EQCMeeting2of2DOC19900810

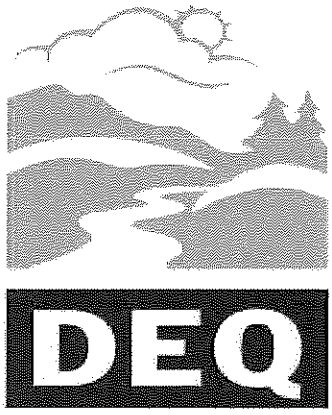
Part 2 of 2

OREGON

ENVIRONMENTAL QUALITY

COMMISSION MEETING

MATERIALS 08/10/1990



State of Oregon
Department of Environmental Quality

Blank Sheet Have Been Removed, which is the reason for any discrepancies in the page numbers

NEIL GOLDSCHMIDT
GOVERNOR

Environmental Quality Commission

811 SW SIXTH AVENUE, PORTLAND, OR 97204 PHONE (503) 229-5696

REQUEST FOR EQC ACTION

Meeting Date: August 10, 1990
Agenda Item: N
Division: Air Quality
Section: Planning & Development

SUBJECT:

Chlorofluorocarbons (CFCs) and Halons: Proposed adoption of finding and rules related to automobile air conditioner coolant recovery and recycling equipment, and enforcement rules for consumer product prohibitions.

PURPOSE:

Adopt proposed rules to implement and enforce ORS 468.612-621 for the reduction and recycling of certain chlorofluoro-carbons.

ACTION REQUESTED:

___ Work Session Discussion
- ___ General Program Background
- ___ Potential Strategy, Policy, or Rules
- ___ Agenda Item ___ for Current Meeting
- ___ Other: (specify)

___ Authorize Rulemaking Hearing
_X_ Adopt Rules

Proposed Rules	Attachment A
Rulemaking Statements	Attachment B
Fiscal and Economic Impact Statement	Attachment B
Public Notice	Attachment C
Other: Determination Of Availability and Affordability of Automobile Air Conditioner Coolant Recycling Equipment	Attachment D

___ Issue a Contested Case Order
___ Approve a Stipulated Order
___ Enter an Order
Proposed Order — Attachment ___

___ Approve Department Recommendation

___ Variance Request	Attachment ___
___ Exception to Rule	Attachment ___
___ Informational Report	Attachment ___
___ Other: (specify)	Attachment ___

DESCRIPTION OF REQUESTED ACTION:

ORS 468.612 to 621 (Attachment E) contains four distinct provisions relating to the control of chlorofluorocarbons and halons.

1) Prohibits the sale of certain products (i.e. foam packaging, fire extinguishers, noisemakers, coolants and cleaners) which contain chlorofluorocarbons and halons.
Wholesale: Effective July 1, 1990
Retail: Effective January 1, 1991

2) Directs the Environmental Quality Commission (EQC, Commission) to make a determination whether equipment for the recovery and recycling of chlorofluorocarbons used in automobile air conditioners is available and affordable. No timeframe is established for this determination.

3) Starts a clock, once the determination is made, which gives businesses one year to begin using this equipment when installing, servicing or otherwise handling auto air conditioners. Smaller repair shops are given an additional year to comply.

4) Directs the Environmental Quality Commission to establish standards for recovery and recycling equipment and to implement and enforce a program to carry out the purposes of the statute.

The Department of Environmental Quality (DEQ, Department) has presented information demonstrating that automobile air conditioner coolant recovery and recycling equipment is available and affordable, has proposed rules which will establish standards for this equipment and its use, and has defined the class of violation of the CFC statutes or rules in the Civil Penalty Matrix.

Based on the public comments received, and the Department's response to those comments, the Commission is being asked to adopt these rules. Included in Attachment D is a determination that automobile air conditioner coolant recovery and recycling equipment is available and affordable. The Commission must concur with this as a legislative condition of adopting the auto air conditioner

recycling rules. Recycling equipment can be purchased from at least four manufacturers. Most businesses will recover their costs of the equipment through savings in CFC purchases. Only a few may have to raise customer costs by as much as 25 percent for air conditioner service to recover equipment costs. The deadline for having this equipment in place will then be one year, or two years in the case of smaller businesses, from the date of rule adoption.

AUTHORITY/NEED FOR ACTION:

X	Required by Statute: ORS 468.612 - 621 Enactment Date: October 3, 1989	Attachment E
___	Statutory Authority: _____	Attachment ___
___	Pursuant to Rule: _____	Attachment ___
___	Pursuant to Federal Law/Rule: _____	Attachment ___
___	Other:	Attachment ___
___	Time Constraints: (explain)	

DEVELOPMENTAL BACKGROUND:

___	Advisory Committee Report/Recommendation	Attachment ___
X	Hearing Officer's Report/Recommendations	Attachment F
X	Response to Testimony/Comments	Attachment G
___	Prior EQC Agenda Items: (list)	Attachment ___
___	Other Related Reports/Rules/Statutes:	Attachment ___
___	Supplemental Background Information	Attachment ___

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

Auto service, repair, and disposal facilities will be most affected by the recycling rules. They will be required to invest in new equipment in order to continue handling air conditioner systems. While the equipment will pay for itself in many cases through cost savings on CFC purchases, the initial expenditure may cause some facilities to stop doing this type of work.

The general public may experience a modest increase in cost for simple repairs and maintenance of their auto air conditioners as a result of shops having to purchase this recycling equipment.

PROGRAM CONSIDERATIONS:

The statute (ORS 468.618) allows the Department to establish a program to implement and enforce these rules, but provides no funding. The Department will provide information to the general public and to the regulated community, and will process tax credit applications. Pollution control tax

credits will provide an incentive for businesses, especially smaller shops, to purchase the equipment.

The rules are expected to be generally self-enforcing. If non-compliance becomes a significant issue, the Department will seek EPA funds to provide a reasonable level of enforcement resources.

DESCRIPTION OF PROPOSED REGULATIONS AND ALTERNATIVES CONSIDERED:

The rules require persons who install, service, repair, dispose of, or otherwise treat automobile air conditioners to recover and recycle the coolant using approved equipment and procedures. Larger repair facilities are required to comply within one year of rule adoption, with smaller facilities given an additional year to comply. Also proposed are rules specifying the classification of violations of CFC statutes and rules. This includes the legislatively defined product prohibitions.

Public testimony suggested two potential modifications to the proposed rules: 1) allow the use of uncertified coolant recovery and recycling equipment purchased before these rules are adopted; and 2) allow coolant to be recovered onsite with subsequent recycling offsite.

Public testimony, and additional information from equipment suppliers, indicates that about 50 machines were sold in Oregon before the Underwriters Laboratories (UL) approval process was in place. Although the national manufacturers tried to get UL certification of these machines, all had to be modified before certification was granted. The manufacturers argue that the earlier models effectively captured and cleaned the used coolant although they did not receive certification. Purchasers of this equipment believe that if UL certification is required, they are being penalized for acting early to protect the environment.

Several commenters suggested that small shops and others handling only a few mobile air conditioners could avoid purchasing costly equipment by only recovering the coolant and sending it offsite for recycling. Recovery equipment is relatively simple and easy to operate. There are no standards for such equipment so there are no added expenses for UL certification. Apparently there is no market yet for recycled CFC coolant but it is likely that one will develop as prices increase. Associated facilities and services would then probably appear.

Alternative 1 - The proposed rules require recovery and recycling equipment which has UL certification, "or other requirements and specifications determined by the Department as being equivalent." Rather than modify the proposed rules, the Department could develop such requirements in a guidance document which would allow the older equipment to be used, or allow onsite recovery without recycling under certain conditions.

Alternative 2 - Modify the proposed rules to exempt equipment purchased before adoption of these rules from the requirement for UL approval. Additional provisions would be needed specifying how shops with exempt equipment would register, provide proof of the purchase date, and provide documentation of the ability of that equipment to efficiently capture and effectively clean auto air conditioner coolant.

Alternative 3 - Modify the proposed rules to exempt equipment used solely for CFC recovery from the requirement for UL approval. In this case additional rules would be needed to ensure that exempt shops demonstrate that the captured coolant is being sent offsite and ultimately recycled.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends that the Commission determine that auto air conditioner coolant recovery and recycling equipment is available and affordable and select Alternative 1 which is the adoption of the rules as proposed. These rules offer sufficient latitude for the Department to exempt equipment or facilities which, although they do not have UL certification, still provide control of the stratospheric ozone depleting chemicals as intended by the Legislature. This alternative would respond to those who acted early to protect the global environment, and be less of an administrative burden on the Department and on owners of the small number of uncertified machines, than to modify the proposed rules and require a formal registration process.

Allowing offsite recycling is not recommended on the basis that it would provide less incentive to recycle efficiently. The offsite recycler would have to be paid for the amount of contaminated coolant processed. While similar systems and markets have been developed and can be effective for solvents, the Department has found that onsite solvent recovery and recycling is generally a better approach to ensure a high level of efficiency. So far no one has presented information describing how an offsite recycling system might work and the Department has no knowledge of anyone providing offsite recycling service.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

The proposed rules play a role in solving what is recognized as a global problem. These rules put Oregon in the vanguard of states adopting control programs, with the Federal government following in a few years. The rules are consistent with Legislative policy as specifically embodied in ORS 468.614, and more generally in the Toxics Use Reduction and Hazardous Waste Reduction Act of 1989 (ORS 465.003 through 037). The rules are also consistent with agency policy and with the strategic plan, encouraging pollution prevention and waste minimization.

ISSUE FOR COMMISSION TO RESOLVE:

Should the Commission determine that automobile air conditioner coolant recovery and recycling equipment is available and affordable, and adopt the rules for Control of Ozone Depleting Chemicals as proposed.

INTENDED FOLLOWUP ACTIONS:

o File the adopted rules with the Secretary of State.

Approved:

Section: John F. Kowalczyk

Division: Tom Bispham

Director: Fred Hansen

Report Prepared By: Gregg E. Lande

Phone: 229-6411

Date Prepared: July 24, 1990

GEL:a
PLAN\AH10250
7/24/90

CHAPTER 340, DIVISION 22
CONTROL OF OZONE DEPLETING CHEMICALS

PURPOSE AND APPLICABILITY

340-22-405 The purpose of these rules is to reduce the use of stratospheric ozone depleting chemicals, to recycle those chemicals already in use, and to encourage the use of less dangerous chemicals. The Environmental Quality Commission having determined that equipment for the recovery and recycling of chlorofluorocarbons from automobile air conditioners is affordable and available, intends that these rules apply to persons handling automobile air conditioners.

DEFINITIONS

340-22-410 As used in these rules, unless otherwise required by context:

(1) "Automobile" means any self-propelled motor vehicle used for transporting persons or commodities on public roads.

(2) "Chlorofluorocarbons (CFC)" includes:

(a) CFC-11 (trichlorofluoromethane);

(b) CFC-12 (dichlorodifluoromethane);

(c) CFC-113 (trichlorotrifluoroethane);

(d) CFC-114 (dichlorotetrafluoroethane); and

(e) CFC-115 ((mono)chloropentafluoroethane).

(3) "Commission" means the Environmental Quality Commission.

(4) "Department" means the Department of Environmental Quality.

(5) "Director" means the Director of the Department of Environmental Quality.

(6) "Person" means individuals, corporations, associations, firms, partnerships, joint stock companies, public and municipal corporations, political subdivisions, the state and any agencies thereof, and the federal government and any agencies thereof.

REQUIREMENT FOR RECYCLING AUTOMOBILE AIR CONDITIONING COOLANT

340-22-415 (1) Except as provided in section (2) no person shall engage in the business of installing, servicing, repairing, disposing of, or otherwise treating automobile air conditioners after August 10, 1991 without recovering and recycling CFC.

(2) Any automobile repair shop that has

(a) fewer than four employees; or

(b) fewer than three covered bays shall comply with the provisions of section (1) after August 10, 1992.

(3) Only recovery and recycling equipment that is certified by Underwriters Laboratory (UL) as meeting the requirements and specifications of UL1963 and the Society of Automotive Engineers (SAE) standards, J1990 and J1991, or other requirements and specifications determined by the Department as being equivalent, shall be used.

(4) All recovery and recycling equipment shall be operated and maintained at full efficiency and effectiveness according to the manufacturer's directions and guidelines contained in SAE standard J1989.

CHAPTER 340, DIVISION 12

ENFORCEMENT PROCEDURE AND CIVIL PENALTY

AIR QUALITY CLASSIFICATION OF VIOLATIONS

340-12-050(2) Class Two:

(a) Allowing discharges of a magnitude that, though not actually likely to cause an ambient air violation, may have endangered citizens;

(b) Exceeding emission limitations in permits or rules;

(c) Exceeding opacity limitations in permits or rules;

(d) Violating standards for fugitive emissions, particulate deposition, or odors in permits or rules;

(e) Illegal open burning, including stack burning, which poses a moderate risk of harm to public health or the environment;

(f) Failure to report upset or breakdown of air pollution control equipment, or an emission limit violation;

(g) Violation of a work practice requirement for asbestos abatement projects which are not likely to result in public exposure to asbestos or release of asbestos into the environment;

(h) Improper storage of friable asbestos material or asbestos-containing waste material from an asbestos abatement projects which is not likely to result in public exposure to asbestos or release of asbestos into the environment;

(i) Violation of a disposal requirement for asbestos-containing waste material which is not likely to result in public exposure to asbestos or release of asbestos into the environment;

(j) Conduct of an asbestos abatement project by a contractor not licensed as an asbestos abatement contractor;

(k) Failure to provide notification of an asbestos abatement project;

(l) Failure to display permanent labels on a certified woodstove;

(m) Alteration of a certified woodstove permanent label;

(n) Failure to use vapor control equipment when transferring fuel;

(o) Failure to file a Notice of Construction or permit application;

(p) Failure to submit a report or plan as required by permit;

(q) Failure to actively extinguish all flames and major smoke sources from open field burning when prohibition conditions are imposed by the Department or when instructed to do so by an agent or employe of the Department;

(r) Causing or allowing a propane flaming operation to be conducted in a manner which causes or allows open flame to be sustained;

(s) ~~[Any other violation related to air quality which poses a moderate risk of harm to public health or the environment.]~~ Installing, servicing, repairing, disposing of or otherwise treating automobile air conditioners without recovering and recycling chlorofluorocarbons using approved recovery and recycling equipment.

(t) Selling, or offering to sell, or giving as a sales inducement any aerosol spray product which contains as a propellant any compound prohibited under ORS 468.605.

(u) Selling any chlorofluorocarbon or halon containing product prohibited under ORS 468.616.

(v) Any other violation related to air quality which poses a moderate risk of harm to public health or the environment.

PLAN\AH10252
7/90

STATEMENT OF NEED FOR RULEMAKING

Legal Authority

ORS 468.600 to 621: Chlorofluorocarbons (CFC) and Halon Control

OAR 340-12: Enforcement Procedure and Civil Penalties

Need for the Rule

The 1989 Legislature, finding that chlorofluorocarbons and halons are being unnecessarily released to the atmosphere and destroying the Earth's protective ozone layer, directed the Commission to determine if equipment for the recovery and recycling of chlorofluorocarbons used in automobile air conditioners is available and affordable. If so, the Commission is to establish by rule standards for approved equipment for use in recovering these stratospheric ozone destroying substances, and to enforce these rules as well as prohibitions on the sale of certain products containing CFC and halons.

Principle Documents Relied Upon

ORS 468.612 to 621 CHLOROFLUOROCARBON AND HALON CONTROL

Fiscal Impact Statement

Impact on State Agencies: No additional funding was provided by the Legislature to implement or enforce these rules. Implementation of some funded programs will only be slightly delayed in order to allow implementation of Chlorofluorocarbon and Halon control.

Impact on Local Agencies: None

Impact on General Public: The prohibition on sale of some products (contained in the statute) will mean that consumers will not be able to service their own automobile air conditioners. Servicing at businesses with the required recycling and recovery equipment may be more expensive in some cases, although it will be difficult to adequately identify this effect since the cost of the coolant is rapidly rising.

Current cost for do-it-yourself coolant recharge	$ 4.50
1991 est. cost for do-it-yourself coolant recharge	$ 5.50
Current cost for coolant recharge at a shop	$40- 50
1991 est. cost for coolant recharge at a shop with recycling equipment	$40-75

Impact on Affected Businesses: The initial cost of purchasing required recycling and recovery equipment will range from $2400 to $7000. Operation and maintenance costs are estimated to be about 10% of this amount. This may cause about 40% of the businesses to evaluate whether they will continue to offer automobile air conditioner service.

Recycling of CFC-12 coolant provides a means for recovering the cost of purchase and maintenance of this equipment. With an average coolant cost per job of $20, repair shops doing over 100 jobs a year will save money. Smaller shops will recover their equipment cost to lesser degrees through coolant recycling and about 10% may be forced to pass this cost (as much as a $25 increase) on to the consumer.

Land Use Consistency Statement

The proposed rules have no impact on, and are consistent with, land use plans.

PLAN\AH10253
7/90

Oregon Department of Environmental Quality

A CHANCE TO COMMENT ON...

New Rules for Control of Ozone Depleting Chemicals
NOTICE OF PUBLIC HEARING

Hearing Date: June 6, 1990 and June 8, 1990
Comments Due: June 15, 1990

WHO IS AFFECTED: All persons engaged in the business of installing servicing, repairing, disposing of, or otherwise treating automobile air conditioners (eg. gasoline service stations, autobody repair shops, automobile repairing and service shops, automobile wrecking yards, government motor pools, and school auto shops).

WHAT IS PROPOSED: The Department of Environmental Quality is proposing to adopt OAR 340-22-405 through 415 and to amend OAR 340-12-026 through 080.

WHAT ARE THE HIGHLIGHTS: The new and amended rules:

- establish equipment standards for the recovery and recycling of chlorofluorocarbons used as automobile air conditioner coolant;
- define the Civil Penalty Matrix and Class of any violation of the chlorofluorocarbon statutes or rules.

SPECIAL CONDITIONS: The effective date for the new recycling rules is dependent upon the Environmental Quality Commission determining that such recovery and recycling equipment is available and affordable.

HOW TO COMMENT: Copies of the complete proposed rule package may be obtained from: Air Quality Division, Department of Environmental Quality, 811 S.W. Sixth Avenue, Portland, OR 97204 or the regional office nearest you. For further information contact Gregg Lande at 229-6411.

811 S.W. 6th Avenue
Portland, OR 97204

11/1/86

FOR FURTHER INFORMATION:
Contact the person or division identified in the public notice by calling 229-5696 in the Portland area. To avoid long distance charges from other parts of the state, call 1-800-452-4011.

A public hearing will be held before a hearings officer at:

1:30 p.m.
June 6, 1990
Cascade Natural Gas Conference Room
334 N.E. Hawthorne, Bend, Oregon

and

9:30 a.m.
June 8, 1990
Oregon Department of Environmental Quality
Conference Room 3A, 811 S.W. Sixth Avenue
Portland, Oregon

Oral and written comments will be accepted at the public hearing. Written comments may be sent to the DEQ, but must be received by no later than June 15, 1990.

WHAT IS THE NEXT STEP:

After public hearing the Environmental Quality Commission may adopt rule amendments identical to the proposed amendments, adopt modified rule amendments on the same subject matter, or decline to act. The adopted rules will be submitted to the U. S. Environmental Protection Agency as part of the State Clean Air Act Implementation Plan. The Commission's deliberation should come in August 10, 1990 as part of the agenda of a regularly scheduled Commission meeting.

A Statement of Need, Fiscal and Economic Impact Statement, and Land Use Consistency Statement are attached to this notice.

GL:a
PLAN\AH6074

DETERMINATION OF AVAILABILITY AND AFFORDABILITY AUTOMOBILE AIR CONDITIONER COOLANT RECYCLING EQUIPMENT

ISSUE:

ORS 468.612 to 621 requires a determination by the Environmental Quality Commission that automobile air conditioner coolant recovery and recycling equipment is "available and affordable". This determination is the trigger which initiates the Department's major responsibilities under the statute, i.e. rules specifying the standards for this equipment and its use, and a program for implementation and enforcement.

BACKGROUND INFORMATION:

Recycling Equipment Standards

Developments at the national level have provided much of the information necessary to make this determination. A task force made up of the Automobile Manufacturer's Association, the Environmental Protection Agency, and the Mobile Air Conditioning Society (MACS) agreed on standards for cleanliness for recycled coolant. Based on this agreement the Society of Automotive Engineers (SAE) adopted J1989 which provides service guidelines for technicians, J1990 which provides equipment specifications for the CFC-12 coolant recycling machines, and J1991 which provides specifications for the purity of recycled CFC-12. These purity standards are:

Moisture	15 ppm by weight
Refrigerant Oil	4000 ppm by weight
Non-condensable gases(air)	330 ppm by weight

The task force gave the Underwriter's Laboratory (UL) the task of testing recycling machines to determine if the cleaned coolant met the SAE J1991 standards, and also if the machines were built to SAE specifications. UL incorporated the SAE requirements along with standard safety requirements into a document (Subject 1963) which outlines procedures for testing the recycling equipment. The Department is prepared to consider equipment that meets UL Subject 1963 as acceptable for recycling CFC-12 coolant in Oregon.

Availability

To date the Department is aware of four manufacturers, and seven models, which have received UL approval for auto air conditioner coolant recycling equipment as shown below.

Manufacturer	Model #	Suggested Retail Price	Back Order
Murray	Air Tune 5000	$7000	1 week
	Air Tune 1100	$2400	2 weeks
Robinair	Model 17300	$3395	in stock
	Model 17350	$3595	in stock
	Model 17400 (available mid-May)	$3095	4 weeks
White	Model 01050	$2933	30 weeks
Draf	Model 1400	$3295	8 weeks

This equipment is available through distributors in Oregon or can be obtained directly from the manufacturer. Some of the major car manufacturers have required their dealerships to purchase this equipment. The Department's survey indicates that in the Portland area over 50% of the dealerships already have units.

There has been some concern that demand for this equipment on a nationwide scale may make it difficult to obtain within the required one year period. The current back order status of each model demonstrates that there is ample time for a shop to make a decision, place an order, and receive delivery within a year. As other States and the Federal government adopt requirements for this equipment demand will increase significantly. The sooner businesses in Oregon begin to purchase this equipment the less likely delivery times will be a problem.

Affordability

One significant, and complicating factor, in this determination is that the cost of CFC will be rising: first, because production will level off and then decline as a result of the international agreement; and second, because of new Federal taxes. Many businesses will be adversely impacted by this effect which may possibly stop their air conditioner repair activity, even without requirements for recycling equipment.

CFC-12 coolant prices were obtained from two of the largest jobbers for air conditioner supplies in Portland and are shown below.

Outlet	Spring 88		Spring 89		Winter 90	
	15#	30#	15#	30#	15#	30#
Johnstone Supply	---	---	---	---	$63.60	$114.60
Grainger WW Inc.	$24.44	$36.34	$28.12	$44.65	$72.94	$128.90

The price per pound of CFC-12, in the 30 pound containers, at Grainger WW Inc. increased from $1.21 in 1988 to a current price of $4.29. As discussed previously, this price increase likely occurred from two sources. Beginning in August 1989 a 15-20% cut back in production of CFC occurred when EPA imposed the requirements of the Montreal Protocol. This cut in supply was anticipated by suppliers who raised their prices by 23% between 1988 and 1989. These price increases led to the imposition of a Federal "windfall profits" tax on CFC of $1.37 beginning on January 1, 1990 under the Omnibus Budget Reconciliation Act of 1989 which raised the price further.

The future of CFC-12 pricing is all "up". The Federal tax is scheduled to go up to $1.67 in 1992 and to $2.65 in 1993 or 1994. After 1994 the tax will increase by $0.45/year. In 1993, a 20% cut back in CFC production from current levels is scheduled. A conservative cost projection based on only a 20% increase per year above tax increases is shown below.

Year	Cost per Pound
Current	$4.29
1991	$5.10
1992	$6.42
1993	$8.70

Other factors which must be considered in determining if recycling equipment is affordable include: cost and expected life of the machines; number of air conditioner jobs done by the shop; size of the repair market and elasticity of the cost to the consumer.

Sie Oulouhojian, spokes-person for the Mobile Air Conditioning Society (MACS) indicated that the expected machine life was 3-5 years and that newer models would probably make older ones obsolete in 3 years. For calculation purposes a conservative machine life of 3 years was used.

As the table of available models shows, the cost of the equipment ranges from $2400 to $7000. The most expensive model provides electronic diagnostics on the air conditioner being serviced, while the least expensive simply recovers and cleans the coolant for later reuse. Eliminating the highest priced model, because of its added features, results in an average cost for the basic equipment of about $3200. Adding 10% per year for maintenance brings the cost over the 3 years to about $4200.

Use of this equipment will reduce the cost of purchasing increasingly expensive CFC. Therefore, the number and type of jobs done by a shop will have a major impact on the affordability of this equipment. The Department's survey of shops working on automobile air conditioners indicates that a variety of businesses are involved in this work and that the number of jobs done can vary considerably. This makes it necessary to consider several classes of repair shops when determining affordability.

Several assumptions are common to all the calculations:

Equipment purchased by July 1991
Useful life of equipment is 3 years
Equipment Cost of $4200
Average coolant used per vehicle of 3 pounds
Average CFC-12 cost of $6.74 per pound

Using these values it is estimated that a shop would need to do about 200 jobs to get complete payback on the equipment within its useful lifetime (assuming no price increases for service).

Category 1 - Shops doing more than 100 jobs a year.

Based on the survey data 80% of the specialty auto air conditioner shops, 30% of the dealerships, and a small percentage of other shops will fall in this category. These businesses will pay for the equipment in about two years and profit from their reduced purchase of CFC-12. Capital outlay should not be significant.

Category 2 - Shops doing between 50 and 100 jobs a year.

The remaining specialty shops, 40% of the dealerships, and 20-30% of the service station and small shops fall into this category. These businesses will probably not profit from recycling coolant but will probably pay for the machine over its useful life. They may easily defer purchase of newer models. The initial capital outlay should not cause significant economic hardship for these businesses.

Category 3 - Shops doing less than 50 jobs a year.

About one-third of the dealership shops and two-thirds of the non-dealership shops and service stations appear to fall into this category. Thirty to forty percent of these smaller shops simply recharge coolant. All of these businesses would need to raise their prices to recover the added expense of the equipment. In some cases the initial capital outlay may be significant.

Two scenarios can be considered. In larger markets competition would prevent raising prices to pay for the equipment and cause these some shops to stop doing this work, while others could make up the loss in other aspects of the business. In smaller markets

price increases may be possible and the equipment costs would then be passed on to the consumer.

The impact this might have on consumer prices was then estimated. About 20% of the shops surveyed do less than 20 jobs a year. In three years they would recover only about $1200 in CFC purchase costs.

20 jobs/yr x CFC @ $20/job x 3 years = $1200

To pay the $4200 equipment cost they would have to charge an additional $50 for each job.

20 jobs/yr x $50/job x 3 years = $3000

As part of its survey the Department gathered information on the cost of various types of automobile air conditioner repairs. About 50% of the jobs being done are relatively minor, either flushing or routine maintenance. These repairs cost on the order of $50 to $100 dollars. Adding $50 to the cost of this type of repair is clearly significant. Whether this level of cost increase will be accepted by the consumer is unknown.

Tax Credits

Both the Department of Environmental Quality and the Department of Energy (DOE) have tax credit programs available to help these small businesses recover some of the cost of this equipment. The DOE program provides a tax credit of 30% of the cost of recycling equipment. The full credit applies to the year of purchase, without reductions for any savings the equipment might provide. However, DOE's program has limited funding and DEQ would have to petition DOE to place automobile air conditioner coolant recycling machines on their list of qualifying equipment.

Automobile air conditioner coolant recycling equipment can be considered for the DEQ tax credit program either through Air Quality, as air pollution control, or through Hazardous Waste, as recycling. Both programs offer a 50% tax credit with reduction for any cost savings provided by the machines. Credits would be apportioned annually over the useful life of the equipment. The Department's Management Service Division has tentatively approved considering this equipment under the Hazardous Waste recovery and reuse program.

It is estimated that by applying this 50% credit to the calculated price increases shown above the cost to the consumer could be halved.

CONCLUSION:

The information presented demonstrates that equipment for the recovery and recycling of automobile air conditioner coolant is available. This equipment can be purchased from at least four manufacturers. Several of the major car manufacturers' dealerships in Oregon are already purchasing this equipment. Delivery can be accomplished within a matter of weeks for most models.

Equipment currently on the market is affordable, ranging in price from $2400 to $7000. Recycling of CFC-12 coolant provides a means for recovering the cost of purchase and maintenance of this equipment. Repair shops doing over 100 jobs a year will save money. Smaller shops will recover their equipment cost to lesser degrees through coolant recycling and some may be forced to pass this cost on to the consumer.

In considering the effect of tax credit availability it is estimated that over 60% of the businesses currently servicing automobile air conditioners will recover equipment costs through savings on CFC purchases. An additional 30% will recover their costs utilizing the tax credit. The remainder may need to increase the costs to their customers by as much as $25 for routine services currently costing $50 to $100.

PLAN\AH10254
7/90

468.565 Compliance with state standards required; hearing; notice. (1) The commission may require that necessary corrective measures be undertaken within a reasonable time if, after hearing, it finds that:

(a) A regional authority has failed to establish an adequate air quality control program within a reasonable time after its formation; or

(b) An air quality control program in force in the territory of a regional authority is being administered in a manner inconsistent with the requirements of ORS 448.305, 454.010 to 454.040, 454.205 to 454.255, 454.405, 454.425, 454.505 to 454.535, 454.605 to 454.745 and this chapter.

(2) Notice of the hearing required under subsection (1) of this section shall be sent to the regional authority not less than 30 days prior to the hearing.

(3) If the regional authority fails to take the necessary corrective measures within the time required, the commission shall undertake a program of administration and enforcement of the air quality control program in the territory of the regional authority. The program instituted by the commission shall supersede all rules, standards and orders of the regional authority.

(4) If, in the judgment of the commission, a regional authority is able to requalify to exercise the functions authorized in ORS 468.535, the commission shall restore those functions to the regional authority and shall not exercise the same functions in the territory of the regional authority. [Formerly 449.905]

468.570 Payment of costs of services to authority by state. Any consultation and services provided to regional authorities or local air quality control programs by the commission may be paid for either from funds appropriated to the commission or under agreements between the parties on a reimbursable basis. [Formerly 449.915]

468.575 State aid. (1) Subject to the availability of funds therefor:

(a) Any air quality control program conforming to the rules of the commission and operated by not more than one unit of local government shall be eligible for state aid in an amount not to exceed 30 percent of the locally funded annual operating cost thereof, not including any federal funds to which the program may be entitled.

(b) Any air quality control program exercising functions operated by a regional authority shall be eligible for state aid in an amount not to exceed 50 percent of the locally funded annual operating cost thereof, not including any federal funds to which the program may be entitled.

(2) Applications for state funds shall be made to the commission and funds shall be made available under subsection (1) of this section according to the determination of the commission. In making its determination, the commission shall consider:

(a) The adequacy and effectiveness of the air quality control program.

(b) The geographic and demographic factors in the territory under the program.

(c) The particular problems of the territory under the program.

(3) In order to qualify for any state aid and subject to the availability of funds therefor, the local government or the regional authority must submit all applications for federal financial assistance to the commission before submitting them to the Federal Government.

(4) When certified by the commission, claims for state aid shall be presented for payment in the manner that other claims against the state are paid. [Formerly 449.920]

468.580 Payment of certain court costs not required. A regional authority shall not be required to pay any filing, service or other fees or furnish any bond or undertaking upon appeal or otherwise in any action or proceedings in any court in this state in which it is a party or interested. [Formerly 449.923]

AEROSOL SPRAY CONTROL

468.600 Findings. The Legislative Assembly finds that:

(1) Scientific studies have revealed that certain chlorofluorocarbon compounds used in aerosol sprays may be destroying the ozone layer in the earth's stratosphere;

(2) The ozone layer is vital to life on earth, preventing approximately 99 percent of the sun's mid-ultraviolet radiation from reaching the earth's surface;

(3) Increased intensity of ultraviolet radiation poses a serious threat to life on earth including increased occurrences of skin cancer, damage to food crops, damage to phytoplankton which is vital to the production of oxygen and to the food chain, and unpredictable and irreversible global climatic changes;

(4) It has been estimated that production of ozone destroying chemicals is increasing at a rate of 10 percent per year, at which rate the ozone layer will be reduced 13 percent by the year 2014;

(5) It has been estimated that there has already been one-half to one percent depletion of the ozone layer;

(6) It has been estimated that an immediate halt to production of ozone destroying chemicals would still result in an approximate three and one-half percent reduction in ozone by 1990; and

(7) There is substantial evidence to believe that inhalation of aerosol sprays is a significant hazard to human health. [1975 c.366 §1]

Note: 468.600 and 468.605 were enacted into law by the Legislative Assembly but were not added to or made a part of ORS chapter 468 or any series therein by legislative action. See Preface to Oregon Revised Statutes for further explanation.

468.605 Prohibition on sale or promotion; exemption from medical use. (1) Unless otherwise provided by law, after March 1, 1977, no person shall sell or offer to sell or give as a sales inducement in this state any aerosol spray which contains as a propellant trichloromonofluoromethane, difluorodichloromethane or any other saturated chlorofluorocarbon compound not containing hydrogen.

(2) Nothing in this section prohibits the sale of any aerosol spray containing any propellant described in subsection (1) of this section if such aerosol spray is intended to be used for a legitimate medical purpose in the treatment of asthma or any respiratory disorder; or such aerosol spray is intended to be used for a legitimate medical purpose and the State Board of Pharmacy determines by administrative rule that the use of the aerosol spray is essential to such intended use. [1975 c.366 §2; 1977 c.18 §1; 1977 c.206 §1; 1983 c.148 §1]

Note: See note under 468.600.

468.610 Wholesale transactions permitted. Nothing in ORS 468.605 shall prevent wholesale transactions, including but not limited to the transportation, warehousing, sale, and delivery of any aerosol spray described in ORS 468.605 (1). [1977 c.206 §4]

CHLOROFLUOROCARBONS AND HALON CONTROL

468.612 Definitions for ORS 468.614 to 468.621. As used in ORS 468.614 to 468.621:

(1) "Chlorofluorocarbons" includes:

(a) CFC-11 (trichlorofluoromethane);

(b) CFC-12 (dichlorodifluoromethane);

(c) CFC-113 (trichlorotrifluoroethane);

(d) CFC-114 (dichlorotetrafluoroethane); and

(e) CFC-115 ((mono)chloropentafluoroethane).

(2) "Halon" includes:

(a) Halon-1211 (bromochlorodifluoroethane)

(b) Halon-1301 (bromotrifluoroethane); and

(c) Halon-2402 (dibromotetrafluoroethane). [1989 c.903 §2]

468.614 Legislative findings. (1) The Legislative Assembly finds and declares that chlorofluorocarbons and halons are being unnecessarily released into the atmosphere, destroying the Earth's protective ozone layer and causing damage to all life.

(2) It is therefore declared to be the policy of the State of Oregon to:

(a) Reduce the use of these compounds;

(b) Recycle these compounds in use; and

(c) Encourage the substitution of less dangerous substances. [1989 c.903 §3]

468.615 [1977 c.206 §2; repealed by 1987 c.414 §172]

468.616 Restrictions on sale, installation and repairing of items containing chlorofluorocarbons and halon. (1) After July 1, 1990, no person shall sell at wholesale, and after January 1, 1991, no person shall sell any of the following:

(a) Chlorofluorocarbon coolant for motor vehicles in containers with a total weight of less than 15 pounds.

(b) Hand-held halon fire extinguishers for residential use.

(c) Party streamers and noisemakers that contain chlorofluorocarbons.

(d) Electronic equipment cleaners, photographic equipment cleaners and disposable containers of chilling agents that contain chlorofluorocarbons and that are used for noncommercial or nonmedical purposes.

(e) Food containers or other food packaging that is made of polystyrene foam that contains chlorofluorocarbons.

(2)(a) One year after the Environmental Quality Commission determines that equipment for the recovery and recycling of chlorofluorocarbons used in automobile air conditioners is affordable and available, no person shall engage in the business of installing, servicing, repairing, disposing of or otherwise treating automobile air conditioners without recovering and recycling chlorofluorocarbons with approved recovery and recycling equipment.

(b) Until one year after the operative date of paragraph (a) of this subsection, the provisions of paragraph (a) of this subsection shall not apply to:

(A) Any automobile repair shop that has fewer than four employees; or

(B) Any automobile repair shop that has fewer than three covered bays.

(3) The Environmental Quality Commission shall establish by rule standards for ap-

proved equipment for use in recovering and recycling chlorofluorocarbons in automobile air conditioners. [1989 c.903 §4]

468.618 Department program to reduce use of and recycle compounds. Subject to available funding, the Department of Environmental Quality may establish a program to carry out the purposes of ORS 468.612 to 468.621, including enforcement of the provisions of ORS 468.616. [1989 c.903 §5]

468.620 [1977 c.206 §3; repealed by 1987 c.414 §172]

468.621 State Fire Marshal; program; halons; guidelines. The State Fire Marshal shall establish a program to minimize the unnecessary release of halons into the environment by providing guidelines for alternatives to full-scale dump testing procedures for industrial halon-based fire extinguishing systems. [1989 c.903 §6]

WOODSTOVE EMISSIONS CONTROL

468.630 Policy. In the interest of the public health and welfare it is declared to be the public policy of the state to control, reduce and prevent air pollution caused by woodstove emissions. The Legislative Assembly declares it to be the public policy of the state to reduce woodstove emissions by encouraging the Department of Environmental Quality to continue efforts to educate the public about the effects of woodstove emissions and the desirability of achieving better woodstove emission performance and heating efficiency. [1983 c.333 §4]

468.635 Prohibited acts relating to uncertified and unlabeled woodstove. On and after July 1, 1986, a person may not advertise to sell, offer to sell or sell a new woodstove in Oregon unless:

(1) The woodstove has been tested to determine its emission performance and heating efficiency;

(2) The woodstove is certified by the department under the program established under ORS 468.655 (1); and

(3) An emission performance and heating efficiency label is attached to the woodstove. [1983 c.333 §8]

468.640 Evaluation of woodstove emission performance; fee. (1) After July 1, 1984, a woodstove manufacturer or dealer may request the department to evaluate the emission performance of a new woodstove.

(2) The commission shall establish by rule the amount of the fee that a manufacturer or dealer must submit to the department with each request to evaluate a woodstove.

(3) A new woodstove may be certified at the conclusion of an evaluation and before July 1, 1986, if:

(a) The department finds that the emission levels of the woodstove comply with the emission standards established by the commission; and

(b) The woodstove manufacturer or dealer submits the application for certification fee established by the commission under ORS 468.655 (1).

(4) As used in this section, "evaluate" means to review a woodstove's emission levels as determined by an independent testing laboratory, and compare the emission levels of the woodstove to the emission standards established by the commission under ORS 468.655 (1). [1983 c.333 §7]

468.645 Used woodstoves exempt from prohibition on sale. (1) The provisions of ORS 468.275, 468.290 and 468.630 to 468.655 do not apply to a used woodstove.

(2) As used in this section, "used woodstove" means any woodstove that has been sold, bargained, exchanged, given away or has had its ownership transferred from the person who first acquired the woodstove from the manufacturer or the manufacturer's dealer or agency, and so used to have become what is commonly known as "second hand" within the ordinary meaning of that term. [1983 c.333 §9]

468.650 Use of net emission reductions in airshed. The commission shall use a portion of the net emission reductions in an airshed achieved by the woodstove certification program to provide room in the airshed for emissions associated with commercial and industrial growth. [1983 c.333 §10]

468.655 Standards and certification program; fee; advisory committee. (1) Before July 1, 1984, the commission shall establish by rule:

(a) Emission performance standards for new woodstoves;

(b) Criteria and procedures for testing a new woodstove for compliance with the emission performance standards;

(c) A program administered by the department to certify a new woodstove that complies with the emission performance standards when tested by an independent testing laboratory, according to the criteria and procedures established in paragraph (b) of this subsection;

(d) A program, including testing criteria and procedures to rate the heating efficiency of a new woodstove;

ATTACHMENT F

STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY INTEROFFICE MEMORANDUM

DATE: June 27, 1990

TO: Environmental Quality Commission

FROM: Gregg Lande, Hearing Officer

SUBJECT: RULES FOR CONTROL OF OZONE DEPLETING CHEMICALS
PUBLIC HEARINGS: JUNE 6, 1990, BEND
JUNE 8, 1990, PORTLAND

Schedule and Procedures

The Department of Environmental Quality held two public hearings on these proposed rules in Bend and Portland, Oregon. Times and places were announced in the Secretary of State's Bulletin, The Oregonian, the Pendleton East Oregonian and the Bend Bulletin (copies attached).

Public Participation

A total of 19 people attended the public hearings, with nine persons providing verbal testimony. Nine people attended the Bend hearing, with five testifying, and 10 attended the Portland hearing, with 4 testifying. Written testimony was received from an additional four persons during the public comment period, which ended June 15, 1990. (Available on request.)

A list of the people providing testimony is attached. The list includes the name, affiliation, type of testimony, and primary position on the proposed rules as indicated on the witness registration form or by testimony.

Summary of Testimony

All of the people providing verbal and written testimony indicated that they primarily favored the proposed rules. However, many stated that the proposed rules needed modification. The primary two changes suggested were: to allow the use of recycling equipment purchased before the UL approval process was in place; to allow coolant to be recovered onsite with subsequent recycling offsite. The Department's response to these and other comments are provided in Attachment G.

CONTROL OF OZONE DEPLETING CHEMICALS RULE PUBLIC TESTIMONY

	GENERAL TESTIMONY[1]	NAME	AFFILIATION	POSITION[2]
(Bend)				
1.	b	Joe Bernard Jr.	Automotive Service Assocation	F
2.	v	E.R. 'Hap' Davie	Chemically Concerned Citizens of Central Oregon	F
3.	v	Ken Mast	Jonek Research & Development	F
4.	v	David V. Buchanan	Save Our Stratosphere	F
5.	v	Mavis McCormic	Citizen	F
(Portland)				
6.	v	T.J. Reilly	Portland Automotive Service Assoc.	F
7.	b	Tom Sumpter		F
8.	b	Quincy Sugarman	Oregon State Public Interest Research Group	F
9.	b	Ted Rowell	Citizens for Better Health	F
10.	w	Thomas BeLusko	Jos. V. BeLusko Co.	N
11.	w	Alan Woll	Moog Automotive, Inc.	F
12.	w	Vittz-James Ramsdell	Roberts Motor Co.	F
13.	w	JoAnn McCauley	Lane Council of Governments	N

GEL:a
PLAN\AH10255 7/90

---

[1] Testimony v = verbal
w = written
b = both verbal and written

[2] Primary Position F = Favor
O = Opposed
N = Neutral

AFFIDAVIT OF PUBLICATION

I, J.M. McINTEER ..... BEING FIRST DULY SWORN DEPOSE AND SAY THAT I AM THE PRINCIPAL CLERK OF THE PUBLISHER OF THE OREGONIAN, A NEWSPAPER OF GENERAL CIRCULATION, AS DEFINED BY ORS 193.010 AND 193.020, PUBLISHED IN THE CITY OF PORTLAND, IN MULTNOMAH COUNTY, OREGON: THAT THE ADVERTISEMENT, THE PRINTED TEXT OF WHICH IS SHOWN BELOW, WAS PUBLISHED IN THE ENTIRE AND REGULAR ISSUES OF THE OREGONIAN FOR 1 DAYS STARTING 05/06/90, ENDING 05/06/90

.....
PRINCIPAL CLERK OF THE PUBLISHER

SUSCRIBED AND SWORN TO BEFORE ME THIS 7th DAY OF MAY 19.90.

Shirley Walker
NOTARY PUBLIC OF OREGON
My Commission Expires 7/28/90

MY COMMISSION EXPIRES: .....

AD TEXT: 381545

NOTICE OF PUBLIC HEARING
ON
PROPOSED AIR QUALITY
RULE ADOPTION
THE OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY IS PROPOSING TO ADOPT CONTROL OF OZONE DEPLETING CHEMICALS RULES BY ADDING CRITERIA ESTABLISHING STANDARDS FOR EQUIPMENT TO RECOVER AND RECYCLE CHLOROFLUOROCARBON COOLANT USED IN AUTOMOBILE AIR CONDITIONERS, AND PROVIDING PENALTIES FOR VIOLATING THE CHLOROFLUOROCARBON STATUTES AND RULES.
THE DEPARTMENT WILL HOLD TWO PUBLIC HEARINGS ON THE ABOVE RULES ON JUNE 6, 1990 AT 1:30 PM AT CASCADE NATURAL GAS CONFERENCE ROOM, 334 NE HAWTHORNE, BEND AND ON JUNE 8, 1990 AT 9:30 AM AT OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY, CONFERENCE ROOM 3A, 811 SW SIXTH AVENUE, PORTLAND. ORAL AND WRITTEN COMMENTS WILL BE ACCEPTED AT THAT TIME. COPIES OF THE COMPLETE PROPOSED RULE PACKAGE MAY BE OBTAINED FROM THE AIR QUALITY DIVISION IN PORTLAND, 811 SW SIXTH AVENUE, PORTLAND OR 97204, OR CALL GREGG LANDE AT (503) 229-5411. WRITTEN COMMENTS MAY BE SUBMITTED ANY TIME TO THE ABOVE ADDRESS, BUT MUST BE RECEIVED NO LATER THAN JUNE 15, 1990.

IN THE _____ COURT OF THE
STATE OF OREGON FOR UMATILLA COUNTY

AFFIDAVIT OF
PUBLICATION OF

_____

Equity Law } No. _____

STATE OF OREGON, }
County of Umatilla } ss.

I, Janet Allen being first duly sworn, depose and say that I am the principal clerk of the publisher of the East Oregonian, a newspaper of general circulation, as defined by ORS 193.010 and 193.020; printed and published at Pendleton in the aforesaid county and state; that the EQ-264 Notice of Public Hearing (Air Quality)

a printed copy of which is hereto annexed, was published in the entire issue of said newspaper for one successive and consecutive issue in the following issues:

May 8th, 1990

Janet Allen

Subscribed and sworn to before me this 8th day of May, 1990

Brenda D Cuhl
Notary Public of Oregon

MY COMMISSION EXPIRES 3-27-94

EQ-264
NOTICE OF PUBLIC HEARING on Proposed Air Quality Rule Adoption

The Oregon Department of Environmental Quality is proposing to adopt Control of Ozone Depleting Chemicals rules by adding criteria establishing standards for equipment to recover and recycle chlorofluorocarbon coolant used in automobile air conditioners, and providing penalties for violating the chlorofluorocarbon statutes and rules.

The Department will hold two public hearings on the above rules on June 6, 1990 at 1:30 p.m. at Cascade Natural Gas Conference Room, 334 N.E. Hawthorne, Bend and on June 8, 1990 at 9:30 a.m. at Oregon Department of Environmental Quality, Conference Room 3A, 811 SW Sixth Avenue, Portland. Oral and written comments will be accepted at that time. Copies of the complete proposed rule package may be obtained from the Air Quality Division in Portland, 811 SW Sixth Avenue, Portland, OR 97204, or call Gregg Lande at (503) 229-6411. Written comments may be submitted anytime to the above address, but must be received no later than June 15, 1990.

May 8, 1990

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
MAY 16 1990
AIR QUALITY CONTROL

NOTICE OF PUBLIC HEARING
on
Proposed Air Quality
Rule Adoption

The Oregon Department of Environmental Quality is proposing to adopt Control of Ozone Depleting Chemicals rules by adding, criteria establishing standards for equipment to recover and recycle chlorofluorocarbon coolant used in automobile air conditioners, and providing penalties for violating the chlorofluorocarbon statutes and rules.

The Department will hold two public hearings on the above rules on June 6, 1990 at 1:30 p.m. at Cascade Natural Gas Conference Room, 334 N.E. Hawthorne, Bend and on June 8, 1990 at 9:30 a.m. at Oregon Department of Environmental Quality, Conference Room 3A, 811 SW Sixth Avenue, Portland. Oral and written comments will be accepted at that time. Copies of the complete proposed rule package may be obtained from the Air Quality Division in Portland, 811 SW Sixth Avenue, Portland, OR 97204, or call Gregg Lande at (503) 229-6411. Written comments may be submitted anytime to the above address, but must be received no later than June 15, 1990.

130c

Affidavit of Publication

STATE OF OREGON, COUNTY OF DESCHUTES, —ss.

I, Nena E. Byler, being first duly sworn, depose and say that I am the Principal Clerk of the Publisher, of The Bulletin, a newspaper of general circulation printed and published at Bend in the aforesaid county and state as defined by ORS 193.010 and ORS 193.020,

that Notice of Public Hearing
Proposed Air Quality Rule Adoption

a printed copy of which is hereto affixed was published in the entire issue of said newspaper for one time successive and consecutive ~~weeks~~ in the following issues: May 6, 1990

Nena E. Byler

Subscribed and sworn to before me this 9th day of May, 1990.

C. Joan Stiles
Notary Public of Oregon

(My Commission Expires 9-1-90)

RECEIVED
MAY 11 1990
AIR QUALITY CONTROL

The agencies listed below give notice of hearing of proposed rulemaking. Interested persons may comment on the proposed rules orally or in writing at the hearing. Written comments received by the dates indicated will also be considered. Written comments should be sent to and copies of the proposed rulemaking may be obtained from the contact person indicated in each notice of hearing.

resident schools, correspondence schools, and private vocational schools of hair design. 47-081 is being amended because the current language is outdated. The Department of Commerce was disbanded several years ago. The correct agency is Health Division of the Department of Human Resources.
LAST DATE FOR COMMENT: 5-17-90
CONTACT PERSON: Rich Schmidt
ADDRESS: Department of Education, 700 Pringle Parkway SE, Salem, OR 97310-0290
TELEPHONE: 378-3608

DATE:	TIME:	LOCATION:
5-17-90	9:00 am	Department of Education Board Room B - 5th Floor 700 Pringle Parkway SE Salem, OR 97310

HEARINGS OFFICER: Jeanne Kincaid
STATUTORY AUTH: ORS Ch. 345
AMEND: Rules formerly under Chapter 345: OAR 581-48-006, 48-011, 48-016, 48-021, 48-026, 48-036, 48-041, 48-046, 48-061, 48-066, 48-071 and 48-076
SUMMARY: Amends rules of Division 581-48: Licensing and Regulation of Schools of Barbering. Adoption of the amended rules will allow the Superintendent to: Increase the schools student tuition bond; require the schools to adopt a pro-rata refund schedule for student tuition; increase the minimum standards for private vocational schools; develop stricter requirements for opening a new school, develop stricter requirements for closing a school; require schools to submit graduation, retention and placement data as part of the annual license renewal.
LAST DATE FOR COMMENT: 5-17-90
CONTACT PERSON: Rich Schmidt
ADDRESS: Department of Education, 700 Pringle Parkway SE, Salem, OR 97310
TELEPHONE: 378-3608

Environmental Quality, Department of

DATE:	TIME:	LOCATION:
6-6-90	1:30 pm	Cascade Natural Gas Conference Room 334 NE Hawthorne Bend, OR

DATE:	TIME:	LOCATION:
6-8-90	9:30 am	DEQ Headquarters Room 3A 811 SW.6th Avenue Portland, OR

HEARINGS OFFICER: Gregg Lande
STATUTORY AUTH: ORS 468.612 - 468.621
ADOPT: OAR 340-22-405 through 22-415
AMEND: OAR 340-12-050
SUMMARY: The Department is proposing rules which will establish standards for automobile air conditioner coolant recovery and recycling equipment. It is also proposing to amend the list of Class 2 Air Quality violations to include violations of the chlorofluorocarbon and halon statutes and rules.
LAST DATE FOR COMMENT: 6-15-90
CONTACT PERSON: Gregg Lande, Air Quality Division
ADDRESS: Department of Environmental Quality, 811 SW 6th Avenue, Portland, OR 97204-1390
TELEPHONE: 229-6411

DATE:	TIME:	LOCATION:
5-16-90	3:00 pm	DEQ Conference Room 3A 811 SW 6th Portland, OR

STATUTORY AUTH: ORS 459.055 and 459.305, SB 855, Ch. 541, Oregon Laws 1989
AMEND: OAR 340-60-090 to 60-095 and 82-030
REPEAL: OAR 340-61-100 to 61-110
SUMMARY: *Who is Affected:* Local and regional government units located within and outside of Oregon who are considering sending more than 75,000 tons of solid waste per year to a landfill established since 1979 as a conditional use in an exclusive farm use zone, regional disposal site owners and operators, owners and operators of local solid waste and recycling collection services within the local government units considering sending their waste to a regional disposal site, local governments requesting financial assistance for solid waste facilities, and citizens in these affected areas.
What is Proposed: DEQ proposes to amend rules for solid waste reduction programs. ORS 459.055 requires that new landfill located in exclusive farm use zones, such as the new Oregon Waste Systems landfill in Gilliam County and the Finley Buttes landfill in Morrow County, may not accept more than 75,000 tons of waste from local government units located within or outside of Oregon unless the government units adopt and implement a waste reduction program approved by DEQ. The proposed rule amendments set requirements that waste reduction programs must meet to be approved by DEQ.
What are the Highlights: The proposed rules require waste reduction programs to address reduction for each separate waste stream generated, including household waste, commercial waste, industrial waste, yard debris, and demolition material. DEQ will be required to maintain a list of proven methods for reducing waste, and local waste reduction programs will be required to include those methods in their adopted program, or else provide evidence that alternative waste reduction methods proposed or in place are as effective as the methods designated by DEQ, or else that special conditions precludes implementation of the methods designated by

DEPARTMENT RESPONSE TO PUBLIC TESTIMONY ON THE PROPOSED RULES FOR CONTROL OF OZONE DEPLETING CHEMICALS

The Department received a number of comments, both verbal and written, on the proposed rules to Control Ozone Depleting Chemicals. Since many of these comments were similar, in that they addressed the same issue, the Department's response can be directed toward these common points.

1. **Equipment for recovery and recycling of automobile air conditioner coolant is currently available and affordable.**

   There are now 7 manufacturers, producing more than 15 different models of machine, which have received approval from Underwriter's Laboratory (UL). An approved machine may cost as little as $2400, and in addition, a number of companies have developed competitive marketing strategies to make purchase of this equipment even more affordable to the smaller shops. The Department concurs that the equipment is available and affordable.

2. **Allow the use of equipment purchased prior to the UL approval procedure being adopted. Individuals who acted early to reduce their release of CFC should not be penalized for their environmental concern.**

   A national task force, consisting of the Automobile Manufacturer's Association, the Environmental Protection Agency, and the Mobile Air Conditioning Society (MACS), gave UL the task of testing recycling machines to determine if the cleaned coolant met purity standards and also if the machines were built to SAE specifications. UL incorporated the SAE requirements along with standard safety requirements into a document (Subject 1963) which outlines procedures for testing the recycling equipment. Without certification by UL the Department should not be required to vouch for the equipment's ability to capture used coolant or the purity of the recycled product.

   While we agree that those environmentally-conscious individuals who acted early should not be penalized, it is the Department's position that the manufacturers should provide a mechanism for ensuring that the equipment they have sold operates effectively, and for the purpose intended. The Department has attempted to determine if the older, unapproved models can be retrofitted and gain UL certification, and to see that manufacturers offer this

option to their customers. However, if UL approval is not possible for retrofitted models, the proposed rules allow the Department to establish its own requirements and specifications for approval.

3. **Enforcement of these rules will be difficult. Automotive air conditioner coolant should only be sold to businesses with approved recovery and recycling equipment.**

   It is true that enforcement of these rules will be problematic. Both enforcement at the point of sale and enforcement of the recovery and recycling aspect are possible approaches, and both are being considered as part of a national program. The Department is specifically given enforcement authority over the equipment and its use in the statute (ORS 468.618) but has no authority over the sale of coolant in legal size containers. Therefore no modification of the rules to regulate coolant sales is recommended.

4. **Coolant <u>recovery</u> and <u>recycling</u> are separate operations that could be handled with different equipment. Auto air conditioner coolant could be recovered onsite using equipment not requiring UL approval. Subsequent recycling could be done offsite with approved equipment.**

   Although technically feasible, the Department believes this approach is not practical because it does not offer motivation for the air conditioner shop to capture the CFC. If a shop has a recovery <u>and</u> recycling machine, there is a financial incentive to use it efficiently and offset its cost through savings on CFC purchases. On the other hand, there is no financial motivation for use of an offsite recycler. Recovery onsite, for subsequent offsite recycling, would use less expensive equipment but would take about the same amount of time. In fact, since a pick-up fee would probably be charged by the offsite recycler there would be a disincentive to efficient recovery.

5. **Wait for a Federal program to establish equipment requirements which will apply nationwide.**

   In effect the national taskforce has already established equipment standards for recovery and recycling equipment. There is no reason to delay the effective date requiring use of this equipment in Oregon since: 1) the equipment is already available; and 2) the Federal program will almost certainly incorporate the same equipment standards.

6. **Sale of CFC overseas should be restricted.**

Destruction of the stratospheric ozone layer is indeed a global problem requiring a global perspective. The Montreal Protocol recognizes the importance of a multi-national approach to solving this problem and provides an international agreement on the production and distribution of CFC. The proposed rules play a part in this solution, but the Department has no authority over sales of CFC overseas and the rules cannot be broadened to include this prohibition.

7. **Recovery of coolant from home appliances should be required as well.**

Releases of CFC from stationary cooling equipment, including home appliances, are of about the same magnitude as those from auto air conditioners. It is likely that very similar equipment could be used to recover and recycle CFC from these sources during repair and maintenance. The Legislature considered this requirement as well but, because less information was available, decided to wait on this facet of CFC control.

One of the primary factors that has made auto air conditioner coolant recycling acceptable to the regulated community was the development of coolant purity standards by the national taskforce. Coupled with the UL certification process, it provides the industry with assurance that recovery and recycling is environmental and cost effective. Efforts are under way to develop similar purity and equipment standards for stationary equipment coolant recycling in support of the emerging national program to control CFC releases from both mobile and stationary sources. At this point it would be best to wait for the national program to address stationary coolers. In any event legislation would be needed to pursue this action.

8. **Most cars coming into service stations have no CFC left in the air conditioning system. Therefore the affordability calculation over-estimates the amount of coolant recoverable from systems and the potential for the equipment to pay for itself.**

Many service stations and small repair shops have the mistaken impression that little CFC is potentially recoverable because of the nature of their own air conditioner business. For the most part they perform minor maintenance, simply finding leaks and adding coolant. The situation is different at full service air conditioner repair shops. These shops will discharge and refill a working

system which is undergoing routine maintenance, and may frequently fill and discharge a malfunctioning system in the process of diagnosis and repair. The estimate used in the affordability calculation was made by the Mobile Air Conditioning Society (MACS) which considers this broader range of service and repair. It remains the best estimate of recoverable coolant to use in determining affordability.

9. **The timetable for requiring use of approved equipment should be the same for all service shops regardless of size.**

Some commenters argue that the different deadlines, giving small shops a year longer than large shops to comply with the rules, will create competitive inequities. This issue was discussed and resolved by the Legislature which determined that smaller shops should be given additional time to purchase the equipment and thus spread out their expense. The rules reflect this position.

10. **Fluoride is a significant environmental problem which must be addressed. The manufacture and use of CFC releases fluoride which should be controlled.**

While it is true that chlorofluorocarbons contain fluoride, the chemistry, use, environmental and health effects of the two have little resemblance. The purpose of the statute, and of these rules, is to protect stratospheric ozone, which it will do by reducing CFC releases. Controlling emissions of fluoride has environmental benefits, and is covered by other air quality rules, but provides no additional protection for stratospheric ozone. Therefore the rules will not be modified to include fluoride control.

GEL:a
PLAN\AH10256
7/90

NEIL GOLDSCHMIDT
GOVERNOR

Environmental Quality Commission

811 SW SIXTH AVENUE, PORTLAND, OR 97204 PHONE (503) 229-5696

REQUEST FOR EQC ACTION

Meeting Date: August 10, 1990
Agenda Item: O
Division: HSWD
Section: HWRTA

SUBJECT:

Toxics Use Reduction and Hazardous Waste Reduction Rules (HB3515, 1989 Oregon Legislature)

PURPOSE:

To adopt regulations for the purpose of implementing the planning, technical assistance and reporting requirements of the Toxics Use Reduction and Hazardous Waste Reduction Act of 1989.

ACTION REQUESTED:

___ Work Session Discussion
- ___ General Program Background
- ___ Potential Strategy, Policy, or Rules
- ___ Agenda Item ___ for Current Meeting
- ___ Other: (specify)

___ Authorize Rulemaking Hearing
X Adopt Rules
- Proposed Rules — Attachment A
- Rulemaking Statements — Attachment B
- Fiscal and Economic Impact Statement — Attachment C
- Public Notice — Attachment D

___ Issue a Contested Case Order
___ Approve a Stipulated Order
___ Enter an Order
- Proposed Order — Attachment ___

___ Approve Department Recommendation
- ___ Variance Request — Attachment ___
- ___ Exception to Rule — Attachment ___
- ___ Informational Report — Attachment ___
- ___ Other: (specify) — Attachment ___

DESCRIPTION OF REQUESTED ACTION:

The Environmental Quality Commission (Commission/EQC) is requested to adopt the Toxics Use Reduction and Hazardous Waste Reduction rules, as proposed in Attachment A.

The proposed rules contain the following key elements:

-- Define the universe of toxics users subject to these requirements.

-- Describe the minimum requirements for a toxics use reduction and hazardous waste reduction plan.

-- Require that priority be given to implementing toxics use reduction measures over hazardous waste reduction measures where technically and economically feasible.

-- Require the establishment of performance goals for reduction.

-- Describe reporting requirements.

-- Describe procedures for compliance review of plans and progress reports by the Department of Environmental Quality (DEQ/Department).

AUTHORITY/NEED FOR ACTION:

X	Required by Statute: ORS 465.015	Attachment E
	Enactment Date: July 24, 1989	
___	Statutory Authority: _____	Attachment ___
___	Pursuant to Rule: _____	Attachment ___
___	Pursuant to Federal Law/Rule: _____	Attachment ___
___	Other:	Attachment ___
X	Time Constraints:	

The EQC is required by statute to adopt regulations for toxics use reduction and hazardous waste reduction plans and reporting requirements no later than September 1, 1990. In order to meet this requirement, it is necessary for the Commission to adopt rules at the August 10, 1990 EQC meeting.

DEVELOPMENTAL BACKGROUND:

The Toxics Use Reduction and Hazardous Waste Reduction Act was passed by the Oregon Legislature in 1989 and signed into law by the Governor on July 24, 1989. This landmark legislation, which is aimed at pollution prevention rather than pollution control, was a result of a cooperative effort between the Department of Environmental Quality, Oregon State Public Interest Research Group (OSPIRG), and industry groups such as American Electronics Association and Associated Oregon Industries. The legislation was passed unanimously and supported by all groups.

The proposed rules are primarily interpretative in nature, rather than policy-making. The statutory requirements for toxics use reduction and hazardous waste reduction are specific in nature. Therefore, the regulations are procedural and clarifying. The proposed regulations outline the minimum requirements for toxics use reduction and hazardous waste reduction planning and reporting.

An Advisory Committee, with representatives from affected industry as well as environmental organizations and the banking community, has reviewed the proposed rules. Technical agency advisors have also been involved in the development of these proposed rules. The U.S. Environmental Protection Agency (Region 10), the Oregon State Fire Marshal's office, Oregon Occupational Safety and Health Division, Washington Department of Ecology, Oregon State University, and the Oregon Department of Justice provided coordinating and technical advice.

Because the legislative mandate for a Toxics Use Reduction and Hazardous Waste Reduction program is based on the premise that this is a self-motivated effort for toxics users, the program to be implemented through these regulations is nonregulatory in nature. However, the Department is responsible for assuring businesses produce adequate plans, thus introducing some element of compliance into the program. The primary role of the Department is to provide technical assistance and to monitor and report to the legislature and to the public on progress toward actual reduction in the use of toxic substances and generation of hazardous waste. The primary role for affected toxics users is to plan for and implement changes in their operations that will result in actual reduction of toxic substances used and hazardous wastes generated.

___	Advisory Committee Report/Recommendation	Attachment ____
_X_	Hearing Officer's Report	Attachment F
_X_	Response to Testimony/Comments	Attachment G
_X_	Prior EQC Agenda Items: May 25, 1990, Item A-3(b)	Attachment H
__	Other Related Reports/Rules/Statutes:	Attachment ____
___	Supplemental Background Information	Attachment ____

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

In addition to the considerations discussed in the May 25, 1990 EQC staff report (Attachment H), one additional significant concern was raised during the public comment period on the proposed rules. Industry representatives voiced concern about the ability of the Department to take notes or copy reduction plans and progress reports. This concern was raised specifically because of the possible sensitivity of some information and the need to protect it from public access.

The Department believes it is necessary to have such access to information in the plans and progress reports in order to effectively document the adequacy of the plans. Language in the rules proposed for adoption clarifies that intent and states that any information collected for purposes of adequacy determination is considered a part of the plan or progress report and is, therefore, not a public record under the statute. (Unless the entire plan is made public as punitive action for noncompliance.)

The Department further clarifies its role, in the Response to Comment (Attachment G), with respect to technical assistance and possible access to information. The Department will provide technical assistance only at the request of a toxics user. It is entirely up to the toxics user to determine what information is provided to Department staff during technical assistance. During technical assistance, the toxics user always has the option of protecting information by not sharing it with Department staff.

PROGRAM CONSIDERATIONS:

No additional considerations have been brought to light during the public comment period on the proposed rules. See Attachment H for considerations stated in the May 25, 1990 EQC staff report.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

Regarding the possible sensitivity of information in the reduction plans and progress reports, and the concern for confidentiality, it has been the Department's intent throughout the rulemaking process to proactively collect such information as it relates to determining the adequacy of plans. Any information extracted from plans and progress reports is considered to be a part of the plan or progress report and therefore, by statute, is non-public record. The Department believes the clarifying language provided in OAR 340-135-090 satisfies the concerns raised. Therefore, no other alternatives were considered.

The non-public record provisions for plans and progress reports in the existing statute could be written in more definitive language such that there is absolutely no doubt under the law that any information extracted by the Department from the plans and progress reports is non-public record, except as provided in ORS 465.021. If potentially affected parties believe the statute is unclear in this area, the Department would support their efforts in seeking legislative clarification.

Attachment I, an informal opinion from the Department of Justice, further supports the Department's approach on this matter.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends the Commission adopt the Toxics Use Reduction and Hazardous Waste Reduction Rules as proposed in Attachment A.

The proposed rules provide the appropriate guidelines for implementation of the Toxics Use Reduction and Hazardous Waste Reduction Act of 1989. The rules represent the best collective thinking of the Department, affected toxics users, the environmental community and the public. Based on the response during the public review period and the revisions made to the rules in response to comments received, the proposed rules appear to provide adequate and necessary guidance for successful implementation of a reduction program.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

See attachment H for earlier remarks.

ISSUES FOR COMMISSION TO RESOLVE:

None

INTENDED FOLLOWUP ACTIONS:

If adopted by the Commission, the Department will implement the proposed rules.

Approved:

Section: Ken W. Brown

Division: Stephanie Hallock

Director: Jeff Hamm

Report Prepared By: Jan Whitworth

Phone: 229-6434

Date Prepared: July 13, 1990

JWhitworth:b
RECY\YB9749
July 16, 1990

Attachment A
Agenda Item O
August 10, 1990

TOXICS USE REDUCTION AND HAZARDOUS WASTE REDUCTION REGULATIONS

OAR CHAPTER 340 DIVISION 135

OAR 340-135-000 Purpose

The rules within this Division establish the minimum requirements for toxics use reduction and hazardous waste reduction. Other federal, state and local programs may contain additional requirements. The primary purpose of these rules is to describe the comprehensive planning requirements for toxic use reduction and hazardous waste reduction, assure measurable performance goals, and monitor the use and reduction of toxic substances and generation and reduction of hazardous wastes. The rules are adopted pursuant to the authority of and are to be used in conjunction with ORS Chapter 465.003 through 465.037.

OAR 340-135-010 General Policies

(1) Reduction in the use of toxic substances and reduction in the generation of hazardous waste is encouraged when technically and economically practicable without shifting risks from one part of a process, environmental media or product to another.

(2) Priority shall be given to reduction methods that reduce the amount of toxics used and, where that is not technically and economically practicable, methods that reduce the generation of hazardous waste.

(3) The Department shall attempt to coordinate with other state and federal toxics use and hazardous waste programs. Special emphasis shall be placed on data and information sharing where practicable, training programs and technology transfer.

(4) Methods that reduce the quantity and toxicity of hazardous waste generated should have priority over management methods that reuse hazardous waste, recycle hazardous waste that cannot be reused, treat hazardous waste, or dispose of hazardous waste by landfilling.

OAR 340-135-020 Definitions

(1) "Commission" means the Environmental Quality Commission.

(2) "Conditionally Exempt Generator" means a hazardous waste generator who generates in one calendar month less than, or equal to, 2.2 pounds of acute hazardous waste as defined in ORS 466.005 and OAR Chapter 340 Divisions 100 and 101, or who generates in one calendar month less than, or equal to, 220 pounds of hazardous waste or does not accumulate at any time greater than 2,200 pounds of hazardous waste as defined in ORS 466.005 and OAR Chapter 340 Divisions 100 and 101.

(3) "Department" means the Department of Environmental Quality.

(4) "Director" means the Director of the Department of Environmental Quality.

(5) "Facility" means all buildings, equipment, structures and other stationary items located on a single site or on contiguous or adjacent sites and owned or operated by the same person or by any person who controls, is controlled by or under common control with any person.

(6) "Fully Regulated Generator" means large quantity generator as used in these rules and is a hazardous waste generator who generates in any calendar month greater than 2.2 pounds of acute hazardous waste, or accumulates at any time greater than 2.2 pounds of acute hazardous waste, or who generates in any calendar month greater than or equal to 2,200 pounds of hazardous waste as defined by ORS 466.005 and OAR Chapter 340 Divisions 100 and 101.

(7) "Generator" means a person who, by virtue of ownership, management or control, is responsible for causing or allowing to be caused the creation of hazardous waste.

(8) "Hazardous Waste" has the meaning given that term in ORS 466.005 and OAR Chapter 340 Divisions 100 and 101.

(9) "Large Quantity Generator" means fully regulated generator.

(10) "Large User" means a facility required to report under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (PL 99-499).

(11) "Person" means individual, the United States, the state or a public or private corporation, local government unit, public agency, partnership, association, firm, trust, estate or any other legal entity.

(12) "Public Record" has the meaning given to it in ORS 192.410.

(13) "Reclamation" means a process to recover a usable product, or to regenerate a usable material. Examples are recovery of lead values from spent batteries and regeneration of spent solvents.

(14) "Recycled" means used, reused, or reclaimed, and has the same meaning given it in 40 CFR 261.2.

(15) "Small Quantity Generator" means a generator who generates in any calendar month greater than 220 pounds and less than 2,200 pounds of hazardous waste as defined by ORS 466.005 and OAR Chapter 340 Divisions 100 and 101.

(16) "Toxic Substance" or "toxics" means any substance in a gaseous, liquid or solid state listed pursuant to Title III Section 313 of the Superfund Amendments and Reauthorization Act of 1986, or any substance added by the Commission under the authority of ORS 465.009 and OAR 340-135-040. "Toxic Substance" does not include a substance when used as a pesticide or herbicide in routine commercial agricultural applications, or any substance deleted by the Commission under the authority of ORS 465.009 and OAR 340-135-040.

(17) "Toxics use" means use or production of a toxic substance.

(18) "Toxics Use Reduction" means in-plant changes in production or other processes or operations, products or raw materials that reduce, avoid or eliminate the use or production of toxic substances without creating substantial new risks to public health, safety and the environment. Reduction may be proportionate to increases or decreases in production or other business changes. Reduction means application of any of the following techniques:

(a) Input substitution, by replacing a toxic substance or raw material used in a production or other process or operation with a nontoxic or less toxic substance;

(b) Product reformulation, by substituting for an existing end product, an end product which is nontoxic or less toxic upon use, release or disposal;

(c) Production or other process or operation modernization, by upgrading or replacing existing equipment and methods with other equipment and methods;

(d) Production or other process or operation redesign or modifications;

(e) Improved operation and maintenance of production processes or equipment or methods, and modifications or additions to existing equipment or methods, including techniques such as improved housekeeping practices, system adjustments, product and process inspections or production or process changes; or

(f) Recycling, reuse or extended use of toxics by using equipment or methods that become an integral part of the production or other process or operation of concern, including but not limited to filtration and other methods.

(19) "Toxics user" means a large user, a large or a small quantity generator.

(20) "Trade Secret" has the meaning given to it in ORS 192.501.

(21) "Treatment" means any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to:

(a) neutralize such waste,

(b) recover energy or material resources from the waste,

(c) render such waste non-hazardous or less hazardous,

(d) make it safer for transport, storage, or disposal, or

(e) make it amenable for recovery, amenable for storage, or reduce its volume.

(22) "Used or reused" means a material that is:

(a) Employed as an ingredient (including use as an intermediate) in an industrial process to make a product (for example, distillation bottoms from one process used as a feedstock in another process). However, a material will not satisfy this condition if distinct components of the material are recovered as separate end products (as when metals are recovered from metal-containing secondary materials); or

(b) Employed in a particular function or application as an effective substitute for a commercial product (for example, spent pickle liquor used as phosphorous precipitant and sludge conditioner in wastewater treatment).

(23) "Waste Reduction" means:

(a) Any recycling or other activity applied after hazardous waste is generated that is consistent with the general goal of reducing present and future threats to public health, safety and the environment. Reduction may be proportionate to the increase or decrease in production or other business changes. The recycling or other activity shall result in:

(A) The reduction of total volume or quantity of hazardous waste generated that would otherwise be treated, stored or disposed; or

(B) The reduction of toxicity of hazardous waste that would otherwise be treated, stored or disposed of; or

(C) Both the reduction of total volume or quantity and the reduction of toxicity of hazardous waste; and

(D) Does not result in: 1) the transfer of hazardous constituents from one environmental medium to another; 2) concentrate waste solely for the purposes of reducing volume; and 3) use dilution as a means of reducing toxicity.

(b) On-site or off-site treatment may be included where it can be shown that such treatment confers a higher degree of protection of the public health, safety and the environment than other technically and economically practicable waste reduction alternatives.

OAR 340-135-030 Applicability

(1) OAR 340-135-000 through OAR 340-135-110 apply to persons who are toxics users. A toxics user is a large user, a large quantity generator, or a small quantity generator as defined in OAR 340-135-020.

(2) All large users, large quantity generators, or small quantity generators are required to complete reduction plans under OAR 340-135-050.

(3) The following toxics users are required to set performance goals under OAR 340-135-060:

(a) All large users, large quantity generators, or small quantity generators who use any toxic substance in quantities greater than 10,000 pounds in a calendar year.

(b) All large users, large quantity generators, or small quantity generators who use any toxic substance in quantities greater than 1,000 pounds in a calendar year and that toxic substance equals greater than 10 percent of total toxics used in a calendar year.

(c) All large quantity generators who generate a hazardous waste that represents 10 percent or more by weight of the cumulative hazardous wastes generated in a calendar year.

(4) Toxics users who manufacture as a product any of the specific toxic substance(s) defined in OAR 340-135-040 and Appendix A to Chapter 340, Division 135 are not required to plan

for the reduction in manufacturing the specific toxic substance(s) or to establish performance goals for reduction of the specific toxic substance(s) manufactured as a product.

OAR 340-135-040 Identification and Listing of Toxic Substances and Hazardous Waste

(1) Toxic Substances

The chemicals and chemical categories listed in Appendix A of OAR Chapter 340, Division 135 are hereby incorporated in and made a part of this section and shall be considered to be toxic substances subject to the requirements of OAR 340-135-000 through OAR 340-135-110 and ORS 465.003 through ORS 465.037.

(2) Hazardous Waste

Hazardous waste as described in Appendix A of OAR Chapter 340, Division 135 are hereby incorporated and made a part of this section and are subject to the requirements of OAR 340-135-000 through OAR 340-135-110 and ORS 465.003 through ORS 465.037.

(3) Identification

(a) The Environmental Quality Commission may add to or delete from the lists of hazardous wastes and toxic substances identified in sections 1 and 2 of this rule and listed in Appendix A of OAR Chapter 340, Division 135. The Commission shall consider, at a minimum, the following conditions when adding to or deleting from the lists.

(A) Proportionate volume of toxic substance or hazardous waste unique to Oregon; or

(B) Amount of regional solid waste or hazardous waste off-site disposal or treatment capacity; or

(C) Impact on statewide or regional air quality, surface water quality, groundwater quality, or other environmental qualities; or

(D) A substance is added to or deleted from 40 CFR Part 372 Subpart D or a hazardous waste is added to or deleted from OAR 340-100-002 and OAR 340-101.

(b) Any additions or deletions to section 1 or 2 of this rule shall be made by rulemaking at least annually and shall be so identified in Appendix A of OAR Chapter 340, Division 135 as appropriate. Any additions or deletions under this rule shall take effect for purposes of plan completion and annual progress report completion in the calendar year following the addition or deletion. Any additions or deletions are hereby incorporated in and made a part of this rule.

OAR 340-135-050 Reduction Plan Requirements and Certification

(1) Purpose

The purpose of a reduction plan is to reduce the use of toxics, to reduce the generation of hazardous waste, and to encourage review of processes and procedures and a conscientious search for reduction methods to implement. A reduction plan shall not be considered public record except as provided under OAR 340-135-110(1).

(2) General Plan Requirements

(a) All large users and large quantity generators in calendar year 1990 shall complete a toxics use reduction and hazardous waste reduction plan on or before September 1, 1991. All small quantity generators shall complete a toxics use reduction and hazardous waste reduction plan on or before September 1, 1992.

(b) All persons who become toxics users after December 31, 1990 shall complete a toxics use reduction and hazardous waste reduction plan on or before September 1 of the year succeeding the calendar year in which they become a toxics user.

(c) A facility required to complete a reduction plan may include as a preface to the initial plan:

(A) An explanation and documentation regarding any toxics use reduction and hazardous waste reduction efforts completed or in progress prior to the year a plan is required to be completed.

(B) An explanation and documentation regarding impediments to toxics use reduction and hazardous waste reduction specific to the individual facility.

(d) The plan shall cover a minimum period of five (5) years and a maximum period of ten (10) years, with annual updates during the term of the plan. After the term of the plan, a person may choose to prepare a new plan or continue to conduct annual evaluations on reduction options.

(e) For the purposes of establishing performance goals and for the reduction plan in general, the baseline calendar year shall be the calendar year preceding the year the initial plan is required to be completed.

(f) The plan shall give priority to implementing toxics use reduction alternatives over hazardous waste reduction alternatives, where technically and economically feasible. Where the generation of a hazardous waste does not result from the use of toxic substance, reduction plans shall give priority to methods that reduce and/or eliminate the generation of that hazardous waste, such as those methods listed in OAR 340-135-020 (18)(a) through (e). Where such methods are not technically and economically feasible, waste reduction methods that apply to hazardous waste after it has been generated shall be used, such as those methods listed in OAR 340-135-020(23).

(g) The completed reduction plan shall be retained at the facility.

(3) Specific Plan Requirements

At a minimum, the Reduction Plan shall include the requirements described below:

(a) Policy Statement

The plan shall include a written policy articulating upper management and corporate support for the toxics use reduction and hazardous waste reduction plan and a commitment to implement plan goals.

(b) Scope and Objectives

The plan shall include, but is not limited to, an evaluation of technologies, procedures, and personnel training programs to

insure that unnecessary toxic substances are not used and unnecessary hazardous waste is not generated.

(c) Reduction Assessments

The plan shall include an internal analysis of toxic substance usage and hazardous waste generation, with periodic toxics use reduction and hazardous waste reduction assessments, to review individual processes or facilities and other activities where toxic substances are used and waste may be generated and identify opportunities to reduce or eliminate toxic substance usage and waste generation. In addition to this analysis the reduction assessment shall include:

(A) Evaluation of data on the types, amount and hazardous constituents of toxic substances used and hazardous waste streams generated.

(B) Evaluation of where and why those toxics are used and waste is generated within the production process or other operations.

(C) Identification and evaluation of potential toxics use reduction and hazardous waste reduction and recycling techniques applicable to those toxic substances and wastes that would provide a reduction program for overall toxics use and hazardous waste reduction, including those for which performance goals are required to be set and any others the toxics user may wish to add.

(d) Accounting System

To the extent technically and economically feasible, the plan shall identify but is not limited to the following toxics use and hazardous waste generation costs:

(A) Cost of toxic substances used.

(B) Cost of hazardous waste disposal.

(C) Cost of hazardous waste storage.

(D) Cost of hazardous waste treatment.

(E) Cost of environmental liability.

(F) Cost of compliance

These costs are to be incorporated into a toxics use and hazardous waste accounting system.

(e) Employee Awareness and Training Program

The plan shall include a description of an employee awareness and training program that involves employees in toxics use reduction and hazardous waste reduction planning and implementation to the maximum extent feasible.

(f) Institutionalization

The plan shall include a description of an ongoing effort that demonstrates the reduction plan is incorporated into management practices and procedures.

(g) Feasibility Analysis

For the toxics substances and hazardous wastes for which a performance goal is set, the plan shall include the following:

(A) A description of reduction options considered.

(B) An explanation of why options considered were not implemented.

(C) A description of reduction options that distinguishes between toxics use reduction options and hazardous waste reduction options.

(D) An analysis of reduction options considered that demonstrates that toxics use reduction options were given priority wherever technically and economically practicable.

(E) Identification of any positive or negative cross media effects on the environment, public health, or other reduction measures.

(F) Any other factors as needed.

(h) Plan Implementation

The plan shall include the following:

(A) A description of technically and economically practicable toxics use reduction and hazardous waste reduction options.

(B) A plan for implementation of reduction options that are selected for implementation, with a schedule of tasks and dates for implementation.

(C) Any other factors important for implementation.

(i) Performance Goals

The plan shall include the information required under OAR 340-135-060 on performance goals.

As part of each reduction plan, a toxics user shall establish specific performance goals for the reduction of toxic substances and the reduction of hazardous waste according to the criteria described in OAR 340-135-060.

(4) Notice of Plan Completion

Upon completion of a reduction plan, each toxics user shall notify the Department of Environmental Quality in writing. The purpose of the notice is to certify that the toxics user has completed a plan according to the requirements of OAR 340-135-050 and that the plan is available for inspection by the Department.

(a) The notice shall be made on a form provided by the Department and shall contain the following information:

(A) Signature of senior manager or business owner.

(B) Standard Industrial Classification (SIC) Code.

(C) Name, physical location and mailing address of toxics user.

(D) EPA hazardous waste identification number, if applicable.

(E) EPA toxic release inventory (TRI) identification number, if applicable.

(F) Time period covered by the plan.

(b) The notice may include an optional description of toxics use reduction and hazardous waste reduction achieved prior to the calendar year a plan is completed. This information may be submitted to the Department of Environmental Quality as a separate document and shall not be considered public record.

(c) Procedures for Submittal

All toxics users shall submit the completed and signed notice of plan completion to the Department of Environmental Quality. Notices shall be submitted on a form provided by the Department.

(A) Large toxics users and large quantity generators in calendar year 1990, shall submit a notice of plan completion on or before September 1, 1991.

(B) Small quantity generators in calendar year 1991 shall submit a notice of plan completion on or before September 1, 1992.

(C) Any person who becomes a toxics user in any calendar year shall submit a notice of plan completion on or before September 1 of the succeeding calendar year.

OAR 340-135-060 Performance Goals

(1) General Requirements

(a) As a part of each reduction plan developed, a toxics user shall establish specific performance goals for the reduction of toxics use and reduction of hazardous waste in the following categories:

(A) Any toxic substance used in quantities in excess of 10,000 pounds in a calendar year.

(B) Any toxic substance used in quantities in excess of 1,000 pounds in a calendar year that constitutes 10 percent or more of the total toxic substances used in that calendar year.

(C) For large quantity generators, any hazardous waste representing 10 percent or more by weight of the cumulative hazardous wastes generated in a calendar year.

(b) Performance goals for reduction of other toxics use and hazardous waste generation categories may also be established.

(c) Performance goals are not required to be established under section (1)(a) of this rule where the toxic substance as defined in OAR 340-135-040 and Appendix A to Chapter 340, Division 135 is a product manufactured by the toxics user.

(2) Specific Requirements

Each performance goal shall be expressed in numeric terms. The numeric terms shall be stated in percent reduction of pounds for at least a two-year and five-year period, and an optional ten-year period if applicable to the reduction plan.

Each toxics user shall explain the rationale for each performance goal. The rationale for a particular performance goal shall address any impediments to toxics use reduction and hazardous waste reduction, including but not limited to the following:

(a) The availability of technically practicable toxics use reduction and hazardous waste reduction methods, including any anticipated changes in the future.

(b) The economic practicability of available toxics use reduction and hazardous waste reduction methods, including any anticipated changes in the future. Examples of situations where toxics use reduction or hazardous waste reduction may not be economically practicable include but are not limited to:

(A) For reasons of prioritization, a particular company has chosen to first address other more serious toxics use reduction or hazardous waste reduction concerns; or

(B) Necessary steps to reduce toxics use and hazardous waste are likely to have significant adverse impacts on product quality; or

(C) Legal or contractual obligations interfere with the necessary steps that would lead to toxics use reduction or hazardous waste reduction, (e.g., existing contracts that require certain chemical usage).

(c) Cross media impacts that result in more severe environmental or human exposure to toxic substances.

(3) Exceptions

If the establishment of a specific numeric performance goal is not technically and economically practicable, the performance goal shall include a clearly stated list of objectives designed to lead to the establishment of a numeric goal as soon as practicable, and may identify a date by which the numeric goal shall be established.

OAR 340-135-070 Annual Progress Report Requirements

(1) General Requirements

(a) All toxics users required to complete a reduction plan under OAR 340-135-030 and OAR 340-135-050 shall complete annual progress reports. Annual progress reports shall not be considered public record except as provided under section (3) of this rule and OAR 340-135-110(1). The annual progress reports shall be retained at the facility and shall meet the following requirements:

(b) Large toxics users and large quantity generators in calendar year 1990 shall complete the first annual progress report on or before September 1, 1992. Each subsequent annual progress report shall be completed on or before September 1 of each year.

(c) Small quantity generators in calendar year 1991 shall complete the first annual progress report on or before September 1, 1993. Each subsequent annual progress report shall be completed on or before September 1 of each year.

(d) Any person who becomes a toxics user after calendar year 1990 shall complete an annual progress report on or before September 1 of the year immediately following the year they are required to complete a reduction plan under OAR 340-135-050 and annually thereafter.

(e) If a toxics user no longer meets the definition of a toxics user under OAR 340-135-030 for one calendar year, the Department shall be notified of this change in status in lieu of the annual progress report normally submitted for the calendar year following the change in status. Annual progress reports are not required thereafter. If the person becomes a toxics user at any time thereafter the person is again subject to the requirements of OAR Chapter 340 Division 135.

(2) Specific Requirements

(a) Each annual progress report shall contain the following information.

(A) Analysis of progress made, if any, in toxics use reduction and hazardous waste reduction, related to each performance goal established under OAR 340-135-060.

(B) Any amendments to the toxics use reduction and hazardous waste reduction plan and an explanation of the need for the amendments, including any adjustment to performance goals.

(C) Annual quantities, in pounds, of toxics used related to the performance goals established under OAR 340-135-060.

(D) Annual quantities, in pounds, of hazardous waste generated related to the performance goals established under OAR 340-135-060.

(E) Narrative summary explaining the data in Section (2)(a)(C) and (D) of this rule.

(b) Each annual progress report may contain the following information.

(A) Narrative description about the goals and progress made in reducing the use of toxic substances and generation of hazardous waste.

(B) Narrative description of any impediments to reducing the use of toxic substances and generation of hazardous waste.

(C) Any other information the toxics user determines to be needed for the evaluation of the reduction plan and annual progress report.

(3) Reporting Requirements

(a) The following information from the Annual Progress Report shall be reported to the Department no later than September 1, of each calendar year succeeding the year a plan is completed. The information shall be reported on a form provided by the Department and shall be public record.

(A) Name, mailing address and physical location of toxics user.

(B) Standard Industrial Classification Code

(C) EPA identification number, if applicable.

(D) TRI identification number, if applicable.

(E) Chemical name, CAS number, and annual number of pounds used for each toxic substance for which a performance goal is required to be established under OAR 340-135-060(1)(a)(A) and (B).

(F) Name of hazardous waste, waste code, annual number of pounds generated for each hazardous waste for which a performance goal is required to be established under OAR 340-135-060(1)(a)(C).

(G) Narrative explaining the data in section (3)(a)(E) and (F) of this rule.

(b) Toxics users may also report a production index, and background information explaining how the production index is calculated, for the facility or for each toxic substance used and hazardous waste generated for which a performance goal is established under OAR 340-135-060.

OAR 340-135-080 Optional Reporting Requirements

(1) Purpose

The information in Section (2) of this rule is reported for administrative purposes to improve technical assistance and to evaluate the effectiveness of toxics use reduction and hazardous waste reduction measures as required by ORS 465.012. The information may be reported on a form provided by the Department no later than September 1 of each calendar year succeeding the year in which the reduction plan is completed. The information reported shall be considered public record. (The information may be used in an aggregated manner to show trends and to determine needs for technical assistance, as an example.)

(2) Information Reported

Each toxics user may report the following information to the Department in addition to the information reported under the requirements of OAR 340-135-070.

(a) Performance goal, and any adjustment to the performance goal, for each toxic substance for which a performance goal is established under OAR 340-135-060(1)(a)(A) and (B).

(b) Performance goal, and any adjustment to the performance goal, for each hazardous waste for which a performance goal is established under OAR 340-135-060(1)(a)(C).

(c) Reduction measures implemented for each toxic substance and each hazardous waste for which a performance goal is established under OAR 340-135-060(1)(a)(A),(B), and (C).

(d) Impediments to reduction for each toxics substance and each hazardous waste for which a performance goal is established under OAR 340-135-060(1)(a)(A),(B), and (C).

OAR 340-135-090 Information Access and Review Procedures for Compliance

(1) Plans

(a) The complete reduction plan shall be maintained at each facility such that the complete plan can be made available to the Department within the requirements of subsection (b) of this section.

(b) The complete plan shall be made available for review to any officer, employee or representative of the Department. The owner/operator of the facility shall make the complete plan available for review within five (5) working days of request by any officer, employee or representative of the Department. The plan shall not be considered public record as defined in ORS 192.410.

(c) Any officer, employee or representative of the Department may conduct a review to determine if the plan has been completed and if it is adequate. Determination of adequacy shall be based on the plan criteria as described in OAR 340-135-050(2) and (3).

(d) Any officer, employee or representative of the Department may make notes, compilations of data, or copies of the plan or portions thereof to the extent necessary to document compliance and fulfill the requirements of section (1)(c) and (e) of this rule. Any information recorded or obtained from the plan shall not be considered public record as defined in ORS 192.410, except as provided in ORS 465.021.

(e) The Department may notify the toxics user in writing of any inadequacies, identifying the specific deficiencies.

(f) At the request of the toxics user, the Department may make technical assistance available to assist the toxics user in modifying the plan.

(g) The toxics user shall be given not less than 90 days to correct the deficiencies and submit a modified plan to the Department addressing the specific deficiencies or to prepare a plan if none has been completed. The plan or portion thereof, when submitted, shall not be considered public record under ORS 192.410.

(h) If the plan that is submitted is determined by the Department to be inadequate, the Department may take action as described in OAR 340-135-110.

(i) If no plan is completed and submitted within the time frame specified by the Department under section (1)(g) of this rule, the Department may take action as described in OAR 340-135-110.

(2) Annual Progress Reports

(a) Each complete annual progress report shall be maintained at each facility such that the complete plan can be made available to the Department within the requirements of subsection (b) of this section. Except for the information required to be reported to the Department in OAR 340-135-070(3), the annual progress report shall not be considered public record under ORS 192.410.

(b) The complete annual progress report shall be made available for review to any officer, employee or representative of the Department. The owner/operator of the facility shall make the annual progress report available for review within five (5) working days of request by any officer, employee or representative of the Department.

(c) Any officer, employee or representative of the Department may review an annual progress report to determine if the annual progress report is adequate. Determination of adequacy shall be based on the criteria described in OAR 340-135-070.

(d) Any officer, employee or representative of the Department may make notes, compilations of data, or copies of the annual progress reports or portions thereof to the extent necessary to document compliance and fulfill the requirement of section (2)(c) and (e) of this rule. Any information recorded or obtained from the annual progress reports shall not be considered public record as defined in ORS 192.410, except as provided in ORS 465.021.

(e) The Department may notify the toxics user in writing of any inadequacies, identifying specific deficiencies.

(f) At the request of the toxics user, the Department may make technical assistance available to assist the toxics user in modifying the annual progress report.

(g) The toxics user shall be given not less than 90 days to correct the deficiencies or to prepare an annual progress report if none has been completed, and submit an annual progress report to the Department addressing the specific deficiencies. The annual progress report or portion thereof, when submitted, shall not be considered public record under ORS 192.410.

(h) If the modified annual progress report submitted is determined by the Department to be inadequate, the Department may take action as described in OAR 340-135-110.

(i) If no annual progress report is completed and submitted within the time frame specified by the Department under section (2)(g) of this rule, the Department may take action as described in OAR 340-135-110.

(3) The Department shall maintain a log of the following information:

(a) Each plan reviewed;

(b) Each progress report reviewed;

(c) Each plan found deficient and a description of deficiencies and corrective actions taken;

(d) Each progress report found deficient and a description of deficiencies and corrective actions taken.

(4) Availability of Information

(a) Access to plans and progress reports submitted to the Department that are not public record shall be limited to employees and representatives of the Department involved in carrying out the responsibilities of the Toxics Use Reduction and Hazardous Waste Reduction Act under ORS 465.003 through ORS 465.037.

(b) Access to plans and progress reports submitted to the Department that are determined to be public record, excluding any trade secrets, shall be open to anyone desiring access to the information.

(c) The Department shall make the information described in section (3) of this rule available to the public at the Department's office.

OAR 340-135-100 Designation of Trade Secret Information

(1) The plan, the annual progress reports, and any other information required to be submitted to the Department may contain information that, even if the plan or the annual progress reports become public record, may be classified trade secret and exempt from public disclosure. Trade secret information must meet the following criteria:

(a) Not the subject of a patent; and

(b) Only known to a limited number of individuals within an organization; and

(c) Used in a business which the organization conducts; and

(d) Of potential or actual commercial value; and

(e) Capable of providing the user with a business advantage over competitors not having the information.

(2) The following procedures shall be followed by the toxics user to designate information as trade secret.

(a) Each individual page of a plan or progress report that contains trade secret information must be clearly marked trade secret.

(b) Written substantiation describing what information is considered trade secret and why must accompany the document. The written substantiation shall address the following:

(A) Identify which portions of information are claimed trade secret.

(B) Identify how long confidential treatment is desired for this information.

(C) Identify any pertinent patent information.

(D) Describe to what extent the information has been disclosed to others, who knows about the information, and what measures have been taken to guard against undesired disclosure of the information to others.

(E) Describe the nature of the use of the information in business.

(F) Describe why the information is considered to be commercially valuable.

(G) Describe how the information provides a business advantage over competitors.

(H) If any of the information has been provided to other government agencies, identify which one(s).

(I) Include any other information that supports a claim of trade secret.

(3) Any time the Department requests submittal of a plan or annual progress report under OAR 340-135-090 or 340-135-110, the information required in section (2)(b) of this rule shall also be submitted by the toxics user. At the time of submittal of the plan or annual progress report, the toxics user shall submit two (2) copies of the document; one copy with the claimed trade secret information omitted and one copy with the information included.

(4) If no claim of trade secret and no substantiation accompanies submittal of a plan or annual progress report, then the information may be considered public record as provided for in OAR 340-135-110.

(5) The Department shall designate a Document Control Officer for the purpose of receiving information claimed to be trade secret and for secure storage and management of trade secret information and any other information classed as non-public record.

(6) The Department shall review information claimed by the toxics user to be trade secret. If the Department concurs that the information meets the requirements of trade secret, the information will be maintained as trade secret. If the Department determines that the information does not meet the requirements for trade secret, then the Department shall request the Attorney General to review and make a final determination. If it is determined that the information is not trade secret, the

Department shall notify the person submitting the information of the determination.

(7) Access to information submitted as trade secret and determined to be trade secret shall be limited to employees and representatives of the Department involved in carrying out the responsibilities of the Toxics Use Reduction and Hazardous Waste Reduction Act under ORS 465.003 through ORS 465.037.

OAR 340-135-110 Compliance and Enforcement Procedures

(1) Compliance Procedures

Procedures in this rule apply to toxics use reduction and hazardous waste reduction plans as described in OAR 340-135-050 and -060 and annual progress reports as described in OAR 340-135-070.

The procedures in Section (1)(a) through (d) of this rule shall apply only after the procedures in OAR 340-135-090(1)(a) through (g) or (2)(a) through (g) have been followed.

(a) If a toxics user fails to comply with the notice of deficiency in the time frame required the Department may:

(A) Issue a second notice of deficiency requiring compliance in not less than 90 days, or;

(B) Issue an administrative order requiring compliance in not less than 90 days.

(b) The administrative order issued under section (1)(a)(B) of this rule shall become final in 21 days if the toxics user fails to request a contested case hearing before the Commission.

(c) If a contested case hearing is requested, the hearing shall be conducted before the Commission as provided under ORS 183.415.

(d) If a toxics user fails to comply with the administrative order issued under section (1)(a)(B) of this rule the Department shall hold a public hearing on the reduction plan or annual progress report. The reduction plan or annual progress report shall become public record, exclusive of trade secret information; and

(e) If a toxics user fails to comply with the administrative order issued under section (1)(a)(B) of this rule, the Department may seek enforcement through judicial action for equitable relief.

(2) Enforcement Restrictions

In accordance with ORS 465.012, on-site technical assistance provided for the development and implementation of a toxics use reduction and hazardous waste reduction plan shall not result in hazardous waste inspections or enforcement actions except under the following conditions:

(a) If, during on-site technical assistance, there is reasonable cause to believe there exists a clear and immediate danger to the public health and safety or to the environment the Department may initiate compliance and enforcement action immediately.

(b) For the purposes of initiating enforcement under section (2)(a) of this rule the term "clear" shall mean plain, evident, free from doubt; and the term "immediate danger" shall mean a situation where there is substantial likelihood that serious harm may be experienced within the time frame necessary for the department to pursue an enforcement action (e.g. observation of a leaking drum).

OAR 340-135 - APPENDIX A

LISTING OF TOXIC SUBSTANCES AND HAZARDOUS WASTES

The following list of toxic substances and hazardous wastes is subject to the requirements of OAR 340-135-000 through OAR 340-135-110 and ORS 465.003 through ORS 465.037.

1. Toxic Substances
   (a) Alphabetical List of Chemicals

CAS Number	Chemical Name	De Minimis Concentration (percent)
75-07-0	Acetaldehyde	0.1
60-35-5	Acetamide	0.1
67-64-1	Acetone	1.0
75-05-8	Acetonitrile	1.0
53-96-3	2-Acetylaminofluorene	0.1
107-02-8	Acrolein	1.0
79-06-1	Acrylamide	0.1
79-10-7	Acyrlic acid	1.0
107-13-1	Acrylonitrile	0.1
309-00-2	Aldrin [1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexochloro-1,4,4a,5,8,8a-hexahydro-(1.alpha.,4.alpha.,4a.beta., 5.alpha.,8.alpha.,8a.beta.)-]	1.0
107-18-6	Allyl Alcohol	1.0
107-05-1	Allyl chloride	1.0
7429-90-5	Aluminum (fume or dust)	1.0
1344-28-1	Aluminum oxide	1.0
117-79-3	2-Aminoanthraquinone	0.1
60-09-3	4-Aminoazobenzene	0.1
92-67-1	4-Aminobiphenyl	0.1
82-28-0	1-Amino-2-methylanthraquinone	0.1
7664-41-7	Ammonia	1.0
6484-52-2	Ammonium nitrate (solution)	1.0
7783-20-2	Ammonium sulfate (solution)	1.0
62-53-3	Aniline	1.0
90-04-0	o-Anisidine	0.1
104-94-9	p-Anisidine	1.0
134-29-2	o-Anisidine hydrochloride	0.1
120-12-7	Anthracene	1.0
7440-36-0	Antimony	1.0
7440-38-2	Arsenic	0.1
1332-21-4	Asbestos (friable)	0.1
7440-39-3	Barium	1.0
98-87-3	Benzal chloride	1.0
55-21-0	Benzamide	1.0
71-43-2	Benzene	0.1
92-87-5	Benzidine	0.1
98-07-7	Benzoic trichloride (Benzotrichloride)	0.1
98-88-4	Benzoyl chloride	1.0
94-36-0	Benzoyl peroxide	1.0

CAS Number	Chemical Name	De Minimis Concentration (percent)
100-44-7	Benzyl chloride	1.0
7440-41-7	Beryllium	0.1
92-52-4	Biphenyl	1.0
111-44-4	Bis(2-chloroethyl)ether	1.0
542-88-1	Bis(chloromethyl)ether	0.1
108-60-1	Bis(2-chloro-1-methylethyl)ether	1.0
103-23-1	Bis(2-ethylhexyl)adipate	1.0
75-25-2	Bromoform (Tribromomethane)	1.0
74-83-9	Bromomethane (Methyl bromide)	1.0
106-99-0	1,3-Butadiene	0.1
141-32-2	Butyl acrylate	1.0
71-36-3	n-Butyl alcohol	1.0
78-92-2	sec-Butyl alcohol	1.0
75-65-0	tert-Butyl alcohol	1.0
85-68-7	Butyl benzyl phthalate	1.0
106-88-7	1,2-Butylene oxide	1.0
123-72-8	Butyraldehyde	1.0
4680-78-8	C.I.Acid Green 3	1.0
569-64-2	C.I. Basic Green 4	1.0
989-38-8	C.I. Basic Red 1	0.1
1937-37-7	C.I.Direct Black 38	0.1
2602-46-2	C.I. Direct Blue 6	0.1
16071-86-6	C.I. Direct Brown 95	0.1
2832-40-8	C.I. Disperse Yellow 3	1.0
3761-53-3	C.I. Food Red 5	0.1
81-88-9	C.I. Food Red 15	0.1
3118-97-6	C.I. Solvent Orange 7	1.0
97-56-3	C.I. Solvent Yellow 3	0.1
842-07-9	C.I. Solvent Yellow 14	0.1
492-80-8	C.I. Sovent Yellow 34 (Auramine)	0.1
128-66-5	C.I. Vat Yellow 4	1.0
7440-43-9	Cadmium	0.1
156-62-7	Calcium cyanamide	1.0
133-06-2	Captan (1H-Isoindole-1,3(2H)-dione, 3a,4,7,7a-tetrahydro-2-[(trichloromethyl)thio]-]	1.0
63-25-2	Carbaryl [1-Naphthalenol, methylcarbamate]	1.0
75-15-0	Carbon disulfide	1.0
56-23-5	Carbon tetrachloride	0.1
463-58-1	Carbonyl sulfide	1.0
120-80-9	Catechol	1.0
133-90-4	Chloramben [Benzoic acid, 3-amino-2,5-dichloro-]	1.0
57-74-9	Chorodane [4,7-Methanoindan, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-]	1.0
7782-50-5	Chorine	1.0
10049-04--4	Chorine dioxide	1.0
79-11-8	Chloroacetic acid	1.0

CAS Number	Chemical Name	De Minimis Concentration (percent)
532-27-4	2-Choroacetophenone	1.0
108-90-7	Chlorobenzene	1.0
510-15-6	Chlorobenzilate [Benzeneacetic acid, 4-chloro-.alpha.-(4-chlorophenyl)-.alpha.-hydroxy-,ethyl ester]	
75-00-3	Chloroethane (Ethyl chloride)	1.0
67-66-3	Chloroform	0.1
74-87-3	Chloromethane (Methyl chloride)	1.0
107-30-2	Chloromethyl methyl ether	0.1
126-99-8	Chloroprene	1.0
1897-45-6	Chlorothalonil [1,3-Benzenedicarbonitrile, 2,4,5,6-tetrachloro-]	1.0
7440-47-3	Chromium	0.1
7440-48-4	Cobalt	1.0
8001-58-9	Creosote	0.1
7440-50-8	Copper	1.0
120-71-8	p-Cresidine	0.1
1319-77-3	Cresol (mixed isomers)	1.0
108-39-4	m-Cresol	1.0
95-48-7	o-Cresol	1.0
106-44-5	p-Cresol	1.0
98-82-8	Cumene	1.0
80-15-9	Cumene hydroperoxide	1.0
135-20-6	Cupferron [Benzeneamine, N-hydroxy-N-nitroso, ammonium salt]	0.1
110-82-7	Cyclohexane	1.0
94-75-7	2,4-D [Acetic acid, 2,4-dichloro-phenoxy)-]	1.0
1163-19-5	Decabromodiphenyl oxide	1.0
2303-16-4	Diallate [Carbamothioic acid,bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester]	1.0
615-05-4	2,4-Diaminoanisole	0.1
39156-41-7	2,4-Diaminoanisole sulfate	0.1
101-80-4	4,4'-Diaminodiphenyl ether	0.1
25376-45-8	Diaminotoluene (mixed isomers)	0.1
95-80-7	2,4-Diaminotoluene	0.1
334-88-3	Diazomethane	1.0
132-64-9	Dibenzofuran	1.0
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	0.1
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	0.1
84-74-2	Dibutyl phthalate	1.0
25321-22-6	Dichlorobenzene (mixed isomers)	0.1
95-50-1	1,2-Dichlorobenzene	1.0
541-73-1	1,3-Dichlorobenzene	1.0
106-46-7	1,4-Dichlorobenzene	0.1
91-94-1	3,3'-Dichlorobenzidine	0.1

CAS Number	Chemical Name	De Minimis Concentration (percent)
75-27-4	Dichlorobromomethane	1.0
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	0.1
540-59-0	1,2-Dichloroethylene	1.0
75-09-2	Dichloromethane (Methylene chloride)	0.1
120-83-2	2,4-Dichlorophenol	1.0
78-87-5	1,2-Dichloropropane	1.0
78-88-6	2,3-Dichloropropene	1.0
542-75-6	1,3-Dichloropropylene	0.1
62-73-7	Dichlorvos [Phosphoric acid, 2 dichloroethenyl dimethyl ester]	
115-32-2	Dicofol [Benzenemethanol, 4-chloro-.alpha.-4-chlorophenyl)-.alpya.-(trichloromethyl)-]	1.0
1464-53-5	Diepoxybutane	0.1
111-42-2	Diethanolamine	1.0
117-81-7	Di-(2-ethylhexyl) phthalate (DEHP)	0.1
84-66-2	Diethyl phthalate	1.0
64-67-5	Diethyl sulfate	0.1
119-90-4	3,3'-Dimethoxybenzidine	0.1
60-11-7	4-Dimethylaminoazobenzene	0.1
119-93-7	3,3'-Dimethylbenzidine (o-Tolidine)	0.1
79-44-7	Dimethylcarbamyl chloride	0.1
57-14-7	1,1-Dimethyl hydrazine	0.1
105-67-9	2,4-Dimethylphenol	1.0
131-11-3	Dimethyl phthalate	1.0
77-78-1	Dimethyl sulfate	0.1
99-65-0	m-Dinitrobenzene	1.0
528-29-0	o-Dinitrobenzene	1.0
100-25-4	p-Dinitrobenzene	1.0
534-52-1	4,6--Dinitro-o-cresol	1.0
51-28-5	2,4-Dinitrophenol	1.0
121-14-2	2,4-Dinitrotoluene	1.0
606-20-2	2,6-Dinitrotoluene	1.0
25321-14-6	Dinitrotoluene (mixed isomers)	1.0
117-84-0	n-Dioctyl phthalate	1.0
123-91-1	1,4-Dioxane	0.1
122-66-7	1,2-Diphenylhydrazine (Hydrazobenzene)	0.1
106-89-8	Epichlorohydrin	0.1
110-80-5	2-Ethoxyethanol	1.0
140-88-5	Ethyl acrylate	0.1
100-41-4	Ethylbenzene	1.0
541-41-3	Ethyl chloroformate	1.0
74-85-1	Ethylene	1.0
107-21-1	Ethylene glycol	1.0
151-56-4	Ethyleneimine (Aziridine)	0.1

CAS Number	Chemical Name	De Minimis Concentration (percent)
75-21-8	Ethylene oxide	0.1
96-45-7	Ethylene thiourea	0.1
2164-17-2	Fluometuron [Urea, N,N-dimethyl-N'-[3-(trifluoromethyl)phenyl]-]	1.0
50-00-0	Formaldehyde	0.1
76-13-1	Freon 113 [Ethane 1,1,2-trichloro-1,2,2-trifluoro-]	1.0
76-44-8	Heptachlor [1,4,5,6,7,8,8-Heptachloro-3a,4,7,7a-tetrahydro-4,7-methano-1H-indene]	1.0
118-74-1	Hexachlorobenzene	0.1
87-68-3	Hexachloro-1,3-butadiene	1.0
77-47-4	Hexachlorocyclopentadiene	1.0
67-72-1	Hexachloroethane	1.0
1335-87-1	Hexachloronaphthalene	1.0
680-31-9	Hexamethylphosphoramide	0.1
302-01-2	Hydrazine	0.1
10034-93-2	Hydrazine sulfate	0.1
7647-01-0	Hydrochloric acid	1.0
74-90-8	Hydrogen cyanide	1.0
7664-39-3	Hydrogen fluoride	1.0
123-31-9	Hydroquinone	1.0
78-84-2	Isobutyraldehyde	1.0
67-63-0	Isopropyl alcohol (manufacturing-strong acid process, no supplier notification)	0.1
80-05-7	4,4'-Isopropylidenediphenol	1.0
120-58-1	Isosafrole	0.1
7439-92-1	Lead	0.1
58-89-9	Lindane [Cyclohexane 1,2,3,4,5,6-hexachloro-,(1.alpha.,2.alpha.,3.beta.,4.alpha.,5.alpha.,6.beta)-]	0.1
108-31-6	Maleic anhydride	1.0
12427-38-2	Maneb [Carbamodithioic acid, 1,2-ethanediylbis-, manganese complex]	1.0
7439-96-5	Manganese	1.0
7439-97-6	Mercury	1.0
67-56-1	Methanol	1.0
72-43-5	Methoxychlor [Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-methoxy-]	1.0
109-86-4	2-Methoxyethanol	1.0
96-33-3	Methyl acrylate	1.0
1634-04-4	Methyl tert-butyl ether	1.0
101-14-4	4,4'-Methylenebis(2-chloro aniline) (MBOCA)	1.0
101-61-1	4,4'-Methylenebis (N,N-dimethyl) benzenamine	0.1

CAS Number	Chemical Name	De Minimis Concentration (percent)
101-68-8	Methylenebis(phenylisocyanate) (MBI)	1.0
74-95-3	Methylene bromide	1.0
101-77-9	4,4'-Methylenedianiline	0.1
78-93-3	Methyl ethyl ketone	1.0
60-34-4	Methyl hydrazine	1.0
74-88-4	Methyl iodide	0.1
108-10-1	Methyl isobutyl ketone	1.0
624-83-9	Methyl isocyanate	1.0
80-62-6	Methyl methacrylate	1.0
90-94-8	Michler's ketone	0.1
1313-27-5	Molybdenum trioxide	1.0
505-60-2	Mustard gas [Ethane, 1,1'-thiobis [2-chloro-]	0.1
91-20-3	Naphthalene	1.0
134-32-7	alpha-Naphthylamine	0.1
92-59-8	beta-Naphthylamine	0.1
7440-02-0	Nickel	0.1
7697-37-2	Nitric acid	1.0
139-13-9	Nitrilotriacetic acid	0.1
99-59-2	5-Nitro-o-anisidine	0.1
98-95-3	Nitrobenzene	1.0
92-93-3	4-Nitrobiphenyl	0.1
1836-75-5	Nitrofen [Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-]	0.1
51-75-2	Nitrogen mustard [2-Chloro-N-(2-chloroethyl)-N-methylethanamine]	0.1
55-63-0	Nitroglycerin	1.0
88-75-5	2-Nitrophenol	1.0
100-02-7	4-Nitrophenol	1.0
79-46-9	2-Nitropropane	0.1
156-10-5	p-Nitrosodiphenylamine	0.1
121-69-7	N,N-Dimethylaniline	1.0
924-16-3	N-Nitrosodi-n-butylamine	0.1
55-18-5	N-Nitrosodiethylamine	0.1
62-75-9	N-Nitrosodimethylamine	0.1
86-30-6	N-Nitrosodiphenylamine	1.0
621-64-7	N-Nitrosodi-n-propylamine	0.1
4549-40-0	N-Nitrosomethylvinylamine	0.1
59-89-2	N-Nitrosomorpholine	0.1
759-73-9	N-Nitroso-N-ethylurea	0.1
684-93-5	N-Nitroso-N-methylurea	0.1
16543-55-8	N-Nitrosonornicotine	0.1
100-75-4	N-Nitrosopiperidine	0.1
2234-13-1	Octachloronaphthalene	1.0
20816-12-0	Osmium tetroxide	1.0
56-38-2	Parathion [Phosphorothioic acid, o,o-diethyl-o-(4-nitrophenyl) ester]	1.0
87-86-5	Pentachlorophenol (PCP)	1.0

CAS Number	Chemical Name	De Minimis Concentration (percent)
79-21-0	Peracetic acid	1.0
108-95-2	Phenol	1.0
106-50-3	p-Phenylenediamine	1.0
90-43-7	2-Phenylphenol	1.0
75-44-5	Phosgene	1.0
7664-38-2	Phosphoric acid	1.0
7723-14-0	Phosphorus (yellow or white)	1.0
85-44-9	Phthalic anhydride	1.0
88-89-1	Picric acid	1.0
1336-36-3	Polychlorinated biphenyls (PCBs)	0.1
1120-71-4	Propane sultone	0.1
57-57-8	beta-Propiolactone	0.1
123-38-6	Propionaldehyde	1.0
114-26-1	Propoxur [Phenol, 2-(1-methylethoxy)-, methylcarbamate]	1.0
115-07-1	Propylene (Propene)	1.0
75-55-8	Propyleneimine	0.1
75-56-9	Propylene oxide	0.1
110-86-1	Pyridine	1.0
91-22-5	Quinoline	1.0
106-51-4	Quinone	1.0
82-68-8	Quintozene (Pentachloronitrobenzene]	1.0
81-07-2	Saccharin (manufacturing, no supplier notification [1,2-Benzisothiazol -3(2H)-one,1,1-dioxide]	0.1
94-95-7	Safrole	0.1
7782-49-2	Selenium	1.0
7440-22-4	Silver	1.0
100-42-5	Styrene	0.1
96-09-3	Styrene oxide	0.1
7664-93-9	Sulfuric acid	1.0
100-21-0	Terephthalic acid	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.1
127-18-4	Tetrachloroethylene (Perchloroethylene)	0.1
961-11-5	Tetrachlorvinphos [Phosphoric acid, 2-chloro-1-(2,3,5-trichlorophenyl) ethenyl dimethyl ester]	1.0
961-11-5	Tetrachlorvinphos [Phosphoric acid, 2-chloro-1-(2,3,5-trichlorophenyl) ethenyl dimethyl ester]	1.0
7440-28-0	Thallium	1.0
62-55-5	Thioacetamide	0.1
139-65-1	4,4'-Thiodianiline	0.1
62-56-6	Thiourea	0.1
7550-45-0	Titanium tetrachloride	1.0

CAS Number	Chemical Name	De Minimis Concentration (percent)
1314-20-1	Thorium dioxide	1.0
108-88-3	Toluene	1.0
584-84-9	Toluene-2,4-diisocyanate	0.1
91-08-7	Toluene-2,6-diisocyanate	0.1
26471-62-5	Toluenediisocyanate (mixed isomers)	1.0
95-53-4	o-Toluidine	0.1
636-21-5	o-Toluidine hydrochloride	0.1
8001-35-2	Toxaphene	0.1
68-76-8	Triaziquone [2,5-Cyclohexadiene -1,4-dione, 2,3,5-tris(1-aziridinyl)-]	0.1
52-68-6	Trichlorfon (Phosphonic acid, (2,2,2- trichloro-1-hydroxyethyl)-,dimethyl ester]	1.0
120-82-1	1,2,4-Trichlorobenzene	1.0
71-55-6	1,1,1-Trichloroethane (Methyl chloroform)	1.0
79-00-5	1,1,2-Trichloroethane	1.0
79-01-6	Trichloroethylene	1.0
95-95-4	2,4,5-Trichlorophenol	1.0
88-06-2	2,4,6-Trichlorophenol	0.1
1582-09-8	Trifluralin (Benzeneamine, 2,6- dinitro-N,N-dipropyl-4-(trifluoromethyl)-]	1.0
95-63-6	1,2,4-Trimethylbenzene	1.0
126-72-7	Tris(2,3-dibromopropyl) phosphate	0.1
51-79-6	Urethane (Ethyl carbamate)	0.1
7440-62-2	Vanadium (fume or dust)	1.0
108-05-4	Vinyl acetate	1.0
593-60-2	Vinyl bromide	0.1
75-01-4	Vinyl chloride	0.1
75-35-4	Vinylidene chloride	1.0
1330-20-7	Xylene (mixed isomers)	1.0
108-38-3	m-Xylene	1.0
95-47-6	o-Xylene	1.0
106-42-3	p-Xylene	1.0
87-62-7	2,6-Xylidine	1.0
7440-66-6	Zinc (fume or dust)	1.0
12122-67-7	Zineb [Carbamodithioic acid, 1,2- ethanediylbis-, zinc complex]	1.0

(b) List of Chemical Categories

The metal compounds listed below, unless otherwise specified, are defined as including any unique chemical substance that contains the named metal (i.e., antimony, copper, etc.) as part of that chemical's structure.

Chemical categories are subject to the 1 percent de minimis concentration unless the substance involved meets the definition of a federal Occupational Safety and Health Act carcinogen.

- o Antimony Compounds
- o Arsenic Compounds
- o Barium Compounds
- o Beryllium Compounds
- o Cadmium Compounds
- o Chlorophenols
- o Chromium Compounds
- o Cobalt Compounds
- o Copper Compounds
- o Cyanide Compounds - $X^{+}CN^{-}$ where $X = H^{+}$ or any other group where a formal dissociation may occur. For example KCN or $Ca(CN)_2$
- o Glycol Ethers - includes mono- and di-ethers of ethylene glycol, diethylene glycol, and triethylene glycol. Polymers are excluded from the glycol ether category.
- o Lead Compounds
- o Manganese Compounds
- o Mercury Compounds
- o Nickel Compounds
- o Polybrominated Biphenyls (PBBs)
- o Selenium Compounds
- o Silver Compounds
- o Thallium Compounds
- o Zinc Compounds

2. Hazardous Waste

[**Comment:** The "Hazard Code" shown below indicates the basis used by the U.S. Environmental Protection Agency for listing the classes or types of wastes. The codes have the following meaning: I - ignitable; C - corrosive; R - reactive; E - EP toxic; H - acute hazardous waste; T - toxic.]

(a) Any characteristic hazardous waste meeting the criteria in 40 CFR Part 261 Subpart C and adopted by the state of Oregon under OAR Chapter 340, Divisions 100 and/or 101. [**Note:** The characteristics include ignitability, reactivity, corrosivity and toxicity.]

(b) Hazardous Waste from non-specific sources.

Industry and EPA hazardous waste No.	Hazardous Waste	Hazard Code
Generic:		
F001	The following spent halogenated solvents used in degreasing: Tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F002	The following spent halogenated solvents: Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F003	The following spent non-halogenated solvents: Xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent non-halogenated solvents; and all spent solvent mixtures/blends containing, before use, one or more of the above non-halogenated solvents, and, a total of ten percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(I)

*(I,T) Specifies mixtures containing ignitable and toxic constituents.

Industry and EPA hazardous waste No.	Hazardous Waste	Hazard Code
F004	The following spent non-halogenated solvents: Cresols and cresylic acid, and nitrobenzene; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F005	The following spent non-halogenated solvents: Toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(I,T)
F006	Wastewater treatment sludges from electroplating operations except from the following processes: (1) Sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.	(T)
F019	Wastewater treatment sludges from the chemical conversion coating of aluminum.	(T)
F007	Spent cyanide plating bath solutions from electroplating operations.	(R,T)
F008	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.	(R,T)
F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.	(R,T)

Industry and EPA hazardous waste No.	Hazardous Waste	Hazard Code
F010	Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process.	(R,T)
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.	(R,T)
F012	Quenching waste water treatment sludges from metal heat treating operations where cyanides are used in the process.	(T)
F024	Wastes, including but not limited to, distillation residues, heavy ends, tars, and reactor clean-out wastes from the production of chlorinated aliphatic hydrocarbons, having carbon content from one to five, utilizing free radical catalyzed processes. [This listing does not include light ends, spent filters and filter aids, spent dessicants, wastewater, wastewater treatment sludges, spent catalysts, and wastes listed in Section 261.32.].	(T)
F020	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- or tetrachlorophenol, or of intermediates used to produce their pesticide derivatives. (This listing does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol.).	(H)
F021	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of pentachlorophenol, or of intermediates used to produce its derivatives.	(H)

Industry and EPA hazardous waste No.	Hazardous Waste	Hazard Code
F022	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzenes under alkaline conditions.	(H)
F023	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- and tetrachlorophenols. (This listing does not include wastes from equipment used only for the production or use of Hexachlorophene from highly purified 2,4,5-trichlorophenol.).	(H)
F026	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzene under alkaline conditions.	(H)
F027	Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols. (This listing does not include fomulations containing Hexachlorophene synthesized from prepurified 2,4,5-trichlorophenol as the sole component.).	(H)
F028	Residues resulting from the incineration or thermal treatment of soil contaminated with EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027.	(T)

(c) Hazardous wastes from specific sources.

Industry and EPA hazardous waste No.	Hazardous Waste	Hazard Code
Wood preservation:		
K001	Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol.	(T)
Inorganic pigments:		
K002	Wastewater treatment sludge from the production of chrome yellow and orange pigments	(T)
K003	Wastewater treatment sludge from the production of molybdate orange pigments	(T)
K004	Wastewater treatment sludge from the production of zinc yellow pigments	(T)
K005	Wastewater treatment sludge from the production of chrome green pigments	(T)
K006	Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated)	(T)
K007	Wastewater treatment sludge from the production of iron blue pigments	(T)
K008	Oven residue from the production of chrome oxide green pigments	(T)
Organic chemicals:		
K009	Distillation bottoms from the production of acetaldehyde from ethylene	(T)
K010	Distillation side cuts from the production of acetaldehyde from ethylene	(T)
K011	Bottom stream from the wastewater stripper in the production of acrylonitrile	(R,T)
K013	Bottom stream from the acetonitrile column in the production of acrylonitrile	(R,T)

Industry and EPA hazardous waste No.	Hazardous Waste	Hazard Code
Organic chemicals:		
K014	Bottoms from the acetonitrile purification column in the production of acrylonitrile	(T)
K015	Still bottoms from the distillation of benzyl chloride	(T)
K016	Heavy ends or distillation residues from the production of carbon tetrachloride	(T)
K017	Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin	(T)
K018	Heavy ends from the fractionation column in ethyl chloride production	(T)
K019	Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production	(T)
K020	Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production	(T)
K021	Aqueous spent antimony catalyst waste from fluoromethanes production	(T)
K022	Distillation bottom tars from the production of phenol/acetone from cumene	(T)
K023	Distillation light ends from the production of phthalic anhydride from naphthalene	(T)
K024	Distillation bottoms from the production of phthalic anhydride from naphthalene	(T)
K093	Distillation light ends from the production of phthalic anhydride from ortho-xylene	(T)
K094	Distillation bottoms from the production of phthalic anhydride from ortho-xylene	(T)
K025	Distillation bottoms from the production of nitrobenzene by the nitration of benzene	(T)

Industry and EPA hazardous waste No.	Hazardous Waste	Hazard Code
Organic chemicals:		
K026	Stripping still tails from the production of methy ethyl pyridines	(T)
K027	Centrifuge and distillation residues from toluene diisocyanate production	(R,T)
K028	Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane	(T)
K029	Waste from the product steam stripper in the production of 1,1,1-trichloroethane	(T)
K095	Distillation bottoms from the production of 1,1,1-trichloroethane	(T)
K096	Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane	(T)
K030	Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene	(T)
K083	Distillation bottoms from aniline production	(T)
K103	Process residues from aniline extraction from the production of aniline	(T)
K104	Combined wastewater streams generated from nitrobenzene/aniline production	(T)
K085	Distillation or fractionation column bottoms from the production of chlorobenzenes	(T)
K105	Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes	(T)
K111	Product washwaters from the production of dinitrotoluene via nitration of toluene	(C,T)
K112	Reaction by-product water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene	(T)

Industry and EPA hazardous waste No.	Hazardous Waste	Hazard Code
Organic chemicals:		
K113	Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	(T)
K114	Vicinals from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	(T)
K115	Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	(T)
K116	Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine	(T)
K117	Wastewater from the reactor vent gas scrubber in the production of ethylene dibromide via bromination of ethene	(T)
K118	Spent adsorbent solids from purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene	(T)
K136	Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene	(T)
K071	Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used	(T)
K073	Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production	(T)
K106	Wastewater treatment sludge from the mercury cell process in chlorine production	(T)

Industry and EPA hazardous waste No.	Hazardous Waste	Hazard Code
Pesticides:		
K031	By-product salts generated in the production of MSMA and cacodylic acid	(T)
K032	Wastewater treatment sludge from the production of chlordane	(T)
K033	Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane	(T)
K034	Filter solids from the filtration of hexachlorocyclopentadiene in the production of chlordane	(T)
K097	Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane	(T)
K035	Wastewater treatment sludges generated in the production of creosote	(T)
K036	Still bottoms from toluene reclamation distillation in the production of disulfoton	(T)
K037	Wastewater treatment sludges from the production of disulfoton	(T)
K038	Wastewater from the washing and stripping of phorate production	(T)
K039	Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate	(T)
K040	Wastewater treatment sludge from the production of phorate	(T)
K041	Wastewater treatment sludge from the production of toxaphene	(T)
K098	Untreated process wastewater from the production of toxaphene	(T)

Industry and EPA hazardous waste No.	Hazardous Waste	Hazard Code
K042	Heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2,4,5-T	(T)
K043	2,6-Dichlorophenol waste from the production of 2,4-D	(T)
K099	Untreated wastewater from the production of 2,4-D	(T)
K123	Process wastewater (including supernates, filtrates, and washwaters) from the production of ethylenebisdithiocarbamic acid and its salt	(T)
K124	Reactor vent scrubber water from the production of ethylenebisdithiocarbamic acid and its salts	(C,T)
K125	Filtration, evaporation, and centrifugation solids from the production of ethylenebisdithiocarbamic acid and its salts	(T)
K-126	Baghouse dust and floor sweepings in milling and packaging operations from the production or formulation of ethylenebisdithiocarbamic acid and its salts	(T)
Explosives:		
K044	Wastewater treatment sludges from the manufacturing and processing of explosives	(R)
	Spent carbon from the treatment of wastewater containing explosives	(R)
K046	Wastewater treatment sludges from the manufacturing, formuuation and loading of lead-based initiating compounds	(T)
K047	Pink/red water from TNT operations	(R)
Petroleum refining:		
K048	Dissolved air flotation (DAF) float from the petroleum refining industry	(T)

Industry and EPA hazardous waste No.	Hazardous Waste	Hazard Code
Petroleum refining:		
K049	Slop oil emulsion solids from the petroleum refining industry	(T)
K050	Heat exchanger bundle cleaning sludge from the petroleum refining industry	(T)
K051	API separator sludge from the petroleum refining industry	(T)
K052	Tank bottoms (leaded) from the petroleum refining industry	(T)
Iron and steel:		
K061	Emission control dust/sludge from the primary production of steel in electric furnaces	(T)
K062	Spent pickle liquor generated by steel finishing operations of facilities within the iron and steel industry (SIC Codes 331 and 332).	(C,T)
Primary copper:		
K064	Acid plant blowdown slurry/sludge resulting from the thickening of blowdown slurry from primary copper production.	(T)
Primary lead:		
K065	Surface impoundment solids contained in and dredged from surface impoundments at primary lead smelting facilities	(T)
Primary Zinc:		
K006	Sludge from treatment of process wastewater and/or acid plant blowdown from primary zinc production	(T)
Primary aluminum:		
K088	Spent potliners from primary aluminum reduction	(T)
Ferroalloys:		
K090	Emission control dust or sludge from ferrochromiumsilicon production	(T)

Industry and EPA hazardous waste No.	Hazardous Waste	Hazard Code
Ferroalloys:		
K091	Emission control dust or sludge from ferrochromium production	(T)
K100	Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting	(T)
Secondary lead:		
K069	Emission control dust/sludge from secondary lead smelting	(T)
Veterinary pharmaceuticals:		
K084	Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)
K101	Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)
K102	Residue from the use or activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)
Ink formulation:		
K086	Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead	(T)
Coking:		
K060	Ammonia still lime sludge from coking operations	(T)
Coking:		
K087	Decanter tank tar sludge from coking operations	(T)

(d) Discarded commercial chemical products, off-specification species, container residues, and spill residues thereof, except those wastes that become subject to regulation solely as a result of remedial activities taken in response to environmental contamination.

The following materials or items are hazardous wastes if and when they are discarded or intended to be discarded as described in 40 CFR 261.2(a)(2)i), when they are mixed with waste oil or used oil or other material and applied to the land for dust suppression or road treatment, when they are otherwise applied to the land in lieu of their original intended use or when they are contained in products that are applied to the land in lieu of their original intended use, or when, in lieu of their original intended use, they are produced for use as (or as a component of) a fuel, distributed for use as a fuel, or burned as a fuel.

(A) Any commercial chemical product, or manufacturing chemical intermediate having the generic name listed in paragraph (E) or (F) of this section.

(B) Any off-specification commercial chemical product or manufacturing chemical intermediate which, if it met specifications, would have the generic name listed in paragraph (E) or (F) of this section.

(C) Any residue remaining in a container or in an inner liner removed from a container that has held any commercial chemical product or manufacturing chemical intermediate having the generic name listed in paragraph (E) of this section, unless the container is empty as defined in 40 CFR 261.7(b)(3).

> [**Comment:** Unless the residue is being beneficially used or reused, or legitimately recycled or reclaimed; or being accumulated, stored, transported or treated prior to such use, re-use, recycling or reclamation, EPA considers the residue to be intended for discard, and thus, a hazardous waste. An example of a legitimate re-use of the residue would be where the residue remains in the container and the container is used to hold the same commercial chemical product or manufacturing chemical intermediate it previously held. An example of the discard of the residue would be where the drum is sent to a drum reconditioner who reconditions the drum but discards the residue.]

(D) Any residue or contaminated soil, water or other debris resulting from the cleanup of a spill into or on any land or water of any commercial chemical product or manufacturing chemical intermediate having the generic name listed in paragraph (E) or (F) of this section, or any residue or contaminated soil, water or other debris resulting from the cleanup of a spill, into or on any land or water, of any off-specification chemical product and manufacturing chemical intermediate which, if it met specifications, would have the generic name listed in paragraph (E) or (F) of this section.

[**Comment:** The phrase "commercial chemical product or manufacturing chemical intermediate having the generic name listed in ..." refers to a chemical substance which is manufactured or formulated for commercial or manufacturing use which consists of the commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the sole active ingredient. It does not refer to a material, such as a manufacturing process waste, that contains any of the substances listed in paragraph (E) or (F). Where a manufacturing process waste is deemed to be a hazardous waste because it contains a substance listed in paragraph (E) or (F), such waste will be listed in either 40 CFR 261.31 or 40 CFR 261.32 or will be identified as a hazardous waste by the characteristics set forth in OAR 340-135-040(2)(a).

(E) The commercial chemical products, manufacturing chemical intermediates or off-specification commercial chemical products or manufacturing chemical intermediates referred to in paragraphs (A) through (D) of this section, are identified as acute hazardous wastes (H) and are subject to the small quantity exclusion defined in 40 CFR 261.5(e). These wastes and their corresponding EPA Hazardous Waste Codes are:

Hazardous Waste No.	Chemical Abstracts No.	Substance
P023	107-20-0	Acetaldehyde, chloro-
P002	591-08-2	Acetamide, N-(aminothioxomethyl)-
P057	640-19-7	Acetamide, 2-fluoro-
P058	62-74-8	Acetic acid, fluoro-, sodium salt
P002	591-08-2	1-Acetyl-2-thiourea

Hazardous Waste No.	Chemical Abstracts No.	Substance
P003	107-02-8	Acrolein
P070	116-06-3	Aldicarb
P004	309-00-2	Aldrin
P005	107-18-6	Allyl alcohol
P006	20859-73-8	Aluminum phosphide (R,T)
P007	2763-96-4	5-(Aminomethyl)-3-isoxazolol
P008	504-24-5	4-Aminopyridine
P009	131-74-8	Ammonium picrate (R)
P119	7803-55-6	Ammonium vanadate
P099	506-61-6	Argentate(1-),bis(cyano-C)-, potassium
P010	7778-39-4	Arsenic acid H_3AsO_4
P012	1327-53-3	Arsenic oxide As_2O_3
P011	1303-28-2	Arsenic oxide As_2O_5
P011	1303-28-2	Arsenic pentoxide
P012	1327-53-3	Arsenic trioxide
P038	692-42-2	Arsine, diethyl-
P036	696-28-6	Arsonous dichloride, phenyl-
P054	151-56-4	Aziridine
P067	75-55-8	Aziridine, 2-methyl-
P013	542-62-1	Barium cyanide
P024	106-47-8	Benzenamine, 4-chloro-
P077	100-01-6	Benzenamine, 4-nitro-
P028	100-44-7	Benzene, (chloromethyl)-

Hazardous Waste No.	Chemical Abstracts No.	Substance
P042	51-43-4	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ehtyl]-, (R)
P046	122-09-8	Benzeneethanamine, alpha,alpha-dimethyl-
P014	108-98-5	Benzenethiol
P001	[1]81-81-2	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, & salts, when present at concentrations greater than 0.3%
P028	100-44-7	Benzyl chloride
P015	7440-41-7	Beryllium
P017	598-31-2	Bromoacetone
P018	357-57-3	Brucine
P045	39196-18-4	2-Butanone, 3,3-dimethyl-1-(methylthio)-,O-[(methylamino) carbonyl] oxime
P021	592-01-8	Calcium cyanide
P021	592-01-8	Calcium cyanide $Ca(CN)_2$
P022	75-15-0	Carbon disulfide
P095	75-44-5	Carbonic dichloride
P023	107-20-0	Chloroacetaldehyde
P024	106-47-8	p-Chloroaniline
P026	5344-82-1	1-(o-Chlorophenyl)thiourea
P027	542-76-7	3-Chloropropionitrile
P029	544-92-3	Copper cyanide
P029	544-92-3	Copper cyanide Cu(CN)
P030	----	Cyanides (soluble cyanide salts), not otherwise specified

Hazardous Waste No.	Chemical Abstracts No.	Substance
P031	460-19-5	Cyanogen
P033	506-77-4	Cyanogen chloride
P033	506-77-4	Cyanogen chloride (CN)Cl
P034	131-89-5	2-Cyclohexyl-4,6-dinitrophenol
P016	542-88-1	Dichloromethyl ether
P036	696-28-6	Dichlorophenylarsine
P037	60-57-1	Dieldrin
P038	692-42-2	Diethylarsine
P041	311-45-5	Diethyl-p-nitrophenyl phosphate
P040	297-97-2	O,O-Diethyl O-Pyrazinyl phosphorothioate
P043	55-91-4	Diisopropylfluorophosphate (DFP)
P004	309-00-2	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-,(1alpha,4alpha,4abeta, 5alpha, 8alpha, 8abeta)-
P060	465-73-6	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-,(1alpha, 4alpha,4abeta,5beta,8beta,8abeta)-
P037	60-57-1	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2aalpha,3beta,6beta, 6aalpha,7beta,7aalpha)-
P051	[1]72-20-8	2,7:3,6-Dimethanonaphth[2,3-b]-oxirene,3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2abeta,3alpha,6alpha, 6abeta,7beta,7aalpha)-, & metabolites
P044	60-51-5	Dimethoate

Hazardous Waste No.	Chemical Abstracts No.	Substance
P046	122-09-8	alpha,alpha-Dimethylphenethylamine
P047	[1]534-52-1	4,6-Dinitro-o-cresol, & salts
P048	51-28-5	2,4-Dinitrophenol
P020	88-85-7	Dinoseb
P085	152-16-9	Diphosphoramide, octamethyl-
P111	107-49-3	Diphosphoric acid, tetraethyl ester
P039	298-04-4	Disulfoton
P049	541-53-7	Dithiobiuret
P050	115-29-7	Endosulfan
P088	145-73-3	Endothall
P051	72-20-8	Endrin
P051	72-20-8	Endrin, & metabolites
P042	51-43-4	Epinephrine
P031	460-19-5	Ethanedinitrile
P066	16752-77-5	Ethanimidothioic acid, N-[[(methylamino)carbonyl]oxy]-, methyl ester
P101	107-12-0	Ethyl cyanide
P054	151-56-4	Ethyleneimine
P097	52-85-7	Famphur
P056	7782-41-4	Fluorine
P057	640-19-7	Fluoroacetamide
P058	62-74-8	Fluoroacetic acid, sodium salt
P065	628-86-4	Fulminic acid, mercury(2+) salt (R,T)
P059	76-44-8	Heptachlor

Hazardous Waste No.	Chemical Abstracts No.	Substance
P062	757-58-4	Hexaethyl tetraphosphate
P116	79-19-6	Hydrazinecarbothioamide
P068	60-34-4	Hydrazine, methyl-
P063	74-90-8	Hydrocyanic acid
P063	74-90-8	Hydrogen cyanide
P096	7803-51-2	Hydrogen phosphide
P060	465-73-6	Isodrin
P007	2763-96-4	3(2H)-Isoxazolone, 5-(aminomethyl)-
P092	62-38-4	Mercury, (acetato-O)phenyl-
P065	628-86-4	Mercury fulminate (R,T)
P082	62-75-9	Methanamine, N-methyl-N-nitroso-
P064	624-83-9	Methane, isocyanato-
P016	542-88-1	Methane, oxybis[chloro-
P112	509-14-8	Methane, tetranitro- (R)
P118	75-70-7	Methanethiol, trichloro-
P050	115-29-7	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-,3-oxide
P059	76-44-8	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-
P066	16752-77-5	Methomyl
P068	60-34-4	Methyl hydrazine
P064	624-83-9	Methyl isocyanate
P069	75-86-5	2-Methyllactonitrile
P071	298-00-0	Methyl parathion

Hazardous Waste No.	Chemical Abstracts No.	Substance
P072	86-88-4	alpha-Naphthylthiourea
P073	13463-39-3	Nickel carbonyl
P073	13463-39-3	Nickel carbonyl ($Ni(CO)_4$, (T,4)-
P074	557-19-7	Nickel cyanide
P074	557-19-7	Nickel cyanide $Ni(CN)_2$
P075	[1]54-11-5	Nicotine, & salts
P076	10102-43-9	Nitric oxide
P077	100-01-6	p-Nitroaniline
P078	10102-44-0	Nitrogen dioxide
P076	10102-43-9	Nitrogen oxide NO
P078	10102-44-0	Nitrogen oxide NO_2
P081	55-63-0	Nitroglycerine (R)
P082	62-75-9	N-Nitrosodimethylamine
P084	4549-40-0	N-Nitrosomethylvinylamine
P085	152-16-9	Octamethylpyrophosphoramide
P087	20816-12-0	Osmium oxide OsO_4,(T-4)-
P087	20816-12-0	Osmium tetroxide
P088	145-73-3	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
P089	56-38-2	Parathion
P034	131-89-5	Phenol, 2-cyclohexyl-4,6-dinitro-
P048	51-28-5	Phenol, 2,4,dinitro
P047	[1]534-52-1	Phenol, 2-methyl-4,6-dinitro-, & salts
P020	88-85-7	Phenol, 2-(1-methylpropyl)-4,6-dinitro-

Hazardous Waste No.	Chemical Abstracts No.	Substance
P009	131-74-8	Phenol, 2,4,6-trinitro-, ammonium salt (R)
P092	62-38-4	Phenylmercury acetate
P093	103-85-5	Phenylthiourea
P094	298-02-2	Phorate
P095	75-44-5	Phosgene
P096	7803-51-2	Phosphine
P041	311-45-5	Phosphoric acid, diethyl 4-nitrophenyl ester
P039	298-04-4	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester
P094	298-02-2	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl]ester
P044	60-51-5	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
P043	55-91-4	Phosphorofluoridic acid, bis(1-methylethyl) ester
P089	56-38-2	Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
P040	297-97-2	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester
P097	52-85-7	Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl]phenyl] O,O-dimethyl ester
P071	298-00-0	Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester
P110	78-00-2	Plumbane, tetraethyl-
P098	151-50-8	Potassium cyanide
P098	151-50-8	Potassium cyanide K(CN)
P099	506-61-6	Potassium silver cyanide

Hazardous Waste No.	Chemical Abstracts No.	Substance
P070	116-06-3	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime
P101	107-12-0	Propanenitrile
P027	542-76-7	Propanenitrile, 3-chloro-
P069	75-86-5	Propanenitrile, 2-hydroxy-2-methyl-
P081	55-63-0	1,2,3-Propanetriol, trinitrate (R)
P017	598-31-2	2-Propanone, 1-bromo-
P102	107-19-7	Propargyl alcohol
P003	107-02-8	2-Propenal
P005	107-18-6	2-Propen-1-ol
P067	75-55-8	1,2-Propylenimine
P102	107-19-7	2-Propyn-1-ol
P008	504-24-5	4-Pyridinamine
P075	[1]54-11-5	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-, & salts
P114	12039-52-0	Selenious acid, dithallium (1+) salt
P103	630-10-4	Selenourea
P104	506-64-9	Silver cyanide
P104	506-64-9	Silver cyanide Ag(CN)
P105	26628-22-8	Sodium azide
P106	143-33-9	Sodium cyanide
P106	143-33-9	Sodium cyanide Na(CN)
P108	[1]57-24-9	Strychnidin-10-one, & salts

Hazardous Waste No.	Chemical Abstracts No.	Substance
P018	357-57-3	Strychnidin-10-one, 2,3-dimethoxy-
P108	[1]57-24-9	Strychnine, & salts
P115	7446-18-6	Sulfuric acid, dithallium(1+) salt
P109	3689-24-5	Tetraethyldithiopyrophosphate
P110	78-00-2	Tetraethyl lead
P111	107-49-3	Tetraethyl pyrophosphate
P112	509-14-8	Tetranitromethane (R)
P062	757-58-4	Tetraphosphoric acid, hexaethyl ester
P113	1314-32-5	Thallic oxide
P113	1314-32-5	Thallium oxide Tl_2O_3
P114	12039-52-0	Thallium(I)selenite
P115	7446-18-6	Thallium(I)sulfate
P109	3689-24-5	Thiodiphosphoric acid, tetraethyl ester
P045	39196-18-4	Thiofanox
P049	541-53-7	Thioimidodicarbonic diamide $[(H_2N)C(S)]_2NH$
P014	108-98-5	Thiophenol
P116	79-19-6	Thiosemicarbazide
P026	5344-82-1	Thiourea, (2-chlorophenyl)-
P072	86-88-4	Thiourea, 1-naphthalenyl-
P093	103-85-5	Thiourea, phenyl-
P123	8001-35-2	Toxaphene
P118	75-70-7	Trichloromethanethiol
P119	7803-55-6	Vanadic acid, ammonium salt

Hazardous Waste No.	Chemical Abstracts No.	Substance
P120	1314-62-1	Vanadium oxide V_2O_5
P120	1314-62-1	Vanadium pentoxide
P084	4549-40-0	Vinylamine, N-methyl-N-nitroso-
P001	[1]81-81-2	Warfarin, & salts, when present at concentrations greater than 0.3%
P121	557-21-1	Zinc cyanide
P121	557-21-1	Zinc cyanide $Zn(CN)_2$
P122	1314-84-7	Zinc phosphide Zn_3P_2, when present at concentrations greater than 10% (R,T)

[1]CAS Number given for parent compound only.

(F) The commercial chemical products, manufacturing chemical intermediates, or off-specification commercial chemical products referred to in paragraphs (A) through (D) of this section, are identified as toxic wastes (T), unless otherwise designated and are subject to the small quantity generator exclusion defined in 40 CFR 261.5(a) and (g). These wastes and their corresponding EPA Hazardous Waste Codes are:

Hazardous Waste No.	Chemical Abstracts No.	Substance
U001	75-07-0	Acetaldehyde (I)
U034	75-87-6	Acetaldehyde, trichloro-
U187	62-44-2	Acetamide, N-(4-ethoxyphenyl)-
U005	53-96-3	Acetamide, N-9H-fluoren-2-yl-
U240	[1]94-75-7	Acetic acid, (2,4-dichlorophenoxy)-, salts & esters
U112	141-78-6	Acetic acid, ethyl ester (I)

Hazardous Waste No.	Chemical Abstracts No.	Substance
U144	301-04-2	Acetic acid, lead (2+) salt
U214	563-68-8	Acetic acid, thallium (1+) salt
See F027	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-
U002	67-64-1	Acetone (I)
U003	75-05-8	Acetonitrile (I,T)
U004	98-86-2	Acetophenone
U005	53-96-3	2-Acetylaminofluorene
U006	75-36-5	Acetyl chloride (C,R,T)
U007	79-06-1	Acrylamide
U008	79-10-7	Acrylic acid (I)
U009	107-13-1	Acrylonitrile
U011	61-82-5	Amitrole
U012	62-53-3	Aniline (I,T)
U136	75-60-5	Arsinic acid, dimethyl-
U014	492-80-8	Auramine
U015	115-02-6	Azaserine
U010	50-07-7	Azirino[2',3':3,4]pyrrolo[1,2-a]indole-4,7-dione, 6-amino-8-[[(aminocar-bonyl)oxy]methyl]-1,1a,2,8,8a,8b, hexahydo-8a-methoxy-5-methyl-,[1aS-(1aalpha, 8beta,8aalpha,8balpha)]-
U157	56-49-5	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-
U016	225-51-4	Benz[c]acridine
U017	98-87-3	Benzal chloride

Hazardous Waste No.	Chemical Abstracts No.	Substance
U192	23950-58-5	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynl)-
U018	56-55-3	Benz[a]anthracene
U094	57-97-6	Benz[a]anthracene, 7,12-dimethyl-
U012	62-53-3	Benzenamine (I,T)
U014	492-80-8	Benzenamine, 4,4'-carbonimidoylbis [N,N-dimethyl-
U049	3165-93-3	Benzenamine, 4-chloro-2-methyl, hydrochloride
U093	60-11-7	Benzenamine, N,N-dimethyl-4-(phenylazo)-
U328	95-53-4	Benzenamine, 2-methyl-
U353	106-49-0	Benzenamine, 4-methyl-
U158	101-14-4	Benzenamine, 4,4'-methylenebis [2-chloro-
U222	636-21-5	Benzenamine, 2-methyl-,hydro-chloride
U181	99-55-8	Benzenamine, 2-methyl-5-nitro-
U019	71-43-2	Benzene (I,T)
U038	510-15-6	Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy, ethyl ester
U030	101-55-3	Benzene, 1-bromo-4-phenoxy-
U035	305-03-3	Benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-
U037	108-90-7	Benzene, chloro-
U221	25376-45-8	Benzenediamine, ar-methyl-
U028	117-81-7	1,2-Benezenedicarboxylic acid, bis(2-ethyl-hexyl) ester

Hazardous Waste No.	Chemical Abstracts No.	Substance
U069	84-74-2	1,2-Benzenedicarboxylic acid, dibutyl ester
U088	84-66-2	1,2-Benzenedicarboxylic acid, diethyl ester
U102	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester
U107	117-84-0	1,2-Benzenedicarboxylic acid dioctyl ester
U070	95-50-1	Benzene, 1,2-dichloro-
U071	541-73-1	Benzene, 1,3-dichloro-
U072	106-46-7	Benzene, 1,4-dichloro
U060	72-54-8	Benzene, 1,1'-(2,2-dichloro-ethylidene)bis[4-chloro-
U017	98-87-3	Benzene, (dichloromethyl)-
U223	26471-62-5	Benzene, 1,3-diisocyanatomethyl- (R,T)
U239	1330-20-7	Benzene, dimethyl- (I,T)
U201	108-46-3	1,3-Benzenediol
U127	118-74-1	Benzene, hexachloro-
U056	110-82-7	Benzene, hexahydro- (I)
U220	108-88-3	Benzene, methyl-
U105	121-14-2	Benzene, 1-methyl-2,4-dinitro-
U106	606-20-2	Benzene, 2-methyl-1,3-dinitro-
U055	98-82-8	Benzene, (1-methylethyl)- (I)
U169	98-95-3	Benzene, nitro-
U183	608-93-5	Benzene, pentachloro-
U185	82-68-8	Benzene, pentachloronitro-

Hazardous Waste No.	Chemical Abstracts No.	Substance
U020	98-09-9	Benzenesulfonic acid chloride (C,R)
U020	98-09-9	Benzenesulfonyl chloride (C,R)
U207	95-94-3	Benzene, 1,2,4,5-tetrachloro-
U061	50-29-3	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-
U247	72-43-5	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-methoxy-
U023	98-07-7	Benzene, (trichloromethyl)-
U234	99-35-4	Benzene, 1,3,5-trinitro-
U021	92-87-5	Benzidine
U202	[1]81-07-2	1,2-Benzisothiazol-3(2H)-one, 1,1-dioxide, & salts
U203	94-59-7	1,3-Benzodioxole, 5-(2-propenyl)-
U141	120-58-1	1,3-Benzoidioxole, 5-(1-propenyl)-
U090	94-58-6	1,3-Benzodioxole, 5-propyl-
U064	189-55-9	Benzo[rst]pentaphene
U248	[1]81-81-2	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, & salts, when present at concentrations of 0.3% or less
U022	50-32-8	Benzo[a]pyrene
U197	106-51-4	p-Benzoquinone
U023	98-07-7	Benzotrichloride (C,R,T)
U085	1464-53-5	2,2'-Bioxirane
U021	92-87-5	[1,1'-Biphenyl]-4,4'-diamine
U073	91-94-1	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-

Hazardous Waste No.	Chemical Abstracts No.	Substance
U091	119-90-4	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-
U095	119-93-7	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-
U225	75-25-2	Bromoform
U030	101-55-3	4-Bromophenyl phenyl ether
U128	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
U172	924-16-3	1-Butanamine, N-butyl-N-nitroso-
U031	71-36-3	1-Butanol (I)
U159	78-93-3	2-Butanone (I,T)
U160	1338-23-4	2-Butanone peroxide (R,T)
U053	4170-30-3	2-Butenal
U074	764-41-0	2-Butene, 1,4-dichloro- (I,T)
U143	303-34-4	2-Butenoic acid, 2-methyl-,7-[[2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxobutoxy]methyl]2,3,5,7a-tetrahydro-1H-pyrrolizin-1-yl ester, [1S-[1alpha(Z),7(2S*,3R*), 7aalpha]]-
U031	71-36-3	n-Butyl alcohol (I)
U136	75-60-5	Cacodylic acid
U032	13765-19-0	Calcium chromate
U238	51-79-6	Carbamic acid, ethyl ester
U178	615-53-2	Carbamic acid, methylnitroso-, ethyl ester
U097	79-44-7	Carbamic chloride, dimethyl-
U114	[1]111-54-6	Carbamodithioic acid, 1,2-ethanediyl- bis, salts & esters

Hazardous Waste No.	Chemical Abstracts No.	Substance
U062	2303-16-4	Carbamothioic acid, bis(1-methyl-ethyl)-, S- (2,3-dichloro-2-propenyl) ester
U215	6533-73-9	Carbonic acid, dithallium (1+) salt
U033	353-50-4	Carbonic difluoride
U156	79-22-1	Carbonochloridic acid, methyl ester (I,T)
U033	353-50-4	Carbon oxyfluoride (R,T)
U211	56-23-5	Carbon tetrachloride
U034	75-87-6	Chloral
U035	305-03-3	Chlorambucil
U036	57-74-9	Chlordane, alpha & gamma isomers
U026	494-03-1	Chlornaphazin
U037	108-90-7	Chlorobenzene
U038	510-15-6	Chlorobenzilate
U039	59-50-7	p-Chloro-m-cresol
U042	110-75-8	2-Chloroethyl vinyl ether
U044	67-66-3	Chloroform
U046	107-30-2	Chloromethyl methyl ether
U047	91-58-7	beta-Chloronaphthalene
U048	95-57-8	o-Chlorophenol
U049	3165-93-3	4-Chloro-o-toluidine, hydrochloride
U032	13765-19-0	Chromic acid H_2CrO_4, calcium salt
U050	218-01-9	Chrysene
U051	----	Creosote
U052	1319-77-3	Cresol (Cresylic acid)

Hazardous Waste No.	Chemical Abstracts No.	Substance
U053	4170-30-3	Crotonaldehyde
U055	98-82-8	Cumene (I)
U246	506-68-3	Cyanogen bromide (CN)Br
U197	106-51-4	2,5-Cyclohexadiene-1,4-dione
U056	110-82-7	Cyclohexane (I)
U129	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1alpha,2alpha,3beta,4alpha,5alpha,6beta)-
U057	108-94-1	Cyclohexanone (I)
U130	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexa-chloro-
U058	50-18-0	Cyclophosphamide
U240	[1]94-75-7	2,4-D, salts & esters
U059	20830-81-3	Daunomycin
U060	72-54-8	DDD
U061	50-29-3	DDT
U062	2303-16-4	Diallate
U063	53-70-3	Dibenz[a,h]anthracene
U064	189-55-9	Dibenzo[a,i]pyrene
U066	96-12-8	1,2-Dibromo-3-chloropropane
U069	84-74-2	Dibutyl phthalate
U070	95-50-1	o-Dichlorobenzene
U071	541-73-1	m-Dichlorobenzene
U072	106-46-7	p-Dichlorobenzene
U073	91-94-1	3,3'-Dichlorobenzidine

Hazardous Waste No.	Chemical Abstracts No.	Substance
U074	764-41-0	1,4-dichloro-2-butene (I,T)
U075	75-71-8	Dichlorodifuloromethane
U078	75-35-4	1,1-Dichloroethylene
U079	156-60-5	1,2-Dichloroethylene
U025	111-44-4	Dichloroethyl ether
U027	108-60-1	Dichloroisopropyl ether
U024	111-91-1	Dichloromethoxy ethane
U081	120-83-2	2,4-Dichlorophenol
U082	87-65-0	2,6-Dichlorophenol
U084	542-75-6	1,3-Dichloropropene
U085	1464-53-5	1,2:3,4-Diepoxybutane (I,T)
U108	123-91-1	1,4-Diethyleneoxide
U028	117-81-7	Diethylhexyl phthalate
U086	1615-80-1	N,N'-Diethylhydrazine
U087	3288-58-2	O,O-Diethyl S-methyl dithiophosphate
U088	84-66-2	Diethyl phthalate
U089	56-53-1	Diethylstilbesterol
U090	94-58-6	Dihydrosafrole
U091	119-90-4	3,3'-Dimethoxybenzidine
U092	124-40-3	Dimethylamine (I)
U093	60-11-7	p-Dimethylaminoazobenzene
U094	57-97-6	7,12-Dimethylbenz[a]anthracene
U095	119-93-7	3,3'-Dimethylbenzidine
U096	80-15-9	alpha,alpha-Dimethylbenzylhydroperoxide (R)

Hazardous Waste No.	Chemical Abstracts No.	Substance
U097	79-44-7	Dimethylcarbamoyl chloride
U098	57-14-7	1,1-Dimethylhydrazine
U099	540-73-8	1,2-Dimethylhydrazine
U101	105-67-9	2,4-Dimethylphenol
U102	131-11-3	Dimethyl phthalate
U103	77-78-1	Dimethyl sulfate
U105	121-14-2	2,4-Dinitrotoluene
U106	606-20-2	2,6-Dinitrotoluene
U107	117-84-0	Di-n-octyl phthalate
U108	123-91-1	1,4-Dioxane
U109	122-66-7	1,2-Diphenylhydrazine
U110	142-84-7	Dipropylamine (I)
U111	621-64-7	Di-n-propylnitrosamine
U041	106-89-8	Epichlorohydrin
U001	75-07-0	Ethanal (I)
U174	55-18-5	Ethanamine, N-ethyl-N-nitroso-
U155	91-80-5	1,2-Ethanediamine, N,N-dimethyl-N'-2-pyridinyl-N'-(2-thienylmethyl)-
U067	106-93-4	Ethane, 1,2-dibromo-
U076	75-34-3	Ethane, 1,1-dichloro-
U077	107-06-2	Ethane, 1,2-dichloro-
U131	67-72-1	Ethane, hexachloro-
U024	111-91-1	Ethane, 1,1'-[methylenebis(oxy)bis [2-chloro-
U117	60-29-7	Ethane, 1,1'-oxybis- (I)

Hazardous Waste No.	Chemical Abstracts No.	Substance
U025	111-44-4	Ethane, 1,1'-oxybis[2-chloro-
U184	76-01-7	Ethane, pentachloro-
U208	630-20-6	Ethane, 1,1,1,2-tetrachloro-
U209	79-34-5	Ethane, 1,1,2,2-tetrachloro-
U218	62-55-5	Ethanethioamide
U226	71-55-6	Ethane, 1,1,1-trichloro-
U227	79-00-5	Ethane, 1,1,1-trichloro-
U359	110-80-5	Ethanol, 2-ethoxy-
U173	1116-54-7	Ethanol, 2,2'-(nitrosoimino)bis-
U004	98-86-2	Ethanone, 1-phenyl-
U043	75-01-4	Ethene, chloro-
U042	110-75-8	Ethene, (2-chloroethoxy)-
U078	75-35-4	Ethene, 1,1-dichloro-
U079	156-60-5	Ethene, 1,2-dichloro-, (E)-
U210	127-18-4	Ethene, tetrachloro-
U228	79-01-6	Ethene, trichloro
U112	141-78-6	Ethyl acetate (I)
U113	140-88-5	Ethyl acrylate (I)
U238	51-79-6	Ethyl carbamate (urethane)
U117	60-29-7	Ethyl ether (I)
U114	[1]111-54-6	Ethylenebisdithiocarbamic acid, salts & esters
U067	106-93-4	Ethylene dibromide
U077	107-06-2	Ethylene dichloride
U359	110-80-5	Ethylene glycol monoethyl ether

Hazardous Waste No.	Chemical Abstracts No.	Substance
U115	75-21-8	Ethylene oxide (I,T)
U116	96-45-7	Ethylenethiourea
U076	75-34-3	Ethylidene dichloride
U118	97-63-2	Ethyl methacrylate
U119	62-50-0	Ethyl methanesulfonate
U120	206-44-0	Fluoranthene
U122	50-00-0	Formaldehyde
U123	64-18-6	Formic acid (C,T)
U124	110-00-9	Furan (I)
U125	98-01-1	2-Furancarboxaldehyde (I)
U147	108-31-6	2,5-Furandione
U213	109-99-9	Furan, tetrahydro- (I)
U125	98-01-1	Furfural (I)
U124	110-00-9	Furfuran (I)
U206	18883-66-4	Glucopyranose, 2-deoxy-2-(3-methyl-3-nitrosoureido-, D-
U206	18883-66-4	D-Glucose, 2-deoxy-2-[[(methyl-nitrosoamino)-carbonyl]amino]-
U126	765-34-4	Glycidylaldehyde
U163	70-25-7	Guanidine, N-methyl-N'-nitro-N-nitroso-
U127	118-74-1	Hexachlorobenzene
U128	87-68-3	Hexachlorobutadiene
U130	77-47-4	Hexachlorocyclopentadiene
U131	67-72-1	Hexachloroethane
U132	70-30-4	Hexachlorophene

Hazardous Waste No.	Chemical Abstracts No.	Substance
U243	1888-71-7	Hexachloropropene
U133	302-01-2	Hydrazine (R,T)
U086	1615-80-1	Hydrazine, 1,2-diethyl-
U098	57-14-7	Hydrazine, 1,1-dimethyl-
U099	540-73-8	Hydrazine, 1,2-dimethyl-
U109	122-66-7	Hydrazine, 1,2-diphenyl-
U134	7664-39-3	Hydrofluoric acid (C,T)
U134	7664-39-3	Hydrogen fluoride (C,T)
U135	7783-06-4	Hydrogen sulfide
U135	7783-06-4	Hydrogen sulfide H_2S
U096	80-15-9	Hydroperoxide, 1-methyl-1-phenylethyl- (R)
U116	96-45-7	2-Imidazolidinethione
U137	193-39-5	Indeno[1,2,3-cd]pyrene
U190	85-44-9	1,3-Isobenzofurandione
U140	78-83-1	Isobutyl alcohol (I,T)
U141	120-58-1	Isosafrole
U142	143-50-0	Kepone
U143	303-34-4	Lasiocarpine
U144	301-04-2	Lead acetate
U146	1335-32-6	Lead, bis(acetato-O)tetrahydroxytri-
U145	7446-27-7	Lead phosphate
U146	1335-32-6	Lead subacetate
U129	58-89-9	Lindane
U163	70-25-7	MNNG

Hazardous Waste No.	Chemical Abstracts No.	Substance
U147	108-31-6	Maleic anhydride
U148	123-33-1	Maleic hydrazide
U149	109-77-3	Malononitrile
U150	148-82-3	Melphalan
U151	7439-97-6	Mercury
U152	126-98-7	Methacrylonitrile (I,T)
U092	124-40-3	Methanamine, N-methyl- (I)
U029	74-83-9	Methane, bromo-
U045	74-87-3	Methane, chloro- (I,T)
U046	107-30-2	Methane, chloromethoxy-
U068	74-95-3	Methane, dibromo-
U080	75-09-2	Methane, dichloro-
U075	75-71-8	Methane, dichlorodifluoro-
U133	74-88-4	Methane, iodo-
U119	62-50-0	Methanesulfonic acid, ethyl ester
U211	56-23-5	Methane, tetrachloro-
U153	74-93-1	Methanethiol (I,T)
U225	75-25-2	Methane, tribromo-
U044	67-66-3	Methane, trichloro-
U121	75-69-4	Methane, trichlorofluoro-
U036	57-74-9	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-
U154	67-56-1	Methanol (I)
U155	91-80-5	Methapyrilene

Hazardous Waste No.	Chemical Abstracts No.	Substance
U142	143-50-0	1,3,4-Metheno-2H-cyclobuta[cd] pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-
U247	72-43-5	Methoxychlor
U154	67-56-1	Methyl alcohol (I)
U029	74-83-9	Methyl bromide
U186	504-60-9	1-Methylbutadiene (I)
U045	74-87-3	Methyl chloride (I,T)
U156	79-22-1	Methyl chlorocarbonate (I,T)
U226	71-55-6	Methyl chloroform
U157	56-49-5	3-Methylcholanthrene
U158	101-14-4	4,4'-Methylenebis(2-chloroaniline)
U068	74-95-3	Methylene bromide
U080	75-09-2	Methylene Chloride
U159	78-93-3	Methyl ethyl ketone (MEK) (I,T)
U160	1338-23-4	Methyl ethyl ketone peroxide (R,T)
U138	74-88-4	Methyl iodide
U161	108-10-1	Methyl isobutyl ketone (I)
U162	80-62-6	Methyl methacrylate (I,T)
U161	108-10-1	4-Methyl-2-pentanone (I)
U164	56-04-2	Methylthiouracil
U010	50-07-7	Mitomycin C
U059	20830-81-3	5,12-Naphthacenedione, 8-acetyl-10-[3-amino-2,3,6-trideoxy)-alpha-L-lyxo-hexopyranosyl)oxy]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-, (8S-cis)-

Hazardous Waste No.	Chemical Abstracts No.	Substance
U167	134-32-7	1-Naphthalenamine
U168	91-59-8	2-Naphthalenamine
U026	494-03-1	Naphthalenamine, N,N'-bis(2-chloroethyl)-
U165	91-20-3	Naphthalene
U047	91-58-7	Naphthalene, 2-chloro-
U166	130-15-4	1,4-Naphthalenedione
U236	75-57-1	2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl[1,1'-biphenyl]-4,4'-diyl)bis(azo)bis[5-amino-4-hydroxy]-tetrasodium salt
U166	130-15-4	1,4-Naphthoquinone
U167	134-32-7	alpha-Naphthylamine
U168	91-59-8	beta-Naphthylamine
U217	10102-45-1	Nitric acid, thallium (1+) salt
U169	98-95-3	Nitrobenzene (I,T)
U170	100-02-7	p-Nitrophenol
U171	79-46-9	2-Nitropropane (I,T)
U172	924-16-3	N-Nitrosodi-n-butylamine
U173	1116-54-7	N-Nitrosodiethanolamine
U174	55-18-5	N-Nitrosodiethylamine
U176	759-73-9	N-Nitroso-N-ethylurea
U177	684-93-5	N-Nitroso-N-methylurea
U178	615-53-2	N-Nitroso-N-methylurethane
U179	100-75-4	N-Nitrosopiperidine
U180	930-55-2	N-Nitrosopyrrolidine

Hazardous Waste No.	Chemical Abstracts No.	Substance
U181	99-55-8	5-Nitro-o-toluidine
U193	1120-71-4	1,2-Oxathiolane, 2,2-dioxide
U058	50-18-0	2H-1,3,2-Oxazaphosphorin-2-amine, N,N-bis(2-chloroethyl)tetra-hydro-,2-oxide
U115	75-21-8	Oxirane (I,T)
U126	765-34-4	Oxiranecarboxyaldehyde
U041	106-89-8	Oxirane, (chloromethyl)-
U182	123-63-7	Paraldehyde
U183	608-93-5	Pentachlorobenzene
U184	74-01-7	Pentachloroethane
U185	82-68-8	Pentachloronitrobenzene (PCNB)
See F027	87-86-5	Pentachlorophenol
U161	108-10-1	Pentanol, 4-methyl-
U186	504-60-9	1,3-Pentadiene (I)
U187	62-44-2	Phenacetin
U188	108-95-2	Phenol
U048	95-57-8	Phenol, 2-chloro-
U039	59-50-7	Phenol, 4-chloro-3-methyl-
U081	120-83-2	Phenol, 2,4-dichloro-
U082	87-65-0	Phenol, 2,6-dichloro-
U089	56-53-1	Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-,(E)-
U101	105-67-9	Phenol, 2,4-dimethyl-
U052	1319-77-3	Phenol, methyl-

Hazardous Waste No.	Chemical Abstracts No.	Substance
U132	70-30-4	Phenol, 2,2'-methylenebis[3,4,6-trichloro-
U170	100-02-7	Phenol, 4-nitro-
See F027	87-86-5	Phenol, pentachloro-
See F027	58-90-2	Pehnol, 2,3,4,6-tetrachloro-
See F027	95-95-4	Phenol, 2,4,5-trichloro-
See F027	88-06-2	Phenol, 2,4,6-trichloro-
U150	148-82-3	L-Phenylalanine, 4-[bis(2-chloroethyl)amino]-
U145	7446-27-7	Phosphoric acid, lead(2+) salt (2:3)
U087	3288-58-2	Phosphorodithioic acid, O,O-diethyl S-methyl ester
U189	1314-80-3	Phosphorus sulfide (R)
U190	85-44-9	Phthalic anhydride
U191	109-06-8	2-Picoline
U179	100-75-4	Pipenidine, 1-nitroso-
U192	23950-58-5	Pronamide
U194	107-10-8	1-Propanamine (I,T)
U111	621-64-7	1-Propanamine, N-nitroso-N-propyl-
U110	142-84-7	1-Propanamine, N-propyl- (I)
U066	96-12-8	Propane, 1,2-dibromo-3-chloro
U083	78-87-5	Propane, 1,2-dichloro-
U149	109-77-3	Propanedinitrile
U171	79-46-9	Propane, 2-nitro- (I,T)

Hazardous Waste No.	Chemical Abstracts No.	Substance
U027	108-60-1	Propane, 2,2'-oxybis[2-chloro-
U193	1120-71-4	1,3-Propane sultone
See F027	93-72-1	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
U235	126-72-7	1-Propanol, 2,3-dibromo-, phosphate (3:1)
U140	78-83-1	1-Propanol, 2-methyl- (I,T)
U002	67-64-1	2-Propanone (I)
U007	79-06-1	2-Propenamide
U084	542-75-6	1-Propene, 1,3-dichloro-
U243	[1]888-71-7	1-Propene,1,1,2,3,3,3-hexachloro-
U009	107-13-1	2-Propenenitrile
U152	126-98-7	2-Propenenitrile, 2-methyl- (I,T)
U008	79-10-7	2-Propenoic acid (I)
U113	140-88-5	2-Propenoic acid, ethyl ester (I)
U118	97-63-2	2-Propenoic acid, 2-methyl-, ethyl ester
U162	80-62-6	2-Propenoic acid, 2-methyl-, methyl ester (I,T)
U194	107-10-8	n-Propylamine (I,T)
U083	78-87-5	Propylene dichloride
U148	123-33-1	3,6-Pyridazinedione, 1,2-dihydro
U198	110-86-1	Pyridine
U191	109-06-8	Pyridine, 2-methyl
U237	66-75-1	2,4-(1H,3H)-Pyrimidinedione,5-[bis(2-chloroethyl)amino]-

Hazardous Waste No.	Chemical Abstracts No.	Substance
U164	56-04-2	4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-
U180	930-55-2	Pyrrolidine, 1-nitroso-
U200	50-55-5	Reserpine
U201	108-46-3	Resorcinol
U202	[1]81-07-2	Saccharin, & salts
U203	94-59-7	Safrole
U204	7783-00-8	Selenious acid
U204	7783-00-8	Selenium dioxide
U205	7488-56-4	Selenium sulfide
U205	7488-56-4	Selenium sulfide SeS_2 (R,T)
U015	115-02-6	L-Serine, diazoacetate (ester)
See F027	93-72-1	Silvex (2,4,5-TP)
U206	18883-66-4	Streptozotocin
U103	77-78-1	Sulfuric acid, dimethyl ester
U189	1314-80-3	Sulfur phosphide (R)
See F027	93-76-5	2,4,5-T
U207	95-94-3	1,2,4,5-Tetrachlorobenzene
U208	630-20-6	1,1,1,2-Tetrachloroethane
U209	79-34-5	1,1,2,2-Tetrachloroethane
U210	127-18-4	Tetrachloroethylene
See F027	58-90-2	2,3,4,6-Tetrachlorophenol
U213	109-99-9	Tetrahydrofuran (I)

Hazardous Waste No.	Chemical Abstracts No.	Substance
U214	563-68-8	Thallium(1) acetate
U215	6533-73-9	Thallium(1) carbonate
U216	7791-12-0	Thallium(1) chloride
U216	7791-12-0	Thallium chloride TlCl
U217	10102-45-1	Thallium(1) nitrate
U218	62-55-5	Thioacetamide
U153	74-93-1	Thiomethanol (I,T)
U244	137-26-8	Thioperoxydicarbonic diamide $[(H_2N)C(S)]_2S_2$, tetramethyl-
U219	62-56-6	Thiourea
U244	137-26-8	Thiram
U220	108-88-3	Toluene
U221	25376-45-8	Toluenediamine
U223	26471-62-5	Toluene diisocyanate (R,T)
U328	95-53-4	o-Toluidine
U353	106-49-0	p-Toluidine
U222	636-21-5	o-Toluidine hydrochloride
U011	61-82-5	1H-1,2,4-Triazol-3-amine
U227	79-00-5	1,1,2-Trichloroethane
U228	79-01-6	Trichloroethylene
U121	75-69-4	Trichloromonofluoromethane
See F027	95-95-4	2,4,5-Trichlorophenol
See F027	88-06-2	2,4,6-Trichlorophenol
U234	99-35-4	1,3,5-Trinitrobenzene (R,T)

Hazardous Waste No.	Chemical Abstracts No.	Substance
U182	123-63-7	1,3,5-Trioxane, 2,4,6-trimethyl-
U235	126-72-7	Tris(2,3-dibromopropyl) phosphate
U236	72-57-1	Trypan blue
U237	66-75-1	Uracil mustard
U176	759-73-9	Urea, n-ethyl-N-nitroso-
U177	684-93-5	Urea, N-methyl-N-nitroso-
U043	75-01-4	Vinyl chloride
U248	[1]81-81-2	Warfarin, & salts, when present at concentrations of 0.3% or less
U239	1330-20-7	Xylene (I)
U200	50-55-5	Yohimban-16-carboxylic qacid, 11,17-dimethoxy-18-[3,4,5-trimethoxybenz-oyl)oxy]-,methyl ester, (3beta,16beta,17alpha,18beta, 20alpha)-
U249	1314-84-7	Zinc phosphide Zn_3P_2, when present at concentrations of 10% or less

[1]CAS Number given for parent compound only.

(e) Any residue, including but not limited to manufacturing process wastes and unused chemicals that has either:

(A) A 3% or greater concentration of any substance or mixture of substances listed in 40 CFR 261.33(e); or

(B) A 10% or greater concentration of any substance or mixture of substances listed in 40 CFR 261.33(f).

(f) The wastes identified in subsections (e)(A) of this rule are identified as acutely hazardous wastes (H) and are subject to the small quantity exclusion defined in 40 CFR 261.5(e).

[**Comment:** Section (2)(e) of this rule shall be applied to a manufacturing process waste only in the event it is not identified elsewhere in OAR Chapter 340, Division 101, but prior to application of section (2)(g) of this rule.]

(g) A pesticide residue or pesticide manufacturing residue is a toxic hazardous waste if a representative sample of the residue exhibits a 96-hour aquatic LC_{50} equal to or less than 250 mg/l.

[**Comment:** A pesticide residue or pesticide manufacturing residue identified section (2)(g)(A) of this rule but not in 40 CFR 261.24 or listed elsewhere in Subpart D of 40 CFR Part 261, has the Hazardous Waste Number of X001.]

(h) The commercial chemical products, manufacturing chemical intermediates, or off-specification commercial chemical products or manufacturing chemical intermediates listed as follows:

(A) P999. . . .Nerve agents (such as GB (Sarin) and VX).

Attachment B
Agenda Item O
August 10, 1990

RULEMAKING STATEMENTS
for
Proposed New Rules Pertaining to
Toxics Use Reduction and Hazardous Waste Reduction

OAR Chapter 340, Division 135

Pursuant to ORS 183.335, these statements provide information on the intended action to adopt rules.

STATEMENT OF NEED:

Legal Authority

The 1989 Oregon Legislature passed Senate Bill 3515 and the bill was signed into law by the Governor on July 24, 1989. The legislation established a Toxics Use Reduction and Hazardous Waste Reduction Program in Oregon to be administered by the Department of Environmental Quality. This law is codified in ORS 465.003 through 465.037. The law requires the Environmental Quality Commission to adopt implementing rules no later than September 1, 1990.

Need for Rule

The law requires that rules be adopted for toxics use reduction and hazardous waste reduction plans and reporting requirements. Because this is a new law, it is necessary to provide guidance on procedural requirements and clarification on statutory language.

Principal Documents

1) Oregon Statute, ORS 465.003 through 465.037

2) OAR 340-135-000 through -110 (proposed)

Land Use Consistency

This proposed rule does not affect land use as defined in the Department's coordination program approved by the Land Conservation and Development Commission. It is the Department's position that the proposed rules are consistent with the statewide planning goal to maintain and improve the quality of the air, water and land resources of the state.

Attachment C
Agenda Item O
August 10, 1990

FISCAL AND ECONOMIC IMPACT

The proposed rules implement the planning and reporting requirements of the Toxics Use Reduction and Hazardous Waste Reduction Act of 1989. This is a new law and new requirements affecting large toxics users, fully regulated hazardous waste generators and small quantity hazardous waste generators. The rules require each of these toxics users to prepare a plan identifying and selecting alternatives for reducing the use of toxic substances and reducing the generation of hazardous waste. The rules also require the toxics users to report to the Department annually on progress made toward reduction.

Because these are new requirements placed on large and small businesses as well as federal, state and local government, there is an economic impact to these toxics users. The cost of preparing a reduction plan is estimated to range from $1,000 to $50,000 depending on how large the business operation is, how many toxic chemicals they use, and how many hazardous waste streams they generate. The cost of preparing an annual progress report and submitting the required information to the Department ranges from a negligible amount up to $12,000 for one of the largest companies in Oregon. In addition to these costs, some toxics users have indicated there will be costs to set up internal monitoring and accounting systems for tracking toxics use reduction and hazardous waste reduction amounts.

These planning efforts may result in toxics use reduction options that can be implemented to reduce operating costs for toxics users. These cost savings may ultimately offset some of the cost of meeting the proposed requirements of this program.

It is the intent of the Department to provide a technical assistance program that will assist toxics users in completing their plans. The technical assistance will be targeted especially to small businesses to help lower any costs and maximize environmental benefits related to this program.

RECY\YB9546C

Attachment D
Agenda Item O
8/10/90 EQC Meeting

Oregon Department of Environmental Quality

A CHANCE TO COMMENT ON...

PROPOSED REGULATIONS
FOR TOXICS USE REDUCTION AND HAZARDOUS WASTE REDUCTION

Date Issued: June 1, 1990
Comments Due: July 10, 1990

WHO IS AFFECTED:

All toxics users - fully regulated hazardous waste generators, small quantity hazardous waste generators, and large users who are required to report under Title III, Section 313 of the Superfund Amendments and Reauthorization Act of 1986.

Citizens of Oregon - who are interested in the protection of the environment and public health and safety through reducing the use of toxic substances.

WHAT IS PROPOSED:

The Department proposes to adopt new administrative rules, OAR 340-135-000 through OAR 340-135-110, to establish the requirements for Toxics Use Reduction and Hazardous Waste Reduction. These rules establish minimum requirements and procedures for preparing reduction plans, annual progress reports, and submitting certain information to the Department of Environmental Quality on progress made toward reduction goals.

WHAT ARE THE HIGHLIGHTS:

The new rules would require all toxics users to prepare reduction plans and notify the Department that plans have been completed. Large users and fully regulated generators must do this by September, 1991 and small quantity generators must complete plans by September, 1992.

All toxics users must complete annual progress reports and submit selected information from those reports to the Department on an annual basis. If you wish to receive a copy of the proposed rules, please call Jan Whitworth in Portland at (503) 229-6434.

(over)

811 S.W. 6th Avenue
Portland, OR 97204

11/1/86

FOR FURTHER INFORMATION:

Contact the person or division identified in the public notice by calling 229-5696 in the Portland area. To avoid long distance charges from other parts of the state, call 1-800-452-4011.

HOW TO COMMENT:

Public hearings will be held before a hearings officer on:

Monday, July 9, 1990	Tuesday, July 10, 1990
10:00 a.m.	10:00 a.m.
Lane County Courthouse	Dept. of Environmental Quality
South Harris Hall	Room 3A
125 E. 8th Avenue	811 S.W. Sixth Avenue
Eugene, Oregon	Portland, Oregon

Written comments are invited, and should be received by the Department at the following address no later than 5:00 pm July 10, 1990.

Department of Environmental Quality
Hazardous and Solid Waste Division
811 S. W. 6th Avenue
Portland, Oregon 97204

Attention: Jan Whitworth

RECY\YB9546D

Chapter 465

1989 EDITION

Hazardous Waste and Hazardous Materials I

REDUCTION OF USE OF TOXIC SUBSTANCES AND HAZARDOUS WASTE GENERATION

BULK PETROLEUM PRODUCT WITHDRAWAL REGULATION

REMOVAL OR REMEDIAL ACTION

CIVIL PENALTIES

CROSS REFERENCES

Environmental Quality Commission, duties and powers, 468.010 to 468.075

Pollution control, Ch. 468

Public health measures, toxic substances, 433.216

Radioactive waste, 469.530 to 469.559

Solid waste, Ch. 459

Transport of hazardous materials, regulation, 761.370 to 761.421

Volunteering assistance or advice related to cleanup of hazardous material, liability limitation, 30.490 to 30.497

465.200 to 465.420

Penalties for violation of 465.200 to 465.420, 466.995

REDUCTION OF USE OF TOXIC SUBSTANCES AND HAZARDOUS WASTE GENERATION

465.003 Definitions for ORS 465.003 to 465.034. As used in ORS 465.003 to 465.034:

(1) "Commission" means the Environmental Quality Commission.

(2) "Conditionally exempt generator" means a generator who generates less than 2.2 pounds of acute hazardous waste as defined by 40 C.F.R. 261, or who generates less than 220 pounds of hazardous waste in one calendar month.

(3) "Department" means the Department of Environmental Quality.

(4) "Director" means the Director of the Department of Environmental Quality.

(5) "Facility" means all buildings, equipment, structures and other stationary items located on a single site or on contiguous or adjacent sites and owned or operated by the same person or by any person who controls, is controlled by or under common control with any person.

(6) "Fully regulated generator" means a generator who generates 2.2 pounds or more of acute hazardous waste as defined by 40 C.F.R. 261, or 2,200 pounds or more of hazardous waste in one calendar month.

(7) "Generator" means a person who, by virtue of ownership, management or control, is responsible for causing or allowing to be caused the creation of hazardous waste.

(8) "Hazardous waste" has the meaning given that term in ORS 466.005.

(9) "Large user" means a facility required to report under section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (P.L. 99-499).

(10) "Person" means individual, the United States, the state or a public or private corporation, local government unit, public agency, partnership, association, firm, trust, estate or any other legal entity.

(11) "Small-quantity generator" means a generator who generates between 220 and 2,200 pounds of hazardous waste in one calendar month.

(12) "Toxic substance" or "toxics" means any substance in a gaseous, liquid or solid state listed pursuant to Title III, Section 313 of the Superfund Amendments and Reauthorization Act of 1986, or any substance added by the commission under ORS 465.009. "Toxic substance" does not include a substance used as a pesticide or herbicide in routine commercial agricultural applications.

(13)(a) "Toxics use reduction" means in-plant changes in production or other processes or operations, products or raw materials that reduce, avoid or eliminate the use or production of toxic substances without creating substantial new risks to public health, safety and the environment, through the application of any of the following techniques:

(A) Input substitution, which refers to replacing a toxic substance or raw material used in a production or other process or operation with a nontoxic or less toxic substance;

(B) Product reformulation, which refers to substituting for an existing end product, an end product which is nontoxic or less toxic upon use, release or disposal;

(C) Production or other process or operation redesign or modifications;

(D) Production or other process or operation modernization, which refers to upgrading or replacing existing equipment and methods with other equipment and methods;

(E) Improved operation and maintenance controls of production or other process or operation equipment and methods, which refers to modifying or adding to existing equipment or methods including, but not limited to, techniques such as improved housekeeping practices, system adjustments, product and process inspections or production or other process or operation control equipment or methods; or

(F) Recycling, reuse or extended use of toxics by using equipment or methods that become an integral part of the production or other process or operation of concern, including but not limited to filtration and other methods.

(b) "Toxics use reduction" includes proportionate changes in the usage of a particular toxic substance by any of the methods set forth in paragraph (a) of this subsection as the usage of that toxic substance changes as a result of production changes or other business changes.

(14) "Toxics use" means use or production of a toxic substance.

(15) "Toxics user" means a large user, a fully regulated generator or a small-quantity generator.

(16)(a) "Waste reduction" means any recycling or other activity applied after hazardous waste is generated that is consistent with the general goal of reducing present and future threats to public health, safety and the environment and that results in:

(A) The reduction of total volume or quantity of hazardous waste generated that would otherwise be treated, stored or disposed of;

(B) The reduction of toxicity of hazardous waste that would otherwise be treated, stored or disposed of; or

(C) Both the reduction of total volume or quantity and the reduction of toxicity of hazardous waste.

(b) "Waste reduction" includes proportionate changes in the total volume, quantity or toxicity of a particular hazardous waste in accordance with paragraph (a) of this subsection as the generation of that waste changes as a result of production changes or other business changes.

(c) "Waste reduction" may include either onsite or offsite treatment where such treatment can be shown to confer a higher degree of protection of the public health, safety and the environment than other technically and economically practicable waste reduction alternatives. [1989 c.833 §2]

465.006 Policy. (1) In the interest of protecting the public health, safety and the environment, the Legislative Assembly declares that it is the policy of the State of Oregon to encourage reduction in the use of toxic substances and to reduce the generation of hazardous waste whenever technically and economically practicable, without shifting risks from one part of a process, environmental media or product to another. Priority shall be given to methods that reduce the amount of toxics used and, where that is not technically and economically practicable, methods that reduce the generation of hazardous waste.

(2) The Legislative Assembly finds that the best means to achieve the policy set forth in subsection (1) of this section is by:

(a) Providing toxics users and generators with technical assistance;

(b) Requiring toxics users to engage in comprehensive planning and develop measurable performance goals; and

(c) Monitoring the use of toxic substances and the generation of hazardous waste. [1989 c.833 §3]

465.009 Exemption of substance or waste by rule. The Environmental Quality Commission by rule may add or remove any toxic substance or hazardous waste from the provisions of ORS 465.003 to 465.034. [1989 c.833 §4]

465.010 [Amended by 1971 c.743 §371; repealed by 1989 c.846 §15]

465.012 Technical assistance to users and generators; priority; restrictions on enforcement resulting from technical assistance. (1) The Department of Environmental Quality shall provide technical assistance to toxics users and conditionally exempt generators. In identifying the users and generators to which the department shall give priority in providing technical assistance, the department shall consider at least the following:

(a) Amounts and toxicity of toxics used and amounts of hazardous waste disposed of, discharged and released;

(b) Potential for current and future toxics use reduction and hazardous waste reduction; and

(c) The toxics related exposures and risks posed to public health, safety and the environment.

(2) In providing technical assistance, the department shall give priority to assisting toxics users and conditionally exempt generators in developing and implementing an adequate toxics use reduction and hazardous waste reduction plan as established under ORS 465.015. The assistance may include but need not be limited to:

(a) Information clearinghouse activities;

(b) Telephone hotline assistance;

(c) Toxics use reduction and hazardous waste reduction training workshops;

(d) Establishing a technical publications library;

(e) The development of a system to evaluate the effectiveness of toxics use reduction and hazardous waste reduction measures;

(f) The development of a recognition program to publicly acknowledge toxics users and conditionally exempt generators who develop and implement successful toxics use reduction and hazardous waste reduction plans; and

(g) Direct onsite assistance to toxics users and conditionally exempt generators in developing the plans.

(3) The department shall:

(a) Coordinate its technical assistance efforts with industry trade associations and local colleges and universities as appropriate.

(b) Follow up with toxics users who receive technical assistance to determine whether the user or generator implemented a toxics use reduction and hazardous waste reduction plan.

(4) Technical assistance services provided under this section shall not result in inspections or other enforcement actions unless there is reasonable cause to believe there exists a clear and immediate danger to the public health and safety or to the environment. The commission may develop rules to carry out the intent of this subsection. [1989 c.833 §5]

Note: Section 6, chapter 833, Oregon Laws 1989, provides:

Sec. 6. The department shall begin providing technical assistance under section 5 of this Act [465.012] on or before January 1, 1990. [1989 c.833 §6]

465.015 Guidelines for reduction plans; performance goals; rationale for goals; annual progress reports; modification of plans. (1) Not later than September 1, 1990, the commission shall establish guidelines for toxics use reduction and hazardous waste reduction plans. At a minimum, the guidelines shall include:

(a) A written policy articulating upper management and corporate support for the toxics use reduction and hazardous waste reduction plan and a commitment to implement plan goals.

(b) Plan scope and objectives, including the evaluation of technologies, procedures and personnel training programs to insure unnecessary toxic substances are not used and unnecessary waste is not generated. In addition to the goals required in subsection (2) of this section, specific goals may be set for toxics use reduction and hazardous waste reduction, based on a realistic assessment of what is technically and economically practicable.

(c) Internal analysis of toxic substance usage and hazardous waste streams, with periodic toxics use reduction and hazardous waste reduction assessments, to review individual processes or facilities and other activities where toxic substances are used and waste may be generated and identify opportunities to reduce or eliminate toxic substance usage and waste generation. Such assessments shall evaluate data on the types, amount and hazardous constituents of toxic substances used and waste generated, where and why those toxics were used and waste was generated within the production process or other operations, and potential toxics use reduction and hazardous waste reduction and recycling techniques applicable to those toxic substances and wastes.

(d) Toxics use and hazardous waste accounting systems that identify toxics use and waste management costs and factor in liability, compliance and oversight costs to the extent technically and economically practicable.

(e) Employee awareness and training programs, to involve employees in toxics use reduction and hazardous waste reduction planning and implementation to the maximum extent feasible.

(f) Institutionalization of the plan to insure an ongoing effort as demonstrated by incorporation of the plan into management practices and procedures.

(g) Implementation of technically and economically practicable toxics use reduction and hazardous waste reduction options, including a plan for implementation. This shall include a description of options considered and an explanation of why options considered were not implemented. The plan shall distinguish between toxics use reduction options and waste reduction options, and the analysis of options considered shall demonstrate that toxics use reduction options were given priority wherever technically and economically practicable.

(2) As part of each plan developed under ORS 465.018, a toxics user shall establish specific performance goals for the reduction of toxics and waste in the following categories:

(a) Any toxic substance used in quantities in excess of 10,000 pounds a year;

(b) Any toxic substance used in quantities in excess of 1,000 pounds a year that constitutes 10 percent or more of the total toxic substances used; and

(c) For fully regulated generators, any waste representing 10 percent or more by weight of the cumulative waste stream generated per year.

(3) Wherever technically and economically practicable, the specific performance goals established under subsection (2) of this section shall be expressed in numeric terms. If the establishment of numeric performance goals is not practicable, the performance goals shall include a clearly stated list of objectives designed to lead to the establishment of numeric goals as soon as is practicable.

(4) Each toxics user shall explain the rationale for each performance goal. The rationale for a particular performance goal shall address any impediments to toxics use reduction and hazardous waste reduction, including but not limited to the following:

(a) The availability of technically practicable toxics use reduction and hazardous waste reduction methods, including any anticipated changes in the future.

(b) The economic practicability of available toxics use reduction and hazardous waste reduction methods, including any anticipated changes in the future. Examples of situations where toxics use reduction or hazardous waste reduction may not be economically practicable include but are not limited to:

(A) For valid reasons of prioritization, a particular company has chosen to first address other more serious toxics use reduction or hazardous waste reduction concerns;

(B) Necessary steps to reduce toxics use and hazardous waste are likely to have sig-

nificant adverse impacts on product quality; or

(C) Legal or contractual obligations interfere with the necessary steps that would lead to toxics use reduction or hazardous waste reduction.

(5) All toxics users shall complete annually a toxics use reduction and hazardous waste reduction progress report.

(6) An annual progress report shall:

(a) Analyze progress made, if any, in toxics use reduction and hazardous waste reduction, relative to each performance goal established under subsection (2) of this section; and

(b) Set forth amendments to the toxics use reduction and hazardous waste reduction plan and explain the need for the amendments.

(7) The commission by rule may provide for modifications for small-quantity generators related to the kind of information to be included in the plan. [1989 c.833 §7]

465.018 Time limitation for completion of plan; plan not public record; inspection of plan. (1) All large users and fully regulated generators shall complete a toxics use reduction and hazardous waste reduction plan on or before September 1, 1991, and all small-quantity generators shall complete a toxics use reduction and hazardous waste reduction plan on or before September 1, 1992. Upon completion of a plan, the user shall notify the Department of Environmental Quality in writing on a form supplied by the department.

(2) A facility required to complete a toxics use reduction and hazardous waste reduction plan under subsection (1) of this section may include as a preface to its initial plan:

(a) An explanation and documentation regarding toxics use reduction and hazardous waste reduction efforts completed or in progress before the first reporting date; and

(b) An explanation and documentation regarding impediments to toxics use reduction and hazardous waste reduction specific to the individual facility.

(3) The department shall consider information provided under subsection (2) of this section in any review of a facility plan under ORS 465.021.

(4) Except as provided in ORS 465.021, a toxics use reduction and hazardous waste reduction plan developed under this section shall be retained at the facility and is not a public record under ORS 192.410.

(5) For the purposes of this section and ORS 465.012 and 465.021, a toxics user shall permit the director or any designated employee of the director to inspect the toxics use reduction and hazardous waste reduction plan.

(6) A facility shall determine whether it is required to complete a plan under subsection (1) of this section based on whether its toxics use or waste generation results in the facility meeting the definition of toxics user as defined in ORS 465.003 for the calendar year ending December 31 of the year immediately preceding the September 1 reporting deadline. [1989 c.833 §8]

465.020 [Amended by 1979 c.284 §151; repealed by 1989 c.846 §15]

465.021 Review of plans; determination of inadequacies; revised plan or progress report; log of inadequacy findings; public inspection of log. (1) The Department of Environmental Quality may review a plan or an annual progress report to determine whether the plan or progress report is adequate according to the guidelines established under ORS 465.015. If a toxics user fails to complete an adequate plan or annual progress report as required under ORS 465.015 and 465.018, the department may notify the user of the inadequacy, identifying the specific deficiencies. The department also may specify a reasonable time frame, of not less than 90 days, within which the user shall submit a modified plan or progress report addressing the specified deficiencies. The department also may make technical assistance available to aid the user in modifying its plan or progress report.

(2) If the department determines that a modified plan or progress report submitted pursuant to subsection (1) of this section is inadequate, the department may, within its discretion, either require further modification or issue an administrative order pursuant to subsection (3) of this section.

(3) If after having received a list of specified deficiencies from the department, a toxics user fails to develop an adequate plan or progress report within a time frame specified pursuant to subsection (1) or (2) of this section, the department may order such toxics user to submit an adequate plan or progress report within a reasonable time frame of not less than 90 days. If the toxics user fails to develop an adequate plan or progress report within the time frame specified, the department shall conduct a public hearing on the plan or progress report. Except as provided under ORS 465.031, in any hearing under this section the relevant plan or progress report shall be considered a public record as defined in ORS 192.410.

(4) In reviewing the adequacy of any plan or progress report, the department shall base

its determination solely on whether the plan or progress report is complete and prepared in accordance with ORS 465.015.

(5) The department shall maintain a log of each plan or progress report it reviews, a list of all plans or progress reports that have been found inadequate under subsection (3) of this section and descriptions of corrective actions taken. This information shall be available to the public at the department's office. [1989 c.833 §9]

465.021 Report of quantities of toxics generated; narrative summary; inspection of progress report. (1) From each annual progress report, the toxics user shall report to the Department of Environmental Quality the quantities of toxics used that are within the categories set forth in ORS 465.015 (2).

(2) From each annual progress report, the toxics user shall report to the department the quantities of hazardous wastes generated that are within the categories set forth in ORS 465.015 (2).

(3) The report shall include a narrative summary explaining the data. The narrative summary may include:

(a) A description of goals and progress made in reducing the use of the toxic substance or generation of hazardous waste; and

(b) A description of any impediments to reducing the use of the toxic substance or generation of hazardous waste.

(4) The Environmental Quality Commission, by rule, shall develop uniform reporting requirements for the data required under subsections (1) and (2) of this section.

(5) Except for the information reported to the department under this section, the annual progress report shall be retained at the facility and shall not be considered a public record under ORS 192.410. However, the user shall permit any officer, employee or representative of the department at all reasonable times to have access to the annual progress report. [1989 c.833 §10]

Note: Section 11, chapter 833, Oregon Laws 1989, provides:

Sec. 11. Large users and fully regulated generators shall complete the first annual progress report required under section 7 of this Act [465.015] on or before September 1, 1992. Small-quantity generators shall complete the first annual progress report required under section 7 of this Act on or before September 1, 1993. [1989 c.833 §11]

465.027 Contract for assistance with higher education institution. Subject to available funding, the Department of Environmental Quality shall contract with an established institution of higher education to assist the department in carrying out the provisions of ORS 465.003 to 465.034. The assistance shall emphasize strategies to encourage toxics use reduction and hazardous waste reduction and shall provide assistance to facilities under ORS 465.003 to 465.034. The assistance may include but need not be limited to:

(1) Engineering internships;

(2) Engineering curriculum development;

(3) Applied toxics use reduction and hazardous waste reduction research; and

(4) Engineering assistance to users and generators. [1989 c.833 §12]

Note. Section 13, chapter 833, Oregon Laws 1989, provides:

Sec. 13. (1) In order to assist in establishing rules related to toxics use reduction and hazardous waste reduction, the Department of Environmental Quality shall establish an advisory committee. The advisory committee shall consist of representatives of the public and affected industries.

(2) The advisory committee shall act in an advisory capacity to the department in any matter related to toxics use reduction and hazardous waste reduction. The advisory committee may provide comments regarding data collection, plan format and content. In addition, the committee shall identify any additional data necessary to improve the technical assistance process, to develop plans and to aid in enforcement of plans.

(3) The committee also may identify specific chemicals that present the greatest hazard to the public health, safety and the environment in order that the department may focus technical assistance, research and development efforts to facilitate accelerated reduction in the use of such chemicals.

(4) The committee shall make recommendations to the department to increase the coordination of requirements of all state and federal toxics use and hazardous waste programs, including but not limited to the Clean Air Act, the Federal Water Pollution Control Act, the Toxic Substances Control Act, the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act, and any amendments thereto, Title III of the Superfund Amendments and Reauthorization Act of 1986 and amendments thereto, the Community Right to Know and Protection Act.

(5) The committee shall make recommendations under this section on or before January 1, 1991. [1989 c.833 §13]

465.030 [Repealed by 1989 c.846 §15]

465.031 Classification of plan or progress report as confidential; trade secrets; restricted use of confidential information. (1) Upon a showing satisfactory to the director by any person that a plan or annual progress report developed under ORS 465.015 or 465.018, or any portion thereof, if made public, would divulge methods, processes or other information entitled to protection as trade secrets, as defined under ORS 192.501, of such person, the director shall classify as confidential such plan or annual progress report, or portion thereof.

(2) To the extent that any plan or annual progress report under subsection (1) of this section, or any portion thereof, would otherwise qualify as a trade secret under ORS

192.501, no action taken by the director or any authorized employee of the department in inspecting or reviewing such information shall affect its status as a trade secret.

(3) Any information classified by the director as confidential under subsection (1) of this section shall not be made a part of any public record, used in any public hearing or disclosed to any party outside of the department unless a circuit court determines that evidence is necessary to the determination of an issue or issues being decided at the public hearing. [1989 c.833 §14]

Note: Section 15, chapter 833, Oregon Laws 1989, provides:

Sec. 15. On or before January 1, 1991, and January 1, 1993, the Environmental Quality Commission shall report to the Legislative Assembly on the status of implementing sections 2 to 16 of this Act [465.003 to 465.034]. This report shall include information regarding:

(1) The status of the technical assistance program;

(2) Progress toward reducing the quantities of toxic substances used and hazardous wastes generated in Oregon; and

(3) An analysis and recommendations for changes to the program including but not limited to the need for any additional enforcement provisions. [1989 c.833 §15]

465.034 Application of ORS 465.003 to 465.031. Notwithstanding any other provision of ORS 465.003 to 465.031, nothing in chapter 833, Oregon Laws 1989, shall be considered to apply to any hazardous wastes that become subject to regulation solely as a result of remedial activities taken in response to environmental contamination. [1989 c.833 §16]

Note: The Legislative Counsel has not, pursuant to 173.160, undertaken to substitute specific ORS references for the words "this Act" in 465.034. Chapter 833, Oregon Laws 1989, enacted into law and amended the ORS sections which may be found by referring to the 1989 Comparative Section Table located in volume 15 of Oregon Revised Statutes (1989 Edition).

465.037 Short Title. ORS 465.003 to 465.034 shall be known as the Toxics Use Reduction and Hazardous Waste Reduction Act. [1989 c.833 §1]

465.040 [Amended by 1971 c.743 §372; repealed by 1989 c.846 §15]

465.050 [Amended by 1971 c.743 §373; repealed by 1989 c.846 §15]

465.060 [Repealed by 1989 c.846 §15]

465.070 [1989 Repealed by 1989 c.846 §15]

465.090 [Amended by 1971 c.743 §374; repealed by 1989 c.846 §15]

465.100 [1977 c.350 §2; 1985 c.728 §83; 1987 c.914 §26; renumbered 464.430 in 1987]

Attachment F
Agenda Item O
8/10/90 EQC Meeting

To: Environmental Quality Commission

From: Linda Rober, Hearings Officer

Subject: Report on Public Hearings Held July 9 and 10, 1990 Regarding Proposed Rules for Toxic Use Reduction and Hazardous Waste Reduction, OAR Chapter 340, Division 135.

Summary of Procedure

Two public hearings were held to accept formal testimony on proposed new rules for toxic use and hazardous waste reduction required under ORS 465.015. Linda J. Rober, of the DEQ Library, presided as hearings officer. Joyce Thomas of the Hazardous and Solid Waste Division served as recorder. Jan Whitworth, preparer of the proposed rules, was in attendance to hear testimony and respond to questions following the hearing.

First Hearing, July 9, 1990, 10:00 a.m., Eugene, Oregon. Seven people attended, plus an additional four from the media. One person, Quincy Sugarman from OSPIRG, gave formal oral testimony. Testimony was completed; the formal hearing was closed at 10:06 a.m. Informal question/answer period followed; meeting adjourned at 10:38 a.m.

Second Hearing, July 10, 1990, 10:00 a.m., Portland, Oregon. Twenty-six people attended of whom six gave formal oral testimony. The six were: Tom Donaca, Associated Oregon Industries; Tom McCue, Tektronix, Inc.; Jim Craven, American Electronics Association; Joel Ario, OSPIRG; Bill Ryen, National Environmental Law Center; and Craig Johnson, Perkins Coie on behalf of Boeing Co. A seventh registered speaker, Kevin O'Leary of McWhorter, Inc., declined to comment when called upon. The formal hearing was closed and adjourned at 11:10 a.m. Some people in attendance remained for informal question/answer period following the close of the hearing.

Copies of written testimony and response to comments are provided in Attachment G.

Attachment G
Agenda Item O
8/10/90 EQC Meeting

TOXICS USE REDUCTION AND HAZARDOUS WASTE REDUCTION PROPOSED REGULATION

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY RESPONSE TO PUBLIC COMMENT

BACKGROUND

Proposed regulations for implementing the Toxics Use Reduction and Hazardous Waste Reduction Act of 1989 were made available for public review and comment during the period June 1, 1990 through July 10, 1990. Two public hearings were held, one on July 9, 1990 in Eugene, Oregon and one on July 10, 1990 in Portland, Oregon.

During the public review period, the Department directly notified approximately 1500 potentially affected parties, received requests for a copy of the proposed regulations from 118 parties, and received written and/or oral testimony from twelve commentors.

The twelve people who commented are:

1. Joel Ario, Oregon State Public Interest Research Group
2. Bobby Bush, Hickory Springs
3. Jean Cameron, Oregon Environmental Council
4. Jim Craven, American Electronics Association
5. Tom Donaca, Associated Oregon Industries
6. Craig Johnston, Perkins, Coie (representing The Boeing Co.)
7. Tom McCue, Tektronix
8. Doug Morrison, Northwest Pulp and Paper
9. Bill Ryen, Environmental Law Center
10. Diane Stockton, Blount, Inc.
11. Quincy Sugarman, Oregon State Public Interest Research Group
12. Kirk Thomson, The Boeing Co.

SUMMARY OF COMMENTS

All commentors generally supported the proposed rules. However, some specific concerns were raised. The major concerns and the Department's response are summarized below.

A. COMMENT: Six people indicated a major concern about the information access portion of the regulations, specifically OAR 340-135-090 (1)(c) and (2)(c). The concern dealt primarily with the Department's ability to take notes from or copy reduction plans or progress reports. This concern is specifically related to the potential sensitivity of information contained in the plans and reports, and the

ability of the Department, both legally and administratively to maintain such information as non-public record.

RESPONSE: The Department recognizes the concern about information sensitivity. The Department believes that the statutory authority and the proposed regulations afford sufficient protection (from public disclosure) of information from a reduction plan or annual progress report. It is important for the Department to retain its authority to review plans and progress reports for the purposes of documenting compliance with plan and progress report requirements, providing specific comments on plan and report deficiencies where they are found to be inadequate, and to carry out administrative order and public hearing sanctions where necessary. Therefore, the Department has added clarifying language to OAR 340-135-090 of the proposed rules indicating note taking and copying of plans and progress reports will be to the extent necessary to document compliance. This information will be maintained as non-public record.

The Department believes that it has a demonstrated track record to properly and adequately maintain confidential information as non-public record. Procedures are in place within the Department and have been used to accomplish this in the Hazardous Waste Program since 1986. No problems regarding information access have been noted to date.

With respect to the sensitivity of information available to the Department during technical assistance, it is the Department's position that it is entirely up to the toxics user how much and what information is shared with the Department. The Department will provide technical assistance at the request of the toxics user. It should be noted that any information made available to the Department during the process of receiving technical assistance will be considered public record.

B. COMMENT: Three people stressed the importance in the law of distinguishing between "front end" use reduction and "after the fact" waste reduction. The law states that priority is to be given to implementation of use reduction options. Concern was raised about the definition for "waste reduction" in OAR 340-135-020(22)(d) which makes this distinction less clear.

RESPONSE: The Department concurs with the comment and has deleted OAR 340-135-020(22)(d) as it was stated in the draft rules. Language addressing reduction for hazardous waste generators who do not use toxic substances has been added to OAR 340-135-050(2)(f). This distinction more appropriately belongs in this section because it is directly related to priority setting for hazardous waste generators in preparing their reduction plans.

C. COMMENT: Two people stated a concern about the timing for making additions and deletions to the list of toxic substances and hazardous waste as described in OAR 340-135-040. It is important to provide adequate lead time to allow toxics users to update the plans and progress reports or to prepare a plan when a new toxics user is affected.

RESPONSE: The Department concurs and has added language to address the concern.

D. COMMENT: Two people expressed a concern about plan requirements and the relationship of performance goals to those requirements. One commentor noted that the language in OAR 340-135-050 was not clear about doing a "feasibility analysis" and "reduction assessments" only for those toxics and hazardous wastes for which a performance goal is set. The second concern was that companies who manufacture for sale the specific chemicals on the toxic substances list should not be required to plan and set performance goals for their reduction.

RESPONSE: The Department generally agrees with these comments and has provided clarifying language in OAR 340-135-030 and -060 to address the chemical manufacturing concern. In OAR 340-135-050, language is added to address the "feasibility analysis" concern. However, the Department finds no reason to limit the "reduction assessment" portion of the reduction plan to only those toxics or hazardous wastes for which a performance goal is set. In fact, the "reduction assessment" portion of the plan is the key section that will enable the user to identify the toxics and hazardous wastes for which performance goals will be needed.

E. MISCELLANEOUS OTHER COMMENTS: Various other comments were provided in testimony. They are not all listed here. The following list summarizes some of them. For more detail, the actual written comments received are contained in Attachment 1 of the Response to Public Comment.

1. Comment: Several comments were received asking for specific language changes in various parts of the proposed regulations. In some cases people requested changes making rule language identical to the statute and, alternatively, in some cases requesting statutory language to be broadened in the regulations.

   Response: These rules are to be used in the implementation of nationally precedent setting law in the relatively new field of pollution prevention. A clear reflection of legislative intent is important because of the delicate balance of cooperation that has been achieved in the passage of this legislation. Therefore, the Department has elected to retain statutory language in most cases, only adding clarification in the rules where the statutes are silent or ambiguous.

2. Comment: Because data collection and technical assistance are important for monitoring program results, language should be added requiring the Department to specifically review the information collected under the optional reporting rule and make recommendations regarding the need to make this rule mandatory.

   Response: The statute requires the Department to review the implementation of the program and report to the legislature. The Department does not feel that specific language in the regulations is needed. It is the intent of the Department to review specifically the reporting requirements and the information reported as part of the reports to the legislature, and as part of the general analysis of program implementation. This analysis will be made available to the public.

3. Comment: The discussion of past achievements in reduction should be reflected in the rules as a more significant part of the reduction plan.

   Response: The discussion of past achievements in reduction is considered an optional requirement in the statute, but an important opportunity for toxics users to express their achievements to date and put perspective on their goals for the future. The Department believes the language in the regulations is sufficiently broad to provide that opportunity and should not be viewed as limiting in any way. A toxics user is free to provide as much information on past achievements needed to tell their story.

4. Comment: The proposed regulations would restrict use of toxic substances in the manufacture of products. The regulations are too vague and simplistic. The regulations should be more specific about what is required to be in a plan and what percent reduction is required.

   Response: The law and the proposed regulations in no way restrict the use of any toxic substance. The purpose of these regulations is to provide guidance on how to look for opportunities to reduce the use of toxic substances but do not mandate reduction unless technically and economically feasible.

   The concept of pollution prevention and toxics use reduction is a new frontier. A large cross section of toxics users with unique circumstances is affected by the proposed regulations. Therefore, it is in the best interest of everyone to provide flexibility in the regulations. By not being overly prescriptive in the requirements, toxics users can develop reduction plans that best suite their individual situation. It is the Department's intent to provide more detailed technical guidance for plan preparation through industry-specific workshops and the availability of a guidance manual.

Specific reduction goals are not listed in the regulations for two reasons. First, each toxics user must decide for themselves what is achievable in their particular circumstance. Secondly, one of the primary purposes of this new program is to create an opportunity for toxics users to examine their use of toxics and look for feasible alternatives to economically and environmentally benefit by reducing the use of toxic substances and the generation of hazardous waste.

Attachment G
Agenda Item O
8/10/90 EQC Meeting

ATTACHMENT 1

TO

RESPONSE TO PUBLIC COMMENT

PROPOSED RULES FOR
TOXICS USE REDUCTION AND HAZARDOUS WASTE REDUCTION

Written testimony submitted for the record

(Copies forwarded to Commission members available upon request.)

Attachment H
Agenda Item O
8/10/90 EQC Meeting

REQUEST FOR EQC ACTION

Meeting Date: May 25, 1990
Agenda Item: A-3(b)
Division: Hazardous and Solid Waste Division
Section: Waste Reduction

SUBJECT:

Toxics Use Reduction and Hazardous Waste Reduction Rules (HB 3515).

PURPOSE:

To establish regulations for the purpose of implementing the planning, technical assistance and reporting requirements of the Toxics Use Reduction and Hazardous Waste Reduction Act of 1989.

ACTION REQUESTED:

___ Work Session Discussion
- ___ General Program Background
- ___ Potential Strategy, Policy, or Rules
- ___ Agenda Item ___ for Current Meeting
- ___ Other: (specify)

_X_ Authorize Rulemaking Hearing
___ Adopt Rules

Proposed Rules	Attachment A
Rulemaking Statements	Attachment B
Fiscal and Economic Impact Statement	Attachment C
Public Notice	Attachment D

___ Issue a Contested Case Order
___ Approve a Stipulated Order
___ Enter an Order

Proposed Order	Attachment ___

___ Approve Department Recommendation

___ Variance Request	Attachment ___
___ Exception to Rule	Attachment ___
___ Informational Report	Attachment ___
___ Other: (specify)	Attachment ___

DESCRIPTION OF REQUESTED ACTION:

Request authorization to conduct two public hearings to receive public comment on the draft regulations to implement the toxics use reduction and hazardous waste reduction program. The hearings are proposed to be held in Eugene and Portland.

The proposed rules contain the following key elements:

- Define the universe of toxics users subject to these requirements.
- Describe the minimum requirements for a toxics use reduction and hazardous waste reduction plan.
- Require that priority be given to implementing toxics use reduction measures over hazardous waste reduction measures where technically and economically feasible.
- Require the establishment of performance goals for reduction.
- Describe reporting requirements.
- Describe procedures for review of plans and progress reports by the Department of Environmental Quality (DEQ, Department).

AUTHORITY/NEED FOR ACTION:

X	Required by Statute: ORS 465.015 Enactment Date: July 24, 1989	Attachment E
___	Statutory Authority: _____	Attachment ___
___	Pursuant to Rule: _____	Attachment ___
___	Pursuant to Federal Law/Rule: _____	Attachment ___
___	Other:	Attachment ___

X Time Constraints: (explain)

The Environmental Quality Commission (EQC, Commission) is required by statute to adopt regulations for toxics use reduction and hazardous waste reduction plans and reporting requirements no later than September 1, 1990. In order to meet this requirement, the public hearings need to be held no later than July 10, 1990 so that final EQC action can be taken at the August 10, 1990 EQC meeting.

DEVELOPMENTAL BACKGROUND:

The Toxics Use Reduction and Hazardous Waste Reduction Act was passed by the Oregon Legislature in 1989 and signed into law by the Governor on July 24, 1989. This landmark legislation, which is aimed at pollution prevention rather than pollution control, was a result of negotiations between the Department of Environmental Quality, Oregon State Public Interest Research Group (OSPIRG), and industry groups such as American Electronics Association and Associated Oregon Industries. The legislation, as passed, was supported by all groups.

The rules proposed here are primarily interpretive in nature, rather than policy-making. The statutory requirements for toxics use reduction and hazardous waste reduction are specific in nature. Therefore, the regulations are procedural and clarifying. The proposed regulations outline the minimum requirements for toxics use reduction and hazardous waste reduction planning and reporting.

An Advisory Committee with representatives from affected industry as well as environmental organizations and the banking community has reviewed the proposed rules. Technical agency advisors have also been involved in the development of these proposed rules. The U.S. Environmental Protection Agency, the State Fire Marshal's office, Oregon OSHA, Washington Department of Ecology, Oregon State University, and the Department of Justice provided coordinating and technical advice.

Because the legislative mandate for a Toxics Use Reduction and Hazardous Waste Reduction Program is based on the premise that this is a self motivated effort for toxics users, the program to be implemented through these regulations is non-regulatory in nature. The primary role of the Department is to provide technical assistance and monitor and report to the legislature and to the public on progress toward actual reduction in the use of toxic substances and generation of hazardous waste. The primary role for affected toxics users is to plan for and implement changes in their operations that will result in actual reduction of toxic substances used and hazardous waste generated.

___ Advisory Committee Report/Recommendation	Attachment ___
___ Hearing Officer's Report/Recommendations	Attachment ___
___ Response to Testimony/Comments	Attachment ___
___ Prior EQC Agenda Items: (list)	
	Attachment ___

___ Other Related Reports/Rules/Statutes: Attachment ___

___ Supplemental Background Information Attachment ___

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

There is general consensus among industry trade associations, environmentalists and the Department that a toxics use reduction and hazardous waste reduction program is good for both the environment and toxics users. However, some businesses and state and local governmental agencies in Oregon have a limited awareness and knowledge of toxic substances and hazardous waste in general. These groups will require more technical assistance than others and may find the reduction planning and reporting requirements more difficult to implement.

In addition to the general implementation considerations stated above, there are two specific issues related to the reporting requirements proposed in these regulations. First, the Department is required to report progress in reducing quantities of toxic substances and hazardous wastes to the 1991 and 1993 Legislatures. According to the statute and under the proposed rules, comparable reduction information will not be available before the end of calendar year 1993. Therefore, the Department will be unable to monitor or report to the legislature on progress in reduction before 1995. This is a statutory oversight. To address this oversight, the Department intends to rely on existing hazardous waste and toxic substance information to provide a general statement of the status of use and generation during the first three years of the program.

The second reporting issue relates to the additional reporting proposed in OAR 340-135-080. The proposed rules provide for information on performance goals, reduction measures implemented and impediments to reduction be reported on a voluntary basis to the Department annually beginning in 1992. Originally the Department considered proposing rules that would make it mandatory for this information to be reported. However, industries in Oregon raised concerns about the mandatory reporting. Of particular concern, by some industries, is the sensitive nature of the information and the legal authority to maintain the confidentiality of the information once it is reported. The Department's statutory authority to obtain this information is also challenged. Discussions with the Assistant Attorney General indicate that the Department clearly has a right to obtain this information. However, the ability to maintain the

confidentiality of the information if reported is less clear. Therefore, the Department is proposing that the information be voluntarily reported. In addition, the Department intends to review plans and annual progress reports at the facilities and collect information as needed.

This information is important because it provides a means for the Department to review implementation of the law and design a technical assistance program that fits the needs of toxics users in Oregon and leads to successful reduction.

PROGRAM CONSIDERATIONS:

The Toxics Use Reduction and Hazardous Waste Reduction Program is unique because the enabling legislation for this program mandates the Department, primarily a regulatory agency, to carry out technical assistance and information/ data management responsibilities. The statute explicitly requires that technical assistance efforts provided by the Department for toxics use reduction and hazardous waste reduction be kept separate from the compliance and enforcement responsibilities of the Department.

Resources available in the 1989-1991 budget for technical assistance program development and particularly for conducting an on-site technical assistance program are very limited. Three full-time staff in the Department's regional offices will be available beginning in late 1990 to provide on-site technical assistance for reduction plan preparation. Because of limited resources, the Department plans to establish environmental and demographic criteria for the purpose of targeting the technical assistance program for the most benefit. Even with these efforts, there will be many small businesses which will not get first-hand assistance in meeting the requirements proposed in these regulations. Workshops will be made available around the state to assist with reduction planning and implementation for these groups.

Additional resources are needed to develop an adequate data management system that provides for timely analysis of the reported reduction information and coordination with other reporting under the Resource Conservation and Recovery Act (RCRA) Hazardous Waste Program, and Superfund Amendment and Reauthorization Act (SARA) Title III. The Department has requested additional funding from the U.S. Environmental Protection Agency for this purpose and is planning to consolidate information management for RCRA hazardous waste information and toxics use reduction and hazardous waste reduction information requirements.

Oregon is one of the first states in the country, and the first state in this region, to begin implementation of a Toxics Use Reduction and Hazardous Waste Reduction Program. Because of this, many states, industries and the federal government are looking at the Oregon program as a model for what may happen throughout the country in the next several years. This is an opportunity for Oregon to lead the way for successful pollution prevention.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

Regarding the 1991 and 1993 reports to the legislature, the Department evaluated two alternatives in an attempt to address the need to report on progress in reducing quantities of toxics used and hazardous waste generated. The alternatives are briefly described below. Because there are problems with both alternatives, the Department plans to use existing RCRA hazardous waste generator information and existing SARA Title III information (Alternative 1) to describe the status of toxic use and hazardous waste generation as we know it today and explain to the legislature that the baseline for measuring progress in reduction will be established in 1992 and 1993. The alternatives initially considered were:

1. To measure progress in reduction, use existing reporting information under RCRA Hazardous Waste Program and SARA Title III reporting information under Sections 312 and 313 to establish baseline data.

   This alternative is not feasible for measuring progress in reduction because the universe of reporters in some cases does not include small quantity generators, and the data reported are not representative of use and generation. The information available through Section 313 reporting is for releases of toxic substances, rather than use of toxic substances. The hazardous waste generation information is for off-site shipments of waste only. The total amount of waste generated is not reported.

2. Request that data on quantities of toxics used and hazardous waste generated be provided at the same time that a toxics user notifies the Department that they have completed their reduction plan.

This alternative is not provided for in statute. Industry representatives on the Advisory Committee are strongly opposed to this option, therefore, voluntary submittal of the data does not seem likely.

To address the issue regarding the additional reporting requirements proposed in OAR 340-135-080, the following alternatives were considered:

1. Rather than require reports, physically send Department staff to the toxics user's facility, review the completed plans and progress reports and record the information on performance goals, reduction measures implemented, and impediments to reduction.

   This alternative is extremely resource-intensive. This process would guarantee, however, that the information would be available to the Department in a timely and complete manner and would give the Department the ability to evaluate substantive information for an effective technical assistance program and also provide a reliable and predictable trend analysis on the potential success of the reduction program.

2. Do not require or request the information on performance goals, reduction measures and impediments to reduction.

   This alternative would not allow for comprehensive first-hand information on reduction methods on which to base a technical assistance program and provide technology transfer, nor would it provide a mechanism for collecting statewide information to evaluate the potential for successful reduction.

3. Request, by rule, that the information on performance goals, reduction measures implemented, and impediments to reduction be reported on an optional basis.

   The information reported would not be maintained as confidential. If the reporting requirement is optional and the information reported is public record, there may be a possibility that toxics users would choose not to report the information.

4. By rule, make it a mandatory requirement to report the information on performance goals, reduction measures implemented, and impediments to reduction. This information is to be reported as an administrative convenience to the Department, and provide by rule that it shall be treated as part of the plan and annual progress report that is required to be maintained as non-public record.

This would ensure that the information is collected on a statewide basis and is available to the Department for developing and targeting an effective technical assistance program and for evaluating the problems and successes of implementing the Toxics Use Reduction and Hazardous Waste Reduction Program. This alternative is an efficient means of collecting the information. However, if the confidentiality of the reported information is challenged, it is not clear that the Department could maintain the information as confidential.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends proposing rules using Alternative 3 in combination with Alternative 1; making the additional reporting requirements optional and utilizing Department resources to go to the facilities and review plans and progress reports and collect information.

Proposing rules that allow for the additional reporting requirements to be optional and at the same time planning to physically visit facilities to review the reduction plans and progress reports will alleviate the concerns about required reporting and give the Department the ability to review implementation of the law and fine tune its technical assistance program. By making the additional reporting requirements optional, toxics users who are not concerned about confidentiality can report the information to the Department, and toxics users who are concerned will not be placed in jeopardy.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

The toxics use reduction and hazardous waste reduction proposed rules are consistent with and support Strategic Goals 2 and 3 in the Department's Strategic Plan. The proposed rules specifically relate to High Priority Number 4 for the Hazardous and Solid Waste Program. If the recommended alternative on reporting requirements is not adopted, there is a potential inconsistency with Goal 2 of the Strategic Plan, in that the Department's ability to monitor and evaluate trends in order to anticipate problems and develop problem-preventative strategies would be hindered

in the area of pollution prevention. These rules as proposed are generally consistent with agency and legislative policy. It should be noted, however, that due to a statutory oversight, the Commission's required report to the 1991 and 1993 Legislatures may not meet the expectations of the legislative assembly. It is the intent of the Department to report on the status of toxics use and hazardous waste generation using existing data. However, progress in quantities reduced will not be reported.

ISSUES FOR COMMISSION TO RESOLVE:

1. OAR 340-135-080, Additional Reporting Requirements - The Department proposes to make additional reporting voluntary.

   Should the Department proceed with the proposed rules as drafted, or should the Department propose to make the additional reporting mandatory?

2. Does the Commission have any early comments on the rules as proposed?

INTENDED FOLLOWUP ACTIONS:

a. Receive public input through public hearings and written testimony on July 9, 10, 1990.

b. Evaluate comments and review final proposed rule with Advisory Committee.

c. Prepare a report, response to public comment, and recommend rule adoption as appropriate at the August 10, 1990 Commission meeting.

Approved:

Section: _____

Division: _____

Director: _____

Report Prepared By: Jan Whitworth

Phone: 229-6434

Date Prepared: April 18, 1990

JW:b
RECY\YB9546
April 20, 1990

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY INTEROFFICE MEMORANDUM

DATE: July 27, 1990

TO: Environmental Quality Commision

FROM: Julie Schmitt

SUBJECT: Attached is written testimony received in connection with Item "O".

American Electronics Association AEA

707 13th Street, S.E. Suite 275 Salem, Oregon 97301 Telephone (503) 371-[illegible] (800) 234-0734 (Oregon only)
Telefax (503) 362-6393

July 10, 1990

Fred Hansen
Department of Environmental Quality
Hazardous and Solid Waste Division
811 SW 6th Avenue
Portland, Oregon 97204

RE: Comments on Proposed Toxics Use Reduction Rulemaking

Dear Mr. Hansen:

The Oregon Council of the American Electronics Association welcomes the opportunity to comment of the department's proposed rules for the Toxics Use Reduction and Hazardous Waste Reduction Act, HB 3515 of the 1989 Legislative Session.

Oregon/AEA has been a strong supporter of this act both during the legislative development and the advisory committee's deliberations. We are committed to being a positive force in helping to make this landmark legislation workable. AEA acknowledges the extensive effort the department staff has put into the development of these proposed rules. We believe that such effort during the drafting stage has answered many of our concerns and has resulted in a rule package that, for the most part, is an accurate reflection of the legislative mandate.

Comments on the Staff Analysis of May 25, 1990

The discussion below is provided for the sake of the record only. We believe that the department has arrived at appropriate conclusions in the proposed rules on this subject and we have no disagreement with the actual draft rules in this area.

During the advisory committee deliberations, the department expressed concern that it will not have sufficient information available to it to make an informed reporting to the 1991 and 1993 legislative sessions, as required by the Act in Section 15 (see note following ORS 465.031). It therefore developed "additional reporting requirements" and proposed to make such reporting mandatory.

The staff analysis provided to the EQC on May 25, 1990 (page 4, paragraph 2), says that this issue arose because of a "statutory oversight." We disagree. The timelines for new data to be submitted and made public record under this Act were very clearly debated and understood during the legislative deliberations. In short, Section 10 of the Act (ORS 465.024 and note following) calls for large companies

to submit toxic use and waste generation data beginning in September 1992 as part of the first annual progress report process. Small companies first submit data beginning in September 1993. The timing of these submissions is explicit in the Act. The data described in Section 10 (ORS 465.024) is the only data required to be submitted to the department.

We also disagree with the staff analysis statement (page 4, paragraph 3) that the department "clearly has a right to obtain" the additional reporting information described in section 340-135-080 of the proposed rules. We know of no written opinion from the Attorney General to support this contention. The statute explicitly limits the department to requiring only the data described in Section 10 of the Act (ORS 465.024). These limitations are clearly stated in Section 8 (4) [ORS 465.018 (4)] and Section 10 (5) [ORS 465.024 (5)] of the statute. These sections make clear that with the exception of the data required in Section 10, the reduction plans remain at the facility and are not public record.

Therefore, we believe the department staff has made the proper conclusions in its staff analysis and in the draft proposed rules that the "additional reporting requirements" in 340-135-080 should be voluntary only. Any other conclusion would have been contrary to the letter--and spirit--of the law.

We would like to observe that developing an intensive data-base approach to toxics use reduction and hazardous waste reduction was never the main intent of this Act. Rather, the focus always was upon mandating companies to perform rigorous in-house planning and for the department to develop a technical assistance program to aid industry in the planning process. The data requirements of Section 10, while an important factor in providing a legislative and public "check" on progress, should not become the overriding focus of this program.

OAR 340-135-090 Information Access and Review Procedures

We suggest that the department delete sections (1)(c) and (2)(c) from this section of the rules. As discussed above, key provisions of this act are that plans are to be retained at the facility and are not a public record. The act gives both provisions equal weight. The widespread legislative support this act received from the business community would not have occurred without this provision.

Thus it seems contradictory to this clear intent to incorporate into these proposed rules a provision allowing department staff to photocopy an entire plan and transport it back to department office files. It is insufficient to include the provision in the rules that such information copied by the department staff "shall not be considered a public record...." The Act clearly states that the plan shall also be **retained** at the facility.

We have a number of concerns about this proposed provision. Foremost is that the proposed scheme is contrary to the expressed intent of the statute. In addition, our firms have serious concerns about the confidentiality of the information contained within their reduction plans and the use to be made of such information by the department. In the legislative hearings on this bill, many parties expressed an interest that reduction plans should represent rigorous and farsighted efforts to comply with the intent of the act: to reduce the use of toxics and the generation of wastes. The intent that these plans should be written primarily by technical personnel rather than corporate attorneys was heard often. The Legislature determined that the best way to accomplish this goal was to assure firms that their plans would remain on site, subject to on-site review for conformity with the planning requirements of the act.

In meetings of the advisory committee, concern was expressed that there doesn't appear to be any sanction within Oregon law for intentional or unintentional disclosure by department staff of sensitive company information. In an industry like ours, where product cycles are so short, where time to market is essential to survival, and where corporate piracy is not unknown, even the possibility of disclosure of important internal information is a cause for grave concern.

We also have a legal concern that staff notes or photocopies of plans may not be afforded the same protection under the Public Records Law as the plans themselves. Such notes or copies do not have an explicit Public Records Law exemption in the statute. Only the actual plans are given such protection. We are not certain that the department, by rule, can make such an exemption.

The statute does contain protection for trade secrets in Section 14 (ORS 465.031). But the language in the statute was inserted only to protect those plans that may become public record as part of the enforcement scheme described in Section 9 (ORS 465.021). The trade secrets statute contained in ORS 192.501 was adopted for HB 3515 by reference. No specific trade secrets scheme was drafted for HB 3515, precisely because the interested parties contemplated that all plans would be retained at the facility and that the only time disclosure would become an issue would be in the rare instance when a firm refused after repeated warnings to comply with the law.

AEA understands the department's desire to facilitate technology transfer about reduction techniques among Oregon companies. Much success has been achieved to date through voluntary cooperation and mutual sharing of "ideas that work" among Oregon industry, trade associations, and DEQ. AEA/Oregon is committed to continuing such voluntary efforts. But we have concern that a wholesale allowance in these rules for copying of entire plans--contrary to the express intent of the statute--will not achieve our mutual aims. The department's insistence on this provision could seriously harm the widespread support for this landmark law that has existed to date.

Thank you again for the opportunity to comment on these proposed rules. Please let us know if we can clarify these comments in any way. Again, we want to commend the DEQ staff for its long hours and hard work in crafting this package and for its willingness to listen and respond to suggestions along the way.

Sincerely,

Jim Craven

Jim Craven
Government Affairs Manager

OSPIRG
The Oregon State Public Interest Research Group
1536 SE 11th Portland, Oregon 97214 (503) 231-4181, FAX: (503) 231-4007

TESTIMONY ON THE IMPLEMENTING REGULATIONS FOR THE TOXICS USE REDUCTION AND HAZARDOUS WASTE REDUCTION ACT (HB 3515)
BY
JOEL ARIO, EXECUTIVE DIRECTOR
OREGON STATE PUBLIC INTEREST RESEARCH GROUP
PRESENTED TO THE DEPARTMENT OF ENVIRONMENTAL QUALITY AT A PUBLIC HEARING IN PORTLAND, OREGON ON JULY 10, 1990

Good morning. Thank you for this opportunity to testify. My name is Joel Ario and I am the executive director of the Oregon State Public Interest Research Group. OSPIRG is a statewide consumer and environmental organization with 30,000 citizen members.

This public hearing represents an historic step in Oregon's pioneering effort to shift from an environmental approach that focuses on pollution control to one that focuses on pollution prevention. The cornerstone of the new pollution prevention approach is **toxics use reduction** -- a concept that OSPIRG began campaigning for in the summer of 1987 and that was enacted into law by the Oregon Legislature and Governor Goldschmidt in July of 1989.

Since Oregon and Massachusetts enacted the nation's first toxics use reduction laws on July 24, 1989, three other states -- Washington, Maine, and Illinois -- have enacted pollution prevention laws built around the core concept of toxics use reduction. Today, many other states, as well as the federal government, are considering pollution prevention programs. Because Oregon will be the first state to implement a toxics use reduction law, our experience is being watched closely around the country. There no longer is any question about the theory behind the Oregon law -- that it is

better to prevent pollution by reducing the industrial use of toxic chemicals at the "front end" than it is to control the pollution generated by this chemical usage at the "back end." The simple fact is that once toxic chemicals are introduced into production processes, they create a whole range of knotty problems for workers (exposures in the workplace), consumers (exposures to toxics contained in products and to toxic emissions), and the environment (all toxics used eventually end up in the environment in one form or another). Trying to "control" these problems will never be as effective as preventing them through aggressive toxics use reduction.

Pollution Prevention: From Theory to Policy

If the theory of pollution prevention is sound, there still is debate about what kind of government policies are best suited to achieve the desired results. In this context, the Oregon law represents a modest starting point. It establishes the right policy goal -- reducing industrial use of toxic chemicals -- and requires Oregon businesses to develop plans for achieving that goal in their operations. It also requires these businesses to make annual reports on the quantities of toxic chemicals being used so that the DEQ and the public can measure progress or the lack thereof. Beyond these basic requirements, however, the law relies on the "carrot" of technical assistance, rather than the "stick" of mandated reductions, to pursue the goal of pollution prevention.

This has two key implications. First, it gives Oregon companies the opportunity to demonstrate that they can achieve major reductions without more regulatory mandates. To the extent that companies produce results, they will strengthen the case for continued reliance on technical assistance. To the extent that they fail to produce results, they will face more concerted efforts to impose tough regulatory standards. My own guess is that results will be mixed, and that new regulatory mandates will be necessary to address the non-responsive businesses, as well as to get

the kinds of reductions we need in use of some of the most harmful chemicals such as CFCs.

The second implication, which has more immediate relevance for these hearings, is that the modest requirements of the Oregon law must be implemented in a manner that establishes a clear pollution prevention mandate. More specifically, the regulations must require that businesses give clear priority to use reduction over waste reduction, that the planning process be comprehensive and specific, and that toxics use data be provided in accurate and standardized form.

Use Reduction as Priority

The foundation and precedent-setting aspect of the Oregon law is the establishment of a new policy goal -- toxics use reduction. The law also establishes a second policy goal -- waste reduction -- that is not new and, in fact, has been a federal policy goal for a number of years.

The greatest obstacle to an effective pollution prevention program in Oregon is the potential for these two policy goals to be conflated in a manner that allows businesses to continue focusing on back-end waste reduction strategies when they should be shifting their focus to front-end use reduction strategies.

The proposed regulations track the statute in two respects that buttress the primacy of use reduction. First, the definition of "waste reduction" limits the concept to "recycling or other activity applied **after** hazardous waste is generated." OAR 340-135-020 (22). Unlike the more expansive definitions of waste reduction used in some other laws, this definition was carefully crafted to make "use reduction" and "waste reduction" mutually exclusive concepts.

Once this principle of mutual exclusivity is established, the regulations proceed to track the statute by requiring that reduction plans distinguish between use reduction and waste reduction options and give priority to use

reduction options. OAR 340-135-050 (2)(f) and (3)(g)(D).

These are critical provisions to ensuring the primacy of the use reduction goal. The next step will be to ensure that the translation from regulatory language to guidance manual language makes these same careful distinctions, and then that the DEQ technical assistance staff do the same in the field. Given industry's proclivity for relying on off-site recycling and other non-preventive "substitutes" for use reduction, it will take continued vigilance to maintain the primacy of use reduction.

In this regard, there is one problem with the definition of "waste reduction" in the regulations. OAR 340-135-020 (22). The last subsection of this definition, refers to reducing wastes **before** they are generated. This activity does not fit within the statutory definition of waste reduction and, therefore should be shifted to fit under the definition of use reduction.

Comprehensive and Specific Planning Process

In general, the regulations are faithful to the statute in setting out planning criteria that ensure that the planning process will be comprehensive in its evaluation of toxics used, costs of that use, and opportunities for reducing that use. The one area in which the regulations appear to narrow the statutory language is in the analyses of costs, where a specific set of cost factors is listed. OAR 340-135-050 (3)(d). A better formulation would be: "The plan shall identify the costs associated with toxics use and hazardous waste generation, including but not limited to" and then list the specific cost factors. The "environmental liability" cost should be broadened to include other types of liability (i.e., for worker and public health problems).

The regulations also handle the issue of performance goals well, which should help ensure that the planning process results in specific numeric goals for reducing use of those toxics which represent a large portion of a company's overall toxics use.

Accurate and Standardized Use Data

In order to assess whether companies are making progress in reducing their use of toxic chemicals, it is critical that companies provide accurate and standardized data on their chemical usage. The statute requires this use data for all toxic chemicals subject to performance goals. The regulations carefully track the statutory language on the issue of data reporting. And the regulations facilitate data comparisons by specifying that all data reports use pounds as the unit of measurement.

As we begin to develop a data base on toxics use (to complement the current data base on toxic emissions), we will need to refine that data base in at least two ways to facilitate comparisons among companies. First, we will need a standardized production index so that the raw use numbers can be assessed against production levels. Because we don't yet have such a standardized production index, the regulations take the next best approach, which is to encourage companies to provide their own production index. OAR 340-135-070 (3)(b). However, company-provided indexes will not be helpful if they don't include an explanation of how the index was derived. Therefore, we recommend that the following sentence be added to section on production indexes: "Toxics users who report a production index also shall provide an explanation of how that production index was derived."

The second way in which we'll need to refine the data is to break down company-wide data by production process, so that similar production processes can be compared. This issue is not addressed by the regulations, but it should be addressed by the advisory committee under its statutory charge to "identify any additional data necessary to improve the technical assistance process, to develop plans and to aid in enforcement of the plans."

Tektronix

Tektronix Inc.
Tektronix Industrial Park
P.O. Box 500
Beaverton Oregon 97077

Phone (503) 627-7111
TWX: 910-467-8708
Telex 151754

July 10, 1990

Jan Whitworth
Department of Environmental Quality
Hazardous and Solid Waste Division
811 S. W. 6th Avenue
Portland, Oregon 970204

RE: Comments on proposed Toxic Use Reduction and Hazardous Waste Reduction Rules

Dear Ms. Whitworth:

In addition to the comments submitted earlier, Tektronix would like to also submit the following comments on the Toxic Use Reduction and Hazardous Waste Reduction Rules.

OAR 340-135-050 (3) Specific Plan Requirements

This section needs to further clarify the fact that the (c) reduction assessments, and (g) feasibility analysis apply only to those toxic substances and hazardous wastes for which performance goals are required. Without this clarification, considerable effort would be required to complete the plan requirements for low priority, low volume materials, thereby delaying the implementation of reduction activities for high priority, high volume items. It was clearly the legislative intent that results be given priority over a paperwork exercise.

OAR 340-135-090 Information Access and Review Procedures

Section (f) suggests that any deficiency in a plan, however small, would result in the entire plan being submitted to the department. The user should have the ability to correct the plan prior to any requirement to submit the plan. This relates to our earlier comments concerning confidentiality of sensitive business information. It is only if the user fails to correct the initial deficiencies identified by the department that further action by the department is warranted as described in OAR 340-135-110.

Thank you for this opportunity to complete our comments. If you have any further questions please contact Tom McCue or Theresa Parrone.

Tom McCue Theresa Parrone

Tom McCue and Theresa Parrone
Tektronix, Inc.

Tektronix, Inc.
Tektronix Industrial Park
P.O. Box 500
Beaverton, Oregon 97077

Phone (503) 627-7111
TWX 910-467-8708
Telex 151754

July 9, 1990

Jan . Whitworth
Department of Environmental Quality
Hazardous and Solid Waste Division
811 S.W. 6th Avenue
Portland, Oregon 97204

RE: Comments on proposed Toxic Use Reduction and Hazardous Waste Reduction Rules

Dear Ms. Whitworth:

Thank you for the opportunity to comment on the Toxic Use Reduction and Hazardous Waste Reduction Rules. We are strong supporters of waste minimization and economical use of chemicals. We have had an active waste minimization program at Tektronix for the last 15 years and have been actively involved in this program since the first introduction of the legislation nearly two years ago. Efforts by the Department in the area of technical assistance for the prevention of pollution will be one of the most successful programs ever undertaken by Oregon.

The proposed rules amount to a great deal of work by a lot of people and are generally very good. We have only a few concerns which we wish to comment on during this public comment period. In order of importance we offer the following comments:

OAR 340-135-080 Additional Reporting Requirements

Additional reporting requirements are intended to be voluntary and assist in program development and evaluation. After internal review, the Department determined that this section exceeded statutory authority and has inserted the word "may" before each reporting requirement. We agree with this change. We propose further that the title of this section be changed to "Optional Reporting Requirements" which would better reflect the nature of the information submitted and make the reader more aware of this section is applied.

OAR 340-135-090 Information Access and Review Procedures

In 135-090 (1) (c) and (2) (c) language has been inserted which would allow any officer, employee or representative of the Department to review plans and take notes, compile data, or copy all or part of the plan. We strongly disagree that this language or any language like this should be included in the rules. This language contradicts the trade secret and confidential information provisions of the statute. Many hours were spent during negotiations at the legislature of the statutory language and during the advisory committee process on the issue of protecting sensitive production and/or business information. There is no statutory authority which would allow the Department to copy or make notes of information which is specifically protected from public record as defined in ORS 192.410 nor is it clear that information so copied remains protected.

This provision alone forces companies to require any agent, employee or representative of the Department to sign non-disclosure statements prior to viewing any reduction plan, report or supporting document. These steps and others must be taken to assure at least the individual reviewing the documents and hopefully the Department is held liable for any unauthorized disclosure of information.

Tektronix already requires visitors, vendors, sales people and consultants to sign non-disclosure agreements before entering a production area, reviewing drawing, designs or data. In light of this requirement, we may have to consider extending the non-disclosure requirement to Government agents and their representatives as well.

We recommend the entire sections of 340-135-090 (1) (c) and (2) (c) be stricken from the rules. Removing this provision from the proposed rules does not limit the information access to the Department since they may inspect any and all plans under 340-135-090 however the information is to remain in the possession of the generator. Information submitted under 340-135-080 (Additional Reporting requirements) is better suited to meet the information desires of the Department and allows the Toxics User to choose which information from the plan he/she may wish to submit.

OAR 340-135-090 Plan Location

Subsection (1) (a) of this section requires that "The complete reduction plan shall be maintained in a single location at each

facility." This requirement is unnecessary and impracticable in some cases. It is unnecessary because subsection (1) (b) of this section allows five working days to make the plan available for review. It is impractical because the volume of data necessary to produce a reduction plan for a large facility is enormous. Many larger facilities like Tektronix would find it overly burdensome to collect and maintain all documents and components of a reduction plan in one central location. In spirit, use reduction documents are meant to be living working documents which require constant checking, updating and improvement. We hope to learn more from the process of involving people in the reduction effort rather than burdening people with maintaining central or duplicate files. We recommend that OAR 340-135-090 (1) (a) and (2) (a) be modified to read "The [complete] reduction plan shall be maintained [in a single location] at each facility." and Each [complete] annual progress report shall be maintained [in a single location] at each facility.

OAR 340-135-040 (3) (b) Additions or Deletions

Additions to the list of chemical substances or wastes subject to these rules trigger any number of complex programs. Programs such as record keeping and data requirements, use assessments, feasibility studies, capital expenditure analysis and planning. We suggest two changes to this section of the rules which will insure timely implementation of these programs.

(1) Change ["at least annually"] to "no more often than annually" and;

(2) Add a new sentence which reads "Additions to section 1 or 2 of this rule must be approved by the Commission no less than 60 days prior to the year of applicability.

These changes are needed to collect data during the applicability year for planning requirement determination and plan component development.

OAR 340-135-100 Trade Secret Information

Tektronix believes the burden of proof for establishing a claim of trade secret is excessive for the user or generator. We suggest that a new section (8) be added to this section which reads:

(8) If the Department should determine that information submitted under the claim of trade secret does not meet the trade secret requirements, the Department must establish before the Commission an overwhelming reason to release the information and describe the benefit derived from releasing the information.

The remainder of Tektronix's comments are in the category of housekeeping and are as follows:

OAR 340-135-010 (d) General policy

The general policy section is not entirely part of the statute and it appears that the word "or" was intended to be included in subsection (d) to read "Methods that reduce the quantity and/or toxicity..." We recommend the word "or" be added after "and" in 340-135-010 (d).

OAR 340-135-020 Definitions

Both the definitions for Use Reduction and Waste Reduction differ from the statute. The words "other business changes" from the statute were replaced with a more restrictive "services provides". We request the statutory language be returned to the rules.

(22) "Waste Reduction" definition is incorrectly numbered and should read:

"(22) "Waste Reduction" means:

(a) Any recycling or other activity...

[(a)] (A) The reduction of total volume...

new (B) The reduction of total toxicity...

[(b)] (C) The reduction of total volume and toxicity...

[(c)] (b) On-site or off-site treatment...

[(d)] (c) Where the generation of a ...

The reference in (22) (d) is incorrect and should delete [(18) (a) through (e)] and insert (17) (a) through (f).

OAR 340-135-080

The references in (2) (a), (b), and(c) are incorrect and should delete [340-135-070] and insert 340-135-060

This concludes my comments and again, I thank you for the opportunity to provide comment. Should you have any questions about these comments or any other aspect of the rules please contact me or Theresa Parrone at 627-2677.

Respectfully,

Thomas C. McCue
Environmental Programs Manager

Theresa Parrone
Air Quality and Waste Minimization
Program Manager

cc: Frank Deaver
Jim Craven
Jim Brown

The Boeing Company
P.O. Box 3707
Seattle, WA 98124-2207

July 10, 1990
4-1240-KJT-098

BOEING

Fred Hansen, Director
Oregon Department of Environmental Quality
Office of the Director
811 S.W. Sixth Avenue
Portland, OR 97204

Subject: Comments on the Proposed Toxics Use Reduction and Hazardous Waste Reduction Rules

Dear Mr. Hansen:

Boeing appreciates the opportunity to comment on these rules. As you know, Boeing participated in the negotiations leading to the passage of the Toxics Use Reduction and Hazardous Waste Reduction Act and supported its passage. We have also monitored the Advisory Committee activities leading to the development of these proposed rules.

Boeing is a strong believer in the chemical reduction principles underlying both the legislation and the proposed rules. We recognize that good environmental management encompasses much more than the proper handling of these waste materials at the end of the manufacturing process. Boeing firmly believes that it is equally important to address raw materials and even the manufacturing processes during the beginning and intermediate stages. Boeing's belief in these principles is demonstrated by the fact that our hazardous waste production has decreased every year since 1985 on a per-hourly-employee basis. The overall reduction has declined almost 35 percent from 1985 levels

It is not surprising, then, that Boeing supports most of what is contained in the proposed rules. We are happy to say that, for the most part, the rules do a good job of maintaining the balance that was struck in the legislation between the need to promote aggressive chemical reduction plans and practices, and the parallel need of companies to be able to keep sensitive manufacturing information confidential. Accordingly, we support the department in its efforts to promulgate these rules.

Our one concern with the package involves the Department's assertion of the right to take notes from or even make copies of the toxic use reduction plans and annual progress reports during site inspections. (See Proposed Rule 340-135-090(1)(c) and (2)(c)). Although the Department is authorized to review these plans and reports during site inspections, the sole purpose of this review is to determine whether the relevant documents are in compliance with the applicable regulatory requirements. (See ORS 465.021). The most that this function requires is the completion of a checklist by the inspector indicating that each required component of the relevant document has been satisfactorily addressed. It does not require that the inspector copy down any of the substantive -- and possibly sensitive -- portions of the plans or reports, let alone make copies of the entire documents.

BOEING

Nothing in the legislation indicates any broad right on the part of the Department to take notes from or copy these plans and reports. In fact, the bill specifically contemplates that both the plans and the reports are to be kept at the facilities and are not to constitute public records. (See ORS 465.018(4) and 465.024(5)). The fact that these documents are to be kept at the facilities will be rendered a nullity if inspectors are free to make complete copies that can then be taken back to their offices.

We are aware that the proposed rules purport to remove these notes or photocopies from the realm of "public records" under ORS 192.410. (See Proposed Rule 340-135-090(1)(c) and (2)(c)). This, however, does not constitute sufficient protection. First, we are not sure that the Department has in place adequate mechanisms to ensure that sensitive materials will be adequately safeguarded. More importantly, we have grave reservations about whether the Department has the legal authority to create a regulatory exception to a statutory requirement of the Public Records Law.

Boeing is not insensitive to the Department's desire to facilitate information sharing under this new program. The clear intent of the legislation, however, was that this information be shared on a voluntary basis. We do not believe that the fact that the bill requires the Department to report back to the legislature in 1991 and 1993 constitutes evidence of any broad authority on the Department's part to require information sharing.

BOEING

We urge the Department to limit its authority to reviewing the plans and reports on-site, and perhaps compiling a checklist indicating that each component has been addressed. This will give the Department the information that it needs to report back to the legislature on the general adequacy of these plans and their implementation. Alternatively, we urge the Department to seek a legislative clarification in the next session indicating that any materials obtained during these inspections are not to be considered "public records." We further point out that, under the current scheme, our only recourse will be to aggressively assert "trade secret" protection whenever the Department seeks to take notes from or copy any sensitive materials during these inspections.

Again, we appreciate this opportunity for comment. We also appreciate the obvious effort put forth by your staff in drafting these proposed rules. We urge the Department to eliminate the problem addressed above. In our view, this step would render the rules as sound as the underlying legislation and would further Oregon's position in the forefront on this very important issue. If any further opportunity for input is made available to address these rules or comments on or revisions to the rules, we would appreciate being informed of that opportunity through our counsel, Craig Johnston, at (503) 295-4400.

Sincerely,

Kirk J. Thomson, Manager
Environmental Affairs

NORTHWEST
PULP&PAPER

July 9, 1990

Jan Whitworth
Department of Environmental Quality
811 S. W. Sixth Avenue
Portland, OR 97204

Dear Ms. Whitworth:

Enclosed are the comments of the Northwest Pulp and Paper Association on your proposed rules for toxics use and waste reduction. NWPPA appreciates the opportunity to comment on DEQ's rules.

NWPPA was established in 1950 to represent pulp, paper and pulping chemical manufacturers on environmental and energy issues. Our Oregon members include: James River, Boise Cascade, Georgia-Pacific, Weyerhaeuser, and Pope & Talbot.

Sincerely,

Douglas L Morrison

Douglas Morrison
Environmental Counsel

NORTHWEST PULP & PAPER ASSOCIATION 1300 114TH AVENUE SOUTHEAST, SUITE 110 BELLEVUE, WASHINGTON 98004 (206) 455-1323

NORTHWEST PULP AND PAPER ASSOCIATION
COMMENTS ON DEQ
TOXIC USE AND WASTE REDUCTION RULES

July 9, 1990

OAR 340-135-020. Add a new definition of "waste" with the same meaning as the term "hazardous waste" defined in 020 (8). Alternatively, preface the word "waste" with "hazardous" wherever it appears in the rule.

OAR 340-135-020 (12). "Reclamation" is a noun normally referring to an act or process of reclaiming. As used in the proposed rule, the definition as a "material" is not appropriate. Is this definition necessary at all?

OAR 340-135-040 (3). The list of "criteria" in (3)(a) are not really criteria in that they do not present standards or tests. If the volume of a substance unique to Oregon was proportionately high, would this warrant addition or subtraction? If the volume was low but the toxicity very high? Would lack of disposal capacity warrant listing? If so, would excess disposal capacity warrant delisting? These factors must be further defined to provide a useful test for listing or delisting.

The language of (3)(b) contains two different and distinct requirements for changes to Appendix A: One requires ("shall") the EQC to update the list "at least annually." The other appears to allow updates "as needed." These seem to be mutually exclusive. The language "at least annually" would allow updates more frequently than annually, but not to exceed one year. We recommend striking the phrase "as needed" and requiring annual updates based on the July 1 reporting date for the SARA Title III § 313 Toxics Release Inventory. Thus, rulemaking would be timed to ensure that Toxics Use and Waste Reduction Plans or Progress Reports would cover the same substances as were reported on the TRI for that calendar year. Consistency between the two programs would make administration of reporting easier for facilities.

OAR 340-135-050 (2)(c). Toxics Use and Waste Reduction has been ongoing for many pulp and paper manufacturers for some years. A very important and critical element of a Plan for future years is consideration of actions taken to date. This element must be more than a "preface" to the initial plan. Indeed, a discussion of past achievements should be a significant part of the actual plan. Otherwise those facilities that have made advances in reduction might be penalized. DEQ should construct the rule to amplify and reward the good behavior of past efforts to reduce chemical usage where warranted.

The impediments facing facilities also should be accorded greater standing as a critical element of the plan instead of mere mention in a preface. Probably the biggest threshold to success is opening up new alternatives to reduction. Section (2)(g) incorporates a discussion of why viable alternatives were not implemented. As much attention should be focussed on how other alternatives could be developed.

OAR 340-135-050 (3). Rather than simply recite the statutory language, DEQ's proposed rule should in more detail outline what a plan should look like. While the statute's basic requirements should be reflected in the guidelines, more is needed. For example, the statute requires the guidelines (i.e., the rules) to include requirements that a plan discuss the scope and objectives of the planning process. In your proposed rule (guideline), you state only that the discussion of scope and objectives in a plan shall include ways to insure that unnecessary toxics are not used, or wastes not generated.

In our opinion, the scope of a plan covers all technically and economically practicable alternatives to reducing toxics use and hazardous waste generation. The objective of the plan is to foster and institutionalize thinking in terms of reduction. The proposed rule has requirements that would satisfy the requirements of 050(3)(b) in 050(c) and (e). This is unnecessary duplication. The rules should include a requirement that plans include a statement of scope and a statement of objectives, based on the intentions of the facility under their circumstances. NWPPA would be happy to provide draft language if requested.

The description of several of the plan elements allows consideration of "any other factors as needed" (e.g., 050(g)(F)) while several do not (e.g., 050(d)). Is the lack of open ended language intended to preclude discussion of other items deemed important to the facility?

OAR 340-135-050(3)(b)(A). Insert the word "hazardous" so that the sentence reads: "Evaluation of data on the types, amount and hazardous constituents of toxic substances used and hazardous waste streams generated. See the comment above on alternatives to 020(8).

OAR 340-135-050(4). DEQ should publish as part of the proposed rule the form on which notification is to be provided.

OAR 340-135-060(2). Performance goals should not be limited to being expressed in terms of weight only. By implication, toxics use reduction may include the substitution of one chemical of less toxicity, but in greater weight or volume for another chemical. By requiring that performance goals be stated only in terms of quantity, you are significantly limiting the types of reduction defined by 020(17). For example, the use of chlorine dioxide is increasing in the pulp and paper industry, while the use of chlorine is decreasing. A performance goal for chlorine dioxide (substance that is more acutely toxic than chlorine) might in fact be an increase in quanitity and toxicity with a net reduction in total output. While this may be explained in terms of why a performance goal may not be warranted for chlorine dioxide, the restriction to expression of goals by weight is unnecessary.

OAR 340-135-080. Any facility may chose to make its Plans and Progress Reports, or any portion thereof, public. There is no need for this section. Moreover, the section heading using the term "requirements" is misleading.

OAR 340-135-090(1)(g). DEQ should state in the proposed rule that DEQ shall submit in writing to the facility its reasons for finding the plan inadequate as it is required to do so under (1)(e).

OAR 340-135-090(1)(h). Add the underlined language and change the reference as follows: "If no plan is completed or submitted within the time frame specified by the Department under section (1)~~(e)~~(f) of this rule, the Department may take action . . .

OAR 340-135-090(2)(h). Make the corresponding change as above for (1)(h).

OAR 340-135 - Appendix A. Sodium Hydroxide should not appear on the list of toxics as it was delisted by final rule on December 14, 1989. 54 Fed. Reg. 51298. DEQ should, just prior to final adoption of this rule, make a thorough review of the federally established list and recent changes to avoid the need for an additional rulemaking by DEQ in the near term.

OREGON ENVIRONMENTAL COUNCIL
2637 S.W. Water Avenue, Portland, Oregon 97201
Phone: 503/222-1963

COMMENTS SUBMITTED BY
THE OREGON ENVIRONMENTAL COUNCIL
ON TOXICS USE REDUCTION AND HAZARDOUS WASTE REDUCTION RULES
OAR 340-135-000 to 110

Our review of these rules indicates that, in most instances, they mirror the relevant statute as set forth in ORS 465.003 to .037. Where these rules supplement the statute with substantive policy rather than procedural detail, they do so in ways which the Oregon Environmental Council finds it can support. For example, OAR 340-135-010 (a) and (b) establish policies relevant to reduction priorities and cross-media shifts, and are excellent points to make.

Regarding the question of OAR 340-135-080 which proposes to make additional reporting requirements voluntary, OEC can support this approach in the spirit of cooperating to implement a new program which is intended to achieve environmental gains rather than increased burdens on the regulated community.

Because program goals are primary, however, OEC would like to see the Department add language to this section which requires that the Department specifically review this aspect of the program in its reports to the Legislature and public, and make recommendations regarding the need to make this element mandatory if the desired goals of data collection and technical assistance evaluation are not being reached because too few reports are being submitted on a voluntary basis.

Thank you for the opportunity to submit these brief comments.

Sincerely yours,

Jean R. Cameron

Jean R. Cameron
Associate Director
July 5, 1990

Hickory Springs

July 9, 1990

Ms. Jan Whitworth
Department of Environmental Quality
Hazardous and Solid Waste Division
811 S.W. 6th Avenue
Portland, Oregon 97204

RE: Response to proposed OAR 340-135-000 through 340-135-110

Dear Ms. Whitworth;

Thank you for the opportunity to respond to proposed administrative requirements for Toxics Use Reduction and Hazardous Waste Reduction.

As Oregon's only manufacturer of flexible polyurethane foam, Hickory Springs serves as the state's best vendor to the furniture, bedding, packaging and carpet installation industries. Because our product is relatively light weight in comparison to its volume, it is costly to ship. Local raw material sources are extremely important to our customer base.

As part of a larger, national corporation and as a founding member of the Polyurethane Foam Association, we are well aware of the concerns involved in handing toxic materials. Hickory Springs has over 30 years experience in processing these materials safely and responsibly with minimal problems.

We therefore are most concerned about any new regulations that would restrict our use of several listed materials and offer the following objections and observations for your consideration.

1) While the intent of these proposed regulations is fairly obvious, there is an enormous amount of vagueness concerning implementation and definition, creating numerous questions which may prove to be troublesome later. For instance; What constitutes a reduction plan? What percentage of toxic use reduction is required? Will toxic chemicals be categorized and prioritized, or all treated in the same manner regardless of the degree of toxicity? What constitutes a deficient reduction plan?

   Without information of this type, responding to this proposed regulation is difficult. When dealing with such a broad list of "toxic substances", generalization and simplification do not serve the best interests of the public or of industry.

Hickory Springs
3900 N.E. 158th Ave. • Portland, OR 97230 • 503/255-5850
OR WATS 800/642-2446 • Outside OR 800/624-3626

Ms. Jan Whitworth
Department of Environmental Quality
Hazardous and Solid Waste Division

RE: Response to proposed OAR 340-135-000 through 340-135-110

We therefore request further engineering by the state to address each of Oregon's industries' specific needs and requirements with regard to toxic substances. Additional opportunity for public input and comment, before these regulations are put into effect, is also requested.

2) We see the proposed "voluntary" record keeping requirements as onerous and essentially duplicitous in light of the federal reporting already specified by SARA Title III. Additional man power would be necessary to compile and maintain these records, adding significantly to the cost of our commodity. We suggest, instead, that duplicate copies of SARA Title III reports filed with the state be accepted as adequate reporting.

3) Listed amongst your toxic substances are toluene-2,4- diisocyanate (CAS #91-09-07). TDI, as these two chemicals are commonly called, is the building block of flexible polyurethane foam. Our entire industry would cease to exist without TDI- there are absolutely no viable alternatives to TDI. It is our hope that the economy of Oregon would grow to the point where more TDI-based products are made in-state and less brought in from out-of-state, adding to the state's total production output.

The only way to reduce our use of TDI would be to reduce foam production or bring finished foam in from out of state at great expense, causing considerable economic stress for the furniture, bedding and packaging industries within the state.

Flexible polyurethane foam is completely harmless to the environment. If, through some unforeseen accident, TDI were spilled upon the ground, this liquid would react with moisture in the soil and become urea, a non-toxic material.

Flexible polyurethane foam is totally recyclable. Hickory Springs in Portland practices this recycling process by reworking scrap and returned foam into rebond carpet underlay.

Although covered vaguely in section "OAR 340-135-060 Performance Goals; section (3)," this exceptions criteria should be broadened to specifically include materials, such as TDI, which are used to produce non-toxic materials with NO HAZARDOUS WASTE as byproduct. We request that no toxic substance reduction plan or reporting be required for toxic substances used to manufacture non-toxic products, such as flexible polyurethane foam.

4) Quite a few flexible polyurethane foam types require the use of an auxiliary blowing agent. These products are entirely emitted to the atmosphere. Traditionally Freon-II and methylene chloride have been used as auxiliary blowing agents. Just over one year ago, Hickory Springs was the first (among 30 competitors) to announce the elimination of CFCs from all its foam formulations. To accomplish this, we resorted to methylene chloride and 1,1,1 trichloroethane as substitutes. Unfortunately both are listed toxic substances (CAS #75-09-2 and #71-55-6, respectively) in Oregon.

In two states- North Carolina and Arkansas- we have been successful in switching to acetone (CAS #67-64-1) to replace or reduce methylene chloride and 1,1,1 trichloroethane use. EPA does not view acetone as a toxic substance. In fact, based on our studies and that of the internationally reknown reactivity scientist Dr. Atkinson ("Kinetics and Mechanisms of the Gas-Phase Reaction of the Hydroxyl Radical with Organic Compounds under Atmospheric Conditions," Chemistry Review 85:69-201), acetone has been found to be less photochemically reactive than ethane, making it eligible for inclusion on EPA's negligible reactivity list of potential smog-causing chemicals. Acetone has a relatively high employee exposure level, does not deplete the ozone layer, is non-carcinogenic and does not contribute to acid rain. Acetone also is more efficient than methylene chloride and 1,1,1 trichloroethane, providing comparative reduction in total emission by 40% and 60%, respectively.

Because of acetone's many advantages, we are currently working with EPA, as well as South Caost Air quality Management District, in regard to expanding the use of acetone, as a new auxiliary blowing agent, throughout the domestic foam industry.

At this time, acetone provides the best alternative to chlorofluorocarbons, methylene chloride, 1,1,1 trichloroethane and even the promised HCFCs. However, under the requirements of this toxic reduction plan, acetone's use in Oregon would be questionable and would require plans for use reduction.

We request that the state take into consideration the reduction of toxic use via substitution with less toxic substances such as acetone, especially when total emission reduction will be achieved.

At some point, toxic reduction reaches its bottom limit. Zero use will not be possible for all chemicals and all uses. What then? Will manufacturing plants be forced to pack up and move to another state, or across the northern border?

While well-intentioned, OAR 340-135-000 throught OAR 340-135-110 is cumbersome, unrealistic, unclear and completely impractical for Hickory Springs. Again, the proposed regulations' implied vagueness must be viewed by industry in worse-case scenarios. Perhaps we are over-reacting or unnecessarily worried. But until the details of plans and intended action are spelled out, these proposed regulations will be considered part of the problem rather than part of the solution.

We suggest similar goals for Oregon's toxic reduction can be obtained in this environmentally sensitive area which comply more specifically with Sara Title III guidelines and include industry concerns, many voiced herein.

Thank you for considering our comments. We would be happy to expound further upon them (especially in regard to acetone) upon your request.

Sincerely,

Bobby Bush, Jr.
General Manager

BBjr/drb

BLOUNT, INC
OREGON CUTTING SYSTEMS DIVISION
PO BOX 22127
4909 SE INTERNATIONAL WAY
PORTLAND OR 97222 0080
503 653 8881
FAX 503 653 4201

71288-05056

July 10, 1990

BLOUNT

Mr. Fred Hansen
Director
Department of Environmental Quality
811 S.W. Sixth Avenue
Portland, Oregon 97204

Re: Comments on Proposed Toxic Used Reduction Rulemaking

Dear Mr. Hansen:

The Oregon Cutting Systems Division of Blount, Inc. (OCS) appreciates the opportunity to comment on the Proposed Toxic Used Reduction and Hazardous Waste Reduction Rules. OCS is a strong believer in the chemical reduction principals underlying both the legislative and proposed rules. We recognize that good environmental management encompasses more than proper handling of these waste materials at the end of the manufacturing process.

OCS firmly believes that it is equally important to address raw materials and the manufacturing processes during the beginning and intermedia stages. OCS's belief in these principals has led it to decrease the amount of its hazardous waste production over the last several years. Therefore, it is not surprising that OCS supports most of what is contained in the proposed rules. For the most part, the rules maintain the recent balance which was struck in the legislature between the need to promote aggressive chemical reduction plans and practices, and the parallel need of companies to be able to keep sensitive manufacturing information confidential. Accordingly, OCS supports the Department in its efforts to promulgate these regulations.

Nevertheless, OCS is concerned with provisions within the proposed rule which involve the Department's assertion of a right to take notes from or even make copies of the toxic use reduction plans and annual progress reports during site inspections (See, Proposed OAR 340-135-090(1)(c) and (2)(c)). Although the Department is authorized to review these plans and reports during site inspections, the "sole" purpose of the review, pursuant to

ORS 465.021(4), is to determine "whether the plan or progress report is complete and prepared in accordance with ORS 465.015." The most this function requires is the completion of a checklist by the inspector indicating that each required component of the relevant document has been satisfactorily addressed. It does not require the inspector to copy down any of the substantive--and possibly sensitive--portions of the plans or reports, let alone make copies of the entire document.

Nothing in the legislation indicates any broad right on the part of the Department to take notes from or copy these plans and reports. In fact, the bill specifically contemplates that both the plans and the reports are to be kept at the facility and do not constitute public records (See, ORS 465.018(4) and 465.024(5)). The fact that these documents are to be kept at the facility will be rendered a nullity if inspectors are free to make complete copies that can then be taken back to their offices and potentially made available to the public.

OCS is aware that the proposed rules purport to remove the notes or photocopies from the realm of "public records" under ORS 192.410 (See, proposed OAR 304-135-090(1)(c) and (2)(c)). Unfortunately, this does not provide sufficient protection of these sensitive documents. First of all, we are not sure that the Department has in place adequate mechanisms to ensure that sensitive materials will be adequately safeguarded. More importantly, we have grave reservations whether the Department has the legal authority to create a regulatory exemption to the statutory requirements of the Public Records Law.

OCS is not insensitive to the Department's desire to facilitate information sharing under this new program. However, the clear intent of the legislation was that this information be shared on a voluntary basis. Furthermore, we do not believe that the fact the bill requires the Department to report back to the Legislature in 1991 and 1993 constitutes evidence of any broad authority to the Department to require information sharing.

Through Associate Oregon Industries and other trade associations, the Oregon industrial community has requested the Department to obtain an Attorney General's written opinion regarding their authority to obtain copies of these plans and reports during an inspection. The Department asserts that the Attorney General says adequate authority exists to allow the Department to copy these reports and plans. However, to the best of OCS's knowledge, any opinion which the Department has received from the Attorney General's office is at best, oral and there is no written document which interested parties can review to

ascertain the sufficiency for the legal reasoning supporting such an opinion.

Therefore, we urge the Department to limit its authority to reviewing the plans and reports on-site, and perhaps compiling a checklist indicating that each component has been addressed. This will give the Department the information that it needs to report back to the Legislature on the general adequacy of these plans and their implementation. We would further point out that under the current scheme, our only recourse will be to aggressively assert "trade secret" protection whenever the Department seeks to take notes from or copy any sensitive materials during these inspections. While we are reluctant to undertake such actions, we believe they may be vital to the on-going viability of our company and the maintenance of sensitive corporate information.

OCS is also concerned that the provisions of proposed OAR 340-135-050(3)(c) relating to the specific plan requirements for reduction assessments and (3)(g) relating to specific plan requirement for feasibility analysis only include those chemicals subject to the performance school requirements of proposed OAR 340-135-060(1)(a). Should either the scope of the reduction assessment or feasibility analysis extend beyond those chemicals specifically addressed in the performance goals, the plan will become extremely onerous and unwielding.

In addition to the comments, specifically set forth herein, OCS adopts, by reference, comments previously received by the Department by Tom Donaca, Associated Oregon Industries; Jim Craven, American Electronic Association; Tom McCue, Tektronix; and Kirk Thomson; The Boeing Company.

OCS once again wants to thank the Department for the opportunity to comment on these proposed rules. Please let us know if we can clarify these comments in any way. Again, we commend the DEQ staff on its long hours and hard work in crafting this package and forth willingness to listen and respond to suggestions along the way.

Sincerely

Diane g. Stockton

cc: Jan Whitworth, DEQ

cl\ocsd\hansen-al.001

DAVE FROHNMAYER
ATTORNEY GENERAL

JAMES E. MOUNTAIN, JR.
DEPUTY ATTORNEY GENERAL

DEPARTMENT OF JUSTICE

PORTLAND OFFICE
1515 SW 5th Avenue
Suite 410
Portland, OR 97201
Telephone: (503) 229-5725
FAX: (503) 229-5120

MEMORANDUM

DATE: November 20, 1989

TO: Jan Whitworth
Department of Environmental Quality

FROM: Larry Edelman LE
Assistant Attorney General

SUBJECT: Toxics Use Reduction and Hazardous Waste Reduction Act

You requested informal advice concerning several issues regarding implementation of the Oregon Toxics Use Reduction and Hazardous Waste Reduction Act (Sections 2-16 of H.B. 3515). Your questions are restated below, followed by discussion. The Act is referred to herein as the Toxics Reduction Act.

QUESTION I.

Under Section 5(4) of the Toxics Reduction Act, enforcement and compliance inspections cannot be tied to or result from technical assistance. Does this apply to all DEQ regulatory programs, just RCRA, or only enforcement of the Toxics Reduction Act. What is the Department obligated to do or not do to meet the intent of the section?

DISCUSSION

Section 5(4) of the Toxics Reduction Act states:

"Technical assistance services provided under this section shall not result in inspections or other enforcement actions unless there is

> reasonable cause to believe there exists a clear and immediate danger to the public health and safety or to the environment. The commission may develop rules to carry out the intent of this subsection."

A literal reading of the statutory language leads to the conclusion that violations of any Oregon environmental laws identified by DEQ employees or representatives while providing technical assistance at a facility can not be addressed through an enforcement action unless independently discovered by another section of the DEQ, another state agency, or there is reasonable cause to believe the violations pose a clear and immediate danger to health, safety, or the environment.

An examination of the legislative history indicates that the clear legislative intent of Section 5(4) was to encourage participation by businesses in solicitation of toxics reduction technical assistance without fear of subjecting themselves to penalties and enforcement actions as a result of their participation. The legislature did not want affected businesses to run the risk of hanging themselves by inviting a governmental official to their facilities to provide technical assistance. (As we know so well, many businesses are all too skeptical of the cheerful salutation "Hi, I'm from the government. I'm here to help you"). The legislature wanted the technical assistance program to be carried out <u>separately</u> from enforcement by <u>different</u> DEQ employes except in the case of clear and immediate danger. Testimony of Representative Keisling, Chair of the House Committee on Environment and Energy, April 19, 1989; May 1, 1989.

It appears also from the wording of the statute and the legislative history that the terms "other enforcement actions" refer at least to hazardous waste violations and probably to all DEQ administered environmental laws. <u>See</u> Minutes of Testimony before the House Committee on Environment and Energy Subcommitte on Toxic Use Recution, April 28, 1989.

<u>QUESTION II</u>

> In Section 5 of the Act, the terms "clear and immediate danger" are used. Should we, or can we, define these terms in the regulations?

DISCUSSION

It would be best to define by rule the parameters for determining what may constitute a "clear and immediate danger" warranting an enforcement action resulting from technical assistance. These and similar terms such as "imminent and substantial" have been construed by several courts.

The term "clear," for example, is generally held to mean plain, evident, free from doubt. Rivas v. U.S., 368 F2d 703, 710 (9th Cir).

"Immediate danger" is often held to mean a danger which is reasonably certain to occur if the situation is not changed. In most legal contexts it does not generally mean instantaneous, and is, therefore, more analogous to the term "imminent." Courts have construed an "imminent endangerment" to be one where there is a substantial likelihood that serious harm may be experienced within the time frame necessary for the government to pursue an enforcement action. Imminent hazards are not limited to crisis or emergency situations. Love v. Thomas, 858 F2d 1347 (9th Cir 1988); U.S. v. Reilly Tar & Chemical Corp., 546 F Supp 1100 (1982).

The legislative history of the Toxics Reduction Act indicates that clear and immediate danger was used in the sense of "serious":

> " . . . I think the intent of that provision is that if DEQ does observe some serious violations, for example, leaking drums, during the process of one of these technical assistance programs, that is the exception from the fact that nothing that's seen during these inspections can lead to enforcement action, and I believe that in that situation DEQ is attempting to preserve the right to enforce the RCRA regulations or any other regulations." Testimony of Craig Johnston on behalf of Boeing before the House Committee on Environment and Energy Subcommittee on Toxic Use Reduction, April 28, 1989.

It therefore appears that the EQC has considerable latitude to narratively define clear and immediate danger to effect the intent of the legislation.

QUESTION III.

Do we have the authority to have plans and annual reports submitted to us? Can we take them from the facility back to our office for review?

DISCUSSION

The Department cannot require submission of the annual reports or plans. Section 8 specifies that the plans are to be retained at the facility and are not public records. The director, or any designated employe, is to have access to inspect the plans. Section 9(5) provides that the annual progress reports shall be retained at the facility and shall not be public records. Any officer, employe, or representative of the Department is to have access to the reports at all reasonable times.

The Department could make copies of the plans and reports if those copies can be maintained as confidential by the Department in accordance with the statute. I see no legal reason why confidentiality of copies obtained by the Department could not be maintained given the legislative intent. The Department can not require that a facility allow the Department to remove the original plans or reports from the facility for review. Moreover, the Department should not engage in that practice even where the documents are voluntarily provided unless a copy is retained by the facility. There is an obvious risk of loss or destruction where original documents are removed from the facility.

QUESTION IV.

Is the general authority requiring plans and annual reports something that would apply to future generators and toxic users or only those that are required to meet 1991 and 1992 deadlines?

DISCUSSION

The statute clearly contemplates an ongoing toxics use and hazardous waste reduction program. While it does not specifically address future generators, they are certainly covered under the statutory scheme. Section 8, paragraph 6 provides that a facility shall determine whether it is required

to complete a plan based on its toxic use and waste status as of the calendar year ending December 31 of the year immediately preceeding the September 1 reporting deadline.[1] This is intended to be an ongoing process whereby December 31, 1990 begins the program for all existing facilities. Thereafter, facilities not initially subject to plans would be required to make annual determinations of their status as of December 31, each year.

The EQC should clarify the application of the Act to future toxics users and generators through rulemaking as part of Section 7 guideline rules and/or annual reporting rules.

#9210H/aa

---

[1] Technically, there is no "reporting" deadline for the plans. Rather, there is a requirement to notify the Department. The statute's use of the term "reporting" may be confusing given the annual progress reporting requirement in Section 11. The regulations should clarify that a facility's status is to be determined annually beginning December 31, 1990. Plans will be due the following September, except for small quantity generators as of December 31, 1990, who will have until September 1, 1992 to prepare a plan.

NEIL GOLDSCHMIDT
GOVERNOR

Environmental Quality Commission

811 SW SIXTH AVENUE, PORTLAND, OR 97204 PHONE (503) 229-5696

REQUEST FOR EQC ACTION

Meeting Date: August 10, 1990
Agenda Item: P
Division: HSW
Section: Waste Reduction

SUBJECT:

Used Oil/Road Oiling Rules (SB 166)

PURPOSE:

Set standards for the use of used oil for dust suppression, as an herbicide, or other direct uses in the environment.

ACTION REQUESTED:

___ Work Session Discussion
- ___ General Program Background
- ___ Potential Strategy, Policy, or Rules
- ___ Agenda Item ___ for Current Meeting
- ___ Other: (specify)

___ Authorize Rulemaking Hearing
_x_ Adopt Rules
- Proposed Rules — Attachment A
- Rulemaking Statements — Attachment B
- Fiscal and Economic Impact Statement — Attachment B
- Public Notice — Attachment B

___ Issue a Contested Case Order
___ Approve a Stipulated Order
___ Enter an Order
- Proposed Order — Attachment ___

___ Approve Department Recommendation
- ___ Variance Request — Attachment ___
- ___ Exception to Rule — Attachment ___
- ___ Informational Report — Attachment ___
- ___ Other: (specify) — Attachment ___

DESCRIPTION OF REQUESTED ACTION:

Adoption is requested of proposed rules to regulate the direct application of used oil in the environment. These rules are to implement the requirements of Senate Bill (SB) 166 (Chapter 268, Oregon Laws 1989). SB 166 was introduced in the Oregon Legislature at the request of the Department of Environmental Quality (Department).

SB 166 gives the Environmental Quality Commission (EQC, Commission) broad authority to adopt rules and issue orders relating to the use and management of used oil but specifically requires the Commission to adopt rules relating to dust control no later than one year after the October 2, 1989 effective date of the Act. The rules proposed here relate mainly to dust suppression.

The proposed rules explicitly prohibit application of used oil as a dust suppressant or pesticide, or otherwise spreading used oil directly in the environment, if the level of lead or other contaminants exceeds the levels set as standards in the rules, or if the used oil has not been tested. As indicated at the April 6, 1990 EQC meeting, the Department has modified the proposed standards to take into account the levels of toxic compounds that would cause a liquid to be considered a characteristic hazardous waste under the new federal Toxicity Characteristic Leaching Procedure (TCLP) Rule (40 CFR 261.24 as amended March 1990). The heavy metals and organic compounds for which standards are proposed here are the metals and compounds identified by the Environmental Protection Agency as contaminants of concern for used oil, and by the Department as contaminants frequently found in used oil.

Almost all used oil from automotive sources contains sufficient amounts of benzene and lead to be classified as hazardous waste under the new federal TCLP rule. Used oil is not regulated as hazardous waste under either federal or EQC rules if it is recycled into lubricating oil or is burned for energy recovery. If, however, used oil is disposed of or "used in a manner constituting disposal" (see 40 CFR 266.20) the oil is regulated as hazardous waste. Thus, implicitly under federal rules and explicitly under these proposed rules, almost all automotive oil will be prohibited from use as a dust suppressant.

SB 166 contains an exclusion related to people who apply their own used oil for dust control on their own property, or on immediately adjacent property. Under SB 166, the Commission cannot regulate this specific application of used oil any more strictly than it is regulated under federal law or rules. The proposed rules therefore do not apply to

persons who use their own used oil on their own property or immediately adjacent property. The phrase "immediately adjacent to" was not defined in SB 166. The Department is proposing a definition for this phrase that would limit the application of used oil under this exemption to within 300 feet of the property owned by the person who generated the oil. The rule language also includes a clarification that for the exemption to apply, written permission from the landowner is required in the case where the generator leases the property and in the case where the generator is located on adjacent property. In the case of a person using their own oil on a city or county road in front of their house, the person must receive written permission from the city or county for the exemption to apply.

SB 166 also provides for civil penalties not to exceed $10,000 per occurrence for violation of used oil rules or orders. Amendments are proposed to OAR 340 Division 12 (enforcement rules) that would classify the spreading of more than 50 gallons of untested used oil or any amount of hazardous waste-mixed used oil as a Class 1 violation, failure to notify as a Class 2 violation, and other minor violations as Class 3 violations.

AUTHORITY/NEED FOR ACTION:

x	Required by Statute: SB 166 (ORS 468.869) Enactment Date: 1989 session	Attachment ___
___	Statutory Authority: _____	Attachment ___
___	Pursuant to Rule: _____	Attachment ___
x	Pursuant to Federal Law/Rule: 40 CFR 266.23	Attachment ___
___	Other:	Attachment ___
x	Time Constraints: (explain) Rules related to dust suppression are required by statute to be adopted no later than October 1990.	

DEVELOPMENTAL BACKGROUND:

___	Advisory Committee Report/Recommendation	Attachment ___
x	Hearing Officer's Report/Recommendations	Attachment C
___	Response to Testimony/Comments	Attachment ___
x	Prior EQC Agenda Items: (list)	Attachment D
___	Other Related Reports/Rules/Statutes:	Attachment ___
___	Supplemental Background Information	Attachment ___

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

Public hearings were held May 23, 1990 in Portland and May 25, 1990 in Pendleton to receive public comments on the proposed rules. Notice of the meetings was published in the Secretary of State's bulletin and mailed directly to 475 potentially interested persons, including used oil handlers, county roadmasters, service stations, and others. Attendance at the hearings was sparse, and consisted of a single radio newsperson at the Portland hearing, and a representative of the Umatilla County Road Department at the Pendleton hearing. No formal testimony was received at either hearing. The only written testimony received was from the Oregon Environmental Council supporting the rule.

The Department believes that attendance at the hearings was low because most affected people are under the impression that the issue of road oiling was settled with passage of SB 166 during the 1989 session, or else realize that the adoption of the new federal "toxicity characteristic" rule effectively eliminates the legal use of used oil for dust control. The Department is aware of only a few small companies that still spread used oil for dust control. These companies have indicated to the Department that they will discontinue applying used oil for dust control when these proposed rules go into effect.

PROGRAM CONSIDERATIONS:

The Department intends to promote proper management of used oil by service stations and others through articles in Department newsletters such as Beyond Waste, Tankline, and the Vehicle Inspection Program newsletter, as well as press releases to trade newsletters. Enforcement would be done using existing Department mechanisms such as hazardous waste generator inspections and responses to complaints.

The Department believes that few if any businesses or individuals will notify the Department of the intent to test and use used oil for dust suppression, since most used oil will fail to meet the proposed standards and since the liability in spreading used oil is high. Therefore, the Department believes that minor staff resources will be required to process reports and other required paperwork. A significant number of complaints may arise involving de minimus quantities, where a neighbor complains that a person has dumped a gallon or so of used oil on a property boundary or on the road in front of their house. Carrying out a full investigation and formal enforcement response in these de minimus cases could divert significant resources from other pressing enforcement issues. Therefore in cases that involve

only a few gallons of oil generated by households (that may not be aware of these rules), the Department intends to, as resources allow, simply notify the alleged violator of the used oil rules and provide information on the proper way to recycle used oil. The Department will carry out a more complete investigation if complaints of improper disposal continue after the notification.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

No new alternatives have been identified by the public or considered by the Department since hearings on the proposed rules were authorized at the April 6, 1990 EQC meeting.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends adoption of the proposed rules. These rules, if adopted, could significantly reduce the likelihood of damage to the environment or threat to public safety caused by spreading contaminated oil in the environment. The Department believes in particular that the strict testing requirement of the proposed rules is necessary for ensuring that contaminated oil is not spread in the environment. Testing of used oil by the Environmental Protection Agency (EPA) and others has turned up significant amounts of chlorinated solvents, polychlorinated biphenyls (PCBs), heavy metals, and other hazardous materials in used oil. Road oiling with dioxin-contaminated oil was responsible for one of the most famous Superfund cleanup sites - the entire town of Times Beach, Missouri. A serious incident was luckily avoided in Jackson County, Oregon in 1984, when an EPA investigation found 40,000 parts per million of PCBs in a tank holding used oil intended for road oiling.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

Rule adoption relating to dust control is required by SB 166 (Chapter 268, Oregon Laws 1989), a bill passed at the request of the Department.

ISSUES FOR COMMISSION TO RESOLVE:

No new issues have been identified since the Commission authorized public hearings on the rules at the April 6, 1990 EQC meeting.

INTENDED FOLLOWUP ACTIONS:

If the rules are adopted, the Department intends to file the rules with the Secretary of State and to publicize and enforce the rules as outlined in the "program considerations" section above.

Approved:

Section: David Fogel

Division: Stephanie Hallock

Director: Fred Hamm

Report Prepared By: Peter Spendelow
Phone: 229-5253
Date Prepared: July 20, 1990

Spendelow
WORDP\RORULE.D08

A bar in the left margin indicates portions of the rules modified since original proposal.

Proposing new rules 340-111-010 to 040, 340-101-006, 340-12-072, and proposing amendments to rule 340-12-042.

New rules 340-111-010 to 340-111-040 and 340-101-006, relating to direct use of used oil in the environment, are proposed to be adopted as follows:

Purpose, scope, and applicability
340-111-010

(1) The purpose of rules OAR 340-111-010 to 340-111-040 is to provide standards and controls for the use or application of used oil on the ground for dust control, weed control, or other similar purposes or spread directly in the environment. The rules are not intended to apply to one-time accidental spills. (Comment: Persons should also consult 40 CFR Parts 260-266, 270, and 124, which are incorporated by reference in rule 340-100-002, and 40 CFR Part 761, to determine all applicable management requirements. In particular, 40 CFR 266.20 to 266.23 set specific requirements for the use of hazardous waste, including used oil mixed with or showing a characteristic of hazardous waste, for dust suppression or in other manners constituting disposal).

(2) Any provision of rules OAR 340-111-010 to 340-111-040 relating to the use of used oil for dust suppression or as an herbicide that is more stringent than 40 CFR Parts 260-266, 270, 124, and 761 shall not apply to used oil that is generated by a business or industry and does not contain polychlorinated biphenyls, or contain hazardous waste or show a characteristic of hazardous waste as set forth in OAR 340 Division 101, or is generated by a household, provided that the used oil is:

(a) used on the property owned by the person who generated the used oil; or
(b) generated and used on property leased by the person who generated the used oil or used on property immediately adjacent to property owned or leased by the person who generated the used oil, provided in both cases that written approval is obtained from the property owner on whose property the oil is to be applied.

Definitions
340-111-020

(1) "Asphalt fraction" means black, tar-like material that is solid at room temperature and that is a residual product from refining used oil.

(2) "Person" means the United States, the state or a public or private corporation, local government unit, public agency, individual, partnership, association, firm, trust, estate or any other legal entity.

(3) "Property immediately adjacent to" means that portion of any single lot, or set of contiguous lots with common ownership, that shares a common boundary with the property on which the used oil is generated, and that lies within 300 feet of the boundary of the property on which the used oil is generated.

(4) "Used oil" means a petroleum based oil which through use, storage, or handling has become unsuitable for its original purpose due to the presence of impurities or loss of original properties.

Prohibitions
340-111-030

(1) Unless permitted pursuant to ORS 468.740, no person shall dispose of used oil by discharge into sewers, drainage systems, or waters of this state as defined by ORS 468.700(8).

(2) Except as allowed in Sections 3 of this rule, used oil, including products made from used oil, shall not be used as a dust suppressant or pesticide, or otherwise spread directly in the environment, unless:
(a) the used oil has not been mixed with hazardous waste, other than a hazardous waste identified solely due to the characteristic of ignitability; and
(b) the used oil has been tested and does not exceed the following levels for each of the following materials:

(A) Lead: 5 milligrams per liter;
(B) Cadmium: 1 milligram per liter;
(C) Chromium: 5 milligrams per liter;
(D) Arsenic: 5 milligrams per liter;
(E) Polychlorinated biphenyls: none detectable, with a testing detection limit of 1 milligram per liter or less;
(F) Total halogens (chlorine, bromine, and iodine): 1000 milligrams per liter, unless it is demonstrated that the concentration of each halogenated solvent or other halogenated molecules identified as hazardous waste in 40 CFR Part 261 does not exceed 100 milligrams per liter and that none of the concentration levels for halogenated molecules set in 40 CFR 261.24 are exceeded;
(G) Benzene: 0.5 milligrams per liter;
(H) Carbon tetrachloride: 0.5 milligrams per liter;
(I) Chloroform: 6 milligrams per liter;
(J) 1,4 Dichlorobenzene: 7.5 milligrams per liter;
(K) 1,2 Dichloroethane: 0.5 milligrams per liter;
(L) 1,1 Dichloroethylene: 0.7 milligrams per liter;
(M) Tetrachloroethylene: 0.7 milligrams per liter; and
(N) Trichloroethylene: 0.5 milligrams per liter.

(3) The standards, prohibition, and requirements set forth in Section 2 of this rule and in OAR 340-111-040 shall not apply to:
(a) the asphalt fraction derived from refining used oil, provided that the asphalt fraction is not identified as a listed hazardous waste or does not show a characteristic of hazardous waste, as set forth in 40 CFR Part 261 or OAR 340-101-033;
(b) disposal of used oil at a permitted hazardous waste disposal facility pursuant to OAR 340 Divisions 100 to 106; or
(c) disposal of used oil at a permitted solid waste landfill provided that such disposal is in conformance with OAR 340 Division 61 and landfill permit requirements.

Notification, testing, and record-keeping requirements
340-111-040

Any person, except as excluded under OAR 340-111-010, who markets or uses used oil or used oil products for dust control or as a pesticide, or who otherwise spreads used oil directly in the environment, is subject to the following requirements:

(1) Notification to the Department stating the location and general description of used oil management activities, on forms provided by the Department.

(2) Used oil that has been tested and found to not exceed the limits set forth in OAR 340-111-030 (2) shall be stored separately from other used oil prior to use. If untested used oil is added to a tank or other storage container containing tested used oil, the entire tank or container shall be retested and determined to not exceed the limits set forth in OAR 340-111-030 (2) prior to use as a dust suppressant or pesticide or otherwise being spread directly in the environment.

(3) The following records shall be produced and kept for a minimum of three years:

(a) Copies of testing results used to determine that used oil meets the specifications set in OAR 340-111-030 (2);
(b) Records on the quantity of oil in each tank or container tested, and quantity and geographic location where used oil was used directly in the environment, cross-referenced to the testing results used to determine that the used oil meets specifications;
(c) Copies of invoices stating the name, address, and EPA identification numbers of both the shipping and receiving facilities, the quantity of oil delivered, date of delivery, a copy of test results, and the following statement: "This used oil is subject to the requirements of Oregon Administrative Rules 340 Division 111" for all used oil shipments intended or destined to be spread directly in the environment.

(4) Any person, except as excluded under OAR 340-111-010, using used oil as a dust suppressant or pesticide or otherwise spreading used oil directly in the environment shall report to the Department on a quarterly basis on the use of used oil. Reports shall be filed with the Department within 45 days of the end of each calendar quarter. The quarterly report shall include:

(a) the name, address, and U.S. EPA/DEQ Identification Number of the person spreading used oil;
(b) the calendar quarter for which the report is being made;
(c) the quantity, location, and date that used oil was spread;
(d) if no used oil was spread, a statement to that effect; and
(e) test results for the used oil, cross-references to the date and location where the used oil was spread.

Used oil used in a manner constituting disposal
340-101-006

In addition to requirements set forth in 40 CFR 261.6 and 40 CFR Part 266, persons using used oil as a dust suppressant or pesticide or otherwise spreading used oil directly in the environment must meet the requirements set forth in OAR 340-111-010 to 340-111-040.

OAR 340-12-042 is proposed to be amended as follows:

CIVIL PENALTY SCHEDULE MATRICES
340-12-042
In addition to any liability, duty, or other penalty provided by law, the Director may assess a civil penalty for any violation pertaining to the Commission's or Department's statutes, regulations, permits or orders by service of a written notice of assessment of civil penalty upon the respondent. The amount of any civil penalty shall be determined through the use of the following matrices in conjunction with the formula contained in OAR 340-12-045:

(1)

$10,000 Matrix

Class of Violation ↓ / Magnitude of Violation →	Major	Moderate	Minor
Class I	$5,000	$2,500	$1,000
Class II	$2,000	$1,000	$500
Class III	$500	$250	$100

No civil penalty issued by the Director pursuant to this matrix shall be less than fifty dollars ($50) or more than ten thousand dollars ($10,000) for each day of each violation. This matrix shall apply to the following types of violations:

(a) Any violation related to air quality statutes, rules, permits or orders, except for residential open burning [and field burning];

(b) Any violation related to of ORS 468.875 to 468.899 relating to asbestos abatement projects;

(c) water quality statutes, rules, permits or orders, except for violations of ORS 164.785(1) relating to the placement of offensive substances into waters of the state and violations of ORS 468.825 and 468.827 and rules adopted thereunder relating to financial assurance requirements for ships transporting hazardous materials and oil;

(d) Any violation related to underground storage tanks statutes, rules, permits or orders, except for failure to pay a fee due and owing under ORS 466.785 and 466.795;

(e) Any violation related to hazardous waste management statutes, rules, permits or orders, except for violations of ORS 466.890 related to damage to wildlife;

(f) Any violation related to oil and hazardous material spill and release statutes, rules and orders, except for negligent or intentional oil spills;

(g) Any violation related to polychlorinated biphenyls management and disposal statutes; [and]

(h) Any violation ORS 466.540 to 466.590 related to environmental cleanup statutes, rules, agreements or orders[.]; and

(i) Any violation related to used oil management statutes, rules and orders under ORS 468.869.

(2) Persons causing oil spills through an intentional or negligent act shall incur a civil penalty of not less then one hundred dollars ($100) or more than twenty thousand dollars ($20,000). The amount of the penalty shall be determined by doubling the values contained in the matrix in subsection (a) of this rule in conjunction with the formula contained in 340-12-045.

(3)

$500 Matrix

<——— Magnitude of Violation

Class of Violation	Major	Moderate	Minor
Class I	$400	$300	$200
Class II	$300	$200	$100
Class III	$200	$100	$50

No civil penalty issued by the Director pursuant to this matrix shall be less than fifty dollars ($50) or more than five hundred dollars ($500) for each day of each violation. This matrix shall apply to the following types of violations:

(a) Any violation related to residential open burning;

(b) Any violation related to noise control statutes, rules, permits and orders;

(c) Any violation related to on-site sewage disposal statutes, rules, permits, licenses and orders;

(d) Any violation related to solid waste statutes, rules, permits and orders; and

(e) Any violation related to waste tire statutes, rules, permits and orders;

(f) Any violation of ORS 164.785 relating to the placement of offensive substances into the waters of the state or on to land;

(g) Any violation of ORS 468.825 and 468.827 and rules adopted thereunder relating to the financial assurance requirements for ships transporting hazardous materials and oil.

(Statutory Authority: ORS Ch. 454, 459, 466, 467 & 468)

New rule OAR 340-12-072 is proposed to be adopted as follows:

USED OIL MANAGEMENT
340-12-072

Violations pertaining to the management of used oil shall be classified as follows:

(1) Class One:

(a) using untested used oil as a dust suppressant or pesticide, or otherwise spreading untested used oil directly in the environment, if the quantity of oil spread exceeds 50 gallons per event;

(b) spreading used oil contaminated with hazardous waste or failing to meet the limits for materials set in OAR 340-111-030.

(c) any other violation that poses a major risk of harm to public health or the environment.

(2) Class Two:

(a) failure to notify the Department of activities relating to spreading used oil;

(b) any other violation that poses a moderate risk of harm to public health or the environment.

(3) Any other violation related to the use of used oil that poses a minor risk of harm to public health or the environment is a Class Three violation.

(Statutory Authority: ORS Ch. 466 & 468)

Oregon Department of Environmental Quality

A CHANCE TO COMMENT ON...

Proposed Rules: Used Oil for Dust Control

Hearing Dates: May 23-25, 1990
Comments Due: May 29, 1990

WHO IS AFFECTED: Persons who use used oil as a dust suppressant or herbicide or who otherwise use, spread or dispose used oil directly on the ground or in the environment.

WHAT IS PROPOSED: New rules are proposed to implement SB 166 (1989 session) relating to the management and use of used oil. The proposed rules relate just to the use of used oil for dust suppression or other direct use or spreading of used oil in the environment. Rules proposed here do not affect the rerefining or burning of used oil.

WHAT ARE THE HIGHLIGHTS: Persons would be required to test used oil for contamination before the used oil could be used for dust suppression or otherwise used or spread directly in the environment. Used oil that fails to meet the standards proposed in these rules would be prohibited from being spread. Penalties are proposed for violators of these proposed rules.

HOW TO COMMENT: Copies of the proposed rule package may be obtained from the Hazardous and Solid Waste Division, 811 S.W. Sixth, Portland, Oregon 97204. Oral and written comments will be accepted at two public hearings:

Wednesday, May 23, 1990	Friday, May 25, 1990
2:00 to 4:00 p.m.	3:30 to 5:30 p.m.
DEQ Conference Room 3A	Room M 130
811 S.W. Sixth	Blue Mountain Community College
Portland, Oregon	Pendleton, Oregon

Written comments should be sent to Peter Spendelow of the DEQ Waste Reduction Program, Hazardous and Solid Waste Division, 811 S.W. Sixth, Portland, OR 97204, and must be received by 5 pm, May 29th. For further information contact Peter Spendelow at (503) 229-5253, or toll-free within Oregon at 1-800-452-4011.

WHAT IS THE NEXT STEP: After the public hearing, the Environmental Quality Commission may adopt rules identical to the proposed rules, adopt modified rules on the same subject matter, or decline to act. The Commission's deliberation should come during the regularly scheduled Commission meeting in August 1990.

A Statement of Need, Fiscal and Economic Impact Statement, and Land Use Consistency Statement are attached to this notice.

811 S.W. 6th Avenue
Portland, OR 97204

11/1/86

FOR FURTHER INFORMATION:

Contact the person or division identified in the public notice by calling 229-5696 in the Portland area. To avoid long distance charges from other parts of the state, call 1-800-452-4011.

Before the Environmental Quality Commission
of the State of Oregon

In the Matter of Adoption of Rules and Amendments for Used Oil: New Rules OAR 340-111-010 to 040, and OAR 340-12-070, and Amending 340-12-042	))))	Statement of Need for Rules for Use of Used Oil in the Environment

1. Statutory Authority

The proposed used oil rules and amendments are proposed under authority of SB 166 (Chapter 268, Oregon Laws of 1989) codified under ORS 468.850 to 468.871 and ORS 468.140, and under ORS Chapter 466 and ORS Chapter 459.

2. Statement of Need

The proposed rules are needed to carry out the requirements set by the 1989 Legislature through passage of SB 166. That law requires the Environmental Quality Commission (EQC) to adopt rules generally prohibiting the use of untested used oil for dust suppression or as an herbicide, and directs EQC to adopt rules and performance standards for used oil management and use as needed to protect the public health, safety, and the environment.

3. Principal Documents Relied Upon

a. ORS Chapter 468, as amended by SB 166 (Chapter 268, Oregon Laws 1989)
b. ORS Chapter 459 (solid waste management statutes)
c. ORS Chapter 466 (hazardous waste management statutes)
d. 40 CFR parts 266 and 261 (federal hazardous waste identification and recycling rules)

4. Fiscal and Economic Impact

No new fees or changes in fee structure are proposed. Individuals presently using used oil for dust control may need to either switch to other material for dust control purposes, pay for testing the used oil, or find other markets for used oil. Some individuals presently in the business of dust control with used oil may go out of business. Alternative materials for dust control are more expensive than used oil, which can generally be collected for free.

5. Land Use Consistency Statement

The proposed rules appear to not affect land use, and appear to be consistent with the Statewide Planning Goals.

With regard to Goal 6 (air, water, and land resources quality) the rules are designed to enhance and preserve land, water, and air resources and are considered consistent with the goal.

The proposed rules do not appear to related to or in conflict with Goal 11, relating to public facilities and services, or with any other goal.

Public comment on any land use issue involved is welcome and may be submitted in the same fashions as are indicated for testimony in this notice.

It is requested that local, state, and federal agencies review the proposed action and comment on possible conflicts with their programs affecting land use and with Statewide Planning Goals within their expertise and jurisdiction.

The Department of Environmental Quality intends to ask the Department of Land Conservation and Development to mediate any apparent conflict brought to our attention by local, state, or federal authorities.

To: Environmental Quality Commission

From: Elaine Glendening, Hearings Officer (Portland, May 23)
Bill Hampton, Hearings Officer (Pendleton, May 25)
Peter Spendelow, Recorder (both hearings)

Subject: Report on Public Hearings held May 23, 1990 in Portland and May 25, 1990 in Pendleton on Proposed Used Oil/Road Oiling Rules.

Summary of Procedure

A public hearing was held May 23, 1990 at 2 pm in Portland to accept testimony on proposed new and amended rules relating to used oil used for dust control. Elaine Glendening presided as hearings officer. A news reporter from KISN Radio was the only person in attendance. No public testimony was offered. The hearing was adjourned at 2:25, and a notice was posted stating that the hearing was temporarily adjourned and giving the location in the same building where the hearings officer and others could be reached in case someone coming late wished to present testimony. No persons responded.

A second public hearing was held May 25, 1990 at Blue Mountain Community College in Pendleton to accept testimony on the same proposed rules. Bill Hampton opened the hearing at 3:30. The only person in attendance was Kathleen Amsberry representing the Umatilla County Road Department. Ms. Amsberry did not have formal testimony to present, but did have questions that were discussed with Department of Environmental Quality staff. Ms. Amsberry left at 4:30 pm. The hearing remained opened until the published 5:30 pm closing time, but no other persons came forward to provide testimony.

Written testimony was received from Jean R. Cameron representing the Oregon Environmental Council. Ms. Cameron's letter stated that the Oregon Environmental Council strongly supports the proposed rules, and that the Department should launch a major public education campaign regarding the new rules. A copy of the testimony is attached. No other testimony was received.

OREGON ENVIRONMENTAL COUNCIL
2637 S.W. Water Avenue, Portland, Oregon 97201
Phone: 503/222-1963

**COMMENTS SUBMITTED BY
THE OREGON ENVIRONMENTAL COUNCIL
ON PROPOSED USED OIL DISPOSAL RULES
OAR 340-111-010 to 040
340-101-006, 340-12-072
and amending 340-12-042**

The Oregon Environmental Council strongly supports these proposed rules, which will reduce a major source of hazardous contaminants entering the environment. Unofficial estimates from the used oil refining industry indicate that approximately 200,000 gallons of oil a month are unaccounted for in Oregon.

We believe that it is imperative that the Department of Environmental Quality (DEQ) launch a major public education campaign regarding these new rules, insofar as the primary impact seems likely to be on private individuals throughout the state rather than industries already likely to be in DEQ's information loop. Pollution prevention and a strong enforcement stance necessitate a solid public education program.

Thank you for the chance to comment.

Jean R. Cameron
Associate Director
May 23, 1990

NEIL GOLDSCHMIDT
GOVERNOR

Environmental Quality Commission

811 SW SIXTH AVENUE, PORTLAND, OR 97204 PHONE (503) 229-5696

REQUEST FOR EQC ACTION

Meeting Date: April 6, 1990
Agenda Item: J
Division: HSW
Section: Waste Reduction

SUBJECT:

Used Oil/Road Oiling: Proposed Rules (SB 166)

PURPOSE:

Set standards for the use of used oil for dust suppression, as an herbicide, or other direct uses in the environment.

ACTION REQUESTED:

___ Work Session Discussion
- ___ General Program Background
- ___ Potential Strategy, Policy, or Rules
- ___ Agenda Item ___ for Current Meeting
- ___ Other: (specify)

_x_ Authorize Rulemaking Hearing
___ Adopt Rules

Proposed Rules	Attachment A
Rulemaking Statements	Attachment D
Fiscal and Economic Impact Statement	Attachment D
Public Notice	Attachment D

___ Issue a Contested Case Order
___ Approve a Stipulated Order
___ Enter an Order

Proposed Order	Attachment ___

___ Approve Department Recommendation

___ Variance Request	Attachment ___
___ Exception to Rule	Attachment ___
___ Informational Report	Attachment ___
___ Other: (specify)	Attachment ___

DESCRIPTION OF REQUESTED ACTION:

Authorization is requested to conduct a public hearing on proposed rules to regulate the direct application of used oil in the environment. These proposed rules are to implement the requirements of Senate Bill (SB) 166 (Chapter 268, Oregon Laws 1989). SB 166 was introduced in the Oregon Legislature at the request of the Department of Environmental Quality (DEQ, Department).

SB 166 gives the Environmental Quality Commission (Commission) broad authority to adopt rules and issue orders relating to the use and management of used oil but specifically requires the Commission to adopt rules relating to dust control no later than one year after the October 2, 1989 effective date of the Act. The rules proposed here relate mainly to dust suppression.

Federal rules (40 CFR 266.23) previously adopted by reference by the Commission prohibit the use of used oil for dust control or road treatment if the used oil has been "contaminated with dioxin or any other hazardous waste (other than a waste identified solely on the basis of ignitability)." The rules proposed here go further than federal rules by setting specific standards and testing requirements for used oil.

The proposed rules explicitly prohibit application of used oil as a dust suppressant or pesticide, or otherwise spreading used oil directly in the environment, if the level of lead or other contaminants exceeds the levels set as standards in the rules, or if the used oil has not been tested. Most of the standards proposed are based on the level of heavy metals that would cause a liquid to be considered a characteristic hazardous waste by federal rule 40 CFR 261.24, previously adopted by reference by the Commission. The heavy metals and organic compounds for which standards are proposed here are the metals and compounds identified by the Environmental Protection Agency as contaminants of concern for used oil. A separate standard is added for volatile aromatic organic compounds (which would include compounds such as benzene, xylene, and toluene), as the Department believes that existing federal rules do not adequately address contamination due to these toxic materials.

Almost all used oil from automotive sources contains sufficient amounts of lead to be classified as hazardous waste. This oil is not regulated as hazardous waste under either federal or EQC rules if it is recycled into lubricating oil or is burned for energy recovery. If, however, used oil is disposed or "used in a manner

constituting disposal" (see 40 CFR 266.20 in Attachment B) the oil is regulated as hazardous waste. Thus, implicitly under federal rules and explicitly under these proposed rules, almost all automotive oil will be prohibited from use as a dust suppressant.

SB 166 contains an exclusion related to people who apply their own used oil for dust control on their own property, or on immediately adjacent property. Under SB 166, the Commission cannot regulate this specific application of used oil any more strictly than it is regulated under federal law or rules. The proposed rules therefore do not apply to persons who use their own used oil on their own property or immediately adjacent property. The phrase "immediately adjacent to" was not defined in SB 166. The Department is proposing a definition for this phrase that would limit the application of used oil under this exemption to within 300 feet of the property owned by the person who generated the oil. This definition is being reviewed by the Attorney General's office.

SB 166 also provides for civil penalties not to exceed $10,000 per occurrence for violation of used oil rules or orders. Amendments are proposed to OAR 340 Division 12 (enforcement rules) that would classify the spreading of more than 50 gallons of untested or contaminated used oil as a Class 1 violation, failure to notify as a Class 2 violation, and other minor violations as Class 3 violations.

AUTHORITY/NEED FOR ACTION:

x	Required by Statute: SB 166 (ORS 468.869)	Attachment C
	Enactment Date: 1989 session	
___	Statutory Authority: _____	Attachment ___
___	Pursuant to Rule: _____	Attachment ___
x	Pursuant to Federal Law/Rule: 40 CFR 266.23	Attachment B
___	Other:	Attachment ___
x	Time Constraints: (explain) Rules related to dust suppression are required by statute to be adopted no later than October 1990.	

DEVELOPMENTAL BACKGROUND:

___	Advisory Committee Report/Recommendation	Attachment ___
___	Hearing Officer's Report/Recommendations	Attachment ___
___	Response to Testimony/Comments	Attachment ___
___	Prior EQC Agenda Items: (list)	Attachment ___
___	Other Related Reports/Rules/Statutes:	Attachment ___
x	Supplemental Background Information	Attachment E
	DEQ fact sheet on used oil used for dust control	

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

Most companies that applied used oil as a dust suppressant in the past discontinued the practice in the early 1980s due to concern about potential liability involved in spreading used oil that might contain hazardous contaminants. There still are at least two small companies known to the Department that collect used oil from service stations and other businesses, and spread the used oil for dust control without testing the oil for contamination. These companies have indicated to the Department that they will discontinue applying used oil for dust control at the time rules adopted under SB 166 go into effect. The Department believes that the existing used oil fuel and oil rerefining markets will be able to take all oil that is presently being used for dust control.

The Department will be seeking comments from a special advisory group prior to the public hearings on proposed rules. The advisory group will consist of representatives of groups affected by or having interest in the proposed rules, and persons with expertise in used oil and public safety issues.

PROGRAM CONSIDERATIONS:

The Department intends to promote proper management of used oil by service stations and others through articles in Department newsletters such as Beyond Waste, Tankline, and the Vehicle Inspection Program newsletter, as well as press releases to trade newsletters. Enforcement would be done using existing DEQ mechanisms such as hazardous waste generator inspections and responses to complaints.

The Department believes that few if any businesses or individuals will notify the Department of the intent to test and use used oil for dust suppression, since most used oil will fail to meet the proposed standards and since the liability in spreading used oil is high. Therefore, the Department believes that minor staff resources will be required to process reports and other paperwork required from road oilers.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

1. Propose rules as shown in Attachment A, which are more stringent than federal requirements because of proposed standards and testing.

2. Propose rules that are equivalent to federal requirements and do not set standards and testing requirements.

3. Include regulations beyond dust suppression, such as additional regulation on burning of used oil or a prohibition on disposal of used oil in solid waste landfills.

4. Set standards more stringent than federal standards for persons who apply large quantities of their own used oil to their own property.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends Alternative 1, authorization of a public hearing on the proposed rules and rule amendments shown in Attachment A. These rules, if adopted, could significantly reduce the likelihood of damage to the environment or threat to public safety caused by spreading contaminated oil in the environment. The Department believes in particular that the strict testing requirement of the rules proposed here is necessary for ensuring that contaminated oil is not spread in the environment. Testing of used oil by the Environmental Protection Agency (EPA) and others has turned up significant amounts of chlorinated solvents, polychlorinated biphenyls (PCBs), heavy metals, and other hazardous materials in used oil. Road oiling with dioxin-contaminated oil was responsible for one of the most famous Superfund cleanup sites - the entire town of Times Beach, Missouri. A serious incident was luckily avoided in Jackson County, Oregon in 1984, when an EPA investigation found 40,000 parts per million of PCBs in a tank holding used oil intended for road oiling.

Although alternatives 2 and 3 are not recommended, the Department does believe that further regulation of used oil would be valuable for protecting public health and the environment. In particular, the Department believes that limits should be set on the levels of heavy metals allowed in used oil burned by industrial boilers and furnaces (currently there is no limitation on these burning devices), and that either a ban or tighter restrictions on disposal of used oil in solid waste landfills would be valuable. However, both Congress and the EPA are debating further regulation of used oil, and the Department believes that a decision on the direction to be taken by the federal government for used oil regulation will be forthcoming later this year. Therefore, the Department believes it is prudent to postpone rulemaking on these matters. The Department believes that new rules should be adopted at this time only for used oil issues related to dust suppression where there is a high immediate potential for environmental damage and potentially high cleanup costs.

Although Alternative 4 was considered, the Department believes that the statutory exemption in SB 166 prohibits the Commission from following this alternative. Persons applying their own oil to their own property would continue to be regulated under 40 CFR 266.20 to 266.23.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

Rule adoption relating to dust control is required by SB 166 (Chapter 268, Oregon Laws 1989), a bill passed at the request of the Department.

ISSUES FOR COMMISSION TO RESOLVE:

1. Should new rules be adopted on issues other than dust control, such as restricting or banning disposal of oil in solid waste landfills or limiting the heavy metal levels allowed in used oil fuel burned in industrial boilers and furnaces?

2. Should the Department not adopt any rule relating to dust control that is more stringent than existing federal rules?

INTENDED FOLLOWUP ACTIONS:

If authorized by the Commission, the Department intends to hold two public hearings, one on May 23, 1990 in Portland and one on May 25, 1990 in Pendleton, on the proposed rules and rule amendments, and to propose adoption of final rules at the August 10, 1990 EQC meeting.

Approved:

Section: David Ryll

Division: Stephanie Hallock

Director: Fred Hansen

Report Prepared By: Peter Spendelow
Phone: 229-5253
Date Prepared: March 19, 1990

Spendelow
WORDP\RORULE.D04

NEIL GOLDSCHMIDT
GOVERNOR

Environmental Quality Commission

811 SW SIXTH AVENUE, PORTLAND, OR 97204 PHONE (503) 229-5696

REQUEST FOR EQC ACTION

Meeting Date: August 10, 1990
Agenda Item: Q
Division: MSD
Section: ADM

SUBJECT:

State Agency Coordination Program - Adoption of rules.

PURPOSE:

Under the Department of Land Conservation and Development (DLCD) statutes and rules state agencies are directed to carry out activities affecting land use in compliance with the statewide goals and compatible with local comprehensive plans. To fulfill these responsibilities state agencies are directed to develop a State Agency Coordination Program and adopt rules for implementation.

ACTION REQUESTED:

___ Work Session Discussion
- ___ General Program Background
- ___ Potential Strategy, Policy, or Rules
- ___ Agenda Item ___ for Current Meeting
- ___ Other: (specify)

___ Authorize Rulemaking Hearing

_X_ Adopt Rules

Proposed Rules	Attachment A
Rulemaking Statements	Attachment B
Fiscal and Economic Impact Statement	Attachment C
Public Notice	Attachment D

___ Issue a Contested Case Order

___ Approve a Stipulated Order

___ Enter an Order

Proposed Order	Attachment ___

___ Approve Department Recommendation

___ Variance Request	Attachment ___
___ Exception to Rule	Attachment ___
___ Informational Report	Attachment ___
___ Other: (specify)	Attachment ___

DESCRIPTION OF REQUESTED ACTION:

The proposed rules contain provisions within the following four program components:

1. Identification of rules, programs, actions affecting land use.

2. Procedures for assuring statewide goal consistency and acknowledged plan compatibility.

3. Cooperation with and technical assistance to local governments.

4. Coordination with federal and state agencies and special districts.

AUTHORITY/NEED FOR ACTION:

___	Required by Statute: _____ Enactment Date: _____	Attachment ___
X	Statutory Authority: ORS 197.180	Attachment ___
X	Pursuant to Rule: OAR 660-340-30	Attachment ___
___	Pursuant to Federal Law/Rule: _____	Attachment ___
___	Other:	Attachment ___
X	Time Constraints: An adopted State Agency Coordination Program is scheduled to be submitted to the DLCD by September 1, 1990.	

DEVELOPMENTAL BACKGROUND:

___	Advisory Committee Report/Recommendation	Attachment ___
X	Hearing Officer's Report/Recommendations	Attachment E
X	Response to Testimony/Comments	Attachment F
X	Prior EQC Agenda Items: EQC staff briefing provided at January, 1989 work session; hearing authorization granted June 2, 1990.	Attachment ___
X	Other Related Reports/Rules/Statutes: (Proposed State Agency Coordination Program Document)	Attachment G
__	Supplemental Background Information	Attachment ___

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

The rules contain procedures the Department of Environmental Quality (Department) will employ in carrying out its rules, programs and actions that affect land use which may require city, county and agency participation and cooperation. The procedures also require that specific information be provided to the Department by any party applying for permits or related Department approvals or actions.

The testimony from the public hearing is summarized in Attachment E.

PROGRAM CONSIDERATIONS:

The rule adoption will require a determination of necessary Department staff resources for implementation. Minimal staff resources are currently available for land use-related participation and assistance purposes. The Department will assess program needs and provide implementation within the capabilities of Department resources. The Executive Summary, Attachment G, pages i - viii, highlights the key elements of the program and includes a list of Department actions determined to affect land use. Section III, pages 22 - 45, provides a description of the land use programs and procedures to assure land use compatibility.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

None. The adoption and implementation of the State Agency Coordination Program is required by state law.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends the EQC adopt the proposed rules. The Department staff has worked closely with the Department of Land Conservation and Development staff and has satisfactorily addressed their concerns and comments.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

The proposed State Agency Coordination Program document and rules represent an update of existing Department policy regarding the fulfillment of statutory land use responsibilities. The Department's current State Agency Coordination Program was certified by the Land Conservation and Development Commission in 1983. The program is consistent with Goal 2 of the Strategic Plan: "Aggressively identify threats to public health or the environment and take steps to prevent problems which may be created."

ISSUES FOR COMMISSION TO RESOLVE:

Commission evaluation, revision or concurrence is necessary for the four components of the State Agency Coordination Program as identified under Description of Requested Action on page 2 of this report.

INTENDED FOLLOWUP ACTIONS:

The Department will submit the State Agency Coordination Program and Rules for the Land Conservation and Development Commission's review and approval which is scheduled for December, 1990.

Approved:

Section: Roberta Young

Division: Peter A. Dalke

Director: Jim Hamrick

Report Prepared By: Roberta Young

Phone: 229-6408

Date Prepared: 7-24-90

G:\IGC\MY100708

ATTACHMENT A
Agenda Item Q
August 10, 1990
EQC Meeting

OREGON ADMINISTRATIVE RULES
CHAPTER 340, DIVISION 18 - DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE AGENCY COORDINATION PROGRAM

PURPOSE

340-18-000 In accordance with ORS 197.180, this rule establishes Department policy and procedures to assure that Department activities determined to significantly affect land use are carried out in a manner that complies with the statewide land use goals and are compatible with acknowledged comprehensive plans. ~~[Notwithstanding possible land use effects, the Department is not responsible for local plan compatibility or goal compliance if the applicable statutory authority requires that the Department's actions be based exclusively on consideration of public health and safety]~~. There are limited situations such as those related to the Health Abatement Act and Threat to Drinking Water Act where the applicable statutes obligate the Department to make decisions based exclusively on environmental, public health and safety considerations, and nothing in this program is intended to affect these responsibilities. Division 18 shall control over any inconsistent rule provisions relating to land use compliance and compatibility in OAR 340 Divisions 20, 35, 52, 61, 71, and 120.

POLICY

340-18-010 It is the Commission's policy to coordinate the Department's programs, rules and actions that affect land use with local acknowledged plans to the fullest degree possible.

DEFINITIONS

340-18-020 As used in these rules,

(1) "Acknowledged comprehensive plan" means a city or county comprehensive land use plan that has been approved by the Land Conservation and Development Commission.

(2) "Affected local government" means a city or county government that has land use planning jurisdiction.

(3) "Commission" means the Environmental Quality Commission.

(4) "Department" means the Department of Environmental Quality.

(5) "Director" means the Director of the Department of Environmental Quality.

(6) "DLCD" means the Department of Land Conservation and Development.

(7) "Land use action" means a Department rule, program or activity which has been determined to affect land use as defined by OAR 660-30-005.

(8) "Land use dispute" means a difference of opinion between the Department and local government as to the compatibility of a Department land use action with the provisions of an acknowledged comprehensive plan.

(9) "Local government" means an incorporated city or county

(10) "LUBA" means the Land Use Board of Appeals.

(11) "LUCS" means a land use compatibility statement.

(12) "NPDES" means a wastewater discharge permit issued in accordance with requirements and procedures of the National Pollutant Discharge Elimination System.

(13) "SAC Program document" means the Department's State Agency Coordination Program document developed pursuant to ORS 197.180.

(14) "Statewide goals" means Oregon's Statewide Planning Goals adopted by the Land Conservation and Development Commission pursuant to ORS 197.222.

(15) "TMDL" means Total Maximum Daily Load, the sum of a wasteload allocation for point and nonpoint sources.

(16) "WPCF" means a state Water Pollution Control Facilities Permit.

APPLICABILITY

340-18-030 The provisions of this rule, 340-18-000 through 340-18-200 apply to Department programs and actions subsequently determined to have significant effects on land use pursuant to ORS 197.180 and OAR 660-30-075. Department land use actions are identified below:

(1) Air Quality Division

(a) Approval of Noise Impact Boundaries for Motor Racing Facilities,

(b) Approval of Airport Noise Abatement Program and Noise Impact Boundaries,

(c) Approval of Notice of Construction,

(d) Issuance of Air Contaminant Discharge Permit,

(e) ~~[Approval]~~ Issuance of Indirect Source Construction Permit,

(f) Approval of Parking and Traffic Circulation Plan, and

~~[(g) Application of State Implementation Plan,]~~

(2) Environmental Cleanup Division

(a) Issuance of Environmental Hazard Notice.

(3) Hazardous and Solid Waste Division

(a) Issuance of Solid Waste Disposal Permit,

(b) Issuance of Waste Tire Storage Permit, and

(c) Issuance of Hazardous Waste and PCB Storage, Treatment and Disposal Permit.

(4) Management Services Division

(a) Approval of Pollution Control Bond Fund Application.

(5) Water Quality Division

(a) Approval of Wastewater System and Facility Plans,

(b) Approval of Construction Grant Program Application,

(c) Approval of State Revolving Loan Application,

(d) Issuance of On-site Sewer Permit,

(e) Issuance of NPDES and WPCF Permits,

(f) Development of Water Quality Wetland Protection Criteria,

(g) Requirement of an Implementation Plan to Meet ~~[R]~~restrictions for Waste Load Allocations on Water Quality Limited Waterways (TMDLS),

(h) Certification of Water Quality Standards for Federal ~~[Projects]~~ Permits, Licenses,

(i) ~~[Declaration]~~ Development of Action Plan for declared ~~[of]~~ Ground Water Management Area,

(j) Development of Nonpoint Source Management Plan,

(k) Development of Estuary Plans,

(l) Development of Oil Spill Regulations,

COMPLIANCE WITH STATEWIDE PLANNING GOALS

340-18-040 (1) The Department shall to the ~~[fullest degree possible]~~ extent required by law, achieve goal compliance for land use programs and actions identified in OAR 340-18-030 by assuring compatibility with acknowledged comprehensive plans, except as provided in Section 3.

(2) The Department shall consider a land use action to be in compliance with the goals when the action is determined compatible with the comprehensive plan.

(3) The Department shall assure statewide goal compliance when necessary through the adoption of findings

pursuant to OAR 660-30-065 (3) through the following process:

(a) The identification of applicable goals;

(b) Request for advice from DLCD or the Attorney General's office when necessary;

(c) Consultation with the affected local government; and

(d) The adoption of necessary findings.

(4) Department statutory responsibiities under ORS 222.840, the Health Abatement Law, are exempt from compliance with the statewide goals and compatibiity with local comprehensive plans.

COMPATIBILITY WITH ACKNOWLEDGED COMPREHENSIVE PLANS

340-18-050 (1) Commission or Department actions under OAR 340-18-030 shall be compatible with local government acknowledged comprehensive plans to the ~~[fullest degree possible]~~ extent required by law.

(2) The Department shall rely on the compatibility procedures described in Section III - subsection 3, and Section IV - subsections 2,3,and 4 of the SAC Program document to assure compatibility with an acknowledged comprehensive plan, which include but may not be limited to the procedures described below:

(a) An applicant's submittal of a LUCS which provides the affected local government's determination of compatibility.

(A) A LUCS shall be submitted with a Department application or required submittal information.

(B) The Department shall rely on an affirmative LUCS as a determination of compatibility with the acknowledged comprehensive plan unless otherwise obligated by statute.

(C) If the Department concludes a local government LUCS review and determination may not be legally sufficient, the Department may deny the permit application and provide notice to the applicant. In the alternative, when the applicant and local government express a willingness to reconsider the land use determination, the Department may hold the permit application in abeyance until the reconsideration is made ~~[does not consider all relevant land use issues, the Department may require the applicant to provide a local government re-evaluation of the LUCS or other related appropriate action]~~.

(D) If the Department receives a LUCS which states that the proposed action is incompatible with the acknowledged comprehensive plan, the Department shall notify the applicant that the application cannot be processed.

(E) A local government may withdraw or modify its compatibility determination any time prior to the issuance of a permit.

(F) ~~[(E)]~~ If more than one local government has jurisdiction related to a Department action, a LUCS review will be required from each affected local government.

~~[(F) If a local government land use compatibility determination or underlying land use decision is appealed subsequent to the Department's receipt of the LUCS, the Department shall continue to process the action unless ordered otherwise by LUBA or a court of law stays or invalidates a local action.]~~

(G) If a LUCS is successfully appealed after the Department has issued a permit, the Department may either proceed to revoke or suspend the permit or may decide to wait until the land use appeals process is exhausted.

(b) An applicant's submittal of a LUCS is required for the renewal or modification of the permits identified in 340-18-030 if the Department determines the permit involves a substantial modification or intensification of the permitted activity.

(A) Renewal permits require a LUCS if a permit renewal involves a modification that requires a LUCS under (B) of this section.

(B) Modification permits require a LUCS if:

(i) The permitted source or activity relates to the use of additional property or a physical expansion on the existing property. The LUCS applies to ~~[the]~~ physical changes on the property ~~[and does]~~ not ~~[apply]~~ to existing permit conditions,

(ii) The permitted source or activity involves a significant increase in discharge to state waters or into the ground,

(iii) The permitted source or activity involves the relocation of an outfall outside of the source property.

(iv) For a major modification of an air contaminant discharge permit which means any physical change or change of operation of a source that results in a net significant emission rate increase as defined in OAR 340-20-225 (25).

(c) An applicant's submittal of evidence that a ~~[required]~~ Department action has been ~~[conducted with and is]~~ reviewed by the affected local government and determined compatible with the local comprehensive plan.

(d) The Department provides notice to local government

prior to initiating land use planning actions of statewide application, or notice to affected local governments prior to initiating an action of site-specific or area-wide application. Dispute resolution procedures pursuant to OAR 340-18-060 are applied when the Department and local government disagree on plan compatibility.

(e) The Department provides notice to the affected local government of a Department land use action, which may include a request for local government action to assure local plan compatibility with the Department's action.

LAND USE DISPUTE RESOLUTION

340-18-060 The Department's preference for resolving a dispute over land use compatibility is to work directly with local government until resolution is accomplished. In resolving a land use dispute, the Department shall consider one or more of the following mechanisms:

(1) Initiate meetings between the Department and affected local government to pursue resolution alternatives,

(2) Provide an application for a necessary local land use approval,

(3) Initiate an appeal of the local government's denial of land use approval,

(4) Submit a request for local land use approval at the local government's periodic review of its comprehensive plan,

(5) Request informal LCDC mediation in accord with OAR 660-30-070, and

(6) Proceed with an agency action and provide compliance with the statewide goals in accord with OAR 660-30-065 (3).

STATEWIDE GOAL COMPLIANCE AND ACKNOWLEDGED PLAN COMPATIBILITY FOR NEW OR AMENDED RULES AND PROGRAMS SIGNIFICANTLY AFFECTING LAND USE.

340-18-070 (1) New or amended rules and programs shall be evaluated in terms of compliance with ORS 197.180 and OAR Chapter 660, Division 30, with the exception of temporary rules.

(2) The Department shall determine if new or amended rules and programs affect land use pursuant to OAR 660-30-075 (2) and Section III, subsection 2 of the Department's State Agency Coordination Program document.

(3) Notice of new or amended rules and programs that

affect land use shall be provided to DLCD and the land use mailing list and shall include the following information:

(a) Evidence that the rule or program is a land use program; or,

(b) Evidence that the rule or program affects land use and is covered under the Department's certified State Agency Coordination Program; or

(c) Evidence that the rule or program is a land use program including an explanation of how goal compliance and plan compatibility will be assured.

COMPLIANCE WITH DLCD PERMIT COMPLIANCE AND COMPATIBILITY RULE

340-18-080 The Department's Waste Tire Storage Permit is classified a Class B permit pursuant to OAR 660 Division 31. This permit is subject to the procedures of OAR 340-18-040 and OAR 340-18-050 to assure statewide goal compliance and acknowledged plan compatibility.

COORDINATION WITH AFFECTED STATE AND FEDERAL AGENCIES AND SPECIAL DISTRICTS

340-18-090 The Department shall coordinate with the appropriate federal agencies and special districts on all rules and programs affecting land use as described in OAR 340-18-030.

COOPERATION WITH AND TECHNICAL ASSISTANCE TO LOCAL GOVERNMENT

340-18-200 The Department is committed to cooperate with and provide local government with environmental quality technical assistance and data for local government land use planning purposes within Department funding and staffing capabilities.

(1) Cooperation and technical assistance may include but not be limited to the following:

(a) The provision of notice to local government of proposed rules and programs determined to affect land use.

(b) Participation in the periodic review, plan update or plan amendment process.

(c) The provision of environmental technical or scientific interpretative assistance and data.

(2) The Department's Intergovernmental Coordination Office is the initial contact point for local government. Department cooperation and assistance will be coordinated and

provided as appropriate by the Department's division and region offices.

(3) The provisions and referenced provisions of this section shall apply to all local governments including those local governments recognized under the state's Coastal Zone Management Program.

ATTACHMENT B
Agenda Item Q
August 10, 1990
EQC Meeting

RULEMAKING STATEMENTS

Statement of Need for Rulemaking.

Pursuant to ORS 183.335(7) this statement provides information on the Environmental Quality Commission intended action to adopt rules.

(1) Legal Authority.

Adoption of rules on state agency coordination is consistent with enabling legislation, ORS 197.180.

(2) Need for Rulemaking.

The Department of Land Conservation and Development Administrative Rule OAR 660-340-30 requires that state agencies adopt rules to implement procedures for assuring the agency's compatibility with acknowledged plans and procedures for the resolution of land use-related disputes.

(3) Principal Documents Relied upon:

- ORS 197.180
- OAR 660, Division 30
- Proposed DEQ State Agency Coordination Document

(4) The adoption of rules to direct the implementation of the Department's State Agency Coordination responsibilities is consistent with the Statement's Planning Goals, in specific, Goal 2, which states "is expected that required state and federal agency plans will conform to the comprehensive plans of cities and counties."

ATTACHMENT C
Agenda Item Q
August 10, 1990
EQC Meeting

FISCAL AND ECONOMIC IMPACT STATEMENT

1. The update and rule adoption of the Department's State Agency Coordination Program does not anticipate increased staff resources in the current biennium.

2. The update and adoption of the Department's State Agency Coordination Program may result in an increase in requests by cities and counties for information and technical assistance. There may be a need for additional staff resources to carry out the responsibilities of the program for the 1991-93 biennium.

The proposed rulemaking is expected to present no measurable economic impact on the general public, small businesses or large business or cities and counties. The Department procedures for assuring its actions affecting land use are consistent with the statewide goals and acknowledged plans, are primarily an extension and update of existing procedure and policy.

ATTACHMENT D
Agenda Item Q
August 10, 1990
EQC Meeting

Oregon Department of Environmental Quality

A CHANCE TO COMMENT ON...

STATE AGENCY COORDINATION PROGRAM RULE PUBLIC HEARING

Date Prepared: June 13,1990
Hearing Date: July 17, 1990
Comments Due: July 18, 1990

WHO IS AFFECTED:

Adoption by rule of the Department's State Agency Coordination Program update will continue to affect those individuals applying for permits and approvals of actions that affect land use.

WHAT IS PROPOSED:

The DEQ proposes to adopt rules OAR 340-18-000 through 340-18-200 to comply with ORS 197.180 and the Department of Land Conservation and Development Administration Rule OAR 660 Division 30.

Proposed rules direct the DEQ to carry out its state agency coordination land use responsibilities pursuant to the State Agency Coordination Program document.

WHAT ARE THE HIGHLIGHTS:

The proposed rules contain the following State Agency Coordination Program elements:

1. Identification of Department rules, programs and actions affecting land use.
2. Procedures to assure statewide goal consistency and compatibility with acknowledged plans.
3. Provisions for cooperation and technical assistance to local government.
4. Provisions for coordination with federal and other state agencies and special districts.

811 S.W. 6th Avenue
Portland, OR 97204

FOR FURTHER INFORMATION: D-1

Contact the person or division identified in the public notice by calling 229-5696 in the Portland area. To avoid long distance charges from other parts of the state, call 1-800-452-4011.

HOW TO COMMENT:

A public hearing will be held:

Tuesday, July 17, 1990
1:30 p.m.
DEQ Headquarters Bldg.
Room 10A
811 S.W. Sixth Ave.
Portland, Oregon

Written or oral comments may be presented at the hearing. Written comments may be sent to:

Department of Environmental Quality
Management Services Division
811 S.W. 6th Ave.
Portland, Oregon 97204

Written comments must be received no later than 5:00 p.m., July 18, 1990.

Copies of the proposed rules and program document can be obtained from:

Christie Nuttall
Management Services Division
811 S.W. Sixth Ave.
Portland, Oregon 97204
Telephone: 229-6484
Toll-free 1-800-452-4011

ATTACHMENT E
Agenda Item Q
August 10, 1990
EQC Meeting

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY INTEROFFICE MEMORANDUM

DATE: July 23, 1990

TO: Environmental Quality Commission

FROM: Roberta Young, Hearings Officer

SUBJECT: Hearing Officer Report - Public Hearing on Proposed State Agency Coordination Rules

On July 17, 1990 a public hearing was held in Portland on the proposed State Agency Coordination Rules. Two individuals attended the hearing.

Ken Brody testified for himself and on behalf of Oregonians in Action. Ken stated that DEQ's State Agency Coordination Program is a lucid, comprehensive document which seems to address the complex land use rules and programs very well. He commented that he understood that atmospheric discharges in wilderness areas (Division 30) and animal feeding operation (Division 51) procedures were not individually addressed, but provisions for permitting, review or approval was provided through other sections of the program document. He also understood that field burning provisions provide for the quantity and amount of burning rather than a permitting process as such.

Mike Byers, with the Department of Land Conservation and Development submitted written comments which are addressed in the Department Response to Testimony and Comments Report, Attachment F.

Attachment F
Agenda Item R
August 10, 1990
EQC Meeting

RESPONSE TO TESTIMONY RECEIVED JULY, 1990
ON PROPOSE STATE AGENCY COORDINATION RULES

Public Testimony

1. Mr. Ken Brody,1313 SW Broadway, Portland, Oregon 97201

Mr. Brody testified for himself and on behalf of Oregonians for Action. Mr. Brody stated he understood the air quality visibility standards for wilderness areas and the confined animal feeding operation standards are addressed in the permitting process. Secondly, he understood that field burning authorities involve the registration of acreage to be burned and establishment of limitations on burning, rather regulation through a permitting process.

Department Response: Both of Mr. Brody's statements are correct. The air containment and water quality discharge permitting procedure addresses these requirements. A permitting process does not apply to the regulation of field burning and these authorities have not been identified as land use related.

Submitted Written Testimony

2. Oregon Concrete & Aggregate Producers Association, Inc, 707 13th St. SE #115, Salem, Oregon 97301
and,
Associated General Contractors, Oregon-Columbia Chapter,9450 SW Commerce Circle, Suite 200, Wilsonville, Oregon 97070

The Oregon Concrete and Aggregate Producers, Inc. and Associated General Contractors submitted identical comments (see Attachments 1 and 2) on three issues. Department staff met with OCAPA and AGC representatives and developed compromise language for each of the issues, except for the reference to funding and staffing limitations. It was agreed to leave this provision as is.

1. In the Purpose provision of Division 18, the statement "Notwithstanding possible land use effects, the Department is not responsible for local plan compatibility or goal compliance if the applicable statutory authority requires that the Department action be based exclusively on consideration of public health

or safety." appears to violate ORS 197.180 which requires all agencies to assure compliance with goals and compatibility with local plans unless "expressly exempt". p. A-1

Department Response: Compromise language follows:

Propose deletion of following statement in 340-18-000: Notwithstanding possible land use effects, the Department is not responsible for local plan compatibility or goal compliance if the applicable statutory authority requires that the Department actions be based exclusively on consideration of public health and safety.

Insert as second paragraph under 340-18-000: There are limited situations such as ones related to the Health Abatement Act and Threat to Drinking Water Act where the applicable statutes obligate the Department to make decisions based exclusively on environmental, public health and safety considerations, and nothing in this program is intended to affect these responsibilities. p. A-1

In the State Agency Coordination Document, Section V - Cooperation and Technical Assistance to Local Government insert after the introductory paragraph as a new paragraph: With respect to Department programs that are technically not subject to land use such as those relating to the Health Abatement and Safe Drinking Water laws, the Department will provide local governments with requested information and technical assistance within its capabilities. p.52

2. The rule and program document contain statements to the effect that the Department will achieve goal compliance and plan compatibility to the "fullest degree possible", and that technical assistance and cooperation with local government will be provided with "Department funding and staffing capabilities." These are viewed as subjective standards and as such, fail to meet the objective requirement of ORS 197.180 for goal compliance and plan compatibility.

Department Response: Compromise language follows:

In 340-18-040 (1) and 340-18-050 (1) substitute fullest degree possible with extent required by law. p. A-3,4

3. Under the permitting procedure, the Department may require an applicant to provide a local government re-evaluation of the Land Use Compatibility Statement if the Department concludes that all issues may not have

been considered in the initial review. This would allow the Department to exceed its authority by second guessing local government and would be require DEQ to perform an analyses in areas in which it has insufficient expertise.

Department Response: Compromise language follows:

In 340-18-050 (2) (C) restate to read If the Department concludes a local government LUCS review and determination may not be legally sufficient, the Department may deny the permit application and provide notice to the applicant. In the alternative, when the applicant and local government express a willingness to reconsider the land use determination, the Department may hold the permit application in abeyance until the redetermination is made. p. A-4

3. Mike Byers, Department of Land Conservation and Development, 1175 Court Street NE, Salem, Oregon 97310

The Department of Land Conservation and Development (DLCD) submitted a list of questions, comments and recommendations on the proposed rule and document. (see Attachment 3) Department staff has met with DLCD staff to discuss appropriate changes in response to DLCD's concerns. The two agencies concur on all changes made in response to the written comments.

Key concerns of DLCD that require revision are identified below. Minor corrections or issues are not specifically addressed, however, as stated above have been addressed to the satisfaction of DLCD. Department response is indicated after each comment.

1. Should program document expand section which discusses goals that most directly relate to DEQ activities to include goals 16 and 19.

   Response: Department concurs, appropriate sections were rewritten - p. ii, 3, 38.

2. Department should re-evaluate which programs are referenced in the goals.

   Response: Department concurs, references for authorities identified in goals 16 and 19 were added - p. ii,4,23,24

3. The document states that DEQ will not take action on a permit if a land use compatibility statement (lucs) is appealed after the lucs has been submitted unless stayed

by LUBA or court of law. Questions whether the lucs would be appealed or a local land use decision.

Response: Department legal counsel suggested that the lucs "or underlying land use decision" both be included, and to clarify that the process shall continue unless "LUBA or a court of law stays or invalidates a local action". p. iii,4,41

4. Recommends adding statement that some DEQ permits are listed in Division 31, the State Permit Consistency Rule, and that all have been identified as land use programs.

Response: Department concurs. p. iv, 44

5. Need clarification of the provision addressing notification to local government of rulemaking that affects land use.

Response: An earlier draft contained inconsistencies regarding this issue. The Department shall provide notice of new or amended rules to DLCD and the land use mailing list. p. A-6, v, 5, 44

6. Need to resolve which elements of the Air Quality State Implementation Plan (SIP) are land use programs.

Response: It is the Department's position that the land use related actions in the SIP have been identified as land use programs, consequently there is no need to also include the SIP as a land use program.

7. Reconsider whether the Airport Noise Abatement and Water Quality 401 Certification are in the correct sections in Figure 2.

Response: These actions are accurately identified. p. viii

8. Recommend that discussion on estuary planning be expanded and clarified.

Response: Department concurs. p. 38, 49

9. Consider if the North Albany Health Hazard Annexation Declaration attorney opinion should be discussed under the Exempt Program requirement.

Response: The Department agrees that the authorities under the Health Abatement Statute be identified as programs exempt from land use and addressed as such. p. ii, 40

10. Recommend that under the list of agencies that DEQ coordinates with, the Economic Development Department be added in reference to grants/loans for public wastewater treatment facilities.
Response: Department concurs. p. 58

11. Recommend expansion of discussion on the Department's role in the Oregon Coastal Management Program and Plan process.

Response: Department concurs. p. 21, 52, 53

4. Proposed Department revisions based on evaluation of comments received and related provisions:

12. Insert Commission in 340-18-000 as technical correction. p. A-1

13. Insert land use in 340-18-020 (8) as technical correction. p. A-2

14. Restated action in 340-18-030 (1) (g), (h), and (i) to provide consistency between the document and rule. p. A-3

15. Add unless otherwise obligated by statute to 340-18-050 (2) (a) (B) for clarification purposes. p.A-4

16. Insert (E) A local government may withdraw or modify its compatibility determination any time prior to the issuance of a permit. under 340-18-050 (2) (a). This is to further clarify the Department's policy of relying on the local government's determination of the compliance of a permit with the local plan. p.A-4, 42

17. Insert substitute language for 340-18-050 (2) (a) (F): (G) If a LUCS is successfully appealed after the Department has issued a permit, the Department may either proceed to revoke or suspend the permit or may decide to wait until the land use appeal process is exhausted. for clarification purposes.

18. Re-insert paragraph addressing - Procedures for Other Actions Affecting Land Use in Executive Summary. this was inadvertently removed from the former draft. p. v

eqc810f

Attachment 1

Associated General Contractors
Oregon-Columbia Chapter

National AGC Award Winning Chapter

President's "We Can—We Care" Award Recipient

July 17, 1990

Ms. Christie Nuttall
Department of Environmental Quality
811 S.W. Sixth Avenue
Portland, OR 97104-1390

Re: AGC Environmental Affairs Committee
Our File #6143-88

Dear Ms. Nuttall:

The Associated General Contractors, Columbia Chapter, and the Oregon Concrete & Aggregate Producers Association have reviewed your draft State Agency Coordination Rule, OAR Chapter 340 Division 18, and offer the following comments:

1. OAR 340-18-000 provides that the Department of Environmental Quality is not responsible for assuring compliance with the statewide planning goals or compatibility with acknowledged comprehensive plans to the extent that the statutory program requires the Department to be exclusively concerned with "public health and safety". This appears to violate ORS 197.180. ORS 197.180 requires all State agencies to "assure compliance with the goals and compatibility with acknowledged city and county comprehensive plans and land use regulations" unless the agency program is "expressly exempted by another statute from any of the requirements of * * * [197.180]." The DEQ State Agency Coordination Rules do not point to any such express exemption, and we have not been able to locate any. Accordingly, we conclude that this wholesale exemption from the state agency coordination requirements is invalid.

9450 S.W. Commerce Circle
Suite 200
Wilsonville, Oregon 97070

(503) 682-3363
In Oregon 1-800-826-6610
FAX (503) 682-1696

2. In a number of instances, the SAC rules state that "coordination" will be provided to a degree that is not clearly defined, but is described as the "fullest degree possible", (OAR 340-18-040(7), 340-18-050(1)), or as an amount limited by DEQ's "funding and staffing capabilities" (OAR 340-18-200). It is not apparent to us how subjective standards like these can meet the requirements of ORS 197.180. ORS 197.180 appears to demand an objective fulfillment of an objective standard: compliance with the goals and compatibility with local adopted comprehensive plans.

3. OAR 340-18-050(2)(C) appears to allow the Department of Environmental Quality to second-guess the local government as to the adequacy and completeness of a land use compatibility statement (LUCS). This exceeds the Department of Environmental Quality's authority. This provision also requires DEQ to perform analyses in areas for which it does not have sufficient expertise.

4. OAR 340-18-200 provides that the Department of Environmental Quality will provide technical assistance to local governments only "within Department funding and staffing capabilities." We do not believe that this is sufficient. We also fear that this policy choice betrays a more general problem with the DEQ's SAC rules--namely, that they offer little to expedite, simplify and rationalize the permit process, and instead just throw up more regulatory roadblocks. This is not what state agency coordination was intended to accomplish. State agency coordination was intended to make land use work in Oregon by providing technical assistance to local governments <u>early</u> in the planning process.

Thank you for the opportunity to comment on the draft Rules. If you have any questions, we would be happy to discuss them with you.

Very truly yours,

LANE POWELL SPEARS LUBERSKY

Attorneys for
Associated General Contractors and
Oregon Concrete & Aggregate
Producers Association

cc: Richard L. Angstrom
Jack R. Kalonoski
Ray Phelps

OCAPA

707 13th St. SE, #115
Salem, Oregon 97301
(503) 588-2430

July 17, 1990

Ms. Christie Nuttall
Department of Environmental Quality
811 S.W. Sixth Avenue
Portland, OR 97104-1390

Re: AGC Environmental Affairs Committee
Our File #6143-88

Dear Ms. Nuttall:

The Associated General Contractors, Columbia Chapter, and the Oregon Concrete & Aggregate Producers Association have reviewed your draft State Agency Coordination Rule, OAR Chapter 340 Division 18, and offer the following comments:

1. OAR 340-18-000 provides that the Department of Environmental Quality is not responsible for assuring compliance with the statewide planning goals or compatibility with acknowledged comprehensive plans to the extent that the statutory program requires the Department to be exclusively concerned with "public health and safety". This appears to violate ORS 197.180. ORS 197.180 requires all State agencies to "assure compliance with the goals and compatibility with acknowledged city and county comprehensive plans and land use regulations" unless the agency program is "expressly exempted by another statute from any of the requirements of * * * [197.180]." The DEQ State Agency Coordination Rules do not point to any such express exemption, and we have not been able to locate any. Accordingly, we conclude that this wholesale exemption from the state agency coordination requirements is invalid.

2. In a number of instances, the SAC rules state that "coordination" will be provided to a degree that is not clearly defined, but is described as the "fullest degree possible", (OAR 340-18-040(7), 340-18-050(1)), or as an amount limited by DEQ's "funding and staffing capabilities" (OAR 340-18-200). It is not apparent to us how subjective standards like these can meet the requirements of ORS 197.180. ORS 197.180 appears to demand an objective fulfillment of an objective standard: compliance with the goals and compatibility with local adopted comprehensive plans.

3. OAR 340-18-050(2)(C) appears to allow the Department of Environmental Quality to second-guess the local government as to the adequacy and completeness of a land use compatibility statement (LUCS). This exceeds the Department of Environmental Quality's authority. This provision also requires DEQ to perform analyses in areas for which it does not have sufficient expertise.

4. OAR 340-18-200 provides that the Department of Environmental Quality will provide technical assistance to local governments only "within Department funding and staffing capabilities." We do not believe that this is sufficient. We also fear that this policy choice betrays a more general problem with the DEQ's SAC rules--namely, that they offer little to expedite, simplify and rationalize the permit process, and instead just throw up more regulatory roadblocks. This is not what state agency coordination was intended to accomplish. State agency coordination was intended to make land use work in Oregon by providing technical assistance to local governments <u>early</u> in the planning process.

Thank you for the opportunity to comment on the draft Rules. If you have any questions, we would be happy to discuss them with you.

Very truly yours,

LANE POWELL SPEARS LUBERSKY

Attorneys for
Oregon Concrete & Aggregate
Producers Association and
Associated General Contractors

cc: Richard L. Angstrom
Jack R. Kalonoski
Ray Phelps

NEIL GOLDSCHMIDT
GOVERNOR

Department of Land Conservation and Development

1175 COURT STREET NE, SALEM, OREGON 97310-0590 PHONE (503) 373-0050 FAX 362-6705

** INTER-OFFICE MEMORANDUM **

July 17, 1990

TO: Roberta Young, Coordination Rule Hearings Officer
Department of Environmental Quality

FROM: Mike Byers, State Agency Coordination program

SUBJECT: July 17, 1990 hearing on draft State Agency Coordination program and administrative rule

I have reviewed the June 11, 1990 draft of DEQ's Land Use Coordination Program and proposed administrative rule. Overall, I find the document and rule to be well thought out and meeting almost all of the criteria in the Land Conservation and Development Commission's coordination rule (OAR 660-30).

I do have some questions, comments, and recommendations on both the coordination document and the draft rule. They are attached to this memo and presented as written testimony for the July 17th hearing. These items are the same ones we discussed during our meeting on July 2nd and are submitted again so they are part of the hearing record.

Please call me if you or Michael Huston have additional questions on my written comments or want to meet to review certain points. I look forward to seeing the final draft.

<sac> DEQ#3.LTR

DLCD NOTES & COMMENTS ON 6/11 DRAFT
DEQ SAC PROGRAM AND RULE

EXECUTIVE SUMMARY

1. p.ii ¶3 5/23 draft included Goals 16 & 19 as two goals that most directly relate to DEQ activities; why were these goals deleted from the 6/11 draft?

2. p.ii ¶4 text here suggests that the only DEQ program referenced in the goals is non-point program (Goal 16 implementation measure.) DEQ programs specifically referenced in the Goals also include:
   - water quality permits (Goals 16 & 19)
   - sewage treatment/disposal (Goal 16)
   - oil spill regulation (Goal 19)

   These additional goal references should be included in the executive summary and later in the text. **[See related item #16]**

3. p.iii ¶1 5/23 draft states that it is DEQ's "policy to prepare goal compliance findings for all rule making determined to affect land use" and that notice of rule making is sent to all local governments.

   These statements were deleted from 6/11 draft. Are they covered elsewhere?? **[See related item #18]**

4. p.iii ¶6 this revised wording is better as it makes it clear it will be the applicant not DEQ that may have to seek additional review by the city or county.

5. p.iii bottom do you intend the appeal to relate only to that specific LUCS action/form or does it include other local approvals as well?

6. p.iv 5/23 draft had a paragraph on "Procedures for Other Actions Affecting Land Use". Why was this paragraph dropped from the 6/11 draft?

6A. p.iv this is the only place that the permit compliance rule is mentioned. It would be helpful to add a paragraph in the summary indicating that some DEQ permits are listed in 660-31 and all such permits are included as DEQ land use programs. The existing ¶ would remain. **[See related item #28A]**

7. p.iv I like the changed/expanded exec. summary discussion of technical assistance to local governments.

8. p.v the last paragraph re: providing notice of rulemaking to local governments was deleted from the 6/11 draft. Why??

9. p.v Figure 1 (organization chart) is not in 6/11 draft.

10. p.vi I think the new Fig. 2 provides a good, quick summary of DEQ's compatibility procedures. I do have two observations:

A) for Airport Noise Abatement (Fig. 2,#2) you rely on 'written evidence' rather than the standard LUCS procedures (see p. 25). This makes me think it should be included under one of the other compatibility procedures.

B) for Certification of WQ Standards (Fig. 2,#17) you use the "deeming" approach (see p. 26), so this should not be listed under the LUCS compatibility mechanism. [**See related items # 24,31,35**]

MAIN TEXT

11. p.6 ¶3 it was a good idea to add the sentence at end of SIP paragraph regarding implementation of land use portion.

12. p.6-7 the new discussion of coordination with DOF for slash burning and DOA for field burning is helpful.

13. p.7 the 5/23 draft had a second paragraph under the Site Assessment section. Why was this deleted from 6/11 draft?

14. p.20 under non-point discussion in 5/23 draft there was a second paragraph re: federal research $$. Why was this deleted from 6/11 draft??

15. p.21 the 5/23 draft had a paragraph re: DEQ's participation in the OCMP process. This paragraph needs to be added back in to the 6/11 draft. [**See also item #37**]

16. p.23 ¶4 the paragraph under "Programs Referenced in the Goals" includes new material that was not in the 5/23 draft. This new wording is helpful. **However,** the longer and necessary discussion in the 5/13 draft of DEQ activities specifically referenced in Goals 16 & 19 has been deleted.

The last three paragraphs on page 23 of the 5/23 draft need to be added back in to the discussion under Programs Referenced in the Goals.

17. p.23 the revised text under "...Significant Effects" gives a cleaner explanation of the two additional DEQ guidelines. In the 6/11 draft the second guideline is 'softer' than in the 5/23 draft; was this change recommended by legal counsel??

18. pp.23-28 each program compatibility description in the 5/23 draft had a short paragraph re: rulemaking notice to cities and counties. That paragraph has been deleted from 6/11 draft. Is it covered elsewhere in the text or rule??

19. p.27 ¶1 the sentence "A permit will not be issued without an affirmative LUCS." has been deleted from the 6/11 draft. If this mean that DEQ might issue a permit without an affirmative LUCS then you need to describe how DEQ will achieve plan compatibility and comply with the goals.

20. p.27 ¶6 same as item #19

21. p.29 ¶1 this new paragraph is helpful.

22. p.34 ¶6 same as item #19

23. p.35 ¶7 this new paragraph provides a useful explanation of how compatibility will be achieved.

24. p.36 ¶2 the compatibility mechanism for this program has changed from the 5/23 draft in two ways: (A) the reference to DSL as the lead agency is gone; and (B) it has been replaced with a "deeming" approach. This is O.K. but the deeming approach also needs to be covered under the compatibility discussion in Section IV. [**See related item #35**]

25. pp.36-37 the new paragraphs on the Groundwater Management program and compatibility process better describe the relationship between DEQ and SWMG.

26. p.38 ¶5 the compatibility mechanism for estuary plans now includes the "deeming" approach in the 6/11 draft. How will DEQ's estuary plan affect local govs?? Will it be advisory? Mandatory?? [**See related item #35**]

27. p.38 under the Regulation of Oil Spill the 5/23 draft had additional reference to Goal 19. This was deleted from the 6/11 draft. The Goal 19 reference should be put back into the 6/11 draft.

28. p.38 the "deeming" compatibility mechanism has been added to the Regulation of Oil Spill land use program. As noted before, until we receive different direction, we feel this is an acceptable compatibility mechanism for large scale programs. **See item #35**

28A. p. 38 my comments on the 5/23 draft included a recommendation that a brief discussion/list of Programs subject to the LCDC Permit Consistency Rule, be added to this section of the document. This is a requirement of 660-30 and I repeat this recommendation for the 6/11 draft.

An alternative is to have a sentence under each of the six Class A and B permit programs in Section III that states that "this activity is listed as a Class A (B) permit under OAR 660-31-012."

28B. p.38 my comments on the 5/23 draft recommended a short paragraph or discussion of any DEQ programs that may be considered EXEMPT LAND USE PROGRAMS. A discussion under this heading is needed and **must be consistent with the A.G.'s letter of opinion (OP-6326) to Lydia Taylor re: the North Albany health hazard declaration.**

29. p.40 the 5/23 draft had a big paragraph here indicating that DEQ's rulemaking procedures require a goal review as part of its policy for assuring goal compliance with significant land use programs. This paragraph was deleted from the 6/11 draft and thus suggests a change in DEQ policy and procedures; is this true??

30. p.40-44 I think this is a very good presentation of the different mechanisms DEQ needs to use to show compatibility, and a good addition in the 6/11 draft. I do have some specific suggestions below.

31. p.40 it seems to me that two programs listed under the LUCS discussion don't really rely on the local land use compatibility statement. The Approval of Airport Abatement Plan (LUP #2) uses the 'written evidence' test and the Certification of Water Quality Standards for Federal Permits (LUP #20) uses the 'deeming' approach.

these two programs should be re-listed under other compatibility mechanisms.

32. p.41 for subsections (a), (b), and (d) where the text says 'comprehensive plan' I suggest you change it to read "comprehensive plan and/or land use regulations".

33. p.41 (f) this is similar to item #5 above. The reference to the LUCS being appealed confuses me; I would think that this could only happen when the action is permitted outright in the plan/code without standards. Isn't DEQ more concerned about appeals of a local decision rather than appeals of the LUC statement?

Also, a minor edit: Court should read Board.

34. p.43 as noted above, I feel the 6/11 draft benefits from this discussion of other compatibility procedures. I have a few comments/suggestions:

the Parking and Traffic Circulation Plan (LUP #6) and the Envir. Hazard Notice (LUP #8) are missing from the disussion on pp.40-43. I suggest putting the PTCP program under 3) 'written evidence', and including the Env. Hazard Notice under 4) 'Planning Activities'.

as noted above under item #10 above, I would also place the Airport Abatement Plan/Impact Boundary program under a 'written evidence' category such as 3).

35. p.43 I recommend you add a 5th procedure for the programs that use the "deeming" approach. Under this procedure I would include:
- Certification of WQ Standards (LUP #20);
- Estuary WQ Planning (LUP #23); and
- Development of Oil Spill Regs. (LUP #24).

36. pp46-48 the quick summary of programs and compatibility procedures is a nice addition to the 6/11 draft.

37. p. 52 there needs to be some discussion under this section on the Oregon Coastal Management Program and the Ocean Resources Management Plan. I've included sample wording on page 6 to cover these two.

38. pp.53-57 I note that several additions have been made to the list of agencies and their related program areas. I have one more addition under the Water Quality Division: ADD the Economic Development Department for grants/loans for public wastewater treatment facilities.

COORDINATION RULE 340-18

39. 18-000 I note the PURPOSE section has been expanded with the caveat of non-compliance if the Department has

statutory authority to exlusively consider public health and safety.

You probably want this to read "...requires that the Department's or Commission's actions be based..."

40. 18-040 the previous draft rule had a statement that prior to rulemaking the Department shall find that the proposed rule is in compliance with the statewide goals. This subsection has been deleted from the current 6/11 draft.

SUGGESTED ADDITION TO SECTION VI OF DEQ SAC PROGRAM

Oregon Coastal Management Program (OCMP)

The OCMP is part of Oregon's program for coordinated land use programs. The program is a partnership among local, state, and federal agencies to resolve general and often conflicting interests through comprehensive plans and land use regulations for all lands in Oregon's coastal zones. The OCMP is based upon specific resource management authorities contained in Oregon Revised Statutes. The Department's involvement is based on:

ORS Chapter 468: Application and administration of air and water pollution; oil spill regulations.

ORS Chapter 454: Application and administration of sewage treatment works.

The Department will participate with DLCD and other OCMP agencies, as resources permit, to develop and update a five-year strategic plan for Oregon's coastal zone.

Oregon Ocean Management Plan

The Department will continue to be an active participant in the ocean resources management process. Following adoption of the Oregon Ocean Management Plan by LCDC, the Department will consider incorporating into the appropriate Department rules and programs those aspects of the Ocean Plan which the Department has authority to implement.

DLCD <sac>DEQ3
6-29-90

Attachment G
Agenda Item Q
August 10, 1990
EQC Meeting

DRAFT ---------- DRAFT ---------- DRAFT

8-10-90

STATE AGENCY COORDINATION PROGRAM

IN ACCORDANCE WITH ORS 197.180 and
OAR CHAPTER 660, DIVISION 30 and 31

APPROVED BY THE ENVIRONMENTAL QUALITY COMMISSION
(DATE)
CERTIFIED BY THE LAND CONSERVATION & DEVELOPMENT COMMISSION
(DATE)

DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE AGENCY COORDINATION PROGRAM

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Oregon Revised Statutes Chapter 197 requires state agencies to carry out their land use responsibilities in compliance with the statewide planning goals and compatible with state acknowledged comprehensive plans. Agencies are required to develop and adopt a state agency coordination (SAC) program to fulfill these obligations. This document describes the Department of Environmental Quality's (Department) policies and procedures for state agency coordination on land use related matters. This is the Department's second update of the SAC program since its initial adoption in 1978.

By state law, state agency coordination programs must contain four elements:

1. Identification of agency rules and programs that affect land use.
2. Procedures to assure goal compliance and compatibility with acknowledged comprehensive plans.
3. Procedures to assure cooperation with and technical assistance to local government.
4. Procedures to coordinate with federal agencies, other state agencies and special districts.

The SAC must also include a description of all agency rules and programs, and procedures for the resolution of land use disputes. The key portions of a SAC such as the procedures for goal compliance plan compatibility and the determination of new or amended programs that affect land use must be adopted by administrative rule.

The following paragraphs provide an overview of each of the Department's SAC document sections.

Section 1 - Introduction

The Department is authorized to maintain, restore, and preserve the state's air and water resources and to manage hazardous and solid waste. These authorities are vested in a five member Environmental Quality Commission (Commission) appointed by the Governor and responsible for overseeing Department policy.

The SAC Program document reflects the Department's view of the federal, state and local government roles regarding environmental quality. The federal and state roles primarily consist of the development,implementation, and enforcement of environmental standards. Local governments generally focus on the prevention of environmental pollution or degradation through comprehensive planning or other mechanisms which regulate development.

The Commission supports an increasing emphasis on the prevention of environmental degradation at the state level. The Commission and Department believe this focus should be well coordinated with local government, most appropriately through the land use planning process. As resources permit, it is the Department's intent to identify and pursue opportunities within its program areas to further state or local efforts to prevent environmental degradation through more effective planning.

Section II - Overview of Department Programs

This section summarizes all agency programs according to the seven Department divisions: Air Quality, Environmental Cleanup, Hazardous and Solid Waste, Laboratory and Applied Research, Management Services, Region Operations, and Water Quality (see Figure 1).

Section III - Rules, Programs and Actions Affecting Land Use

Goals that Relate to Land Use

~~[The Department's rules, programs, and actions that affect land use may relate to any of the nineteen statewide land use goals, but the two goals that most directly relate to the Department's activities are: Goal 6 - Air, Water and Land Resource Quality and Goal 11 - Public Facilities and Services. Although these are the primary goals that relate to Department responsibilities, other goals may apply to Department land use actions and will be appropriately addressed when necessary. These goals may include Goal 5, the open space and natural resources goal, or the four coastal goals.]~~

Of the nineteen statewide land use goals, Goal 6 - Air, Water and Land Resources Quality, most directly relates to Department programs in that federal and state regulatory authorities governing these resources are vested in the Department and Commission. This goal requires that all waste and process discharges from development comply with state and federal environmental quality standards. However, other goals such as Goal 5 - Open Spaces, Scenic and Historic Areas, and Natural Resources; Goal 11 - Public Facilities and Services; Goal 16 - Estuarine Resources; and Goal 19 - Ocean Resources are also significant in that the implementation of these goals must involve the consideration of the carrying capacity and protection of air and water resources. In accordance with the State Agency Coordination rule requirements, the Department will comply with all applicable statewide goals.

Department Programs Referenced in Goals

The Department of Land Conservation and Development's (DLCD) administrative rule OAR 660-30-005 considers that an agency rule or program affects land use if, (1) it is specifically referenced in the statewide planning goals, or (2) it is reasonably expected to have significant effects on resources, objectives or areas identified in the goals or in acknowledged comprehensive plans. Under DLCD's first criterion, ~~[the Department's Water Quality] [Nonpoint Source Program is referenced in Goal 16 -- Estuarine] [Resources.--These authorities are essential to maintaining water] [quality and to minimize man-induced sedimentation in estuaries.-]~~ the implementation requirements of Goal 16 direct state and federal agencies to ... "review, revise and implement their plans, actions, and management authorities to maintain water quality and minimize man-induced sedimentation in estuaries." The goal further direct local government to recognize these authorities rather than developing new or duplicatory management controls. The Department's nonpoint source discharge water quality program is specifically referenced as a state authorized management program for estuaries.

Goal 16 also identifies the Department's water quality and sewage disposal systems authorities as state authorities of special concern in estuarine areas. As such, agencies are to assure that their procedures and standards address the objectives of the goal.

Goal 19 speaks to the conservation of natural resources of the nearshore ocean and the continental shelf. The implementation requirements of this goal includes water quality permits and oil spillage regulation authorities as state authorities of special concern.

To provide assistance in evaluating DLCD's "significance" criterion, in the second criterion, the Department relied on two interpretive guidelines: a) the land use responsibilities of a program or action involving more than one agency, rests with the agency that has primary statutory authority; and b) a determination of land use significance must consider the Department's mandate to protect public health and safety and the environment.

Exemptions

Under DLCD rules, state agencies must identify any rules or programs that are specifically exempt from goal compliance or plan compatibility. The Department authorities under the Health Hazard Abatement Law, ORS 222.840 to 222.915, have been determined exempt from land use coordination requirements by the opinion of the Attorney General. (Opinion request OP_6326).

The court, in West Side Sanitary District v. LCDC (#26780) held that in the Health Division's determination of whether a danger to public health exists, the sole issue involved is current health conditions and not future land use implications. The above cited opinion states that the Environmental Quality Commission has no discretion to apply land use planning goals in the review and approval of a jurisdiction or alternative plan for the removal or alleviation of a health hazard.

Program Affecting Land Use

In applying DLCD's criteria, the Department has identified twenty-three actions that affect land use. The procedures for assuring comprehensive plan compatibility for these Department actions are summarized in Figure 2 (page viii).

Section IV - Procedures for Assuring Statewide Goal Compliance and Compatibility with Acknowledged Plans

Procedures for Compliance with Statewide Goals - It is the Department's intent to achieve goal compliance by relying on local government determinations of acknowledged comprehensive plan compatibility to the degree possible. DLCD's administrative rule OAR 660-30-065 describes circumstances that require an agency to directly comply with the statewide goals. When necessary, the Department will identify the applicable goal(s), seek advice from DLCD or the Attorney General's office when needed, consult with the affected local governments, and adopt appropriate findings to support goal compliance.

Procedures for Acknowledged Plan Compatibility - The Department has identified twenty-three actions that affect land use and has developed procedures for assuring statewide goal compliance and comprehensive plan compatibility.

The majority of Department actions affecting land use involve the requirement of a Land Use Compatibility Statement (LUCS). Through the use of the LUCS, the Department relies on the affected local government to determine comprehensive plan compatibility. Procedural provisions involving a LUCS include:

- A completed LUCS, acted upon by the affected local government must be submitted by an applicant with an approval request or permit application. If an affirmative LUCS is not received the Department will not process the application, unless otherwise obligated by statute.

- The Department relies on an affirmative LUCS as a determination of local plan compatibility. If a negative LUCS is received the application will not be processed.

- If the Department concludes a local government LUCS review and determination may not be legally sufficient, the Department may deny the permit application and provide notice to the applicant. In the alternative, when the applicant and local government express a willingness to reconsider the land use determination, the Department may hold the permit application in abeyance until the reconsideration is made.

- If more than one local government has jurisdiction for an activity, the LUCS must be reviewed by each affected jurisdiction.

- A local government may withdraw or modify its compatibility determination any time prior to the issuance of a permit.

- If a LUCS or underlying land use decision is appealed after the Department has determined an application complete, the permit will be processed and may be issued except when the LUCS has been stayed or invalidated by the Land Use Board of Appeals (LUBA), or other court of law. ~~[The Department will not take action to withhold permit issuance or to revoke a permit until ordered by a court, or until the appeal process is exhausted.]~~

- If a LUCS is successfully appealed after the Department has issued a permit, the Department may either proceed to revoke or suspend the permit or may decide to wait until the land use appeals process is exhausted.

- A LUCS is not required for a permit renewal unless the renewal also involves a substantial modification that would in itself require a LUCS.

- A LUCS is required for a permit modification when conditions exist that constitute a substantial modification or intensification of the permitted activity as determined when: the permitted source or activity will be expanded or use additional property; the modification involves a significant increase in discharge to state waters or into the ground; the modification involves the relocation of an outfall outside of the source property; or, any physical or operational change that would result in a net significant emission rate increase.

Procedures for Other Actions Affecting Land Use - Procedures for actions other than permits that affect land use vary by action as depicted in Figure 2. These may include the submittal of a LUCS; submittal of written evidence of local government participation and approval; notification to local government before Department action is taken; or notice to local government of proposed rulemaking.

Procedures for Dispute Resolution - In efforts to resolve a land use dispute the Department will consider several options:
1) meetings and discussions with affected local government;
2) alternatives or modifications of the Department's SAC Program;
3) application for necessary local land use approval;
4) an appeal of the local government action; submittal request for local approval during periodic review; or
5) a request for Land Conservation and Development Commission (LCDC) mediation.

Goal Compliance and Plan Compatibility Procedures for New or Amended Rules - The Department will evaluate all proposed rules using the factors in Section III for determining if rules and programs affect land use. The DLCD and land use mailing list will receive a notice of all proposed rulemaking determined to affect land use.

State Permit Compliance and Compatibility Rule - The Department proposes one SAC program change that affects DLCD's OAR 660 Division 31. One new permit, the Waste Tire Storage Permit, has been included in the SAC program. The permit should be classified a Class B permit. All Department permits listed in Division 31 are identified as programs affecting land use. The Department relies on an affirmative LUCS for a determination of plan compatibility before a permit is issued.

Section V - Cooperation and Technical Assistance to Local Government

The Department provides information and technical assistance through all of its program areas. The Department will coordinate its activities affecting land use with local governments to prevent potential conflicts between local and state planning. Coordination and assistance may involve periodic review, technical assistance and plan amendments. Local requests should be initiated through the Intergovernmental Coordination office.

Involvement in Periodic Review - The Department will provide periodic review guidelines to local government upon request. As resources allow, Department staff will evaluate periodic review related plan or plan amendments upon request. The Department will participate in periodic review through the establishment of priority environmental concerns that relate to land use planning. This may involve emphasis on geographic areas or issue areas of high environmental priority.

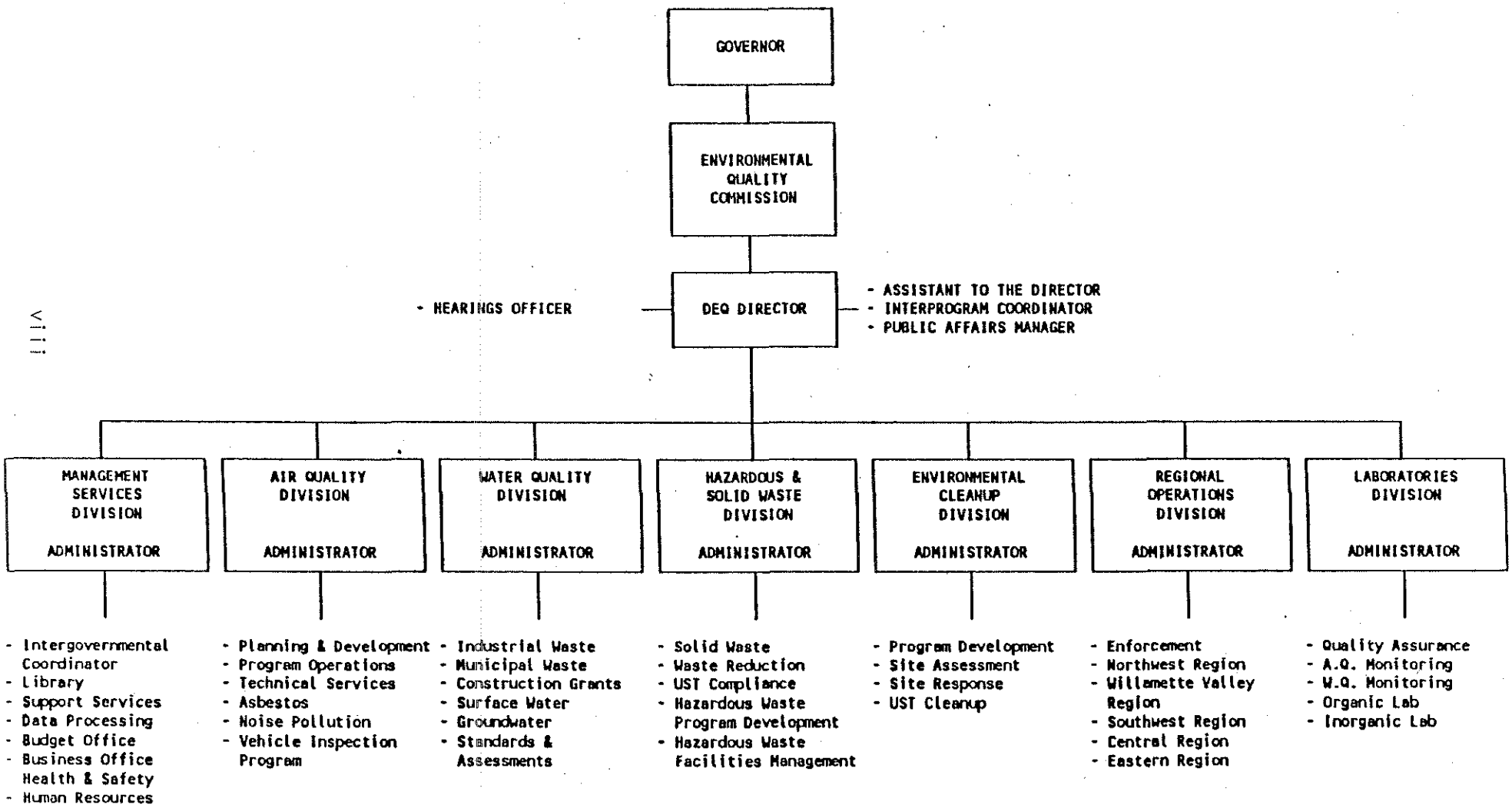
The above provisions for cooperation, coordination and technical assistance also apply to coastal areas with a specific emphasis on Goal 16, Estuarine Resources and Goal 19, Ocean Resources.

Section VI - Coordination with State Agencies, Federal Agencies and Special Districts

The Department's authorities and areas of responsibility require on-going coordination with other agencies, particularly natural resource agencies and special service districts. In response to DLCD's rule requirement of agency coordination for providing services necessary for economic development, the Department shall coordinate with the Departments of Economic Development, Land Conservation and Development, Transportation, and Water Resources in the implementation of federal grant and state loan applications for wastewater pollution control and treatment facilities.

FIGURE 1

STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY
1989 - 1991



\PERSONEL\MGNMTORG (2/23/90)

Figure 2

DEPARTMENT PROGRAMS/ACTIONS AFFECTING LAND USE
Goal Compliance/Plan Compatibility Procedures

Actions Affecting Land Use	Consistency/Compatibility Mechanisms
1. Approval of Noise Impact Boundaries for Motor Racing Facilities 2. Approval of Airport Noise Abatement Program/Noise Impact Boundaries 3. Approval of Air Quality Notice of Construction 4. Issuance of Air Contaminant Discharge Permit 5. Issuance of Indirect Source Construction Permit 6. Approval of Parking and Traffic Circulation Plan 7. Issuance of Solid Waste Disposal Permit 8. Issuance of Waste Tire Storage Permit 9. Issuance of Hazardous Waste & PCB Storage, Treatment and Disposal Permits 10. Issuance of Environmental Hazard Notice 11. Approval of Pollution Control Bond Fund Application 12. Approval of Wastewater System and Facility Plans 13. Approval of Construction Grant Program Application 14. Approval of State Revolving Loan Applications for Water Pollution Control Facilities 15. Issuance of On-Site Sewage Disposal Permit 16. Issuance of Federal and State Industrial Waste Discharge Permits (NPDES, WPCF) 17. *Certification of Water Quality Standards for Federal Permits or Licenses	The Department relies on a local government determination of plan compatibility before approving these permits or plan approvals. An applicant is required to submit a Land Use Compatibility Statement (LUCS) with a permit application or plan approval material. It is the applicant's responsibility to provide the LUCS to the local government of jurisdiction for review and sign off. With actions 2. and 6., other written evidence of compatibility may be provided. The Department will not proceed with these actions until a completed LUCS is submitted. If the Department determines that a LUCS review did not consider all relevant land use issues, the applicant may be required to provide additional compatibility information.
~~[18. Air Quality State Implementation Plan (SIP)~~	~~Local governments receive notice and opportunity for input when the SIP is amended or updated. The actions in SIP identified as affecting land use are implemented through the specific action procedure (e.g., permitting process).]~~
18. Development of Water Quality Wetland Protection Criteria	Compatibility for point sources is achieved through the discharge permit process (LUCS). Rules have not been developed for nonpoint application.
19. Requirement of Implementation Plan for Meeting Total Maximum Daily Load Requirements for Water Quality Limited Waterways 20. Development of Estuary Water Quality Plans	Written evidence that a Department plan or locally developed implementation plan is compatible with all affected local comprehensive plans, is required before plan approval.
21. Development of Action Plan for Declared Groundwater Management Plan 22. Development of Water Quality Nonpoint Source Plan ~~[22. Development of Estuary Water Quality Plans]~~ 23. Development of Oil Spills Regulations	All affected local governments receive notice prior to Department initiation of actions. Opportunities are provided for local government participation and coordination on land use issues.

J:\SB9681.1 (7/90)

*Subject to limitations of Section 401 of the federal Clean Water Act.

SECTION I

INTRODUCTION

1. AUTHORITY FOR LAND USE COORDINATION

Oregon's land use laws mandate state agency responsibilities which include the submittal of a State Agency Coordination (SAC) program to the Land Conservation and Development Commission (LCDC) for approval. In 1986, LCDC revised its administrative rules to strengthen and clarify state agency coordination requirements. Under the revised rules, all agencies, including those with previously approved coordination programs, must submit a coordination program for LCDC approval by September, 1990. The current Department State Agency Coordination program was approved by LCDC in January 1983 as being in compliance with the requirements of ORS 197.180. This is the Department's second update of its SAC program.

2. STATUTORY ROLE OF DEQ

The Department of Environmental Quality evolved from the State Sanitary Authority by legislative direction in 1969. The agency reports to a Governor-appointed five member citizen commission, the Environmental Quality Commission (Commission).

The role of the Commission is to establish Department operational policies and to adopt rules and standards essential to the Department's functions.

The Department has broad authorities related to the maintenance, restoration, and preservation of the quality of Oregon's air and water resources and to the management of hazardous and solid wastes. These authorities are carried out by seven Departmental divisions.

The Director serves at the pleasure of the Commission and is responsible for overall agency management. The Director's office houses the agency's Public Affairs and Hearings sections. Agency divisions report to the Director and include:

Air Quality
Environmental Cleanup
Hazardous and Solid Waste
Laboratory & Applied Research
Management Services
Regional Operations
Water Quality

3. LAND USE PLANNING AND ENVIRONMENTAL QUALITY

Environmental quality may be narrowly interpreted as applying to our natural environment or, interpreted to include virtually every aspect of our living environment. The federal and state authorities governing environmental quality encompass the natural environment classifications such as air, water, sewage, solid waste and hazardous waste. From a local land use perspective, however, the environment may be perceived more expansively to include elements such as recreation, housing, transportation, and energy.

There are three governmental levels of control and regulation of environmental quality...federal, state, and local. The federal and state roles focus on the establishment of environmental quality standards and regulation and enforcement, with growing emphasis on the prevention of environmental degradation. Local government regulation to prevent environmental pollution and degradation is accomplished through a variety of mechanisms which may include the local comprehensive plan, related development ordinances and building codes.

State environmental regulation is continually changing in response to growth pressures on the state's natural resource assimilative capacity. The state can assist local government in furthering a local emphasis on prevention of environmental degradation. This can be most directly accomplished by providing current monitoring, assessment or other technical data to assist local government in managing future growth with accurate environmental-based decision making.

SECTION II

OVERVIEW OF DEPARTMENT PROGRAMS

1. ORGANIZATION

The Department's program areas are organized under its seven divisions. The information in this section is presented in accord with the agency's organization structure. Division management sections are established for each major program area; within each section there are a number of sub-programs, actions, or activities necessary for program implementation.

2. OFFICE OF THE DIRECTOR

The Director provides agency leadership and guidance in carrying out policy direction established by the Commission. The Office of the Director includes the Assistant to the Director, Public Affairs, Hearings Officer, and Administrative Support staff.

3. AIR QUALITY DIVISION

The Department is the designated agency responsible for the establishment and implementation of state air quality requirements under the federal Clean Air Act as well as state requirements. These responsibilities have been delegated by the Department to the Lane Regional Air Pollution Authority which assumes jurisdiction over most sources of air pollution in Lane County. The Air Quality Division oversees the development and implementation of state programs for the restoration and maintenance of the state's air resources, to facilitate cooperation among local government, and, to provide the means for air quality control through pollution abatement and prevention. The Division is also responsible for the development, implementation and enforcement of noise emission standards. These statutory responsibilities are carried out through the following programs:

Administration. Provides management and administrative support services to the various air quality program areas, and assists in obtaining federal funding for program areas.

Asbestos Control. Asbestos abatement is defined as any work which involves the handling, removal or disposal of any materials with potential of releasing asbestos fiber into the air. The Department regulates building owners and contractors through work practices, disposal requirements, training, and licensing of workers and contractors for all types of asbestos

abatement. Notification to the Department is required prior to any asbestos abatement project.

Fieldburning Smoke Management. Air emissions from agricultural burning practices are regulated by the Department in the Willamette Valley. Registration permits are issued yearly which identify the amount of acreage to be open burned in accord with burning criteria. The permit fees support the research and development of feasible alternatives to fieldburning. In 1990, the Department transferred some of its program responsibilities, through a Memorandum of Understanding, to the Oregon Department of Agriculture. The transferred responsibilities include assistance, monitoring and compliance, registration, and fee collection. The Department is responsible for enforcement activities.

Motor Vehicle Inspection. Vehicle emission testing program involves testing and inspection certification of motor vehicle emission control systems. A Certificate of Compliance is required in order to renew a vehicle's registration in the Portland and Medford areas. Vehicle inspection may be required if needed in any area that is not in compliance with carbon monoxide standards.

Noise Control. Develops and administers noise emission standards and regulations. Technical assistance, training, and equipment loans to local governments and other affected agencies are also provided. Specific noise control regulations apply to the following:

- Sale of new motor vehicles.
- New and existing industrial and commercial facilities.
- Motor sports vehicles and (racing) facilities. The data and analysis used to determine the environmental noise impact boundaries for new facilities must be submitted to the Department for approval. Facilities located more than two miles from noise sensitive land uses are exempt from this requirement.
- Noise abatement plans are required for airports which encompass noise sensitive property within the noise impact boundary. The submittal of noise impact contours for Department evaluation and approval is also required when a new airport master plan is developed.

Program Operations. The Program Operations role is to achieve and maintain a high level of sources operating in compliance with federal and state air quality rules, regulations, and permit conditions. The Section is responsible for the issuance of all new and renewed permits, permit modifications, and

provides technical assistance to the regulated sources and communities. This is accomplished through the administration and enforcement of ambient air emission standards as follows:

- Submittal of a Notice of Construction (NC) to the Department is required before commencement of any construction or modification of an air contaminant source, unless an Air Contaminant Discharge Permit (ACDP) is required. The NC applies primarily to sources that emit less than 10 tons of any pollutant per year and to sources that do not have significant toxic air pollutant emissions.

- An ACDP is required before the construction, major modification and operation of all significant air contaminant sources. Specific criteria requirements for an ACDP are determined by the amount of emissions per year or the type of source on pollutant emissions.

  Permit criteria vary depending upon the type and level of emissions involved which may include: federally-based criteria for new sources that emit over 250 tons/year; growth increment strategies; state criteria governing the highest and best treatment and control practices; and, criteria for sources located in air quality nonattainment areas.

- An emission permit is required for any activity in a wilderness area other than emergency or recreational which causes the emission of air contaminants, water pollutants or noise in excess of specified environmental standards. This permit is required in addition to other Department permit requirements.

- The Department will, in response to new federal requirements, develop and implement air toxic controls for new and existing sources.

Planning and Development. Develops, plans, monitors and implements appropriate procedures to achieve and maintain compliance with air quality standards; and coordinates federal requirements with the state air quality programs. These are principally accomplished through the development and implementation of control strategies for attainment areas and nonattainment areas (Nonattainment areas include Portland-Vancouver, Salem, Eugene-Springfield, Medford-Ashland, Klamath Falls and Grants Pass). Specific actions are stated below:

- Indirect Source Construction Permits (ISCP) are required for the construction and operation of certain types of parking facilities, airports, highways, and for other types of attractors of motor vehicles in certain parts of the state. Threshold levels vary

according to the amount of parking or other indicators.

- Parking and Traffic Circulation Plans (PTCP) may be required for the control of motor vehicle emissions located in or projected to be in noncompliance areas. The plan requirement is based on the Department's or a regional air authority determination that the control of parking spaces and traffic circulation is necessary to ensure attainment of state and federal air standards.

- ~~[The State Implementation Plan (SIP) is the Department's plan to implement provisions of the federal Clean Air Act. The Act requires that all states develop such plans for attaining and maintaining national ambient air quality standards. The SIP contains statewide air quality regulatory provisions, control strategies for nonattainment and attainment areas, an ambient air monitoring program, criteria for the prevention of significant deterioration, an emergency action plan, information on intergovernmental cooperation, and public involvement procedures. The portions of the plan that affect land use are implemented through the discharge permitting process.]~~

- The certification of new woodstoves offered for sale is required statewide for the control of air pollutants, including fine particulate emissions (PM_{10}). Retail stores are inspected for compliance with federal and state woodstove labeling regulations.

- A visibility impact analysis is required of major air contaminant sources or major source modifications to prevent significant visual impairment in federal wilderness areas and national parks. These requirements are implemented through the ACDP process.

- Open burning regulations prohibit industrial burning and regulate other classes of open burning statewide. Letter approvals may be issued for exceptions to prohibited burning activities. In areas and under circumstances where open burning is allowed, the local fire control entity has authority to issue a local burning permit. The Department coordinates with the Department of Forestry to assure slash burning regulations comply with state and federal air standards.

- The Department regulates agricultural field burning in the Willamette Valley through the implementation of statutory limits on the maximum number of acres that

can be open burned. These responsibilities are closely coordinated and shared with the Department of Agriculture.

- o Air contaminant sources with emissions of toxic air pollutants not currently regulated as standard criteria pollutants are subject to an interim policy regarding risk evaluation. The policy is implemented through the standard ACDP process.

4. ENVIRONMENTAL CLEANUP DIVISION

The Environmental Cleanup Division is authorized to eliminate or minimize adverse impacts to public health and the environment by cleanup of hazardous substances that have been released or improperly disposed. Program implementation is carried out through the Division's five sections:

Administration. Consists of the Division Administrator, an environmental toxicologist, and division administrative support staff. The toxicologist provides technical assistance which includes the review of studies involving environmental risk analysis. The section is responsible for the coordination of cleanup activities associated with illegal drug labs and spills of hazardous substances.

Site Assessment. Responsible for developing a statewide list of facilities with a confirmed release of hazardous substances; establishing an inventory of facilities where a confirmed release may pose a significant threat to public health and safety of the environment; and, conducting preliminary assessments of facilities to determine the extent of a release and an appropriate course of action regarding further investigation and cleanup.

Site Response. If a preliminary assessment determines that a site poses a significant threat to the public health or environment, the site is transferred to the Site Response Section for further investigation and selection of a remedial action.

Investigations are typically referred to as "remedial investigations" and "feasibility studies." A remedial investigation is conducted to characterize the hazardous substances, determine the extent of contamination, and, to evaluate the potential or actual hazard to public health or the environment.

The next step involves a feasibility study to develop and evaluate remedial action options for site cleanup. Department rules direct that sites be cleaned up to background level or to the lowest concentration level feasible using the highest and

best technology available. Remedial action may include removal of contaminants for off-site management or selection of an on-site cleanup action.

The cleanup level and remedial action for each site is, by law, determined by the Director. The remedial action must protect present and future public health, safety and welfare and the environment. To the extent possible, the remedial action must be cost effective and implementable, and must use permanent solutions and alternative technologies or resource recovery technologies.

In cases where cleanup technology is not feasible, measures other than cleanup may be necessary such as fencing, designed to prevent or minimize exposure by the public or wildlife.

The section also administers the state Hazardous Substance Remedial Action Fund which provides a state match for federal Superfund monies to clean up federally authorized hazardous substance sites.

Underground Storage Tank (UST) Cleanup. This section is responsible for the identification of sites, investigation, and cleanup oversight of leaking underground storage tanks containing petroleum. The federal Leaking Underground Storage Tank Trust Fund is used to investigate and clean up sites where the responsible parties are unknown. Of the approximately 19,000 underground storage tanks at 6,000 facilities in Oregon, there is an estimated 75% contamination rate. In comparison to the cleanup of sites with hazardous substance contamination, the cleanup of USTs is often relatively inexpensive and simple. In the majority of cases, cleanup involves soil excavation and disposal, and the cleanup and/or disposal of tanks.

Policy and Program Development. This section is responsible for development of the Division's rules, policies, budget, and data information systems. Other administrative functions include contractor procurement, management of federal Superfund assistance agreements, and development of coordination procedures for cleanup activities with other Department divisions.

- The Commission is authorized to issue a Notice of Environmental Hazard to the affected local government for a disposal site that contains potential hazards to human health or the environment. The notice identifies the site, describes the contamination, states the use restrictions of the site, and contains findings supporting the decision to issue a notice. The affected local government is required by statute to include the notice in the comprehensive plan, in appropriate land use regulations, and on zoning maps.

5. HAZARDOUS AND SOLID WASTE DIVISION

The Hazardous Waste Program regulates the transportation, treatment, reduction, and disposal of hazardous wastes; the disposal of polychlorinated biphenyls (PCB); and the management of hazardous wastes by generators.

Solid waste responsibilities apply to the minimization, management and disposal of solid waste. The Department encourages the reuse of materials, the recycling of materials that cannot be reused, the recovery of energy from wastes that cannot be reused or recycled, and the proper disposal of wastes that cannot be reused, recycled, or recovered as energy by approved and regulated methods.

The Division carries out its responsibilities through eight program areas:

Administration. Provides division policy, management and administrative support services.

Hazardous Waste Technical Assistance. Responsible for development and maintenance of the hazardous waste database, providing technical assistance to the regulated community, developing hazardous waste policy and rules, coordinating and negotiating with the EPA, the reduction of hazardous waste, and for the development and monitoring of the hazardous waste biennial and operating budgets.

This program ensures that hazardous wastes generated in Oregon are reduced, reused, and recycled to the extent possible in line with statutory priorities. Regulations also require planning by businesses to reduce the quantity of toxic chemicals used and the amount of hazardous waste generated. Technical assistance is provided to businesses for development of reduction plans.

Beginning in 1991, every toxics user must submit an annual progress report to the Department on the status of its reduction plan and goals.

Hazardous Waste Permits and Compliance. Implements federal hazardous waste legislation in Oregon to ensure proper management from generation to disposal through the following mechanisms:

- Hazardous waste permits are required for the storage, treatment, or disposal of hazardous waste, or for the modification of such practices.
- A closure permit and plan is required for the closure of any hazardous waste disposal site.

- Registration with the Department is required of all fully regulated and small quantity generators of hazardous waste. Field staff inspect generators for compliance with appropriate standards and regulations.

Underground Storage Tank (UST) Compliance. Responsible for assuring the underground storage of oil and hazardous materials is accomplished in a manner which prevents groundwater contamination or tank leakage into the environment. The following mechanisms are used to meet these responsibilities:

- Department registration permits are required for tanks containing petroleum or other hazardous materials.

- Any tank removal, modification, leak testing or detecting, or contaminated soil cleanups must receive prior approval from the Department.

- Companies working on UST systems are required to be licensed and to employ Department certified supervisors.

- The Department approves state grants and guaranteed loan funds to underground storage tank owners for tank testing, pollution control upgrades, and soil cleanups which are required by the EPA.

Solid Waste Permits and Compliance. This program ensures that municipal and industrial solid waste is properly disposed. These responsibilities are accomplished through the following mechanisms:

- Engineering and design plans for the construction or modification of solid waste disposal facilities and/or sites must be reviewed for compliance with regulations, permit conditions and approved by the Department.

- A solid waste disposal permit is required for the disposal of solid waste anywhere in the state.

- A disposal site closure permit is required and must be initiated five years before anticipated closure of a site.

- The Waste Tire Management Section addresses the generation and disposal of approximately two million waste tires annually in Oregon. The program regulates the collection, transport or storage of waste tires, and has established a state fund to partially reimburse businesses for using waste tires and to fund cleanup of existing disposal sites.

- o A waste tire permit is required for the transport and storage of waste tires. Persons transporting more than 5 waste tires for the purpose of storage or disposal must obtain a carrier permit. A permit is also required of a person who stores more than 100 waste tires at a site.

- o A fee is required on the sale of every new tire in the state. The fee revenue is placed in a waste tire recycling account to provide financial assistance for cleaning up waste tire disposal sites. The Department has authority to clean up these sites when the owner is unable or unwilling, and is authorized to seek reimbursement of cleanup costs from the site owner.

Solid Waste Reduction

Statutory priorities for the management of solid waste in Oregon are: reduce, reuse, recycle, recover energy, and landfill. These objectives are carried out through the following activities:

- o Approval of recycling grants and technical assistance to local government and the public.

- o The Department approves a required recycling report submitted by each designated wasteshed in the state.

- o Communities that ship more than 75,000 tons of solid waste per year to a regional disposal site must submit a waste reduction plan to the Department for approval.

- o The Department certifies carriers of recycled materials as eligible for special Public Utility Commission trucking rates.

6. LABORATORY AND APPLIED RESEARCH DIVISION

This Division provides chemical, biological and microbiological analysis, and sampling and monitoring services to the Department. The Division analyzes samples collected by its own monitoring groups, regional and program staff, and other state or federal agencies. It also provides analytical expertise to evaluate methods submitted for review or to develop such methods. The Division consists of the following program sections:

Administration. Provides division guidance, management and administrative support services, including data filing and distribution to users.

Air Monitoring. Maintains and operates a statewide ambient air sampling network for airborne particulate and meteorology, including wind speed, direction, and temperature; and a gaseous pollutant monitoring network for carbon monoxide, ozone, nitrogen oxides, and sulfur dioxide. Real-time monitoring and meteorology data is transmitted to the Laboratory via phone lines to a computer Data Acquisition System.

Water Monitoring. Collects water samples as part of statewide ambient and special monitoring projects. Groundwater monitoring is conducted at landfills, hazardous waste disposal sites, and for regional groundwater assessment studies. The section conducts Comprehensive Monitoring Evaluations on sources required to perform self-monitoring under federal law. Samples are collected to identify sources and determine extent of contamination in Superfund actions, and to evaluate environmental impact of hazardous substance spills. Water monitoring includes biomonitoring which conducts bio-assessment of streams, laboratory bioassays on effluents, and biological characterization of water quality.

Organic Analysis. The Organic Laboratory section performs quantitative analyses for organic chemicals (volatiles, semi-volatiles, PCBs, polynuclear aromatics, pesticides, herbicides, phenols, cyanide) in air, water, waste, tissue and soil samples collected during ambient monitoring, complaint investigation, compliance monitoring, split samples, special studies, spill and superfund investigation and cleanup. Analytical data is used for strategy planning, measuring quality of environment, evaluating compliance, enforcement, identifying spills, determining need for and effectiveness of cleanup.

Inorganic Analysis. The Inorganic Laboratory section performs quantitative analysis for minerals, trace metals, non-metals and nutrients in air, water, waste, tissue, and soil samples collected during ambient monitoring, complaint investigation, compliance monitoring, split samples, special studies, spill and superfund investigation and cleanup, etc. Analytical data is used for strategy planning, measuring quality of environment, evaluating compliance, enforcement, identifying spills, determining need for and effectiveness of cleanup.

Quality Assurance. This section ensures Department laboratory data is documented and meets high data quality standards for precision and accuracy; provides sampling and analytical expertise and support to region personnel, sources, and other government agencies; evaluates results of split samples and audits regulated source labs; and audits emission self-monitoring activities by stationary sources. The section also annually inspects and evaluates laboratories participating in the Drinking Water Laboratory Certification Program for inorganic, trihalomethane and volatile organic analyses. This

work is performed for the Oregon Health Division, which administers the program.

7. MANAGEMENT SERVICES DIVISION

This Division provides budgetary oversight, human resource services and administrative support services for the Department. Program areas and activities are organized into five sections:

Administration. This section consists of library services, employee health and safety, and intergovernmental coordination. Other responsibilities include the following:

- The State Agency Coordination Program is administered through the Intergovernmental Coordination Office.

- The Pollution Control Tax Credit Program is administered by the section for all divisions. This includes legislative oversight, rulemaking, the review and approval of division review reports, and the preparation of tax credit reports to the Environmental Quality Commission.

  Tax relief is provided under this program to industry and businesses which have installed pollution control equipment in accordance with environmental requirements, or voluntarily installed equipment exclusively for pollution control or material recovery purposes.

Business and Finance Services. These sections are responsible for payroll and accounting services, and financial program management which includes the Pollution Control Bond Fund. The fund supports loans to local government for financing water or solid waste facility projects, or may be used to clean up hazardous substance orphan sites.

Budget. The Budget Section is responsible for the agency's budget, and provides budget-related assistance to the Department divisions.

Support Services. This section provides word processing, mail processing, photocopying, supplies, and messenger services.

Information Systems. This section provides department-wide information systems planning and programming services.

8. REGIONAL OPERATIONS DIVISION

Regional Operations is the primary compliance assurance and enforcement arm of the agency. It carries out its

responsibilities through a network of five region offices, two branch offices, and an enforcement section. The Division consists of the following organizational structure.

Administration. Oversees division management and policies. Administrative support services are not provided centrally, but within each region office.

Enforcement. Responsible for processing most formal enforcement actions taken by the Department, including warning letters, civil penalties, and orders. There is ongoing interface between the region offices and the Enforcement Section.

Region Offices. Five region and two branch offices are responsible for drafting most air, water, and solid waste permits; the inspection and enforcement of air, water, solid waste, and hazardous waste facilities; complaint response; and, oil and hazardous spill response. The field administration of the underground storage tank preventative program, and, regulatory elements of the leaking underground storage tank program are included in the region responsibilities. The region offices also provide technical assistance to the public, local government and regulated community.

9. WATER QUALITY DIVISION

This Division is responsible for the development and implementation of state programs to maintain, protect, and improve the quality of the state's surface and subsurface waters. Program priorities focus on public health and safety, and the protection of recognized beneficial uses of the state's waterbodies. Department mandates and policies are carried out through public awareness and cooperation, and through the regulation and enforcement of waste treatment and discharge practices through several program areas:

Administration. Provides management and administrative support services to the various program areas. This includes development of internal program plans, program budgets, negotiation of federal funding assistance, allocation of program components and coordination of program activities.

Municipal Waste Sewage. This program is responsible for regulating sewage collection and treatment/disposal systems, other than individual on-site systems, through the following:

- All facility and engineering plans for the construction or expansion of domestic wastewater treatment facilities and sewer systems must be reviewed and approved by the Department prior to facility construction or modification.

- A federal National Pollutant Discharge Elimination System (NPDES) permit is required of all systems that propose to discharge domestic sewage wastewater to public surface waters. The permit review includes the evaluation of sites for new or relocated effluent outfalls.

- A state Water Pollution Control Facility (WPCF) permit is required prior to the construction of all new or modified systems that propose to dispose of sewage effluent on land, or injected into the ground with no direct discharge to surface waters.

- Wastewater treatment systems that receive industrial waste subject to federal or state pretreatment standards are required to develop and implement a pretreatment program. The requirement is designed to control the discharge of certain industrial wastes such as heavy metals, and to prevent treatment system impacts such as process upsets or the pass through of toxics or sludge contamination. This requirement is implemented through the water discharge permitting process.

- A Sludge Management Plan is required of all wastewater treatment facilities that generate sludge. This plan is part of an overall sewerage facility plan and is administered through the water discharge permit process.

- All owners of collection and treatment systems are required to have a certified operator at a grade level equal to or higher than the classification of the wastewater treatment system.

- The Department provides technical assistance and training to sewage treatment plant operators.

Construction Grants. This section provides financial services through grants and loans for the construction of municipal treatment works. Program activities include:

- The current construction grant priority list was developed in 1989 to govern the distribution of remaining federal construction grant funds. When necessary, the EPA prepares an environmental impact statement for proposed municipal treatment facilities. Environmental assessments are prepared by the Department when needed. The section also certifies that all requirements have been met through grant application review, and provides oversight of all construction management activities.

- The State Revolving Fund provides loans to municipalities for water pollution control construction projects which include: sewage transportation and treatment facilities, infiltration and inflow correction, and nonpoint source control projects. This fund was created by the state Legislature to replace the federal construction grant program which is being phased out. A needs priority list is developed annually to govern the distribution of state loans.

- Assessment deferral loans are available to cities where residents are required by a state order to connect to sewers. A city in turn provides loans to low income property owners for payment of sewer assessments.

Industrial and On-Site Waste. This section manages industrial wastewater sources and on-site sewerage systems to assure compliance with federal and state water quality regulations.

Point source water quality regulation is accomplished through the evaluation of treatment and disposal systems or discharge of pollutants, the issuance of water discharge permits, the review of construction and design plans, the provision of technical assistance, enforcement action, and response to reported spills and complaints. Nonpoint discharge water quality control is primarily accomplished through Best Management Practices (BMP) or other management practices for the minimization of water quality impacts. Specific program implementation activities consist of the following:

- A site evaluation and permit is required for all on-site sewage disposal systems. The permit approves the construction of an on-site system (septic tank), or standardized alternative system, to dispose of sewage without discharge to public waters. The Department contracts with 23 counties to conduct these evaluations and to issue permits for on-site systems.

- An NPDES permit is required prior to construction of new or modified industrial waste treatment facilities that discharge into public waters. A WPCF permit is required for the discharge of wastes on land or injected into the ground.

  Either permit may be issued as a general permit without reference to a specific source. The general permit is used for certain categories of minor sources where individual NPDES or WPCF are not necessary to adequately protect the environment.

The sources involve the same or similar types of operation, discharges, and require the same monitoring requirements.

- The Department coordinates with the Department of Agriculture in implementing the Confined Animal Feeding Operations waste management requirements. The location, construction, operation and maintenance of confined animal feeding or holding operations requires the use of best practical waste control technology. The requirements are implemented through the issuance of the WPCF discharge permit.

- Water Quality strategies will be developed to eliminate water quality problems such as runoff from container nurseries which may be implemented through the discharge permit process or stipulated consent order.

Standards and Assessments. This Section has overall responsibility for development of Department water quality standards, preparation of the state Water Quality Assessment Report, water quality planning which includes the protection of beneficial uses, and development of the ambient monitoring network. Program implementation activities include the following:

- The state Instream Water Rights Program was established to maintain and support public users within natural streams and lakes. The Department of Water Resources is the responsible agency for program administration. Agencies authorized to submit instream water rights applications include State Parks, Fish and Wildlife, and Environmental Quality. These agencies are required to adopt rules describing their procedures, and methodologies for determining instream water rights. The Department will develop rules for the Department's approach in determining instream water rights for water quality protection.

- The development of Total Maximum Daily Loads (TMDLS) restrictions are required for those waterways determined to be water quality limited. The capacity of a waterway is defined and an allocated waste load is distributed among point and nonpoint sources. The load restrictions translate into regulations relating to stormwater control and changes in agricultural or forestry practices. The TMDL restrictions are implemented through a management plan.

- A Department certification for meeting state water quality standards is required for a federal license or permit to conduct any activity which may result in

any discharge into the navigable waters of the state as required under Sections 401 and 404 of the Clean Water Act. This includes activities such as hydroelectric, and fill and dredge projects. The certification assures that designated beneficial uses in or adjacent to a waterway will not be adversely affected.

- Ambient monitoring is conducted to assess basic water quality, water quality trends, waste characteristics, compliance, and to identify and assess problem areas. Due to limited Department resources, only the highest priority streams in the state are routinely monitored.

- Individual water quality control strategies are to be developed for determining when toxics are causing violation of water quality standards. Strategies may involve additional treatment or controls at industrial point sources and will be implemented through the WPCF or NPDES permits.

- The management of a Geographic Information System provides computerized mapping capabilities for geographic data analysis, and management of the water quality data.

- Appropriate water quality standards for wetlands will be developed by the Department and a policy for the use of existing or constructed wetland for wastewater or stormwater treatment.

- The completion of on-site system performance audits to assure proper protection of the ground and surface water where these systems are used.

- The setting of program priorities with the use of the state Clean Water strategies.

Groundwater. Consistent and coordinated groundwater management is provided to ensure that preventive actions are considered before groundwater problems from point or nonpoint sources occur. The section coordinates all groundwater related regulations with other sections in Water Quality, the Hazardous and Solid Waste Division and the Environmental Cleanup Division, and the Water Resources Department. The section carries out groundwater protection activities required by the 1989 Groundwater Act; adopts rules establishing numerical reference levels for contaminants in groundwater; and develop and operates a statewide monitoring and assessment program. Specific activities include the following:

- Groundwater monitoring is conducted to identify background water quality, trends in quality and critically impacted areas.

- Appropriate groundwater protection requirements are included in the NPDES and WPCF permitting process which include monitoring requirements and concentration limits. When monitoring indicates a violation at a compliance point, a remedial investigation and feasibility study is required of the permittee and remedial action is determined.

- The Department has groundwater protection responsibilities under the 1989 Groundwater Protection Act which establishes a state comprehensive groundwater management program. The Act defines groundwater protection goals and policies with regard to groundwater quality; creates a Strategic Water Management Group (SWMG) responsible for systemic coordination of state agencies in responding to groundwater management issues; and requires the development and implementation of preventative groundwater protection programs, with an emphasis on non-regulatory programs. Department responsibilities under the Act include: the provision of staff support for SWMG activities, adoption of rules for the designation of "areas of groundwater concern", and "groundwater management areas", and establishment of a statewide groundwater assessment program. Rules have not yet been developed.

Surface Water. The primary purpose of this program is the development and implementation of the nonpoint source program responsibilities that relate primarily to forestry and agriculture practices and urban runoff. The section also provides oil spill planning, water quality assessments, and special projects involving public lakes restoration, estuaries, wetlands, and surface waters. Specific activities and implementation mechanisms include:

- The development and maintenance of a statewide Nonpoint Source Assessment Management Plan. The plan contains strategies to achieve implementation of land management practices to control nonpoint source pollution resulting primarily from forestry, agriculture and range practices, and urban runoff. The plan emphasizes a voluntary, locally controlled, and incentive based implementation approach, but also focuses on interagency priorities and resources through agreements and action plans. The Department's role in management planning is to identify issues and problems; develop solutions and priorities; assist with funding of projects; and

evaluate implementation efforts. Administrative rules to guide program implementation are currently being developed.

- Section 319 of the federal Water Quality Act provides a grant fund to assist state efforts in controlling nonpoint source pollution. Projects are designed to reduce erosion, increase moisture-holding capacity of he soil, encourage native vegetation, or to encourage land management practices to improve the natural watershed productivity. These funds are available to cities, counties, state agencies and others subject to federal and state water quality regulations.

  The federal funds are targeted at high priority sites or tributaries listed in the state nonpoint source assessment plans and, to projects that demonstrate committed local support and multi-agency coordination.

- The Surface Water Section supports designated management agencies in writing and implementing watershed management plans in conjunction with critical basin and TMDL activities.

- The Department is responsible for water quality monitoring and assessment of the state's twenty-one major estuaries and nearshore environments. The EPA has initiated a pilot program to develop and implement innovative ways of managing water quality in estuary and ocean waters. Oregon was one of three states to participate in the federal project. The Coquille Estuary was selected as a demonstration project because of water quality and habitat concerns. The project has assisted the Department in developing a water quality plan for near coastal waters that can be a model for similar areas. The development of estuary plans for the rest of Oregon's estuaries like Yaquina, Coos and Columbia estuaries are contingent upon the availability of Department resources.

- The development of an Emergency Oil Spill Contingency Plan for the Oregon Coast and its estuaries, the Columbia River and the Willamette River from its mouth to Oregon City. The plan will include strategies for the prevention of spills in coastal and ocean waters and will identify sufficient resources to oil spill contingency equipment and training activities. The planning is expected to be completed by July 1, 1991.

- Continue coordination of federal clean lakes grants for lake assessment and restoration projects; continue the development of the voluntary clean lakes monitoring program.

- The Department participates in the state's Ocean Resources Management Planning administered by DLCD, to address potential impacts of ocean-use activities on ocean and coastal resources. The plan is based on current regulatory responsibilities of participating agencies.

SECTION III

DEPARTMENT RULES, PROGRAMS AND ACTIONS AFFECTING LAND USE

1. INTRODUCTION

The Department has broad regulatory authorities to ensure the protection of the public health, safety and welfare of the citizens, and to preserve the state's natural resources which contribute to a high quality of life, a healthy environment, and a stable economic base. These authorities address air and water quality, noise, solid and hazardous waste. The Department's responsibilities are carried out through a variety of implementation strategies which include the application of regulatory and enforcement action, incentive based programs, the encouragement of voluntary cooperation, the provision of technical and advisory assistance, and intergovernmental coordination efforts. These strategies are utilized dependent upon the Department's mandate, health and safety implications, and the role and responsibilities of other agencies or local government.

~~[The Department's programs directly relate to two of the statewide planning goals: Goal 6 - Air, Water and Land Resource Quality, and Goal 11 - Public Facilities and Services. However, other goals may be applicable to certain programs or actions such as the four coastal goals or Goal 5 - Open Spaces and the Protection of Natural and Scenic Resources. The Department will address other goals when determined necessary or required.]~~

Of the nineteen statewide land use goals, Goal 6 - Air, Water and land Resources Quality, most directly relates to Department programs in that federal and state regulatory authorities governing these resources are vested in the Department and Commission. This goal requires that all waste and process discharges from development comply with state and federal environmental quality standards. However, other goals such as Goal 5 - Open Spaces, Scenic and Historic Areas, and Natural Resources; Goal 11 - Public Facilities and Services; Goal 16 - Estuarine Resources; and Goal 19 - Ocean Resources are also significant in that the implementation of these goals must involve the consideration of the carrying capacity and protection of air and water resources. In accordance with the State Agency Coordination rule requirements, the Department will comply with all applicable statewide goals.

2. PROGRAMS AND ACTIONS THAT AFFECT LAND USE

In accordance with the DLCD Administrative Rule 660-30-005, state agency rules and programs affect land use if they are:

- Specifically referenced in the statewide planning goals; or

- Reasonably expected to have significant effects on

  a.) resources, objectives or areas identified in the statewide planning goals, or
  b.) on present or future land uses identified in acknowledged comprehensive plans.

Exceptions identified in the DLCD rule apply:

- If an applicable statute, constitutional provision or appellate court decision expressly exempts the requirement of compliance or compatibility; or

- If a program is not reasonably expected to have a significant effect on resources, objectives or areas identified in the goals or present or future land uses identified in acknowledged plans; or

- Agency property transactions that do not involve change in the use or area of the property.

Exempt Programs

Department authorities under ORS 222-840 to 222-915, are exempt from the statewide goals and acknowledged comprehensive plans (see Attorney General Opinion 6826).

Under ORS 222.860, the Oregon Health Division is authorized to require an affected area to annex to a city or special district if a danger to public health exists. The Division requires and reviews a jurisdiction plan to alleviate the conditions causing the danger to public health. When the source of the health problem is caused by conditions other than impure drinking water, the Environmental Quality Commission has responsibility for review and approval of the jurisdiction plan, or alternative plan.

The court, in West Side Sanitary District v. LCDC (#26780) held that in the Health Division's determination of whether a danger to public health exists, the sole issue involved is current health conditions and not future land use implications. The above cited opinion states that the Environmental Quality Commission has no discretion to apply land use planning goals in the review and approval of a jurisdiction or alternative plan for the removal or alleviation of a health hazard.

Programs Referenced in the Goals

~~[Goal 16 -- Estuarine Resources, references the Department's nonpoint source discharge water quality program under implementation requirement 3: -- "State and federal agencies shall review, revise, and implement their plans, actions, and management authorities to maintain water quality and minimize man-induced sedimentation in estuaries. -- Local governments shall recognize these authorities in managing lands rather than developing new or duplication management techniques or controls."]~~

The Department of Land Conservation and Development's (DLCD) administrative rule OAR 660-30-005 considers that an agency rule or program affects land use if, (1) it is specifically referenced in the statewide planning goals, or (2) it is reasonably expected to have significant effects on resources, objectives or areas identified in the goals or in acknowledged comprehensive plans. Under DLCD's first criterion, ~~[the Department's Water Quality] [Nonpoint Source Program is referenced in Goal 16 -- Estuarine] [Resources. -- These authorities are essential to maintaining water] [quality and to minimize man-induced sedimentation in estuaries. -]~~ the implementation requirements of Goal 16 direct state and federal agencies to ... "review, revise and implement their plans, actions, and management authorities to maintain water quality and minimize man-induced sedimentation in estuaries." The goal further direct local government to recognize these authorities rather than developing new or duplicatory management controls. The Department's nonpoint source discharge water quality program is specifically referenced as a state authorized management program for estuaries.

Goal 16 also identifies the Department's water quality and sewage disposal systems authorities as state authorities of special concern in estuarine areas. As such, agencies are to assure that their procedures and standards address the objectives of the goal.

Goal 19 speaks to the conservation of natural resources of the nearshore ocean and the continental shelf. The implementation requirements of this goal includes water quality permits and oil spillage regulation authorities as state authorities of special concern.

Programs Reasonably Expected to Have Significant Effects

All Department programs and actions have been evaluated against DLCD's "significant effects" criterion. As part of the evaluation, the following two Department guidelines were also relied upon to assist in defining land use programs and in interpreting "significance":

- The land use responsibilities of a program or action that involves more than one agency, are considered the responsibilities of the agency with primary authority.

- A determination of land use significance must consider the Department's mandate to protect public health and safety and the environment.

3. DEPARTMENT ACTIONS AFFECTING LAND USE

The following identifies Department actions determined to affect land use in accord with OAR 660-30-005, and includes a brief analysis of each action and description of the compatibility mechanism.

AIR QUALITY DIVISION

Noise Control Program - OAR 340 Division 35

1. Action: Approval of Environmental Noise Impact Boundaries for new motor racing facilities.

   Authorities: ORS 467.030 and 035; OAR 340-35-040.

   Analysis: Department approval of noise impact boundaries is required for new motor sports facilities with the exception of those located more than two miles from noise sensitive land uses. These facilities, if inappropriately located, may pose significant noise impacts for adjacent land uses and activities. Prior to construction, the facility owners must submit noise impact boundary information to the Department such as the data and analysis used to determine the boundary.

   Land Use Compatibility Mechanism: The facility owner is required to provide a Land Use Statement of Compatibility (LUCS) or written evidence that the local government has determined the proposed facility is compatible with the local plan. This information is to be provided to the Department as part of the noise impact boundary submitted information. The Department will conduct an evaluation of the boundary and will provide the local government with a copy of the Department's decision.

2. Action: Approval of Airport Noise Abatement Program/Noise Impact Boundaries.

Authorities: ORS 467.030; OAR 340-35-045.

Analysis: The Department reviews and approves a required noise abatement program and noise impact boundaries for all air carrier airports that include noise sensitive property. The abatement plan includes measures to prevent the creation of new noise impacts or the expansion of existing noise impacts. An analysis is conducted on the effects of aircraft noise emission regulations and land use controls.

Prior to construction, all new airports must also receive Department approval of the airport's Noise Impact Boundary. The Department has authority to require approval of the Noise Impact Boundary of non-air carrier airports in efforts to resolve an identified noise problem.

Land Use Compatibility Mechanism: Within 12 months of the designation of an air carrier airport, the proprietor must submit the data and analysis used to determine the noise impact boundary to the Department for evaluation. For new air carrier airports, this information must be submitted prior to the construction, operation or local land use approval. After the Department conducts its evaluation, it notifies the affected local government of the evaluation results.

If an airport's noise impact boundary includes noise sensitive property, the proprietor is required to submit a proposed Airport Noise Abatement Program for Commission approval within 12 months of notification by the Director. A submitted airport noise abatement program must contain the following elements:

- Maps of the airport and supplemental information, including zoning and land use plan permitted uses and policies.
- An airport operational plan.
- A proposed land use and development control plan.

The airport proprietor must provide written evidence that the affected local government has participated in and has approved the airport related land use plan in terms of compatibility with the local comprehensive plan. The Department shall consult and coordinate with the Department of Transportation (Aeronautics Division) prior to the issuance of a notification for revision of a noise abatement program and regarding other airport noise related problems.

Operations Program - OAR 340 Divisions 14 and 20

3. Action: Approval of Notice of Construction (NC) for Air Pollution Sources.

   Authorities: ORS 468.325; OAR 340-20-030.

   Analysis: An NC is required before the construction of new minor sources or major alteration or modification of air contaminant emissions that are too small to require an Air Contaminant Discharge Permit (ACDP) or, for the modification of an existing source. These sources may have significant impacts on local plan policies and surrounding land uses if not sited in appropriately designated areas.

   Land Use Compatibility Mechanism: The permit applicant is required to submit a LUCS which contains the local government's determination of land use compatibility with the NC application. A LUCS is not required in cases where pollution control equipment is being added or substituted to an existing source and there is no operational change.

4. Action: Issuance of Air Contaminant Discharge Permit (ACDP).

   Authorities: 40 CFR Parts 51 and 55; ORS 468.310 through 315; OAR 340-20-140 through 276.

   Analysis: An ACDP is required of all air contaminant sources and modification of sources that emit significant air contaminants. The permit regulates the level and type of emissions. Permits may also specify emission monitoring and testing requirements, reporting requirements, emission control equipment

requirements, and production limitations. The ACDP is also issued for sources with emissions of toxic pollutants that are not regulated as criteria pollutants. These sources may present significant impacts to adjacent land uses if not sited in appropriately designated areas.

Major new sources or major sources within designated attainment or unclassified areas are also subject to federal New Source Review, Prevention of Significant Deterioration (PSD) and Visibility Impact requirements as part of the ACDP procedure. The New Source Review evaluates the air quality impacts of new air contaminant sources. PSD standards are applied to prevent significant deterioration of air quality in areas that have cleaner air quality than the minimum national ambient air standards require; and, visibility impact standards are applied to new major sources to ensure that the source will not contribute to significant impairment of visibility within any clean air area.

Land Use Compatibility Mechanism: The applicant is required to submit a LUCS which contains the local government's determination of land use compatibility with the permit application.

Planning Development Program - OAR 340 Divisions 14 and 20

5. Action: Issuance of Indirect Source Construction Permit (ISCP).

Authorities: ORS 468.020 and 468.310; OAR 340-20-100 through 135.

Analysis: An ISCP is required to reduce and control mobile source emissions from certain indirect air pollution sources such as highways, parking facilities, airports, recreation/activities, etc. The need for an ISCP is based on the type, location, size and operation of the indirect source.

There are potentially significant short-term and long-term impacts of indirect sources on adjacent land uses and/or local comprehensive plan policies relating to present and future land uses.

Land Use Compatibility Mechanism: The applicant is required to submit a LUCS which contains the local government's determination of land use compatibility with the permit application.

6. Action: Approval of Parking and Traffic Circulation Plan (PTCP).

Authorities: ORS 468.020 and 320; OAR 340-20-120.

Analysis: Parking and Traffic Circulation Plans may be required of local governments located in geographic areas determined or projected to be in noncompliance with federal air quality standards. The plan identifies parking space capacity and other necessary measures to provide for the attainment of required standards.

Land Use Compatibility Mechanism: Administrative rule 340-20-120 requires that a PTCP be developed in coordination with the local and regional comprehensive planning process. The Department requires written evidence that plan development was coordinated with the local comprehensive plan. The approved plan is to be implemented and annually reviewed by local government to determine if it continues to be adequate for the maintenance of air quality in the planning area.

~~[7. Action:]~~ ~~[The State Implementation Plan (SIP) for Air Quality]~~.

~~[Authorities:]~~ ~~[40 CFR 51.11; ORS 468.020; OAR 340-20-047]~~.

~~[Analysis:]~~ ~~[The SIP provides Division directives in managing and implementing the state's air quality program pursuant to the Federal Clean Air Act. The plan contains control strategies, ambient air standards emission limitations and enforcement procedures. The majority of the air quality rules are in the SIP]~~.

~~[Land Use Compatibility Mechanism:]~~ ~~[The Department provides notice through the state clearinghouse process and to an interested party mailing list when the SIP is updated. Most of the programs in the SIP that relate to land use are implemented through the air quality permitting process].~~

ENVIRONMENTAL CLEANUP DIVISION

7. Action: Issuance of Environmental Hazard Notice.

Authorities: ORS 466.360-385; OAR 340-130-001 through 035.

Analysis: An environmental hazard notice is intended to ensure that a potentially hazardous site is not altered by land development without consideration of the impacts of the activity on public health, safety and the environment. The condition of a site after the cleanup of hazardous substances may have land use implications. If a site is not cleaned up to levels protective of human health and the environment, the site may not be suitable for certain uses. This situation may significantly affect land use if the site poses health or safety implications for some land uses.

Land Use Compatibility Mechanism: OAR Chapter 340 Division 130, requires that the Department provide public notice of a hazardous site to the affected city or county which includes model language for amending the comprehensive plans to incorporate procedures to implement the environmental hazard notice.

The local government is required within 120 days of the receipt of a notice, to amend the comprehensive plans and land use ordinances, including adjoining maps, in accordance with ORS 466.385 and the rule requirements.

A local government cannot approve a proposed use for a site under an Environmental Hazard Notice until the Department has been notified and has provided comments to the jurisdiction.

HAZARDOUS AND SOLID WASTE DIVISION

Solid Waste Program - OAR 340 Divisions 14, 61 and 64

8. Action: Issuance of Solid Waste Disposal Permit.

   Authorities: ORS 459.205; OAR 340-61-020 and 025.

   Analysis: A Solid Waste Disposal Permit is required to establish, operate, maintain, substantially alter, expand or improve a disposal site. Approval of engineering plans and specifications are required as part of the permitting process. Solid waste disposal sites must be appropriately sited to minimize impacts to adjacent land uses.

   Land Use Compatibility Mechanism: Division 61 requires that a permit application include recommendations of the local government in addition to a LUCS which contains a determination of compatibility with the local plan. A permit will not be issued without affirmative LUCS.

9. Action: Issuance of Waste Tire Storage Permits.

   Authority: ORS 459.715; OAR 340-62-015 and 020.

   Analysis: A Waste Tire Storage Permit is required for the storage of more than 100 tires at a site, with exceptions. The inappropriate storing of waste tires may violate local plan policies or zoning requirements.

   Land Use Compatibility Mechanism: Division 62 requires that an application contain the site's zone description and a LUCS which includes the local government's determination of compatibility with the permit.

Hazardous Waste Facilities Management Program - OAR 340 Divisions 14, 120 and 130

10. Action: Issuance of Hazardous Waste and PCB Storage, Treatment and Disposal Permits.

Authorities: Title 40 CFR 260-266, 27 and Subpart A of 124; ORS 466.005 - 350; OAR 340-120-001 through 025.

Analysis: A three-step permitting procedure is required for permitting off-site hazardous waste and PCB treatment and disposal facilities which includes those that are located on-site more than 15 days per year.

Land Use Compatibility Process; Goal Compliance Mechanism: A Request for Authorization to proceed is initially required to allow the Commission to determine whether there is a need for a new facility. Secondly, the applicant must submit a LUCS which contains a determination by the local government of land use compatibility with the local plan. The final step involves the actual submittal of an application.

The LUCS must include an affirmative determination of compatibility with written findings as specified in Division 120 which addresses: population density; site distances from sensitive land uses; site distances from historical and national resources; input on adjacent land uses; the provision of emergency services; and transportation access. If the local government chooses not to act on a LUCS, the Department will prepare findings for determining compliance with the statewide goals.

MANAGEMENT SERVICES DIVISION

Business & Financial Services - OAR 340 Divisions 81 and 82

11. Action: Pollution Control Bond Fund Applications

Authorities: ORS 468.195 through 225; OAR Division 82

Analysis: State financial assistance is provided through the Pollution Control Bond Fund to finance municipal water treatment or solid waste facility projects. Projects are evaluated using criteria which includes

technical feasibility, the replacement of existing inadequate facilities, and a demonstrated need for state assistance.

Division staff is responsible for processing project applications; however, program oversight is provided by the Management Services Division Finance Section.

Land Use Compatibility Mechanism:

A project application submittal must include a LUCS which contains a local government determination of land use compatibility with the proposed project.

WATER QUALITY DIVISION

Municipal/Sewage Program - OAR 340 Divisions 14, 15, 41, 45, 49, 50 and 52

12. Action: Plan approval for wastewater system and facility plans.

Authority: ORS 468.742; OAR 340-41-030 through 120 and Division 52.

Analysis: Engineering reports and construction plan approval is required prior to the construction, installation, or modification of disposal systems and sewage works.

Land Use Compatibility Mechanism: The submittal of proposed construction plans must include a LUCS which involves a determination of the project compatibility with the local comprehensive plan.

If a jurisdiction submitting plans is the sole jurisdiction responsible for determining plan compatibility, the Department considers the submittal of plans as adequate evidence of compatibility with the local plan.

Construction Grant Program - OAR 340 Divisions 53 and 54

13. Action: Certification of applications for federal Sewerage Works Construction grants.

Authorities: 40 CFR 35.415; OAR 340-53-005.

Analysis: On an annual basis, the Department develops and adopts a project priority list to rank grant applications which govern the distribution of federal construction grant funds.

When necessary, the Department requires local government to prepare environmental assessments for grant applications and must certify that state and federal requirements are met. The Department also monitors the distribution of grant funds to a community.

Grant applications may be submitted for funding after a project is on the priority list. This federal program is phasing out and will be replaced by the State Revolving Loan Fund.

Land Use Compatibility Mechanism: The applicant must submit a LUCS with the final grant application which includes a local government determination of plan compatibility with the grant application.

14. Action: Approval of State Revolving Fund Loan Applications.

Authorities: ORS 423.440; OAR Division 54.

Analysis: The State Revolving Fund was established to provide state financial assistance through loans to municipalities to plan, design, and construct water pollution control facilities. The facility projects should be identified in the local government's public facility plan. An annual priority list is maintained to govern the distribution of loan funds.

Land Use Compatibility Mechanism: A loan application for construction or design and construction projects must include a LUCS which provides a local government determination of plan compatibility with the loan application. Loan approval will not be provided without the approved LUCS which demonstrates project compatibility with the local comprehensive plan.

Industrial and Commercial Waste Program - OAR 340 Divisions 14, 15, 44, 45 and 71

15. Action: Issuance of On-site Sewage Disposal Permit.

Authorities: PL 92-500 Sec. 401; ORS 468.020, 035, 615; OAR Division 71.

Analysis: The Department or contract counties issue permits for the construction of sewer systems on the site where the waste is generated and where there is no discharge to public waters. Permits can be issued for conventional septic tank systems or for selected alternative or

experimental systems. The permits are issued for disposal systems of land use activities compatible with the local comprehensive plan.

Land Use Compatibility Mechanism: Division 71 requires that a permit application include a LUCS which includes a local government determination of compatibility with the local plan.

16. Action: Issuance of Industrial Waste Discharge Permit.

Authorities: ORS 468.065 through 740; OAR 340 Divisions 14, 15 and 45.

Analysis: An NPDES or WPCF is issued for the construction and operation of new or modified industrial waste treatment facilities or, for the treatment and related disposal of sludge. The permits are only issued for industrial sources that are located in properly zoned areas.

Land Use Compatibility Mechanism: An application for a NPDES or WPCF permit must include a LUCS which includes a local government determination of compatibility with the local plan.

Standards and Assessments Program - OAR 340 Divisions 40, 41 and 48.

17. Action: Development of Water Quality Wetland Protection Criteria.

Authorities: PL 92-500, Sections 303, 305(b), 319 and 401; ORS 468; OAR 340 Divisions 41 and 48.

Analysis: The development of water quality wetland protection criteria is a cooperative effort with the Division of State Lands and Department of Fish and Wildlife and will focus on the development of water quality standards and assessment procedures applicable to state wetlands. The Division of State Lands is the primary state agency responsible for the overall policy regarding state wetlands. These strategies will include an inventory of

the state's wetlands in relation to water quality; the incorporation of cumulative impact assessment techniques into the 404 certification process; and, the development of guidelines for constructed wetlands in wastewater treatment.

Land Use Compatibility Mechanism: The implementation of wetland criteria for point sources will be conducted through the permitting process. Rules for implementation have not been developed.

18. Action: Requirement for Implementation Plan to meet Total Maximum Daily Loads (TMDLS) Restrictions for Water Quality Limited Waterways.

Authorities: PL 92-500 Sec. 303; ORS Chapter 468; OAR 340 Division 41.

Analysis: To improve water quality in subbasins that are identified as water quality limited, the Commission adopts special requirements for TMDLS stream allocations and requires the development of an implementation plan. The load restrictions may necessitate a change in land use activities or practices. The standards are implemented for point sources through the permitting process.

Land Use Compatibility Mechanism: A Commission designated local government is generally responsible for coordinating the development of an implementation plan with the affected local comprehensive plans.

Evidence that the implementation plan is compatible with or will be compatible with the affected local comprehensive plans must be provided before the Commission approves the plan.

19. Activity: Certification of Water Quality Standards for Federal Permits or Licenses.

Authorities: PL 92-500, Section 401; OAR 340 - Division 48.

The Department is directed to provide a certification of compliance with water quality standards of all federal license or permit applications for facilities that may discharge

into the state's waters. The review criteria is based on water quality standards, however, land use factors which relate to water quality may be considered.

Land Use Compatibility Mechanism: OAR 340, Division 48 requires that an application for certification contain provisions from the affected local comprehensive plan and implementing regulations that are applicable to the proposed project. If land use findings of the local jurisdiction are not included in the application, the Department will forward the application's land use information to the local government for review and comment within 60 days. If no response is provided within 60 days, the Department will continue to seek information from the jurisdiction but will deem the application complete.

Groundwater Program

20. Action: Development of Action Plan for Declaration of a Groundwater Management Area.

Authorities: 1989 Groundwater Management Act - ORS Chapter 466.

Analysis: The 1989 Groundwater Management Act created a comprehensive statewide groundwater management program. This program provides an overall framework for existing programs of state agencies that affect the management and protection of groundwater. A Strategic Water Management Group (SWMG) oversees the program and is responsible for coordinating interagency management. The Department provides general staff support for SWMG, and when designated, will take the lead in developing action plans for declared Groundwater Management Areas. These involve geographic areas where contaminants in the groundwater exceed allowable levels.

Land Use Compatibility Process: The Department shall provide written notice to affected local government of its planning activities for "groundwater management areas," under the direction of SWMG. As a

lead agency for the development of an action plan, the Department will work with a SWMG designated local groundwater management committee. Local land use issues and plan compatibility will be addressed through the committee's involvement. Rules governing these actions have not been developed.

Surface Waters Program

21. Action: Development of Nonpoint Source Management Planning.

Authorities: PL 92-500 9; ORS 468.705 through 730.

Analysis: The Nonpoint Source Management Plan is a statewide framework plan for the prevention and control of nonpoint source pollution used for the development and implementation of statewide, regional and local projects. Nonpoint source pollution results from activities such as grazing, transportation, construction, timber harvesting, chemical application, irrigation practices, streambank erosion, and urban runoff. Coordination with designated management agencies and local government is an essential component in the identifying of problems, development of solutions and project prioritization.

Statewide Goal 16 - Estuarine Resources directs local governments to recognize the Department's nonpoint source program authorities to maintain water quality and minimize non-induced sedimentation in estuaries rather than developing duplicatory management controls.

Land Use Compatibility Mechanism: The Nonpoint Source Management Plan is developed for a five year planning period. Cities and counties are notified in writing at the time the Department reviews or updates the plan and provided an opportunity for input to the planning process.

The Department will provide written notice to affected local governments of nonpoint program actions. Local issues and concerns will be coordinated and accommodated by the Department to the fullest degree possible.

22. Action: Development of Estuary Water Quality Plans.

Authorities: PL 92-500 Section 303; OAR 340 Division 41.

Analysis: As a participant in a federal pilot program, the Department developed the Near Coastal Waters Pilot Project for the Coquille Basin. Through this project, the Department is working closely with local government to identify and implement effective pollution control methods to improve water quality and to meet designed land restrictions.

In the estuary planning process, the Department is concerned with evaluating the link between land uses and water quality and coordinates closely with DLCD in the development of estuary management plans.

Plans will be developed for other estuaries and near coastal waters that fail to meet water quality standards. Through these plans a basin wide approach will be used to manage point and nonpoint sources.

Land Use Compatibility Mechanism: Affected local governments are notified of proposed estuary planning and asked to provide relevant information from the comprehensive plan, and to actively participate in the planning process.

A key participating mechanism is a task force which is comprised of local government, special district, affected agencies and special interests. The local government will be asked to provide evidence that the plan or related implementation plans are compatible with the local comprehensive plans before adoption by the Commission.

~~[If local governments do not respond to the notice, the Department will assume there are no land use incompatibilities or issues]~~.

23. Action: Development of Oil Spills Regulations.

Authorities: ORS 468.780-833; OAR 340 Division 47

Analysis: The Department's regulation of oil spills and spill cleanup are integrated with the Oregon Emergency Operations Plan which is administered through the Emergency Management Division.

Land Use Compatibility Mechanism: In the development and revision of oil spill regulations and related planning, the Department shall request input and participation from affected cities and counties and affected state agencies. If the local government does not respond to the notice, the Department shall assume there are no land use incompatibilities or issues.

SECTION IV

PROCEDURES FOR ASSURING STATEWIDE GOAL COMPLIANCE AND COMPATIBILITY WITH ACKNOWLEDGED PLANS

1. INTRODUCTION

This section provides an overall discussion of the Department's procedures for assuring that actions that affect land use are in compliance with the statewide goals and compatible with local comprehensive plans.

2. PROCEDURES FOR COMPLIANCE WITH STATEWIDE GOALS

OAR 660-30-065 describes the circumstances for a state agency to directly determine compliance with the goals. Generally, the Department relies on acknowledged local plan compatibility to assure goal compliance. However, agencies are directed to adopt goal findings when one or more of the following applies:

1. The agency's program/action relates to an area that is not subject to an acknowledged plan.

2. The agency takes an action that is not compatible with the acknowledged plan after exhausting the agency's compatibility procedures.

3. The acknowledged plan does not contain:

   - Provisions applicable to the agency's land use program; or
   - General provisions which would be substantially affected by the agency's action.

4. A statewide goal or interpretative rule adopted under OAR Chapter 660 establishes a compliance requirement directly applicable to the agency.

5. The acknowledged plan permits a use contingent upon case-by-case goal findings by an agency.

6. The agency action is exempt from compatibility with local acknowledged plans.

7. An agency carries out goal compliance requirements on behalf of local government.

When it is necessary for the Department to demonstrate compliance with the statewide goals for Department actions, the following procedure will be followed:

1. Identification of applicable goals.

2. If necessary, request advice from DLCD and/or Attorney General's office.

3. Consultation with affected local government.

4. Adoption of goal findings.

3. PROCEDURES FOR ACKNOWLEDGED PLAN COMPATIBILITY

Section III contains a description of Department programs and actions that affect land use pursuant to OAR 660-30-005. Figure 3 lists the actions that affect land use and provides a summary of the compatibility mechanism.

A. Local Government Compatibility Determinations through the LUCS.

The LUCS is the key mechanism the Department uses to assure local comprehensive plan compatibility with Department-issued permits and other site-specific actions that affect land use which include:

- Approval of Noise Impact Boundaries for Motor Racing Facilities
- Approval of Airport Abatement Plan/Noise Impact Boundaries
- Approval of Notice of Construction for Air Contaminant Source
- Issuance of Air Contaminant Discharge Permit
- Issuance of Air Indirect Source Construction Permit
- Issuance of Parking and Traffic Circulation Plan
- Issuance of Parking and Traffic
- Issuance of Solid Waste Disposal Permit
- Issuance of Waste Tire Storage Permit
- Issuance of Environmental Hazard Notice
- Issuance of Hazardous Waste and PCB Storage, Treatment, and Disposal Permit
- Approval of Pollution Control Bond Fund Application
- Approval of Waste System Facility/Sewer System Plan
- Approval of Waste Water Treatment Construction Grant Applications
- Approval of State Revolving Loan Application for Municipal Waste Water Treatment Systems
- Certification of Water Quality standards for Federal Permits, Licenses
- Issuance of On-site Sewer Permit
- Issuance of Water Discharge Permits (NPDES/WPCF/General)

1) Procedures for submitting the LUCS include:

(a) An applicant must provide a LUCS that has been acted on by the affected local government before the Department can accept the application as complete for processing. The completed LUCS must state if the proposed project is compatible with the acknowledged local comprehensive plan.

If the Department does not receive an affirmative LUCS with a permit application or required submittal information, the applicant will be notified that the Department is unable to process the application, unless otherwise obligated by law.

(b) When the Department receives an affirmative LUCS and determines it complete, the Department will rely on it as a determination of compatibility with the acknowledged local comprehensive plan, unless therwise obligated by state law.

(c) If the Department concludes a local government LUCS review and determination may not be legally sufficient, the Department may deny the permit application and provide notice to the applicant. In the alternative, when the applicant and local government express a willingness to reconsider the land use determination, the Department may hold the permit application in abeyance until the reconsideration is made.

(d) If a negative LUCS is submitted to the Department stating that the project is incompatible with the acknowledged plan, the Department will notify the applicant that a permit cannot be issued.

(e) Where more than one local jurisdiction has planning authority regarding a specific action, the Department will require a LUCS from each jurisdiction (e.g., city/county in urbanizing area).

(f) A local government may withdraw or modify its compatibiity determination any time prior to the issuance of a permit.

(g) If a local government land use compatibility determination or underlying land use decision is appealed after the Department has determined the LUCS complete, the permit process will proceed and a permit may be issued except when the LUCS has been stayed or invalidated by the Land Use Board of Appeals or other court of law. If a LUCS is appealed on a permit that has already been issued,

the Department may take no action on the permit until otherwise ordered by a court or, until there is a final decision on all appeals.

2) Procedures for the renewal or modification of permits

(a) Permit Renewals:

Department permits are generally renewed every five years. Discharge or emission limits are not normally increased in a permit renewal. However, the emission limits may be reduced. The exception may be a circumstance where proposed changes that typically would be addressed through a permit modification coincide with the permit renewal. Permit renewals require a LUCS for renewals that involve substantial modification or intensification of the permitted activity as required under OAR 660-31-040 and as defined through the Department's permit modification criteria.

(b) Permit Modifications:

A permit modification applies to the revision of a permit for a source or activity to reflect a significant change in the nature of the activity that results in increased emission or discharge of pollutants, or the initiation of discharge of new pollutants. This might involve an expansion of production capacity, or a change in product or production methods that require major construction, significant changes in the raw materials used, or increases in the discharge of existing pollutants above existing permitted levels. A modification would not include maintenance replacement, modernization of production equipment with no increase in contemplated discharges, or increases in production that are possible with the current installed production capacity and within current permit limits.

A permit modification constituting a substantial modification or intensification of the permitted activity as defined in OAR 660-31-040 requires a LUCS when one or more of the following conditions exist:

- The permitted source or activity will be expanded or use additional property. The LUCS would only apply to the physical changes on the land, not to already approved permit conditions.

- The modification involves a significant increase in discharge to state waters or into the ground.

- The modification involves the relocation of an outfall outside of the source property.

- Any physical change or change of operation of an air contaminant source that should result in a net significant emission rate increase as defined in OAR 340-20-225(25).

B. Procedures for Planning Actions of Area-Wide Application that Affect Land Use.

There are a number of Department actions or planning activities that affect land use which have individual compatibility procedures:

~~[1) Air Quality State Implementing Plan. Under Department notice procedure, cities and counties are provided notice when the SIP is updated and revised. This allows the Department to consider and coordinate local land use issues in the SIP planning process. Local concerns are addressed to the fullest degree possible and dispute mediation procedures are used when appropriate. Land use compatibility for air quality actions that affect land use are implemented through the requirement of a specific LUCS.]~~

1) Development of Water Quality Wetland Protection Criteria. The application of water quality wetland protection criteria is coordinated with the Division of State Lands which has primary authority over state wetlands which includes responsibilities for local land use compatibility.

2) Requirement for Implementation Plan to Meet Load Restrictions on Water Quality Limited Waterways. The Department requires written evidence that a locally developed TMDL implementation plan is coordinated with affected local planning entities to assure compatibility.

3) Planning Activities. The Department provides notice to affected local governments prior to initiating planning activities. The Department provides notice to local governments prior to initiating land use planning actions of statewide application, or notice to affected local governments prior to an action of site specific or area-wide application. The notice requests relevant comprehensive plan policy or processing regarding the proposed activity. The Department will work with local government to accommodate local concerns to the degree possible. When necessary, dispute resolution procedures will be used to resolve conflicts.

This procedure applies to:

- Development of Action Plan for Declared Groundwater Management Area;
- Development of Water Quality Nonpoint Source Planning.
- Development of Estuary Water Quality Planning.
- Development of Regulations for Oil Spills.

4. PROCEDURES FOR RESOLUTION OF LAND USE DISPUTES

OAR 660 Division 30 requires state agencies to adopt procedures to resolve conflicts or disputes that may develop between state agencies and local governments.

The potential for conflict exists in part because of a lack of definition in the statutory authorities relating to land use and environmental protection. The Department and local government share to some degree, the management responsibilities for air, water, and land resources. The Legislature established the Department for the purpose of administering and enforcing the state's (and federal) environmental quality laws and, carrying out statewide policy on environmental quality. Comprehensive planning responsibilities require cities and counties to prepare comprehensive plans to regulate the development of land within local jurisdictions, and to coordinate the plan with the needs of other levels of government. This creates the potential for conflicts.

The Department's dispute resolution process requires that the following be considered by the Department in efforts to resolve disputes with local government:

1. Initiate a meeting between the Department and the affected local government to discuss resolution alternatives.

2. Seek compatibility through an application for necessary local land use approvals.

3. Appeal the local government's denial of the land use approval.

4. Submit a request for local land use approval or necessary plan amendment at the time of the local government's periodic review of the comprehensive plan.

5. Request informal LCDC mediation in accord with OAR 660-30-070.

6. Proceed with agency action and provide compliance with the statewide goals if action is justified by the Department's statutory responsibilities.

5. STATEWIDE GOAL COMPLIANCE AND ACKNOWLEDGED PLAN COMPATIBILITY FOR NEW OR AMENDED RULES OR PROGRAMS AFFECTING LAND USE.

New or amended rules will be evaluated to determine if they affect land use using the DLCD guidelines pursuant to OAR 660-30-075(2). The Department will provide DLCD and the Department's land use mailing list notice of new rules, amended programs or actions that affect land use. The notice shall include the following information:

1. Evidence that the rule or program is a land use program; or
2. Evidence that the rule or program affects land use and is covered under the Department's Certified State Agency Coordination Program; or
3. Evidence that the rule or program is a land use program including an explanation of how goal compliance and plan compatibility will be achieved.

6. DIVISION 31 - STATE PERMIT COMPLIANCE COMPATIBILITY

In addition to the requirements of the LCDC State Agency Coordination Rule, state agencies must also address procedures and standards under OAR 660 Division 31 prior to approving state permits. The rule classifies state agency permits based on public notice and public hearing requirements. The rule's Class A permits include the Department's Hazardous Waste Disposal collection or storage permit.

The permit consistency rule allows state agencies to rely on local government compatibility determinations with acknowledged plans. A local government determination of goal compliance is also acceptable if affirmative findings are provided.

The Department proposes to classify the only permit addition to the SAC Program, the Waste Tire Storage Permit, as a Class B permit under OAR 340 Division 31. All permits listed in Division 31 are identified as programs affecting land use.

Figure 3

Division Actions Affecting Land Use

Goal Compliance/Plan
Compatibility Procedures

Action	Procedure Mechanism
AIR DIVISION	
1. Approval of Noise Impact Boundaries for Motor Racing Facilities	LUCS required with the submitted boundary data.
2. Approval of Airport Noise Abatement Plan/Noise Impact Boundaries	LUCS or written evidence submitted with plan that local government has participated in and determined plan compatibility.
3. Issuance of Notice of Construction Approval	LUCS required with application.
4. Issuance of Air Contaminant Discharge Permit	LUCS required with application.
5. Issuance of Indirect Source Construction Permit	LUCS required with application.
6. Approval of Parking and Traffic Circulation Plan	LUCS written evidence of local government participation and local plan compatibility.
ECD DIVISION	
* 7. Issuance of Environmental Hazard Notice	Notice provided to local government and information on land use requirements or restrictions.

Action	Procedure
HSW DIVISION	
8. Issuance of Solid Waste Disposal Permit	LUCS required with application.
* 9. Issuance of Waste Tire Storage Permit	LUCS required with application.
10. Issuance of HW & PCB Storage Disposal Permit	LUCS required with application.
MSD DIVISION	
11. Approval of Pollution Control Bond Fund Application	LUCS required with application.
WQ DIVISION	
12. Approval of Waste Water System and Facility Plans.	LUCS required with plans.
13. Approval of Construction Grant Program Application	LUCS required with application.
*14. Approval of State Revolving Loan Application	LUCS required with application.
15. Issuance of On-site Sewage Disposal Permit	LUCS required with application.
16. Issuance of Industrial Waste Discharge Permit NPDES/WPCF	LUCS required with application.
*17. Development of Water Quality Wetland Protection Criteria	Compatibility for point sources achieved through LUCS process. Rulemaking not completed.
*18. Requirement for Implementation Plan to meet TMDL Restrictions on Water Quality Limited Waterways.	Requires written evidence that TMDL implementation plan and comprehensive plans are compatible.
**19. Certification of Water Quality Standards for Federal Permits or Licenses	Requires LUCS with application.

Action		Procedure
*20.	Development of Action Plan for Declared Ground Water Management Area	Provide notice to affected local governments prior to Department action. Coordinate with local government on land use issues.
*21.	Development of Nonpoint Source Management Plan	Provide notice to affected local governments prior to Department action. Coordinate with local government on land use issues.
*22.	Development of Estuary Water Quality Plan	~~[Provide notice to]~~ Request affected local governments to provide evidence of compatibility with the local comprehensive plan prior to Department action. Coordinate with local government on land use issues.
*23.	Development of Oil Spill Regulations	Provide notice to affected local governments prior to Department action. Coordinate with local government on land use issues.

* New SAC Programs
** Subject to limitations of Section 401 of the federal Clean Water Act

SECTION V

Cooperation and Technical Assistance to Local Government

Cooperation with and technical assistance to cities and counties is instrumental in fulfilling the agency's environmental responsibilities and furthering the state's environmental objectives. Local government participation is necessary in fostering public awareness of the quality of the state's environment, promoting educational efforts aimed at the prevention of environmental pollution, and for assuring that local governments and the Department are striving towards the same environmental objectives.

With respect to Department programs that are technically not subject to land use such as those relating to the Health Abatement and Drinking Water Laws, the Department will provide local governments with requested information and technical assistance within its capabilities.

Provision of Information/Technical Assistance

Participation in local land use planning is only one aspect of Department's coordination with local government. As staffing and funding resources allow, the Department provides technical assistance or information for land use planning purposes through the following:

1. Department publications, studies and planning documents are available to the public upon request. Each division maintains a local government mailing list for the distribution of new publications.

2. Technical data and assistance on a jurisdictional basis may be available for:

   - Noise control/airport standards.
   - Air quality monitoring data.
   - Air quality standards and regulations.
   - Noise impact boundary regulations for airports.
   - Hazardous Substance contamination sites/inventory of confirmed releases.
   - Hazardous waste generators.
   - Solid waste disposal standards and regulations.
   - Hazardous waste facilities management standards and regulations.
   - Waste tires regulations for storage permits.
   - Pollution Control Bond Fund application process.
   - Municipal waste sewage collection, treatment, disposal requirements.
   - Financial assistance information for loans to construct municipal treatment works.

- Nonpoint source/groundwater water quality problems.
- Total maximum daily local restrictions on specific waterways.
- Ambient water quality monitoring data.

3. Provide copies of Department statutes and administrative rules.

4. Notice of proposed rules affecting land use for non-site specific items such as statewide plans, grants, programs or other issues affecting local government will be sent to all affected cities and counties. Notice of rulemaking which affects specific jurisdictions or geographic areas will be provided to the affected cities and counties.

Technical assistance should be requested of the Department's Intergovernmental Coordination Office. Division or Region staff will assist in coordinating the delivery of local government requests. Requests for informational material or publications should also be directed to the Intergovernmental Coordination Office of the Management Services Division.

Involvement in Periodic Review

The Department is committed to an active role in the periodic review process, within the constraints of the Department's resources. The assistance and information that may be provided to local governments consist of the following:

1. Periodic Review Guidelines will be prepared and provided to local governments upon request. The following information will be provided in the guidelines:

    - Summary of existing Department programs/actions affecting land use and recommendations on how they should be addressed in local plans;
    - New programs, rules, or actions that affect land use and recommendations for addressing them in local plans.
    - List of Department publications and technical data available upon request.
    - New revisions to the Department Land Use Coordination Program.
    - The identification of priority Department activities that may affect local planning such as upcoming studies or plans.
    - Recommendations for city and county actions that would contribute to the prevention of environmental degradation or pollution.

2. Department staff will review local government periodic plan update or plan amendments upon request and within the Department's resource capabilities.

3. The Department will participate in DLCD's periodic review process through the establishment of "priority environmental concerns" that affect local planning. This may involve emphasis on geographic areas or issue areas of high environmental priority.

Assistance to Coastal Jurisdictions

The above provisions for technical assistance and information apply as well to all coastal jurisdictions. However, specific emphasis will be placed on technical assistance to coastal jurisdictions - issues that relate to Goal 16, Estuarine Resources; and Goal 19, Ocean Resources. Specific Department program areas include estuary plans, the regulations of oil spills, participation in Oregon Coastal Zone Management Program process and Ocean Management Planning process.

SECTION VI

COORDINATION WITH STATE AGENCIES, FEDERAL AGENCIES AND SPECIAL DISTRICTS

The Department strongly believes that ongoing interagency involvement and cooperation is essential to effectively carry out Department mandates. This involvement is an integral element of all agency activities. The basis for the Department's commitment to interagency involvement is multi-fold. There are obvious overlaps and interrelationships between the Department's responsibilities with those of other federal and state agencies. Many of the Department's statutory directives require specific intergovernmental efforts. It is also the agency's firm conviction that accomplishments are heavily influenced by the amount of effort placed on intergovernmental relations.

Intergovernmental coordination as applicable to programs and actions that affect land use is implemented through each of the agency's divisions. From an administrative and organizational perspective, the coordination of land use matters is integrated throughout the Department's structure.

In an effort to improve agency coordination as it relates to improving opportunities for economic development pursuant to ORS 197.712, the agency shall provide the Department's of Economic Development, Transportation, and Water Resources notice of all Department's proposed priority list of potential eligible projects for wastewater collecting disposal and treatment facilities.

When appropriate, land use issues involving more than one division or involving multiple agencies, are coordinated through the Intergovernmental Coordination Office in the Management Services Division. Most of the Department's coordination, however, is conducted through the responsible program area.

The Oregon Coastal Management Program (OCMP) is part of Oregon's program for coordinated land use programs. The program is a partnership among local, state, and federal agencies to resolve general and often conflicting interests through comprehensive plans and land use regulations for all lands in Oregon's coastal zones. The OCMP is based upon specific resource management authorities contained in Oregon Revised Statutes. The Department's involvement is based on:

ORS Chapter 468:	Application and administration of air and water pollution; oil spill regulations.

ORS Chapter 454: Application and administration of sewage treatment works.

The Department will participate with DLCD and other OCMP agencies, as resources permit, to develop and update a five-year strategic plan for Oregon's coastal zone.

The Department will continue to be an active participant in the ocean resources management process. Following adoption of the Oregon Ocean Management Plan by LCDC, the Department will consider incorporating into the appropriate Department rules and programs those aspects of the Ocean Plan which the Department has authority to implement.

The Department will continue to be an active participant in

Notice of all Department proposed rulemaking that affects land use and which relates to other agency authorities is provided to the appropriate agency or special district for input.

A list of those federal and state agencies and special districts that the Department coordinates with on an on-going basis follows:

1. Air Quality Division

Federal Agencies	Program Area
Bureau of Reclamation	Rules/actions involving impacts to Forest Service lands.
Environmental Protection Agency	Rules/programs involving federal mandates.
Forest Service	Actions involving impacts to Forest Service lands.
State Agencies	
Agriculture	Field/slash burning.
Division of State Lands	Sand and gravel removal operations from streams.
Economic Development	Air Quality programs affecting land use.
Forestry	Slash burning.
Land Conservation & Development	All rules affecting land use; site specific issues.
Marine Board	Motorboat racing noise enforcement.
Transportation	Noise Abatement for airports.
	ISCP permits; parking and traffic circulation plans.

Special Service Districts/Other Agencies

Lane Regional Air Pollution Authority	All major air quality sources except field/ burning and motor vehicles.
Metro	Participates in carbon monoxide and ozone control strategy development.
Councils of Governments	Participates in carbon monoxide and ozone control strategy development.

2. Environmental Cleanup Division

Federal Agencies	Program Area
Environmental Protection Agency	Rules/programs involving federal mandates.

State Agencies

Land Conservation & Development	All rules/actions affecting land use; site specific issues.

3. Hazardous and Solid Waste Division

Federal Agencies	Program Area
Army Corp of Engineers	Siting of solid waste. Disposal sites.
Bureau of Land Management	Siting of solid waste disposal sites.
Environmental Protection Agency	Rules/programs involving federal mandates.
Forest Service	Siting of solid waste disposal sites.

State Agencies

Agriculture	Hazardous waste pesticide program
Applicable Agencies	Siting of solid waste disposal sites on public lands.
Land Conservation & Development	All rules affecting land use; site specific issues.
Water Resources	Siting of new facilities.

4. Management Services Division

Federal Agencies	Program Area

State Agencies

Executive (Intergovernmental Relations)	Review of projects involving federal funds.

5. Regional Operations Division

Federal Agencies	Program Area

State Agencies

Applicable Agencies	Site-Specific actions that affect state agencies.

Special Service Districts

Applicable Special Districts	Site-Specific actions that affect special service districts.

6. Water Quality Division

Federal Agencies	Program Area
Bureau of Land Management	Nonpoint source rules/actions.
Coast Guard	Rules/actions involving oil spills.
Corps of Engineers	Section 401 permits.
Environmental Protection Agency	Rules/programs involving federal mandates.
Forest Service	Rules/nonpoint source site-specific actions.

State Agencies

Agriculture	Nonpoint source rules/actions.
Columbia Gorge Bi-State Commission	Rules/issues Columbia Gorge National Scenic Area.
Columbia South Slough Commission	Nonpoint/groundwater rules/actions.
Division of State Lands	Fill and removal activities.
Economic Development	Grants/Loans for public wastewater treatment facilities.

Fish and Wildlife	Water quality rules/actions that affect fish; instream water rights; oil spill planning.
Forestry	Nonpoint source rules/actions.
Land Conservation and Development	All rules affecting land use; site-specific issues; ocean resources planning issues.
Parks	Rules/actions involving scenic waterways; instream water rights.
Regional Response Team	Oil spills.
Transportation	Nonpoint source rules/actions.
Water Resources	Rules/issues relating to groundwater protection; instream water rights.

Special Service Districts

Water Improvement Special Districts	Rules/actions affecting land use; planning studies.

Department procedure for site-specific intergovernmental coordination is basically determined on a case-by-case basis. All affected agencies are invited to review proposed rulemaking that affects land use. Many agencies are involved through Task Forces, Advisory Committees, or assist DEQ in developing rules/programs.

Other

Northwest Power Planning Council	Section 401 permits.
Strategic Water Management Group	Water policy issues.

STATE LEGAL AUTHORITIES

STATE AUTHORITIES

The Department of Environmental Quality carries out its statutory authorities under Oregon Revised Chapters 448, 453, 454, 459, 465, 466, 467, and 468.

Chapter 448: 448.410 - 415 provides the EQC with authority to classify sewage treatment works and certify operators of all sewage treatment works.

Chapter 453: 453.510 - 527 directs the establishment of the Interagency Hazard Communication Council. The role of the Council is to develop a state comprehensive emergency response plan. The Director of DEQ is a designated member of the 21-member Council.

Chapter 454: This chapter provides DEQ regulatory authority over sewage treatment works; provides municipalities authority to finance, construct and own sewage disposal systems; authorizes EQC review and approval of proposed construction of sewage treatment works; establishes a State Sewage Treatment Works Construction Account; and, provides DEQ authority to regulate subsurface sewage disposal.

Chapter 459: This chapter provides DEQ's regulatory authorities for the control of solid waste: Directs the planning, development and operation of recycling programs; establishes Oregon Solid Waste Regional Policy Commission; requires counties to develop solid waste management plans; requires permitting of landfill disposal sites; provides for local governments to enter into intergovernmental agreements in carrying out solid waste control provisions; directs EQC to adopt rules on waste disposal and recycling; establishes statewide mandatory recycling opportunities; directs DEQ regulations of landfill site closures; provides for enforcement authority; regulates disposal of infectious waste; establishes pilot project for household hazardous waste; regulates disposal of lead-acid batteries; directs regulation of the storage and disposal of waste tires; and, directs the EQC to

promote the use of reusable containers in the state.

Chapter 465: ORS 465.003 - 037 provides authorities for the reduction of use of toxic substances and hazardous waste generation through the development of user waste reduction plans. ORS 465.200 - 980 contains authorities to undertake hazardous substance removal or remedial action; provides state financial assistance through Hazardous Substance Remedial Action Fund; establish Orphan Site Account for removal or remedial action of sites where the responsible party is unknown.

Chapter 466: This chapter contains DEQ's authorities relating to hazardous waste and hazardous materials. Through these authorities, the DEQ is directed to regulate the storage, treatment and disposal of hazardous waste and PCB; the EQC is authorized to give local government notice of potential hazardous waste conditions on sites; enacts the Pacific States Agreement on Radioactive Materials Transportation Management; directs remedial action or removal to clean up contaminated sites; directs EQC policy for the cleanup of oil or hazardous materials; directs EQC to adopt a state program for the prevention, reporting of releases, and corrective action from releases from underground storage tanks; provides financial assistance for remedial action; provides authority to establish a loan guaranty program for compliance and corrective action on underground storage tanks; and, provides authorization for civil penalties.

Chapter 467: The Environmental Quality Commission is provided with authority to adopt standards for noise emissions and to enforce compliance. Cities and counties are authorized to regulate noise sources including agricultural operations and forestry operations which are exempt from state regulation.

Chapter 468: Chapter 468 contains the bulk of the statutory authorities on pollution control. ORS 468.005 - 468.272 provides general administrative provisions for the EQC and Department; provides the Department with enforcement and investigation authorities; provides the EQC authority to adopt rules for issuance of pollution control tax credit certification; establishes pollution control fund and provides

EQC authority to grant funds for eligible projects; provides counties bonding authority for purpose of emergency installation of antipollution devices.

ORS 468.275 - 468.655 provide broad authorities for restoration and protection of air resources and directs development of a state program of air quality control; requires certification of motor vehicle pollution control systems and inspection of motor vehicles; directs the Department to regulate fieldburning and conduct a smoke management plan; provides for the formation of regional air quality control authorities; prohibits the role of aerosol sprays containing certain propellants; controls the use of chlorofluorocarbons and halons; directs EQC to establish emissions performance standards for woodstoves and to develop a woodstove certification program.

ORS 468.423 - 440 establishes a Water Pollution Control Revolving Fund to provide state financial assistance for treatment works and the management of nonpoint sources of pollution.

468.686 - 883 provides EQC authorities for the prevention, abatement and control of new or existing water pollution; requires regulation of discharge from confined animal feeding operations; requires certification of federally licensed or permitted activity related to hydroelectric power development; and prohibits entry of oil into state waters from ship, fixed or mobile/activity located on shore or off shore.

ORS 468.659 - 685 establishes a Resource Conservation Trust Fund to support projects relating to habitat conservation and waste reduction. The DEQ would oversee the waste reduction responsibilities if the Legislature provides support funding.

ORS 468.850 - 871 directs Department to conduct a public education program on benefits of collecting and recycling used oil. ORS 468.875 - 899 requires the licensing for asbestos abatement. ORS 468.925 - 965 authorizes the EQC to provide tax credit certification for capital investments to manufacture a reclaim/plastic product. ORS 468.970 establishes the Assessment Deferral Loan Program to provide assistance to

property owners who will experience financial hardship from paying assessed costs for the construction of required treatment works.

OREGON ADMINISTRATIVE RULES
DEPARTMENT OF ENVIRONMENTAL QUALITY
CHAPTER 340
Table of Contents

OREGON ADMINISTRATIVE RULES
DEPARTMENT OF ENVIRONMENTAL QUALITY
CHAPTER 340
Table of Contents

Table of Contents

Table of Contents

Table of Contents

Table of Contents

OREGON ADMINISTRATIVE RULES
DEPARTMENT OF ENVIRONMENTAL QUALITY
CHAPTER 340
Table of Contents

INDIVIDUAL ON-SITE SYSTEMS

DIVISION 72

FEE SCHEDULE

DIVISION 73

CONSTRUCTION STANDARDS

Distribution Boxes, Drop Boxes, and Diversion Valves

Nonwater-Carried Waste Disposal Facilities, Materials, and Construction

STATE FINANCIAL ASSISTANCE

DIVISION 81

STATE FINANCIAL ASSISTANCE TO PUBLIC AGENCIES FOR WATER POLLUTION CONTROL FACILITIES

Water Pollution Control Facilities

OREGON ADMINISTRATIVE RULES
DEPARTMENT OF ENVIRONMENTAL QUALITY
CHAPTER 340
Table of Contents

ACTION RULES

Cleanup Rules for Leaking Petroleum UST Systems

DIVISION 130

ENVIRONMENTAL HAZARD NOTICES

DIVISION 150

UNDERGROUND STORAGE TANK RULES ORS 446.705 THROUGH 466.995

DIVISION 160

REGISTRATION AND LICENSING REQUIREMENTS FOR UNDERGROUND STORAGE TANK SERVICE PROVIDERS

ORS 466.705 through ORS 466.995

NEIL GOLDSCHMIDT
GOVERNOR

Environmental Quality Commission

811 SW SIXTH AVENUE, PORTLAND, OR 97204 PHONE (503) 229-5696

REQUEST FOR EQC ACTION

Meeting Date: August 10, 1990
Agenda Item: R
Division: Water Quality
Section: Municipal Waste

SUBJECT:

Water Quality Rules: Adoption of Proposed Rules Establishing Requirements for Sewage Treatment Facilities that Provide Reclaimed Water (Treated Effluent) for Beneficial Purposes.

PURPOSE:

The rules, if adopted, will establish effluent quality limitations, effluent monitoring and other requirements for sewage treatment plant owners that use reclaimed water from sewage treatment plants for beneficial purposes including agricultural and landscape irrigation and other uses.

ACTION REQUESTED:

___ Work Session Discussion
___ General Program Background
___ Potential Strategy, Policy, or Rules
___ Agenda Item ___ for Current Meeting
___ Other: (specify)

___ Authorize Rulemaking Hearing
_X_ Adopt Rules
Proposed Rules — Attachment A
Rulemaking Statements — Attachment ___
Fiscal and Economic Impact Statement — Attachment ___
Public Notice — Attachment ___

___ Issue a Contested Case Order
___ Approve a Stipulated Order
___ Enter an Order
Proposed Order — Attachment ___

___ Approve Department Recommendation

___ Variance Request	Attachment ___
___ Exception to Rule	Attachment ___
___ Informational Report	Attachment ___
___ Other: (specify)	Attachment ___

DESCRIPTION OF REQUESTED ACTION:

Currently, there are no rules in Oregon concerning limitations or requirements for reclaimed water (treated effluent) from sewage treatment plants when used for beneficial purposes. Past permit applications proposing to use reclaimed water have been evaluated on the basis of guidance that was developed in the 1970s and was revised in 1986.

The proposed rules were developed with the assistance of a technical advisory group made up of treatment plant officials, consultants, agricultural experts, and health, environmental, and consumer advocates. Much of the proposed rules are derived from regulations in effect in other states, most notably California, where the successful use of reclaimed water has a long history.

The Environmental Quality Commission (EQC) granted authority to hold hearings on proposed rules for reclaimed water at the Commission's March 2, 1990, meeting in Pendleton. Three public hearings were held on the proposed rules in La Grande, Bend, and Portland on May 8, 9, and 10, 1990, respectively.

AUTHORITY/NEED FOR ACTION:

___	Required by Statute: _____ Enactment Date: _____	Attachment ___
_X_	Statutory Authority: ORS 468.705, 710, 740	Attachment ___
___	Pursuant to Rule: _____	Attachment ___
___	Pursuant to Federal Law/Rule: _____	Attachment ___
___	Other:	Attachment ___

_X_ Time Constraints: Currently, many sewage treatment plants are evaluating means to reduce effluent discharges to meet waste load allocations for receiving streams with established total maximum daily loads (TMDLs). When adopted, the rules will provide sewage treatment plant owners with a firm knowledge of the requirements for the use of reclaimed water.

DEVELOPMENTAL BACKGROUND:

___	Advisory Committee Report/Recommendation	Attachment ___
_X_	Hearing Officer's Report/Recommendations	Attachment _B_
___	Response to Testimony/Comments	Attachment ___
___	Prior EQC Agenda Items: (list)	Attachment ___
___	Other Related Reports/Rules/Statutes:	Attachment ___
___	Supplemental Background Information	Attachment ___

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

As a result of public testimony, Department proposes the following changes to the rules being considered for adoption:

1. Less restrictive limitations than originally proposed for hearing would be allowed for reclaimed water irrigated on golf courses. The lesser restrictions would be consistent with the requirements specified by the State of California, however. The Oregon Health Division concurs with this proposed change. As a result, sewage treatment plants currently providing reclaimed water to golf courses should not have to significantly upgrade their treatment facilities.

2. Certain requirements related to worker safety in the original proposed rules have been changed to advisory notices. The change was made because legal counsel had concerns about the Department's authority in regard to such limitations. The Health Division also concurs with this change.

3. An exemption has been included in the proposed rules for use of treated effluent at a sewage treatment plant site. Effluent is traditionally used at a treatment plant for washdown water and landscape irrigation. Application of the proposed rules to effluent used at sewage treatment plants is believed by the Department to be unnecessary.

PROGRAM CONSIDERATIONS:

The proposed rules attempt to be strict to ensure protection of public health. At the same time, the proposed rules also attempt to encourage and foster the use of reclaimed water. Much of the water used in Oregon for agriculture or industry does not require the same high quality as that necessary to

protect in-stream uses or for domestic purposes. Diverting reclaimed water away from discharge into surface waters not only reduces the amount of pollutants discharged into public waters, but, in addition, replaces water that might have been otherwise withdrawn from surface or groundwaters. Less withdrawal from surface and groundwater sources should maintain more dilution for other point and nonpoint pollution sources and maintain a greater supply of higher quality water for those beneficial uses requiring high quality water.

The proposed rules, if adopted, will increase the need of the Department to conduct thorough oversight of sources that are permitted to use reclaimed water. Although the proposed rules are particularly strict for those uses where human contact with the reclaimed water is allowed, this must be followed up with an effective compliance assurance effort. The Department's current resources available for compliance assurance for water quality permits may not be sufficient.

The Department already has insufficient resources for evaluating and renewing permits as they expire. The rules proposed for hearing would have required reclaimed water use plans to be submitted and approved before permits for use of reclaimed water could be renewed. The additional workload for evaluating these plans cannot be readily handled with existing staff. To address this concern, the proposed rules have been changed to allow the Department to specify the submittal date in renewal permits to coincide when resources are available. In addition, existing permits that already authorize use of reclaimed water will be allowed to continue under the requirements of those permits until the Department chooses to modify them.

The Department's statutory authority, relative to reclaimed water, is limited to the treatment and disposal of wastewater. Should sewage treatment plants fail to meet the requirements of the proposed rules, the Department can revoke permits and assess civil penalties. The Department does not have authority, however, to restrict harvesting and selling of crops nor to restrict access to a specified area. The Department does not believe this issue would warrant the proposed rules not to be adopted. The Department, however, is recommending that the Department enter into memorandums of agreement with the Oregon Department of Agriculture, Oregon Health Division, and the Oregon Occupational Safety and Health Division. The memorandums would specify what type of violations should be reported to the agencies and how and in what form the report should occur. This would allow

appropriate agencies to be aware of incidents and situations that warrant their action. The Department has informally discussed the concept of memorandums of agreement and has received favorable responses from these agencies.

Testimony at the hearing indicated that many people were fearful that the Department's groundwater quality protection rules would effectively discourage use of reclaimed water, particularly irrigation of reclaimed water. The Department is sensitive to this concern. Guidance for the groundwater quality protection rules is being drafted. It appears that the guidance will require only minimal requirements for use of reclaimed water for irrigation if the reclaimed water is applied at agronomic rates.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

1. Recommend adoption of proposed rules as they were presented for hearing.

2. Recommend adoption of proposed rules as modified pursuant to public hearing testimony and advise of legal counsel. It is also recommended that the Department be directed to develop memorandums of agreements with appropriate state agencies that have authority and responsibilities that may be impacted by improper use of reclaimed water.

3. Recommend that proposed rules not be adopted.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends alternative 2. The Department believes that the revised proposed rules will adequately protect public health and the environment. These proposed rules will provide a firm, long term basis for sewerage agencies in Oregon to invest in wastewater control facilities that will encourage use of reclaimed water. The proposed rules, as revised, are felt to be more consistent with the Department's authority relative to the use of reclaimed water. In addition, the proposed rules also allow the Department the flexibility to more effectively manage its workload for reclaimed water by allowing it to delay action on existing permits that already authorize use of reclaimed water.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

These rules are consistent with one of the Water Quality Program's high priorities which is to "implement aggressive source control and problem prevention programs based on the priorities established that explore and encourage use of environmentally sound alternatives for disposal of treated wastewater which do not adversely affect air, land, stream, and groundwater quality. (Goal 1,3,& 8)"

ISSUES FOR COMMISSION TO RESOLVE:

1. Should the standards for irrigating on golf courses be made less restrictive than originally proposed?

2. Should the proposed rules include advisory statements that are used for the purpose of relaying concerns of another agency, but are not for the purpose of regulation by DEQ?

3. Should the Department proceed to enter into memorandums of agreement with other state agencies that have authority and responsibilities that may be impacted by improper use of reclaimed water?

INTENDED FOLLOWUP ACTIONS:

The Department will file the rules, if adopted, with the Secretary of State. The Department will also, if authorized, proceed to develop memorandums of agreement with the Oregon Department of Agriculture, Oregon Occupational Safety and Health Division and the Oregon Health Division. Water Quality Division staff will complete and, as necessary, update guidance for the rules and will schedule meetings with regional personnel to update them on the rule revisions.

Approved:

Section: Mary M. Hallebuster

Division: Dick Nichols for Lydia Taylor

Director: Fred Hansen

Report Prepared By: Richard J. Nichols

Phone: 229-5323

Date Prepared: July 19, 1990

(Nichols:crw)
(MW\WC6864)
(July 19, 1990)

PROPOSED

OREGON ADMINISTRATIVE RULES

DEPARTMENT OF ENVIRONMENTAL QUALITY

CHAPTER 340

DIVISION 55

REGULATIONS PERTAINING TO THE USE OF RECLAIMED WATER (TREATED EFFLUENT) FROM SEWAGE TREATMENT PLANTS

Note: The Department's requirements for reclaimed water have not been established in rule previous to this proposal. The proposed rules, if adopted, will be new and will not amend or replace any existing rules.

Recommended additions to these proposed rules that went to hearing are <u>underlined.</u> Recommended deletions are [bracketed]. The only exception is that tables 1 and 2 that were in the rule proposal that went to hearing have been totally changed and merged into a single Table 1. The old tables 1 and 2 are included at the end of the proposed rules (Attachment A).

Purpose

340-55-005 The purpose of these rules is to protect the environment and public health in Oregon by prescribing the methods, procedures and restrictions required for the use for beneficial purposes of reclaimed waters.

Policy

340-55-007 It is the policy of the Environmental Quality Commission to encourage the use of reclaimed waters for beneficial purposes using methods that assure that the health of Oregonians and the environment of the state are protected. Proper use of reclaimed waters for beneficial purposes enhances water quality by reducing discharges of treated effluents to surface waters and by conserving stream flows through reduced demand for withdrawals for out-of-stream use.

Definitions

340-55-010(1) "Sewage" means water-carried human wastes, including kitchen, bath and laundry waste from residences, buildings, industrial and commercial establishments, or other places, together with such groundwater infiltration, surface waters, or industrial wastewater as may be present.

(2) **"Industrial wastewater"** means any liquid, gaseous, radioactive, or solid waste substance or a combination thereof resulting from any process of industry, manufacturing, trade, or business, or from the development or recovery of any natural resources.

(3) **"Sewage treatment system"** means any facility or equipment used to alter the quality of sewage by physical, chemical or biological means or a combination thereof such that the tendency of said wastewater to cause any degradation in water quality or other environmental conditions is reduced.

(5) **"Sewage treatment system owner"** is any person who owns a sewage treatment system that provides reclaimed water for use.

(6) **"Person"** means the United States and agencies thereof, any state, any individual, public or private corporation, political subdivision, governmental agency, municipality, copartnership, association, firm, trust estate, or any other legal entity whatever.

(7) **"NPDES permit"** means a waste discharge permit as defined in Oregon Administrative Rules Chapter 340, Division 45.

(8) **"WPCF permit"** means a Water Pollution Control Facilities permit as defined in Oregon Administrative Rules Chapter 340, Division 45.

(9) **"Reclaimed water"** means treated effluent from a sewage treatment system which, as a result of treatment, is suitable for a direct beneficial purpose or a controlled use that could not otherwise occur.

(10) **"User"** means any person who uses reclaimed water.

(11) **"Oxidized wastewater"** means treated sewage in which the organic matter has been stabilized, is nonputrescible, and contains dissolved oxygen.

(12) **"Biological treatment"** means methods of sewage treatment in which bacterial or biochemical action is promoted as a means of producing an oxidized wastewater.

(13) **"Clarification"** means the removal by gravity of settleable solids remaining in the effluent after the biological treatment or after flocculation as part of the coagulation process.

(14) **"Coagulation"** means a treatment process applied to oxidized wastewater in which colloidal and finely divided suspended matter have been destabilized and agglomerated by the addition of suitable floc-forming chemicals or by an equally effective method.

(15) **"Filtration"** means a treatment process applied to oxidized, coagulated, clarified wastewater which has been passed through natural undisturbed soils or filter media, such as sand or diatomaceous earth, so that the turbidity as determined by an approved laboratory method does not exceed an average operating turbidity of 2 turbidity units and does not exceed 5 turbidity units more than 5 percent of the time during any 24-hour period.

(16) **"Disinfection"** means a treatment process in which the pathogenic organisms have been destroyed or reduced to very low levels by chemical, physical or biological means. Disinfection is deemed to have occurred when total coliform and (where appropriate) turbidity limitations have been continuously met for the specific uses cited in Table 1 and Table 2.

(17) **"Beneficial purposes"** means a purpose where the resource values of the reclaimed waters, such as but not limited to its nutrient or moisture value, are utilized for enhanced productivity or water conservation by the user.

(18) **"Restricted impoundment"** means a body of reclaimed water in which recreation is limited to fishing, boating, and other non-body-contact water recreation activities. Restricted impoundments constructed and operated pursuant to these rules shall be considered part of a sewage treatment system and not waters of the state for water quality purposes.

(19) **"Nonrestricted impoundment"** means a body of reclaimed water in which no limitations are imposed on body-contact water recreation activities. Nonrestricted impoundments constructed and operated pursuant to these rules shall be considered part of a sewage treatment system and not waters of the state for water quality purposes.

(20) **"Landscape impoundment"** is a body of reclaimed water which is used for aesthetic enjoyment or which otherwise serves a function not intended to include public contact through such activities as boating, fishing, or body-contact recreation. Landscape impoundments constructed and operated pursuant to these rules shall be considered part of a sewage treatment system and not waters of the state for water quality purposes.

(21) **"Potable water supply system"** means a water supply system used to provide water for human consumption.

(22) "Controlled use" means a use of reclaimed water for which the sewage treatment plant owner, either directly or through a written contract, has reasonable knowledge of the use and fate of the reclaimed water and is able to discontinue the use of the reclaimed water if it is determined that the requirements of the rules and the permit authorizing use of reclaimed water are not being met.

(23) "Processed Food Crops" means those crops which undergo thermoprocessing sufficient to kill spores of Clostridium botulinum. Washing, pickling, fermenting, milling or chemical treatments are not sufficient.

Exemptions

340-55-013 Reclaimed water used at the treatment plant site where it is generated shall be exempt from these rules provided:

(1) The reclaimed water that is used is disinfected, oxidized wastewater, and

(2) Reclaimed water that is used for landscape irrigation shall be confined to the treatment plant site. No spray or drift shall be allowed off the treatment plant site.

The treatment plant site shall not include property that is not contiguous to the parcel of land upon which the treatment plant is located.

General Requirements for Use of Reclaimed Water

340-55-015(1) No sewage treatment system owner shall release any reclaimed water for use unless so authorized by a WPCF or NPDES permit issued by the Department. Any application for a WPCF or NPDES permit that proposes to use reclaimed water shall provide sufficient information as necessary to evaluate and determine compliance with this Division.

(2) Except for use of reclaimed water already authorized by permit by the Department, no sewage treatment system owner shall release any reclaimed water for use until a reclaimed water use plan meeting the requirements of OAR 340-55-025 has been approved in writing by the Department. Before approving any plan, the Department shall submit the proposed plan to the Health Division for comment. For uses of reclaimed water already permitted, but for which no reclaimed water use plan has been approved, the

sewage treatment system owner shall submit a reclaimed water use plan to the Department when requested in writing by the Department. [when the permittee applies to renew the permit. No permit shall be renewed until the reclaimed water use plan has been approved.]

(3) Where the rules of this Division require limitations and conditions that are different or more stringent than conditions in existing permits, the existing permit limitations and conditions shall control until such time as the Department chooses to change the permit limitations and conditions through permit modification or renewal. When the Department does choose to change existing permit limitations and conditions to conform to these rules, the permittee shall be given a reasonable compliance schedule for achieving more stringent requirements. The compliance schedule shall be inserted in the permit at the time the permit is renewed or modified.

(4) Reclaimed water from sewage treatment systems used for agricultural and nonagricultural uses listed in Table 1 of this Division shall comply with the [criteria established] associated effluent quality limitations and the treatment, monitoring and other requirements for that use that are stated in Table 1. [Reclaimed water from sewage treatment systems for nonagricultural uses shall comply with Table 2 of this Division.]

(a) Where Table 1 [and Table 2], for specified uses, requires that reclaimed water receive biological, coagulation, clarification, filtration treatment plus disinfection, the Department will consider treatment processes that do not utilize coagulation provided that equivalent effluent quality to that achieved with coagulation can be demonstrated. The Department shall consult with the Oregon Health Division when considering alternative treatment processes allowed for under this section.

(b) The Department may include additional permit effluent limitations and/or other permit conditions other than those required by Table[s] 1 [and 2] if it determines or has reason to believe that the reclaimed water may contain physical or chemical contaminants that would impose potential hazards to public health or the environment or cause detrimental effects on an allowed use.

(c) In cases where chlorine or chlorine compounds are used as the disinfecting agent, the Department may specify in the permit a minimum chlorine residual concentration to be met after a minimum contact time. In cases where other disinfecting agents are used, the Department may require

other additional monitoring requirements that will assure adequate disinfection. The Department may [shall] consult with the Health Division before allowing disinfection agents other than chlorine or chlorine compounds.

(d)(i) The Department may reduce the buffer distances required in Table[s] 1 [and 2] if it determines that alternative controls as specified in the permit will adequately protect public health and the environment. Alternative controls may be, but are not limited to, valves that are activated by wind speed or direction, low trajectory sprinklers or remoteness of the site to incompatible uses.

(ii) Buffers for uses in Table 1 for Level I effluent shall be specified in the permit and shall be based on a determination that aerosols will be adequately controlled so as to protect public health.

(iii) The Department may [shall] consult with the Health Division before establishing buffer distances other than those specifically cited in Table[s] 1 [and 2].

(5) Reclaimed water from sewage treatment systems shall be considered adequately treated and disinfected if, at the end of the treatment process, the bacterial and turbidity limitations for the use of reclaimed water as specified in Table 1 [or Table 2] are met. The sampling point for monitoring compliance with water quality limitations shall be specified in the permit.

(6) By permit, reclaimed water for a use not specified in Table 1 [or Table 2] may be authorized. In considering such authorization, the Department may request information and shall impose such effluent limitations as deemed necessary to assure protection of public health and the environment. Before the Department shall authorize uses of reclaimed water under this section of the rule, written concurrence from the Oregon Health Division shall be obtained.

(7) A person using reclaimed water from a sewage treatment system may provide additional treatment for a more restrictive reuse as allowed under Table 1 [and Table 2] of this Division. Under such conditions, the sewage treatment system owner providing the additional treatment is subject to the same requirements as other sewage treatment system owners releasing wastewater for reuse and its owner shall have a WPCF or NPDES permit issued by the Department.

(8) [When authorizing the use of reclaimed water, t]The Department may consider the effects of blending reclaimed water with other waters if proposed by the owner of a sewage treatment system. In cases where blending of reclaimed water is provided, the sewage treatment system owner shall submit to the Department, at a minimum, a plan of operation, a description of any additional treatment process, blending volumes, and a range of final quality at the point of use. Reclaimed water receiving less than secondary treatment and disinfection shall not be blended for uses requiring a higher level of treatment and disinfection.

(9) The sewage treatment system owner shall be solely responsible and liable to the Department for meeting the requirements of these rules and the sewage treatment system owner's permit for any and all water that passes through the owner's treatment plant. Any reclaimed water released for use on property not under the direct control of the sewage treatment system owner shall be allowed only if there is a legally enforceable contract between the treatment plant owner and the user. The contract shall set forth as a minimum:

(a) The quality and maximum quantity of wastewater to be released for use by the sewage treatment system.

(b) The specific use(s) for which the reclaimed water will be used by the user.

(c) The maximum quantity of reclaimed water that shall be used on an annual basis.

(d) A condition that the direct release of any reclaimed water to surface waters of the State of Oregon shall be prohibited.

(e) A statement specifying the parties in the contract responsible for compliance with these rules and the sewage treatment system permit.

(f) A provision allowing the sewage treatment system owner to cease providing reclaimed water if the Department or the owner determine that the requirements of this Division are not being met.

(g) A condition that requires the user of reclaimed water to report to the sewage treatment plant owner any and all violations of the terms of these rules or the contract.

(10) In cases where reclaimed water is transferred from one user to another, each succession of ownership of the reclaimed water shall be governed by a legally enforceable contract on file with the owner of the sewage treatment system and which notifies the succeeding reclaimed water user of the requirements of this Division and the permit for the sewage treatment system. The contract shall also require the succeeding user to so contract with any additional succeeding reclaimed water users.

(11) The use of reclaimed water from a sewage treatment system for direct human consumption, regardless of the level of treatment, is prohibited unless, after public hearing and with the written concurrence of the Oregon Health Division, it is so authorized by the Environmental Quality Commission.

(12) The monitoring requirements specified in any permit that authorizes use of reclaimed water shall, at a minimum, meet the requirements listed in Table 1 [or Table 2] of this Division. Effluent and other data required by a permit authorizing use of reclaimed water from sewage treatment plants shall be submitted to the Department each month.

(13) A permit authorizing use of reclaimed water from sewage treatment plants shall require reporting of noncompliance with this Division and the sewage treatment system owner's permit within 24 hours of when the permittee becomes aware of an incident of noncompliance. If the permittee becomes aware of the incident of noncompliance when the Department is not open, the incident shall be reported to Oregon Emergency Response System (Telephone Number 1-800-452-3011).

Groundwater Protection Requirements

340-55-020 No reclaimed water shall be authorized for use unless all requirements for groundwater protection established in Oregon Administrative Rule 340, Division 40 are satisfied. Oregon Administrative Rule 340, Division 40 shall be considered satisfied by the Department if the sewage treatment system owner demonstrates that reclaimed water will not be used in a manner or applied at rates that cause contaminants to be leached into the groundwater in quantities that will adversely affect groundwater quality.

Reclaimed Water Use Plan

340-55-025 Reclaimed water use plans shall demonstrate how the sewage treatment system owner will comply with these rules and shall meet the following minimum requirements:

[(1) The plan shall be prepared under the direction of a properly qualified professional experienced in the field of wastewater treatment and water utilization.]

[(2)](1) The plan shall contain a description of the design of the proposed reclamation system and shall clearly indicate the means for compliance with these regulations.

[(3)](2) No reclaimed water use plan submittal shall be deemed complete for review by the Department unless the submittal includes three complete copies of the proposed plan.

Other Requirements for Use of Reclaimed Water

340-55-030(1) No bypassing shall be allowed of untreated or inadequately treated water from the sewage treatment system or from any intermediate unit processes to the point of use.

(2) Alarm devices shall be provided as necessary to provide warning of loss of power and/or failure of process equipment essential to the proper operation of the sewage treatment system and to compliance with this Division.

(3) Unless otherwise approved in writing by the Department, sewage treatment systems providing reclaimed water for use shall have standby power facilities of sufficient capacity to fully operate all essential treatment processes. The Department may grant an exception to this section only if the sewage treatment system owner demonstrates that power failure will not result in inadequately treated water being released for use and will not result in any violation of an NPDES or WPCF permit limit or condition or Oregon Administrative Rule.

(4) Sewage treatment systems that provide reclaimed water for use shall contain sufficient level of redundant treatment facilities and monitoring equipment to effectively prevent inadequately treated water from being used or discharged to public waters.

(5) Unless otherwise approved in writing by the Department, all piping, valves, and other portions of the reclaimed water use system shall be constructed and marked in a manner to prevent cross-connection with potable water systems. Unless otherwise approved in writing by the Department, construction and marking shall be consistent with sections 2, 3, 4, and 5 of the Final Draft of the "Guidelines for Distribution of Nonpotable Water" of the California-Nevada Section of the American Water Works Association, as revised September 14, 1983. The Department may allow exceptions for existing systems in rural areas where it can be demonstrated that both private and public domestic water systems are more than 100 feet from any component of the system using reclaimed water.

(6) There shall be no connection between any potable water supply system and the distribution system carrying reclaimed water unless the connection is through either an unrestricted air gap at least twice as wide as the diameter of the potable water discharge, or a reduced pressure principle back flow preventor (RPP) which is tested and serviced professionally at least once per year.

(7) Every NPDES or WPCF permit that authorizes use of reclaimed water shall include a requirement that the sewage treatment system operator submit at least an annual report to the Department describing the effectiveness of the system to comply with the approved reclaimed water use plan, the rules of this Division, and permit limits and conditions.

(8) No reclaimed water shall be made available to a person proposing to use reclaimed water unless that person certifies in writing that they have read and understand the provisions in these rules. This written certification shall be kept on file by the sewage treatment system owner and be made available to the Department for inspection upon request.

(9) Compliance with these rules shall not create a water right under ORS Chapters 536, 537, 539 or 540.

TABLE 1: TREATMENT AND MONITORING REQUIREMENTS FOR USE OF RECLAIMED WATER*

NOTE: This table specifies the allowable beneficial purposes for various levels of quality of reclaimed water. If reclaimed water is to be applied to a specific beneficial purpose, all requirements -- except advisory notices, but including footnotes, listed for that level of reclaimed water and use -- must be met.

CATEGORY	LEVEL I	LEVEL II	LEVEL III	LEVEL IV
Biological Treatment	X	X	X	X
Disinfection		X	X	X
Clarification				X
Coagulation				X
Filtration				X
Total Coliform (organisms/100 ml):				
Two Consecutive Samples	N/L	240	N/L	N/L
7-Day Median	N/L	23	2.2	2.2
Maximum	N/L	N/L	23	23
Sampling Frequency	N/R	1 per week	3 per week	1 per day
Turbidity (NTU):				
24-Hour Mean	N/L	N/L	N/L	2
5% of Time During a 24-Hour Period	N/L	N/L	N/L	5
Sampling Frequency				Hourly
GENERAL				
Public Access	Prevented (fences gates, locks)	Controlled (signs, rural or nonpublic lands)	Controlled (signs, rural or nonpublic lands)	No direct public contact during irrigation cycle

TABLE 1: TREATMENT AND MONITORING REQUIREMENTS FOR USE OF RECLAIMED WATER* *(Continued)*

(Numbers in the Table refer to Footnotes)

CATEGORY	LEVEL I	LEVEL II	LEVEL III	LEVEL IV
Buffers for Irrigation:	Surface: 10 ft. Spray: site specific	Surface 10 ft. Spray: 70 ft.	10 ft.	None required
Agricultural:				
Food Crops	N/A	N/A	N/A	Unrestricted
Processed Food Crops	N/A	1	1	Unrestricted
Orchards and Vineyards	N/A	2	2	Unrestricted
Fodder, Fiber, and Seed Crops not for Human Ingestion	3	1	1	Unrestricted
Pasture for Animals	N/A	4	4	Unrestricted
Sod	N/A	1	1	Unrestricted
Ornamental Nursery Stock	N/A	1	1	Unrestricted
Christmas Trees	N/A	1	1	Unrestricted
Firewood	N/A	1	1	Unrestricted
Commercial Timber	3	1	1	Unrestricted

TABLE 1: TREATMENT AND MONITORING REQUIREMENTS FOR USE OF RECLAIMED WATER* *(Continued)*

(Numbers in the Table refer to Footnotes)

CATEGORY	LEVEL I	LEVEL II	LEVEL III	LEVEL IV
Parks, Playgrounds, Schoolyards, Golf Courses with Contiguous Residences	N/A	N/A	N/A	5,6
Golf Courses without Contiguous Residences	N/A	5,7	5,7	5,6
Cemeteries, Highway Medians, Landscapes without Frequent Public Access	N/A	5,7	5,7	5,6
Industrial or Commercial Use	N/A	9,10,11,12	9,10,11,12	9,10,12
Construction Use	N/A	9,10,11 12,13	9,10,11 12,13	9,10, 12,13
Impoundments:				
Unrestricted	N/A	N/A	N/A	8,10
Restricted	N/A	N/A	8,10,14	8,10
Landscape Impoundments	N/A	8,10,14	8,10,14	8,10

*DEFINITIONS:

Surface: Surface irrigation where application of reclaimed water is by means other than spraying such that contact between the edible portion of any food crop and reclaimed water is prevented.

Spray: Spray irrigation where application of reclaimed water to crops is by spraying it from orifices in piping.

Processed Food Crops: Those which undergo thermoprocessing sufficient to kill spores of *Clostridium botulinum*. Washing, pickling, fermenting, milling or chemical treatments are not sufficient.

*DEFINITIONS: *(Continued)*

N/A: This level of reclaimed water not allowed for this use.
N/L: No limit.
X: Required treatment for this treatment level.
N/R: Not required.

FOOTNOTES:

1 Advisory Notice Only: The Oregon State Health Division recommends that there should be no irrigation of this level of effluent for 3 days prior to harvesting.

2 Surface irrigation where edible portion of crop does not contact the ground, and fruit or nuts shall not be harvested off the ground.

3 The Department may permit spraying if it can be demonstrated that public health and the environment will be adequately protected from aerosols. Advisory Notice Only: The Oregon State Health Division recommends that there should be no irrigation of this level of effluent for 30 days prior to harvesting.

4 Surface or spray irrigation: No animals shall be on the pasture during irrigation.

5 Signs shall be posted around the perimeter of the facility's perimeter and other locations indicating that reclaimed water is used for irrigation and is not safe for drinking, and in the case of effluent quality Levels II and III for body contact (e.g., for Level IV, ATTENTION: RECLAIMED WATER USED FOR IRRIGATION — DO NOT DRINK • ATENCIÓN: RECLAMADO DESPERDICIO DE AGUA USADO PARA LA IRRIGACION. — NO BEBA EL AGUA; for Levels II and III, ATTENTION: RECLAIMED WATER USED FOR IRRIGATION — AVOID CONTACT — DO NOT DRINK • ATENCIÓN: RECLAMADO DESPERDICIO DE AGUA USADO PARA LA IRRIGACION. — EVITE EL CONTACTO — NO BEBA EL AGUA).

6 Reclaimed water shall be applied in a manner so that it is not sprayed onto areas where food is prepared or served or onto drinking fountains.

7 Reclaimed water shall be applied in a manner so that it is not sprayed within 100 feet from areas where food is prepared or served or where drinking fountains are located.

8 Signs shall be posted around the perimeter and other locations indicating that reclaimed water is used and is not safe for drinking, and in the case of effluent quality Levels II and III for body contact (e.g., for Level IV, ATTENTION: RECLAIMED WATER — DO NOT DRINK • ATENCION: RECLAMADO DESPERDICIO DE AGUA — NO BEBA EL AGUA; for Levels II and III, ATTENTION: RECLAIMED WATER — AVOID CONTACT — DO NOT DRINK • ATENCION: RECLAMADO DESPERDICIO DE AGUA — EVITE EL CONTACTO — NO BEBA EL AGUA).

9 The Department may impose more stringent limits on the use of reclaimed water if it believes it is necessary to protect public health and the environment.

10 There shall be no disposal of reclaimed waters into surface or groundwaters without authorization by an NPDES or WPCF permit.

11 Use of reclaimed water in evaporative cooling systems shall be approved only if the user can demonstrate that aerosols will not present a hazard to public health.

12 Members of the public and employed personnel at the site of the use of reclaimed water shall be notified that the water is reclaimed water. Provisions for how this notification will be provided shall be specified in the reclaimed water use plan.

13 Unless decontaminated in a manner approved in writing by the Oregon Health Division, tanker trucks or trailers that transport and/or use reclaimed water shall not be used to transport potable water intended for use as domestic water. A tanker truck or trailer used to transport and/or use reclaimed water shall have the words "NONPOTABLE WATER" written in 6-inch high letters on each side and the rear of the truck. The words "NONPOTABLE WATER" shall not be removed until decontamination as approved by the Health Division has occurred.

14 Aerators or decorative fixtures which may generate aerosols shall not be used unless approved in writing by the Department. Approval will be considered if it can be demonstrated that aerosols will be confined to the area of the impoundment or a restricted area around the impoundment.

TABLE 1: TREATMENT AND MONITORING REQUIREMENTS FOR USE OF RECLAIMED WATER* *(Continued)*

(Numbers in the Table refer to Footnotes)

ADVISORY NOTICE ONLY:

The Oregon State Health Division recommends that persons who must handle irrigation or other equipment for reclaimed wastewater or who are exposed to reclaimed water should be fully advised of any hazards associated with such exposure and should be provided with necessary protective clothing.

TABLE 1
(OAR 340-55-035)

TREATMENT AND MONITORING REQUIREMENTS
FOR
AGRICULTURAL USE OF RECLAIMED WATER

MINIMUM DEGREE OF TREATMENT FOR TYPE OF CROP AND METHOD OF APPLICATION

	LEVEL I	LEVEL II	LEVEL III	LEVEL IV
	Biological Treatment without Disinfection	Biological Treatment Plus Disinfection	Biological Treatment Plus Disinfection	Biological, Clarification, Coagulation, and Filtration Treatment Plus Disinfection
RECLAIMED WATER QUALITY (Not to be Exceeded)				
BACTERIALOGICAL LIMITS (NO. ORGANISMS PER 100 MLS.)				
Total Coliform				
Two Consecutive Samples	No Limit	240	Not Applicable	Not Applicable
7 Day Median	No Limit	23	2.2	2.2
Maximum	No Limit	No Limit	23	23
Turbidity (NTU)				
24-Hour Mean	No Limit	No Limit	No Limit	2
5% of the Time during any 24-Hour Period	No Limit	No Limit	No Limit	5

MINIMUM DEGREE OF TREATMENT FOR TYPE OF CROP AND METHOD OF APPLICATION
(Continued)

	LEVEL I	LEVEL II	LEVEL III	LEVEL IV
	Biological Treatment without Disinfection	Biological Treatment Plus Disinfection	Biological Treatment Plus Disinfection	Biological, Clarification, Coagulation, and Filtration Treatment Plus Disinfection
MINIMUM MONITORING REQUIREMENTS FOR TOTAL COLIFORM AND TURBIDITY				
Total Coliform	Not Required	One Sample/ Week	Three Samples/ Week	Daily
Turbidity	Not Required	Not Required	Not Required	Hourly or Continuous
GENERAL AGRICULTURAL USES				
Food Crops	No*	No*	No*	Surface[a] or Spray[b]
Processed Food Crops[1]	No*	Surface or Spray[4]	Surface or Spray[4]	Surface or Spray
Orchards and Vineyards	No*	Surface[2]	Surface[2]	Surface or Spray
Fodder, Fiber, and Seed[3] Crops	Surface[5]	Surface or Spray[4]	Surface or Spray[4]	Surface or Spray
Pasture for Animals	No*	Surface or Spray[6]	Surface or Spray[6]	Surface or Spray

MINIMUM DEGREE OF TREATMENT FOR TYPE OF CROP AND METHOD OF APPLICATION
(Continued)

	LEVEL I	LEVEL II	LEVEL III	LEVEL IV
	Biological Treatment without Disinfection	Biological Treatment Plus Disinfection	Biological Treatment Plus Disinfection	Biological, Clarification, Coagulation, and Filtration Treatment Plus Disinfection
Sod	No*	Surface or Spray(4)	Surface or Spray(4)	Surface or Spray
Ornamental Nursery Stock	No*	Surface or Spray(4)	Surface or Spray(4)	Surface or Spray
Christmas Trees	No*	Surface or Spray(4)	Surface or Spray(4)	Surface or Spray
Firewood	No*	Surface or Spray(4)	Surface or Spray(4)	Surface or Spray
Commercial Timber	Surface(5)	Surface or Spray(4)	Surface or Spray(4)	Surface or Spray
OTHER REQUIREMENTS				
Public Access	"Prevented" (fences, gates, locks)	"Controlled" (signs, rural or nonpublic lands)	"Controlled" (signs, rural or nonpublic lands)	No Direct Public Contact during Irrigation Cycle
Buffers (minimum distance from property lines and waterways)	10 ft (Surface Only) To be Determined on a Site Specific Basis if Sprayed	70 ft (Spray) 10 ft (Surface)	10 ft	None Required

MINIMUM DEGREE OF TREATMENT FOR TYPE OF CROP AND METHOD OF APPLICATION
(Continued)

	LEVEL I	LEVEL II	LEVEL III	LEVEL IV
	Biological Treatment without Disinfection	Biological Treatment Plus Disinfection	Biological Treatment Plus Disinfection	Biological, Clarification, Coagulation, and Filtration Treatment Plus Disinfection

All persons who must handle irrigation or other equipment used for reused wastewater or who are exposed to reused wastewater shall be fully advised of any hazards associated with such exposure and shall be provided with necessary protective clothing to avoid hazardous exposures.

---

* - "No" means 'not allowed'.

(a) "Surface" means surface irrigation where application of reclaimed water is by means other than spraying such that contact between the edible portion of any food crop and reclaimed water is prevented.

(b) "Spray" means spray irrigation where application of reclaimed water to crops is by spraying it from orifices in piping.

(1) Processed food crops are those which undergo thermoprocessing sufficient to kill spores of Clostridium botulinum. Washing, pickling, fermenting, milling, or chemical treatments are not sufficient.

(2) Edible portion of plant does not contact the ground and fruit or nuts shall not be harvested off the ground.

(3) Not for human ingestion.

(4) There shall be no irrigation of this level of effluent for 3 days prior to harvesting.

(5) There shall be no irrigation of this level of effluent for 30 days prior to harvesting. The Department may permit spraying if it can be demonstrated that public health and the environment will be adequately protected from aerosols.

(6) No animals shall be on the pasture during irrigation.

TABLE 2
(OAR 340-55-040)

TREATMENT AND MONITORING REQUIREMENTS
FOR
NON-AGRICULTURAL USE OF RECLAIMED WATER

MINIMUM DEGREE OF TREATMENT FOR TYPE OF USE AND METHOD OF APPLICATION

CATEGORY 1: Parks, play-grounds, schoolyards, other areas (e.g., golf courses with contiguous residential development) where the public has similar access or exposure.

	LEVEL II	LEVEL III	LEVEL IV
	Biological Treatment Plus Disinfection	Biological Treatment Plus Disinfection	Biological, Clarification, Coagulation, and Filtration Treatment Plus Disinfection
RECLAIMED WATER QUALITY (Not to be Exceeded)			
BACTERIOLOGICAL LIMITS (NO. ORGANISMS PER 100 MLS.)			
Total Coliform			
Two Consecutive Samples	USE	USE	Not Applicable
7 Day Median	NOT	NOT	2.2
Maximum	ALLOWED	ALLOWED	23
Turbidity (NTU)			
24-Hour Mean	USE NOT	USE NOT	2
5% of the Time during any any 24-Hour Period	ALLOWED	ALLOWED	[illegible]

MINIMUM DEGREE OF TREATMENT FOR TYPE OF USE AND METHOD OF APPLICATION
(Continued)

	LEVEL II	LEVEL III	LEVEL IV
	Biological Treatment Plus Disinfection	Biological Treatment Plus Disinfection	Biological, Clarification, Coagulation, and Filtration Treatment Plus Disinfection
MINIMUM MONITORING REQUIREMENTS FOR TOTAL COLIFORM AND TURBIDITY			
Total Coliform	Not Applicable	Not Applicable	Daily
Turbidity	Not Applicable	Not Applicable	Continuous or Hourly
Other Requirements for Category 1:			
a. Public Access	Not Applicable	Not Applicable	No Direct Public Contact During Irrigation Cycle
b. Buffers	Not Applicable	Not Applicable	No Buffer Required

c. Signs shall be posted around the perimeter and other locations indicating that reclaimed water is used and is not safe for drinking (e.g., ATTENTION: RECLAIMED WATER -- DO NOT DRINK ♦ ATENCION: RECLAMADO DESPERDICIO DE AGUA -- NO BEBA EL AGUA).

d. Reclaimed water shall be applied in a manner so that it is not sprayed onto areas where food is prepared or served or onto drinking fountains.

e. Irrigation shall occur when people are not intended to be present.

f. All persons who must handle irrigation or other equipment used for reused wastewater or who are exposed to reused wastewater shall be fully advised of any hazards associated with such exposure and shall be provided with necessary protective clothing to avoid hazardous exposures.

TABLE 2

TREATMENT AND MONITORING REQUIREMENTS
FOR
NON-AGRICULTURAL USE OF RECLAIMED WATER

MINIMUM DEGREE OF TREATMENT FOR TYPE OF USE AND METHOD OF APPLICATION

CATEGORY 2: Golf courses not included in Category 1.

	LEVEL II	LEVEL III	LEVEL IV
			Biological, Clarification, Coagulation, and Filtration Treatment Plus Disinfection
	Biological Treatment Plus Disinfection	Biological Treatment Plus Disinfection	
	RECLAIMED WATER QUALITY (Not to be Exceeded)		
BACTERIOLOGICAL LIMITS (NO. ORGANISMS PER 100 MLS.)			
Total Coliform			
Two Consecutive Samples	USE	Not Applicable	Not Applicable
7 Day Median	NOT	2.2	2.2
Maximum	ALLOWED	23	23
Turbidity (NTU)			
24-Hour Mean	USE NOT	Not Applicable	2
5% of the Time during any any 24-Hour Period	ALLOWED	Not Applicable	5

MINIMUM DEGREE OF TREATMENT FOR TYPE OF USE AND METHOD OF APPLICATION
(Continued)

	LEVEL II	LEVEL III	LEVEL IV
	Biological Treatment Plus Disinfection	Biological Treatment Plus Disinfection	Biological, Clarification, Coagulation, and Filtration Treatment Plus Disinfection
MINIMUM MONITORING REQUIREMENTS FOR TOTAL COLIFORM AND TURBIDITY			
Total Coliform	Not Applicable	Three Samples Per Week	Daily
Turbidity	Not Applicable	Not Applicable	Continuous or Hourly
Other Requirements for Category 2:			
a. Public Access	Not Applicable	No Direct Public Contact During Irrigation Cycle	No Direct Public Contact During Irrigation Cycle
b. Buffers	Not Applicable	10 feet	No Buffer Required

c. Signs shall be posted around the perimeter and other locations indicating that reclaimed water is used and is not safe for drinking (e.g., ATTENTION: RECLAIMED WATER -- DO NOT DRINK ♦ ATENCION: RECLAMADO DESPERDICIO DE AGUA -- NO BEBA EL AGUA).

d. Reclaimed water shall be applied in a manner so that it is not sprayed onto areas where food is prepared or served or onto drinking fountains.

e. Irrigation shall occur when people are not intended to be present.

f. All persons who must handle irrigation or other equipment used for reused wastewater or who are exposed to reused wastewater shall be fully advised of any hazards associated with such exposure and shall be provided with necessary protective clothing to avoid hazardous exposures.

TABLE 2

TREATMENT AND MONITORING REQUIREMENTS
FOR
NON-AGRICULTURAL USE OF RECLAIMED WATER

MINIMUM DEGREE OF TREATMENT FOR TYPE OF USE AND METHOD OF APPLICATION

CATEGORY 3: Cemeteries, highway, landscapes, and other landscape areas not included in the category 1.

	LEVEL II	LEVEL III	LEVEL IV
	Biological Treatment Plus Disinfection	Biological Treatment Plus Disinfection	Biological, Clarification, Coagulation, and Filtration Treatment Plus Disinfection
RECLAIMED WATER QUALITY (Not to be Exceeded)			
BACTERIOLOGICAL LIMITS (NO. ORGANISMS PER 100 MLS.)			
Total Coliform			
Two Consecutive Samples	240	Not Applicable	Not Applicable
7 Day Median	23	2.2	2.2
Maximum	No Limit	23	23
Turbidity (NTU)			
24-Hour Mean	No Limit	No Limit	2
5% of the Time during any any 24-Hour Period	No Limit	No Limit	5

MINIMUM DEGREE OF TREATMENT FOR TYPE OF USE AND METHOD OF APPLICATION
(Continued)

	LEVEL II	LEVEL III	LEVEL IV
	Biological Treatment Plus Disinfection	Biological Treatment Plus Disinfection	Biological, Clarification, Coagulation, and Filtration Treatment Plus Disinfection
MINIMUM MONITORING REQUIREMENTS FOR TOTAL COLIFORM AND TURBIDITY			
Total Coliform	One Sample/ Week	Three Sample/ Week	Daily
Turbidity	Not Applicable	Not Applicable	Continuous or Hourly
Other Requirements for Category 3:			
a. Public Access	No Direct Public Contact During Irrigation Cycle	No Direct Public Contact During Irrigation Cycle	No Direct Public Contact During Irrigation Cycle
b. Buffers	70 Feet (Spray) 10 Feet (Surface)	10 Feet	No Buffer Required

c. Signs shall be posted around the perimeter and other locations indicating that reclaimed water is used and is not safe for drinking, and in the case of effluent quality Levels II and III, for body contact (e.g., for Level IV, ATTENTION: RECLAIMED WATER -- DO NOT DRINK ♦ ATENCIÓN: RECLAMADO DESPERDICIO DE AGUA -- NO BEBA EL AGUA; for Levels II and III, ATTENTION: RECLAIMED WATER - AVOID CONTACT -- DO NOT DRINK ♦ ATENCIÓN: RECLAMADO DESPERDICIO DE AGUA -- EVITE EL CONTACTO -- NO BEBA EL AGUA).

d. Reclaimed water shall be applied in a manner so that it is not sprayed onto areas where food is prepared or served or onto drinking fountains.

MINIMUM DEGREE OF TREATMENT FOR TYPE OF USE AND METHOD OF APPLICATION
(Continued)

	LEVEL II	LEVEL III	LEVEL IV
	Biological Treatment Plus Disinfection	Biological Treatment Plus Disinfection	Biological, Clarification, Coagulation, and Filtration Treatment Plus Disinfection

e. Irrigation shall occur when people are not intended to be present.

f. For effluent Levels II and III, ponding of reclaimed water shall be prevented.

g. All persons who must handle irrigation or other equipment used for reused wastewater or who are exposed to reused wastewater shall be fully advised of any hazards associated with such exposure and shall be provided with necessary protective clothing to avoid hazardous exposures.

TABLE 2

TREATMENT AND MONITORING REQUIREMENTS
FOR
NON-AGRICULTURAL USE OF RECLAIMED WATER

MINIMUM DEGREE OF TREATMENT FOR TYPE OF USE AND METHOD OF APPLICATION

CATEGORY 4: Unrestricted Impoundments.

	LEVEL II	LEVEL III	LEVEL IV
	Biological Treatment Plus Disinfection	Biological Treatment Plus Disinfection	Biological, Clarification, Coagulation, and Filtration Treatment Plus Disinfection
	RECLAIMED WATER QUALITY (Not to be Exceeded)		
BACTERIOLOGICAL LIMITS (NO. ORGANISMS PER 100 MLS.)			
Total Coliform			
Two Consecutive Samples	USE	USE	Not Applicable
7 Day Median	NOT	NOT	2.2
Maximum	ALLOWED	ALLOWED	23
Turbidity (NTU)			
24-Hour Mean	USE NOT	USE NOT	2
5% of the Time during any any 24-Hour Period	ALLOWED	ALLOWED	5

MINIMUM DEGREE OF TREATMENT FOR TYPE OF USE AND METHOD OF APPLICATION
(Continued)

	LEVEL II	LEVEL III	LEVEL IV
	Biological Treatment Plus Disinfection	Biological Treatment Plus Disinfection	Biological, Clarification, Coagulation, and Filtration Treatment Plus Disinfection
MINIMUM MONITORING REQUIREMENTS FOR TOTAL COLIFORM AND TURBIDITY			
Total Coliform	Not Applicable	Not Applicable	Daily
Turbidity	Not Applicable	Not Applicable	Continuous or Hourly

Other Requirements for Category 4:

a. Public Access — Not Applicable | Not Applicable | No Restrictions

b. No overflow or direct discharge shall be allowed to surface waters of the state unless authorized by an NPDES waste discharge permit.

c. Signs shall be posted indicating that reclaimed water is used and is not safe for drinking (e.g., ATTENTION: RECLAIMED WATER -- DO NOT DRINK ♦ ATENCION: RECLAMADO DESPERDICIO DE AGUA -- NO BEBA EL AGUA).

d. All persons who must handle irrigation or other equipment used for reused wastewater or who are exposed to reused wastewater shall be fully advised of any hazards associated with such exposure and shall be provided with necessary protective clothing to avoid hazardous exposures.

TABLE 2

TREATMENT AND MONITORING REQUIREMENTS
FOR
NON-AGRICULTURAL USE OF RECLAIMED WATER

MINIMUM DEGREE OF TREATMENT FOR TYPE OF USE AND METHOD OF APPLICATION

CATEGORY 5: Restricted Impoundments.

	LEVEL II	LEVEL III	LEVEL IV
	Biological Treatment Plus Disinfection	Biological Treatment Plus Disinfection	Biological, Clarification, Coagulation, and Filtration Treatment Plus Disinfection
	RECLAIMED WATER QUALITY (Not to be Exceeded)		
BACTERIOLOGICAL LIMITS (NO. ORGANISMS PER 100 MLS.)			
Total Coliform			
Two Consecutive Samples	USE	Not Applicable	Not Applicable
7 Day Median	NOT	2.2	2.2
Maximum	ALLOWED	2.3	23
Turbidity (NTU)			
24-Hour Mean	USE NOT	Not Applicable	2
5% of the Time during any any 24-Hour Period	ALLOWED	Not Applicable	5

MINIMUM DEGREE OF TREATMENT FOR TYPE OF USE AND METHOD OF APPLICATION (Continued)

	LEVEL II	LEVEL III	LEVEL IV
	Biological Treatment Plus Disinfection	Biological Treatment Plus Disinfection	Biological, Clarification, Coagulation, and Filtration Treatment Plus Disinfection
MINIMUM MONITORING REQUIREMENTS FOR TOTAL COLIFORM AND TURBIDITY			
Total Coliform	Not Applicable	Three Samples per Week	Daily
Turbidity	Not Applicable	Not Applicable	Continuous or Hourly
Other Requirements for Category 5:			
a. Public Access	Not Applicable	No Body-Contact Recreation Allowed	No Restrictions

b. No overflow or direct discharge shall be allowed to surface waters of the state unless authorized by an NPDES waste discharge permit.

c. For Level III effluents, the perimeter of the impoundment shall have signs indicating that the water in the impoundment is not safe for drinking or body contact (e.g., **ATTENTION: RECLAIMED WATER -- AVOID CONTACT -- DO NOT DRINK ♦ ATENCIÓN: RECLAMADO DESPERDICIO DE AGUA -- EVITE EL CONTACTO -- NO BEBA EL AGUA**). For Level IV effluents, the perimeter of the impoundment shall have signs indicating that the water in the impoundment is not safe for drinking (e.g., **ATTENTION: RECLAIMED WATER -- DO NOT DRINK ♦ ATENCIÓN: RECLAMADO DESPERDICIO DE AGUA -- NO BEBA EL AGUA**).

d. Aerators or decorative fixtures which may generate aerosols shall not be used unless approved in writing by the Department. Approval will be considered if it can be demonstrated that aerosols will be confined to the area of the impoundment or a restricted area around the impoundment.

e. All persons who must handle irrigation or other equipment used for reused wastewater or who are exposed to reused wastewater shall be fully advised of any hazards associated with such exposure and shall be provided with necessary protective clothing to avoid hazardous exposures.

TABLE 2

TREATMENT AND MONITORING REQUIREMENTS
FOR
NON-AGRICULTURAL USE OF RECLAIMED WATER

MINIMUM DEGREE OF TREATMENT FOR TYPE OF USE AND METHOD OF APPLICATION

CATEGORY 6: Landscape Impoundments.

	LEVEL II	LEVEL III	LEVEL IV
	Biological Treatment Plus Disinfection	Biological Treatment Plus Disinfection	Biological, Clarification, Coagulation, and Filtration Treatment Plus Disinfection
	RECLAIMED WATER QUALITY (Not to be Exceeded)		
BACTERIOLOGICAL LIMITS (NO. ORGANISMS PER 100 MLS.)			
Total Coliform			
Two Consecutive Samples	240	Not Applicable	Not Applicable
7 Day Median	23	2.2	2.2
Maximum	No Limit	23	23
Turbidity (NTU)			
24-Hour Mean	Not	Not	2
5% of the Time during any any 24-Hour Period	Applicable	Applicable	5

MINIMUM DEGREE OF TREATMENT FOR TYPE OF USE AND METHOD OF APPLICATION
(Continued)

	LEVEL II	LEVEL III	LEVEL IV
	Biological Treatment Plus Disinfection	Biological Treatment Plus Disinfection	Biological, Clarification, Coagulation, and Filtration Treatment Plus Disinfection
MINIMUM MONITORING REQUIREMENTS FOR TOTAL COLIFORM AND TURBIDITY			
Total Coliform	One Sample/ Week	Three Samples/ Week	Daily
Turbidity	Not Applicable	Not Applicable	Continuous or Hourly
Other Requirements for Category 6:			
a.	No Access Allowed on or in the Impoundment	No Body Contact Activities Allowed	No Restrictions

b. No overflow or direct discharge shall be allowed to surface waters of the state unless authorized by an NPDES waste discharge permit.

c. For Level II and III effluents, the perimeter of the impoundment shall have signs indicating that the water in the impoundment is not safe for drinking or body contact (e.g., ATTENTION: RECLAIMED WATER -- AVOID CONTACT -- DO NOT DRINK ♦ ATENCIÓN: RECLAMADO DESPERDICIO DE AGUA -- EVITE EL CONTACTO -- NO BEBA EL AGUA). For Level IV effluents, the perimeter of the impoundment shall have signs indicating that the water in the impoundment is not safe for drinking (e.g., ATTENTION: RECLAIMED WATER -- DO NOT DRINK ♦ ATENCIÓN: RECLAMADO DESPERDICIO DE AGUA -- NO BEBA EL AGUA).

d. Aerators or decorative fixtures which may generate aerosols shall not be used unless approved in writing by the Department. Approval will be considered if it can be demonstrated that aerosols will be confined to the area of the impoundment or a restricted area around the impoundment.

f. All persons who must handle irrigation or other equipment used for reused wastewater or who are exposed to reused wastewater shall be fully advised of any hazards associated with such exposure and shall be provided with necessary protective clothing to avoid hazardous exposures.

TABLE 2

TREATMENT AND MONITORING REQUIREMENTS
FOR
NON-AGRICULTURAL USE OF RECLAIMED WATER

MINIMUM DEGREE OF TREATMENT FOR TYPE OF USE AND METHOD OF APPLICATION

CATEGORY 7: Industrial or Commercial Use. (Examples include, but are not limited to: cooling system, sand and gravel operations, and nonpotable process water additions.)

	LEVEL II	LEVEL III	LEVEL IV
	Biological Treatment Plus Disinfection	Biological Treatment Plus Disinfection	Biological, Clarification, Coagulation, and Filtration Treatment Plus Disinfection
RECLAIMED WATER QUALITY (Not to be Exceeded)			
BACTERIOLOGICAL LIMITS (NO. ORGANISMS PER 100 MLS.)			
Total Coliform			
Two Consecutive Samples	240	Not Applicable	Not Applicable
7 Day Median	23	2.2	2.2
Maximum	No Limit	23	23
Turbidity (NTU)			
24-Hour Mean	No Limit	No Limit	2
5% of the Time during any any 24-Hour Period	No Limit	No Limit	5

MINIMUM DEGREE OF TREATMENT FOR TYPE OF USE AND METHOD OF APPLICATION
(Continued)

	LEVEL II	LEVEL III	LEVEL IV
	Biological Treatment Plus Disinfection	Biological Treatment Plus Disinfection	Biological, Clarification, Coagulation, and Filtration Treatment Plus Disinfection
MINIMUM MONITORING REQUIREMENTS FOR TOTAL COLIFORM AND TURBIDITY			
Total Coliform	One Sample/ Week	Three Samples/ Week	Daily
Turbidity	Not Required	Not Required	Continuous or Hourly

Other Requirements for Category 7:

a. All persons who must handle irrigation or other equipment used for reused wastewater or who are exposed to reused wastewater shall be fully advised of any hazards associated with such exposure and shall be provided with necessary protective clothing to avoid hazardous exposures.

b. The Department may impose more stringent limits on the use of reclaimed water if it believes it is necessary to protect public health and the environment.

c. There shall be no disposal of reclaimed waters into surface or ground waters without authorization by an NPDES or WPCF permit.

d. Use of reclaimed water for use in evaporative cooling systems shall only be approved if the user can demonstrate that aerosols will not present a hazard to public health.

TABLE 2

TREATMENT AND MONITORING REQUIREMENTS
FOR
NON-AGRICULTURAL USE OF RECLAIMED WATER

MINIMUM DEGREE OF TREATMENT FOR TYPE OF USE AND METHOD OF APPLICATION

CATEGORY 8: Construction Use. (Examples include, but are not limited to: dust control and compaction.)

	LEVEL II	LEVEL III	LEVEL IV
	Biological Treatment Plus Disinfection	Biological Treatment Plus Disinfection	Biological, Clarification, Coagulation, and Filtration Treatment Plus Disinfection
	RECLAIMED WATER QUALITY (Not to be Exceeded)		
BACTERIOLOGICAL LIMITS (NO. ORGANISMS PER 100 MLS.)			
Total Coliform			
Two Consecutive Samples	240	Not Applicable	Not Applicable
7 Day Median	23	2.2	2.2
Maximum	No Limit	23	23
Turbidity (NTU)			
24-Hour Mean	No Limit	No Limit	2
5% of the Time during any any 24-Hour Period	No Limit	No Limit	5

MINIMUM DEGREE OF TREATMENT FOR TYPE OF USE AND METHOD OF APPLICATION
(Continued)

	LEVEL II	LEVEL III	LEVEL IV
	Biological Treatment Plus Disinfection	Biological Treatment Plus Disinfection	Biological, Clarification, Coagulation, and Filtration Treatment Plus Disinfection
MINIMUM MONITORING REQUIREMENTS FOR TOTAL COLIFORM AND TURBIDITY			
Total Coliform	One Sample/ Week	Three Samples/ Week	Daily
Turbidity	Not Applicable	Not Required	Continuous or Hourly

Other Requirements for Category 8:

a. Members of the public and employed personnel at the site of the use of reclaimed water shall be notified that the water is reclaimed water. Provisions for how this notification will be provided shall be specified in the reclaimed water use plan.

b. The Department may impose more stringent limits on the use of reclaimed water if it believes it is necessary to protect public health and the environment.

c. There shall be no disposal of reclaimed waters into surface or ground waters without authorization by an NPDES or WPCF permit.

d. All persons who must handle irrigation or other equipment used for reused wastewater or who are exposed to reused wastewater shall be fully advised of any hazards associated with such exposure and shall be provided with necessary protective clothing to avoid hazardous exposures.

HEARING OFFICER'S REPORT

Proposed Rules Establishing Requirements for Sewage Treatment Facilities that Provide Reclaimed Water (Treated Effluent) for Beneficial Purposes

On May 8, 9, and 10, 1990, the Department held hearings in La Grande, Bend, and Portland, respectively, concerning proposed rules establishing requirements for sewage treatment facilities that provide reclaimed water (treated effluent) for beneficial purposes. Mr. John Loewy, Assistant to the Director of the Department of Environmental Quality, was the hearings officer for the hearings in La Grande and Bend. Mr. D. Mitchell Wolgamott, Environmental Specialist for the Department was the hearings officer for the Portland hearing. The hearing record remained open until 5 PM on May 14, 1990, for the purpose of receiving written comments.

At the three hearings, ten persons gave verbal testimony. In addition, the Department received eleven written comments. About twenty-eight people attended the three hearings. Although testifiers did indicate concerns about specific components of the proposed rules, no one stated that they were completely opposed to their adoption.

The following text is a summary of written and oral comments received concerning the proposed rules. Each issue presented in the testimony has been summarized, followed by the Department's response to the issue.

ISSUE: The proposed rules specify a weekly median limitation for total coliform. The proposed rules only require that Level II reclaimed water be sampled and analyzed for total coliform once per week. One testifier wanted to know if the one sample taken during the week exceeded the weekly median value limitation, could additional samples be taken and analyzed to verify compliance.

Department Response: Permittees may take as many samples and perform as many analyses as they wish in order to verify compliance with permit conditions and rules. The monitoring requirements in the proposed rules specify only the minimum requirements. All data collected, however, must be submitted to the Department.

ISSUE: A couple of testifiers stated that they believed it appropriate for the rules to exempt regulation of reclaimed water if it were discharged into an irrigation district system which provided substantial dilution of the reclaimed water. This idea was particularly attractive to one testifier if it would relieve users of the obligation to provide groundwater monitoring at the site of use.

Department's Response: According to the statutory definition of waters of the state, unless the irrigation district conveyance system was an enclosed conduit, the district's irrigation water probably would be considered waters of the state. ORS 468.700 defines waters of the state to include "lakes, bays, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Pacific Ocean within the territorial limits of the State of Oregon and all other bodies of surface or underground waters, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters which do not combine or effect a junction with natural surface or underground waters), which are wholly or partially within or bordering the state or within its jurisdiction." Consequently, if the irrigation district's water was not in an enclosed conduit, the Department could only allow discharge of treated effluent into an irrigation system if it could be demonstrated that applicable water quality standards would be met. If water quality standards could be met, then regulation as reclaimed water by DEQ would not longer be required.

If the irrigation district's water was in an enclosed conduit, these rules could consider a dilution limit above which regulation under these rules would cease. The Department does not have sufficient data, however, to establish an appropriate dilution ratio that would assure protection of public health. Therefore, until such time as data is available, the Department has chosen not to include an exception to the proposed rules when a given dilution is provided.

ISSUE: The proposed rules include a policy statement that use of reclaimed water should be encouraged because, in part, it conserves stream flows through reduced demand for withdrawals for out-of-stream use. One testifier felt that use of reclaimed water would be encouraged and stream flows conserved if land owner's existing water rights were protected when they exchanged water currently appropriated from a stream for reclaimed water. Current water law states that if a water right is not exercised for five years, it is forfeited. If a person uses reclaimed water instead of exercising the out-of-stream water right, the person loses the water right.

This testifier also suggested that state water law should require a person applying to appropriate water from a stream to first determine that reclaimed water is not available.

Department's Response: Both of these issues are matters of Oregon Revised Statute that are not under the authority of the Environmental Quality Commission. The Department is working with Water Resources Department on a legislative proposal that would prevent the application of the five year limitation if the water right were not exercised because reclaimed water was being used to replace the water allowed under that water right. The Department will also forward to the Water Resources Department the suggestion that water right applicants first be required to determine if reclaimed water is available.

ISSUE: Several testifiers stated that many, if not most, sewage treatment plants use treated effluent for landscape irrigation at the site of the sewage treatment plant for washdown of the treatment facilities and for other uses within the sewage treatment plant. The testifiers were concerned that such uses were not defined in the proposed rules and, further, if the requirements for landscaping were extended to landscaping at sewage treatment plants, use of treated effluent would have to be discontinued.

Department's Response: The Department shares these concerns and proposes to insert the following language in the proposed rules:

> "Reclaimed water used at the treatment plant site where it is generated shall be exempt from these rules provided:
>
> 1. The reclaimed water that is used is disinfected, oxidized wastewater, and
>
> 2. Reclaimed water that is used for landscape irrigation shall be confined to the treatment plant site. No spray or drift shall be allowed off the treatment plant site.
>
> The treatment plant site shall not include property that is not contiguous to the parcel of land upon which the treatment plant is located."

ISSUE: One commenter suggested that water treated to Level IV and stored for more than 30 days shall not be considered reclaimed water and shall not be subject to regulation by DEQ. This water shall become water of the State and subject to regulation by Water Resources Department.

Department's Response: The Department recognizes the attractiveness of this idea because of its potential to encourage reuse by minimizing regulation of the use of Level IV reclaimed water. The commenter did not provide any data, however, that would support a conclusion that the use of Level IV effluent would be safe for all uses after 30 days storage. The Department has not been able to uncover any data that could be used to support this approach.

In developing the proposed rules, the Department reviewed the regulations employed by other states to regulate reclaimed water. None of the state programs that were reviewed allowed storage as a means to exempt facilities from regulation of their effluent. Until such documented information becomes available, the Department is unwilling to support this concept.

ISSUE: One testifier stated that the tables in the proposed rules were difficult to understand and provided an alternative format for the tables which he believes are simpler and easier to understand.

Department's Response: The Department has reviewed the table and believes that alternative format is superior to that in the proposed rules. The tables in the proposed rules will be revised pursuant to the alternative format. The technical advisory committee felt that a simpler format was desirable.

ISSUE: One testifier suggested that the Department's proposed rule guidance does not provide sufficient technical assistance to people using the rules, particularly in regard to water application rates and other technical matters regarding agricultural irrigation practices. This testifier suggested that the guidance should at least reference specific literature where this information can be obtained.

Department's Response: The Department has modified the guidance to include references to several irrigation manuals. This will be included in a bibliography attached to the guidance.

ISSUE: One testifier felt that the reclaimed water should be diverted to California for use. This would help relieve California's water shortage which, in his words, would allow the 28 million people in southern California to stay there and not move to Oregon.

Department's Response: The Department's proposed rules would not prevent reclaimed water from being diverted to California; however, according to the Oregon Water Resources Department, Oregon Water Law prevents such change in place of use of water.

ISSUE: One testifier was concerned about the continued use of chlorine and the resulting halogenated hydrocarbons. He suggested that there be monitoring of halogenated hydrocarbons when chlorine is used for disinfection.

Department's Response: A review of the literature concerning the use of reclaimed water has not found any clear evidence that chlorine, when used at reasonable levels, will pose a threat to those beneficial purposes of reclaimed water specified in these proposed rules. The Department does recognize the public's concerns about toxic effects of halogenated compounds upon humans and wildlife. At this time, however, there is no information that would lead the Department to conclude that these proposed rules should not be adopted because of the potential adverse affects of chlorine disinfection.

Very high levels of chlorine residual in reclaimed water can cause crop damage. The chlorine residual when crop damage begins to occur is specified in the literature and steps necessary to control crop damage problems can be implemented rather easily.

For the purpose of further encouraging the use of reclaimed water, the proposed rules require only absolutely essential monitoring of reclaimed water as needed to protect public health. The Department does not believe that monitoring of halogenated hydrocarbons is necessary and the expense of such monitoring could seriously discourage use of reclaimed water.

ISSUE: One testifier expressed concerns that water trucks applying reclaimed water for dust control could also being used to haul drinking water without being thoroughly cleaned or disinfected.

Department's Response: A requirement has been added to the rules in Table 1 that prohibits the use of tanker trucks or trailers that carry reclaimed water from also carrying potable water that is intended to be used as domestic water. In addition the proposed rule has been further revised to require such trucks or trailers to have the words "nonpotable water" written in 6 inch high letters on each side and on the rear of the truck.

ISSUE: One testifier stated that the term "controlled use" which is used in the definition of reclaimed water [OAR 340-55-010(9)] should also be defined.

Department's Response: The Department will insert an additional definition in the definition section of the proposed rules. "Controlled use" will be defined as a use of reclaimed water for which the sewage treatment plant owner, either directly or through a written contract, has reasonable knowledge of the use and fate of the reclaimed water and is able to discontinue the use of the reclaimed water if it is determined that the requirements of the rules and the permit authorizing use of reclaimed water are not being met.

ISSUE: The proposed rules allow the Department, if it deems necessary, to include additional permit limitations and or monitoring conditions over that specifically required by the proposed rules. One testifier felt that additional limitations and requirements should be balanced with the benefit derived. For example, for Level IV effluent, the very stringent turbidity requirement will assure effective sewage treatment. Limitations for BOD-5 and TSS are, therefore, unnecessary.

Department's Response: The Department agrees that additional limitations and conditions should be required only as needed to address a particular issue related to the use of reclaimed water. Additional, unnecessary conditions add to the burdens of the sewage treatment plant owner and discourage the use of reclaimed water. The Department, however, does believe that there will be situations where limitations and conditions not anticipated by the proposed rules will be justified and, therefore, believes this subsection of the rule should not be changed. It should also be noted that this discussion relates to reclaimed water made available for beneficial purpose. Effluent that is discharged into surface waters will be limited for all appropriate effluent parameters including BOD-5 and TSS.

ISSUE: One testifier was concerned that the proposed rules required the disinfection step to be done following other treatment processes. In some cases, chlorination is provided ahead of the filters to prevent biological growth on or in the filter media.

Department's Response: The proposed rules would not prohibit the use of disinfecting agents during the treatment process. If chlorine disinfection was done ahead of the filters, the

Department would most likely specify a minimum chlorine residual in the filtered effluent after a given contact time. This is to assure sufficient disinfection following filtration. OAR 340-55-015(4)(c) would allow the Department to specify a chlorine residual in the permit.

ISSUE: One testifier recommended that the term "noncompliance" as stated in OAR 340-55-015(13) of the proposed rules be defined. This testifier also wanted to know if this condition applied to the user of the reclaimed water as well as the provider of the water.

Department's Response: Noncompliance as used in this section of the rules means that the requirements of the rules or the permit are not being met. The Department believes this is straightforward. The permittee should be sure that he or she understands the requirements before accepting a permit issued under the provisions of these proposed rules. To be clear that compliance with the permit is also required, wording has been added to OAR 340-55-015(9) and (13) requiring reporting of noncompliance with the permit authorizing use of reclaimed water.

OAR 340-55-015(13) applies to compliance with the rules and the permit. The permit and the rules will apply to both the user of the reclaimed water and/or the provider. These rules, however, make the sewage treatment plant owner accountable to the Department for compliance. If the user violates any of the requirements of rule or of the permit, the owner will be held accountable for the violation. The owner, therefore, should require in the contract between the owner and the user that all incidents of noncompliance be reported to the owner so that the owner can relay them on to the Department. To assure that the contract states this, the section in the proposed rules requiring a contract (OAR 340-55-015(9) has been modified to require a user to notify the owner if an incidence of noncompliance with the contract has occurred.

ISSUE: One testifier was concerned that OAR 340-55-020 (3) requires the owner to demonstrate that groundwater degradation will not occur. This testifier felt that further definition of this issue is needed. This testifier felt that the Department assumes this will be a straight-forward matter when it probably is not. This testifier questioned the value of imposing strict groundwater protection requirements on smaller facilities.

Department's Response: First, OAR 340-55-020 (3) would not require the owner to demonstrate that groundwater degradation will not occur. The rules states that "no reclaimed water shall be authorized for use unless all requirements for groundwater

protection established in Oregon Administrative Rule 340-40 are satisfied. Oregon Administrative Rule 340-40 shall be considered satisfied by the Department if the sewage treatment system owner demonstrates that reclaimed water will not be used in a manner or applied at rates that cause contaminants to be leached into the groundwater in quantities that will adversely affect groundwater quality." This language is consistent with the Department's groundwater quality protection rules and recognizes that some degradation could occur, but only minimally and not to the extent that uses of groundwater would be adversely affected.

The Department agrees that further definition of the issue is needed. The Department is currently developing guidance for its groundwater quality protection rules. This guidance should provide such definition. At the time this report was being drafted, the Department staff were considering a categorical exclusion in the groundwater guidance for irrigation of reclaimed water when it is applied at hydraulic and nutrient rates consistent with crop uptake rates. When these draft rules were prepared for hearing, the Department proposed to include in the associated guidance further details about groundwater requirements related to the use of reclaimed water. At this point, however, the Department believes such guidance should be confined to the groundwater quality protection rule guidance and should not be separately or independently addressed in the reclaimed rule guidance. Therefore, the Department proposes to only reference the groundwater rules and guidance in the reclaimed water rule guidance.

The Department recognizes the complexity of addressing groundwater impacts and agrees that it may not necessarily be a straight-forward matter. The Department does believe that the groundwater guidance will ease some of these problems. For those cases where a categorical exemption cannot be applied, some level of groundwater analysis will be necessary to determine potential impacts on groundwater. The Department believes that reclaimed water use can potentially impact groundwater and decisions concerning such use should be made consciously and with full knowledge of the impacts on groundwater and other resources.

The Department recognizes that its groundwater quality protection rules may place a greater relative burden upon smaller facilities. Smaller facilities, however, can significantly impact local groundwater resources. These resources need to be protected regardless of the size and type of facility.

ISSUE: One testifier wanted to know if DEQ would approve the use of two independent power supplies as meeting the stand-by power requirement in the rules.

Department's Response: The proposed guidance for the rules would allow two independent power sources to meet the stand-by power requirement.

ISSUE: One testifier stated that, when reuse programs are administered by operators of treatment plants, guidance on appropriate site characteristics, crop management, irrigation scheduling, and monitoring is needed. Although not universally true, but in many case, operators do not have a background in farming and have different objectives than a farm operator does. The testifier foresees endless difficulty and misunderstanding between operators and regulators if these issues are not clearly defined.

Department's Response: The Department agrees that the operator must know specifically how to operate a facility that provides and, in some cases, uses reclaimed water. There are limitations, however, to the extent that rules and even guidance can provide the necessary detail for site specific application of the rules. This is the reason that the proposed rules require a plan for the use of reclaimed water from every permit holder that provides and/or uses reclaimed water. The detail for the use of reclaimed water should be defined in the plan from which the owner/operator should then know his or her obligations and responsibilities. The Department recognizes that sewage treatment plant operators may not have sufficient expertise to develop the plan and would expect that the plan would be prepared by a consultant hired by the owner of the sewage treatment plant.

There are a multitude of technical issues that come into play when irrigating water regardless of whether or not it is reclaimed water. Much of the information needed to address irrigation practices are available in text books and manuals. The Department does not believe the rules or the guidance should delve into the detail that can be obtained from the technical literature on agricultural irrigation practices. Sources of technical information will be referenced in the reclaimed water guidance.

ISSUE: One testifier wanted to know the definition of "qualified professional" and who certifies them to be qualified and qualified for what.

Department's Response: People who prepare applications and plans for using reclaimed water will have to have knowledge and expertise in a number of fields including wastewater treatment, agriculture, soil science, and, in some cases, engineering. There are probably very few people who have sufficient expertise in all fields and so it is likely that any one project will

require several people. The Department recognizes the difficulty in determining who is qualified and who is not and, further, has no plans or authority to establish a program to certify qualified people. To eliminate uncertainty about this issue, the Department proposes to delete this requirement from the proposed rules.

ISSUE: One testifier had concerns about footnotes #4 and #5 in table 1 which state waiting periods after irrigation before applicable crops can be harvested. It was his understanding that the footnote #4 should read "three days prior to product reaching market," and footnote #5 should read "30 days prior to product reaching market." This would protect the unsuspecting consumer. The way it reads in the proposed rules would prohibit the use of Level II or III reclaimed water on any food crop about to go to market which could effectively eliminate its use entirely. Another commenter stated a concern about footnote 4 in Table 1 of the rules concerning the requirements for use of reclaimed water on agricultural crops. This footnote requires that no reclaimed water be irrigated on certain crops within 3 days of harvesting. This person believed, as a practical matter, that a farmer would not likely violate this requirement, since it could lead to harvesting problems and soil compaction due to equipment usage on wet soils. In the opinion of this commenter, this limitation is not necessary. By placing perceived restrictions to the agricultural operations of cooperating farmers, there will be a disincentive for using reclaimed water. The commenter was also concerned about problems the 3 day limit would impose on sod harvesting, since most sod specifications require the sod to be brought to the site in a damp condition. This requirement would effectively limit the use of reclaimed water on sod to Level IV treatment only, which is excessive. Typically, the sod farms have very good control of their labor operations and reclaimed water quality equivalent to Level II would be suitable.

Department's Response: Waiting periods were inserted into the proposed rules at the suggestion of the Oregon State Health Division to assure even further pathogen die-off before the irrigation site is made available to people harvesting the crop.

The Department has discussed this issue with the Department's legal counsel and the Health Division. Legal counsel does not believe that the Department has legal authority to establish or enforce waiting periods as proposed in the rules. The Department, therefore, proposes to modify the proposed rules to note that the specified waiting periods prior to harvesting have been recommended by the Oregon State Health Division and are advisory and not requirements of the rule. It should be noted that rules in both California and Arizona have no such restrictions.

The proposed rule also required that "all persons who must handle irrigation or other equipment for reused wastewater or who are exposed to reused wastewater shall be fully advised of any hazards

associated with such exposure and shall be provided with necessary protective clothing to avoid hazardous exposures." Since this, too, is a worker safety issue and not an issue under the Department's authority, this condition will also be revised to indicate that it is a recommendation of the Oregon State Health Division and is not a requirement of the rules.

To assure that users of reclaimed water are aware of both the requirements of the proposed rules and the recommendations of the Oregon State Health Division, a section has been added to the rules that states: "no reclaimed water shall be made available to a person proposing to use reclaimed water unless that person certifies in writing that they have read and understand the provisions in these rules. This written certification shall be kept on file by the sewage treatment system owner and be made available to the Department for inspection upon request."

Finally, this issue suggests that the Department should inform other state agencies of potential health, worker safety, or consumer protection problems that could result when the Department determines that its rules and/or permits regarding the use of reclaimed water have been violated. The Department considered inserting an additional section into the proposed rules that would require the Department to inform appropriate agencies when a violation of the rules or a permit occurs. This, however, caused some concerns about the additional workload for the Department that might result from such a requirement in the rules, particularly in light of the difficulties the Department currently has meeting work commitments. The Department, instead, proposes to develop memorandums of agreement with appropriate agencies. The memorandums will specify what type of violations should be reported to the agencies and how and what in form the report should occur. The Department did consider whether or not the proposed rules should be delayed until the memorandums had been developed. Several sewerage facility owners are actively considering the use of reclaimed water as a tool to meet waste load allocations that have been imposed by the Department. These proposals for using reclaimed water will be coming to the Department for consideration in the near future. The Department, therefore, believes that the rules are needed now to provide assurance and guidance to these facility owners on the use of reclaimed water. The Department believes that memorandums of agreement can be developed before any significant, new use of reclaimed water is implemented.

ISSUE: One commenter stated that the storage requirement for "long term" storage seemed excessive. For facilities which have an NPDES permit and use of reclaimed water is not their only means of handling effluent, storage should be based on demand for reclaimed water like domestic water systems.

Department's Response: This is actually a comment on the rule guidance. The guidance would only suggest that 20 days storage would be necessary if there were no other available alternatives for disposal of the treated effluent other than diversion to a beneficial purpose. If a permittee is allowed to discharge to public waters, then long term storage may not be necessary.

ISSUE: One commenter questioned why "constructed wetlands" were not specified in the rules as an allowable beneficial purpose. This testifier stated that "a constructed wetland can be established for polishing wastewater and/or for wildlife habitat improvements by just providing treated wastewater in an 'impoundment.' They also can be discharging to water of the state or be nondischarging. A facility that discharges to waters of the state is covered by NPDES requirements and is not necessary to be covered in the reuse rules. However, we would expect the proposed rules for use of treated effluent to address nondischarging, constructed wetlands built for wildlife habitat. We do this in Jackson Bottom and found the effort to be satisfactory for the intended use."

Department's Response: The Department believes that constructed wetlands can either be viewed as part of a wastewater treatment system or as an impoundment as defined under the proposed rules. The determination would be based upon how the constructed impoundment were intended to be managed. If it were part of a treatment system, public access to the constructed wetland would have to be restricted and supervised in the same manner as any other component of a sewage treatment facility. If unsupervised public access were allowed, the constructed wetland would be considered as an impoundment subject to the requirements of the proposed rules. If swimming, fishing, boating were prohibited in the constructed wetland, it would be considered a landscape impoundment and influent to the system would have to meet, at a minimum, Level II reclaimed water.

The proposed rules were not drafted on the basis of protecting wildlife because wildlife are not believed to be threatened by the use of reclaimed water. Ducks, geese, other waterfowl, and fur-bearing animals routinely frequent sewage treatment lagoons all over the state. Such lagoons contain undisinfected,

partially treated sewage. We have no information to suggest that contact with human wastewater is directly detrimental to wildlife or indirectly hazardous to human health.

ISSUE: Several testifiers felt that the reclaimed water quality standards for use on golf courses was too stringent. One testifier felt that the requirements currently established by DEQ's guidance was sufficiently protective and that no apparent problems in regard to the health of the public utilizing the golf course. Another testifier cited the requirements in the State of Arizona which are much less stringent for virtually every allowable use of reclaimed water. One testifier was concerned that the standards for reclaimed water used to irrigate golf courses was substantially tighter than the in-stream water quality standards for fecal coliform bacteria.

Department's Response: In Oregon's existing guidance for land application of wastewater, reclaimed water that is used to irrigate golf courses must have better than secondary treatment and achieve a monthly average total coliform concentration of less than 100 organisms per 100mls or a fecal coliform concentration of less than 10 organisms per 100mls. California's requirements would limit total coliform levels to a weekly median not to exceed 23 total coliform organisms per 100mls. Arizona requirements state that the fecal coliform concentration shall not exceed a median value of 200 organisms per 100 mls. The following table compares the standards for reclaimed water and in-stream water quality for Oregon, California, and Arizona.

TABLE A
COMPARISON OF WATER QUALITY STANDARDS AND RECLAIMED WATER STANDARDS FOR SEVERAL STATES

STATE	INSTREAM WATER QUALITY STANDARD	EFFLUENT QUALITY FOR FRESH FOOD CROPS	EFFLUENT QUALITY FOR GOLF COURSES
California		2.2/100mls TC[1]	23/100mls TC[2]
Arizona		2.2/100mls FC[3]	200/100mls FC[4]
Oregon (Current Guidance)	200/100mls FC[5]	Not Allowed	10/100mls FC[6] 100/100mls TC[6]
Oregon (Proposed Rules for Hearing)	200/100mls FC	2.2/100mls TC[1]	2.2/100mls TC[7]

FOOTNOTES TO TABLE A

1 A specific treatment process (chemical coagulation, clarification, filtration) is also required as well as meeting the effluent standard for total coliform. This effluent standard is a 7 day median value for Total Coliform. No samples to exceed 23/100mls.

2 Total Coliform - 7 day median value. No two consecutive samples to exceed 240/100mls.

3 Fecal Coliform - geometric mean. No single sample to exceed 25/100mls. Arizona also limits enteric viruses to 1 per 40 liters for this use.

4 Fecal Coliform - geometric mean. No single sample to exceed 1000/100mls. Arizona also limits enteric viruses to 125 per 40 liters for this use.

5 This is Oregon's current water quality standard and refers to "organisms of the coliform group associated with fecal sources" and is not to exceed a "log mean of 200 fecal coliform per 100 milliliters based on a minimum of 5 samples in a 30 day period with no more than 10 percent of the samples in the 30-day period exceeding 400 per 100 mls."

6 Geometric mean for Fecal Coliform and Total Coliform, respectively.

7 Total Coliform - 7 day median value. No samples to exceed 23/100mls.

The effluent quality levels specified for golf courses in these two other states are both substantially less restrictive than that specified in the proposed rules that went to hearing. Under the treatment levels specified in each of the other states, there have been no documented outbreaks of disease that can be traced to the application of reclaimed water on golf courses nor are any of these states proposing to tighten up the requirements for reclaimed water used on golf courses as a result of evidence of disease outbreaks. Oregon's existing guidance is also less stringent than the proposed levels and no evidence of a threat to human health is known.

It should be stated that the absence of documented outbreaks does not necessarily mean that golfers are not being exposed to unhealthful levels of pathogenic organisms or that occasional, limited outbreaks are not occurring. Health problems associated with the use of reclaimed water would probably only be detected if a large, widespread epidemic occurred.

When developing the draft rules, even though there were no documented problems resulting from the use of reclaimed water on golf courses, the technical advisory committee recommended tighter reclaimed water quality restrictions than are currently required in other states' rules and in Oregon's guidance. This was based primarily upon the Oregon Health Division's recommendation that there should be a waiting period after irrigation of reclaimed water is stopped and before harvesting of crops irrigated with either Level II or Level III effluent. This was deemed advisable to assure further die off of pathogenic organisms before harvest workers come in contact with the crop. The committee reasoned that, if a waiting period is desirable for agricultural crops not intended for human consumption, then would it not also be appropriate to require a waiting period for access to golf courses.

The committee believed that a waiting period for golf courses would not be feasible, but was concerned that health protection on golf courses may not be adequate under either the current Department guidance or that proposed by other states. Therefore, instead of requiring waiting periods following irrigation, the committee recommended that the proposed rules not allow

irrigation with Level II effluent on golf courses. Because Level III effluent has more stringent total coliform standards, this quality of reclaimed water was believed to be acceptable for golf courses.

Oregon's in-stream water quality standard for bacteria (200 fecal coliform per 100mls.) was established based upon 1976 EPA criteria. The standard was adopted for the purpose of protecting the beneficial use of body contact recreation (swimming). According to 1976 EPA criteria, this standard would provide acceptable swimming conditions although the associated gastroenteritis rates for swimmers would be about 8 occurrences per 1000 swimmers in freshwater. There was no consideration of the bacterial levels necessary for public health protection relative to irrigation of food crops or other uses.

Based upon the above discussion, the Department proposes to revise the proposed rules such that Level II reclaimed water may be irrigated on golf courses not adjacent to residential housing. (Note: irrigation on golf courses with adjacent residential housing will require Level IV reclaimed water as originally proposed in the rules.) Level II reclaimed water as defined in these rules is equivalent to the quality of reclaimed water allowed for irrigation of golf courses in California. The reasons for this modification are:

1. The standards for golf courses in the proposed rules as were presented for hearing are too stringent when compared with the in-stream water quality standards for bacteria. It seems illogical to require more stringent bacteria standards for golf course irrigation than are required for waters intended for swimming.

2. There is no evidence that the standards historically applied in either California, Arizona or Oregon have ever failed to effectively protect the health of the public using the golf courses.

3. The Department's in-stream water quality standard for bacteria was established for protection of body contact activities. EPA has no in-stream criteria for the protection of irrigation uses. The total coliform standards in the reclaimed water rules are intended to assure effective disinfection of the reclaimed water. The Department believes the proposed standards for Level II effluent, as modified, will assure adequate disinfection.

ISSUE: Two commenters felt that the quality requirements for reclaimed water were too strict particularly considering that the state-wide, in-stream water quality standard is 200 fecal coliform per 100 milliliters(mls.). This would mean that surface water in the state, even though meeting in-stream water quality standards would not meet the quality standards for reclaimed water proposed in these rules. Further, the discharge standard for most sewage treatment plants discharging to surface waters is also 200 fecal coliform per 100 mls.(based on a monthly geometric mean).

Department's Response: Oregon's bacterial water quality standards was adopted based upon information contained in the Federal Water Pollution Control Administration's 1968 Water Quality Criteria document (Green Book) and the 1976 USEPA Quality Criteria for Water (Red Book). The criteria in these documents were based upon the goal of protecting water quality for swimming. There is no discussion relative to bacterial quality necessary for agricultural irrigation. It is logical to assume that, at the time, protection of body contact recreation was deemed the most critical beneficial use.

Although there has been substantial work done to define appropriate bacterial standards for body contact recreation, there is a paucity of information relative to organism (bacteria, protozoa, and viruses) levels necessary in irrigation water to protect human health. Rather than attempt to establish its own organism levels for reclaimed water, the Department chose to follow the lead of other states where reclaimed water has been successfully used without any known outbreaks of disease. Depending upon the specific use of the reclaimed water, in many cases, the requirements of other states for reclaimed water would impose more stringent effluent standards than the in-stream water quality standards. In the case of the State of California essentially all allowable uses of reclaimed water require a bacterial level substantially more stringent than Oregon's water quality standard. The State of Arizona's rules are less stringent than California's, but their standards for reclaimed water irrigated on areas of open access and on food consumed raw are much more stringent than Oregon's in-stream water quality standard for bacteria.

These reclaimed water quality levels in the proposed rules are consistent with the requirements that have been established in California for use of reclaimed water. The Department chose to base these rules on those already in effect in California because California's experience indicated that their rules were protective of public health. The Department did not believe it had the

resources or time to develop its own data base upon which it could establish other standards that perhaps would have been less restrictive.

ISSUE: One testifier felt that the reclaimed water quality requirements specified in the proposed rules were too stringent and the cost of treating to the required levels would be too expensive, particularly for smaller towns in eastern Oregon. Another commenter from a city in eastern Oregon refuted the Department's claim that no one applied treated effluent to food crops in Oregon. This City irrigates wheat which they assume is only milled and would not qualify as processed food. According to the draft rules, processed foods would have to undergo thermoprocessing. Milling is not thermoprocessing. This City would like to increase the amount of food crops being grown and believes the proposed rules, if adopted, would impair their ability to do so. The city reduces its operation and maintenance costs from revenues collected by growing and selling food crops. This city did not see any value in monitoring for turbidity in their agriculture application.

Department's Response: The Department believes the standards for use of reclaimed water should be based on levels that provide protection of public health. The standards should not be based upon what smaller cities can afford. If a city or other entity cannot afford to treat to the levels that are safe for use, then other treatment and disposal alternatives may need to be investigated.

The Department's current guidance prohibits application of reclaimed water on fresh market food crops. Wheat milled into flour, however, could be grown with reclaimed water under current guidance. These rules as proposed, on the other hand, would not allow this use unless the wheat were to undergo thermoprocessing. There is no certainty that such thermoprocessing would occur.

The Department is unaware of any other places in Oregon where reclaimed water is being applied to crops intended for human consumption. Therefore, the Department does not believe it has sufficient experience with reclaimed water and food crops to conclude that the current guidance is adequate to protect public health.

The Department's primary goal in developing the proposed rules for reclaimed water was to assure protection of public health. The Department has relied heavily on the experience of California in determining necessary quality for reclaimed water. California's experience is based upon decades of successful use of reclaimed water and indicates that the reclaimed water quality requirements specified in its rules will be protective of public health.

The Department considered allowing less than Level IV effluent to be applied to grains provided that irrigation ceased at least 30

days prior to harvest. However, there was no data found that could support this suggestion. Therefore, the Department believes the proposed rules which require Level IV effluent on crops intended for human consumption (except those thermally processed) should not be changed. If the city wishes to pursue this further, it could develop and conduct a study to verify the safety of using less than Level IV effluent on wheat. If such data can be developed, the city could then petition the Commission for a rule change.

ISSUE: One commenter stated that their treatment plant received its chlorine one rail car at a time. Would the proposed rules find this a problem?

Department's Response: It is impossible to answer this question without knowing the other assurances that would be provided for adequate disinfection. The rules or the guidance would not mandate that two rail cars be on-site in all cases. The main concern is to assure that the reclaimed water consistently and reliably meets the requirements of the rules. There are a number of ways this can be done.

ISSUE: One commenter stated that they currently supply reclaimed water to an agricultural operator. This water is then mixed with about 80% natural flow (from a stream & Tualatin Valley Irrigation District System) in a large pond. How does this rule apply to this operation? Is the pond an impoundment? Does this operation have the same legal requirements for contract and reporting?

Department's Response: It could be an impoundment if this is the end use of the reclaimed water. Whether or not it is a restricted impoundment or a nonrestricted impoundment would depend on how it is used. If it is an impoundment, the requirements of the rules, including contracting and reporting would be required.

It is also possible that the pond could be considered public waters under Oregon Statute (see Department response to issue on page 1) which would require a permit for discharge into the pond and that instream water quality standards would have to be met in the pond before a permit could be issued.

Finally, the impoundment could be part of the treatment facility used for blending treated effluent with fresh water. Blending of reclaimed water is allowed in the proposed rules, but the facility

would have to be covered either in the permit issued to the sewage treatment plant owner or in a separate permit issued to the person responsible for the blending facility.

The Department believes that the sewage treatment plant operator would have the choice of managing the impoundment under any of the three cases described above. (This assumes the pond is a constructed impoundment. It if is a natural impoundment, it can only be considered a lake and, therefore, public waters). Under the description stated in the testimony, the Department believes that it the most appropriate choice would be to consider it a blending facility and part of the sewage treatment plant.

If the pond was an impoundment or blending facility as defined in these rules, the irrigation water would have to comply with these proposed rules. If the pond were managed as waters of the state, then the water would not be subject to these rules and could be irrigated like any other public water body. In any case, the water in the pond could be irrigated subject, of course, to appropriate requirements of the Water Resources Department.

In order to clearly distinguish between an impoundment when it is an impoundment and not public waters, a statement has been included in the proposed rules that states that impoundments constructed and operated pursuant to these rules shall not be considered waters of the state. Because they would be part of a treatment system, blending facilities, of course, would not be considered public waters of the state.

ISSUE: One commenter was concerned about the amount of water generated by the Unified Sewerage Agency of Washington County and the amount of land that would be required in order to irrigate this much water. He was concerned about being forced to accept treated effluent. He believed that farmers should have the choice of whether or not to use reclaimed water. He was concerned about the safety of applying reclaimed water to his crops if it could not be discharged into streams. He was opposed to using reclaimed water on his crops. He felt that buffer distances specified in the proposed rules would not work in the Tualatin River subbasin.

Department's Response: The proposed rules will not require anyone to accept reclaimed water for use. The Commission does not have the authority to promulgate such rules and USA must still meet the requirements of the Water Resources Department concerning water rights.

The Department believes that the use of reclaimed water under the proposed rules will be safe. The primary reason the Unified Sewerage Agency is considering use of reclaimed water for beneficial purposes is because of the very stringent phosphorus

limitations placed upon their treatment plants. Excessive levels of phosphorus in the Tualatin River causes nuisance algae to grow which impairs the beneficial uses of the river. If the phosphorus is irrigated on land to grow crops, however, it will provide fertilization which should benefit the crop.

The buffer distances proposed in the rules were based on protecting public health from drift and aerosols of reclaimed water. In some cases, the buffer distances specified in the proposed rules will not work for farmers because it will remove too much land from irrigation with reclaimed water. In other areas, however, it will work. The Department believes, particularly for lower quality reclaimed water, that buffer distances for irrigation of this water are necessary.

Based upon the facilities plan report being prepared by the Unified Sewerage Agency of Washington County, effluent provided for reuse within the Tualatin River subbasin will probably be Level IV quality reclaimed water. This quality of effluent does not require any buffer distance, and, consequently, should not be an issue for farmers in the Tualatin River subbasin.

ISSUE: One commenter felt that the proposed rules, when coupled with upgrading of treatment by the Unified Sewerage Agency and with the acceptance of the food processors and the consumer, would greatly benefit growers in the Tualatin River subbasin.

Department's Response: The Department also believes that people could benefit with the use of reclaimed water. The proposed rules should provide assurance for consumers and food processors to confidently accept crops grown with reclaimed water.

ISSUE: One commenter stated that they felt the 2 NTU limit for turbidity for Level IV effluent was adequate based upon the experience with the use of Level IV effluent in California.

Department's Response: The Department agrees and does not propose to change the turbidity limit for Level IV effluent.

ISSUE: One commenter supported the portion of the rules that allowed the Department to consider alternative treatment process trains to achieve the desired turbidity and coliform limits for Level IV effluent. This commenter also supported the part of the rules that allowed the Department to reduce buffer distances if alternative controls are provided to adequately protect public health.

Department's Response: The Department agrees.

ISSUE: One commenter stated that the proposed rules would establish a complex system of health and environmental protection. USA strongly support those goals. Whether the rules will be

practical for an ambitious, multi-site program of reuse such as USA contemplates, remains to be seen."

Department's Response: The Department recognizes USA's concern. The proposed rules are more complex than one would desire if encouraging use of reclaimed water was the sole purpose. Positive protection of public health, however, is the paramount concern and is the reason that the rules are more complex.

ISSUE: One commenter had a concern about the Department incorporating every term of these rules into an NPDES permit. If so, a treatment facility could face extensive potential liability for matters which would be largely out of its control. For example if a third party removed a warning sign, or a user violated the conditions of its contract with a permittee.

Department's Response: The Department does not anticipate that every term of the rules will be restated in a permit. Much of the issues in the rules will be addressed in the reclaimed water use plan which is required by the rules. The permit will require, however, that the permittee comply with the plan.

The Department does not believe that a treatment facility can be relieved of the potential liability for permit violations. Some protection for the permittee can be garnered through the contract between the treatment facility owner and the user. The user may not wish to provide such protection, of course, which may discourage the use of reclaimed water.

****

This concludes the Department's summary of the testimony and its responses to the testimony. The Department received several comments about the proposed guidance for the rules. Although the Department does not intend to address comments on the guidance in this hearings officer report, the Department will consider these comments when revising the guidance.

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY

Activity Report

June 1990

DEPARTMENT OF ENVIRONMENTAL QUALITY

Monthly Activity Report

June, 1990

Table of Contents

DEPARTMENT OF ENVIRONMENTAL QUALITY

MONTHLY ACTIVITY REPORT

Air Quality, Water Quality and Solid Waste Divisions
(Reporting Unit)

June 1990
(Month and Year)

SUMMARY OF PLAN ACTIONS

	Plans Received		Plans Approved		Plans Disapproved		Plans
	Month	FY	Month	FY	Month	FY	Pending
Air							
Direct Sources	2	60	4	72	0	0	18
Total	2	60	4	72	0	0	18
Water							
Municipal	22	284	11	219	2	22	66
Industrial	0	44	8	39	0	0	15
Total	22	328	19	258	2	22	81
Solid Waste							
Gen. Refuse	5	68	4	55	1	7	38
Demolition	2	5	1	5	0	0	3
Industrial	0	13	0	8	0	5	12
Sludge	0	0	0	0	0	0	1
Total	7	86	5	68	1	12	54
GRAND TOTAL	31	474	28	398	3	34	153

MY100830 (8/08/90)

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

MONTHLY ACTIVITY REPORT

DIRECT SOURCES
PLAN ACTIONS COMPLETED

Permit Name	Source Name	County	Date Schld.	Action Description	Date Achvd.
09 0015	BEND MILLWORK SYSTEMS INC	DESCHUTES	06/18/90	COMPLETED-APRVD	06/29/90
22 0471	WILLAMETTE IND ALBANY PPR	LINN	06/13/90	COMPLETED-APRVD	06/15/90
36 1026	LIQUID AIR CORPORATION	YAMHILL	05/25/90	COMPLETED-APRVD	06/13/90
36 6142	SMURFIT NEWSPRINT CORP	YAMHILL	05/15/90	COMPLETED-APRVD	06/21/90

TOTAL NUMBER QUICK LOOK REPORT LINES 4

DEPARTMENT OF ENVIRONMENTAL QUALITY

MONTHLY ACTIVITY REPORT

Air Quality Division (Reporting Unit) — June 1990 (Month and Year)

SUMMARY OF AIR PERMIT ACTIONS

	Permit Actions Received Month	Permit Actions Received FY	Permit Actions Completed Month	Permit Actions Completed FY	Permit Actions Pending	Sources Under Permits	Sources Reqr'g Permits
Direct Sources							
New	5	34	2	34	22		
Existing	0	5	0	2	11		
Renewals	9	103	2	59	149		
Modifications	1	15	1	19	16		
Trfs./Name Chng.	2	24	2	30	1		
Total	17	181	7	144	199	1323	1356
Indirect Sources							
New	2	14	1	14	7		
Existing	0	0	0	0	0		
Renewals	0	0	0	0	0		
Modifications	0	0	0	0	0		
Total	2	14	1	14	7	315	322
GRAND TOTALS	19	195	8	158	206	1638	1678

Number of Pending Permits	Comments
37	To be reviewed by Northwest Region
2	To be reviewed by Willamette Valley Region
18	To be reviewed by Southwest Region
4	To be reviewed by Central Region
9	To be reviewed by Eastern Region
40	To be reviewed by Program Operations Section
78	Awaiting Public Notice
11	Awaiting end of 30-day Public Notice Period
199	

AH102671 (7/90)

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

MONTHLY ACTIVITY REPORT

DIRECT SOURCES

PERMITS ISSUED

Permit Number	Source Name	County	Appl. Rcvd.	Status	Date Achvd.	Type Appl.
01	0029 ASH GROVE CEMENT WEST INC	BAKER	09/05/89	PERMIT ISSUED	06/15/90	MOD
15	0005 CASCADE WOOD PRODUCTS INC	JACKSON	12/26/89	PERMIT ISSUED	06/18/90	RNW
16	0026 PACIFIC GAS TRANSMISSION	JEFFERSON	12/07/89	PERMIT ISSUED	06/19/90	NEW
22	2526 FRERES LUMBER CO., INC	LINN	06/08/90	PERMIT ISSUED	06/27/90	TRS
23	0032 EAGLE-PICHER MINERALS INC	MALHEUR	06/22/89	PERMIT ISSUED	06/19/90	RNW
32	0012 R Y TIMBER, INC.	WALLOWA	05/18/90	PERMIT ISSUED	06/27/90	NCH
34	2756 DMH, INC.	WASHINGTON	06/19/89	PERMIT ISSUED	06/18/90	NEW

TOTAL NUMBER QUICK LOOK REPORT LINES 7

DEPARTMENT OF ENVIRONMENTAL QUALITY

MONTHLY ACTIVITY REPORT

Air Quality Division (Reporting Unit)	June 1990 (Month and Year)

PERMIT ACTIONS COMPLETED

County	Name of Source/Project /Site and Type of Same	Date of Action	Action
Indirect Sources			
Marion	Millrace Parking Structure, 454 Spaces, File No. 24-8920	05/24/90	Final Permit Issued
Multnomah	OHSU-Parking Structure 500 Spaces, File No. 26-8922	06/19/90	Final Permit Issued

AH102672 (7/90)

DEPARTMENT OF ENVIRONMENTAL QUALITY

MONTHLY ACTIVITY REPORT

Air Quality Division (Reporting Unit) — June 1990 (Month and Year)

PERMIT TRANSFERS & NAME CHANGES

Permit Number	Company Name	Type of Change	Status of Permit
22-2526	Freres Lumber Co., Inc.	Transfer	Issued
32-0012	Dinuba Timber Industries, Inc. dba RY Timber, Inc.	Name Change	Issued

---

[1] In conjunction with permit renewal.
[2] In conjunction with permit modification.

AH10269 (7/90)

DEPARTMENT OF ENVIRONMENTAL QUALITY
MONTHLY ACTIVITY REPORT

Water Quality Division (Reporting Unit) — June 1990 (Month and Year)

PLAN ACTIONS COMPLETED

County	Name of Source/Project /Site and Type of Same	Date of Action	Action
INDUSTRIAL WASTE SOURCES - 8			
Tillamook	Wilford Rock Manure Control Facility	6-13-90	Approved
Tillamook	Brian Tallman Manure Control Facility	6-14-90	Approved
Tillamook	Donell Bailey Manure Control Facility	6-14-90	Approved
Umatilla	Highway Division Department of Transportation Surface Drainage Sump	6-14-90	Approved
Coos	Ron Woodworth Manure control Facility	6-14-90	Approved
Tillamook	Brownlee Bush Manure control Facility	6-14-90	Approved
Tillamook	Nick Hurliman Manure control Facility	6-14-90	Approved
Marion	Casper Ott Manure Control Facility	6-14-89	Approved

IW\WC6721

DEPARTMENT OF ENVIRONMENTAL QUALITY
MONTHLY ACTIVITY REPORT

Water Quality Division (Reporting Unit) — June 1990 (Month and Year)

PLAN ACTIONS COMPLETED

County	Name of Source/Project /Site and Type of Same	Date of Action	Action
MUNICIPAL WASTE SOURCES			
Clackamas	Boy Scouts of America Scouter's Mountain 9,000 gpd Recirc. Gravbel Filter	7-13-90	Provisional Approval
Douglas	Riddleeach Septage Treatment Facility	6-25-90	Rejected
Yamhill	Walter A. Brosamle, Jr. Mulkey RV Park 6300 gpd Recirc. Gravel Filter	7-12-90	Provisional Approval
Lincoln	Lincoln City Lincoln Shore Star Resort	7-12-90	Provisional Approval Gravity Sewers Only
Lane	Florence Sea Watch Pump Station	7-12-90	Rejected
Coos	Charleston SD Crown Point Pump Station	6-25-90	Provisional Approval
Multnomah	Gresham 185th St. P.S. & F. M.	7-11-90	Provisional Approval
Columbia	Vernonia Rehab - Basins "C"	6-25-90	Provisional Approval
Curry	Brookings Dawson Tract Facilites Plan Report	6-26-90	Approved
Polk	Dallas - S.W. Allgood - Mill - Canterburg Ct.	7-13-90	Provisional Approval

IW\WC6819

DEPARTMENT OF ENVIRONMENTAL QUALITY
MONTHLY ACTIVITY REPORT

Water Quality Division (Reporting Unit) — June 1990 (Month and Year)

PLAN ACTIONS PENDING

County	Name of Source/Project /Site and Type of Same	Date Received	Status
INDUSTRIAL WASTE SOURCES - 15			Page 1 of 2
Clackamas	Marvin L. Ruffing Manure Control Facility	5-19-89	Review Completion Projected 7-31-90
Tillamook	Richard Woodward Manure Control Facility	6-21-89	Review Completion Projected 7-31-90
Marion	Arie Jorgenel Manure Control Facility	6-30-89	Review Completion Projected 7-31-90
Marion	David Delany Manure Control Facility	8-3-89	Review Completion Projected 7-31-90
Clatsop	Joe Rohne Manure Control Facility	8-3-89	Review Completion Projected 7-31-90
Tillamook	Bill & Bruce Hagerty Manure Control Facility	8-14-89	Review Completion Projected 7-31-90
Marion	Stanley Shephard Manure Control Facility	8-25-89	Review Completion Projected 7-31-90
Marion	Edward Schiedler Manure Control Facility	9-6-89	Review Completion Projected 7-31-90
Tillamook	Nestucca Bay Farms Manure Control Facility	9-12-89	Review Completion Projected 7-31-90
Tillamook	Camara Dairy Manure Control Facility	9-27-89	Review Completion Projected 7-31-90
Clackamas	Weisdorfer Mink Farm Mink Waste Control Facility	9-28-89	Review Completion Projected 7-31-90
Baker	William Miller Manure Control Facility	10-25-89	Review Completion Projected 7-31-90

IW\WC6819

DEPARTMENT OF ENVIRONMENTAL QUALITY
MONTHLY ACTIVITY REPORT

Water Quality Division (Reporting Unit) — June 1990 (Month and Year)

PLAN ACTIONS PENDING

County	Name of Source/Project /Site and Type of Same	Date Received	Status
INDUSTRIAL WASTE SOURCES			
Tillamook	Craven Farms Manure Control Facility	10-25-89	Review Completion Projected 7-31-90
Tillamook	Robert Seymour Manure Control Facility	10-26-89	Review Completion Projected 7-31-90
Jackson	Paul Medina Manure Control Facility	10-4-89	Review Completion Projected 7-31-90

IW\WC6819

DEPARTMENT OF ENVIRONMENTAL QUALITY
MONTHLY ACTIVITY REPORT

Water Quality Division (Reporting Unit) — June 1990 (Month and Year)

PLAN ACTIONS PENDING

MUNICIPAL WASTE SOURCES

County	Name of Source/Project /Site and Type of Same	Date Received	Status	Reviewer
Clatsop	Glenwood Mobile Park Modification to dual media filter from anoxic tower	10-4-88	Review Completion Projected 8-31-90	JLV
Tillamook	Pacific Coast Recreation RV Park Collection/Treatment/Disposal Preliminary	5-17-89	Review Completion Projected 8-31-90	JLV
Wallowa	Wallowa Engineering Study of Sewer System	10-10-89	Review Completion Projected 8-31-90	DSM
Deschutes	Eagle Crest Drainfields #3 and #4	11-13-89	Review Completion Projected 8-31-90	RCP/ JLV
Tillamook	NTCSA (Manzanita) S.4th Street Extension	3-7-90	Review Completion Projected 8-31-90	DSM
Wasco	The Dalles Bert L. Hodges Project West 7th St. and Irvine	4-26-90	Review Completion Projected 7-31-90	JLV
Douglas	Tri-City S.D. Clark Street Ext.	4-27-90	Review Completion Projected 7-31-90	JLV
Marion	Stayton/Sublimity Sayre Addition No. 3	4-13-90	Review Completion Projected 7-31-90	JLV
Klamath	Klamath Falls North Hills III and IV Additions	4-18-90	Review Completion Projected 7-31-90	JLV
Multnomah	Troutdale Sandee Palisades Phase IV	4-30-90	Review Completion Projected 7-31-90	JLV

IW\WC6819

DEPARTMENT OF ENVIRONMENTAL QUALITY
MONTHLY ACTIVITY REPORT

Water Quality Division (Reporting Unit) — June 1990 (Month and Year)

PLAN ACTIONS PENDING

MUNICIPAL WASTE SOURCES — Page 2 of 6

County	Name of Source/Project /Site and Type of Same	Date Received	Status	Reviewer
Douglas	BCVSA Bellinger/Minear Area	4-11-90	Review Completion Projected 7-31-90	JLV
Union	Island City S.D. Clearwater Pond Subdivision	4-25-90	Review Completion Projected 7-31-90	JLV
Columbia	St. Helens Sewer Interceptor Upgrade	4-17-90	Review Completion Projected 7-31-90	JLV
Coos	North Bend Outfall Modifications	4-18-90	Review Completion Projected 7-31-90	DSM
Polk	Dallas Academy SS Ext.	4-23-90	Review Completion Projected 7-31-90	DSM
Washington	USA (Forest Grove) Solids Handling Improvements	4-25-90	Review Completion Projected 7-31-90	DSM
Deschutes	Bend Aubrey Butte Phase 15	4-30-90	Review Completion Projected 7-31-90	DSM
Umatilla	Pendleton Continental Mills	5-3-90	Review Completion Projected 8-31-90	JLV
Jackson	BCVSA Coker Butte/Springbrook Rd.	5-3-90	Review Completion Projected 8-31-90	JLV
Yamhill	Dundee - Laurel Street Improvements - Seventh Street Sewer Ext.	5-8-90	Review Completion Projected 8-31-90	DSM
Jackson	Shady Cove Matheny Sewer Ext.	5-8-90	Review Completion Projected 8-31-90	JLV

IW\WC6819

DEPARTMENT OF ENVIRONMENTAL QUALITY
MONTHLY ACTIVITY REPORT

Water Quality Division (Reporting Unit) — June 1990 (Month and Year)

PLAN ACTIONS PENDING

MUNICIPAL WASTE SOURCES

County	Name of Source/Project /Site and Type of Same	Date Received	Status	Reviewer
Douglas	RUSA Oakridge Drive	5-9-90	Review Completion Projected 8-31-90	DSM
Gilliam	Arlington Sludge Drying Beds	5-11-90	Review Completion Projected 8-31-90	JLV
Lincoln	Newport - S.E. South Beach - S.W. South Beach	5-14-90	Review Completion Projected 8-31-090	DSM
Union	Elgin WWTP Improvements	6-28-90	Review Completion Projected 8-31-90	JLV
Douglas	RUSA - Oakridge Apartments, Phase I - Harvard Park S.S. Main	5-23-90	Review Completion Projected 8-31-90	DSM
Clackamas	Lake Oswego School District Rivergrove School	5-24-90	Review Completion Projected 8-31-90	JLV
Deschutes	Sunriver - Championship Estates - Fairway Pines	5-25-90	Review Completion Projected 8-31-90	JLV
Harney	Burns Chlorine Contact Basin	5-29-90	Review Completion Projected 8-31-90	JLV
Deschutes	Bend SMGV (Revised)	6-11-90	Review Completion Projected 9-30-90	JLV
Marion	Gervais Black Walnut French Prairie MH Park	6-11-90	Review Completion Projected 9-30-90	JLV
Lane	Westfir Phase 3	6-14-90	Review Compltion Projected 9-30-90	JLV

IW\WC6819

DEPARTMENT OF ENVIRONMENTAL QUALITY
MONTHLY ACTIVITY REPORT

Water Quality Division (Reporting Unit) — June 1990 (Month and Year)

PLAN ACTIONS PENDING

MUNICIPAL WASTE SOURCES

County	Name of Source/Project /Site and Type of Same	Date Received	Status	Reviewer
Curry	Harbor SD South Bank Road	6-1-90	Review Completion Projected 9-30-90	JLV
Curry	Brookings Claron Glen Subd.	6-14-90	Review Completion Projected 9-30-90	JLV
Polk	Monmouth Sewer Rehab	6-14-90	Review Completion Projected 9-30-90	GLS
Lincoln	Siletz Sewer Ext.	6-15-90	Review Completion Projected 9-30-90	JLV
Marion	Salem Sludge Lagoon Resurfacing	6-15-90	Review Completion Projected 9-30-90	JLV
Tillamook	NTCSA Classic Ridge Beach	6-15-90	Review Completion Projected 9-30-90	JLV
Tillamook	Tillamook Meadow Glen Sewer	6-11-90	Review Completion Projected 9-30-90	DSM
Clackamas	Oregon City M-6 Truckes	6-18-90	Review Completion Projected 9-30-90	GLS/DSM
Lane	Lynbrook Phase I & II	6-18-90	Review Completion Projected 9-30-90	JLV
Clatsop	Astoria Gold & Country Club On-Site System Modification	6-15-90	Review Completion Projected 9-30-90	JLV
Douglas	RUSA Saddle Butte Estates	6-21-90	Review Completion Projected 9-30-90	DSM
Clackamas	Oregon City Riverview	6-26-90	Review Completion Projected 9-30-90	DSM

IW\WC6819

DEPARTMENT OF ENVIRONMENTAL QUALITY
MONTHLY ACTIVITY REPORT

Water Quality Division (Reporting Unit) — June 1990 (Month and Year)

PLAN ACTIONS PENDING

County	Name of Source/Project /Site and Type of Same	Date Received	Status	Reviewer
MUNICIPAL WASTE SOURCES				Page 5 of 6
Clackamas	Wilsonville "Old Town" Mine Improvements	6-27-90	Review Completion Projected 7-31-90	JLV
Washington	USA - Forest Grove - Solid Handling Facilities - Pump Station	6-28-90	Review Completion Projected 9-30-90	DSM
Clackamas	Estacada STP C.O. 9-12	6-20-90	Review Completion Projected 9-30-90	DSM
Coos	STP #2 Addenda 1-3	6-21-90	Review Completion Projected 9-30-90	DSM
Lincoln	Siletz Facility Plan Review	6-25-90	Review Completion Projected 9-30-90	DSM
Lane	Brooks City Sewer & Lagoon System	6-20-90	Review Completion Projected 9-30-90	DSM
Benton	Adair Village STP Phase I	6-1-90	Review Completion Projected 9-30-90	DSM
Multnomah	Troutdale STEP O&M Manual	6-8-90	Review Completion Projected 9-30-90	DSM
- - - - - - - - - - - - - -PROJECTS BELOW ARE "ON-HOLD"- - - - - - - - - - - - -				
Deschutes	Redmond (Al Holly) 23rd & Volcano	6-1-89	Awaiting Land Use Compatibility Statement	JLV
Deschutes	Romaine Village Recirculating Gravel Filter (Revised)	4-27-87	On Hold For Surety Bond	Not Assigned
Multnomah	Troutdale Frontage Road Sewage Pump Station Replacement	4-25-88	Bids Rejected, Being Redesigned	DSM

IW\WC6819

DEPARTMENT OF ENVIRONMENTAL QUALITY
MONTHLY ACTIVITY REPORT

Water Quality Division (Reporting Unit) — June 1990 (Month and Year)

PLAN ACTIONS PENDING

County	Name of Source/Project /Site and Type of Same	Date Received	Status	Reviewer
MUNICIPAL WASTE SOURCES				Page 6 of 6
Deschutes	Bend Bend Millwork Sewer and Pump Station	1-30-89	Plan Rejected Awaiting Design Revisions	DSM
Polk	Falls City Phase II Improvements	2-22-89	Awaiting NPDES Permit	JLV
Lane	Deadwood Campground On-Site System	7-10-89	Pending Owners Decision	JLV/ RCP
Linn	Mill City Sanitary Sewer Improvements Wastewater Treatment Plant and Disposal Fields	1-23-90	Awaiting WPCF Permit	JLV
Lane	Rainbow Camp On-Site System	12-1-89	Awaiting WPCG Permit	JLV
Deschutes	Mt. Shadow R.V. Village On-Site System	1-8-90	Awaiting WPCF Permit	JLV

IW\WC6818

Summary of Actions Taken on Water Permit Applications in JUN 90
07/27/90

Source Category &Permit Subtype	Number of Applications Filed						Number of Permits Issued						Applications Pending Permits Issuance (1)			Current Number of Active Permits		
	Month			Fiscal Year			Month			Fiscal Year								
	NPDES	WPCF	Gen	NPDES	WPCF	Gen	NPDES	WPCF	Gen	NPDES	WPCF	Gen	NPDES	WPCF	Gen	NPDES	WPCF	Gen
Domestic																		
NEW		3		4	27	1		1			13		7	35	4			
RW				1									4	1				
RWO		1		21	18		8			25	7		80	55				
MW				1	2					1	1		3	1				
MWO	1			8	12		1			7	10		6	3				
Total	1	4		35	59	1	9	1		33	31		100	95	4	220	218	29
Industrial																		
NEW	2	2	9	11	13	65			16	3	4	73	10	15	14			
RW	1			1						1			1					
RWO	2	6		29	22					25	8		29	30				
MW	1			4						2	1		4					
MWO	1	1		12	14	5	1	1		13	14		1	2				
Total	7	9	9	57	49	70	1	1	16	44	27	73	45	47	14	156	118	537
Agricultural																		
NEW					1	1			6			48	1	1	1			
RW																		
RWO													1	3				
MW																		
MWO																		
Total					1	1			6			48	2	4	1	2	9	755
Grand Total	8	13	9	92	109	72	10	2	22	77	58	121	147	146	19	378	345	1321

1) Does not include applications withdrawn by the applicant, applications where it was determined a permit was not needed, and applications where the permit was denied by DEQ.

It does include applications pending from previous months and those filed after 30-JUN-90 .

NEW - New application
RW - Renewal with effluent limit changes
RWO - Renewal without effluent limit changes
MW - Modification with increase in effluent limits
MWO - Modification without increase in effluent limits

CAT	PERMIT NUMBER	TYPE	SUB-TYPE	OR	NUMBER	FACILITY	FACILITY NAME	CITY	COUNTY/REGION	DATE ISSUED	DATE EXPIRES
General: Placer Mining											
IND	600	GEN06	NEW			49360/A	LATTIG, ROBERT M.	BAKER	BAKER/ER	26-JUN-90	31-JUL-91
IND	600	GEN06	NEW			105243/A	BOYD, KEITH B.		DOUGLAS/SWR	27-JUN-90	31-JUL-91
General: Suction Dredges											
IND	700	GEN07	NEW			105088/A	FISHER, CHRIS C.		MOBILE SRC/ALL	13-JUN-90	31-JUL-91
IND	700	GEN07	NEW			105098/A	ALLRED, PAUL		MOBILE SRC/ALL	14-JUN-90	31-JUL-91
IND	700	GEN07	NEW			105158/A	BAKER, JOHN & BAIRD, BLAKE		MOBILE SRC/ALL	21-JUN-90	31-JUL-91
IND	700	GEN07	NEW			105160/A	DAYTON, DONALD G.		MOBILE SRC/ALL	21-JUN-90	31-JUL-91
General: Confined Animal Feeding											
AGR	800	GEN08	NEW			105087/A	LEE, RICHARD H.	ASTORIA	CLATSOP/NWR	13-JUN-90	31-JUL-92
AGR	800	GEN08	NEW			105092/A	TRIMPEY, KATHLEEN L.	GRANTS PASS	JOSEPHINE/SWR	14-JUN-90	31-JUL-92
AGR	800	GEN08	NEW			105122/A	SANDBERG, EDMUND	SCIO	LINN/WVR	15-JUN-90	31-JUL-92
AGR	800	GEN08	NEW			105124/A	KROLL, ARNOLD	LEBANON	LINN/WVR	15-JUN-90	31-JUL-92
AGR	800	GEN08	NEW			105125/A	MARK CHARMICHAEL	HILLSBORO	WASHINGTON/NWR	15-JUN-90	31-JUL-92
AGR	800	GEN08	NEW			105127/A	TYNKILA FARMS	ASTORIA	CLATSOP/NWR	15-JUN-90	31-JUL-92
General: Seasonal food procs. and wineries											
IND	1400	GEN14	NEW			105050/A	MADRONA HILL VINEYARD & WINERY, INC.	AMITY	YAMHILL/WVR	08-JUN-90	31-DEC-93

ALL PERMITS ISSUED BETWEEN 01-JUN-90 AND 30-JUN-90
ORDERED BY PERMIT TYPE, ISSUE DATE, PERMIT NUMBER

IND	1400	GEN14	NEW		105134/A	UMATILLA MORROW GROWERS COOPERATIVE	HERMISTON	UMATILLA/ER	18-JUN-90	31-DEC-93
IND	1400	GEN14	NEW	OR002221-7	58217/A	MOORE ORCHARDS, INC.	HOOD RIVER	HOOD RIVER/CR	21-JUN-90	31-DEC-93
IND	1400	GEN14	NEW		59198/A	BARRETT, RANDY DBA	THE DALLES	WASCO/CR	21-JUN-90	31-DEC-93

==========
General: Petroleum Hydrocarbons Cleanup
==========

IND	1500	GEN15	NEW	OR003308-1	105053/A	STAFF JENNINGS INC.	PORTLAND	MULTNOMAH/NWR	11-JUN-90	31-JUL-94
IND	1500	GEN15	NEW	OR003309-0	105057/A	COURTESY CORNER AND ALBANY HEATING OIL, INC.	ALBANY	LINN/WVR	11-JUN-90	31-JUL-94
IND	1500	GEN15	NEW	OR003310-3	105061/A	HILLSBORO, CITY OF	HILLSBORO	WASHINGTON/NWR	11-JUN-90	31-JUL-94
IND	1500	GEN15	NEW	OR003311-1	105077/A	ROGUE VALLEY OIL CO.	MEDFORD	JACKSON/SWR	12-JUN-90	31-JUL-94
IND	1500	GEN15	NEW	OR003312-0	105183/A	CHEVRON U.S.A. INC.	CORVALLIS	BENTON/WVR	22-JUN-90	31-JUL-94
IND	1500	GEN15	NEW	OR003313-8	105185/A	BP OIL COMPANY	GRANTS PASS	JOSEPHINE/SWR	22-JUN-90	31-JUL-94

==========
NPDES
==========

19

DOM	100675	NPDES	RWO	OR002804-5	58650/A	MOSIER, CITY OF	MOSIER	WASCO/CR	05-JUN-90	31-MAY-95
DOM	100361	NPDES	MWO	OR002000-1	98815/A	WOODBURN, CITY OF	WOODBURN	MARION/WVR	07-JUN-90	30-JUN-92
DOM	100676	NPDES	RWO	OR003126-7	30554/A	LAWRENCE, JAMES R.	OREGON CITY	CLACKAMAS/NWR	18-JUN-90	31-MAY-95
DOM	100677	NPDES	RWO	OR002242-0	78980/A	SCAPPOOSE, CITY OF	SCAPPOOSE	COLUMBIA/NWR	18-JUN-90	31-MAY-95
DOM	100678	NPDES	RWO	OR002687-5	48854/A	LANE COMMUNITY COLLEGE	EUGENE	LANE/WVR	18-JUN-90	31-MAY-95
DOM	100679	NPDES	RWO	OR002040-1	79929/A	SEASIDE, CITY OF	SEASIDE	CLATSOP/NWR	18-JUN-90	31-MAY-95
DOM	100680	NPDES	RWO	OR002912-2	28498/A	JOHNSON, DOUGLAS L. AND WHITE, KENNETH R., JR.	LEBANON	LINN/WVR	18-JUN-90	31-MAY-95
DOM	100681	NPDES	RWO	OR002282-9	58827/A	MT. HOOD MEADOWS OREG., LTD.	GOVERNMENT CAMP	HOOD RIVER/CR	18-JUN-90	31-MAY-95
DOM	100683	NPDES	RWO	OR002615-8	78804/A	SAUVIE ISLAND MOORAGE CO.	PORTLAND	MULTNOMAH/NWR	18-JUN-90	31-MAY-95
IND	100120	NPDES	MWO	OR000011-6	84108/B	CASCADE FRUIT COMPANY	THE DALLES	WASCO/CR	21-JUN-90	30-SEP-90

ALL PERMITS ISSUED BETWEEN 01-JUN-90 AND 30-JUN-90
ORDERED BY PERMIT TYPE, ISSUE DATE, PERMIT NUMBER

WPCF

DOM	100682	WPCF	NEW	104708/A	BROSAMLE, WALTER A. JR.	MC MINNVILLE	YAMHILL/WVR	18-JUN-90	30-JUN-95
IND	3870	WPCF	MWO	48085/B	WESTPAC FOODS, INC.	RICKREALL	POLK/WVR	28-JUN-90	31-JUL-89

PERMIT TRANSFERS

Part of
Water Quality Division Monthly Activity Report

(Period June 1, 1990 through June 30, 1990)

Permit No.	Previous Facility Name	Facility	New Facility Name	City	County	Date Transferred
100120	Stadelman Fruit, Inc.	84108	Cascade Fruit Company	The Dalles	Wasco/CR	6/21/90 (Ownership Change)
3870	La Creole Fruit Co.	48085	WestPac Foods, Inc.	Rickreall	Polk/WVR	6/28/90 (Ownership Change)

IW\WH3713 (JDH)
07/27/90

DEPARTMENT OF ENVIRONMENTAL QUALITY

MONTHLY ACTIVITY REPORT

Hazardous and Solid Waste Division (Reporting Unit) — June 1990 (Month and Year)

PLAN ACTIONS COMPLETED

County	Name of Source/Project /Site and Type of Same	Date of Action	Action
Municipal			
Gilliam	Columbia Ridge Landfill (391)	6/1/90	Plans approved (Module 1 Fill Plan and Slope Study)
Multnomah	Metro East Station (Received 2/11/90)	6/8/90	Plans approved
Morrow	Finley Buttes Landfill (394)	6/13/90	Plans approved (Liner Specs; Test Liner)
Clackamas	Rossman's Landfill (115)	6/19/90	Plan disapproved (Development of golf driving range on landfill cover)
Morrow	Finley Buttes Landfill (394)	6/21/90	Plans approved (Receiving and Administrative Facilities)
Demolition			
Multnomah	Riedel Landfill (330) (Plan received 6/1/90)	6/18/90	Revised closure plan approved

PRIOR MONTH COMPLETIONS

Municipal			
Washington	Therm Tec Destruction Service (Plans received 11/14/89)	5/10/90	Plans approved

DEPARTMENT OF ENVIRONMENTAL QUALITY

MONTHLY ACTIVITY REPORT

Hazardous and Solid Waste Division (Reporting Unit) — June 1990 (Month and Year)

PLAN ACTIONS PENDING - 54

County	Name of Facility	Date Plans Rec'd.	Date of Last Action	Type of Action and Status	Location
Municipal Waste Sources - 38					
Marion	Ogden Martin Brooks ERF (364)	3/24/87	3/24/87	(N) As-built plans rec'd.	HQ
Douglas	Reedsport Landfill (19)	5/7/87	5/7/87	(R) Plan received	HQ
Benton	Coffin Butte (306)	6/1/87	6/1/87	(R) Plan received	HQ
Umatilla	City of Milton-Freewater (106)	11/19/87	11/19/87	(N) Plan received (groundwater study)	HQ
Marion	Ogden-Martin (metal rec.)	11/20/87	11/20/87	(N) Plan received	HQ
Harney	Burns-Hines (179)	12/16/87	12/16/87	(R) Plan received	HQ
Lane	Franklin Landfill (79)	9/29/88	9/29/88	(R) Groundwater report received	HQ
Jackson	Ashland Landfill (35)	12/1/88	12/1/88	(N) Plans received	HQ
Lake	Lake County Landfill	12/5/88	12/5/88	(C) Plans received	HQ
Deschutes	Alfalfa Landfill (26)	12/19/88	12/19/88	(C) Plans received	HQ
Wallowa	Ant Flat Landfill (261)	3/13/89	3/13/89	(N) Plan received	HQ
Klamath	Klamath Falls (302)	3/27/89	9/27/89	(R) Plans for monitoring well installation received	HQ
Douglas	Lemolo Transfer & Demo Landfill (341)	7/24/89	7/24/89	(M) Revised Plans received (O & M Plan)	HQ

County	Name of Facility	Date Plans Rec'd.	Date of Last Action	Type of Action and Status	Location
Marion	Woodburn Ash Storage/Demolition LF (240)	10/2/89	2/5/90	Revisions to Plan received (Groundwater Sampling and Analysis)	HQ
Gilliam	Gilliam County Landfill	11/21/89	11/21/89	Report received (Hydrogeologic characterization)	
Washington	Hillsboro Landfill (112)	1/31/90	1/31/90	Plan received (Hydrogeology and Groundwater Monitoring)	
Klamath	Chiloquin Landfill/Transfer Station	2/1/90	2/1/90	Plan received (Operational)	
Baker	City of Huntington Landfill	2/1/90	2/1/90	Plan received (Operational)	
Josephine	Grants Pass Landfill (159)	2/8/90	2/8/90	Plan received (5-year Operational)	
Morrow	Tidewater Finley Buttes (394)	2/12/90	2/12/90	Plan received (Sampling and Analysis for Groundwater Monitoring)	
Multnomah	Metro South Transfer Station	2/14/90	2/14/90	Plans received (Modification of of Facility)	
Clatsop	Wauna Landfill	2/16/90	2/16/90	Report received (Leachates Alternatives)	
Gilliam	Gilliam County Landfill (391)	2/20/90	2/20/90	Revisions to Plan received (Sampling and Analysis)	
Marion	North Marion County Disposal Facility (240)	2/21/90	2/21/90	Plan received (1989 Backup Landfill Engr. Certifications and As-Builts)	
Curry	Port Orford Landfill (210)	3/12/90	3/12/90	Plan received (revised groundwater sampling and analysis)	
Morrow	Finley Buttes Landfill (394)	4/13/90	4/13/90	Plans received (Phase 1, Sector 1 Plans and Contract Documents)	

County	Name of Facility	Date Plans Rec'd.	Date of Last Action	Type of Action and Status	Location
Gilliam	Columbia Ridge Landfill (391)	4/26/90	4/26/90	Plans received (Module 2 Excavation)	
Benton	Coffin Butte Landfill (306)	4/30/90	4/30/90	Plans received (Cell 1, Phase 1, Closure)	
Jackson	South Stage Landfill (67)	4/30/90	4/30/90	Report received (Phase II Hydrogeology Assessment)	
Gilliam	Columbia Ridge Landfill (391)	5/1/90	5/1/90	Plan received (Special Wastes Management)	
Washington	Lakeside Reclamation (214)	5/18/90	5/18/90	Plan received (Groundwater Investigation)	
Jackson	Dry Creek Landfill (190)	5/22/90	5/22/90	Report received (Phase II Hydrogeologic Assessment)	
Baker	Baker Sanitary Service, Inc. Landfill	5/29/90	5/29/90	Plans received	
Lincoln	Agate Beach Landfill (373)	6/4/90	6/4/90	Draft report received (Hydrogeologic investigation)	
Yamhill	Riverbend Landfill (345)	6/5/90	6/5/90	Report received (Landfill construction)	
Lane	Short Mountain Landfill (290)	6/12/90	6/12/90	Plan received (Groundwater monitoring network)	
Benton	Coffin Butte Landfill (306)	6/13/90	6/13/90	Plan received (CQA Manual Cell/Closure)	
Morrow	South Morrow County Transfer Station	6/18/90	6/18/90	Plans received	
<u>Demolition Waste Sources</u> - 3					
Coos	Joe Ney (344) (Bracelin/Yeager)	9/21/89	9/21/89	Report received (Phase II Geotech)	HQ

County	Name of Facility	Date Plans Rec'd.	Date of Last Action		Type of Action and Status	Location
Washington	Hillsboro Landfill (112)	3/23/90	3/23/90		Plans received (Detection/ Prevention of HW and Landfill Gas Monitoring)	
Coos	Joe Ney Disposal Site	6/4/90	6/4/90		Plans received	
Industrial Waste Sources - 12						
Coos	Rogge Lumber (1019)	7/28/86	6/18/87	(C)	Draft amendments to applicant	HQ
Douglas	Louisiana-Pacific Round Prairie (1058)	9/30/87	9/30/87	(R)	Operational plan	HQ
Clatsop	Nygard Logging	11/17/87	11/17/87	(N)	Plan received	HQ
Columbia	Boise Cascade St. Helens (1127)	4/6/88	4/6/88	(N)	As built plans received	HQ
Douglas	Sun Studs (1012)	6/20/88	7/1/88	(R)	Operational/groundwater plans received	HQ
Douglas	IP, Gardiner (1154)	8/16/88	8/16/88	(N)	Plans received	HQ
Marion	OWTD - Silverton Forest Products	12/19/88	12/19/88	(C)	GW study received	HQ
Douglas	Glide Lumber Products Landfill (1053)	6/12/88	6/12/89		Hydrogeologic study report received	
Polk	Willamette Industries Dallas Wood Waste Landfill	8/28/89	8/28/89	(M)	Beneficial use survey received	HQ
Lane	Pope & Talbot Oakridge (1020)	1/8/90	1/8/90		Work Plan received (Groundwater and Surface Water Investigation, Yard 3 Wood Waste Disposal Facility)	

County	Name of Facility	Date Plans Rec'd.	Date of Last Action	Type of Action and Status	Location
Lane	Bohemia Dorena Wood Waste Landfill (1002)	2/28/90	2/28/90	Report received (Hydrogeological Site Characterization)	
Lane	Bohemia Dorena Wood Waste Fill (1002)	5/11/90	5/11/90	Plan received (Operations)	
Sewage Sludge Sources - 1					
Coos	Beaver Hill Lagoons	11/21/86	8/31/89	(N) Add'l. info. requested	HQ

DEPARTMENT OF ENVIRONMENTAL QUALITY

MONTHLY ACTIVITY REPORT

Hazardous and Solid Waste Division (Reporting Unit) — June 1990 (Month and Year)

SUMMARY OF SOLID WASTE PERMIT ACTIONS

	Permit Actions Received Month	Permit Actions Received FY	Permit Actions Completed Month	Permit Actions Completed FY	Permit Actions Pending	Sites Under Permits	Sites Reqr'g Permits
Municipal							
New	1	6	1	6	3		
Closures	-	-	-	2	2		
Renewals	-	14	1	8	16		
Modifications	1	6	1	6	2		
Terminations	-	1	-	1	-		
Total	2	27	3	23	23	180	180
Demolition							
New	-	-	-	-	-		
Closures	-	-	-	-	-		
Renewals	-	-	-	1	-		
Modifications	-	2	-	2	1		
Terminations	-	-	-	-	-		
Total	0	2	0	3	1	11	11
Industrial							
New	-	16	2	17	5		
Closures	-	1	-	-	2		
Renewals	-	7	-	-	11		
Modifications	-	5	-	4	2		
Terminations	-	-	-	-	-		
Total	0	29	2	21	20	107	107
Sludge Disposal							
New	-	1	-	1	1		
Closures	-	-	-	1	-		
Renewals	-	1	-	-	1		
Modifications	-	-	-	-	-		
Terminations	-	-	-	-	-		
Total	0	2	0	2	2	18	18
Total Solid Waste	2	60	5	48	46	316	316

(SW\SB5285B)
MAR.5S (11/84)

DEPARTMENT OF ENVIRONMENTAL QUALITY

MONTHLY ACTIVITY REPORT

Hazardous and Solid Waste Division (Reporting Unit) — June 1990 (Month and Year)

PERMIT ACTIONS COMPLETED

County	Name of Source/Project /Site and Type of Same	Date of Action	Action	
Municipal				
Washington	Forest Grove Transfer Station (368)	6/2/90	(R) Permit issued	HQ
Multnomah	Metro East Station	6/11/90	(N) Permit issued	
Josephine	Grants Pass Landfill (159) (Department initiated 6/90)	6/25/90	(M) Addendum issued	
Industrial				
Multnomah	Quincorp Investment Group (Application received 5/29/90)	6/20/90	(N) Letter of Authorization	NWR
Union	R. D. Mack (Application received 5/90)	6/25/90	(N) Letter of Authorization	ER

SW\SB8139B
MAR.6 (5/79)

DEPARTMENT OF ENVIRONMENTAL QUALITY

MONTHLY ACTIVITY REPORT

Hazardous and Solid Waste Division (Reporting Unit) — June 1990 (Month and Year)

PERMIT ACTIONS PENDING - 46

County	Name of Facility	Date Appl. Rec'd.	Date of Last Action	Type of Action and Status	Location
Municipal Waste Sources - 23					
Clackamas	Rossman's Landfill (115)	3/14/84	6/19/90	(C) Draft permit mailed to Applicant for review	HQ/RO
Coos	Bandon Landfill (68)	1/20/87	1/7/88	(R) Draft received	HQ
Douglas	Reedsport Lndfl. (19)	5/7/87	1/11/88	(R) Draft received	HQ
Lane	Florence Landfill (91)	9/21/87	1/12/88	(R) Draft received	HQ
Douglas	Roseburg Landfill (265)	10/21/87	12/21/87	(R) Draft received	
Marion	Ogden Martin	10/11/88	12/8/89	(R) Proposed revision of draft permit	HQ
Deschutes	Alfalfa Landfill Closure (26)	12/19/88	12/19/88	(C) Application received	RO
Union	North Powder (372)	12/20/88	12/20/88	(R) Application received	HQ
Benton	Coffin Butte Landfill (306)	6/7/89	4/25/90	(R) Information requested	WVR
Lincoln	Agate Beach Balefill (373)	9/11/89	11/6/89	(R) Application suspended	HQ
Clatsop	Seaside Transfer Station (374)	9/15/89	9/15/89	(R) Application received	RO
Yamhill	Newberg Transfer Station (366)	9/21/89	9/21/89	(R) Application received	WVR

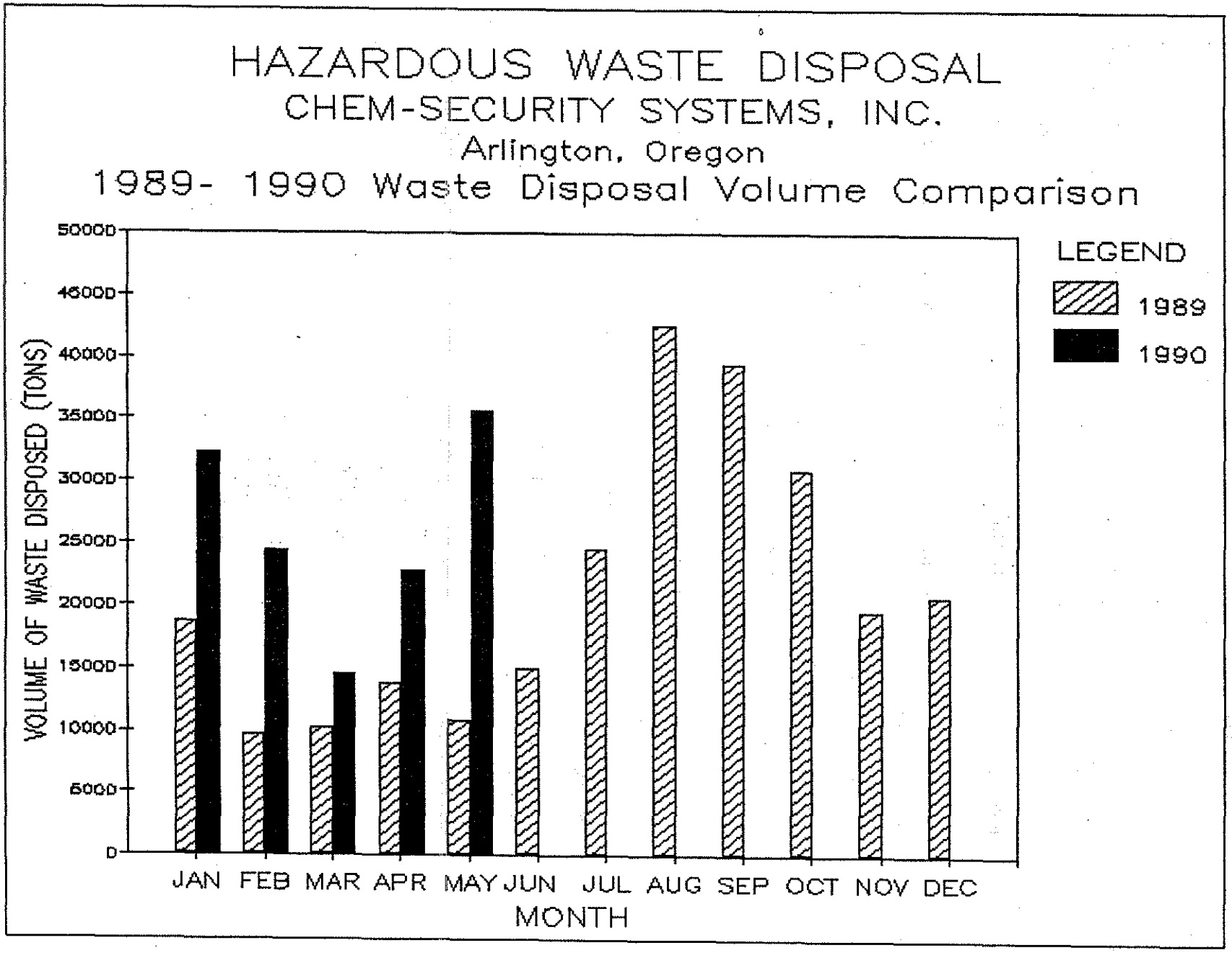
SW\SB4968
MAR.7S (5/79)

(C) = Closure permit; (M) = Modification;
(N) = New source; (R) = Renewal; (T) = Termination

County	Name of Facility	Date Appl. Rec'd.	Date of Last Action	Type of Action and Status	Location
Lincoln	Agate Beach Transfer Station (377)	10/6/89	10/6/89	(R) Application received	WVR
Washington	Therm Tec Destruction Service	11/14/89	6/12/90	(N) Draft permit issued	
Deschutes	Southwest Transfer Station	12/28/89	6/20/90	(N) Draft permit issued	
Union	Elgin Transfer Station	1/2/90	1/2/90	(R) Application received	RO
Klamath	Chiloquin Landfill/Transfer Station	2/1/90	2/1/90	(R) Application received	
Baker	City of Huntington Landfill	2/1/90	2/1/90	(R) Application received	
Multnomah	Metro South Transfer Station	2/14/90	2/14/90	(M) Application received	
Douglas	Camas Valley Transfer Station (249)	3/26/90	3/26/90	(R) Application received	SWR
Clatsop	Astoria Landfill (118)	5/2/90	6/22/90	(M) Draft permit mailed to Applicant for review	
Marion	McCoy Creek Landfill (55)	5/4/90	5/4/90	(R) Application received	WVR
Morrow	South Morrow County Transfer Station	6/18/90	6/18/90	(N) Application received	
<u>Demolition Waste Sources</u> - 1					
Washington	Hillsboro Landfill (112)	4/11/90	4/11/90	(M) Application received	

County	Name of Facility	Date Appl. Rec'd.	Date of Last Action	Type of Action and Status	Location
Industrial Waste Sources - 20					
Wallowa	Boise Cascade Joseph Mill (1051)	10/3/83	5/26/87	(R) Applicant comments received	HQ
Curry	South Coast Lbr.	7/18/86	7/18/86	(R) Application filed	RO
Baker	Ash Grove Cement West, Inc.	4/1/87	4/1/87	(N) Application received	RO
Klamath	Modoc Lumber Landfill (1042)	5/4/87	4/3/89	(R) Applicant comments received	RO
Clatsop	Nygard Logging	11/17/87	3/3/88	(N) Draft permit received from region	HQ
Wallowa	Sequoia Forest Ind.	11/25/87	11/25/87	(N) Application filed	RO
Clatsop	James River Wauna Mills	4/28/88	3/3/89	(C) Draft Closure permit received from region	HQ
Douglas	Hayward Disposal Site (1114)	6/7/88	3/23/90	(R) Draft returned to region	SWR
Polk	Willamette Industries Dallas Wood Waste Landfill (1048)	4/3/89	4/30/90	(M) Draft permit sent out for applicant review	HQ
Klamath	Weyerhaeuser (Woodwaste Landfill)	7/10/89	7/10/89	(N) Application received	HQ
Baker	Orr Ash Disposal Site	7/10/89	7/10/89	(M) Application received	HQ
Multnomah	New Hope Metals	9/29/89	5/30/90	(N) Application returned to Applicant for completion	HQ
Multnomah	Malarkey Roofing (1041)	10/23/89	2/22/90	(R) Requested additional information from Applicant	HQ
Clackamas	Avison Lumber Landfill (1139)	11/6/89	11/6/89	(R) Application received	RO

County	Name of Facility	Date Appl. Rec'd.	Date of Last Action	Type of Action and Status	Location
Marion	Green Veneer Landfill	2/2/90	2/2/90	(R) Application resubmitted (original application dated 9/28/89 was lost and was not logged in)	WVR
Lane	Bohemia Dorena Mill Landfill (1002)	2/16/90	2/16/90	(R) Application received	WVR
Lane	Weyco Rail Dike Landfill (1133)	2/16/90	2/16/90	(C) Application received	WVR
Yamhill	Willamina Lumber Co., Buck Hollow Landfill (1115)	5/11/90	6/28/90	(R) Applicant review	WVR
Lake	Lakeview Lumber Products, Inc. (1143)	5/1/90	5/1/90	(R) Application received	
Hood River	Diamond Fruit Disposal Site	5/14/90	5/14/90	(R) Application received	
<u>Sewage Sludge Sources</u> - 2					
Multnomah	Bob's Sanitary Service, Inc.	12/7/89	12/7/89	(N) Application received (Land spreading septic waste)	RO
Multnomah	Waste Water Management (369)	3/26/90	3/26/90	(R) Application received	


HAZARDOUS WASTE DISPOSAL
CHEM-SECURITY SYSTEMS, INC.
Arlington, Oregon
1989- 1990 Waste Disposal Volume Comparison
VOLUME OF WASTE DISPOSED (TONS)
50000
46000
40000
35000
30000
25000
20000
15000
10000
5000
0
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
MONTH
LEGEND
1989
1990

CHEM-SECURITY SYSTEMS, INC.

1990

HAZARDOUS WASTE ORIGINATION SOURCES

MONTHLY QUANTITY OF WASTE DISPOSED (TONS)[1]

Waste Source	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YTD
Oregon	1,474	1,162	1,697	1,962	1,677								7,972
Washington	23,825	17,245	12,267	18,842	29,210								101,389
Alaska	1	155	8	-	172								336
Idaho	67	-	21	1,043	1,017								2,148
CSSI[2]	6,521	5,745	331	899	3,340								16,836
Other[3]	575	236	280	136	315								1,542
TOTALS	32,463	24,543	14,604	22,882	35,731								130,233

Footnotes

1 Quantity of waste (both RCRA and non-RCRA) received at the facility.

2 Waste generated on-site by CSSI.

3 Other waste origination sources include California, Montana, Utah, British Columbia.

DEPARTMENT OF ENVIRONMENTAL QUALITY

MONTHLY ACTIVITY REPORT

Noise Control Program (Reporting Unit) — June, 1990 (Month and Year)

SUMMARY OF NOISE CONTROL ACTIONS

Source Category	New Actions Initiated		Final Actions Completed		Actions Pending	
	Mo	FY	Mo	FY	Mo	Last Mo
Industrial/ Commercial	11	85	11	82	149	149
Airports			3	21	2	2

DEPARTMENT OF ENVIRONMENTAL QUALITY

MONTHLY ACTIVITY REPORT

Noise Control Program (Reporting Unit) — June, 1990 (Month and Year)

FINAL NOISE CONTROL ACTIONS

County	* Name of Source and Location	* Date	* Action
Clackamas	Stanley Hydraulic Tools, Milwaukie	6/90	No violation
Multnomah	Clean Machine Car Wash, Portland	6/90	In compliance
Multnomah	Columbia Bifocal Co., Inc. Portland	6/90	In compliance
Multnomah	Diebold Lumber Company, Portland	6/90	In compliance
Multnomah	Johnson Creek Texaco & Rental Center, Portland	6/90	Referred to the City of Portland
Multnomah	Pacific Coatings, Inc., Portland	6/90	In compliance
Multnomah	Tidee-Didee Diaper Service, Portland	6/90	In compliance
Multnomah	Tune-Up Specialties, Portland	6/90	No violation
Washington	ACI Glass Company, Tigard	6/90	Referred to the City of Tigard
Washington	U.S. Postal Service, West Slope Station, Portland	6/90	In compliance
Benton	Technon Corporation, Philomath	6/90	In compliance

DEPARTMENT OF ENVIRONMENTAL QUALITY

MONTHLY ACTIVITY REPORT

Noise Control Program (Reporting Unit) — June, 1990 (Month and Year)

FINAL NOISE CONTROL ACTIONS

County	Name of Source and Location	Date	Action
Airport			
Clackamas	Auberge des Fleurs Airport, 3.6 miles N. of Sandy	6/90	Boundary approved
Clatsop	Seaside Heliport, Seaside	6/90	Contour info. inadequate
Union	LaGrande Airport, LaGrande	6/90	Boundaries approved

CIVIL PENALTY ASSESSMENTS

DEPARTMENT OF ENVIRONMENTAL QUALITY
1990

CIVIL PENALTIES ASSESSED DURING MONTH OF JUNE 1990

CASE NO./ RESPONDENT/ LOCATION	VIOLATION(S)	REFERRED BY/ ASSIGNED TO[1]	FINAL ACTION
HW-NWR-90-47 Lakea Corporation dba/Columbia American Plating Co. Portland, Oregon	Violations of the hazardous waste management rules.	L.McCulloch, NWR L.Schurr, Enf.	A $7,600 civil penalty assessment (CPA) was issued on 6/13/90 and paid on 7/9/90.
AQAB-NWR-90-59 Fuiten's Plumbing and Heating Co. Oregon City, Oregon	Open accumulation of asbestos waste during a renovation project at the Clackamas County Jail.	M.McClincy, AQ H.Duncan, Enf.	A $1,200 CPA was issued on 6/13/90 and contested on 6/28/90.
HW-WVR-90-62 Oregon State Penitentiary Salem, Oregon	Various violations of the HW management rules.	G.Hargreaves, WVR Y.McNally, Enf.	An $8,000 CPA was issued on 6/19/90 and paid on 7/6/90.
SW-SWR-90-80A SW-SWR-90-80B Coos County Coos County	Open burning in violation of SW permit. Various SW permit violations at the Beaver Hill disposal site.	R.Kretzschmar, SWR L.Cwik, Enf.	A $320 CPA was issued on 6/6/90. Paid 6/19/90.
AQOB-WVR-90-94 Gordon A. Wilson Salem, Oregon	Open burned prohibited materials (tires).	B.Scherzinger, WVR N.Hogan, Enf.	An $800 CPA was issued on 6/13/90. Contested by letter dated 6/24/90.
AQAB-NWR-90-99 MCI Telecommunications Co. and CIS, Inc. Portland, Oregon	Various violations of the asbestos management rules during an asbestos abatement project at the Bank of California Building.	M.McClincy, AQ H.Duncan, Enf.	A $1,000 CPA was issued on 6/6/90 and paid on 6/12/90.
AQ-NWR-90-104 Times Litho, Inc. Forest Grove, Oregon	Failure to install air pollution control equipment, in violation of Air Contaminant Discharge Permit.	R.Nomura, NWR H.Duncan, Enf.	A $1,400 CPA was issued on 6/14/90. Paid 6/19/90.

[1] AQ = Air Quality Division; WQ = Water Quality Division; HSW = Hazardous and Solid Waste Div.; DOA = Department of Agriculture; Enf. = Enforcement Section; NWR = Northwest Region; WVR = Willamette Valley Region; SWR = Southwest Region; CR = Central Region; ER = Eastern Region; DOJ = Department of Justice

CASE NO./ RESPONDENT/ LOCATION	VIOLATION(S)	REFERRED BY/ ASSIGNED TO	FINAL ACTION
AQOB-SWR-90-107 Mark Von Axtell Grants Pass, Oregon	Open burning of demolition waste.	D.Belsky, SWR H.Duncan, Enf.	A $1,800 CPA was issued on 6/26/90.
OSI-ER-90-108 Wesley I. Shockman Milton-Freewater, Oregon	Installed an on-site sewage disposal system (sand filter) without a permit.	J.Hammond, ER N.Hogan, Enf.	A $420 CPA and Department Order was issued on 6/13/90.
WQ-CR-90-110 Klamath Dairy Products, Inc. Klamath County	Discharged animal waste into public waters.	D.Bramhall, CR N.Hogan, Enf.	A $2,500 CPA was issued on 6/27/90.
OSI-CR-90-111 Larry N. Faulk Crook County	Installed an on-site sewage disposal system without a permit.	D.Bramhall, CR H.Duncan, Enf.	A $200 CPA was issued on 6/19/90.
OS-SWR-90-114 Gordon Winchester, Oregon	Continued violation of a Department Order requiring Gordon to obtain an on-site sewage system repair permit.	N.Hogan, Enf.	A $1,200 CPA was issued on 6/28/90.

[DRAFT NOTIFICATION LETTER - INVENTORY]

August 13, 1990

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

x
x
x

Attn: Manager of Environmental Affairs

Re: Listing of [SITE NAME] on Inventory
DEQ Site ID No. [SDDB Site ID#]

This letter is to notify you that the Department of Environmental Quality (DEQ) is proposing to list the facility located at [SITE ADDRESS] on an Inventory of facilities where releases of hazardous substances require further investigation or cleanup. The Department is notifying you as an [owner or operator] of the facility; this letter is not a determination that you are responsible for the release or for investigation or cleanup of the facility.

The Environmental Cleanup Law, Oregon Revised Statutes (ORS) 465.200 et seq., and implementing Site Discovery Rules, Oregon Administrative Rules (OAR) 340-122-410 et seq., require the Department to list facilities on the Inventory if the Department:

- confirms a release of a hazardous substance into the environment in accordance with OAR 340-122-427, and
- based on a preliminary assessment or equivalent information, determines additional investigation, removal, remedial action, or related long-term environmental or institutional controls are needed to assure protection of present and future public health, safety, welfare, and the environment.

[Option 1 -- PA or equivalent report included with notification letter.] Enclosed for your review are the [preliminary assessment or preliminary assessment equivalent], which provides the basis for listing the facility, and a Facility Report, which identifies the information to be included on the Inventory.

[Option 2 -- Use when PA or equivalent report is not included with notification letter]. The "[insert name and date of PA/PA Equivalent]" provides the basis for listing the facility. A copy of this report has been previously provided. Enclosed for your review is a Facility Report, which identifies the information to be included in the Inventory.

As [owner\operator] you have forty-five (45) days from receiving this notice to provide written comments on the [preliminary assessment or preliminary assessment equivalent] and the proposed listing. You may request an extension of up to forty-five (45) days to comment. Any request must show good cause for the extension.

Comments regarding the proposal to list the facility and any request for extension should be sent to:

Oregon Department of Environmental Quality
Environmental Cleanup Division
Site Assessment Section
811 S.W. Sixth Avenue
Portland, OR 97204

The Department will consider your comments in determining whether to add the facility to the Inventory.

The Department will remove the facility from the Confirmed Release List and Inventory, if listed, after all necessary removal or remedial action, including continuing environmental or institutional controls, is completed. (OAR 340-122-470) If you are not already working with the Department to investigate or clean up the facility, please contact the Department if you have conducted or plan to initiate these activities. The Department will contact you before initiating any new action at the facility.

The Department will publish the Inventory quarterly and make it available to the public upon request. In addition the Department must submit the Inventory to the Governor, the Legislative Assembly, and the Environmental Quality Commission on January 15 of each year.

If you have specific questions about the Inventory, the proposed listing or site activities, or want copies of the Environmental Cleanup Law or rules, please contact the Site Assessment Section of the Environmental Cleanup Division at (503) 229-6170 or at the address shown above.

Sincerely,

Fred Hansen
Director

SL:m
SA\SM3169
Enclosures: [Only print if Option 2 used --Preliminary Assessment or Preliminary Assessment Equivalent]
Facility Report
cc: [DEQ REGION/PROGRAM]

[DRAFT NOTIFICATION LETTER - INVENTORY & CRL]

August 13, 1990

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

x
x
x

Attn: Manager of Environmental Affairs

Re: Listing of [SITE NAME]
on the Confirmed Release List and Inventory
DEQ Site ID No. [SDDB Site ID#]

This letter is to notify you that the Department of Environmental Quality (DEQ) is proposing to list the facility located at [SITE ADDRESS] on two lists of facilities where hazardous substances have been released into the environment, a Confirmed Release List and an Inventory. The Department is notifying you as an [owner or operator] of the facility; this letter is not a determination that you are responsible for the release or necessary response.

The Environmental Cleanup Law, Oregon Revised Statutes (ORS) 465.200 et seq., and implementing Site Discovery Rules, Oregon Administrative Rules (OAR) 340-122-410 et seq., require the Department to:

- add facilities to the Confirmed Release List if the Department confirms a release of a hazardous substance into the environment in accordance with OAR 340-122-427; and
- add facilities to the Inventory if the Department:
  - confirms a release of a hazardous substance into the environment in accordance with OAR 340-122-427, and
  - based on a preliminary assessment or equivalent information, determines additional investigation, removal, remedial action, or related long-term environmental or institutional controls are needed to assure protection of present and future public health, safety, welfare, and the environment.

[Option 1 -- Use when PA or equivalent report included with notification letter]. Enclosed for your review are the [preliminary assessment or preliminary assessment equivalent], which provides the basis for listing the facility, and a Facility Report, which identifies the information to be included on the Confirmed Release List and Inventory.

[Option 2 -- Use when PA or equivalent report is not included with notification letter]. The "[insert name and date of PA/PA Equivalent]" provides the basis for listing the facility. Enclosed

for your review is a Facility Report, which identifies the information to be included in the Inventory.

As [owner\operator] you have forty-five (45) days from receiving this notice to provide written comments on the [preliminary assessment or preliminary assessment equivalent] and the proposed listing. You may request an extension of up to forty-five (45) days to comment. Any request must show good cause for the extension.

Comments regarding the proposal to list the facility and any request for extension should be sent to:

Oregon Department of Environmental Quality
Environmental Cleanup Division
Site Assessment Section
811 S.W. Sixth Avenue
Portland, OR 97204

The Department will consider your comments in determining whether to add the facility to the Confirmed Release List and Inventory.

The Department will remove the facility from the Confirmed Release List and Inventory, if listed, after all necessary removal or remedial action, including continuing environmental or institutional controls, is completed. (OAR 340-122-470) If you are not already working with the Department to investigate or clean up the facility, please contact the Department if you have conducted or plan to initiate these activities. The Department will contact you before initiating any new action at the facility.

The Department will update the Confirmed Release List and Inventory quarterly and make them available to the public upon request. In addition the Department must publish the Inventory quarterly and will submit the Inventory to the Governor, the Legislative Assembly, and the Environmental Quality Commission on January 15 of each year.

If you have specific questions about the Inventory, the proposed listing or site activities, or want copies of the Environmental Cleanup Law or rules, please contact the Site Assessment Section of the Environmental Cleanup Division at (503) 229-6170 or at the address shown above.

Sincerely,

Fred Hansen
Director

SL:m
SA\SM3168
Enclosures: [Only print if Option 1 Used -- Preliminary Assessment or Preliminary Assessment Equivalent]
Facility Report
cc: [DEQ REGION/PROGRAM]

SITE ID: 305

NAME:* EYERLY AIRCRAFT

LOCATION: Marion County
2050 Turner Road
Salem

CURRENT OWNER:* Jack E. Eyerly, Legal Owner

CURRENT OPERATOR:* John Eyerly

PRIOR OWNER/OPERATOR:* Eyerly Aircraft

HAZARDOUS SUBSTANCE INFORMATION:

SUBSTANCE	QUANTITY** RELEASED	MEDIA CONTAMINATED	CONCENTRATION IN MEDIA
Chromium	Unknown	Soil	15,291 ppm
Lead	Unknown	Soil	6,214 ppm

AS VERIFIED BY: Laboratory data

HOW RELEASED:
Operating practices

STATUS OF REMOVAL OR REMEDIAL ACTION:

Preliminary Assessment in progress

TIME PERIOD WHEN RELEASE OCCURRED:

Unknown

ENVIRONMENTAL AND PUBLIC HEALTH THREATS:

High levels of metals in soil; potential for leaks from the chrome plating tank or drain into the soil; barrels on site in varying stages of decay; visible leaks and spills where barrels are stored and oily stains on other areas of site.

REMEDIAL ACTION FUNDED PRIMARILY BY:

Hazardous Substance Remedial Action Fund

HAZARD RANK: The Department will rank sites after the hazard ranking system is completed.

* NOT NECESSARILY RESPONSIBLE FOR CONTAMINATION

** QUANTITY RELEASED MAY INCLUDE AMOUNTS OF SUBSTANCES OTHER THAN HAZARDOUS SUBSTANCES

[DRAFT NOTIFICATION LETTER - CONFIRMED RELEASE LIST]

August 13, 1990

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

x
x
x

Attn: Manager of Environmental Affairs

Re: Listing of [SITE NAME] on Confirmed Release List
DEQ Site ID No. [SDDB Site ID#]

This letter is to notify you that the Department of Environmental Quality (DEQ) is proposing to list the facility located at [SITE ADDRESS] on a Confirmed Release List identifying facilities where hazardous substances have been released into the environment. The Department is notifying you as an [owner or operator] of the facility; this letter is not a determination that you are responsible for the release or for investigation or cleanup of the facility.

The Environmental Cleanup Law, Oregon Revised Statutes (ORS) 465.200 et seq., and implementing Site Discovery Rules, Oregon Administrative Rules (OAR) 340-122-410 et seq., require the Department to add facilities to the Confirmed Release List if the Department confirms a release of a hazardous substance into the environment in accordance with OAR 340-122-427.

Enclosed for your review is a Facility Report, which identifies the confirmed release and information the Department proposes to include on the Confirmed Release List.

As [owner\operator] you have forty-five (45) days from receiving this notice to provide written comments on the proposed listing. You may request an extension of up to forty-five (45) days to comment. Any request must show good cause for the extension.

Comments regarding the proposal to list the facility and any request for extension should be sent to:

Oregon Department of Environmental Quality
Environmental Cleanup Division
Site Assessment Section
811 S.W. Sixth Avenue
Portland, OR 97204

The Department will consider your comments in determining whether to add the facility to the Confirmed Release List.

The Department will also add this facility to an Inventory of sites if, after a preliminary assessment or its equivalent, the Department determines that further investigation or cleanup is required to assure protection of present and future public health, safety, welfare, and the environment.

The Department will remove the facility from the Confirmed Release List and Inventory, if listed, after all necessary removal or remedial action, including continuing environmental or institutional controls, is completed. (OAR 340-122-470) If you are not already working with the Department to investigate or clean up the facility, please contact the Department if you have conducted or plan to initiate these activities. The Department will contact you before initiating any new action at the facility.

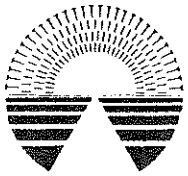
The Department will update the Confirmed Release List quarterly and make it available to the public upon request.

If you have specific questions about the Confirmed Release List, the proposed listing or site activities, or want copies of the Environmental Cleanup Law or rules, please contact the Site Assessment Section of the Environmental Cleanup Division at (503) 229-6170 or at the address shown above.

Sincerely,

Fred Hansen
Director

SL:m
SA\SM3167
Enclosures: Facility Report
cc: [DEQ REGION/PROGRAM]



SUNSET CORRIDOR ASSOCIATION

August 9, 1990

William Hutchison, Jr., Chairman
Environmental Quality Commission
811 S.W.Sixth Avenue
Portland, OR 97204

RE: Testimony for August 10, 1990 EQC Commission Meeting.
Unified Sewerage Agency's Urban Area Surface Water Management Plan

Dear Mr. Hutchison:

As an economic development organization influencing economic expansion in the Tualatin River Basin and recognizing that the environment is an unique component to the attractiveness of the area the association has followed the water quality issue with particular interest. The Association recognizes the need to assure high quality rivers and tributaries. Our interest is in seeing a thorough review of the options and that the solution (or solutions) be measured in cost to the public as well as effectiveness in meeting the standards adopted by the EQC.

The Association appreciates the manner in which USA has approached the large task of developing both a program plan for surface water management and wastewater treatment facilities in order to comply with the new standards. From our perspective the agency has worked diligently to meet the various timelines within the schedule prescribed by the EQC. We're also pleased that there has been a genuine interest by USA to work cooperatively with the various interest groups in studying the issue. Cooperation has encouraged a dialogue that will contribute to a thorough review of a broad spectrum of concerns and options to correct noted deficiencies.

However, we have serious reservations as to whether the schedule allows time for a responsible approach to further definition and then implementation of the various solutions. We seem to be adopting solutions without a clear understanding of how effective each will be. The technology needs to be tested in this region to be certain it will reach the assumptions expected. We urge that measures be tested to assure their effectiveness before public funds are spent.

The Association wants to be sure there is a process that assures the recommended solutions meet the TMDL standards and if found inadequate there be an opportunity to find alternative solutions without hamstringing development which in the long-term would be detrimental to the area's economy.

15455 N.W. Greenbrier Parkway
Suite 201
Beaverton, Oregon 97006
(503) 645-4410

We believe it is imperative that a "basin-wide" coordinated management plan be in place to effectively solve the water quality issues with respect to the Tualatin River Basin. Efforts have been made by numerous jurisdictions to reach a coordinated management plan for urban point source, non-point source and rural non-point source water quality discharge. However, to date there remains some unfinished business in this area. This is of concern to us and we would encourage you to bring together all independent efforts into a coordinated "basin-wide" solution. We are firmly convinced that without this coordinated approach the ultimate private and public cost to improve water quality in the Tualatin Basin will not be distributed commensurate with the cause source.

The Sunset Corridor Association stands ready to support and participate in the development and implementation of an ecologically responsible and equitable comprehensive plan to solve our water quality problem. We believe that the plan presented today provides the foundation on which to build a sound program to enhance the future growth and liveability for the residents of Washington County.

Sincerely,

Betty Atteberry
Executive Director

SUNSET CORRIDOR ASSOCIATION

August 9, 1990

William Hutchison, Jr., Chairman
Environmental Quality Commission
811 SW 6th Ave.
Portland, OR 97204

RE: Testimony for the August 10, 1990 EQC Commission.
Unified Sewerage Agency's Wastewater Facilities Plan

Dear Mr. Hutchison:

The Board of Directors of the Sunset Corridor Association has reviewed the Recommended Plan for wastewater treatment facilities. Based on this review we are prepared to support the portions of the Recommended Plan which have proven value for the Tualatin Basin. The portions we are prepared to support are as follows:

1. We support the phosphorus detergent ban so long as reasonable industrial pretreatment/industrial user fee options are included in the plan.

2. We support the proposed concept of public education regarding water conservation and recycling.

3. We support the concept of rehabilitation of existing wastewater collection facilities so long as the expenditures for such rehabilitation will provide results that are cost effective and can be demonstrated to remedy actual existing problems which cannot be remedied by less expensive approaches.

4. We support the concept of a single standard for sewer specification and for inspection procedures throughout the region. The Unified Sewerage Agency should have a strong voice in setting up the standard that will be enforced and we agree that this standard should provide for a reasonably efficient and long lasting collection system. Specifications set up for future installations should be based on sound engineering criteria. If Unified Sewerage Agency assumes the responsibility for the inspection process then jurisdictions currently inspecting this work should be relieved of the responsibility to avoid duplication of effort and unnecessary cost.

5. We support the non-structural river flow management measures described and the preliminary feasibility study for additional reservoirs on the Tualatin River.

15455 N.W. Greenbrier Parkway
Suite 201
Beaverton, Oregon 97006
(503) 645-4410

The planned growth item in the Recommended Plan implies a greater role for the Unified Sewerage Agency in the area of land planning and comprehensive plan review. We understand that the Agency is involved as a commenting party in all actions which would involve change in land use patterns. We support the comprehensive plan and the periodic review process that currently exists, which already assess need for future public facilities. Any proposal which will give USA the ability to effect a building moratorium on its own will receive our strong opposition.

The use of user fees to fund the entire amount of capital necessary and the increased operating cost will increase sewer rates dramatically and have significant impact on the individual homeowner, as well as be damaging to prospects for future economic development in this region. We are adamantly opposed to funding a series of capital improvements, such as outlined in the plan, by simply raising user fees and connection fees. Funding by general obligation bonds and application for funding by other governmental agency sources are two possible sources of funding as suggested in the plan.

As proposed, the series of improvements in the Recommended Plan will be the largest public improvement project that has ever occurred in Washington County. There is a limit to the amount of money available for publicly funded projects such as this proposal as well as schools, streets and highways, libraries and the like. The amount of money proposed to clean up the Tualatin River will impact funding availability for these other projects which are also important to this region. Decisions as to the importance of each of the necessary publicly funded projects will need to be made during the life of this proposed project.

We have grave misgivings with respect to the ability to meet the levels established for phosphorus and ammonia in the Tualatin River. In their own Wastewater FAcilities Plan, Chapter VI Water Quality Issues and Requirements, USA sates, "two major uncertainties exist with respect to the phosphorus TMDLs: whether USA's attainment of the TMDLs for point sources will achieve the instream phosphorus concentration of 0.07 mg/L; and whether USA's attainment of the TMDLs will achieve the desired water quality in the Tualatin River." Not only do these two uncertainties exist, but background levels in soils and in river sediments are likely higher than previously believed and may preclude ultimate attainment of the TMDL's. This only further reinforces our recommendation for testing the proposed solutions.

A significant portion of the capital costs related to implementation of the Recommended Plan during the 1990-93 time period are for items involved in the reuse of treated effluent and the use of sludge on agricultural land. These are the most publicly controversial sections of

the plan and will likely require more than the time allowed in the plan to implement. The 200 acre sludge storage site and the acquisition of effluent reservoirs near the Banks, Forest Grove and Hillsboro West facilities will likely be a longer term siting process than this proposed plan assumes. Given the potential problems in siting facilities for storage of these materials and in gaining support for greater use of effluent and sludge in agricultural enterprises, we feel the expenditure of capital funds on facilities scheduled to be involved in the reuse of effluent and sludge use during the 1990-93 period will be premature. This portion of the plan must be undertaken with a much longer planning and education cycle than is contemplated.

We strongly believe the public interest will be better served by a more deliberate approach to the issue of phosphorus in the Tualatin River. Our Association supports enhancing the quality of the river but due to the complexity of the problem we believe the solutions should be implemented in incremental phases, measuring the effectiveness of each phase before proceeding. For example there are many opinions on how effective the ban on phosphorus containing detergent will reduce phosphorus at the treatment facilities. Once this solution is in place time should be given to measure its effectiveness and evaluate what implication the results have on the need for other measures. This would eliminate implementing unnecessary solutions at major costs to the public.

The Sunset Corridor Association takes the position that the currently mandated compliance schedule is unreasonable in the light of the fact that no public health or safety issue is involved at this time and that adherence to this schedule will result in the investment of substantial amounts of public funds in technology and improvements which may not achieve the desired results. A more deliberate approach will allow the Unified Sewerage Agency to refine its approach to the Tualatin River water quality issues, to find adequate and fiscally responsible funding sources and to make sure that appropriate dividends result from the public investment in the solution.

We don't believe there is sufficient information to insure that the solutions outlined in the plan will achieve the desired requirements. We are unwilling to approve vast expenditures of public monies until well founded solutions can be demonstrated. We believe a deliberate approach, to minimize the first three years expenditures while developing sound evidence that the outlined solutions will accomplish the intended objectives, is the only responsible approach.

We are prepared to continue to provide assistance and support to efforts to enhance the quality of the Tualatin River, so long as proper attention is paid to insuring that the money spent for such enhancement actually achieves results commensurate with the burden placed on the users of the system through increased user fees or other funding methods. We hope to be of assistance in this endeavor.

Sincerely,

Betty Atteberry
Executive Director

WQTESTI

Chemosphere, Vol.16, Nos.8/9, pp 2079-2084, 1987
Printed in Great Britain

0045-6535/87 $3.00 + .00
Pergamon Journals Ltd.

AN ESTIMATION OF THE RELATIVE HUMAN EXPOSURE TO 2,3,7,8-TCDD EMISSIONS VIA INHALATION AND INGESTION OF COW'S MILK

Paul Connett and Tom Webster

Chemistry Department, St. Lawrence University, Canton, NY 13617
Center for the Biology of Natural Systems, Queens College, Flushing, NY 11367

Abstract

We consider a model for estimating the concentration of 2,3,7,8-TCDD in milk from a cow grazing near an incinerator, given the ambient air concentration. We estimate that the daily dose received from this milk could be 200 times higher than the daily dose from inhalation of the same ambient air. Comparisons with other work in this area are made.

INTRODUCTION

In the USA several large refuse incinerators have been proposed for sites at which the plumes will impinge upon dairy farms. Despite the fact that measurements in Switzerland indicate that milk from cows grazing near a municipal incinerator have levels of dioxins and furans considerably greater than cow's milk from unexposed areas (1), few risk assessments have gone much beyond consideration of inhalation as a route of exposure. Studies which do attempt to assess exposure to PCDDs and PCDFs via food yield ratios of the relative exposure via dairy products and air (inhaled at the same point as the grazing cows) which vary by three orders of magnitude. In this analysis we examine the assumptions involved in estimates by the Swiss Federal Office for Environmental Protection (2), Olie et al (3), Danish National Environmental Protection Agency (4), and Highland (5), and then offer our own assessment.

MODEL PARAMETERS

d = deposition
C_a = groundlevel concentration
V_d = deposition velocity
d_{wet} = wet deposition
I = dose to cow per day
Q_g = fodder consumption per day
C_g = concentration in fodder
A_d^g = leaf deposition
U_d = uptake from soil
r^p = interception fraction
K_L = rate constant
K_L^p = photolysis rate
K_L^v = volatilization rate
K_L^w = weathering rate
Y_g = yield of fodder
t = growing time of fodder
F_m = transfer coefficient
C^m = concentration in whole milk
C^m = concentration in milk fat
F^f = fat content of whole milk
B = bioconcentration factor
k_1 = uptake constant
k_2 = elimination constant
X_2^m = consumption of milk per day
A^m = absorption from milk
D^m = human dose from milk
X^m = inhalation of air per day
A^a = retention/absorbtion from air
D^a = human dose from inhalation
M^a = ration of dose from milk to dose from inhalation

THE MODEL

The exposure model we adopt is based upon methodology developed by the U.S. Nuclear Regulatory Commission to predict human exposure to radionuclides emitted by nuclear power plants, as generalized by Moghissi et al (6), to include organic compounds. The concentration of 2,3,7,8-TCDD in cow's milk is estimated from the concentration in ambient air in several steps: 1) deposition onto fodder, 2) concentration in the fodder, 3) transfer from fodder to milk, and 4) consumption of milk by humans.

1) Deposition: Deposition of particulates onto soil and plant surfaces occurs through dry

deposition and wet deposition (precipitation washout).

$$d=C_a V_d+d_{wet}$$

2) Concentration in Fodder and Dose to Cow: Plants could accumulate TCDD through direct deposition onto the plant surfaces, uptake through roots, or absorption from ambient air. The interception fraction, modelled by Baes (7), determines the fraction of ground surface covered by the plant; it is a function of the type of plant and its dry yield. We assume that deposited material is removed via a series of first order processes including photolysis, volatilization and weathering. For each type of fodder:

$$I=C_g Q_g$$

$$C_g=(A_d+U_p)d$$

$$A_d=r(1-\exp(-K_{Lt}))/(Y_g K_L)$$

$$K_L=K_p+K_v+K_w$$

If the growing time is much longer than the half-life associated with the overall rate constant, the equation simplifies:

$$Ad=r/(Y_g K_L) \quad \text{for } t>>t_{1/2}; \quad t_{1/2}=\ln 2/K_L$$

An "effective grazing area", the area of plant material that a grazing cow contacts in a day, can be estimated by:

$$G=\text{sum}(r_i Q_i/Y_i) \qquad i=\text{types of fodder}$$

For negligible uptake from soil ($U_p=0$) and $t>>t_{1/2}$

$$I=\text{sum}(C_{f,i}Q_i)=\text{sum}(r_i Q_i/(Y_i K_L)d=Gd/K_L$$

3) Transfer to milk: 2,3,7,8-TCDD in particulate contaminated fodder is partially absorbed by a cow, accumulates in body fat and is excreted in the fat portion of the milk. Concentration of the compound in body fat and milk fat are approximately equal (8). The transfer coefficient is defined as the ratio of the concentration of the compound in milk to the amount ingested per day. It is related to the bioconcentration factor, the ratio of the concentration in milk fat to the concentration in fodder.

$$F_m=C_m/I=fC_f/(C_g Q_g)=fB/Q_g$$

$$C_m=fC_f$$

$$B=C_f/C_g$$

4) Human Doses from Milk and Air: The average daily human doses from consumption of milk is the product of the concentration in the milk, the amount of milk consumed per day, and the absorption from the milk. A similar equation applies to inhalation of ambient air.

$$D_m=C_m X_m A_m$$

$$D_a=C_a X_a A_a$$

We define the dose multiplier as the ratio of the dose from milk to the dose via inhalation.

$$M=D_m/D_a$$

FACTORS

Deposition Velocity (V_d):

As the vapor pressure 2,3,7,8-TCDD is about 7×10^{-10} torr (9), we assume that 2,3,7,8-TCDD will be predominantly attached to particulates at ambient conditions (10). The deposition velocity is defined as the dry deposition flux divided by the groundlevel concentration. It is greater than the gravitational settling velocity for small particles due to

the effects of inertial impaction and Brownian motion. The deposition velocity is a function of particle size, density, wind speed and surface characteristics. Moghissi (6) suggests a V_d of 1 cm/s for deposition onto vegetation. This value is supported experimentally by Chamberlain who found deposition velocities of 5 um polystyrene particles to grass ranging from 0.16 to 1.2 cm/s depending on wind speed (11). Wet deposition is smaller than dry deposition so we have chosen to ignore it.

A deposition velocity of 1 cm/s was also used by Olie and the Swiss EPA, and lies within the range calculated by the Danish EPA. Highland's value of 0.25 cm/s is inadequately documented in his report and is the lowest of the group (See Table I).

Persistence on Leaves (K_L):

We consider only direct deposition onto plant surfaces as uptake of 2,3,7,8-TCDD from soil into plants is not thought to be important (12). We ignore volatilization and absorption because we assume the 2,3,7,8-TCDD is tightly bound to particulates. While photolysis of 2,3,7,8-TCDD may be rapid in the vapor phase in the presence of hydrogen donors or when sprayed with an herbicide, the rate for the particular bound compound is not known (9). Hence, we assume that K_p and K_v are negligible compared to K_w. Baes (7) estimates the weathering half-life of particles containing radionuclides to be about 14 days as does Moghissi (6). The Swiss EPA and Olie also use a halflife on plants of 14 days while Highland uses 15 days based on measurements of the persistence of pesticides. The Danish figure was not reported.

Effective Grazing Area (G)

Calculation of effective grazing area requires agricultural parameters specific to a locale. We have used data for northern New York State. According to Baes (7), typical dry yields (per harvest) of hay, pasture grass, and silage for this area are 0.147, 0.017, and 0.917 kg/m^2, respectively. Using Baes' (7) equations for estimating interception fractions based on dry yield, the interception fractions for hay is 0.35, for pasture grass 0.048, and for silage 0.51. We assume that the interception fraction for grain is zero. Amounts of dry fodder consumed per day by a dairy cow are derived from Baes (7): 11 kg/d of forage crops and 7 kg/d of grain, a total of 18 kg/d. The forage requirements are distributed among component crops according to local harvest figures: 6.1 kg/d of hay, 2.1 kg/d of pasture grass and 2.8 kg/d of silage. The effective grazing area is thus 22 m^2/day. We assume that the growing season is large compared to the weathering half-life.

The Swiss, Danish and Olie studies do not consider r or Y explicitly; all three use an effective grazing area of 60 m^2/day. Highland uses a single value of r of 0.39 for all fodder, a total wet weight of fodder of 29.6 kg/day, and a weighted average yield of 1.99 kg/m^2(wet); use of this weighted average appears to be incorrect.

Transfer Coefficient (F_m)

Lactating cows have been exposed to 2,3,7,8-TCDD in only one experiment (13). Experiments involving steers (14) are not as useful because the elimination constants should differ due to lactation. Single compartment elimination models have been found to describe behavior of 2,3,7,8-TCDD in rats (15) and higher chlorinated dioxins in cows (8). A single compartment bioaccumulation model can be described by (16):

$$dC_f/dt = k_1 C_g - k_2 C_f$$

The solution to this equation is:

$$C_f(t) = (k_1/k_2) C_g (1-\exp[-k_2 t]) + A\exp[-k_2 t] \; ; \quad A = x(0)$$

At steady-state, uptake and elimination are equal, so the steady-state bioaccumulation

factor is:

$$B_{ss}=k_1/k_2$$

B is determined experimentally by feeding a cow a constant concentration of TCDD and measuring the concentration in milk fat. Jensen et al. (14) complicated the calculation somewhat by increasing the amount of TCDD periodically. They measured the half-life of elimination as 41 days, resulting in a value of k_2 of 0.017 per day. We estimated the B_{ss} for each cow from their data by examining the rise in milk fat concentration at the highest C_g, setting the constant A equal to the value measured at the beginning of this dosing period:

$$B_{ss}=[C_f(t)-A\exp(-k_2*t)]/[C_g(1-\exp(-k_2*t)]$$

This resulted in B_{ss} values of 9.7, 11.3 and 15.7 for the three cows. The values can vary between animals because k_1 depends partly on animal specific parameters such as fat as a fraction of body weight. To validate the model we compared measured values of 2,3,7,8-TCDD in milk fat with values computed by simulating the above differential equation varying C_g as a step function and assuming 40 g of fat per liter (8). The fit between modelled and experimental values has an r-square of 0.94 with 18 observations.

The average B_{ss} of the three cows, 12.2 has to be adjusted to take into account absorption of 2,3,7,8-TCDD from fly ash contaminated feed as opposed to PCP contaminated feed as was the case in Jensen's experiment. We estimated the difference in absorption as 33% based on the work of Van den Berg et al (17) comparing liver retention in rats fed fly ash with extracts of fly ash. Thus, F_m is computed using a BCF of 4.1:

$$F_m = fB/Q_g=0.009 \text{ day/l}$$

The Swiss value of F_m, which is higher than the other estimates is based upon a feeding experiment which is not well defined in their paper so we cannot properly evaluate this figure.

Olie bases his estimate on 1,2,3,6,7,8-HxCDD, assuming daily excretion in milk as 30% of intake (8). Olie assumes 10% uptake from fly ash compared to food (17), and 20 l/day of milk production. However, steady state was not reached in the 70 day feeding experiment, and this isomer has a different halflife from 2,3,7,8-TCDD.

The Danish study assumes 5% excretion in milk from daily intake and 20 l/day of milk production. No experimental source for these assumptions are presented.

Highland bases his estimate of F_m on Holton's (18) regression equation and a K_{ow} for 2,3,7,8-TCDD of 6.84. This equation is derived from work by Kenaga (19) who regressed log(BCF) against log(K_{ow}) for 23 organic compounds including 2,3,7,8-TCDD. Unfortunately, Kenaga's equation underpredicts for 2,3,7,8-TCDD, resulting in an estimated BCF of 0.42 instead of the value of 3.5 listed in Kenaga's raw data (which is not a steady-state value).

Average Daily Milk and Dairy Product Consumption: Xm

Both the Swiss EPA and Olie assume an average daily consumption of milk and dairy products of 1.5 liters. The Danish EPA assumes consumption of 1 l/d. Highland assumes 0.38 kg/d for the average milk consumption in the USA; this does not include dairy products. While people in the area of the incinerator will probably drink milk from cows grazing nearby, it is likely that many of the dairy products they consume will originate elsewhere. In our calculations we have used figures for both average and high level milk consumers (6).

Air Inhaled (X_m), Absorption from Milk (A_m) and Air (A_m)

All of the studies assume that 100 % of the dioxin present in milk fat is absorbed.

The Swiss EPA, Danish EPA and Olie assume 100% absorption from air; Highland assumes 29%. We follow the USEPA approach and use a combined retention and bioavailability factor of 75% (12).

The Swiss EPA and Olie assume that an individual inhales 13 m^3/day, the Danish EPA 20 m^3/day and Highland 41 m^3/day (assuming an individual doing light work). We use the USEPA's value of 20 m^3/day (12).

RESULTS

Assuming that a person drinks milk from a cow grazing at the same point as the person breathes, the milk-to-air dose multiplier (M) is:

$$M=V_d G F_m X_m A_m/(K_L X_a A_a)$$

Table I lists the parameter values assumed by the different studies and shows values of M we calculated from these parameters with our model. None of the other studies explicitly calculates M. Although the form of our model is isomorphic with those considered in the other studies, computations using their models might give slightly different results (e.g., Highland includes root uptake and wet deposition).

Our estimates indicate that the dose of 2,3,7,8-TCDD in milk from a cow grazing near an incinerator could exceed that obtained from breathing the ambient air by two orders of magnitude. This estimate is of the same order of magnitude as estimates derivable from work by the Danish EPA and Olie, but is an order of magnitude lower than that of the Swiss EPA and two orders of magnitude higher than an estimate based on Highland's parameters.

Table I

Comparison of Parameter Values and Resulting Dose Multiplier

Parameters / units	V_d (cm/s)	$1/K_L$ (d)	G (m^2/d)	F_m (d/kg)	X_m (kg/d)	A_m (-)	X_a (m^3/d)	A_a (-)	M* (-)
Swiss EAP[2]	1	20.2	60	0.013	1.5	1	13	1	1570
Olie et al[3]	1	20.2	60	0.0015	1.5	1	13	1	180
Danish EPA[4]	0.5-3.7	NA	60	0.0025	1	1	20	1	310
Highland[5]	0.25	21.6	5.8	0.00195	0.38	1	41	0.29	1.7
This study									
high X_m	1	20.2	22	0.0091	0.88	1	20	0.75	205
ave X_m					0.36				

* Values of M calculated in current paper use paramenters from the cited studies except for the Danish EPA value of M which is reproduced from their estimate for an incinerator in a rural area.

Using the ambient air concentration for 2,3,7,8-TCDD of 0.05 pg/m^3, 3.3% of the total TCDD measured near a Dutch incinerator by Olie (3), our model predicts 4 ppt. of 2,3,7,8-TCDD in milk from a cow grazing there. Parameters from the other studies predict: 17 ppt for the Swiss EPA, 2 ppt for Olie, 0.07 ppt for Highland. We cannot predict the value for the Danish study as one parameter is missing. Milk from cows grazing near a "typical" Swiss incinerator contained 1.1 and 1.2 ppt of 2,3,7,8-TCDD (1).

DISCUSSION

Our estimates indicate that one liter of milk is equivalent to breathing the air at the same point as the grazing cow for about eight months. The daily dose could be even higher for high-fat dairy products produced from this milk. For example, ingestion of one quarter pound of butter would be equivalent to about 1.5 years of inhalation. Of particular concern are manufacturers of high-fat dairy products (butter, cheese, chocolate, ice

cream, etc.) who obtain most of their milk from an area near an incinerator. We believe health risk assessments for incinerators proposed at sites near farms must include a thorough analysis of exposure via food.

References

1. Swiss Federal Office for Public Health, Bulletin No. 8, pp. 66-69 (1985).
2. Swiss Federal Office for Environmental Protection, Bulletin No. 5 (1982).
3. K. Olie, M.v.d. Berg, O. Hutzinger, Chemosphere 14, 627-636 (1983).
4. Danish National Environmental Protection Agency, "Formation and Dispersion of Dioxins, Particularly in Connection with Combustion of Refuse," (1984).
5. J. Highland, "Site Selection Process. Phase 4a: Selection of a Preferred Site(s), Generic Risk Assessment. Volume 1,2," prepared for the Ontario Waste Management Corporation by Environ, Inc., 1986.
6. A. Moghissi, R. Marland, F. Congel, K. Eckerman, in: "Dynamics, Exposure and Hazard Assessment for Toxic Chemicals," R. Haque (ed), Ann Arbor Science, Michigan (1980).
7. C. Baes, R. Sharp, A. Sjoreen, R. Shor, "A Review and Analysis of Parameters for Assessing Transport of Environmentally Released Radionuclides through Agriculture," Oak Ridge National Laboratory, ORNL-5786 (1984).
8. D. Firestone, M. Clower, A. Borsetti, R. Teske, P. Long, J. Agric. Food Chem., 27, 1171-1177 (1979).
9. R. Podoll, H. Jaber, T. Mill, Environ, Sci. Technol. 20, 490-492 (1986).
10. T. Mill, in: Dioxins in the Environment, M. Kamrin and P. Rodgers (Ed), Hemisphere Publishing, NY (1986).
11. A. Chamberlain Proc. R. Soc. A 296, 45-71 (1967).
12. USEPA, "Health Assessment Document for PCDDs," EPA/600/8-84/014F (1985).
13. D. Jensen, R. Hummel, Bull. Envir. Contam. Toxic., 29, 440-446 (1982).
14. D. Jensen, R. Hummel, N. Mahle, C. Kocher, H. Higgins, J. Agric. Food Chem. 29, 265-268 (1981).
15. J. Rose, J. Ramsey, T. Wentzler, R. Hummel, P. Gehring, Toxic. App. Pharm., 36, 209-226 (1976).
16. D. Hawker, D. Connell, Chemosphere, 14, 1205-1219 (1985).
17. M. van den Berg, K. Olie, O. Hutzinger, Chemosphere, 12, 537-544 (1983).
18. G. Holton, "Multiple Pathways Screening Level Assessment of a Hazardous Waste Facility," Oak Ridge National Laboratory, ORNL-TM-8652 (1984).
19. E. Kenaga, Envir. Sci. Technol, 14, 553-556 (1980).

Presented at the Ninth International Symposium
on Chlorinated Dioxins and Related Compounds
(Dioxin '89), Toronto, Ontario, Sept. 17-22, 1989.
Submitted to Chemosphere.

THE USE OF BIOCONCENTRATION FACTORS IN ESTIMATING THE 2,3,7,8-TCDD CONTENT OF COW'S MILK

Thomas Webster* and Paul Connett

*Center for the Biology of Natural Systems, Queens College,
Flushing, NY 11367, U.S.A.
Chemistry Department, St. Lawrence University,
Canton, NY 13617, U.S.A.

ABSTRACT

Models of 2,3,7,8-TCDD contamination of cow's milk from the atmosphere are compared with field data. Direct deposition and/or vapor adsorption are more important than bioconcentration from soil. Attention must be paid to the experimental conditions under which BCFs are estimated.

KEYWORDS

Bioconcentration; cow's milk; dioxin; deposition; vapor adsorption

INTRODUCTION

Because food is now recognized as the major exposure route of humans to PCDD and PCDF, bioconcentration factors (BCFs) have assumed critical importance in environmental modelling. Unfortunately, risk assessors have been insufficiently cautious in this regard. Particularly troublesome is the extrapolation of experimentally derived BCFs to field conditions where they do not apply. The best solution to this problem lies in the validation of environmental fate models with field data. We will examine this and related pitfalls using contamination of cow's milk by atmospheric 2,3,7,8-TCDD as an example.

Models of the Air to Cow's Milk Pathway

Dairy cattle can be exposed to atmospheric pollutants by ingestion of contaminated feed, soil and water, and inhalation of ambient air. A commonly used model is (neglecting water):

$$dep = Ca*Vd + \text{wet deposition} \quad (1)$$

$$Cp = r*dep/(Y*Kl) + BCFp*Cs \qquad \text{for } t \gg th \quad (2)$$

$$Cm = BCFmf/Q*f*(Ap*Cp*Qp+As*Cs*Qs+Aa*Ca*Qa) \quad (3)$$

Parameters are defined at the end of this paper. Soil is contaminated by deposition from the air (equations not shown). Contamination of feed occurs via two processes. The first term in (2) describes direct deposition. The second term estimates concentrations in feed contaminated via all routes from soil--root uptake and translocation, volatilization, resuspension of dust--using an empirically derived BCFp. BCFp should predict the concentration in the above-ground parts of feed plants eaten by cows. The quantity BCFmf/Q*f

in (3)--commonly referred to as a transfer factor (Fm)--gives concentration in milk as a function of intake. (See Connett and Webster, 1987, for a more complete description of the model).

Four recent papers have analyzed the air to cow's milk pathway for 2,3,7,8-TCDD (Connett and Webster, 1987; McKone and Ryan, 1989; Michaels, 1989; Travis and Hattemer-Frey, 1987). Although all four models fit the framework of the general model described above, they differ in terms of individual parameters, particularly the BCFs. Table 1 summarizes the important sub-pathways for each of the models.

Table 1. Structure of Four Air to Cow's Milk Models

Model	Direct Deposition to Plants	Soil to Plant	Soil Ingestion	Plant Ingestion	Inhalation
Michaels	Negl.	X	-	X	-
Connett & Webster	X	Negl.	-	X	-
Travis & Hattemer-Frey[a]	X	X	X	X	-
McKone & Ryan	X	X	X	X	X

X=included in model; -=not included; Negl.=assumed negligible
a. Also includes a negligible exposure via water

Comparison with Field Data

The true test of such models is a comparison with field data. Hattemer-Frey and Travis (1989) state that their model has been "verified by empirical studies." Assuming background levels of 2,3,7,8-TCDD in air of 2.2×10^{-16} mol/m3 (70 fg/m3) and soil of 6.85×10^{-9} mol/m3 (1.5 pg/g), they predicted concentrations in cow's milk of 0.04 pg/g. This result was compared to background levels of 0.01 and 0.03 pg/g measured by Beck et al. (1987) and Rappe et al. (1987).

The cited data may not validate the model. The concentration used for background air (70 fg/m3), referenced to Eitzer and Hites (1986), appears to be a value for total TCDD, not 2,3,7,8-TCDD. More recent work by Eitzer and Hites (1989) in the same city, Bloomington, Indiana, resulted in an average total TCDD level of 1.5 fg/m3. Air samples from a rural area of Wisconsin showed total TCDD concentrations of 0.3 fg/m3 (data from Eitzer and Hites as reported by Edgerton et al., 1989). The background air concentration of 2,3,7,8-TCDD experienced by dairy cows remains poorly known.

The concentrations in milk cited by Hattemer-Frey and Travis may not represent a true background. Beck et al. (1987) found 2,3,7,8-TCDD at 0.33 pg/g (fat basis) in one sample. Seven other samples were at or below the detection limit of 2 pg/g (fat basis). Rappe et al. (1987) took two samples within 1 km of municipal incinerators and one about 1 km from a chlorinated chemical industry plant. While the geometric average of these three samples is about 0.03 pg/g, 2,3,7,8-TCDD was not detected in three other samples, two of them pooled controls (DL=0.01-0.013 pg/g). Better background data are required before this approach can be used to validate models.

Fortunately, field data have been taken near a copper wire reclamation plant in Brixlegg, Austria. Riss et al. (1988, 1989) measured soil, hay and milk

samples from the same location on a farm situated 1400-2200 m downwind of the plant. Christmann et al. (1989) sampled air 250-300 m downwind, a distance thought to correspond to high soil concentrations. Concentrations of total TCDD in grass varied by only about a factor of two over the distance 285-2900 m, so the fact that the air sample was taken closer to the source may make little difference.

Because of the small number of data points and the different location for the air sample, conclusions drawn from these data are suggestive, rather than definitive. Nevertheless, it provides some insight into the four models. Assuming an average air concentration of 0.1 pg/m3 (Sample I, Christmann et al., 1989) and a soil concentration of about 2 pg/g (Riss et al., 1988), Table 2 shows the concentrations of 2,3,7,8-TCDD in hay and milk fat predicted by the four models. All of the models underpredict levels in hay, while two of the models substantially underpredict milk fat concentrations.

For purposes of comparison with the other models, Tables 2-4 are computed using the expected values for parameters listed by McKone and Ryan (1989). As they point out, such use of expected values can generate exposure estimates significantly less than the expected value computed using Monte Carlo techniques. Indeed, their 90% confidence bounds on human exposure via cow's milk contaminated by air spans orders of magnitude. The large uncertainty was due primarily to uncertainty in biotransfer factors and deposition velocity, factors which field data can help reduce.

Table 2. Measured and Predicted Concentrations of 2,3,7,8-TCDD in Dry Hay and Milk Fat (pg/g)[a]

	Measured[c]	Michaels	Connett & Webster	Travis & Hattemer-Frey	McKone[b] & Ryan
dry hay	9.4	0.06[d]	4.2	0.17	3.4
milk fat	15.7	0.3	10[e]-17[f]	1.6	23

a. Assuming Ca=0.1 pg/m^3 and Cs=2 pg/g.
b. Product of expected values of parameters.
c. Brixlegg data from Riss et al. (1988, 1989), Christmann et al. (1989)
d. Moisture not specified. A correction factor would depend on the moisture content of the plant used in the BCFp experiment.
e. Computed with a biotransfer factor, assuming a mixed diet.
f. Computed with BCFmf, assuming the cow consumes only hay.
NOTE: The field BCFmf=1.7

Air and Soil to Plant

The major distinction between the four models lies in the transfer of 2,3,7,8-TCDD from air or soil to plants. This is primarily due to the different treatment of direct deposition.

The lowest estimates of hay and milk contamination in Table 2 come from Michaels' (1989) model which, unlike the others, excludes explicit estimation of direct deposition. Michaels estimated BCFp using a set of data that included root crops. Since roots bioconcentrate 2,3,7,8-TCDD more readily than the above-ground parts of plants, Michaels argued that his BCFp provides a safety factor of at least two that accounts for other pathways such as direct deposition. The New York State Department of Health concurred (1988), based on numerical comparisons of Michaels' model with other health risk assessments which used direct deposition. However, they compared estimates of the dose humans would receive from produce; this tells us little about the air to cow's milk pathway.

Table 3. Air/Soil to Fodder Parameters

Parameter	Michaels	Connett & Webster	Travis & Hattemer-Frey	McKone[a] & Ryan
Vd (cm/s)	1.36[b]	1	0.23	0.58[c]
r/Y (m^2/kg)	-	2.4	0.4	2.1
K1 (d^{-1})	-	0.0495	0.0495	0.039
BCFp	0.03	negl.	0.003	0.03
% deposition[d]	0	100	96	98

a. Expected values b. Estimated from Michaels (1989)
c. Not strictly comparable as r and wet deposition are included.
d. Percent of Cp due to direct deposition with Ca=0.1 pg/m3 and Cs=2 pg/g

Table 4. Fodder to Cow's Milk Parameters

Parameter	Michaels	Connett & Webster	Travis & Hattemer-Frey	McKone[a] & Ryan
BCFmf	5	12	25[b]	8.7[b]
Ap	1	0.33	1	1
f	0.04	0.04	0.0368	0.05
Fm (d/kg)	-	0.027[c]	0.058	0.02
Qp (kg/d)	-	11[d]	5[d]	17
Qs (kg/d)	-	-	0.1	0.46
% feed[e]	100	100	81	98

a. Expected values b. Calculated from Fm
c. Unlike Connett and Webster (1987), Ap is shown separately.
d. Exposed fodder
e. Percent of Cmf due to feed assuming Ca=0.1 pg/m^3 and Cs=2 pg/g.

The Brixlegg data show that bioconcentration from soil cannot account for the 2,3,7,8-TCDD levels found in hay (See Tables 2, 3). The concentration in hay divided by the concentration in soil is 5.5, much greater than the range of BCFp values assumed by the models: 0.003-0.03. Hence, indirect contamination via soil is probably negligible compared to direct contamination from the air. Indeed, given the concentrations assumed for air and soil in Table 3, the two models that include both pathways estimate that direct deposition is much larger than bioconcentration. The predominance of contamination from the air rather than from soil is suggested by Riss and Hagenmaier (1989) who noted that the homologue pattern found in grass matches ambient air rather than soil.

In addition to comparison with field data, assumptions made in risk assessments about bioconcentration factors can be judged in another way. In order for an empirical BCFp to predict field conditions, the experiments should include all important processes found in the field. The experiments cited by Michaels (1989) involved plants growing in contaminated soil, rather than plants exposed to deposition (continuous or repeated) from the air, as would occur in the air to cow's milk scenario. Given this crucial omission, it is not surprising that the model underpredicts concentrations in hay and milk.

Although the direct deposition model matches the field data much better than bioconcentration from soil, Table 2 indicates that this approach may also underpredict levels in hay. The discrepancy might, of course, be due to the data quality problems mentioned earlier, but there is a more interesting possibility. All four models assume deposition of particulate-bound 2,3,7,8-TCDD. Recent work by Eitzer and Hites (1989) indicate that a substantial fraction of TCDD will be in the vapor phase. This suggests that an additional pathway for contamination of feed needs to be taken into account: direct adsorption of vapor from the air. Reischl et al. (1989) predicted air to spruce needle partition factors for total TCDD of about 25000 and 43000 (w/w) using two regression models. The concentrations of total TCDD in recent spruce needles from Brixlegg appears to be within a factor of two of grass sampled at similar distances (Riss et al., 1988). Application of Reischl's partition factors to the assumed Brixlegg air concentration results in 2,3,7,8-TCDD concentrations in dry hay of 2.1-3.6 pg/g. Although dependent on a number of assumptions which require further study, this alternative model appears to explain the field data as well as the more traditional deposition model. A combination of the particulate deposition and vapor adsorption models may be appropriate. Such a model would include a vapor/particulate partition factor that depends on ambient temperature and the vapor pressure of a compound (Eitzer and Hites, 1989).

Plant to Cow's Milk

The dominant route of exposure for Brixlegg cows is probably ingestion of fodder, not inhalation or ingestion of soil (See Table 4). Soil ingestion would be more significant in the case of a toxic waste site, where soil was the source of contamination rather than air.

Revealing differences between the four models lie in the derivations of the plant to cow's milk bioconcentration factors:

1) Michaels (1989) chose a BCFmf for 2,3,7,8-TCDD based on values of four for beef cattle (Jensen et al., 1981) and five for similar compounds in dairy cattle (Fries, 1987). However, Jensen et al. (1981) estimated a steady-state value of 25 for beef cattle.

2) Connett and Webster (1987) calculated a steady-state BCFmf of 12 for dairy cattle from Jensen and Hummel's data (1982). We reasoned, based on experiments with rats, that the bioavailability of 2,3,7,8-TCDD attached to fly ash in cow's feed would be about one third of that in Jensen and Hummel's (1982) experiment in which 2,4,5-T was added directly to feed.

3) Travis and Hattemer-Frey (1987) estimated their transfer factor with a regression equation based on octanol-water partition coefficients (Kow). This relatively uncertain value was used despite the fact that Travis and Arms (1988) constructed the regression equation using an experimental value for 2,3,7,8-TCDD. The latter, derived from Jensen and Hummel (1982), was not steady-state.

4) McKone and Ryan (1989) relied on the empirical transfer factor for dairy cattle listed by Travis and Arms (1988) to compute the expected value listed in Table 4.

These assumptions may be judged by their compatability with the field conditions. Steady-state bioconcentration factors should be used since exposure is much longer than the 41 day halflife of 2,3,7,8-TCDD in lactating dairy cows (Jensen and Hummel, 1982). Since lactation is an efficient means

of excretion, data from dairy cattle are preferrable to data from beef cattle. A reduction of bioavailability relative to experiments is probably needed for 2,3,7,8-TCDD bound to fly ash and soil; data on the bioavailability of adsorbed vapor are not available. Compound-specific experimental data are generally preferrable to estimates for a number of reasons: i) possible non-linearities, real or experimental, in the relationship between BCF and Kow; 2) metabolism can depend on factors other than Kow (e.g., whether PCDDs or PCDFs are 2,3,7,8-substituted or not); 3) poorly known Kow values; 4) increased uncertainty when estimating values near the upper end of the data used in the regression.

The Brixlegg milk samples were taken from cows "fed almost exclusively with hay from the sampled area" (Riss, 1988). The apparent field BCFmf is about 1.7 (Table 2), a value lower than that assumed by all four models. Possible explanations include variability in the field data and a relative bioavailability lower than that assumed by Connett and Webster (1987). In addition, Jensen and Hummel's dairy cow experiment (1982) does not specify the moisture content of the feed. Application of a wet weight BCFmf to dry hay would overestimate the concentrations in milk fat.

CONCLUSIONS

A comparison of field data with estimates of 2,3,7,8-TCDD concentrations in hay and milk show that models which only examine bioconcentration from soil are inadequate. Direct deposition, and possibly vapor adsorption, should be included. Reviews of health risk assessments demand critical analysis of scientific assumptions, not just numerical analysis of results. In particular, the experiments from which bioconcentration factors are derived must be relevant to the application of the health risk assessment. Care must be taken in validation of models, but new laboratory and field data will help reduce the large uncertainty in exposure assessment. Given the high degree of bioconcentration of 2,3,7,8-TCDD and related compounds, caution should be exercised in siting new emissions sources in dairy country.

DEFINITIONS OF SYMBOLS

dep	= deposition	Ca	=concentration in air
Vd	= deposition velocity	Cs	=concentration in soil
r	= interception fraction	Cp	=concentration in fodder
Y	= yield	Cmf	=concentration in milk fat
Kl	= leaf rate constant	Qa	=inhalation by cow
f	= fat content of milk	Qs	=soil ingestion by cow
BCFp	= soil to dry fodder bioconentration factor	Qp	=fodder ingestion by cow
		Q	=ingestion in BCF experiment
BCFmf	= dry fodder to milk fat bioconcentration factor	Aa	=air relative bioavailability
		As	=soil relative bioavailability
th	= halflife corresponding to Kl	Ap	=feed relative bioavailability

REFERENCES

Beck, H., K. Eckart, M. Kellert, W. Mathar, C. Ruehl, R. Wittkowski (1987). Levels of PCDFs and PCDDs in Samples of Human Origin and Food in the Federal Republic of Germany. Chemosphere 16: 1977-1982.

Christmann, W., K. Kloeppel, H. Partscht, W. Rotard (1989). Determination of PCDD/PCDF in Ambient Air. Chemosphere 19: 521-526.

Connett, P. and T. Webster (1987). An Estimation of the Relative Human Exposure to 2,3,7,8-TCDD Emissions via Inhalation and Ingestion of Cow's Milk. Chemosphere 16: 2079-2084.

Edgerton, S., J. Czuczwa, J. Rench, R. Hodanbosi, P. Koval (1989). Ambient Air Concentrations of Polychlorinated Dibenzo-p-dioxins and Dibenzofurans in Ohio: Sources and Health Risk Assessment. Chemosphere 18: 1713-1730.

Eitzer, B. and R. Hites (1986). Concentrations of Dioxins and Dibenzofurans in the Atmosphere. Intern. J. Environ. Anal. Chem. 27: 215-230.

Eitzer, B. and R. Hites (1989). Polychlorinated Dibenzo-p-dioxins and Dibenzofurans in the Ambient Air of Bloomington, Indiana. Environ. Sci. Technol. 23: 1389-1395.

Fries, G. (1987). Assessment of Potential Residues in Foods Derived from Animals Exposed to TCDD-Contaminated Soil. Chemosphere 16: 2123-2128.

Hattemer-Frey, H. and C. Travis (1989). Comparison of Human Exposure to Dioxin from Municipal Waste Incineration and Background Environmental Contamination. Chemosphere 18: 643-649.

Jensen, D., R. Hummel, N. Mahle, C. Kocher, H. Higgins (1981). A Residue Study on Beef Cattle Consuming 2,3,7,8-Tetrachlorodibenzo-p-dioxin. J. Agric. Food Chem. 29: 265-268.

Jensen, D. and R. Hummel (1982). Secretion of TCDD in Milk and Cream Following Feeding of TCDD to Lactating Dairy Cows. Bull. Envir. Contam. Toxicol. 29: 440-446.

McKone, T. and P. Ryan (1989). Human Exposures to Chemicals Through Food Chains: An Uncertainty Analysis. Environ. Sci. Technol. 23: 1154-1163.

Michaels, R. (1989). Health Risk Assessment for the Planned St. Lawrence County, New York, Resource Recovery Facility. RAMTRAC, Long Island City, NY.

New York State Department of Health (1988). Letter dated Nov. 14. Included in Addendum 3 of Michaels (1989).

Rappe, C., M. Nygren, G. Lindstroem, H. Buser, O. Blaser, C. Wuethrich (1987). Polychlorinated Dibenzofurans and Dibenzo-p-dioxins and Other Chlorinated Contaminants in Cow Milk from Various Locations in Switzerland. Environ. Sci. Technol. 21: 964-970.

Reischl, A., M. Reissinger, H. Thoma, O. Hutzinger (1989). Uptake and Accumulation of PCDD/F in Terrestial Plants: Basic Considerations. Chemosphere 19: 467-474.

Riss, A., H. Hagenmaier, U. Weberruss, C. Schlatter, R. Wacker (1988). Comparison of PCDD/PCDF Levels in Soil, Grass, Cow's Milk, Human Blood and Spruce Needles in an Area of PCDD/PCDF Contamination Through Emissions from a Metal Reclamation Plant. Presented at Dioxin '88, Umea, Sweden and submitted to Chemosphere.

Riss, A. and H. Hagenmaier (1989). Environmental Monitoring of PCDD/PCDF in the Vicinity of a Metal Reclamation Plant in Tyrol/Austria. Presented at Dioxin '89, Toronto, Ontario.

Travis, C. and H. Hattemer-Frey (1987). Human Exposure to 2,3,7,8-TCDD. Chemosphere 16: 2331-2342.

Travis, C. and A. Arms (1988). Bioconcentration of Organics in Beef, Milk, and Vegetation. Environ. Sci. Technol. 22: 271-274.

Ida Honorof
P. O. BOX 346 (#407)
CUTTEN CALIF. 95534
Vol XVIII-Mar/88

Report to the Consumer"

DIOXIN IN HUMAN BREAST MILK

Reports on DIOXIN dominated the annual (1986) N.Y.. meeting of the American Chemical Society. Dr. Arnold Schecter, professor of preventive medicine at the State University of New York in Binghamton, said it was difficult to prove that dioxins in the environment are killing Americans because they are so widespread that it is difficult to define a dioxin-related illness. "Our studies," he commented, "suggest that the fatty tissue of the average American contains about 7.2 parts per trillion (ppt) of 2,3,7,8-TCDD dioxin. This means that the general population of the U.S. cannot be considered a control group in assessing the health effects on people known to have had unusually high exposure to dioxins."

With the help of the Vietnamese government, Dr. Schecter and colleagues obtained biopsy tissue and mothers' milk from residents of the northern and southern regions of Vietnam. They found that the mean level of dioxins in the tissues of South Vietnamese was 23 parts per trillion, far higher than levels found elsewhere in the world, while samples from North Vietnam contained no detectable quantities of dioxin. Over 170 kg, or approximately 400 pounds of 2,3,7,8-TCDD was spread over 10% of what was then South Vietnam in the late 1960s to about 1970, and was never cleaned up.

Human breast milk and adipose tissue was collected in Vietnam between 1970 and 1985 from patients thought to have been exposed to 2,3,7,8-TCDD from "Agent Orange" and from others not thought to have been exposed to TCDD from any known source, who had always lived in the North of Vietnam. Humans at the top of the food chain were felt to be the best biological monitor to indicate environmental persistence. Further, elevated body burdens in humans is of importance because of the linkage of ill health effects with various chlorinated dioxins and dibenzofurans. If populations with high and low levels of TCDD can be found. clinical and epidemiological studies regarding human health effects might be furthered more readily than in industrial societies such as the USA, where all persons have elevated PCDD/F levels (1,200 ppt) and 6-to-12 ppt of 2,3,7,8-TCDD.

If high levels of TCDD and other dioxins can be found in human breast milk from the 1970s archival specimens it may be possible to identify individual persons or geographical areas where babies ingested very high levels, beyond those considered as "acceptable" additional risk (1 pg/kg/day for 70 years) by the World Health Organization, the USEPA, the Centers for Disease Control, and many other government agencies, it may then be possible to follow such persons for determination of ill health.

In parts of the country of Vietnam, contaminated with TCDD in the late '60s through the 70s, where no remedial action was taken, human tissue levels in breast milk obtained from 1970 through 1986, were found elevated as compared with the USA, or especially with human tissues from the non-contaminated northern part of Vietnam, suggesting that in some dioxin contaminations if no remedial action is taken, dioxins may work its way up the environmental and food chain into humans, thus posing a serious potential health hazard, including cancer, future adverse reproductive outcome, nervous system and gastrointestinal and genitourinary system is believed to be more

sensitive to the depressant effects of 2,3,7,8-TCDD than would be an adult. Thus, the ability to fight infections, a major source of mortality in the newborn, would be decreased.

"In one year," stated Dr. Arnold Schecter, "many breast-fed infants in the United States may consume 18 times more toxic chemical dioxin than federal scientists recommend for a lifetime." Schecter's projection was calculated on the average level of dioxin found in human fat in the United States and Canada--assuming the baby is "breast-fed for one year and weighs and average of 11 pounds over that time." The projection was based on fat samples from 200 people his research team had sampled, plus 900 fat samples tested by the federal government. (We assume all of this was in Vietnam) Actual studies of breast milk had not yet begun, but were expected to begin that year.

2,3,7,8 TCDD LEVELS IN HUMAN ADIPOSE TISSUE FROM HANOI AND HO CHI MINH CITY HOSPITALS, 1984, IN PARTS PER TRILLION (ppt), ON A LIPID BASIS

Patients From the South of Vietnam				Patients From the North of Vietnam			
Sample Number	Age	Sex	TCDD	Sample Number	Age	Sex	TCDD
1	46	M	15.2	2	37	F	ND(a)
5	63	M	3.2	3	62	F	ND(b)
6	22	F	ND(b)	4	63	M	ND(a)
8	23	F	9.6	7	(c)60	F	ND(a)
11	41	F	102.6	9	39	F	ND(b)
15	23	M	9.8	10	26	F	ND(a)
16	32	M	4.1	12	45	F	ND(a)
18	53	F	ND(b)	13	35	F	ND(b)
20	69	M	55.9	19	35	F	ND(a)
22	17	M	56.7				
31	31	F	13.6				
34	50	F	7.2				
36	52	M	28.9				
39	52	F	25.6				

(a) at a 2 ppt detection level on a wet weight basis
(b) at a 3 ppt detection level on a wet weight basis
(c) age about 60 years

"Despite the possible dioxin contamination," stated Schecter, "human breast milk is extremely desirable, because it is nutritious and helps the baby resist disease...breast milk is much superior in general to formula, and the dioxin contamination level in cow's milk is not known."

For nursing mothers this information came as a shock. Many experts on both pollution and breast feeding acknowledged that breast milk has been known for some time to contain pollutants. During the 70s, it was reported that based on Federal Drug Administration standards, a nursing mother would be forbidden (on Interstate Commerce laws) from crossing into another state because of the high DDT contamination in her milk. We also have reports that the Reagan administration prohibited the EPA from cooperating in a global World Health Organization study on dioxins in mothers' milk, and is now in the process of revising downward its assessment of the health risks posed by many hazardous chemicals. (Greenpeace, Apr/88)

Stanislaus Tarkowski, a director of the WHO study, in a telephone interview with the Philadelphia Inquirer on Apr. 27. 1986, stated "At the moment the view of WHO is that we don't see any reason why breast-feeding should not be recommended because we are still at the position that we think that the benefits are such that it should be continued, since the studies have shown the existence of just trace amounts of dioxins in breast milk, and WHO wanted to study the issue further to be better prepared for sound conclusions." Following are more excerpts from the 4-27-86 Philadelphia Inquirer:

Depending mainly on data showing the presence of dioxins in body fat, the group used mathematical formulas to reach the conclusion that infants breast-fed for a year may be receiving at least 18 times more of a particularly lethal type of dioxin than scientists recommend for a lifetime, Schecter said. The dioxin in question is known as "2,3,7,8 TCDD" — the deadliest form of the chemical and the one that is usually being referred to when the word "dioxin" is used

The dioxin "2,3,7,8 TCDD," often produced as the byproduct of pesticides and herbicides, including Agent Orange, has been associated with rashes, liver disorders and disruptions of the immune system as well as with a variety of cancers. Dioxins are stored in the fatty tissues of the human body and can be transmitted to infants through mother's milk, which is about 4 percent fat.

Schecter, whose three children were breast-fed, said in an interview last week that although dioxins can be found throughout the environment, their levels in cow milk could be lower than in human milk, provided that dairy cows have eaten plants that were not contaminated by the chemical.

Schecter said that since the possible health effects of dioxins have been determined by research on animals, the "exact risks" to humans, including breast-fed infants, is not known. He suggested, though, that one of the main benefits of breast milk — increased resistance to infection for the infant — might be affected by "2,3,7,8 TCDD" because it may make the immune system less effective.

"While there may be a small amount [of dioxins] passed on to the infant in the nine months" before birth, Schecter said, subsequent breast-feeding "would presumably, by our calculations, contribute to what current government assessors believe to be an undesirable amount of dioxin in that time period."

The researchers' suggestion that mothers stop breast-feeding or do it for just a "short time" caused quick and firm reaction from breast-feeding support groups, such as La Leche League International.

La Leche League officials, who have advised mothers to continue nursing during several recent scares over a variety of pollutants, including PCBs and the insecticide heptachlor, said there has never been any evidence that environmental pollutants in the general population have caused infants any harm.

The only cases in which infants may have become ill from polluted breast milk occurred when the mothers suffered heavy exposure to a chemical in an industrial accident or other mishap, the La Leche officials said, and those cases were "rare."

The league continues to recommend that nursing mothers take various steps to reduce their exposure to pollutants: avoiding freshwater fish, a source of PCBs if they are from contaminated waters; peeling or thoroughly washing fruits and vegetables; avoiding the fatty portions of meat and those dairy products with high butterfat content. The league also advised nursing mothers not to go on crash diets, since doing so could release some of the contaminants stored in their body fat.

Julie Stock, the league's administrative assistant at its international headquarters in Franklin Park, Ill., said last week that the organization's nursing counselors had received hundreds of calls from worried mothers nationwide as a result of the dioxin report. "About half the calls are from women who are really scared to death and have weaned their babies," she said, "The other half comment, 'How can they report such irresponsible information?'"

Stock and other breast-feeding supporters worried that the report would increase pressure on nursing mothers, many of whom who already experience criticism from relatives and friends who question whether their breast-fed babies are "getting enough."

"If it's a brand-new mama who doesn't have her confidence built up yet," said Linda Sushko, group coordinator of the Delaware County Nursing Mothers, "she's going to listen. She's afraid."

Health agencies and experts across the nation were in agreement with the La Leche League. They all said mothers should not stop nursing. Below are some of the recent comments from various agencies and experts.

American Academy of Pediatrics. Chemicals such as chlorinated compounds, of which dioxin is an example, are present in the mother's body and are primarily stored in the mother's fatty tissue, said a statement by Dr. Jean Lockhart, director of the academy's department on maternal, child and adolescent health. "As a result, the fetus is exposed throughout pregnancy. Moreover, human milk substitutes may also contain small amounts of dioxin. For these reasons, the amount of these chemicals present in human milk makes a very minor contribution to the overall lifetime exposure to humans.

Centers for Disease Control (CDC). "Breast-feeding is beneficial to the infant as well as the mother," said a statement by Dr. Renate Kimbrough, medical officer with the CDC Center for Environmental Health. "Contamination of breast milk with trace amounts of a variety of chlorinated compounds should not discourage women from breast-feeding except under unusual circumstances, which have to be evaluated on an individual basis.

"Chemicals such as chlorinated compounds are present in the mother's body and are primarily stored in the mother's fatty tissue and as a result, *in utero* exposure occurs. Thus, an infant may be born with a body burden of chlorinated compounds. Substitutes used for human milk are not entirely free of these compounds. ... Other food commodities ingested later in life also contain trace amounts of these chemicals and low levels are inhaled through air. For all these reasons, the amount of these chemicals present in human milk does not make a significant contribution to the overall lifetime exposure in humans. ...

National Institute of Environmental Health Sciences. Although it is not yet proven that dioxin is in the general population, says Dr. Walter Rogan, medical officer of the institute's epidemiology branch, "if there is dioxin in [human] fat ... it's quite possible there is dioxin in breast milk.

"There are, in developed countries like the United States, probably small but nonetheless measurable benefits associated with breast-feeding. The best-documented of those have to do with [reduction of] gastrointestinal illnesses severe enough to put you in the hospital and reduced respiratory illnesses. That's pretty much a known. The hazards of dioxins or anything else in parts per trillion concentrations ... are conjectural at this point."

Sally Wendkos Olds. Says the co-author of *The Complete Book of Breastfeeding*: "It's so crazy to think of stopping breast-feeding, which we know is good, because of a vague undefined fear about something we don't know about. There have been one or two cases in the literature where there has been an industrial accident or a woman has worked under heavy contamination for a long period of time. The babies have gotten sick and there has been this suspicion the contaminants did it. But again, no proof."

Dr. Susan Aronson. Comments the president of the Pennsylvania chapter of the American Academy of Pediatrics: "Just as we don't generally advise use of the newest drug until it's been tested and evaluated, one should also not jump to take away nature's best nutrient for infants on the basis of a single report that has yet to be evaluated. The breast is still best, as far as we know."

We also reproduce the News Release sent out by LaLeche League, Int'l. 9616 Minneapolis Ave. (P.O.Box 1209) Franklin Park, IL 60131

Mothers should continue to breastfeed their infants despite recent highly publicized reports about dioxin in breast milk, according to La Leche League International, the leading source of information for breastfeeding women in the United States and Canada.

Dioxin, a chemical herbicide, is present in soil, water and air and as a consequence is found in food sources. They are stored primarily in fatty tissues. The long term effects of human ingestion of dioxin remain unknown although it is documented that substituting formula for human milk can pose distinct risks for susceptible infants. Human milk substitutes may also contain trace amounts of contaminants.

Studies over the past twenty years have demonstrated that breastfeeding conveys significant nutritional, immunological, and psychological benefits to infants. La Leche League International and consultants from its Health Advisory Council have concluded that current information about environmental contaminants in breast milk does not justify depriving infants of the benefits of breastfeeding. Suggestions that mothers limit the length of time that they nurse their babies are also unwarranted.

At this time there are no government standards regarding the levels of dioxin that are acceptable for foodstuffs. Levels have been established for acceptable levels in soil. Predictions of the health consequences of dioxin ingestion by humans are based on data obtained in animal studies. Comparable effects in humans have not been established.

The World Health Organization, The Centers for Disease Control, The Environmental Health Agency, and the American Academy of Pediatrics have considered the information regarding the presence of trace amounts of dioxin in human milk and have concluded that the benefits of breastfeeding outweigh the hypothetical dangers posed.

Exposure to environmental contaminants can be minimized by following these suggestions: 1) consume moderate amounts of dairy products, particularly those high in fat; 2) eat less red meat; 3) avoid foods high in fat; 4) avoid quick weight loss diets when pregnant and breastfeeding (dieting mobilizes fat stores, thus releasing contaminants into the blood stream); and 5) reduce the use of pesticides and herbicides in the home environment.

Founded in 1956, La Leche League International offers support and information for those interested in breastfeeding. Over 9,000 local volunteer Leaders in 46 countries around the world are available for personal counselling. Local Group meetings explore topics of interest to pregnant and breastfeeding women. La Leche League also provides information for health professionals and sponsors an annual Physicians' Seminar.

We agree with LaLeache League, with the exception of a few errors, one of which is that Dioxin is NOT a chemical herbicide---Dioxin is an integral unwanted contaminant that is present in many herbicides, but also present in pesticides, chemicals, plastics, and pharmaceutical manufacturing facilities, in municipal and industrial waste incinerators and hazardous waste dumps, and found to be spewing out of pulp and paper mills into our waterways and skies across this country. We would very much like to see LaLeche League join in getting our government to clamp down on those industries that contaminates our environment with dioxin and other deadly contaminants.

Just before the 1988 New Year was ushered in, Dr. Schecter confirmed the fact that samples from 900 women in the U.S. showed dioxin levels in breast milk fat ranging up to 7.3 ppt--in basic agreement with a study involving 200 Canadian women...from areas with no known specific occupational or environmental exposure! WHEN DIOXIN CONTAMINATES THE MOST IMPORTANT SOURCE OF AN INFANT'S FOOD--IT IS HIGH TIME THAT OUR GOVERNMENT ACT TO HALT THAT CONTAMINATION!

PUBLISHED 2x MONTHLY. SUBSCRIPTION RATES $8.00 PER YEAR

Mother's Milk or Mother's Poison? Pesticides in Breast Milk

By Ruth M. Heifetz and Sharon S. Taylor

In the year of the tainted apple,[1] it seems appropriate to explore whether human breast milk also shows the presence of pesticides. The late 1970s and early 1980s witnessed a tremendous resurgence of breast-feeding. Sixty percent of newborns were breast-fed in contrast to the late 1960s and early 1970s when only 25% of infants who left the hospital were breast-feeding.[2] The advantages of breast-feeding are well established: it offers superior nutrition, protection against infection, enhancement of the immune system, a contraceptive effect while lactating, economic benefits, and emotional support.[3] However, breast-feeding shifted from being the norm in the early years of this century, to the low points described in the 1960s and early 1970s, as a result of the aggressive marketing by infant formula companies.

This shift from breast-fed to "bottle babies" was also dramatic and particularly tragic in the developing world. Formula feeding's impact on families living in severe poverty was catastrophic. Infant diarrhea, severe malnutrition, increased infections, and a tragic bounty of preventable illness and death were all consequences of this shift from breast to bottle in the developing world.[4]

Ruth M. Heifitz is a senior lecturer at the University of California, San Diego and a board member of the San Diego Environmental Health Coalition. Ms. Heifitz teaches and works in the community on work-related and community toxic hazards and is especially interested in the impact of toxics on babies.

Sharon S. Taylor is a board member of the National Coalition Against the Misuse of Pesticides, chair of the Pesticide Committee of the San Diego Environmental Health Coalition, and an environmental health consultant.

Mary Rounds

Pesticide Residues Found

"Although environmental contaminants may have potential for entering breast milk, pesticides are among the groups with greatest concern," states one author in *Clinical Nutrition*.[5] Pesticides such as chlordane, heptachlor, DDT, DDE and other organohalogen compounds do not biodegrade in the environment. Instead they bioconcentrate and are stored in the fat of human beings, who feed at the top of the food chain. The infant feeding on its mother's milk is even higher on this chain.[5]

In the 1960s, many articles signaled the presence of pesticides in human milk. However, surveys as early as 1948, 1949, and 1951 had already found traces of DDT in one-quarter of market samples of cow's milk in the U.S.[6] In 1978, reports indicated that during the previous years of that decade, 96 percent of commercial milk samples in Illinois had dieldrin residues, 93 percent had heptachlor epoxide, 73 percent had lindane, 69 percent had chlordane, and 48 percent had DDT residues.

Because cow's milk had become contaminated with widely used insecticides, it should have been of considerable interest to explore the state of human milk. But the first evaluation of human milk for insecticide contamination did not occur until 1951 when 32 non-occupationally exposed black women were surveyed in Washington, D.C., 30 of whom had detectable levels of DDT with a mean value of 0.13ppm.[7]

More than a decade passed before another paper was published in the U.S. on the results of a small survey taken in California noting both DDT (0-0.12ppm) and DDE (0-0.25ppm) in human milk.[8]

Since that time many research papers have been published that report on limited surveys of the levels of chlorinated hydrocarbons, principally DDT and its metabolites. There has been considerable variation in the DDT levels, based undoubtedly on significant differences in the variables explored, such as urban and rural differences, age of mothers, occupations, and geographic variability.

E.J. Calabrese comments there does not seem to be a downward trend in DDT levels in human breast milk over the 30 years since the original reports, including the years since DDT was banned in 1970.[6] He notes that despite the differences between studies, all reported that breast milk had such high levels of DDT that substantial percentages of nursing infants were ingesting more DDT than was considered acceptable by the World Health Organization.[9] Calabrese states that cow's milk containing the average level of DDT found in human milk would have been banned by the Federal Department of Agriculture.[5]

While initial studies focused on DDT in the late 1960s, other pesticides were identified in reviewing breast milk samples. It was not until 1981 that a national survey of over 1400 nursing women was conducted.[1] The survey revealed that 83%, 61%, and 74% of the milk samples had detectable levels of dieldrin, heptachlor epoxide (a breakdown product of heptachlor) and oxychlordane (breakdown product of chlordane), respectively. Most of the studies concerning a spectrum of pesticides document that pesticides continue to be present in the milk of nearly all nursing mothers.

How Does Breast Milk Become Contaminated?

The human breast is capable of producing a liter of milk a day. It is a com-

plex organ that both synthesizes and excretes chemicals. Milk is composed of protein, fat, carbohydrates, minerals, vitamins, hormones and antibodies. Milk contains the fat as droplets suspended in water, an emulsion separated from the blood plasma by a semipermeable membrane. Chemicals can be excreted into breast milk by binding to milk protein or adhering to the surface of milk fat globules, or they can be totally contained within the fat globules.

Fat soluble materials such as the organochlorines, DDT and chlordane, can be stored for long periods of time in maternal body fat. Body fat mobilization and turnover are increased during lactation and fat soluble substances may also be mobilized. Fat soluble substances may be released from fat during weight loss, which typically occurs during lactation.[11]

Thus past exposures to fat soluble pesticides pose a risk that the breast-feeding mother cannot avoid at the time of pregnancy and lactation, in contrast to other substances like medications, coffee, and recreational drugs. A mother's prior lifetime burden of pesticides represent an important source of pesticides for the fetus and for the infant during breast-feeding.

Fat solubility influences the storage of pesticides in the mother's tissues, their mobilization during lactation, the transfer of pesticides form the mother's blood plasma to the milk, and thus the total dose to the infant. The passage through several barriers is greatly accelerated if a substance is fat soluble.

In general the very young are open to exposure to pesticides on three levels. The first involves the capacity for toxic materials to get into the brain. The second is based on the fact that the brain is still developing. The third concerns the fact that fat soluble pesticides are "fat seeking." An area of concern with infants is the adequacy of the "blood brain barrier," a special protective feature of the human brain. Thus infants may be particularly vulnerable to exposure to neurotoxic pesticides.[12]

Living at the Top of the Food Chain

The actual amount of pesticides that the breast-feeding infant receives is related to the intake during pregnancy via the placenta and the concentration of pesticides in the breast milk, both of which are related to the maternal body burden, as well as the volume and duration of breast-feeding.

The fat content of a mother's milk actually varies during the nursing process. The milk is lower in fat in the first period of a feeding than the latter period. It has been suggested that infants feeding briefly, but more frequently, might therefore obtain milk with a lower fat content and thus receive a lower dose of fat soluble pesticide.[5]

The actual infant pesticide burden is related to the amount available in the breast milk, to the amount actually absorbed by the nursing infant, and to the ability of the infant to remove these substances from its body.

The major routes for elimination of pesticides are through the kidneys and via metabolism, much of which is dependent on effective liver functioning. Both these organs are often poorly developed in the very young infant, which decreases the organs' ability to remove toxic substances from the body. Clearance mechanisms are particularly weak in the many low birth-weight infants (not all of whom are preterm).

Low birth-weight infants constitute 6% of all newborns. In high risk populations (e.g., those living in poverty, or born to teenage mothers, those with delayed or absent prenatal care), 12% of the infants will have a low birth weight. These less mature newborns represent a significant number of infants who already have a diminished capacity to survive, since they are more prone to other illnesses and developmental problems. The premature infant may be more vulnerable to milk contaminants not only because of their impaired elimination mechanisms, but because the integrity of the blood brain barrier may be more easily breached. This raises particular concern about entities like pesticides and their pesticide solvent vehicles, both recognized as neurotoxins. The potential for central nervous system damage is great, when one considers that substantial human growth and maturation occur in the brain *following* birth.[12-14]

Sources of Contamination

Sources of exposure to pesticides for the mother and her nursing infant are ubiquitous. It is important to recognize the potential exposures in the workplace, home, and broader community and the possible routes of transmission.

The list of chemicals of concern includes metals such as lead, mercury and cadmium, and solvents and halogenated hydrocarbons that include many of the fat soluble pesticides, described as transferring to milk very efficiently due to the high proportion of fat in milk (Table 1). Many workers who are exposed to pesticides on their jobs are not involved in the *manufacture* of pesticides or in their *application* in the fields, but are exposed as "bystanders" in offices, transportation activities, hospitals, or parks, where pesticides are used. Many industrial processes use pesticides as antifungal agents, although workers are often unaware of

Table 1
Human Breast Milk Contamination

"Typical" Levels, Food and Drug Administration (FDA) Action Levels, Allowable Daily Intake, and Daily Intake of Breast-Fed Infants

Substance	Typical Levels in Human's Milk[a] (ppb)	FDA Action Levels For Cow's Milk (ppb)	Allowable Daily Intake (ug/kg)	Daily Intake Of Breast-fed Infant[c] (ug/kg)
Dieldrin	1-6	7.5	0.1	0.8
Heptachlor epoxide	8-30	7.5	0.5	4
PCBs	40-100	62.5	1	14
DDT (including metabolites)	50-200	50	5	28

[a] Levels considered typical in whole milk in the United States.
[b] Assuming 2.5% fat. FDA Action levels represent the limit at or above which FDA will take legal action against a product to remove it from the market.
[c] Intake of a 5-kg infant drinking 700 ml of milk per day. Levels are based on high values given under typical levels.
Source: Rogan *et al.* (1980) in Calabrese, E.J. (1980).[6]

these exposures.

In the home, exposures occur in a myriad of ways: structural pest control activities, gardening, neighborhood drift, and agricultural or government spraying for insect and weed control. In the community, pesticides are still used generously in most locations, in hospitals, schools, parks, markets, theaters and restaurants.

Air, water and food are all vehicles that carry pesticides to the body. Routes of transmission are the lungs, ingestion, the skin (an extremely effective mode of transmission for pesticides), the placenta during pregnancy, and of course breast-feeding.

Health Concerns

The factors determining how pesticides are stored and released from the nursing mother's body have been reviewed. However, the major issue is to investigate the extent of infants' exposure and the impact on their health. The relatively few studies that exist are difficult to compare, and maternal and infant variables are either inadequately detailed, or difficult to control. The pesticides reviewed are varied, and insufficient information is available concerning the toxicity of their metabolic products.

For instance, it is believed that when DDT breaks down to DDE, this metabolite decreases the duration of lactation, perhaps through an estrogen effect.[15] Very little is known about the fate of pesticides in breast milk; how the levels vary during a single feed, and from one feed to the next as lactation proceeds, and between the early and later phases of breast-feeding.

It is very hard to generalize on the basis of the existing data, which are based in great part on animal studies, or individual human case reports. Obviously, there are no controlled human studies. Unfortunately research in this field has not enjoyed the priority many believe it merits, given the increasing popularity of breast-feeding in our country and the importance of breast-feeding for the developing world.

Our understanding of the impact of pesticides on human health is greatest in the case of acute high level exposures, but we know very little about the longterm consequences of chronic low-level exposures, which are the main concern with nursing infants. Assessing the hazards to the newborn of exposures to pesticides that are known mutagens, carcinogens, neurotoxins and agents that may disrupt the immune system is an urgent task we face today.

In the case of pesticides, not only do we have sparse and inadequate data, but we know very little about their impact on the very young. There is no agreement on what, if any levels of which pesticides in breast milk are not hazardous. There are virtually no data to substantiate the effects of multiple chemicals at low levels or whether their impact is additive or synergistic. This article has only reviewed the question of pesticides in breast milk. What should also be considered are the health hazards posed by further exposures to dangerous substances after the breast-feeding stage.

Ensuring Future Safety

The safety of the food supply for children is all-important for the future of our planet. We must begin by creating a system that provides adequate information on the quality of mother's milk nationwide, i.e., a comprehensive, monitoring program state by state, or area by area (contaminants are different in each locale). This surveillance program should:

> *"We must start by creating a system that provides adequate information on the quality of mother's milk nationwide. . . ."*

1. Determine the toxic materials that are likely to be present, given industrial and agricultural activities in the area, in order to test for the appropriate chemicals.

2. Institute a breast-milk testing program, to gather population-based information about specific contaminants and their levels. These data will also provide the basis for charting national and regional trends. Currently such information is severely lacking.

3. Establish a testing program available to individual women with specific concerns, assuring quality and economic accessibility for those requiring clinical assessment.

4. Identify "hot spots" and inform the appropriate health department jurisdictions, local health practitioners, and the community. This information can be the basis for implementing clean-up programs and conducting studies for health effects.

There is a tremendous need to create education programs for health professionals and the general community about toxics and breast-feeding, emphasizing the prevention of avoidable exposures to pesticides and ways of reducing and eventually eliminating their use.

Insist on research concerning toxins in breast milk so that we may feed those at the very top of the food chain safely. ■

References

1. Sewell, B.H., Whyatt, R.M. 1989. *Intolerable risk: Pesticides in our children's food.* New York: Natural Resources Defense Fund.
2. Hendershot, G.E. 1984. Trends in breast-feeding. *Pediatrics* 74 (suppl):591-602.
3. Jelliffe, D.B., and E.F. Jelliffe. 1979. Early infant nutrition: Breast-feeding in nutrition. In Winick (Ed.), *Pre- and post-natal development.* New York: Plenum Press.
4. Joseph, S.C. 1981. The infant formula controversy: An international health policy paradigm. *Annals of Internal Medicine* 95:383-384.
5. Lederman, S.A. 1989. Breast milk constraints: substance abuse, infection and the environment. *Clinical Nutrition.* 8:120-130.
6. Calabrese, E.J. 1982. Human breast milk contamination in the Untied States and Canada by chlorinated hydrocarbon insecticides and industrial pollutants: Current status. *J. of the Amer. Coll. of Toxicology.* 1(3):91-98.
7. Laug, E.P., Kunze, F.M., and Prickett, C.S. 1951. Occurrence of DDT in human fat and milk. *Arch. Ind. Hyg. Occup. Med.* 3:245-246.
8. West, I. 1964. Pesticides as contaminants. *Arch. Environ. Health* 9:626-633.
9. WHO. 1969. Pesticide residues in food—Report of the 1968 joint FAO/WHO meeting. *WHO Tech. Report.* sec. 417.
10. Savage, E.P., *et al.* 1981. National study of chlorinated hydrocarbon insecticide residues in human milk. USA. *Amer. J. Epidem.* 113:413-422.
11. Barr, M. Jr. 1981. Environmental contamination of human breast milk. *Am. J. Public Health. 71:124-126.*
12. *Gladen, B.C., et al.* 1988. Development after exposure to polychlorinated biphenyls and dichlorodiphenyl dichloroethene transplacentally and through breast milk. *J. Pediatrics* 113:991-995.
13. Atkinson, H.C., E.J. Begg, and B.A. Darlow, 1988. Drugs in human milk. *Clinical Pharmacokinetics* 14:217-240.
14. Giacoia, G.P., and C.S. Catz. 1979. Drugs and pollutants in breast milk. *Clinics in Perinatol.* 6(1):181-196.
15. Rogan, W.J., *et al.* 1987. Polychlorinated biphenyls (PCBs) and dichlorophenyl dichloroethene (DDE) in human milk: Effect on growth, morbidity and duration of lactation, *Am. J. Public Health.* 77:1294-1297.

Waste Management & Research (1987) 5, 327–346

THE ORIGIN AND HEALTH RISKS OF PCDD AND PCDF*

Barry Commoner,† Karen Shapiro and Thomas Webster

(*Received December 1986, revised May 1987*)

PCDD PCDF are ubiquitous in the emissions of trash-burning incinerators. They are synthesized in the cooler parts of the incinerator, and emissions are not reduced by controlling combustion conditions. Estimates of maximum lifetime risks of PCDD PCDF emissions range over two orders of magnitude from a minimum of one per million. This risk is greater than that which has triggered regulatory procedures against airborne carcinogens by U.S. EPA. Computations based on PCDD PCDF in adipose tissue of a representative sample of the U.S. population indicate a national lifetime cancer risk of 330–1400 per million depending on the choice of equivalence methodology. In comparison, U.S. EPA has regulated environmental exposure to benzene based on a national lifetime cancer risk of 71.4. Because waste-burning incinerators contribute significantly to this risk, it is the authors' opinion that their PCDD PCDF emissions should be reduced if U.S. EPA is to be consistent in its regulatory practice.

Key Words—municipal solid waste, incineration, dioxins, PCDD PCDF, synthesis, risk.

1. Introduction

It is widely recognized that the method now used to dispose of more than 90% of the municipal solid waste (MSW) in the United States—deposition in landfills—is unacceptable and must be replaced. Landfills give rise to a number of serious environmental problems, and in many places their capacity is becoming rapidly depleted. The most popular alternative is an incinerator that burns unseparated MSW or a refuse-derived fuel prepared from it. This paper considers the environmental impact of such MSW incinerators, and concludes that, like landfills, the incinerators are also environmentally unacceptable.

The MSW incinerator is generally presented to a community faced with replacing its landfill as a "proven technology". In physical terms, this is a valid description. It has certainly been established that a mass-burn incinerator can destroy about 75–80% (by weight) of the MSW (leaving a residue that must be consigned to a landfill) at a high combustion efficiency and a reasonable thermodynamic efficiency. However, in environmental terms, the MSW incinerator is not a "proven technology". First, the design theory employed to control the incinerator's environmental impact turns out to be incorrect. Second, in actual practice the incinerators have generated cancer-inducing emissions which, judged by standards now employed by the U.S. EPA with respect to airborne carcinogens, are clearly unacceptable. The evidence which leads to these conclusions is presented below.

---

* Presented at the ISWA–WHO–DAKOFA specialized seminar, *Emission of Trace Organics from Municipal Solid Waste Incinerators*, Copenhagen, 20–22 January 1987.

† Center for the Biology of Natural Systems, Queens College (CUNY), Flushing, NY 11367, U.S.A.

0734–242X/87/030327 + 20 $03.00/0

2. Incinerator PCDD/PCDF emissions

2.1. *Relationship to furnace temperature and combustion efficiency*

MSW incinerators were designed on the theory that a high furnace temperature and combustion efficiency would destroy toxic organic compounds in the fuel and thereby prevent hazardous emissions. However, actual tests of operating incinerators show that, despite this theoretical expectation, in practice MSW incinerators emit a variety of organic compounds, of which PCDDs and PCDFs (the family of 210 polychlorinated dibenzo-*p*-dioxins and polychlorinated dibenzofurans) are the most hazardous.

As test data have accumulated, it has become apparent that the rates of PCDD/PCDF emission from different incinerators vary widely, ranging over nearly two orders of magnitude. Efforts to explain such variations have frequently relied on the supposed effect of furnace temperature on emission rate. However, as can be seen from Table 1, there is no correlation between PCDD/PCDF emission rate and furnace temperature among MSW incinerators for which both values are available (compare Hasselriis Table 1 and Fig. 3 in this issue). For example, the lowest rate of emission was observed at the Chicago Northwest incinerator when it operated at 650°C (U.S. EPA, 1983). Yet, the Zaanstad incinerator, operating at 911°C, emitted PCDD/PCDF at a rate about ten times higher (Olie *et al.* 1982). Similarly, the Hampton incinerator has consistently emitted PCDD/PCDF at a rate nearly two orders of magnitude higher than the Chicago Northwest plant, although it operated at temperatures ranging from 550 to 868°C (Haile *et al.* 1984). In this connection, the test of an Albany, New York, RDF incinerator in which an auxiliary gas burner had been installed as a means of enhancing PCDD/PCDF destruction is particularly revealing (NYS DEC 1985). The results showed that about twice as much PCDD/PCDF was emitted with the burner on than with the burner off (570 vs. 310 ng m^{-3}).

The foregoing data may of course be influenced by the possible effect of incinerator

TABLE 1

Total PCDD/PCDF (Cl_4–Cl_8 congeners) emission rates and furnace temperatures of different incinerators*

Incinerator	PCDD + PCDF emission rate (ng m^{-3})	Furnace temperature (°C)	Pollution control device
Chicago, Northwest	180†	650	ESP
Eskjo, Sweden	555	700	Not given
Como, Italy	722	994	ESP
Zaanstad, Netherlands		911	ESP
Tsushima, Japan	2713		
Test 1	2047	800	Baghouse
Test 2	7001	510–815	
Hamilton, Canada	11,575	700	ESP
Hampton, Virginia			
EPA test (1984)	12,620	771–868	ESP
Tiernan test (1983)	9647	550	

* See Commoner *et al.* (1985*a*) for references regarding sources of data (see also Hasselriis and Klicius *et al.* in this issue).

† Excludes Cl_5 congeners (not reported).

design, fuel composition, and other variables among different plants. However, in two cases data are available which describe the effects of different operating temperatures and combustion conditions on PCDD/PCDF emissions from a single incinerator. In the tests conducted at the Hamilton and Hampton incinerators, the number of observations (13 and 5, respectively) are sufficient to warrant regression analyses that test the relationship between the rate of PCDD/PCDF emission and combustion conditions. The results are shown in Table 2 (see Commoner *et al.* 1985*a*, for details). Regression analysis of the Hamilton data yields a linear correlation coefficient (r) of -0.05 for the relation between top furnace temperature and the rate of PCDD emission. For the relation between top furnace temperature and the rate of PCDF emission, r is 0.26. Neither correlation is significant at the 95% confidence level. The corresponding correlation coefficients derived from the Hampton data are 0.2 for PCDD and 0.18 for PCDF, which are also non-significant at the 95% confidence level (see Dean, this issue, section 4.4.).

One response to such data, which contradict the assumption that elevated furnace temperatures will destroy PCDD/PCDF, has been the suggestion that destruction is more closely related to combustion efficiency than to furnace temperature. Values of combustion efficiency can be computed from the Hamilton and Hampton data and their correlation with the rate of PCDD/PCDF emissions can be determined by regression analysis. As shown in Table 2, the correlation coefficient at Hamilton is -0.14 for PCDD and 0.06 for PCDF; at Hampton the values are -0.02 for PCDD and -0.07 for PCDF. None of these values are statistically significant at the 95% confidence level. Appropriately, the report of the Hamilton tests reaches the operational conclusion that:

> The lack of positive trends between dioxin and furan concentrations [in the emitted flue gas] and parameters examined, including furnace top temperature, overfire air port flow, total air, THC [total hydrocarbon] and CO concentrations, suggests that none of these parameters can be used as the single parameter to minimize dioxin and furan emissions. (Envirocon 1984).

In sum, the available data regarding the relationship between the rate of PCDD/PCDF emissions and either furnace temperature or combustion efficiency contradict the widely held view that these substances can be destroyed and emissions reduced by operating an incinerator at a sufficiently high temperature and/or combustion efficiency (compare with Hasselriis Section 4.4. and with Bergstrom & Warman in this issue).

TABLE 2

Correlation coefficient (r)* = rates of PCDD and PCDF emissions with combustion conditions for Hampton and Hamilton incinerators†

Incinerator	Emission	Combustion efficiency	Percent CO	Furnace temperature
Hampton	PCDD	−0.02	−0.21	0.20
	PCDF	−0.07	−0.16	0.18
Hamilton	PCDD	−0.14	−0.02	−0.05
	PCDF	0.06	−0.26	0.26

* Significant levels of r: Hampton, 0.88 ($N = 5$); Hamilton, 0.55 ($N = 13$).

† See Commoner *et al.* (1985*a*) for details.

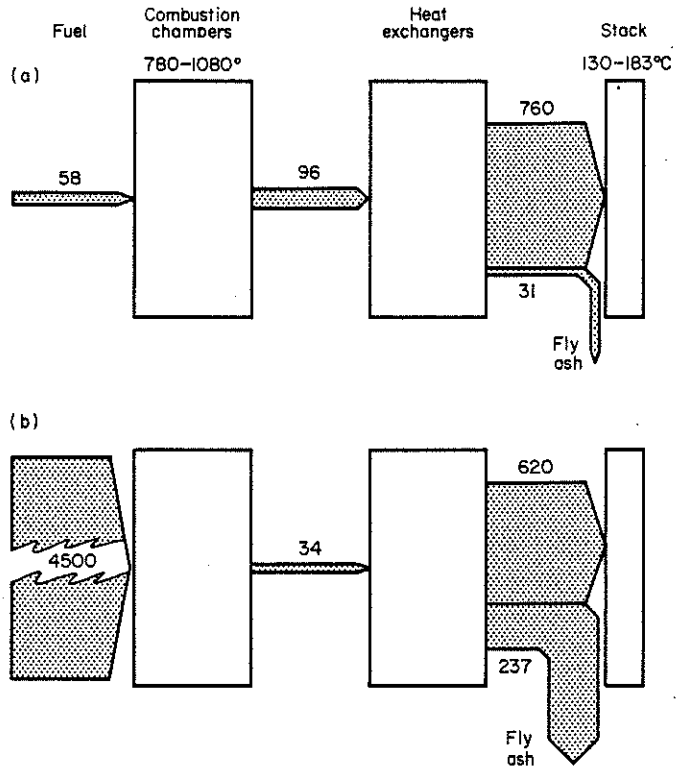


Fig. 1. Diagrammatic presentation of mass balance from the test of the Prince Edward Island incinerator described in Environment Canada (1985). The data confirm that PCDD and PCDF are synthesized between the point of entry of the flue gas into the heat exchanger and the stack. (a) Furans, (b) dioxins. All data are in $\mu g\ h^{-1}$.

2.2. *PCDD/PCDF formation in incinerators*

Because the actual test data on incinerator emissions contradict the expectations from the conventional theory of incinerator operation (i.e. that hazardous emissions of organic compounds such as PCDD/PCDF can be prevented by effectively destroying them in the furnace), we at CBNS (Center for the Biology of Natural Systems) have re-examined the evidence and have developed a new theory (Commoner *et al.* 1984). According to our theory, the rate of PCDD/PCDF emission reflects the actual *synthesis* of these compounds in the incinerator system rather than the degree of destruction of pre-existing PCDD/PCDF in the furnace. This conclusion is based on the following considerations (see Vogg *et al.* and Hagenmaier *et al.* in this issue).

First, it is known from the work of Olie *et al.* (1983) that PCDDs and PCDFs are readily formed when lignin is burned in the presence of HCl. This suggests that, in such a process, phenolic compounds, which are readily derived from lignin, can be chlorinated and dimerized to form PCDDs and PCDFs. Important additional evidence regarding the chlorination reactions is provided by the experiments of Eiceman & Rghei (1982, Rghei & Eiceman 1984), which demonstrate that both unchlorinated dibenzodioxin and 1,2,3,4-TCDD can be readily chlorinated by HCl at temperatures ranging up to 250°C if they are adsorbed on fly ash. Adsorbtion of phenolic precursors would be expected to occur only at temperatures below ca. 400°C. This observation and the theoretical improbability of purely gas-phase reactions among phenolic de-

rivatives and sources of chlorine (Shaub 1984) indicate that at least these final stages in the production of PCDDs and PCDFs take place in association with fly ash particles in those sectors of the incinerator system where temperatures are likely to be about 250—300° C (Commoner *et al.* 1984).

Chlorine is present in a number of MSW components, either as an organo-chlorine compound such as PVC, or in an inorganic form, such as NaCl. An incinerator test shows that combustion of PVC yields HCl quantitatively (Kaiser & Carotti 1972). Other experiments indicate that NaCl can react with SiO_2 at combustion temperatures to produce HCl (Uchida *et al.* 1983).

These considerations suggest that PCDD/PCDF synthesis involves phenolic precursors derived from lignin, and HCl derived from chlorinated organic compounds, which combine through some, as yet unidentified, dimerization and chlorination reactions, at least some of them occurring on the surface of fly ash. Because these reactions take place in the cooler parts of the incinerator system which are downstream of the furnace, PCDD/PCDF emissions are not affected by the destructive influence of the high temperatures that occur in the incinerator furnace.

The theory of dioxin synthesis has now been confirmed by two recent tests. In a test of an incinerator at Prince Edward Island, Canada, it was found (see Fig. 1) that although almost no PCDD or PCDF left the incinerator furnace, considerable amounts occurred at the base of the stack (Environment Canada 1985). This confirms that PCDDs and PCDFs are literally synthesized in the incinerator system after the flue gas leaves the furnace, and that the process occurs at temperatures consistent with the theory. As can be seen from Fig. 1, this test also confirms that PCDD *can* be destroyed in the incinerator, provided it is present in the fuel. Vogg (in this issue) has also shown that PCDD/PCDF synthesis occurs on the surface of fly ash at the predicted low temperatures (Vogg & Stieglitz 1985). Fly ash taken from an incinerator precipitator was treated at temperatures between 120—600°C. Very large amounts of PCDD/PCDF were produced, especially at temperatures of 250—350°C.

It seems evident, therefore, that MSW incineration must be regarded as a process that synthesizes PCDD/PCDF on fly ash. Therefore, there is no basis for the conventional view that PCDD/PCDF emissions can be controlled by proper furnace conditions alone. This means that if an incinerator based on the conventional design theory is built, it is impossible, at this time, to predict how much PCDD/PCDF will be emitted or how combustion efficiency or furnace temperature should be regulated in order to reduce the emissions. Building such an incinerator therefore involves a serious technological risk.

This conclusion has important implications for the effort to control PCDD/PCDF emissions. First, it calls into question the approach, often taken in regulatory proposals, which cites high furnace temperature and combustion efficiency as a means of reducing PCDD/PCDF emissions (see Magagni & Boschi in this issue). Second, this conclusion conditions the strategy of reducing emissions by trapping them in a control device. The synthesis theory suggests that a primary requirement for such a device is that it must be located at a position downstream from the zone of synthesis. In practice, this means that the gas stream must be cooled to the temperature range which enhances PCDD/PCDF synthesis (200–300°C) *before* it enters the control device. It is possible that the observation of relatively low PCDD/PCDF emissions from certain incinerators may result from the fortuitous occurrence of the proper relationship between the zone of synthesis and the location of the control device. In this connection it is significant to note that the apparent success of the Quebec pilot plant in controlling PCDD/PCDF

emissions depends on cooling the gas in a scrubber before it enters the baghouse (Hay *et al.* 1986).

While the synthesis theory may lead to improved incinerator control systems by specifying the relation between flue gas temperature and the control device, we do not yet have reports of successful application to a full-scale system. It should be noted that the Quebec experiment was conducted on a flue gas stream representing the combustion of only 20 tpd of MSW. Serious scale-up problems remain to be solved before this success can be regarded as indicative of comparable results in a full-scale incinerator. It is our opinion that the MSW incinerator cannot be regarded at this time as a "proven technology", suitable for adoption by a community that wishes to avoid the risks of experimenting with such a costly investment (compare with Bergstrom & Warman in this issue).

3. The health effects of incinerator PCDD/PCDF emissions

3.1. *Incinerator cancer risk assessments*

Until now it has appeared that the most serious health effect due to incinerator PCDD/PCDF emissions is the risk of an increased incidence of cancer. However, Hoffman *et al.* (1986) have indicated that there is also a risk of suppression of the immune system, i.e. the system that protects the body from a variety of diseases, including cancer. It was found that people exposed to dioxin-contaminated soil in Missouri exhibited a significant reduction in their cellular immune system. It will be important to assess this risk from incinerator emissions as well.

At present, incinerator health-risk assessments relate only to PCDD/PCDF and toxic metals in the emissions, based on their effect on cancer incidence. In recent months a relatively consistent picture of the PCDD/PCDF-induced cancer risk from MSW incinerators—which was previously a subject of a good deal of disagreement—has begun to emerge. As shown in Table 3 (Commoner *et al.* 1986*a*), risk assessments made by various state agencies and consulting firms, as well as by CBNS, now agree that the maximum lifetime cancer risk from MSW incinerators is 1–160 per million, even if the assumed PCDD/PCDF emissions are at the low rate determined in the test of the Chicago Northwest incinerator. However, because many operating incinerators emit much higher levels of PCDD/PCDF, the actual risks may be 25–50 times higher than those shown in Table 3.

Also shown in Table 3 are the cancer risks determined from tests of two operating incinerators in New York State. The cancer risks determined by the New York State Department of Health are 1–2 per million for the Peekskill incinerator and 11–20 per million for the Niagara Falls incinerator. However, when the risk is recalculated using revised estimates of PCDD/PCDF dosage of the exposed population, the cancer risks due to the emissions from these incinerators are 17 and 270 per million, respectively (Commoner *et al.* 1986*a*).

The significance of such risks has become clearer as a result of certain governmental decisions. In announcing the result of the Niagara Falls test, the New York State Departments of Health and Environmental Conservation "... recommended steps be taken immediately to reduce levels of dioxins and furans being emitted in Niagara Falls, because of health concerns ..." (NYS DEC 1986). This implies that an 11–20 per million lifetime cancer risk is unacceptable. Although no U.S. Federal PCDD/PCDF standards have yet been established, recent actions by EPA regarding

TABLE 3
Incinerator cancer risk assessments (additional cases per million people exposed to maximum PCDD/PCDF concentration over 70-year lifetime)

Location	Author	Risk assessment
Proposed incinerators*		
Brooklyn, NY	Hart	5.9
Brooklyn, NY	CBNS	29
Newark, NJ	Camp, Dresser & McKee	1
San Diego, CA	HDR	10
Rutland, VT	Department of Health	12–29
Detroit, MI	Department of Natural Resources	2–31
Detroit, MI	CBNS	160
Los Angeles, CA	CBNS	22
Palm Beach, FL	CBNS	10
Minneapolis, MN	CBNS	9
Operating incinerators		
Niagara Falls, NY	Department of Health	11–20
Niagara Falls, NY	CBNS	270
Peekskill, NY	Department of Health	1–2
Peekskill, NY	CBNS	17

* These risk assessments are based on an assumed PCDD/PCDF stack concentration equivalent to that measured at the Chicago Northwest incinerator.

the regulation of airborne carcinogens under Section 112 of the Clean Air Act and Section 4(f) of the Toxic Substances Control Act (U.S. Public Law 1970) suggest a standard more stringent than that of New York. EPA uses the maximum lifetime risk of cancer in part to determine whether or not to begin regulatory proceedings against airborne carcinogens. As shown in Table 4, EPA has begun proceedings to regulate a carcinogen (methylene chloride) with a maximum lifetime cancer risk as low as 0.83 per million. All of the risk assessments for existing and proposed incinerators are in excess of this value, some of them considerably so. This comparison indicates that PCDD/PCDF emissions from trash-burning incinerators are likely to be subject to EPA regulation, requiring that they be reduced so that the resultant cancer risk is no more than about one per million.

3.2. *PCDD/PCDF in human adipose tissue*

A second way of assessing the significance of the incinerator cancer risk relative to national regulatory practice can be derived from recent data on the amount of PCDD/PCDF which the general U.S. population has absorbed from past environmental exposure. Data on the PCDD/PCDF content of human adipose tissue is available for Canada (Ryan *et al.* 1985), northern Europe (Rappe 1984), for New York State (Schecter *et al.* 1985), and for the U.S. from the recent EPA survey (Stanley *et al.* 1985). Comparable data for North and South Vietnamese samples are available from studies reported by Schecter *et al.* (1986).

It is possible to estimate the PCDD/PCDF dosages which lead to the observed adipose tissue levels (Commoner *et al.* 1985*b*). We assume that the uptake and elimination of PCDD/PCDF are adequately described by first-order kinetics, based on experiments in animals and humans (Fries *et al.* 1975, Poiger & Schlatter 1985).

TABLE 4

U.S. EPA cancer risk assessments and regulatory actions taken on airborne organic carcinogens

	Cancer risk per million		
	Maximum lifetime (70-year) risk*	National average lifetime (70-year) risk†	EPA action
Benzene	154	71.4	Regulatory standard established (6/6/84)
Carbon tetrachloride	154	13.3	Assessment (U.S. EPA, 8/13/85)
Chloroform	77	4.9	Intend to List (U.S. EPA, 9/27/85)
Ethylene dichloride	18	12.6	Intend to List (U.S. EPA, 10/16/85)
Formaldehyde	206	58.1	Under extended assessment
Methyl chloride	0.46	<0.7	No information
Methylene chloride	0.83	0.7	Listed‡ (U.S. EPA, 10/17/85)
Perchloroethylene	18.8	7.0	Intend to List (U.S. EPA, 12/28/85)
Trichloroethylene	25.9	5.6	Intend to List (date NA)
Vinyledene chloride§	830	0.02	No regulatory action (U.S. EPA, 8/13/85)

* Data from Hunt *et al.* (1985*a*). Table 9 (two or more valid quarters) except for ethylene dichloride and formaldehyde, which, according to Hunt, are erroneously reported there. For these compounds, values are the maximum reported in Table 7(a and b), which are accurate.

† Data from Hunt *et al.* (1985*b*), Table 6.

‡ Initiation of comprehensive regulatory investigation as required under Section 4(f) of the Toxic Substances Control Act.

§ Data from EPA *Decision Not to Control Vinyledene Chloride and Solicitation of Information* (U.S. EPA 1985*c*). Decision based on inadequate evidence of carcinogenicity and small population exposure.

Assuming steady-state concentrations in lipid (about 13% of body weight, Heilbrunn 1943), we estimate absorbed dosages in humans using a 4.95 year half-life for all 2,3,7,8-substituted PCDD isomers, and 1.8 years for 2,3,7,8-PCDF isomers (Poiger & Schlatter 1985, Gorski *et al.* 1984). These are converted to 2,3,7,8-TCDD equivalents and multiplied by the U.S. EPA's upper-bound cancer potency for 2,3,7,8-TCDD (U.S. EPA 1985a) to calculate lifetime risk The results assume that the dosages computed from 1982 tissue concentrations are equal to the average lifetime dose.

We estimate the maximum additional lifetime cancer risk due to the 2,3,7,8-TCDD present in adipose tissue to be 48 per million in the U.S. The risk for all PCDD/PCDF isomers is 330–1400 per million, depending on the equivalence methodology used, U.S. EPA (1985*a*) or California (Stephen 1986).

It has been shown that, in humans, the PCDD/PCDF concentration in the lipid of breast milk is approximately equivalent to that in adipose tissue lipid (see Rappe *et al.* in this issue). The adipose tissue data therefore enable us to compute the PCDD/PCDF dosage to infants that are breast-fed by mothers in the exposed population and hence to compute the resultant cancer risk (for methodological details see Commoner *et al.* 1985*b*). This computation reveals that an infant consuming milk from a mother with adipose levels equal to those determined for the U.S. population by the EPA survey is exposed to enough PCDD/PCDF to account for a lifetime risk of 23–64 per million in only one year of breast feeding.

The foregoing results indicate that current exposure of the U.S. population to PCDD/PCDF is unacceptable and should be reduced. This is evident from recent EPA regulatory action. Under the provisions of Section 112 of the Clean Air Act and Section

TABLE 5
Potential chlorinated dioxin and dibenzofuran source categories in California *

Source category	Estimate of relative emissions † in California
Point sources	
Municipal waste incinerators and RDF boilers	High
Commercial waste oil burners	Unknown
Hazardous waste incinerators	Low
Industrial boilers cofiring wastes	Unknown
Wire reclamation incinerators	Unknown
Sewage sludge incinerators	Unknown
Wood/bark boilers	High ‡
Black liquor boilers	Unknown
PCP sludge incinerators	High
Cement kilns cofiring wastes	Low
Hospital incinerators	Unknown
Sawmills §	High ‡
Area sources	
Mobile sources	Unknown
Wood stove/fireplaces	Unknown
Forest fire/agricultural burning	Unknown

* Source: Table I-2 (CARB 1986) California Air Resources Board "Report to the Scientific Review Panel on Chlorinated Dioxins and Dibenzofurans", Feb. 1986.

† This is a qualitative assessment of the expected emissions relative to the other source categories listed.

‡ Estimate is high when burning wood treated with chlorophenol, otherwise these are rated as low.

§ Most sawmills have the capability to incinerate some or all the woodwaste produced at the facility. A wood/bark boiler may be used at a sawmill to incinerate process wastes. This source category may overlap other source categories listed in the table.

4(f) of the Toxic Substances Control Act, EPA has begun regulatory proceedings against a series of airborne carcinogens. The chief criteria for such action are estimates of: (a) the maximum lifetime (70-year) cancer risk, and (b) the national average lifetime cancer risk. Since it is based on the widespread sampling used in the EPA survey, it can be assumed that the cancer risk represents the national average lifetime cancer risk to the U.S. population due to the uptake of PCDD/PCDF, if the dosage characteristics of the population sampled in 1982 were to continue. When compared with recent EPA actions on airborne carcinogens (see Table 4), it is evident that the PCDD/PCDF exposure qualifies for regulatory action. The national average cancer risk for PCDD/PCDF (330 per million)—which, it should be noted, is computed according to EPA equivalence methodology—is considerably greater than even the highest risk from the airborne carcinogens which EPA has begun to regulate. According to the EPA Office of Air Quality Planning and Standards, the highest national average cancer risk for airborne carcinogens is that of benzene, a substance which is now subject to a regulatory standard. The national average lifetime cancer risk for benzene is 71.4 per million, clearly less than that for PCDD/PCDF. It follows that the exposure of the general population to PCDD/PCDF should be regulated and action taken to reduce it. Failure to take this action (which is now under consideration by EPA) would be grossly inconsistent with previous EPA action on benzene and other airborne carcinogens.

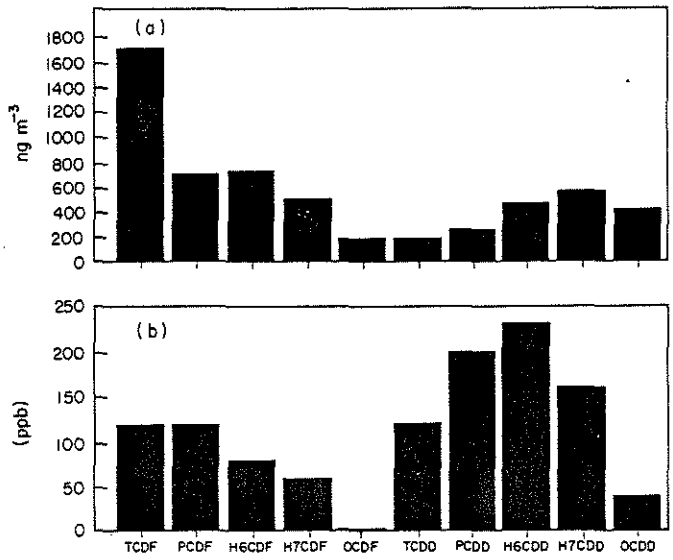


Fig. 2. PCDD/PCDF homologue patterns of combustion sources. (a) MSW incineration (Ontario Ministry of the Environment 1985, Commoner *et al.* 1986*b*). (b) Industrial (chemical) waste incineration (Czuczwa & Hites 1986).

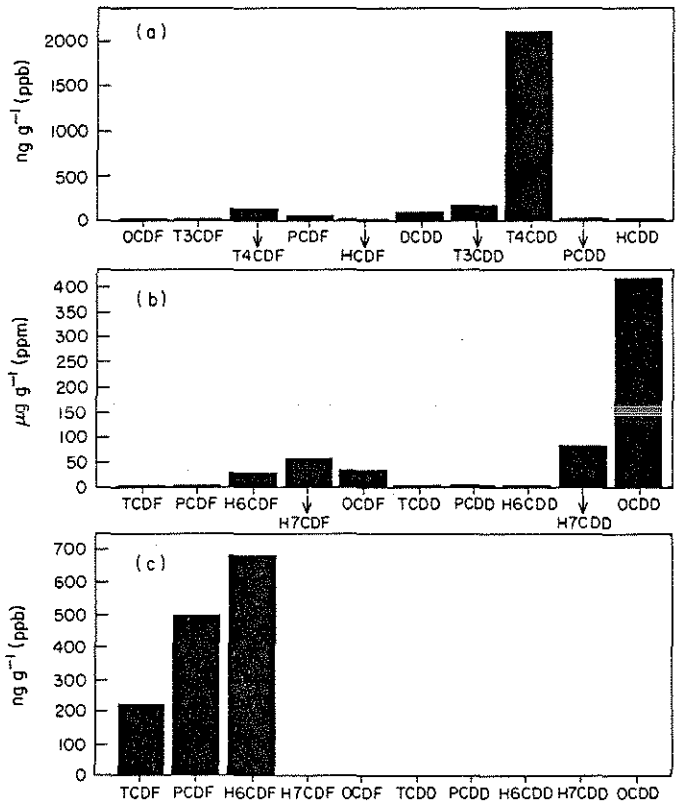


Fig. 3. PCDD/PCDF homologue patterns of chemical sources. (a) Agent Orange (Rappe *et al.* 1978). (b) PCP (Ontario Ministry of the Environment 1985). (c) PCBs (Ontario Ministry of the Environment 1985). Note that the homologues of (a) are different from those of (b) and (c).

Measurements of PCDD and PCDF in five samples of breast milk obtained from South Vietnam in 1973 allow a direct computation of risk from breast-feeding without calculating milk concentrations from adipose tissue levels (Schecter *et al.* 1986). A South Vietnamese infant breast feeding for one year on milk contaminated at the levels measured in 1973 absorbed a dose of 310 pg kg^{-1} day^{-1} of 2,3,7,8-TCDD, or a total of as much as 340 pg^{-1} kg^{-1} day^{-1} of 2,3,7,8-TCDD equivalents. This is far higher than the acceptable daily intake of 1–10 pg kg^{-1} day^{-1} recommended by several government agencies. The upper-bound lifetime cancer risk associated with one year of breast feeding, without subsequent exposure, is 49–54 per million.

4. The sources of adipose tissue PCDD/PCDF

Regulatory action presupposes the identification of the sources that are chiefly responsible for the environmental PCDD/PCDF levels and which, if regulated, would significantly reduce these levels. The main environmental sources of PCDD/PCDF are listed in Table 5. The sources differ considerably in the relative proportions of the different PCDD and PCDF homologues and isomers which they contain (see Figs 2 and 3 and Rappe *et al.* in this issue); in their route of entry into the environment, and in the amounts released to the environment annually. According to several assessments in California, Canada and Denmark, combustion of municipal solid waste and industrial wastes are the major sources of environmental PCDD/PCDF (Californian Air Resources Board 1986, Environment Canada 1983, Danish National Environmental Protection Agency 1984).

Nevertheless, there is a good deal of uncertainty about this conclusion, for it is based only on estimated emissions. The adipose tissue data are, of course, evidence of the acquisition of PCDD/PCDF by the population from some general source(s) in the environment, and it is useful to examine the relation between these data and the various potential sources in order to evaluate directly their relative contributions to PCDD/PCDF uptake.

4.1. *The significance of the Vietnam data*

North Vietnam represents an environment relatively unaffected by PCDD/PCDF sources that are associated with modern industrial activities. Unlike South Vietnam, North Vietnam was not sprayed with Agent Orange (which was heavily contaminated with PCDD); it presumably uses little or no chlorinated organic chemicals, or burns waste or wood containing such chemicals. In contrast, South Vietnam was heavily sprayed with PCDD-contaminated Agent Orange and may have been exposed to other chlorinated organic chemicals (such as pentachlorophenol) introduced during French occupation of that area.

The distribution patterns of PCDD and PCDF homologues in adipose tissue from North and South Vietnam and the United States are compared in Fig. 4. It is immediately evident that the levels in North Vietnam are about an order of magnitude below those found in either South Vietnam or the United States (note differences in scale). This indicates that those proposed sources of PCDD/PCDF that are common to all three countries—for example, combustion processes such as forest fires and domestic burning of untreated wood—do not contribute significantly to the elevated levels in South Vietnam or the United States. This contradicts the "trace chemistry of fire hypothesis" proposed by Dow chemists (Bumb *et al.* 1980), i.e. that all combustion

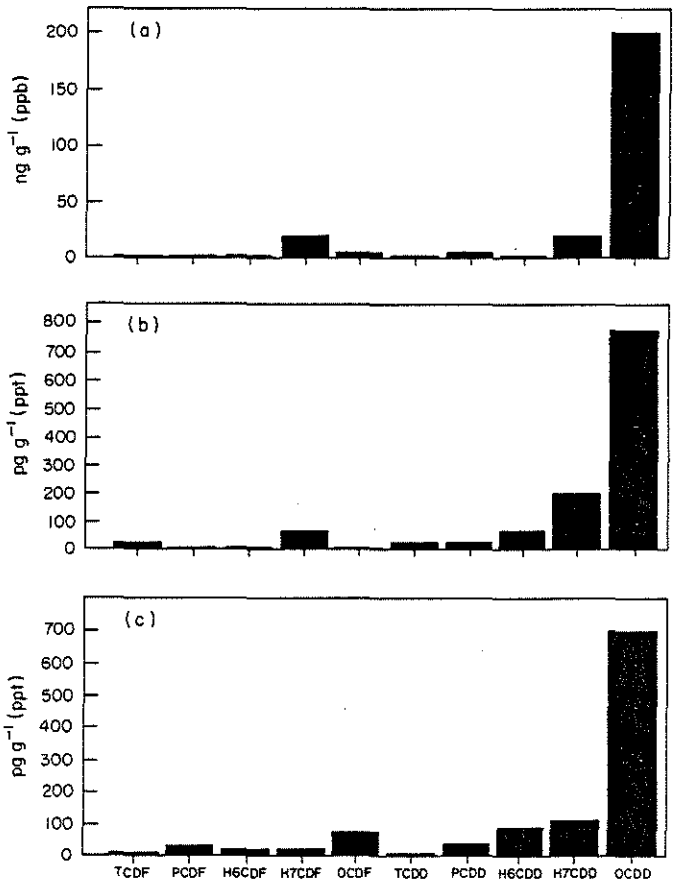


Fig. 4. PCDD/PCDF homologue patterns of human adipose tissue. (a) North Vietnam 1984 (Schecter *et al.* 1986). (b) South Vietnam 1984 (Schecter *et al.* 1986). (c) United States 1982 (Stanley *et al.* 1985).

processes contribute to environmental PCDD/PCDF, a view that would lead to the conclusion that forest fires are a major contributor.

The PCDD/PCDF adipose tissue levels in South Vietnam are about 60% above those in the United States. With one important exception, the isomer patterns are also generally similar. In the South Vietnam homologue pattern, the relative concentration of 2,3,7,8-TCDD is considerably higher than it is in the United States, by a factor of 3.5. This is indicative of the prominence of exposure to Agent Orange—in which 2,3,7,8-TCDD predominates (see Fig. 3)—in the population of South Vietnam. This conclusion is reinforced by measurements of breast milk made from five samples collected in 1973 in South Vietnam (Schecter *et al.* 1986). Only three isomers were detected: 2,3,7,8-TCDD at 100 ppt, 2,3,4,7,8-PeCDF at 10 ppt, and OCDD at 170 ppt. (These values refer to concentrations in milk lipid, averaged by setting non-detection equal to zero.) Assuming that milk lipid concentrations reflect adipose tissue concentrations, comparison of the 1973 and 1984 data should indicate changes in environmental exposure over that time. The concentration of 2,3,7,8-TCDD in adipose tissue collected in 1984 was 22.3 ppt, a 78% reduction from the 1973 value. Over that period the concentrations of the other isomers increased. This result is consistent with the initial exposure of the South Vietnamese population to Agent Orange, metabolic conversion and excretion of

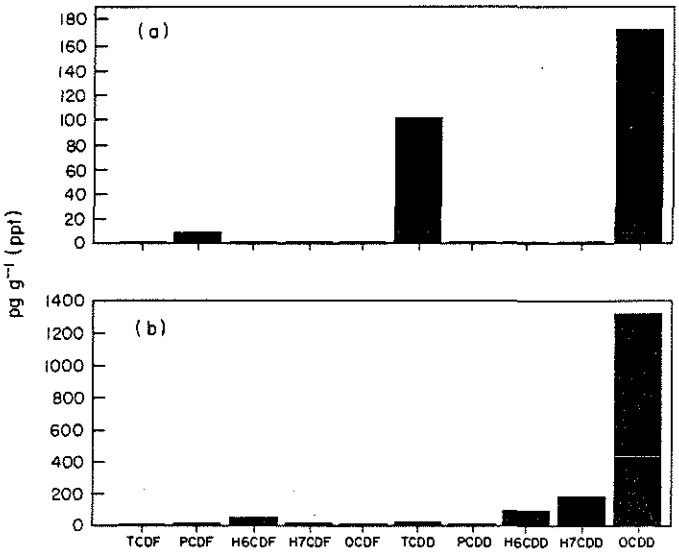


Fig. 5. Comparison of 1973 breast milk lipid (a) and 1984 adipose tissue (b) levels of PCDD and PCDF from South Vietnam (from Schecter *et al.* 1986).

2,3,7,8-TCDD with a half-life of about five years, and subsequent exposure to other sources of PCDD and PCDF relatively low in 2,3,7,8-TCDD but containing other isomers (see Fig. 5).

Apart from the foregoing differences, there is a general resemblance between the relative levels of the different PCDD and PCDF homologues in all three countries, except for the unique presence of TCDF and OCDF in the U.S. adipose tissue, which is unexplained. As we show below, the U.S. pattern is probably derived from combustion of chlorine-containing fuels, followed by the preferential degradation of the less-chlorinated homologues in the atmosphere. This suggests that exposure in South Vietnam is due to similar combustion sources, with 2,3,7,8-TCDD from Agent Orange superimposed. Such a combustion source might be the burning of lumber and brush contaminated with Agent Orange; wood burned with 2,4,5-T (an ingredient of Agent Orange) yields an array of PCDDs and PCDFs in its combustion products (Ahling & Lindskog 1977). It is possible that the low levels of exposure reflected in adipose tissue in North Vietnam may result from such combustion products drifting northward from South Vietnam.

4.2. *The sources of PCDD/PCDF in the U.S. environment*

In the United States, exposure of the general population to PCDD/PCDF may originate in two generic types of sources: (a) PCDD/PCDF-contaminated chemicals that enter the food chain from waste effluents or agricultural sprays; (b) PCDD/PCDF-contaminated particles (such as fly ash) created by combustion of chlorine-containing fuels, disseminated into the atmosphere and thence into the food chain or ingested or inhaled directly. From a Canadian survey (Sheffield 1985*a*,*b*), it appears that the major chemical sources are the wood preservative, pentachlorophenol, the herbicides 2,4-D and 2,4,5,-T, and PCBs. The homologue composition of these sources relative to the homologue pattern in adipose tissue tends to minimize their possible contribution to

the PCDD/PCDF found in adipose tissue (see Fig. 3, and Rappe *et al.* in this issue). In the United States, adipose tissue contains each of the 10 tetra–octa PCDD and PCDF homologues, which, with the exception of the HxCDDs (unspecified in the EPA analyses) are represented almost exlusively by those isomers which are chlorinated in the 2, 3, 7 and 8 positions. Hence, a chemical source that contributes to the adipose tissue levels must contain at least these particular isomers. However, PCDFs and the higher-chlorinated PCDDs are essentially absent from 2,4-D and 2,4,5-T; pentachlorophenol is lacking in the less (4- and 5-) chlorinated PCDDs and PCDFs; PCDDs are almost absent from PCBs. It would appear, therefore, that no one of these chemical sources can, by itself, account for the homologue pattern observed in adipose tissue. Exposure to mixtures of these sources might account for the adipose tissue content, but this is unlikely given the fact that the sources of these chemicals tend to be localized, while the sources affecting adipose tissue must be generally distributed in the environment.

It would appear, therefore, that the sources responsible for the PCDD/PCDF in U.S. adipose tissue originate in the combustion of chlorine-containing fuels. This conclusion is confirmed by observations of the PCDD/PCDF content of dated sedimentary layers in the Great Lakes (Czuczwa *et al.* 1984*a*,*b*). Little or no PCDD/PCDF is detected in sediments laid down before 1930–40, ruling out significant contributions from any earlier sources to the rising concentrations found in later years (e.g. forest fires, wood and coal burning). This confirms the conclusion derived from the low PCDD/PCDF levels in North Vietnam. Czuczwa & Hites (1986) also show that the homologue pattern in current sediments (with the exception of a Lake Ontario sample apparently affected by a local source) is significantly correlated with the pattern found in airborne urban particulates, both of which differ from the pattern found in chemical sources such as pentachlorophenol. Because certain lake sediments which exhibit this general pattern can be shown to be exclusively derived from deposits of atmospheric particulates, which include combustion products. Czuczwa & Hites conclude that:

> These results imply that PCDD and PCDF are transported through the atmosphere—suggesting that combustion is the source of these compounds (Czuczwa & Hites 1986).

The homologue pattern in U.S. adipose tissue resembles the pattern of both the lake sediments and atmospheric particulates. This is suggested by Fig. 6 which compares the homologue patterns for air particulates from Washington DC, an example of a current sediment (from Lake Michigan), and for U.S. adipose tissue from the EPA survey. This comparison is only suggestive, because PCDD/PCDF associated with atmospheric particulates will be subject to differential degradation once taken into the body.

As is evident from a comparison of Figs 2 and 6, the homologue patterns of the lake sediments and of atmospheric particulates are very different from the patterns in emissions from the combustion of both MSW and chemical waste. (The latter have considerably higher proportions of the less-chlorinated PCDDs and PCDFs.) Czuczwa & Hites (1986) suggest that, after the combustion products enter the atmosphere, the less-chlorinated homologues are preferentially subject to photochemical decomposition. Hence, with time, airborne particulates originating in combustion emissions exhibit the OCDD-rich pattern found in atmospheric particulates. These relationships suggest, therefore, that the PCDD/PCDF in lake sediments are derived from atmospheric particulates, which in turn represent the degraded products of combustion of MSW and industrial waste.

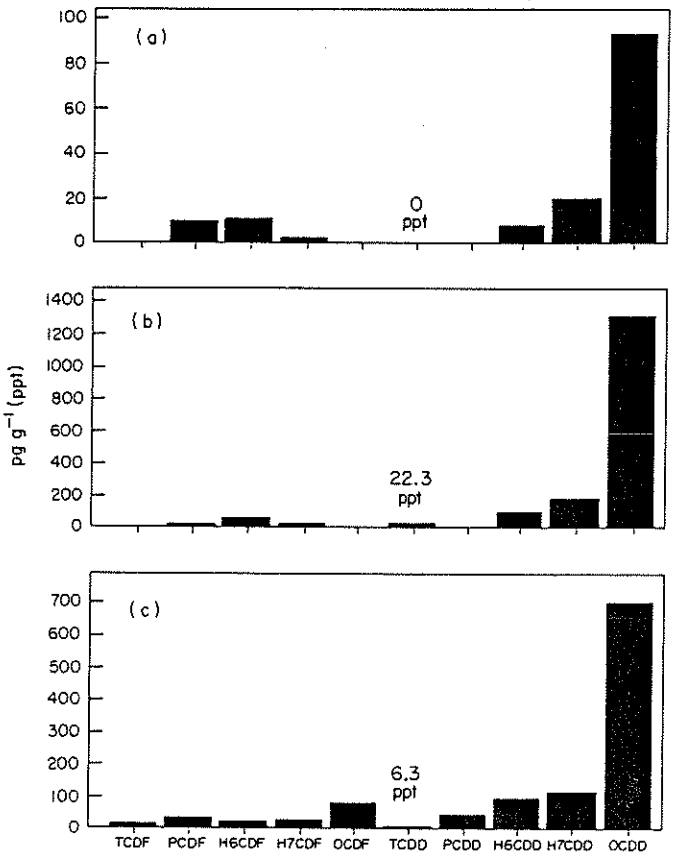


Fig. 6. Comparison of environmental and human tissue PCDD/PCDF homologue patterns. (a) Air particulates, Washington DC. (b) Sediment, Lake Michigan. Data taken from Czuczwa & Hites (1986). (c) Adipose tissue, U.S. population. Data taken from Stanley *et al.* (1985).

One of the noteworthy features of the lake sediment data is that PCDD/PCDF concentrations rise to a peak between 1970 and 1977 and thereafter decline probably because of new environmental regulations. This is most evident in Czuczwa & Hites' (1986) analysis of two locations in Lake Erie where the average PCDD/PCDF content decreased by about 30% between 1977 and 1983. If the airborne particulates that comprise the lake sediments are also the chief source of the PCDD/PCDF in adipose tissue, then this recent decline should be reflected in the adipose tissue PCDD/PCDF concentrations. For example, adipose tissue samples taken at different times might be expected to reflect the changing PCDD/PCDF concentration in the lake sediments. Adipose tissue samples in Canada and the United States have been taken in 1972, 1976, 1980, 1982 and 1983–84. Unfortunately it is difficult to compare them because, in most cases, the numbers of samples are small and taken from limited locations. Nevertheless, the values do appear to have declined slightly in recent years, possibly in response to decreasing concentrations of PCDD/PCDF in atmospheric particulates (Ryan *et al.* 1985, Schecter *et al.* 1985, Stanley *et al.* 1985).

Another way to examine the relation between the recent decline in the concentration of PCDD/PCDF in both the lake sediments and adipose tissue is to examine the latter as a function of the donor's age. The EPA survey of samples taken in 1982 provides separate data on the adipose tissue concentrations of three age groups: 0–14 years, 15–

44 years, and 45+ years. The concentration of PCDD relative to the oldest group are, respectively, 0.54, 0.96, and 1.0. The PCDFs do not exhibit this pattern; the values are relatively low and exhibit no common behavior among the several age groups. This may reflect the relatively low half-life of the furans, which would tend to reduce the differential effect of time of exposure. Qualitatively, these relationships conform with the expected effect of the decline in the PCDD/PCDF concentration of atmospheric particulates, as reflected in the lake sediments. Individuals up to 14 years old in 1982 will have received most of their environmental PCDD/PCDF exposure since 1975–76, when the exposure declined, and therefore should have lower adipose tissue concentrations than older donors.

To test this relationship more precisely, we modelled adipose tissue concentrations of PCDD assuming that human exposure paralleled the levels in Lake Erie sediments (Czuczwa & Hites 1986). Concentrations for different age groups were estimated using this time-varying proxy for dose and the differential equation describing first-order kinetics. The results were converted to fractions of the concentration found in the 45+ age group. For the 15—44 year age group, the actual value was 0.96 and the computed value is 0.99. For the 0—14 age group, the actual value was 0.54 and the computed value was 0.66. The variation in PCDD/PCDF concentration with age may thus be due to a time-varying environmental load. (It could also be explained by a non-linear model and changes in body-fat content with age.) This supports the view that the PCDD/PCDF in both lake sediments and adipose tissue are ultimately derived from the same source, atmospheric particulates produced by the combustion of chlorine-containing fuels.

Some effort has been made to quantify the relative contributions of various combustion processes to the environmental levels of PCDD/PCDF. Certain of potential sources listed by Sheffield (1985*a*,*b*) can be eliminated on the grounds that they were present before 1930–40, when (based on lake sediment data) there was no atmospheric PCDD/PCDF, for example, forest fires and coal, oil and gas combustion. The remaining significant sources are municipal solid waste (MSW) incineration, sewage sludge incineration, and combustion of chlorophenol-treated wood. According to Sheffield's data, combustion of municipal solid waste appears to be the largest contributor (with forest fires excluded, for the reason cited above). A similar but qualitative evaluation has been made for California by the California Air Resources Board (California Air Resources Board 1986).

The contribution from incinerators that burn hazardous chemical waste is not considered in the Sheffield report (such facilities are absent in Canada). The California report designates this source as "low" with respect to relative PCDD/PCDF emissions. This conclusion is suggested by the fact that about 15 million tons of MSW and about 0.44 milllion tons of chemical waste were incinerated in the United States in 1981 (Chemical Manufacturers Assn 1986), and that the average emission rate of PCDD and PCDF from MSW incinerators appears to be considerably greater than the typical emission rates from chemical incinerators (Cleverly 1986). In sum, it is likely that the contribution of chemical waste combustion to the environment, relative to that of MSW combustion, is very small.

Recently Marklund *et al.* have studied the emissions from automobiles provided with unleaded gasoline to which 0.15 g l^{-1} of tetraethyl lead and 0.1 g l^{-1} of dichloroethane (DCE, a scavenger that is used in commercial leaded gasoline) were added (Marklund *et al.* 1987). Significant concentrations of PCDDs and PCDFs were found in these emissions; none were detected in the emissions of automobiles using the

unleaded fuel, which does not contain DCE. Based on this observation, the authors conclude that emissions from cars using leaded gasoline represent a significant contribution to environmental PCDD/PCDF.

However, the fuel was compounded specially for these tests and does not have the composition of commercial leaded gasoline, which contains a mixture of both DCE and dibromoethane (DBE). Muller *et al.* (1986) studied the emissions from a car using Swiss premium leaded gasoline containing both DCE and DBE and found, contrary to Marklund's results, that PCDDs or PCDFs were not detectable in the emissions Instead, a considerable number of brominated benzenes and phenols were found, together with smaller concentrations of brominated benzofurans and bromo-chlorophenols.

Thus, it appears that the amounts of PCDD and PCDF measured in automotive emissions by Marklund *et al.* may be a consequence of the absence of DBE in the experimentally compounded fuel used in their tests. Their results are therefore not representative of the emissions of automobiles run on commercial leaded gasoline. Although additional experimentation is needed to resolve this issue, clearly the present data do not support the conclusion that emissions from automobiles using normal, commercial leaded gasoline contribute significantly to environmental PCDD/PCDF.

Finally, it is possible to estimate the emissions of PCDD and PCDF from incineration of MSW and automobiles in the United States, based on the following assumptions, for 1974 (nearly the peak of PCDD/PCDF levels in Great Lake sediments), when 65,800 tpd of MSW was incinerated in the United States (Alvarez 1980):

(1) Only three incinerators, operating in 1974, with ESP or minimal emission control, could be identified from Beychok's standardized database (Beychok 1986), and a reference on incinerator construction (U.S. EPA 1979): Stuttgart, F.R.G.; Hamilton, Ontario; Chicago, Illinois. Their upper and lower PCDD/PCDF emissions rates are: Chicago, 1.9 mg t^{-1}; Hamilton, 260 mg t^{-1}. These values include only emissions from tetra- and penta-chlorinated dioxins and furans, so that they are comparable to the emissions reported by Marklund for automobiles, which include only these homologues.

(2) We assume that total emissions from automotive vehicles in the United States in 1974 are equal to the rate reported by Marklund *et al.* multiplied by the number of vehicle miles traveled by passenger automobiles in that year (U.S. Dept. of Commerce 1984).

Based on these estimates, automobile emissions in the United States in 1974 might have acounted for 2.3 to 31 kg $year^{-1}$ of tetra- and penta-PCDD and PCDF. However, in view of Muller and Buser's results, the true value is probably much lower. In comparison, MSW incineration probably emitted between 46 and 6300 kg $year^{-1}$. It would appear from these considerations that PCDD/PCDF in the emissions of MSW incinerators made a major contribution to environmental PCDD/PCDF, and hence to their levels in adipose tissue.

This conclusion emphasizes the trend in MSW combustion. Alvarez has established that the total capacity of operating MSW incinerators in the United States declined from 65,800 t day^{-1} in 1974 to 33,200 t day^{-1} in 1979 (Alvarez 1980). (Most incinerators were in violation of the new environmental regulations and many were closed down.) Since the late 1970s, increasing numbers of newly designed "resource recovery" plants (MSW incinerators that recover useful heat) have been constructed. According to a survey by Combustion Engineering Inc. in 1986 for the U.S. Conference of Mayors, about 20,000 t day^{-1} was incinerated in the United States, which—given the present

rapid rate of authorization and construction of "resource recovery" incinerators—is predicted to rise to about 73,000 t day^{-1} by 1989.

5. Conclusions

Based on the average adipose tissue concentration determined by the EPA survey, and assuming a constant chronic dose, the average lifetime cancer risk for the U.S. population due to PCDD/PCDF exposure is as much as 330–1400 per million, depending on the methodology used to estimate the relative cancer-enhancing effect of different isomers. PCDD/PCDF emissions from waste-burning incinerators are a major contributor to environmental exposure to these substances. Hence, the present PCDD/PCDF emissions from MSW incinerators must be significantly reduced if the cancer risk to the U.S. population is to be brought to a level consistent with EPA regulatory practice.

References

Ahling, B. & Lindskog, A. (1977), Formation of polychlorinated dibenzo-*p*-dioxins and dibenzofurans during combustion of 2,4,5-T formulation, *Chemosphere, 8*, 461.

Alvarez, R. J. (1980), *Status of Incineration and Generation of Energy from Thermal Processing of MSW*, presented at National Waste Processing Conference, ASME, Washington DC, 11–14 May.

Beychok, M. R.(1986). A data base of dioxin and furan emissions from municipal refuse incinerators, *Atmospheric Environment* (in press).

Bumb, R. R., Crummett, W. B., Cutie, S. S., Gledhill, J. R., Hummell, R. H. Kagel, R. O., Lamparski, L. L., Luoma, E. V., Miller, D. L., Nestrick, T. J., Shadoffy, L. A., Stehl, R. H. & Woods, J. S. (1980), Trace chemistries of fire: a source of chlorinated dioxins, *Science, 210*, 385.

California Air Resources Board (1986), *Report to the Scientific Review Panel on Chlorinated Dioxins and Dibenzofurans*, February.

Chemical Manufacturers Assn and Engineering Science Inc. (1986), *Results of the 1984 CMA Hazardous Waste Survey*, January.

Cleverly, D. (1986), personal communication, May.

Commoner, B., McNamara, M., Shapiro, K. & Webster, T. (1984), *Environmental and Economic Analysis of Alternative Municipal Solid Waste Disposal Technologies. II. The origins of chlorinated Dioxins and Dibenzofurans Emitted by Incinerators that Burn Unseparated Municipal Solid Waste, and an Assessment of Methods of Controlling them*, CBNS, Queens College, Flushing, NY, 1 December.

Commoner, B., Webster, T., Shapiro, K. & McNamara, M. (1985*a*), *The Origins and Methods of Controlling Polychlorinated Dibenzo-*p*-Dioxin and Dibenzofuran Emissions from MSW Incinerators*, presented at 78th Annual Meeting of the Air Pollution Control Association, Detroit, MI, 16–21 June.

Commoner, B., Webster, T. & Shapiro, K. (1985*b*), *Environmental Levels and Health Effects of PCDDs and PCDFs*, presented at the Fifth International Symposium on Chlorinated Dioxins and Related Compounds, Bayreuth, F.R.G., 16–19 September.

Commoner, B., Isaacson, J., Shapiro, K. & Webster, T. (1986*a*), *A Re-evaluation of the New York State Department of Health's Health Impact Evaluation of the Westchester and Occidental incinerators*, CBNS, Queens College, Flushing, NY. Jan. 28.

Commoner, B., Shapiro, K. & Webster, T. (1986*b*), *Risk assessment of the health effects of polychlorinated dibenzo-p-dioxin [PCDD] and dibenzofuran [PCDF] emissions from the proposed Hennepin County trash-burning incinerator*, January 17.

Czuczwa, J. M. & Hites, R. A. (1986), *Airborne dioxins and dibenzofurans: sources and fates, Environmental Science and Technology, 20*(2), 195.

Czuczwa, J. & Hites, R. A. (1984*a*), Environmental fate of combustion generated polychlorinated dioxins and furans, *Environmental Science and Technology, 18*(6), 444–450.

Czuczwa, J. McVeety, B. D. & Hites, R. A. (1984*b*), Polychlorinated dibenzo-*p*-dioxins and dibenzofurans in sediments from Siskiwit Lake, Isle Royale, *Science, 226*, 568–569.

Danish National Environmental Protection Agency (1984), *Formation and Dispersion of Dioxins, Particularly in Connection with Combustion of Refuse*, December.

Eiceman, G. A. & Rghei, H. O. (1982), Chlorination reactions of 1,2,3,4-tetrachlorodibenzo-*p*-dioxin on fly ash with HCl in air, *Chemosphere, 11*, 822.

Envirocon Ltd. (1984), *Report on Combustion Testing Program at the SWARU Plant, Hamilton-Wentworth*, prepared for Ontario Ministry of the Environment Air Resources Branch, Report No. ARB-43-84-ETRD, January.

Environment Canada, Health and Welfare Canada (1983), *Report of the Joint Health and Welfare Canada/Environment Canada Expert Advisory Committee on Dioxins*, Ottawa, November.

Environment Canada (1985), The national incinerator testing and evaluation program: two-stage combustion (Prince Edward Island), September.

Fries, G. F. & Marrow, G. S. (1975), Retention and excretion of 2,3,7,8-tetrachlorodibenzo-*p*-dioxin by rats, *Journal of Agriculture and Food Chemistry*, *23*(2), 265–269.

Gorski, T., Konopka, L. & Brodzki, M. (1984), Persistence of some polychlorinated dibenzo-*p*-dioxins and polychlorinated dibenzofurans of pentachlorophenol in human adipose tissue, *Rocznik Pzh.*, *35*(4), 297–301.

Haile, C. L., Blair, R. B., Lucas, R. M. & Walker, T. (1984), *Assessment of Emissions of Specific Compounds from a Resource Recovery Municipal Refuse Incinerator*, Task 61, Final Report, prepared by Midwest Research Institute for EPA. EPA Contract No. 68-01-5915, 22 May.

Hay, D. J., Finkelstein, A., Klicius, R. & Marentette, L. (1986), *The National Incinerator Testing and Evaluation Program: An Assessment of (A) Two-stage incineration; (B) Pilot scale emission Control*, prepared for presentation at APCA Annual Meeting, June.

Heilbrunn, L. V. (1943), *An Outline of General Physiology*. W. B. Saunders, Philadelphia.

Hoffman, R. E., Stehr-Green, P. A., Webb. K. B., Evans, R. G., Knutsen, A. P., Schramm, W. F., Staake, J. L., Gibson, B. B. & Steinberg, K. K. (1986), Health effects of long-term exposure to 2,3,7,8-tetrachlorodibenzo-*p*-dioxin, *Journal of the American Medical Association, 255*(15), 2031.

Hunt, W., Faoro, R. B., Curran, T. C. & Montz, J. (1985*a*), *Estimated Cancer Incidence Rates for Selected Toxic Air Pollutants Using Ambient Air Pollution Data*, U.S. EPA Office of Air and Radiation, Office of Air Quality Planning and Standards, Monitoring and Data Analysis Division.

Hunt, W., Faoro, R. B. & Haemisegger, E. (1985*b*), *Future Air Toxic Monitoring Needs*, ASQC Quality Congress Transcript, Baltimore, MD.

Kaiser, E. & Carotti, A. (1972), Municipal incineration of refuse with 2 percent and 4 percent additions of four plastics: polyethylene, polyurethane, polystyrene and polyvinyl chloride, *Proceedings of the 1972 National Incinerator Conference*, ASME, New York, p. 230, June.

Marklund, S., Rappe, C., Tysklind, M. & Egebeck, K.-E. (1987), Identification of polychlorintated dibenzofurans and dioxins in exhausts from cars run on leaded gasoline, *Chemosphere* (in press)

Muller, M. D., Buser, H.-R. (1986), Halogenated aromatic compounds in automotive emissions from leaded gasoline additives, *Environmental Science Technology 20* (11) 1151–1157.

NYS DEC (1985), New York State Department of Environmental Conservation, Division of Air Resources, *Preliminary Report on Sheridan Ave. RDF Plant, "Answers"*, 28 January.

NYS DEC (1986) New York State Department of Environmental Conservation, News Release, 24 January.

Olie, K., Lustenhouwer, J. W. A. & Hutzinger, O. (1982), Polychlorinated dibenzo-*p*-dioxins and related compounds in incinerator effluents. In *Chlorinated Dioxins and Related Compounds—Impact on the Environment* (O. Hutzinger *et al.*, Eds), pp. 227–244. New York: Pergamon Press.

Olie, K., Van Den Berg, M. & Hutzinger, O. (1983), Formation and fate of PCDD and PCDF from combustion processes, *Chemosphere, 12*(4/5), 627.

Ontario Ministry of the Environment (1985), Scientific criteria document for standard development No. 4-84: Polychlorinated dibenzo-*p*-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs), September.

Poiger, H. & Schlatter, C. (1985), *Pharmokinetics of 2,3,7,8-TCDD in man*, presented at the Fifth International Symposium on Chlorinated Dioxins and Related Compounds, Bayreuth, F.R.G., 16–19 September.

Rappe, C. (1984), *Problems in Analysis of PCDDs and PCDFs and Presence of these Compounds in Human Milk*, World Health Organization Regional Office for Europe, December.

Rappe, C., Buser, H. R. & Bosshardt, H. P. (1978), Identification and quantification of polychlorinated dibenzo-*p*-dioxins (PCDDs) and dibenzofurans (PCDFs) in 2,4,5-T-ester formulations and herbicide orange, *Chemosphere, 5*, 431.

Rghei, H. O. & Eiceman, G. A. (1984), Adsorption and chlorination of dibenzo-*p*-dioxin and 1-chlorodibenzo-*p*-dioxin on fly ash from municipal incinerators, *Chemosphere, 13*(3), 421.

Ryan, J., Lizotte, R. & Lau, B. P.-Y. (1985), Chlorinated dibenzo-*p*-dioxins and dibenzofurans in Canadian human adipose tissue, *Chemosphere, 14*(6/7), 697–706.

Schecter, A., Ryan, J. J., Lizotte, R., Sun, W.-F., Miller, L., Gitlitz, G. & Bogdasarian, M. (1985), Chlorinated dibenzodioxins and dibenzofurans in human adipose tissue from exposed and control New York State patients, *Chemosphere, 14*(6/7), 933–937.

Schecter, A., Weerasinghe, N. C. A., Gross, M., Gasiewicz, T., Constable, J. D. & Ryan, J. J. (1986), Human Tissue Levels of Dioxin and Furan Isomers in Potentially Exposed and Control Patients up to 15 Years after Cessation of 2,3,7,8-TCDD Environmental Contamination, presented at American Chemical Society National Meeting, Symposium on Solving Hazardous Waste Problems, New York, 15 April.

Shaub, W. M. (1984), *Technical Issue Concerned with PCDD and PCDF Formation and Destruction in MSW Fired Incinerators*, prepared for P. Casowitz, New York City Department of Sanitation.

Sheffield, A. (1985*a*), Polychlorinated dibenzo-*p*-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs): Sources and releases, *Environment Canada Report*, EPS 5/H1/2, July.

Sheffield, A. (1985*b*), Sources and releases of PCDDs and PCDFs to the Canadian environment, *Chemosphere, 14*(6/7), 811–814.

Stanley, J. S., Boggess, K. E., Onstot, J. & Sack, T. M. (1985), *PCDDs and PCDFs in Human Adipose Tissue from the EPA FY82 NHATS Repository*, presented at the Fifth International Symposium on Chlorinated Dioxins and Related Compounds, Bayreuth, F.R.G., 16–19 September.

Stephen, R. (1986), California Department of Health Services, personal communication, 27 January.

Uchida, S., Kamo, H., Kubota, H. & Kanaya, K. (1983), Reaction kinetics of formation of HCl in municipal refuse incinerators, *Industrial Eng. Chem. Process Des. Dev.*, 22(1), 144.

U.S. Conference of Mayors (1986), *City Currents*. Washington, DC, March.

U.S. Department of Commerce (1984), *Statistical Abstract of the United States*, Bureau of the Census, 104th Edition.

U.S. EPA (1979), Refuse-fired energy systems in Europe: an evaluation of design practices, Office of Water & Waste Management, SW 771, November.

U.S. EPA (1983), *Comprehensive Assessment of the Specific Compounds Present in Combustion Processes. I. Pilot Studies of Emissions Variability*, EPA-560, Office of Toxic Substances, Washington DC, June 1983.

U.S. EPA (1985*a*), Chlorinated Dioxins Work Group, *Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzodioxins and Dibenzofurans (CDDs and CDFs)*, 21 November.

U.S. EPA (1985*b*), Assessment of carbon tetrachloride as a potentially toxic air pollutant, *Federal Register, 50*(156), 32621–7.

U.S. EPA (1985*c*), Air pollution control; decision not to regulate vinyledene chloride and solicitation of information, *Federal Register, 50*(156), 32632–4.

U.S. EPA (1985*d*), Intent to list chloroform as a hazardous air pollutant, *Federal Register, 50*(188), 39626–9.

U.S. EPA (1985*e*), Assessment of ethylene dichloride (EDC) as a potentially toxic air pollutant, *Federal Register, 50*(200), 41994–8.

U.S. EPA (1985*f*), Methylene chloride; initiation of regulatory investigation, *Federal Register, 50*(201), 42037–47.

U.S. EPA (1985*g*), Intent to list perchloro ethylene, *Federal Register*, 28 December.

U.S. Public Law 91–604 (1970), *National Emission Standards for Hazardous Air Pollutants*, Section 112(a) and (b), in *U.S. Statutes at Large*, Vol. 84, Part 2, p. 1685, December 31.

Vogg, H. & Stieglitz, L. (1985), *Thermal Behavior of PCDD in Fly Ash from Municipal Incinerators*, presented at the Fifth International Symposium on Chlorinated Dioxins and Related Compounds, Bayreuth, F.R.G., 16–19 September.

CRITICAL FACTORS IN THE ASSESSMENT OF FOOD CHAIN CONTAMINATION BY PCDD/PCDF FROM INCINERATORS.

Thomas Webster* and Paul Connett

Center for the Biology of Natural Systems, Queens College, Flushing, NY 11367. * Chemistry Department, St. Lawrence University, Canton, NY 13617.

ABSTRACT

Three key factors have received little attention in incinerator risk assessments in the USA: the deposition of airborne compounds to the surface, the distribution of the chemicals on particles, and the exposure of people who live far away but consume food grown near the incinerator.

INTRODUCTION.

Contamination of food is a main route of human exposure to the PCDD and PCDF emitted by incinerators. Several assumptions have to be made in the estimation of such exposure. Usually, in health risk assessments, where an assumption has to be made, in the absence of clear data, the most conservative assumption is chosen. However, in several recent risk assessments for incineration projects in the USA, some of the assumptions made have been far from conservative, thus seriously underestimating the potential population exposure to PCDD and PCDF. This paper examines some of these assumptions in more detail.

Deposition.

Deposition of PCDD and PCDF from the atmosphere to the surface is the first step in the food contamination pathway. Many risk assessments in the USA have estimated dry deposition using the Industrial Source Complex (ISC) model. Although the physics underlying this algorithm is not explained in the User's Guide (TRC,1986), the ISC model is a variant on the work of Csanady (1955) and Overcamp (1976). In these models there are two independent and additive causes for deposition to the surface (Fig. 1). Gravity causes the plume to sink as it moves downwind at a settling rate equal to the Stokes' velocity (V_s) for each particle size. Deposition due to vertical plume dispersion is estimated by following a streamline : the transport velocity (V_t) at ground level is proportional to the wind speed (u) and the derivative of the vertical dispersion constant (s_z) with respect to downwind distance (x). For Pasquill-Gifford dispersion coefficients, we have:

This paper was presented at DIOXIN '87 (The Seventh International Symposium on Chlorinated Dioxins and Related Compounds) held at the University of Nevada, Las Vegas, Oct 4-9, 1987 and has been submitted for publication to the journal CHEMOSPHERE.

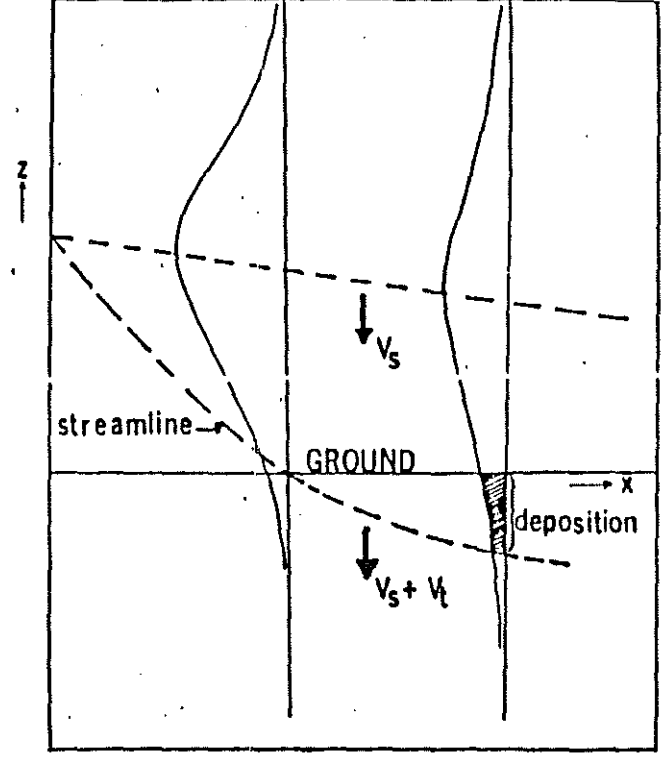


FIGURE 1 The ISC DEPOSITION MODEL showing plume sinking and vertical spreading. V_g = gravitational settling velocity, V_t = transport velocity.

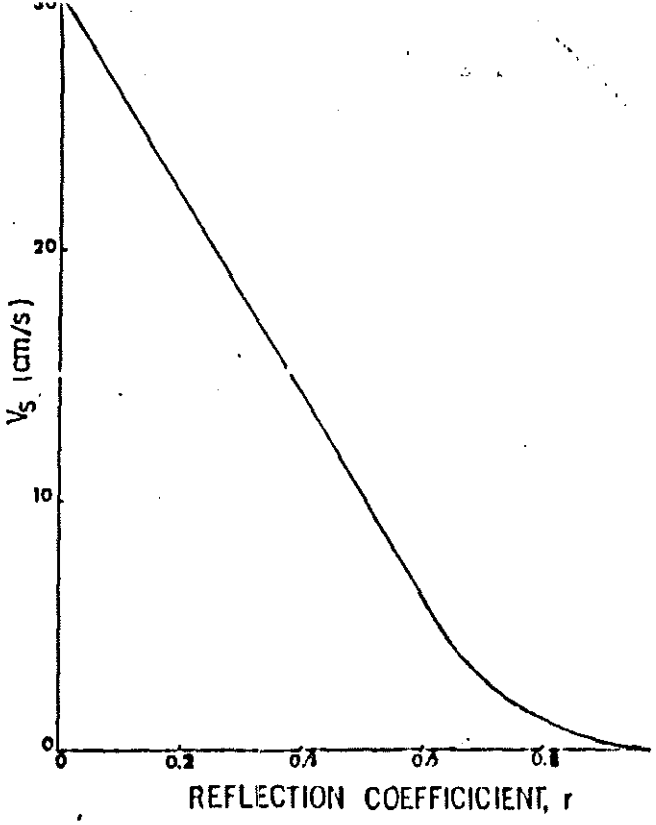


FIGURE 2 REFLECTION COEFFICIENTS versus gravitational settling velocity (V_s) from Dumbauld et al.

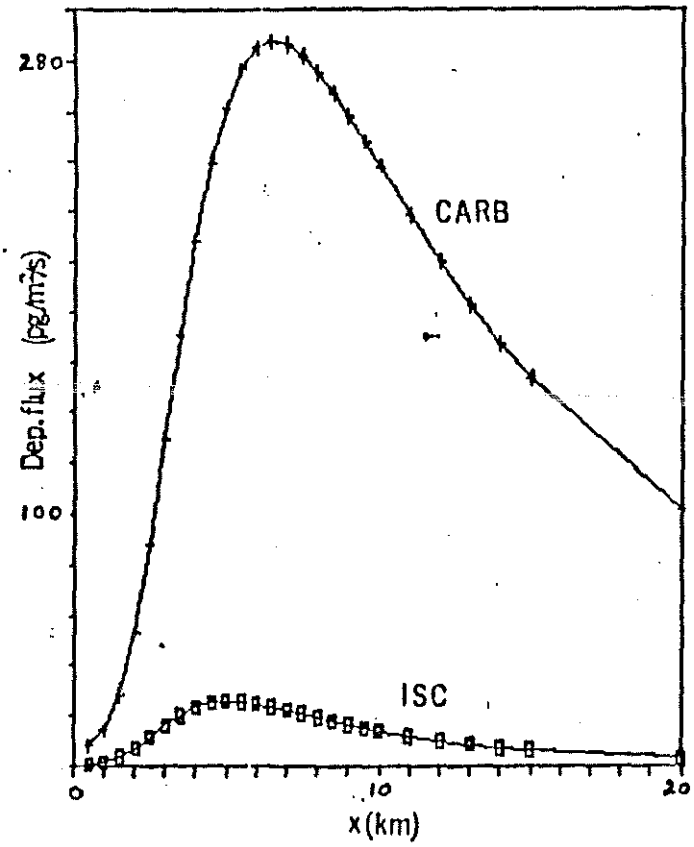


FIGURE 3 Computer modelled CENTERLINE DEPOSITION. Comparison of the CARB and ISC models for Deposition Flux versus distance from the stack.

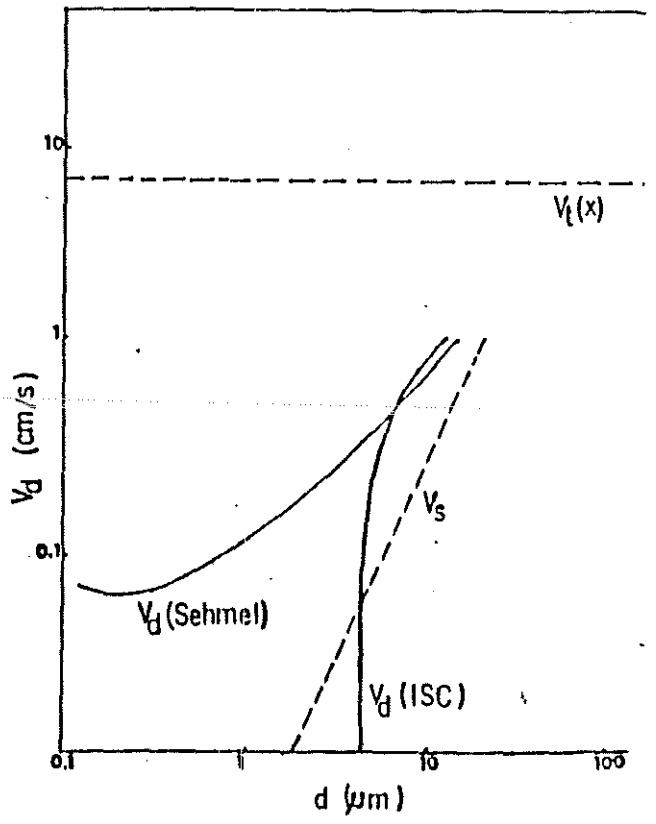


FIGURE 4 Comparison of deposition velocity (V_d), at the point of maximum impact, as a function of particle size, for the Sehmel and ISC models.

$s_z = ax^b$
$V_t = buH/x - bV_s$ where H=final plume height (1)

Note that V_s varies with particle size while V_t decreases with distance. The deposition flux (units of $g/m^2/sec$) is proportional to the volume of the plume "below" the surface.

The depositon velocity (V_d) is defined as the deposition flux devided by the air concentration at a reference height. Csanady and Overcamp recognized that surface effects can cause the sum of V_s and V_t to differ from V_d. The boundary condition is met with a reflection coefficient (r) which governs the strength of an image reflected plume. Using mass balance for a plume consisting of a single particle size :

$$C(x,y,0) = C_s(x,y,0) + C_r(x,y,0) = (1+r)C_s(x,y,0)$$
$$N(x,y) = V_d C(x,y,0) = (V_s+V_t)C_s(x,y,0) - (V_s+V_t)C_r(x,y,0)$$
$$V_d = (V_s+V_t)(1-r)/(1+r) \qquad (2)$$

C=air concentration C_s=concentration due to source plume
N(x,y)=deposition flux C_r=concentration due to reflected plume

The models satisfy equation 2 in different ways. Csanady assumed that $V_d = V_s$, while Overcamp assumed that V_d was empirically derived. In both cases, r is a function of downwind distance and V_d is constant. The ISC model, on the other hand, assumes that r is a constant; V_d is thus a function of distance.

The ISC model can be recast in a one-dimensional form by examining a verticle slice of the plume integrated cross-wind (r = 0 for simplicity) :

$$N = [V_s C + k_0 dC/dz] \Big|_{x,zref} \qquad \text{for all z when r=0}$$
$$k_0 = u s_z ds_z/dx$$

The first term in the equation is the deposition due to gravitational settling. The second term the "transport" flux, is proportional to the vertical gradient of the concentration. The "eddy diffusivity" constant (k_o) does not vary with height when r = 0. The model behaves as if the surface is an imaginary line with no effect on the air above it.

An alternative model now recommended by the California Air Resources Board (CARB) estimates deposition by multiplying ground level concentrations (calculated using a dispersion model) by a deposition velocity (CARB, 1986). The deposition velocity is based upon the wind-tunnel work of Sehmel and Hodgson (1980). Their equation takes a different form:

$$N = [V_s C + (k+D) dC/dz] \Big|_{x,zref}$$

Here the eddy diffusivity is a function of height and surface roughness, reflecting the effect of the surface on air flow. The model includes Brownian diffusivity (D) which varies inversely with particle diameter. The deposition velocity depends on surface characteristics and meteorological conditions as well as particle size and density.

The physics of the ISC model differs from the Sehmel-Hodgson model in several respects. By not including Brownian diffusion, the ISC model underpredicts deposition for small particles. Second, the difference in treatment of the transport flux causes ISC to overpredict deposition relative to CARB's model for near distances and underpredict for far distances.

The reflection coefficients given in the ISC User's Guide originated in a paper by Dumbauld et al. (1976) who state that the coefficients were derived from a hypothetical curve (Fig. 2). They assume that particles with gravitational settling velocities less than 0.1 cm/sec have a

reflection coefficient of unity; such particles do not deposit. This speed corresp particle of about 5 um with a density of 1 g/cm^3. As Sehmel and Hodgson show, this is incorrect (Fig. 4). Indeed, the deposition velocity for particles less than about 0.1 um to increase due to Brownian diffusion.

Although Dumbauld et al. tested the reflection coefficients experimentally, 99% of the oil droplets had mean diameters greater than 30 um. Two other ISC validation experiments used even larger particles (Bowers and Anderson, 1981). In contrast, most of the particles (measured by mass) emitted by municipal incinerators with modern air pollution control devices are smaller than 10 um. Dumbauld et al. warned that the reflection coefficient might not be applicable to other particles and ground conditions.

Since V_d decreases with distance for ISC, comparison of ISC and CARB results should be made in the context of a plume model. For this purpose we have used the ISC plume equations and the following assumptions : 1) a wind speed of 1 m/s at anemometer height, 2) Pasquil-Gifford stability class C, 3) typical stack parameters for new incinerators (USEPA, 1987), 4) a surface roughness of 10 cm, 5) a very high mixing height (to eliminate reflections), and 6) a particle size distribution frequently used in U.S. risk assessments and the surface area distribution of Table 1. Depositon along the plume centerline calculated using the ISC and CARB algorithms is shown in Fig. 3. CARB's results are much higher at all distances except those very close to source where ground level concentrations and deposition are negligible. Since the ground level concentrations for the two models are virtually identical for this particle size distribution, the difference in deposition is due to the magnitude of the deposition velocities. The total V_d, weighted by the particle size distribution, was 0.062 cm/sec for the CARB model at all distances. Deposition in the CARB model peaks where ground level concentration is highest. Since V_t is inversely proportional to distance in the ISC model, peak deposition occurs closer to the source. Total V_d was 0.006 cm/sec at this point, about one tenth of the CARB value.

The reason for this difference is shown by Figure 4. ISC deposition velocities were calculat using Equation 2 and the V_t at the point of maximum deposition of 8.9 cm/sec. Fig. 4 compare this curve with gravitational settling velocities and Sehmel-Hodgson deposition velocities. The ISC deposition velocities are approximately equal to those predicted by the Sehmel-Hodgs model for particles larger than about 10 um. The reflection coefficients drastically reduce V_d for particles smaller than 10 um.

The difference between the ISC and CARB results depends on the particular combination of particle size distribution and meteorological conditions. However, the ISC model will generally underpredict deposition for small particulates. Developed for large particles, th ISC model is being applied to particle sizes where it was not validated and where the physi is incorrect. Risk assessments which apply this model to incinerators should be rejected (e.g., Roy Weston, 1986; Malcolm Pirnie, 1987).

While the physics of the CARB model is an improvement, it needs further validation. Deposition under field conditions can exceed results in wind tunnel experiments by 1-2 orders of magnitude (Hicks and Garland, 1983). The Sehmel-Hodgson model also exhibits anomalous behavior for submicron particles as wind speed increases; it is not known whethe

this effect is real (Sehmel and Hodgson, 1980). Furthermore, the boundary conditions assumed by CARB, a constant flux layer above the surface, may not be correct for larger particles near the source, leading to an underprediction of deposition.

The Effect of Particle Size Distribution on Deposition.

Clearly, the assumed particle size distribution is critical. Despite the relatively large number of incinerator emission tests, there are few measurements of the distribution of PCDD and PCDF on particles of different sizes. This is partly a technical problem : protocols for measuring emissions are not thought to adequately differentiate gas and particle phase concentrations. Having chosen, often arbitrarily, from a small set of particle size distributions, U.S. risk assessors typically assume that PCDD and PCDF are distributed on the particles according to surface area. This may be reasonable given current knowledge of PCDD and PCDF chemistry. However, they estimate surface area by assuming that the particles are solid, smooth spheres of uniform density. If these assumptions are incorrect, surface area will not vary directly with the square of the aerodynamic radius. We have found only three measurements of the distribution of PCDD on particles. Of two samples of fly ash captured by ESPs (30-350 um), only one shows fine particle enrichment (Karasek et al., 1982). Samples collected between a quench reactor and a fabric filter (sizes < 2um, 2-10 um and >10 um) show PCDD and PCDF concentrations increasing with diameter (Concord Scientific, 1987). In the absence of more definitive data, use of calculated surface area is not a conservative assumption for risk assessments.

We calculated Sehmel-Hodgson deposition velocities using surface or mass weighting of two commonly used particle size distributions (Radian, 1986), averaged over a year of meteorological data (Radian, 1986).The deposition velocity for the particle size distribution measured at a pulse jet fabric filter was 0.06 cm/sec for surface weighting and 0.44 cm/sec for mass weighting. For a reverse air fabric filter, surface weighting resulted in a deposition velocity of 0.59 cm/sec and mass weighting in 0.84 cm/sec. Given the small amount of particle size data, the uncertainties regarding the distribution of PCDD and PCDF on particles, and the effects of agglomeration and wet deposition, we feel that a deposition velocity of 1 cm/sec is an appropriate conservative assumption.

Exported Risk.

Some recent risk assessments have estimated human exposure to food contaminated by incinerator emissions. They often calculate maximum individual risk and local population risk, but not "exported" risk: exposure to food grown near the incinerator but consumed elsewhere. Such an estimate can be easily made with one critical assumption: the pollutants must have a linear, no-threshold, dose-response curve. Despite the controversy over this question, we believe this is still the most appropriate model for 2,3,7,8-TCDD. Additional non-essential assumptions simplify the calculation: agricultural practices within the plume impact area are uniform, the products grown there are thoroughly mixed before consumption, and local poupulation and agriculture are constant over time. We assume uniform values for human body weight, food consumption per day, and loss of contaminant during processing of the food before consumption.

The model developed is for a single pollutant in a single crop. The average contaminant level of

the crop is a function of the average deposition rate in the area. The individual exposure and lifetime risk are : $D_i = waxf_iC/b$ for lifetime expo

$$r_i = pD_i$$

The total population risk is:

$$R_N = Sum(r_i) = (pwaC/b)\ Sum(f_ix) = (pwaC/b)(sq)$$

Although the fraction of each person's food which comes from the impact area (f_i) varies, sum of the product of this fraction and food consumption is equal to the entire crop production of the study area minus losses.

If we assume that the local population all consume the same fraction of contaminated food ($f_i = f_1$), the exported risk is :

$$R_E = R_N - R_1 = (pwaC/b)(sq - q_1) = R_1(sq/q_1 - 1) \qquad \text{where } q_1 = f_1 x N_1$$

The exported risk thus depends on the ratio of crop production to local consumption. The critical assumption of a linear , no-threshold, dose-response curve is required to keep t population risk a function of the amount of food consumed, independent (within limits) of number of people or its distribution.

An example of the impact of these calculations is drawn from an incinerator planned for Stanislaus County, California, a major agricultural area. Radian Corp. calculated local population risk but not exported risk (Radian,1986). They assumed (in our notation): $N_1 = 650{,}000$, $f_1 = 0.1$, $x = 0.557$ kg/day of dairy products. To calculate the export risk of dairy products, we use 1986 production of milk in the two county area that includes t impact area: 4.52 million kg/day (USDA, 1987). Since the impact area defined by Radian i about 10% of the two county area, we assume that the amount of milk contaminated (q) is 452,000 kg/day. Assuming that the amount of milk loss is negligble ($s = 1$):

$$q_1 = f_1N_1x = 36200 \text{ kg/day} \qquad R_E/R_1 = (sq/q_1 - 1) = 11.5$$

The exported population risk is, in this case, an order of magnitude above the calculat local risk. As this example shows, calculation of local risks can seriously underestima the total population risk for incinerators sited in agricultural areas. Since pollutant political boundaries, risk assessment must also.

Definitions for Exported Risk:

D_i=individual daily dose (mg/kg-day)
w=fraction of pollutant remaining after processing
a=pollutant GI absorption
x=consumption of crop (kg/person-day)
f_i=fraction of the individual's food grown in the study area
i=index referring to an individual
C=concentration in the crop (mg/kg)
b=body weight (kg)
p=pollutant potency (mg/kg-day)
r_i=individual lifetime risk
R_N=total population risk
s=fraction of the crop consumed
q=production of food in the st
R_E=exported population risk
R_1=local population risk
q_1=local consumption of contam food
N_1=size of local population

CONCLUSION.

Each of the three factors considered (dry deposition, particle size distribution and export) has either been underestimated or neglected in several recent risk assessm for incinerators. Individually, each factor can lead to an underestimate of PCDD and

exposure by a factor of about 10. Collectively, they can lead to underestimates of between two and three orders of magnitude.

TABLE 1: Deposition Velocities and Reflection Coefficients for a Commonly Used Particle Size Distribution.

Diameter (um)	Distribution by mass	Distribution by area	r	V_d-Sehmel (cm/s)
13	0.14	0.0038	0.78	0.90
6.2	0.08	0.0046	0.89	0.53
4.2	0.08	0.0068	0.99	0.40
2.4	0.10	0.0148	1.00	0.25
0.9	0.07	0.0277	1.00	0.09
0.2	0.53	0.9423	1.00	0.05
	1.00	1.00		

REFERENCES.

J. Bowers and A. Anderson, 1981, "An Evaluation Study for the Industrial Source Complex (ISC) Dispersion Model," EPA-450/4-81-002.

California Air Resources Board,1986, "Deposition Rate Calculations for Waste-to-Energy Projects

Concord Scientific Corp.,1987, "Evaluation of Emissions Test Results from an MSW Incinerator," prepared for the California Air Resources Board.

G. Csanady, 1955, "Dispersal of Dust Particles from Elevated Sources," Aust.J.Phys.,8, 545-550.

R. Dumbauld, J. Rafferty, H. Cramer, 1976, "Dispersion-Deposition from Aerial Spray Releases," Third Symposium on Atmospheric Diffusion and Air Quality, Amer. Met. Soc., Boston, MA.

B. Hicks and J. Garland, 1983, "Overview and Suggestions for Future Research on Dry Deposition" in Proc. of the Fourth Int. Conf. on Precipitation Scavenging, Dry Deposition and Resuspension, ed. H.R. Pruppacher et al, Elsevier, NY, quoted by P.Katen and J. Hubbe, 1985, J.Geophy. Res. 90, 2145-2160.

F. Karasek, R. Clement, A. Viau, 1982, "Distribution of PCDDs and Other Toxic Compounds Generated on Fly Ash Particulates in Municipal Incinerators," J. Chromat, 239, 173-180.

T. Overcamp, 1976, "A General Gaussian Diffusion-Deposition Model for Elevated Point Sources," J. Applied Meteorol., 15, 1167-1171.

Malcolm Pirnie, 1987, "York County(PA) Resource Recovery Project Multiple Pathway Health Risk Assessment".

Radian Corp., 1986, "Stanislaus Waste-to-Energy Facility Health Risk Assessment."

G. Sehmel and W. Hodgson, 1980, "A Model for Predicting Dry Depositon of Particles and Gases to Environmental Surfaces," AIChE Symposium Series 196, 76, 218-230.

G. Sehmel, 1980, "Particle and Gas Dry Deposition: A Review", Atmos. Env. 14, 983-1011.

TRC Environmental Consultants, Inc., 1986, "Industrial Source Complex (ISC) Dispersion Model User's Guide --Second Edition. Volume 1," prepared for the USEPA. PB-234259.

USDA Statistics Board, 1987, Personal communication, March 7 1987.

USEPA, 1987, "Municipal Waste Combustion Study: Assessment of Health Risks Associated with Municipal Waste Combustion Emissions, " EPA/530-SW-87-021g.

Roy Weston, Inc., 1986, "Air Quality Modelling Protocol for a Health Risk Assessment of the the Proposed Philadelphia (PA) Resource Recovery Facility."

CALIFORNIA AIR RESOURCES BOARD
PROGRAM Update #3

AIR TOXICS UPDATE

The Air Resources Board (ARB) took action on five toxic compounds during 1986 as part of California's Air Toxics Program. Three substances — hexavalent chromium, asbestos, and chlorinated dioxins/furans — were identified as toxic air contaminants (TACs), and decisions were made about the need to control two previously identified air toxics — benzene and ethylene dibromide.

This Update is the third in a series of publications on California's air toxics program. It provides an overview of the air toxics decisions made by the Board during 1986, and summarizes the characteristics of the three newly named air toxic substances — chromium, asbestos, and dioxins. In addition, the benzene control plan is described, and the decision not to develop control measures for ethylene dibromide is explained.

For the reader wanting a general description of California's air toxics law and how the program works, Air Toxics Program Update #1 is recommended. For a discussion of the start-up of the program and a description of the three substances identified as air toxics in 1985 — benzene, ethylene dibromide, and ethylene dichloride — please see Update #2.

CONTENTS OF THIS UPDATE

COMPOUND REVIEW

During 1986, there were 15 compounds at various stages of the identification and regulatory phase of the air toxics program. Those substances which had completed the identification phase and moved into or were already in the control measure phase were:

- benzene
- ethylene dibromide
- ethylene dichloride
- hexavalent chromium
- asbestos
- chlorinated dioxins/furans

Those substances which were in the identification phase at the end of 1986 were:

- cadmium
- vinyl chloride
- inorganic arsenic
- carbon tetrachloride
- chloroform
- ethylene oxide
- methylene chloride
- perchloroethylene
- trichloroethylene

Cadmium was considered and listed by the Board as a TAC in January 1987. Carbon tetrachloride, ethylene oxide, and methylene chloride are expected to follow later in the year.

Another Board action of general interest was the adoption in early 1987 of a revised compound ranking list. This list now contains 50 compounds of concern divided into three categories to reflect the status of the substances in the identification process. Category one contains those substances identified as TACs, Category two includes those substances currently under review or soon to be scheduled for review, and category three contains those compounds

a lifetime. In making these estimates, DHS found no compelling reason to differentiate between fiber types, thus all fiber types listed above have been identified as toxic air contaminants with the same associated risks.

Chlorinated Dioxins/Furans

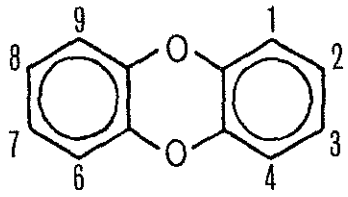
In July 1986, the Air Resources Board voted to list 15 compounds from the chlorinated dioxin and dibenzofuran family of substances as toxic air contaminants. Dioxins and furans were selected for identification as TAC's because several of these compounds are proven to cause cancer in animals and have the potential to be carcinogenic to humans. Another significant reason for their consideration is that dioxins and furans have been detected in the emissions from a number of different sources which are currently operating or are proposed for construction in California.

Americans first began to hear about dioxins after Vietnam veterans attributed adverse health effects to exposure to the defoliant Agent Orange, an herbicide which contains dioxins. Dioxins, however, are not a single substance but a generic term used to denote a family of chemicals. There are in all 75 chlorinated dioxins and 135 chlorinated dibenzofurans in this family, differing from each other by the number and position of chlorine atoms on the molecule. These compounds are grouped together (dioxins/furans) for identification as toxic air contaminants because of their similarities in chemical, physical, and toxic properties, as well as their environmental origins.

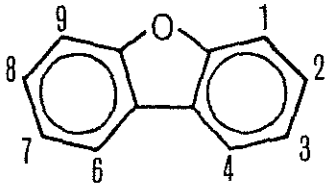
Out of this group of 210 compounds, the 15 that were identified as toxic air contaminants were those with a chlorine atom attached at the 2, 3, 7 and 8 positions and containing between four and seven chlorine atoms. No cancer threshold was identified because there was not sufficient scientific evidence available to identify a safe exposure level.

These diagrams of dioxin and furan molecules show in red the four positions where, if chlorine atoms are attached, the substances are toxic air contaminants.

DIOXIN



DIBENZOFURAN



Information about emissions of dioxins and furans is limited because they occur as unwanted by-products of certain chemical manufacturing and combustion processes. These substances are produced in very small quantities and are difficult to detect.

Recent evidence suggests that combustion processes are the major environmental source of dioxins, but few of these possible sources of emissions have been extensively tested. Emission rates appear to be related to the chemical composition of the fuel and the efficiency with which the burning takes place. Combustion temperatures seem to play a role in the formation and destruction of dioxins and furans. Although conflicting results from several studies make it unclear as to the exact role temperature plays in dioxin formation and emissions, tests of existing sources do give a strong indication that high temperatures, long resident time, and efficient mixing in an incinerator can reduce the amount of dioxins emitted.

From the tests conducted thus far, it appears that waste incineration may be a major source of dioxin and furan emissions, along with facilities burning wastes containing pentachlorophenol (a wood preservative) and wire recovery furnaces. Other potential sources in California are incinerators burning hazardous waste, sewage sludge, and hospital waste. However, because the composition of the wastes burned in these incinerators varies, it has been difficult to estimate emissions. Waste oil derived fuel is also a potential source of dioxins and furans.

Once emitted into the atmosphere, the chemistry of dioxins is largely unknown. Several research studies do indicate, however, that dioxins can be transported over long distances by the wind and therefore could have effects both in the immediate vicinity of the source and at areas distant from the source.

Dioxins and furans attached to airborne particles are eventually deposited on soil or water opening a secondary exposure route via ingestion and skin exposure. These substances are highly persistent in soils and can be present years after the introduction of dioxins occurred. The chemical properties of dioxins also allow it to be accumulated in fatty tissue. This has led to concerns that dioxins could accumulate up the food chain resulting in an effective dose of dioxins greater than that indicated by the levels in the air.

Thus, secondary exposure may be as significant as atmospheric exposure and could substantially increase the total public health risk of dioxin and furan emissions. However, in the absence of data on exposure for California residents, the DHS did not include effects of these secondary exposures in its risk assessment.

A number of polychlorinated dioxins and furans have been tested for their toxicity in animal studies and have been found to be highly toxic. The toxic effects of these substances include severe weight loss, liver disease, skin lesions, reproductive toxicity, suppression of the immune

system, cancer, and death.

The one dioxin that has been studied the most extensively and is considered to be the most toxic is 2,3,7,8 tetrachlorodibenzodioxin or TCDD, a dioxin with four chlorine atoms attached at the 2, 3, 7, and 8 positions. Based on animal studies DHS believes TCDD may act both as an initiator and as a promoter of cancer. The other chlorinated dioxins and furans identified by ARB as TAC's are thought to be carcinogens with similar toxicities but decreasing potency as the number of the chlorine atoms increases. All other dioxins and furans are not thought to be carcinogenic and were not included for identification at this time.

The epidemiological studies of persons exposed to dioxins have not been adequate to prove that these substances are carcinogenic to humans. Short term exposure of humans to high concentrations of dioxins has caused chloracne, a skin lesion which resembles mild to very severe acne which may last many years. Acute and chronic human exposure has also been associated with liver toxicity. However, no toxic effects other than cancer are expected to occur in humans at the ambient levels of chlorinated dioxins and furans predicted by the ARB staff.

Evaluating exposure levels to dioxins is difficult. Ambient concentrations of these compounds are so low that until recently they could not be detected in ambient air. Another complicating factor is that dioxins and furans are emitted from emission sources as a mixture which varies depending on the source, thereby making determination of the presence of its toxic forms more difficult.

To expand our information on background levels of dioxins and furans, ARB is currently funding an air monitoring study in Southern California. Monitoring will be done at a variety of locations both near and away from potential dioxin sources. In addition, ARB staff is surveying and evaluting the degree to which various stationary sources emit dioxins and furans.

Once the background exposure levels are determined, the overall public health risk from exposure to airborne dioxins and furans can be calculated using the DHS estimate of excess cancers — a maximum of 38 cancer cases per million people exposed to one picogram per cubic meter of air. In addition, the development of emission information about specific sources will be used in the regulatory review process where specific sources will be considered for regulation.

REGULATORY DECISIONS

Benzene Control Plan

Early in 1985, the Air Resources Board identified benzene as a toxic air contaminant in California and listed it as a TAC without an identifiable safe threshold. Once identified, the second phase of the air toxics program began — control measure development. During this risk management phase, the ARB prepares a report on the need and appropriate degree of regulation for the toxic substance.

The regulatory needs report, according to the state's air toxics legislation (Calif. Health & Safety Code 39665), must contain information on:

1) sources and emission levels;
2) the physical and chemical characteristics of benzene;
3) its public health effects; and
4) control measures, their availability, feasibility, costs and risk reduction.

Additionally, where there is no identified threshold, the law requires that toxic control measures reduce emissions to the lowest achievable level by using best available control technology or a more effective method unless another level is determined by a risk assessment to be adequate.

At the July, 1986 Board meeting, the ARB approved the Benzene Control Plan which describes an overall course of action for developing benzene control measures but does not adopt any specific measures. The plan identifies potential benzene control measures that reflect the use of either presently available control technology or technology which is expected to be feasible in the near future.

In reviewing emission levels, the ARB staff found that vehicular exhaust and fuel systems create 91% of the benzene emissions in California. The other non-vehicular sources — primarily gasoline marketing and refineries — combine to make up the remaining 9% of the benzene emissions.

Benzene emission levels have varied in California over the last 30 years with 1964 being the estimated high at around 40,000 tons per year. Since the introduction of smog controls on cars in 1964, benzene emissions have dropped over 50%. Without further controls, total benzene emissions in the year 2000 are expected to drop another 29% primarily because older cars will be replaced with newer, better controlled vehicles.

Exposure to benzene varies in California between urban and rural areas. Based on the 1984 ambient air monitoring data from around the state, ARB found that urban areas registered higher levels with the greater Los Angeles area showing the highest annual average at about 4 parts per billion (ppb). The statewide annual average was estmated to be above 3 ppb.

To estimate the current and future risk levels, ARB used the DHS health assessment range of risk for benzene — 22 to 170 excess cancers for each million people exposed to 1 ppb over a lifetime. When this risk factor is used with the statewide annual average exposure to benzene of 3.3 ppb, the individual risk of cancer is estimated to be between 72 and 560 for each million people in California. Applying this same DHS range of risk to the benzene emissions inventory for the year 2000, the individual risk of cancer was reduced 30% to a level between 52 and 400 excess cancers.

DIOXINS, FURANS AND PCBs: THE TRUE STORY

GREENPEACE

Dioxins, furans and PCBs have become some of the most controversial chemicals of modern society. Dioxin in particular has been labelled the most toxic chemical ever produced by man. More than $1 billion has been spent so far on dioxin research[1], yet at the same time, industry and government officials insist that not enough evidence on the toxicity exists to justify elimination of the sources.

This paper explores some of the myths and facts surrounding these environmentally dangerous chemicals and explains why the scientific debate has become of an increasing political nature.

What Are 'Dioxins'

The term 'dioxins' usually refers to a whole chemical family with 75 individual members, which more correctly should be termed chlorinated dibenzo-p-dioxins. The most toxic member of this family is 2,3,7,8-Tetra-Chloro-Dibenzo-p-Dioxin, often abbreviated as 2,3,7,8-TCDD.

Often, the term 'dioxins' also includes a closely related chemical family called chlorinated dibenzofurans. The most toxic among the 135 known furans is 2,3,7,8-Tetra-Chloro-Dibenzo-Furan (TCDF), which is one tenth as toxic as the corresponding dioxin, TCDD.

Of the 210 dioxins and furans, twelve are extremely toxic and are commonly referred to as the 'Dirty Dozen'. Their individual toxicity is ranked by comparing them to 2,3,7,8-TCDD via internationally agreed upon Toxic Equivalence Factors (TEFs). Box 1 (next page) shows the chemical structures of dioxins and furans, and their toxicity ranking.

PCBs are another chemical family closely related to dioxins. Due to their similar chemical structure, some PCBs can act through exactly the same pathways in organisms as dioxins; but are much less potent. However, due to their chemical nature, PCBs are inevitably contaminated with furans and dioxins, and will form these more toxic chemicals during fires.

How Toxic Are Dioxins [2]

a) Extreme Ability to Kill

Dioxin TCDD is the most toxic man-made chemical ever tested on laboratory animals. Acutely lethal doses are measured in micro-grams per kilogram animal weight, in the parts per billion range. [2e] Though the lethal dose varies considerably from species to species, dioxin has been found to be extraordinarily toxic to all species tested.

Characteristic of lethal dioxin exposure is the 'wasting syndrome': animals seem to waste away, and eventually die, without displaying any overt pathological symptoms. The exact reason why dioxin can cause death in these minute quantities is not yet known.[2e]

b) Extremely Bio-Accumulative

Dioxins are some of the most persistent and bio-accumulative man-made chemicals released into the environment. While dioxins can be broken down under certain conditions, in particular when exposed to intensive sunlight, they cannot be broken down once absorbed by soil or dust. When they enter the food-chain, they will bio-magnify, often to levels many thousands of times higher than their surroundings.[2d,3]

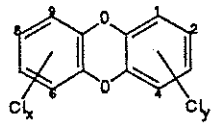
It is this combination of dioxin's extreme toxicity and its bio-magnification in the environment that makes Greenpeace believe that there can be no safe level of dioxin emissions.

Picture

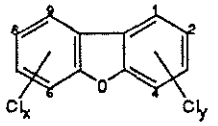
Times Beach

INTERNATIONAL TOXICITY EQUIVALENCY FACTORS (I-TEFS)

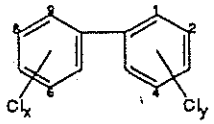
	I – TEF
2,3,7,8-TCDD	1
1,2,3,7,8-PeCDD	0.5
1,2,3,4,7,8-HxCDD	
1,2,3,7,8,9-HxCDD	0.1
1,2,3,6,7,8-HxCDD	
1,2,3,4,6,7,8-HpCDD	0.01
OCDD	0.001
2,3,7,8-TCDF	0.1
2,3,4,7,8-PeCDF	0.5
1,2,3,7,8-PeCDF	0.05
1,2,3,4,7,8-HxCDF	
1,2,3,7,8,9-HxCDF	
1,2,3,6,7,8-HxCDF	0.1
2,3,4,6,7,8-HxCDF	
1,2,3,4,6,7,8-HpCDF	
1,2,3,4,7,8,9-HpCDF	0.01



chlorinated dibenzo—p—dioxins



chlorinated dibenzofurans



chlorinated byphenyls (PCBs)

Box 1

c) Long-Term Toxicity: The Dioxin-Receptor

More worrisome than the high acute toxicity are the more insidious long-term effects of exposure to sub-lethal doses of dioxin. Daily doses 1,000 times below the lethal dose, the parts per trillion range, cause profound delayed effects in mammals, such as cancer, damage to the immune system, and reproductive failure.[2e]

Concentrations in water another 1,000 times lower, the parts per quadrillion range, can still cause a wide variety of toxic effects in fish, e.g. in rainbow trout.[3]

Scientists believe that the reason why dioxin is so toxic in minute quantities lies in its mode-of-action inside the cell. Dioxin imitates natural steroid hormones (e.g. estrogen) in our bodies. Dioxin fits into a protein receptor, which normally responds to these steroid hormones. The receptor then transports the dioxin directly into the cell nucleus, where it interacts with basic cell chemistry.[2a]

The 'dioxin-receptor' has been identified in laboratory animals as well as in humans. One can compare this mode-of-action with dioxin acting as a key to the receptor-lock. Some individual dioxins and furans fit better into the receptor than others; PCBs do not fit as well. 2,3,7,8-TCDD fits best into this receptor and consequently is the most toxic.

d) Chloracne

The disfiguring skin disease chloracne is often erroneously referred to as the only human health effect positively linked to dioxin exposure, and is often down-played in its severity. Yet, chloracne is always accompanied by other health effects, such as chronic weakness in the legs, severe pain in the joints, headaches, pronounced fatigue and irritability, and often lasts for decades, as several studies on occupationally exposed workers show.[2b]

e) Cancer

2,3,7,8-TCDD is the most potent carcinogen tested to date.[2] Researchers so far have been unable to clarify whether dioxin acts as a co-carcinogen or whether it suppresses the immune response to other carcinogens. Yet given the fact that other carcinogens are plentiful in our polluted environment, that question can be of academic interest only.

Does Dioxin Cause Cancer in Humans?

Much discussion has focused on whether 2,3,7,8-TCDD is a human carcinogen. Some evidence exists to support such a claim, but there are also indications that this discussion has not been without bias.

One of the best analyzed groups of exposed humans are chemical workers who produced 2,4,5-T (Agent Orange). The West German chemical company BASF experienced an explosion in 1953, which exposed workers to relatively high doses of dioxin TCDD. Many of the workers subsequently suffered from chloracne.

At the 1989 International Symposium on dioxin and its toxic effects, West German scientist F. Rohleder presented a re-analysis of these exposed BASF workers and found significantly elevated levels of respiratory cancer and cancer of the digestive system. [4]

Most disturbingly, Rohleder found that earlier studies, paid for by BASF itself, were fraudulent: non-exposed workers had been deliberately added to the 'exposed' cohort, and truly exposed workers, some of whom were displaying chloracne, had been deliberately excluded from the study.

Evidence that PCBs may be carcinogenic in humans is also mounting. A cancer study by the Cincinnati National Institute for Occupational Safety and Health found that Westinghouse workers in Bloomington, Indiana experienced a more than two-fold increase in mortality from brain cancer and a four-fold increase in deaths from skin cancer.[5]

The Shortcomings of Epidemiology

The reason clear proof of dioxins' and PCBs' carcinogenicity in humans does not exist, and may never exist, lies in some important short-comings of any epidemiological study: the humans investigated are exposed to many more toxic influences than just dioxin, and it will always be possible to point the finger at other factors possibly causing the disease. This poses an ethical dilemma, since it is impossible to raise humans in controlled environments such as a laboratory.

Further, epidemiological studies carried out so far rarely have verified the actual exposure of the presumed exposed versus the unexposed control group. That fact is probably the single most important reason why the findings of epidemiological studies carried out so far contradict each other so much.

Recently it has become possible to determine actual dioxin body burdens through analysis of blood serum, and some exposed cohorts investigated earlier, e.g. Vietnam Veterans and occupationally exposed workers, are being re-analyzed. However, individuals in these cohorts who have died since the original study was conducted are invariably excluded from these new studies.

f) Reproductive Effects

More subtle than chloracne or cancer are other health effects such as reproductive failure. It is striking that reproductive failure has been observed in all animal species tested, be it fish, bird or mammal. It is therefore highly likely that reproductive failure also occurs in humans exposed to dioxin.[2c]

Most disturbing are laboratory experiments on primates such as rhesus monkeys, whose reproductive systems were found to be extremely sensitive to dioxins when administered in minute doses on a daily basis. Researchers found a serious decrease in sperm count in exposed males, and an inability to conceive or carry the pregnancy to term in exposed females.[2d,6]

Some evidence of such reproductive failure in humans already exists. Jock Ferguson, a Canadian reporter who investigated health effects in occupationally exposed workers, once interviewed three Hooker Chemicals workers, all of whom suddenly came to realize that none had fathered children.[7] Why is it that incidences like these are always dismissed immediately as anecdotal evidence, and are not followed up in a formal investigation, e.g. an epidemiological study, whereas negative findings are always promoted as certainty?

Other reproductive effects observed in laboratory animals include stillbirths and birth defects. Dioxin has been linked to spina bifida, anencephaly (absence of brain) and cleft palate.[2]

g) Suppression of the Immune System

Perhaps most frightening of all are the effects dioxin has on the immune system. The thymus, a gland that is of utmost importance to the immune system, is one of the main targets of dioxin. It has been shown in laboratory animals that one of the first signs of dioxin poisoning is thymic atrophy.[d]

The human thymus develops at 9 weeks of gestation and disappears at puberty, at the age of 10 to 12. It seems that the thymus is not required for the maintenance of effective immune function in adults, since human T lymphocytes have a life-span of 15 – 20 years, and there is little replacement for them during adult life.[2d]

But what about children, and even worse, what does thymic atrophy do to nursing babies?

h) Behavioral Changes in Offspring and Minimum Effect Levels

A number of health effects have been noted at doses comparable to those producing cancer. Very few of the studies, however, have produced clear No Observable Effect Levels. This is particularly true of long-term studies in rodents and rhesus monkeys.[2e]

The available evidence suggests that No Observable Effect Levels for some of the immunologic and reproductive effects in rhesus monkeys are well below 1 ng/kg/day. [6] Behavioral changes in the offspring, for example, were observed in rhesus monkeys when exposed to dioxin levels in the diet as low as 0.12 parts per trillion.[6a]

Box 2 shows how these Minimum Effect Levels for immunotoxic, reproductive and carcinogenic effects, as observed in various animal species, compare to the average daily intake of nursing babies in the western industrialized world.[2d,8]

Dioxins in Human Milk

An average breast-fed baby in industrialized countries already ingests up to 100 times more dioxin than the World Health Organization (WHO) deems tolerable for a healthy adult.[8] The margin of safety, that is the difference between the levels of dioxin we expose our babies to and those that we know will cause adverse effects in laboratory animals, is on the order of ten to non-existent. Babies in heavily contaminated areas are already exposed to dioxin levels that are certain to induce toxic effects in laboratory animals.

Aside from dangerously high levels of dioxins and furans, mother's milk also contains other toxic chlorinated chemicals, such as PCBs, hexachlorobenzene, and polychloronaphthalenes to name a few. Yet no research has been done on the likely synergistic effects of these compounds.

Further, some scientists believe that exposure in utero from transplacental migration may have important effects on brain development, and thus may

Minimum Effect Levels and Tolerable Daily Intake of Dioxin, expressed in equivalents of 2, 3, 7, 8-TCDD (TEQ), compared to the Average Daily Intake by a nursing baby in industrialized countries. (2d,8)

EFFECTS	MEL (lab.tests) ng/kg bw/day	ADI (nursing baby) ng/kg bw/day
immunotoxic	6 (guinea pig)	
reproductive	0.12 (primates)	around 0.1
carcinogenic	10 (rats)	
	TDI pg/kg bw/day	**ADI pg/kg bw/day**
Sweden	1 – 5	
Canada	10	
USEPA	0.006	100
USFDA	0.06	
WHO	1	

Box 2

be of even more concern than postnatal exposure through mother's milk. [9]

Scientists will never be able to prove a link between health effects at a later stage in life to any toxic chemicals present in mother's milk or to exposure to these toxins in utero, simply because babies do not grow up in controlled environments such as a laboratory.

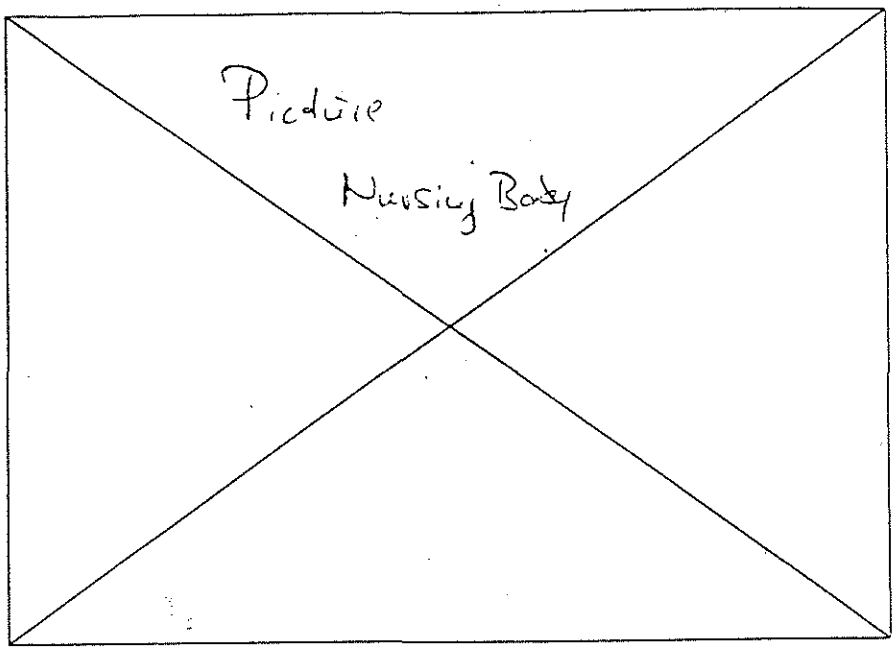
Who is at Risk?

Obviously, the human baby is of most concern when it comes to human health effects. But what about the entire environment? Despite all the money spent and all the papers published, we know very little about dioxin's effect on an entire ecosystem. It seems likely that animals and birds with a fish-based diet will suffer most.

The Baltic gray seal is a case in point. In the mid-seventies it was found that only 20 percent of the mature female gray seals were fertile.[10] This is commonly thought to be caused by PCBs in the Baltic food chain; and PCBs, as we know, react through the same protein receptor as dioxins.

Fertility is not the only effect linked to PCBs in the seals' diet: over 75% of the seals found dead in recent years have been found to have intestinal ulcers and kidney damage. Roughly half the female gray seals also had uterine tumors. Often, even the living display these same diseases. Interestingly, when seals are raised with a diet of less contaminated fish caught outside the Baltic, the seals are able to reproduce. Yet, this fact is often excluded in discussions about toxic effects of PCBs and dioxins, and seldom mentioned in official government or industry brochures.

Clearly, the solution to such environmental problems cannot be to place Baltic seals or beluga whales or fish-eating birds into a sanctuary and feed them less contaminated fish. Neither can the solution be to forbid breast-feeding. It is essential, then, to prevent any further build-up of these insidious chemicals in the food chain. This can only be achieved by immediate elimination of all sources of dioxins.



The Sources and Elimination Strategies

While the production of PCBs was finally outlawed worldwide, and the worry now is how to eliminate existing PCB wastes, dioxins and furans seem to come from many different and ongoing sources. Yet there is an obvious common denominator to these sources: modern society's use of chlorine.

It is often claimed that dioxin is a naturally occurring toxin, produced in forest fires and wood stoves. This theory, first introduced by Dow Chemical scientists as the 'Trace Chemistry of Fire' theory [11], has been convincingly disclaimed by at least three separate studies:

a) the Czuczwa study, which investigated contamination of Great Lakes sediments, found that dioxin levels were virtually non-existent prior to the Second World War, which coincides with the beginning of large-scale production and combustion of organochlorines.[12]

b) the Inuit mummy study, in which A. Schector investigated tissue of two 400-year-old mummies. Only minor amounts of the less toxic but very persistent octa-chlorodibenzo-p-dioxin (OCDD) were found. [13]

c) the Chilean mummy study, in which W.V. Lignon analyzed tissue of nine Chilean mummies for dioxins and furans. Again, only minor amounts of OCDD were found.[14]

All three studies conclude that rising dioxin levels are intimately linked to modern industrialized society. Box 3 lists strategies to eliminate major industrial sources of dioxin, all of which are connected with the use of elemental chlorine as well as the production and combustion of chlorinated organic chemicals (organochlorines).

Elemental chlorine does not exist in Nature, and Nature does not produce organochlorines on a large scale either, with the exception of some very simple molecules, such as methylchloride or dichloromethane.

Many of the industrial dioxin sources are easy to eliminate.

Chlorophenols, for example, are already banned in many European countries. Sweden actually experienced a decline of dioxin levels in human milk after banning both pentachlorophenol and chlorophenol-based herbicides.

Both Canada and the United States actively resist such a ban, and chlorophenols are still used for wood preservation (utility poles and railway ties) and as a fungicide on lumber destined for export. Once treated, these

wood articles become very significant sources of dioxin when burnt in wood stoves or incinerators.

Municipal incinerators are another very significant but completely avoidable source of dioxins. They not only generate vast amounts of dioxin-laden ash but also emit dioxins into the atmosphere where they can be transported over long distances, e.g. to the Arctic. The disposal of toxic incinerator ash has become a highly publicized problem since export schemes to Panama and other developing nations were exposed by Greenpeace.

Incinerators should be eliminated for other environmental reasons as well. Incinerators are not compatible with recycling systems, since comprehensive recycling systems eliminate cheap fuel from the waste stream, e.g. paper or plastics, thus eliminating the economic viability of incinerators.

Copper reclamation plants and hospital waste incinerators are also major dioxin sources due to the burning of PVC (polyvinylchloride) and PVDC (polyvinylidene-chloride) waste. Copper wires are coated with PVC, and many hospital disposable items are made of these chlorinated plastics, as are many disposable household products.

Many West German cities, e.g. Bielefeld, Munich, Aachen and others, have now banned the use of PVC material in public buildings to protect the public and fire fighters from dioxin formed during fires. The Danish government is actively pursuing a phase-out of all PVC articles, and is presently researching a feasible time-table.

The Swedish government is pushing for a phase-out of chlorinated solvents, due to the risks they pose to ground water supply, their effects in the lower atmosphere, and the associated waste disposal problems.

The pulp and paper industry as well as certain branches of the metallurgical industry are significant sources of dioxin due to the use of raw chlorine. Chlorine gas reacts with wood compounds or carbon electrodes to form dioxins. European governments are researching and implementing new production processes that would ban the use of chlorine and thus the generation of dioxin as well as other toxic organochlorines.

It is clear that eliminating these sources of dioxin means eliminating a much larger portion of toxic chemicals from our environment. This makes a lot of sense from an environmental point of view, because dioxins never come alone, but are always accompanied by other toxic organochlorines.

Dioxin indeed is only the tip of an iceberg of environmentally dangerous organochlorines and other organohalogens; and successfully eliminating modern society's dioxin sources will inevitably mean eliminating this iceberg, which is exactly the reason environmentalists are becoming more and more vocal in this matter. To Greenpeace, dioxin is a symbol of whether we want to deal with our pollution or whether we want to continue our self-destructive lifestyle.

SOURCE	ELIMINATION STRATEGY
a) PRODUCTION OF ORGANOCHLORINES, e.g.	
* chlorophenols and chlorobenzenes	ban production and use immediately
b) COMBUSTION OF ORGANOCHLORINES, e.g.	
* car exhaust, leaded gas	don't add org. chlorine scavengers (use unleaded gas)
* municipal waste incinerators	comprehensive recycling
* hazardous waste incinerators	waste reduction/elimination and use other destruction methods
* copper reclamation	eliminate PVC coating
* steel recycling	no chlorinated rubber/plastics to be used in car or machinery
c) USE OF CHLORINE GAS, e.g.	
* pulp and paper industry	less bleaching and bleaching with oxygen/ H202
* zinc/magnesium smelters	use chlorine-free process

Box 3

The Politics – Whose Interests Are At Stake?

Obviously, when the entire organohalogen production is being questioned, some very powerful interest groups want to have a say. Much is at stake, both in terms of liability law suits and lost profits.

It would be naive to think that the chlorine- and organochlorine-producing industry, e.g. PVC and chlorinated solvents or pesticide producers, have had no influence on the colour of dioxin science. Other vested parties to name include the incineration lobby, the pulp and paper industry and the metallurgical industry. Even defense departments are involved in the discussion, due to the use of Agent Orange in Vietnam and elsewhere.

The result: instead of devoting research efforts toward eliminating the sources, finding alternative products or production technologies, and safe methods of dealing with the existing wastes, the public is being deluged with attempts to linguistically detoxify dioxin, via media releases, information brochures and widely publicized risk assessments.

Risk assessments, in particular, can at best only be viewed as pseudo-scientific exercises, because they do not take into account:

- total exposure from all possible sources
- synergistic effects
- effects on the next generation, for example through contaminated human milk
- all possible health effects, rather than selected health effects only, e.g. certain forms of cancer.

Conclusions and Greenpeace Demands

Enough research exists to prove that dioxin is extremely toxic and persistent, and that levels in our environment and in human milk are increasing. Given that many health effects occur from exposure to even minute quantities over time, and that widespread contamination of our environment and the build-up of these chemicals in the food chain has already led to dangerously high levels in human milk and in marine mammals, all energy must be devoted toward preventing any further releases of dioxins into the environment.

The elimination of man-made dioxin sources would go hand-in-hand with the elimination of a much larger group of environmentally dangerous organochlorines, which would be extremely desirable from an overall environmental point of view. Elimination of all dioxin sources would mark a turning point in our dealings with pollution control, since a holistic approach would have to include the phase-out of an entire class of anthropogenic chemicals presently discharged in large quantities into the environment.

In 1983, after two years of research, the Ministers' Expert Advisory Committee on Dioxins stated that [15]:

"Regardless of arguments about the significance of species differences in sensitivity, the validity of risk assessments, and other uncertainties which may take years to resolve, it is quite clear that dioxins are very unpleasant things to have in our environment and the less we have of them the better. It is, in fact, imperative to reduce dioxin exposure to the absolute possible minimum."

Despite these recommendations, the Canadian government has failed to eliminate even such outstanding dioxin sources as pentachlorophenol, but has instead actually added new dioxin sources to the Canadian environment by building further municipal and hazardous waste incinerators.

Greenpeace demands that the Canadian government follow the leadership provided by forward thinking European governments, and:

establish a five-year plan to eliminate all known industrial dioxin sources,

and in particular:

- ban import and use of chlorophenols immediately;
- establish an indefinite moratorium on construction of new municipal and hazardous waste incinerators;
- phase out disposable products made of PVC or PVDC;
- phase out PVC coating of copper wire;
- phase out chlorinated solvents;
- eliminate the use of chlorine in the pulp and paper industry and metallurgical industry;
- establish a mass-balance of chlorine and organochlorines in Canada; i.e. determine the amount of chlorine gas and organochlorines produced, and their fate in the environment. This mass balance should extend to other halogens and organohalogens;
- commission a feasibility study on phase-out of all production and use of organochlorines.
- Fund research to find clean production technologies and alternatives to chlorinated products, as well as safe methods of destroying the existing piles of dioxin and other chlorinated waste.

This paper was researched and written by Renate Kroesa, M.Sc., Toxic Project Co-ordinator.

REFERENCES

1) Report from Conferences, the 5th Int'l Dioxin Symposium, Bayreuth, 1985; Chemosphere, 1986, 15, N1-2.

2) This entire section is based on the following five overview reports/books published on the toxicology of dioxin. All reports/books give an excellent overview and provide many detailed references to the interested reader.
   a) 'Human Health Aspects of Exposure to PCDDs and PCDFs'; IIAREP, Bethesda, Maryland, June 1986 (funded by the American Paper Institute).
   b) 'The Chemical Scythe', by Alistair Hay; Plenum Press 1982.
   c) 'A Cancer Risk-Specific Dose Estimate for 2,3,7,8-TCDD'; US-EPA/600/6-86/007Ab, June 1986, plus Appendices A-F.
   d) 'Dioxins in the Environment' by the UK Dept of the Environment; Pollution Paper No. 27, 1989.
   e) S.A. Skene et al, Human Toxicol, 1989, 8, 173-203.

3) P.M. Mehrle et al, Environmental Toxicology and Chemistry, 1988, 7, 47-62.

4) F. Rohleder, Presentation to the 9th Int'l Dioxin Symposium, Toronto, 1989.

5) T. Sinks, Presentation to the 7th Int'l Symposium on Epidemiology in Occupational Health, Tokyo, 1989.

6) a) R.E. Bowman et al, Neurotoxicology, 1986, 7, 637-650.
   b) J.R. Allen et al, Toxicology and Applied Pharmacology, 1979, 48, A180.
   c) J.R. Allen et al, Bulletin of Environmental Contamination and Toxicology, 1979, 21, 465-469.

7) 'Who do you believe?', Jock Ferguson; Chemosphere, 1985, 14 791-795.

8) PCBs, PCDDs and PCDFs in Breast Milk: Assessment of Health Risks; WHO, Regional Office for Europe; EH 29 (1988).

9) W.R. Swain; Aquatic Toxicology, 1988, 11, 357-377.

10) Monitor 1986, Sweden's Marine Environment - Ecosystems Under Pressure; National Swedish Environmental Protection Board.

11) a) R.R. Bumb et al (Dow Chemical), Science, 1980, 210, 385.
    b) Nestrick et al (Dow Chemical), Chemosphere, 1983, 12, 617-626.

12) J.M. Couture, R.A. Hites, Chemosphere, 1986, 15, 1417-1420.

13) a) A. Schecter et al, Chemosphere, 1988, 17, 827.
    b) A. Schecter et al, poster at the 9th Int'l Dioxin Symposium, Toronto, 1989.

14) W.V. Ligon et al (General Electric), Environ. Sci. Technol. 1986, 23, 1286-1290.

15) Report of the Joint Health and Welfare Canada/ Environment Canada Advisory Committee on Dioxins, November 1983.

GREENPEACE

Founded in Canada, 1971
Fondé au Canada, 1971

Vancouver
2623 West 4th Avenue
Vancouver
British Columbia
Canada V6K 1P8
✆ 604 736-0321
Fax 604 736-3878

Toronto
578 Bloor Street West
Toronto, Ontario
Canada M6G 1K1
✆ 416 538-6470
Fax 416 538-6479

Montréal
2444 Notre-Dame Ouest
Montréal (Québec)
Canada H3J 1N5
✆ 514 933--0021
Fax 514 933-1017

PRESTON
THORGRIMSON
SHIDLER
GATES & ELLIS

ATTORNEYS AT LAW

3200 U.S. BANCORP TOWER
111 S.W. FIFTH AVENUE
PORTLAND, OR 97204-3611
TELEPHONE: (503) 228-3200
FACSIMILE: (503) 248-9085

CYNTHIA L. HULL

August 8, 1990

VIA FAX NO. 223-5550

Mr. William P. Hutchison
Tooze Shenker et al.
333 SW Taylor Street
Portland, OR 97204

Re: Concerned Citizens Against Medical Waste Burning in Sherwood

Dear Mr. Hutchison:

On behalf of the Concerned Citizens against Medical Waste Burning in Sherwood, I request to be given ten minutes on the agenda of the Environmental Quality Commission's public forum scheduled for Friday in Bend. Concerned Citizens wish to address DEQ's processing of Therm-Tec's application for a permit to operate a medical waste burner in Sherwood.

Unless I hear from you to the contrary, I will assume Concerned Citizens will be placed on the agenda. Thank you.

Very truly yours,

Cynthia L. Hull

Cynthia L. Hull

CLH:dbm

NEIL GOLDSCHMIDT
GOVERNOR

Department of Land Conservation and Development

1175 COURT STREET NE, SALEM, OREGON 97310-0590 PHONE (503) 373-0050 FAX 362-6705

August 7, 1990

Roberta Young
Intragovernmental Coordinator
Department of Environmental Quality
811 SW 6th Avenue
Portland, Oregon 97204

Dear Roberta:

Thank you for sending me the packet of State Agency Coordination materials for the Environmental Quality Commission hearing on August 10, 1990. Your Hearing Officer's report and annotated text changes make it easy to understand and follow the many changes to the June draft.

I have reviewed the changes to the coordination program text and proposed rule (Chapter 340, Division 18) that were made in response to my recommendations and comments. These changes satisfactorly address several important changes and additions, along with many minor changes we discussed for this and previous drafts.

The DEQ State Agency Use Coordination Program and related proposed administrative rule contain all the components or elements required by OAR 660-30. DEQ's expanded land use coordination program and new rule will help your agency and local governments protect Oregon's land, air, and water resources.

After DEQ formally submits your EQC approved program and rule, the Department will prepare a staff report for a Land Conservation and Development Commission (LCDC) hearing to consider certifying your program and rule. Although Jim Knight and I feel you have developed a solid program, we cannot anticipate who might comment on your program during our review period, nor can we precommit LCDC to a decision on your submittal.

Jim and I appreciate your willingness to spend many hours answering our questions and discussing our recommendations. We look forward to receiving DEQ's land use coordination program and administrative rule.

Sincerely,

Mike Byers

Mike Byers

cc: DLCD SAC file
Jim Knight, DLCD
Michael Huston, DOJ
Larry Knudsen, DOJ

LANE
POWELL
SPEARS
LUBERSKY

August 2, 1990

Law Offices

520 S.W. Yamhill Street Suite 800 Portland, OR 97204-1383

(503) 226-6151

Telex: 269029-SPRS-UR Facsimile: (503) 224-0388

A Partnership Including Professional Corporations

Mr. Fred Hansen, Director
Department of Environmental Quality
811 S.W. Sixth Avenue
Portland, Oregon 97204

Re: DEQ State Agency Coordination Program
File No. 6143-1

Dear Mr. Hansen:

I am writing in response to the Department's revised State Agency Coordination Rule. As you are aware, this office on behalf of the Associated General Contractors and the Oregon Concrete and Aggregate Producers Association submitted written objections to the Department's draft rule. Subsequently, we met with Roberta Young and Mike Huston to resolve those objections. Due in large part to the candid and conscientious way in which Roberta and Mike approached our objections, we were able to agree on compromise language which has been included in the revised rule. The Associated General Contractors and the Oregon Concrete and Aggregate Producers Association therefore withdraw our objections to the Department's SAC rule as written.

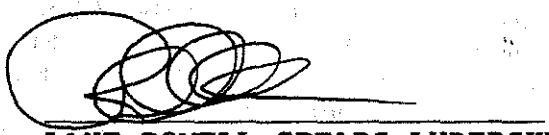
That is not to say, however, that we are in accord with the Department's SAC program as implemented. ORS 197.180 clearly envisions that state agencies whose programs significantly affect land use will participate on the "front end" of the land use process, e.g. when the significant land use decisions are made by local governments (periodic reviews, significant amendments to comprehensive plans, etc.). The Department of Environmental Quality is failing to meet this statutory

Anchorage, AK
London, England
Los Angeles, CA
Mount Vernon, WA
Olympia, WA
Portland, OR
Seattle, WA
Vancouver, WA
Tokyo, Japan

responsibility because "[m]inimal staff resources are currently available for land use related participation and assistant purposes" (Request for EQC Action page 3 "Program Considerations").

Thus in practice (as opposed to on paper) DEQ is failing to meet its land use responsibilities. This failure is magnified when viewed in light of the Department's proposed budget request. While the budget request seeks to double the Department's overall staffing (a request that is unwarranted in our view), there is no discernable effort to address the Department's admitted failure to assign resources to this critical area. The Department cannot continue to abrogate its land use responsibilities by failing to assign the necessary resources. Until such time as the Department makes these necessary decisions, we believe that the Department will not be in full compliance with ORS 197.180.

Sincerely,



LANE POWELL SPEARS LUBERSKY
of Attorneys for Associated
General Contractors and Oregon
Concrete and Aggregate
Producers Association

cc: Dick Angstrom
Ray Phelps
Roberta Young
Michael Huston

NEIL GOLDSCHMIDT
GOVERNOR

Department of Environmental Quality

811 SW SIXTH AVENUE, PORTLAND, OREGON 97204-1390 PHONE (503) 229-5696

July 19, 1990

Robert Liberty
Senior Staff Attorney
1000 Friends of Oregon
300 Willamette Building
534 SW Third Avenue
Portland, OR 97204

Re: Land Use Planning

Robert

Dear Mr. Liberty:

Thank you for your letter of July 3 in reference to budgeting for participation in the land use planning program. As you noted, the Department has historically participated in the development of local government's land use plans. This has been possible in part due to the fact that an existing position - Intergovernmental Coordinator - was originally funded in prior budgets to assist in supporting the land use planning program.

I agree with you that it is far more efficient to have staff with a background in Oregon's planning laws and programs to address the needs related to coordination. Roberta Young of our staff was hired as the Department's Intergovernmental Coordinator in part based on her experience with land use planning.

We are presently in the process of adopting by administrative rule a State Agency Coordination program. This rule development has involved Roberta full-time for over four months, notwithstanding numerous additional staff hours from individuals in each of the Department's program areas - air quality, water quality, hazardous and solid waste, and environmental cleanup. The updating of our land use policies to a create a State Agency Coordination program would have suffered without Roberta's expertise. Her programmatic knowledge has allowed efficient and effective communication with the Department of Land Conservation and Development's staff to prepare the program for adoption by administrative rule. The Environmental Quality Commission will act on the proposed rule at its upcoming August 9 meeting.

In preparing the 1991-93 budget, we recognize the need to plan for on-going resources to support the State Agency Coordination program. The proposed budget will request continued funding for the existing intergovernmental coordinator position whose responsibilities include this task. In addition, we are planning to shift some existing responsibilities from this position to other new positions requested in the budget. The intent is to shift some responsibilities to new positions in order to allow for the Intergovernmental Coordinator to devote more time to the program.

Sincerely,

Fred Hansen
Director

FH:p
cc: Peter Dalke, DEQ
Roberta Young, DEQ

Audubon Society of Portland
5151 N.W. Cornell Road
Portland, Oregon 97210
503-292-6855

August 9, 1990

Environmental Quality Commission
811 SW Sixth Avenue
Portland, Oregon 97204

Dear Commissioners,

I would like this letter to be read into the record at the August 10th meeting of the Commission that is being held in Bend, Oregon since I will be unable to attend that meeting. I am writing in support of a DEQ staff recommendation of 100' buffers for Washington County stream corridors and wetlands to assist in achieving higher water quality for the Tualatin basin.

I have been involved in land use issues in Washington County for over ten years and have seen the incremental loss of wetlands, riparian habitat and, in some instances, entire segments of streams due to inadequate protection of these resources. The standard Washington County "buffer" over the years has been zero to a maximum of 25' which any review of the literature will substantiate as insufficient to protect the beneficial uses of these aquatic resources. As I understand it, the DEQ staff recommendation does not require, but merely suggests a 100' buffer. It has been my experience throughout the region that if a regulation is not required it will not be enforced and even then variances are routinely given. My suggestion would be that a 50' minimum buffer be required on both sides of all urban streams, with a target of 100' as suggested by staff. This should allow for accommodation of development considerations in the urban setting where less flexibility is sometimes availability due to existing conditions. A 100' buffer should be required in agricultural settings.

I was surprised to learn that the Unified Sewerage Agency has gone on record as opposing these provisions. I sat on the Citizens Advisory Committee for their Surface Water Management program which placed great importance on non-structural alternatives to achieve higher water quality standards. One of the key strategies recommended by the Advisory Committee and adopted by U.S.A. staff, with the concurrence of County Commissioners, was protection

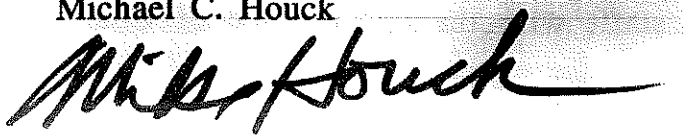
of existing stream corridors and wetlands and additional wetland creation, when that could be shown to be an effective measure.

There is ample evidence in the literature to support substantial buffers around wetlands and streams to achieve water quality, wildlife habitat and other environmental goals. King Co., Washington, for example, has established 150' buffers around all high quality wetlands, 75' around wetlands of "lesser quality" and 50' minimum around other wetlands. Clark Co., Washington recently adopted a 100' minimum buffer around high quality wetlands.

The trend throughout the United States is for more protection of aquatic systems, not less. One strategy to achieve added protection is to require expanded buffers. I would respectfully remind the Commission that, although its charge is to address water quality issues, the use of larger buffers around urban wetland and stream systems have benefits that go far beyond water quality objectives. Water quantity, wildlife habitat, aesthetic values, passive recreation opportunities and enhanced property values are other multiple benefits that result from increased "buffers."

Finally, I would like to point out that the term "buffer" is misleading since the streamside or non-wetland vegetation surrounding many wetlands are an integral part of the aquatic system. Riparian vegetation that is often referred to as a "buffer" should be regarded as **part** of the aquatic ecosystem that contributes to water quality, water quantity, wildlife habitat, fisheries and other beneficial uses. The Department of Environmental Quality is to be commended for taking a proactive approach to remedying water quality issues in the Tualatin basin which reflect the importance of ecosystems in maintenance of beneficial uses of our streams and rivers. The Commission must now assess the political ramifications of adopting biologically and technically sound direction from its staff. Unfortunately, political considerations have been responsible for past losses of aquatic systems throughout the Portland metropolitan region which has contributed to decreased water quality, loss of wildlife habitat and reduced quality of life for people. It is time we redress past environmental mistakes and work toward restoring the natural resources that have been degraded in the process.

Sincerely,
Michael C. Houck



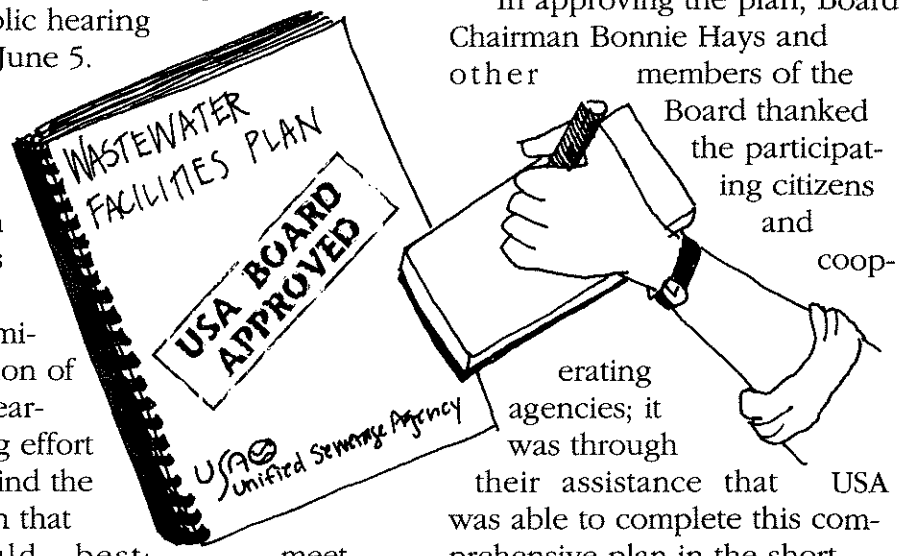
TUALATIN RIVER WATCH BULLETIN

155 N. First Avenue, Suite 270
Hillsboro, Oregon 97124

UPDATE ON THE UNIFIED SEWERAGE AGENCY FACILITIES PLAN — JULY 1990

USA BOARD APPROVES FACILITIES PLAN, PLAN GOES TO DEQ

On *June 29*, the Unified Sewerage Agency (USA) submitted its Wastewater Facilities Plan to the Oregon Department of Environmental Quality (DEQ). The recommended plan was approved by USA's Board of Directors following a public hearing on June 5.



This action was the culmination of a year-long effort to find the plan that could best: meet DEQ's deadlines for water quality standards; accommodate future needs; and be acceptable to the community.

The final plan is a refinement of the plan that was outlined in our May newsletter – a flexible combination of advanced treatment, reuse of treated wastewater, and wetlands. The final plan addresses input from the last round of advisory committee and public meetings. (See back page for an illustration of the plan.)

In approving the plan, Board Chairman Bonnie Hays and other members of the Board thanked the participating citizens and cooperating agencies; it was through their assistance that USA was able to complete this comprehensive plan in the short time frame.

The Metropolitan Service District, along with other groups and individuals that appeared at the hearing, strongly supported the plan and process, noting the "extraordinary effort to involve citizens and agencies. USA has gone far... and fast." Several farmers cited their success with reusing treated wastewater for irrigation.

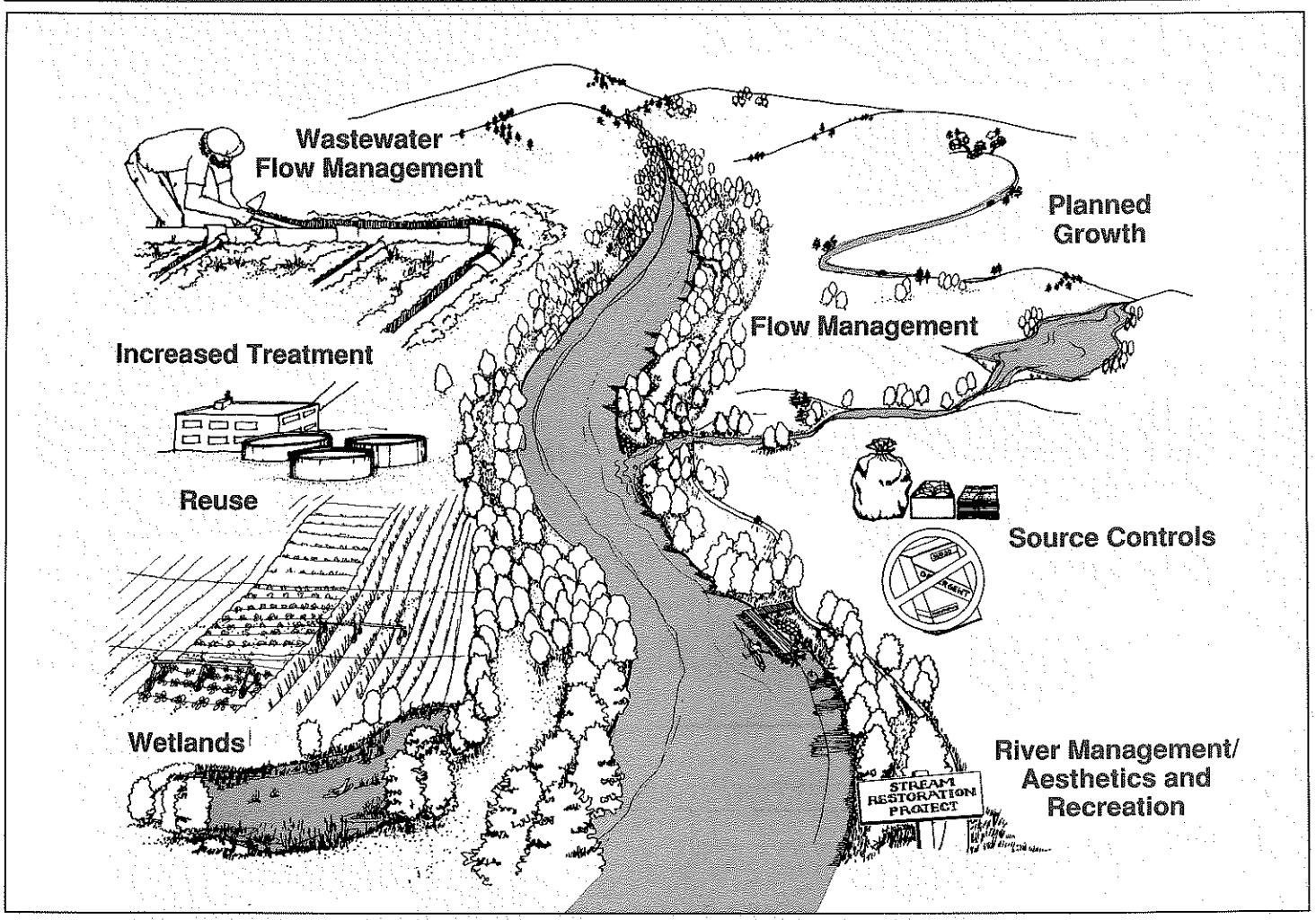
Of course there were concerns, too.

- Will enough farmers accept reuse?
- Will the public understand the plan and accept the costs?
- How will USA coordinate with other agencies and jurisdictions in implementing the plan?
- Is the financing strategy sufficient to pay for the program – can we afford it?

Most of these issues have been discussed throughout the planning process in previous newsletters, and are addressed in the final plan. In this newsletter we take a closer look at the financing plan developed as part of the Facilities Plan.

The final plan will be reviewed by the state Environmental Quality Commission (EQC) at their August 10 meeting (see notice on back page).

A FLEXIBLE PLAN FOR TUALATIN RIVER WATER QUALITY



Wastewater Flow Management: Reduce rainwater in sewers by:

- Sewer rehabilitation
- Sewer construction & inspection requirements.

Increase Treatment: Produce highly treated effluent (either for reuse or discharge to river) that meets the new DEQ standards.

Reuse:

- Reuse up to 70% of effluent for irrigation.
- Expand program to reuse sludge on agricultural land.

Wetlands: If studies show it is feasible, develop new wetlands to provide additional treatment of about 8% of effluent.

Planned Growth: Ensure water quality impacts are considered in land use planning.

Flow Management: Maintain adequate flows in the river by managing existing resources and adding storage to existing Barney Reservoir.

Source Controls: Reduce the amount of pollution that users put in the system

- Phosphate detergent ban.
- Industrial pretreatment/user fees.
- Public education on recycling, composting, disposal of harmful substances and other water quality issues.

River Management/Aesthetics and Recreation: Advocate protection of habitat and river access.

Oregon Environmental Quality Commission to review USA Facilities Plan

You can attend:

Friday, August 10
9:00 a.m.
High Desert Museum
59800 S. Hwy 97
(between Bend & Sunriver)

Or send your written comments to
William Hutchison, Jr., Chairman
Environmental Quality Commission
811 SW 6th Ave.
Portland, OR 97204

August 2, 1990

William Hutchison, Jr.
Chairman,
Environmental Quality Commission
811 SW 6th Avenue
Portland, Oregon 97204

Dear Mr. Hutchison;

I am a member of the Citizens Advisory Committee, Facilities Plan, working with Unified Sewerage Agency of Washington County. I am unable to attend the August 10th meeting in Bend, but would like to submit my comments to you via this letter.

Our committee fully supports the five month extension, which we feel is necessary to finish initial construction improvements.

We support the concept of reuse of treated wastewater along with usage of wetlands. However, our committee did not support a dam, nor the export of water.

Our committee feels that cooperation on all sides is the key to having a truly flexible plan.

Thank you for your time.

Sincerely,

Linda L. Reeder

Linda L. Reeder

August 2, 1996

Attention: Dr.
Chairman,
Clean Environmental Engineering Commission
P.O. Box of Eugene
Corvallis, Oregon 97330

Dear Dr. Mendelsohn:

I am a member of the Oil Spill Advisory Committee and will be voting on Monday, August 5 on the proposed Emergency Response Program. I am unable to attend the August 5th meeting in person. I would like to be recorded as voting in favor of the proposal.

Our committee fully supports the City Water Board's decision to proceed with the necessary improvements to Clearwater Creek.

We support the concept of the proposed wastewater reuse facility, but have some questions. However, we feel the benefits outweigh the risks.

Our committee feels that cooperation can only help. The two boards should work closely together.

Sincerely,

Linda L. Chandler

METRO

2000 SW First Avenue
Portland, OR 97201-5398
(503) 221-1646
Fax 241-7417

August 1, 1990

Environmental Quality Commission
811 SW Sixth Avenue
Portland, OR 97204

Dear Sirs:

At it's July 25, 1990 meeting the Water Resources Policy Advisory Committee voted unanimously to endorse the Unified Sewerage Agency of Washington County's Wastewater Facilities Plan including the USA's request for an extension of the compliance deadline for the Durham Facility.

The WRPAC is composed of 22 representatives of local governments, state and federal agencies and environmental and industrial organizations.

Sincerely,

Laurence R. Sprecher
Water Policy Analysis
Planning and Development

CLACKAMAS COUNTY

Department of Utilities

DAVID J. ABRAHAM
DIRECTOR

August 9, 1990

Environmental Quality Commission
811 SW 6th Ave
Portland, OR 97204

RE: Adoption of Proposed Rules Regarding Reclaimed Water
(Treated Effluent)

Dear Commission Members:

The Department of Utilities remains concerned about the adverse impact of the proposed rules on its facilities and plans regarding use of reclaimed water. The comments which follow are applicable to the setting in which we operate; non-agricultural reuse in an urban area.

First, the highest levels of treatment in Table 1 (Levels III and IV) still exceed the treatment levels required to discharge into most waters of the state. As long as this situation exists, there is no incentive to recycle. Obviously protection of human health must control the level of treatment for reuse, but we remain concerned that the levels of treatment proposed are excessive.

Second, the total coliform parameter remains inappropriate and the standard proposed for treatment Levels III and IV approaches drinking water standards. We believe that fecal coliform is the more appropriate parameter.

We also believe that the change in the standard from 10/100 ml of fecal coliform in the present guidance to 2.2/100 ml of total coliform in the proposed rules imposes a heavy treatment burden without a corresponding human health benefit.

We request that these concerns be resolved.

Sincerely,

Steven E. Simonson

STEVEN E. SIMONSON, P.E.
Manager of Wastewater Treatment

/jk

902 Abernethy Road • Oregon City, Oregon 97045 • (503) 650-3323

20 years of service

ASPHALT PAVEMENT ASSOCIATION OF OREGON

JAMES E. BRITTON
Executive Director
CHUCK GASKILL
President
STEVE LOOSLEY
Vice President
PAT DEAN
Secretary/Treasurer

3747 Market Street, N.E. - Salem, Oregon 97301
(503) 363-3858

August 6, 1990

Mr. Fred Hansen, Director
Department of Environmental Quality
811 SW 6th Ave
Portland, OR 97204

Dear Mr. Hansen:

Enclosed are copies of a letter addressed to the Commission and distribution to the Commission members would be appreciated. Delivery prior to the August 10th EQC meeting would be most helpful.

I plan to attend the August 10th meeting and make additional comments. The contents of the letter will not be read or paraphrased. Thank you for your cooperation.

Very truly yours,

James E. Britton

James E. Britton, P. E.
Executive Director

JEB/dl
DEQCvr.Doc

20 years of service

JAMES E. BRITTON
Executive Director
CHUCK GASKILL
President
STEVE LOOSLEY
Vice President
PAT DEAN
Secretary/Treasurer

ASPHALT PAVEMENT ASSOCIATION OF OREGON

3747 Market Street, N.E. - Salem, Oregon 97301
(503) 363-3858

August 6, 1990

Environmental Quality Commission
811 SW 6th St
Portland, OR 97204

RE: WASTE TIRE UTILIZATION

Commissioners:

Your concern as to the disposal of millions of waste tires in an environmentally acceptable manner is quite understandable. Satisfactory disposal is a world wide concern and incorporation of waste tire rubber into asphalt cement paving has been proposed in many areas for more than 35 years. Some variations of the process have found favor in limited areas. The process has not gained general acceptance for routine use by either the Federal Highway Administration (FHWA) or the American Association of State Highway Transportation Officials (AASHTO).

During this same 35 year period (and longer) the paving industry and street, road and highway agencies have worked towards cost effective recycling of paving materials. Asphalt cement pavement consists of about 94% aggregate and 6% asphalt cement by weight. At times there are 2-3% performance enhancing materials added. Conservation of both the aggregate and asphalt cement through recycling is becoming more important as aggregate mining becomes increasingly difficult and the world oil supply becomes less predicatable. The present level of effective recycling has been reached through cooperative efforts of equipment manufacturers, material suppliers, paving contractors and federal, state and local agencies. This progress was not without cost and frustrations. Significant changes had to be made to comply with increasingly more stringent pollution control laws.

The point of the preceding paragraph is to point out to you that the paving industry, in concert with the highway and street building agencies, has developed an effective material and energy conservation program. There is apprehension that the addition of waste tire material may materially reduce the ability to recycle asphalt cement pavement. Tires are manufactured in many countries and with varying blends of materials and this may result in inconsistent chemicals being introduced into the rubber modified mix. How will these constituents react in the presence of extreme heat during recycling years later? Will there also be a haze discharge? Some air discharge limits are extremely low and compliance during hot recycling may be nearly impossible.

To move your waste tire program forward, it is suggested that both the industry and the Highway Division be directly involved with selection, monitoring and evaluation of pilot and test programs. Please understand that a pilot program must include both the product being tested and the product that would normally be specified for a valid evaluation. This is especially true when the tested product is an "added cost" product. It is also suggested that any plant producing rubber modified mix as a part of pilot or test programs be exempt from the air discharge permit limitations during the test. It would seem to be inconsistent with public policy to fine a person for trying to help develop a process.

The industry is not adverse to progress and works on a continuing basis toward product improvement with resultant economic benefits to the public. Opportunity for direct participation in the waste rubber tire modified mix program would be appreciated by the industry.

Very truly yours,

James E. Britton, P.E.
Executive Director

JEB/dl
EQCWT.Doc

TheWetlandsConservancy

August 6, 1990

Mr. William Hutchison, Chairman
Environmental Quality Commission
811 S.W. 6th Avenue
Portland, OR 97204

Re: Unified Sewerage Agency Surface Water Management Plan

Dear Chairman Hutchison and Commissioners,

I am writing this letter since I am unable to drive to Bend to give my testimony personally. I was at the 29 June hearing in Portland but the hearing was continued. My role in all this was as a member of the Citizen Advisory Committee (CAC) representing the Wetlands Conservancy and the uncounted numbers of people who are concerned about the protection of Washington County's wetlands as well as the water quality improvement of the Tualatin River.

Our work on the CAC involved months of meetings, seemingly endless amounts of reading, comments, revisions, re-reading and more meetings. It was a very intensive process. We were all impressed with the sincerity and determination of the USA staff and the various consultants involved in the work, and as CAC members we were hard put to keep up.

The whole surface water management process requires new thinking for most everyone. Education and attitude changes take time, but that is the path to a long term solution. We support the proposition that non-structural alternatives employing natural systems and behavioral changes need to be implemented first and that incremental changes in each sub basin have to support the clean-up of the Tualatin River itself.

The installation of oil-water separator catch basins and their regular maintenance along with the requirement for surface water detention and bio-filtration of storm water run-off by means of swales, created wetlands and riparian strips is all a reversal of the old attitudes of getting the water into a pipe and to the river as quickly as possible. Education must accompany regulation.

With this in mind I do support the original DEQ staff report in its call for a prohibition of roadside vegetation spraying and for wide riparian buffer strips along streams and around wetlands. I personally support a buffer width of 50 feet minimum from the stream center line or wetland boundary. Some situations may even require a wider buffer. A 100 foot wide buffer is not unreasonable from a resource protection standpoint.

Post Office Box 1195
Tualatin, Oregon 97062
Phone: (503) 691-1394

The role of the buffer in addition to affording protection to the water body is also to filter out pollutants and water borne trash before they reach the water. Detention basins only handle collected water from roofs and parking lots. They will not handle surface water run-off from the rest of the site bordering the stream. Buffers are an important part of a surface water management system. They must not be made so narrow that they cannot perform their intended function as wildlife corridor or water filter. Dr. Eugene P. Odum has done a great deal of work on the valuable role of riparian borders in water quality improvement.

I support the idea that USA should be involved in the land use planning process within the Tualatin basin but they should not be expected to exercise responsibility beyond their statutory authority. All of our collective work however must not go simply to support additional development in the basin. We will never achieve a clean river unless water quality issues are raised in every future land use decision by cities and counties. The clean-up is not a vehicle for unlimited growth. USA will need DEQ help in this regard. All of the responsibility cannot be put upon them.

Lastly, USA needs to be given reasonable time to meet the requirements of the DEQ staff report. The whole process has been advanced as quickly as reasonably possible. Please give USA time to do a proper job. I am convinced that they intend to do it.

Sincerely yours,

John W. Broome

JOHN W. BROOME

cc: John Jackson, USA
Clark Worth, Barney & Worth
Tualatin Basin Consultants
Northwest Environmental Defense Center

Date: 8-15-90 9:32am
From: Carol Harris:HSW:DEQ
To: RLDanko:HSW:DEQ
cc: CAHarris:HSW:DEQ
Subj: Paragraph Write-up for Minutes of 8/10 EQC meeting
Forwarded: Message from Deanna Mueller-Crispin:HSW:DEQ of 8-14-90

I thought you might like to have a copy of the summary.

---------- Forwarded Message Body ----------

Date: 8-14-90 9:45am
From: Deanna Mueller-Crispin:HSW:DEQ
To: Harold Sawyer:OD:DEQ
cc: spGreenwood:hsw, dmCrispin:hsw, carol Harris:hsw
Subj: Paragraph Write-up for Minutes of 8/10 EQC meeting
In-Reply-To: Message from Harold Sawyer:OD:DEQ of 8-13-90

Agenda Item D: Solid Waste out-of-state surcharge.

Item would authorize hearings on proposed rule changes to establish a per-ton surcharge on the disposal of out-of-state solid waste in Oregon beginning January 1, 1991. The proposal offers a range of surcharge rates (from $1.50 to $3.50 per ton) for public comment.

The Department proposal was to proceed with the hearings, requesting public comment on the range of rates.

Chairman Hutchison asked whether instead of a range we shouldn't take to the public a "worst case scenario" (from the high end of the range, e.g. the $3.50 surcharge recommended by the Solid Waste Advisory Committee). It could be treated as a conditional recommendation. Staff responded that we felt we would get better comments from the public if they weren't just reacting for or against a specific Department proposal. Fred Hansen mentioned that an economic consultant's report would also be available for comment at the hearings.

Commission passed the Item unanimously.

---------- Replied Message Body ----------

Date: 8-13-90 9:31am
From: Harold Sawyer:OD:DEQ
To: Roberta Young:MSD, Deanna Mueller-Crispin:HSW,
Stephen Greenwood:HSW, Neil Mullane:WQ, Brad Price:HSW,
Mitch Wolgamott:WQ, Don Yon:WQ, Stephanie Hallock:HSW,
Noam Stampfer:MSD, Gregg Lande:AQ
cc: Division Administrators:DEQ, Administrative Assistants:DEQ,
Harold Sawyer:OD:DEQ
Subj: Paragraph Write-up for Minutes of 8/10 EQC meeting

The Commission wants faster turn-around on minutes. I would appreciate receiving a brief writeup for the items you had on the agenda -- for inclusion in the minutes.

SIC Code	Industry
Nondepository Institutions	
6111	Federal and federally-sponsored credit
6141	Personal credit institutions
6153	Short-term business credit
6159	Miscellaneous business credit institutions
6162	Mortgage bankers and correspondents
6163	Loan brokers
Security and Commodity Brokers	
6211	Security brokers and dealers
6221	Commodity contracts brokers, dealers
6231	Security and commodity exchanges
6282	Investment advice
6289	Security and commodity services, nec
Insurance Carriers	
6311	Life insurance
6321	Accident and health insurance
6324	Hospital and medical service plans
6331	Fire, marine, and casualty insurance
6351	Surety insurance
6361	Title insurance
6371	Pension, health, and welfare funds
6399	Insurance carriers, nec
Insurance Agents, Brokers, and Service	
6411	Insurance agents, brokers, and service
Real Estate	
6512	Nonresidential building operators
6513	Apartment building operators
6514	Dwelling operators, except apartments
6515	Mobile home site operators
6517	Railroad property lessors
6519	Real property lessors, nec
6531	Real estate agents and managers
6541	Title abstract offices
6552	Subdividers and developers, nec
6553	Cemetery subdividers and developers
Holding and Other Investment Offices	
6712	Bank holding companies
6719	Holding companies, nec
6722	Management investment, open-end
6726	Investment offices, nec
6732	Educational, religious, etc. trusts
6733	Trusts, nec
6792	Oil royalty traders
6794	Patent owners and lessors
6798	Real estate investment trusts
6799	Investors, nec

SIC Code	Industry
SERVICES	
Hotels and Other Lodging Places	
7011	Hotels and motels
7021	Rooming and boarding houses
7032	Sporting and recreational camps
7033	Trailer parks and campsites
7041	Membership-basis organization hotels
Personal Services	
7211	Power laundries, family and commercial
7212	Garment pressing and cleaners' agents
7213	Linen supply
7215	Coin-operated laundries and cleaning
7216	Dry cleaning plants, except rug
7217	Carpet and upholstery cleaning
7218	Industrial launderers
7219	Laundry and garment services, nec
7221	Photographic studios, portrait
7231	Beauty shops
7241	Barber shops
7251	Shoe repair and shoeshine shops
7261	Funeral service and crematories
7291	Tax return preparation services
7299	Miscellaneous personal services, nec
Business Services	
7311	Advertising agencies
7312	Outdoor advertising services
7313	Radio, TV, publisher representatives
7319	Advertising, nec
7322	Adjustment and collection services
7323	Credit reporting services
7331	Direct mail advertising services
7334	Photocopying and duplicating services
7335	Commercial photography
7336	Commercial art and graphic design
7338	Secretarial and court reporting
7342	Disinfecting and pest control services
7349	Building maintenance services, nec
7352	Medical equipment rental
7353	Heavy construction equipment rental
7359	Equipment rental and leasing, nec
7361	Employment agencies
7363	Help supply services
7371	Computer programming services
7372	Prepackaged software
7373	Computer integrated systems design
7374	Data processing services
7375	Information retrieval services
7376	Computer facilities management

Most helpful would be:

-- a 1-3 sentence description of what the item is or would accomplish.

-- a 1 sentence summary of the Department Recommendation.

-- a summary of any testimony and significant questions/discussion from the Commission.

-- a description of the final action taken, including specifics is the Commission mofidied the Department recommendation in any way.

I already have the necessary information from Dick Nichols.

** Please send this information to me by E-Mail by Wednesday, August 15.

Note: Yes, the process has required that report authors provide such a writeup. Most have not been doing it however. Therefore, this reminder.

Thanks.

SIC Code Industry

RETAIL TRADE

Building Materials and Garden Supplies

5211 Lumber and other building materials
5231 Paint, glass, and wallpaper stores
5251 Hardware stores
5261 Retail nurseries and gardens
5271 Mobile home dealers

General Merchandise Stores

5311 Department stores
5331 Variety stores
5399 Miscellaneous general merchandise stores

Food Stores

5411 Grocery stores
5421 Meat and fish markets
5431 Fruit and vegetable markets
5441 Candy, nut, and confectionery stores
5451 Dairy products stores
5461 Retail bakers
5499 Miscellaneous food stores

Automotive Dealers and Service Stations

5511 New and used car dealers
5521 Used car dealers
5531 Auto and home supply stores
5541 Gasoline service stations
5551 Boat dealers
5561 Recreational vehicle dealers
5571 Motorcycle dealers
5599 Automotive dealers, nec

Apparel and Accessory Stores

5611 Men's and boys' clothing stores
5621 Women's clothing stores
5632 Women's accessory and specialty stores
5641 Children's and infants' wear stores
5651 Family clothing stores
5661 Shoe stores
5699 Miscellaneous apparel and accessory stores

Furniture and Home Furnishings Stores

5712 Furniture stores
5713 Floor covering stores
5714 Drapery and upholstery stores
5719 Miscellaneous home furnishings stores
5722 Household appliance stores
5731 Radio, TV, and electronic stores
5734 Computer and software stores

SIC Code Industry

5735 Record and prerecorded tape stores
5736 Musical instruments stores

Eating and Drinking Places

5812 Eating places
5813 Drinking places

Miscellaneous Retail

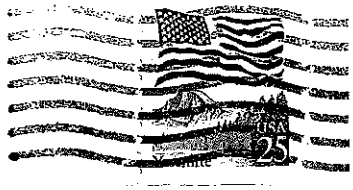
5912 Drugstores and proprietary stores
5921 Liquor stores
5932 Used merchandise stores
5941 Sporting goods and bicycle shops
5942 Book stores
5943 Stationery stores
5944 Jewelry stores
5945 Hobby, toy, and game shops
5946 Camera and photographic supply stores
5947 Gift, novelty, and souvenir shops
5948 Luggage and leather goods stores
5949 Sewing, needlework, and piece goods
5961 Catalog and mail order houses
5962 Merchandising machine operators
5963 Direct selling organizations
5983 Fuel oil dealers
5989 Fuel dealers, nec
5984 Liquefied petroleum gas dealers
5992 Florists
5993 Cigar stores and stands
5994 News dealers and newsstands
5995 Optical goods stores
5999 Miscellaneous retail stores, nec

FINANCE, INSURANCE AND REAL ESTATE

Depository Institutions

6011 Federal Reserve banks
6019 Central reserve depository, nec
6021 National commercial banks
6022 State commercial banks
6029 Commercial banks, nec
6035 Federal savings institutions
6036 Savings institutions, except federal
6061 Federal credit unions
6062 State credit unions
6081 Foreign banks and branches and agencies
6082 Foreign trade and international banks
6091 Nondeposit trust facilities
6099 Functions related to deposit banking

Ave.
1451



William Hutchison, Jr.
Chairman
Environmental Quality Commission
811 SW 6th Avenue
Portland, Oregon 97204