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7/17/1987

OREGON
ENVIRONMENTAL QUALITY
COMMISSION MEETING
MATERIALS

DEQ

State of Oregon
Department of Environmental Quality

NEIL GOLDSCHMIDT
GOVERNOR

Environmental Quality Commission

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MEMORANDUM

To: Environmental Quality Commission

From: Director

Subject: Agenda Item I, July 17, 1987 EQC Meeting

Proposed Adoption of Revisions to "Oil and Hazardous Materials Spills and Releases" Rules OAR 340-108-002; OAR 340-108-010; OAR 340-108-020 and Repeal in its Entirety Appendix I of OAR 340 - Division 108.

Background

At the January 23, 1987 EQC meeting, the Commission adopted a temporary rule amending the reportable quantity levels for reporting spills of hazardous materials in Oregon. The temporary rule made the state reportable quantity levels the same as the federal levels adopted pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund).

The Commission action on January 23rd came as a result of a study the Commission directed the Department to make on the need for and effect of different state reportable quantity levels than those adopted by the Environmental Protection Agency (EPA). The Commission requested the study on September 12, 1986, the same date it adopted Department recommended revisions to OAR Chapter 340 - Division 108 which were proposed to implement the provisions of HB 2146 (now ORS 466.605-466.690). One of the recommended changes was to revise the level at which spills and releases of hazardous wastes need to be reported.

In addition to revising the levels for hazardous wastes, approximately 300 additional hazardous materials were added so that the state's list would be comparable to the federal hazardous substances list under the Federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund).

In determining an appropriate state reporting level, the staff spent considerable effort researching EPA's basis for their reportable quantity levels which range from 1 pound to 5,000 pounds. Staff reviewed the preamble discussions to the following Federal Register Notices, as well as, three technical background documents:

1. Notification Requirements; Reportable Quantity Adjustments; Final Rule and Proposed Rule - April 4, 1985

2. Notification Requirements; Reportable Quantity Adjustments; Proposed Rule and Designation of Additional Hazardous Substances; Advanced Notice of Proposed Rulemaking - May 25, 1983.

3. Definitions, Designations, Revocation of Regulations, Proposed Expansion of Criteria of Designation and Proposed Determination of Reportable Quantities - February 16, 1979

4. Hazardous Substance - March 13, 1978

5. Technical Background Document to Support Rulemaking Pursuant to CERCLA Section 102: Volumes 1, 2 and 3 - March, 1985.

In the staff's opinion, EPA selected their numbers to distinguish between the relative hazards that substances present, to recognize their limited ability to respond with staff from distant locations and on the potential threat to public health and the environment if a spill or release of that quantity occurred. They caution repeatedly in the preambles, however, that "the reportable quantities do not themselves represent any determination that releases of a particular quantity are actually harmful to public health or welfare or the environment" (F.R. April 4, 1985 - Page 13459). One pound was picked to represent small containers normally used in commerce. 5,000 pounds was picked to represent bulk shipments of hazardous materials. Three intermediate categories of 10, 100 and 1,000 pounds are also used.

Substances at the 1 pound level tend to present primarily acute or chronic toxicity problems (certain pesticide products, industrial solvents and other manufacturing chemicals) while substances at the 5,000 pound level present primarily handling problems (combustible or flammable products, strong acids, strong bases). EPA also expected that local and state agencies would be responding to smaller spills that are less likely to need federal involvement or assistance.

After evaluating EPA's rationale for levels at which they require reporting, interviewing EPA's author of the reportable quantity rule and discussing levels with DEQ field responders, the Department concluded that the federal program had merit as to determining the relative hazards between substance but that the values of 10, 100, 1,000 and 5,000 pounds were too high for a state response program. Staff recommended a level of one-tenth the federal values or 1, 10, 100 and 500 pounds. No change to the federal 1 pound level was recommended.

The principal criteria the staff used in selecting lower values were:

1. When people report, we have the opportunity to review and determine that appropriate cleanup methods and levels will be used. From experience we knew some companies interpret the rules to mean that spills below the reportable quantity level do not have to be cleaned up because EPA has already determined (by setting the RQ level) that no hazard exists.

2. For many companies, including many transporters, spills are a rare enough occurrence that DEQ's technical assistance and involvement is needed to arrive at cleanup methods and levels.

3. Other state agencies and local government look to DEQ to provide timely response and oversight of spill cleanup activities.

4. With our regional and branch offices, we are in a substantially better position than EPA in arranging technical assistance and response in time for it to make a difference.

5. A toll-free call was not a major economic burden on the regulated community yet allowed us to be involved early in spill containment and cleanup decisions.

Of all the rules proposed on September 12, 1986, the reportable quantity levels prompted the greatest concern. The expressed concerns were and remain:

1. The federal levels are fully protective of public health and the environment.

2. The confusion to be created by two different levels far outweigh the benefits to public health and environment by lower levels.

3. DEQ had shown no basis in public health or environmental protection to support the lower levels, particularly at the 10 pound level which includes such substances as PCB and chlorine.

4. DEQ staff would not be able to respond to all the additional reports that would be called in.

5. It is not the call that is difficult to comply with, rather it's the burden of preparing clear enough instructions for the production employee, utility lineman or truck driver that is burdensome. Each difference between federal and state rules requires additional instructions to employees.

6. Companies that normally will comply will continue to try and comply even given the added complexity. Companies who don't currently comply with the federal program are unlikely to comply with the state's more stringent requirement.

Although the Commission adopted the staff recommendation, the Commission requested a report on the impact of the reportable quantity rules within 90 days.

The requested report was submitted to the Environmental Quality Commission at their January 23, 1987 meeting. A significant conclusion in that report read:

> "6. Adopting existing federal reportable quantity values for reporting spills or releases to the Department will have little, if any, adverse impact on public health or the environment."

As a result of that conclusion, the Department recommended adoption of a temporary rule repealing the lower reportable quantity values in Appendix I of OAR 340 - Division 108 and adoption of 40 CFR - Table 302.4 as amended in its place. The Commission adopted the Director's recommendation and authorized a public hearing on a similar permanent rule revision.

On May 8, 1987 the Department held an informal meeting on its intent to adopt permanent rule revisions. At this same meeting the Department stated its intent to add a reportable quantity value for nerve agents, pesticide residues and incorporate new federal reportable quantity values as published by EPA on April 22, 1987 in 40 CFR Part 355 - Appendix A. Seven industry representatives attended that meeting and generally were supportive of the Department's plans.

At 10:00 a.m. on June 4, 1987, the Department held a public hearing at 811 S. W. Sixth Avenue, Portland on proposed permanent revisions to OAR 340 - Division 108. Ten industry representatives attended, five persons testified orally and four letters were received.

Discussion

The Department's January 23, 1987 report analyzed in detail 88 product spills that occurred between October 1, 1986 and December 19, 1986. Attachment I contains that detailed analysis.

In preparing this report we have updated the most pertinent data through March 31, 1987. Tables I and II demonstrate that the earlier limited data is representative of longer term reporting of spills and releases:

Table 1

	October 1, 1986 through December 19, 1986		October 1, 1986 through March 31, 1987	
	Number of Spills	Percent of Spills	Number of Spills	Percent of Spills
Greater than federal/ state reportable quantity	20	23%	66	30%
Less than federal reportable quantity but greater than state reportable quantity	3	4%	6	3%
Less than both federal/ state reportable quantity	14	16%	41	18%
No federal reportable quantity but greater than state reportable quantity (oil on land)	17	19%	44	20%
Unknown quantity at time of spill	25	28%	49	22%
Spilled material not regulated	9	10%	16	7%
Totals	88	100%	222	100%

Table 2

	Number Reported	Percent Reported	Number Reported	Percent Reported
Reported by Responsible Party	30	34%	75	34%
Reported by Other Party	58	66%	147	66%
Total	88	100%	222	100%

Based on the longer term information, the Department believes our recommended action in January (adoption by reference of federal reportable quantity values) was an appropriate recommendation. Testimony at the June 4, 1987 meeting concurred with the Department's proposal to adopt 40 CFR Table 302.4 by reference.

On the other hand, objections were raised to incorporating new federal reportable quantity values in 40 CFR Part 355 - Appendix A. The major objections as we understand them are:

1. If the Commission adopts the two lists, industry will have to comply with four lists (i.e. 40 CFR Table 302.4, 40 CFR Part 355 - Appendix A, OAR 340-Division 108 (40 CFR Table 302.4 and 40 CFR Part 355-Appendix A)

2. Many of the reportable quantity levels adopted by EPA in Appendix A are the statutory levels set in the Superfund Amendments and Reauthorization Act of 1986 (SARA) and as such are temporary levels that will be revised by EPA when they have better information. Rather than adopt these reportable quantities now, the Department should wait until EPA adopts the revised levels. This will avoid the potential conflict between state and federal reportable quantity levels during the few months it would take DEQ to revise its rules after EPA has promulgated its revised list of reportable quantities.

3. EPA has purposefully adopted separate lists because two different, but related, federal laws are involved (Comprehensive, Environmental, Response, Compensation and Liability Act of 1980 and Superfund Amendments and Reauthorization Act of 1986).

4. DEQ staff should concentrate its scarce resources on other programs of greater importance than "fine tuning" the reportable quantities in 40 CFR Part 355.

On April 22, 1987, in response to requirements in the Superfund Amendments and Reauthorization Act of 1986, EPA adopted reportable quantity values for 406 extremely hazardous substances. (40 CFR Part 355-Appendix A). The apparent confusion arises, because 150 of the extremely hazardous substances also appear as hazardous substances in 40 CFR Table 302.4. What is important to understand, however, is that for these common substances the reportable quantity value is exactly the same on the two lists. (See illustration below:)

40 CFR Table 302.4 (698 Chemicals)	548 Hazardous Substances Unique to Table 302.4	
	150 Substances Common to Table 302.4 and Appendix A	40 CFR Part 355 Appendix A (406 Chemicals)
	256 Extremely Hazardous Substances Unique to 40 CFR-Part 355 Appendix A	

Other important factors to consider:

1. We are creating no new lists - we are incorporating into the state program exact duplicates of federal regulations.

2. We agree there will be future changes to Appendix A. There will also be changes to Table 302.4 as when EPA proposed on March 16, 1987 to adjust 273 substances that were not adjusted on April 4, 1985 or September 29, 1986.

3. We agree that at some future unspecified date EPA states it will merge Table 302.4 and Appendix A.

4. To address the issue of the short-term inconsistency that would exist between state reportable quantities (RQs) and federal RQs each time EPA revises its list, we have added language to OAR 340-108-010(1)(d) that would, in effect, automatically update the state RQ levels to the new federal RQs as soon as they are adopted by EPA. Additionally, the Department will update this rule to incorporate the new federal RQ levels by reference as quickly as possible to limit any potential confusion over what the state RQ levels are.

5. Whether or not we adopt Appendix A, industry must use it and must report to the State of Oregon. Specifically 40 CFR 355.40(b)(1) reads as follows:

"(b) Notice Requirements (1) The owner or operator of a facility subject to this section shall immediately notify the community emergency coordinator for the local emergency planning committee of any area likely to be affected by the release and the State Emergency Response Commission of any state likely to be affected by the release."

6. The State Emergency Response Commission has concluded that this emergency notification should be made to the Oregon Emergency Management Division at 1-800-452-0311 consistent with our Rule 340-108-020(4).

We also received comments from the Umatilla Army Depot on our proposal to adopt a reportable quantity value of "any quantity of nerve agent". Based on their comments, we have modified the rule to read:

(e) (1). One (1) pound of nerve agents (such as GB(Sarin) or VX) if spilled or released on-site;

(2). Any quantity of nerve agents such as GB (Sarin) or VX if spilled or released off-site;

(3). An ambient air concentration for nerve agents monitored at the chemical storage perimeter or depot perimeter which is equal to or greater than 3×10^{-6} mg/m^3 for GB and VX; or

(4) An ambient air concentration for nerve agents monitored at or near a point of release equal to or greater than 2×10^{-2} mg/m^3 GB or 4×10^{-2} mg/m^3 VX. (i.e. igloo monitoring).

Alternatives and Evaluation

On September 12, 1986, revised rules requiring the reporting of oil and hazardous material spills and releases were adopted. Based on staff recommendations, the Commission adopted reportable quantity values that were 1/10 of comparable federal values. Since rule adoption, the Department has examined 222 spills and releases that occurred between October 1, 1986 and March 31, 1987. Of those 222 spills only six (6) fell between the state's lower reportable quantity value and EPA's higher value. Furthermore, two-thirds of these spills were initially reported by persons other than the responsible party (i.e. government emergency responders or private citizens). Under the circumstances, the Department has now concluded that the higher federal values are protective of public health and the environment. Rather than retain the state's existing lower values, staff now recommends consistency with federal values.

The Department has also concluded that the new reportable quantity values adopted by EPA on April 22, 1987 and contained within 40 CFR Part 355-Appendix A should be adopted by reference into OAR 340 Division-108. 40

CFR Part 355 mandates reporting to state emergency response commissions. Oregon's Emergency Response Commission has concluded that reporting to the Oregon Emergency Management Division at 1-800-452-0311 as would be required by OAR 340-108-020(4) is the most practical way for industry to comply with this new federal requirement. Whether or not Appendix A is adopted by reference at this time, the federal requirement will remain in effect in Oregon (it became effective May 22, 1987).

We have examined the U. S. Army's comments, on our proposed nerve agent reportable quantity value, and conclude their proposals for reportable quantity values are protective of public health and the environment.

Summary

1. Almost half of all spills reported fall below mandated reportable quantity levels (106 of 222 or 48%). Another thirty percent (66 of 222 or 30%) exceed the current federal levels. Only three percent (60 of 222 or 3% fall between the lower state reportable quantity values adopted September 12, 1986 and the higher federal values.

2. Persons other than the responsible party initially report nearly two-thirds of all spills and releases. Most often these are local government agencies looking to DEQ for technical assistance/advice on proper containment, control and cleanup methods.

3. EPA adjusted 68 federal RQ values on December 29, 1986. EPA proposed plans for further changes to up to 275 additional substances in early 1987. Continuous review of the federal list is planned as EPA receives additional technical data. Each change at the federal level will affect the accuracy of DEQ's Appendix I listing of federal reportable quantities.

4. On April 22, 1987 EPA adopted reportable quantities values for 256 extremely hazardous substances that are not currently on its hazardous substance list contained in 40 CFR Table 302.4. The Department has concluded that the extremely hazardous substances listed in 40 CFR Part 355-Appendix A because of their quantity, concentration or physical or chemical characteristics may pose a present or future hazard to human health, safety, welfare or the environment when spilled or released. This conclusion is based upon available scientific information, including the documents listed in the Statement of Need-Attachment III.

5. Dual RQ values do make it significantly more difficult for industry to give accurate instructions/procedures to its employees. Confusing instructions make it less likely that employees will take the proper actions that are required when a spill or release occurs.

6. Adopting existing federal RQ values for reporting spills or releases to the Department will have little, if any, adverse impact on public health or the environment.

Director's Recommendation

Based on the above report, it is recommended that the Commission find that the extremely hazardous substances listed in 40 CFR Part 355-Appendix A, because of their quantity, concentration or physical or chemical characteristics may pose a present or future hazard to human health, safety, welfare or the environment when spilled or released. It is also recommended that the Commission adopt proposed revisions to "Oil and Hazardous Materials Spills and Releases" rules OAR 340-108-002; OAR 340-108-010; OAR 340-108-020 and repeal in its entirety Appendix I of OAR 340-Division 108.

Lydia Taylor
Fred Hansen

Attachment I: Selected pages from January 23, 1987 EQC staff report
II: Proposed revisions to OAR 340-Division 108
III: Statement of Need and Fiscal and Economic Statement
IV: Land Use Consistency Statement
V: June 4, 1987 Hearings Officer's Report
VI: Responsiveness Summary to June 4, 1987 Hearing Officer's Report
VII: Public Notice of Proposed Rulemaking

Richard P. Reiter:m
SM710.C
229-5774
July 1, 1987

Attachment I
Agenda Item I
7/17/87 EQC Meeting

SELECTED PORTIONS OF
JANUARY 23, 1987 ENVIRONMENTAL QUALITY COMMISSION
STAFF REPORT

<u>Discussion</u>

Between October 1, 1986 and December 19, 1986, 84 spills or releases involving 88 products were reported to DEQ (see summary in Table 1). Based on reports forwarded to the Hazardous Materials Section, the analyses described in Table 2 were prepared. Some general observations are as follows:

1. On an annual basis, 88 product spills or releases in 80 days correlates to 401 spills or releases. Table 3 summarizes the reported spills for 1981 through 1985. There is no

significant increase over the reported spills or releases for the last three years (372, 367 and 356 respectively).

2. Three general classes of products were spilled or released; oil (primarily gasoline, deisel and other), listed hazardous material (acids, bases, solvents and pesticides) and non-listed materials (organic acids, nitrogen fertilizer and pesticides). Not surprisingly, 62% of the spills represented petroleum products. Hazardous materials represented 28% and others represented 10%.

3. Of all products spilled or released, 40% involved transportation accidents while 60% occurred at a fixed location. These percentages were fairly consistent between the three product categories.

4. Of all spills reported, DEQ went to the scene in 33% of the cases (29 of 88). It is more likely that DEQ will respond in the field on a transportation spill than a fixed site spill (40% vs. 28%). It is also more likely that DEQ will respond in the field to a fixed site spill of oil than hazardous material (42% vs. 7%). This can principally be explained because hazardous materials spills normally involve smaller quantities of product (See Table 4). Furthermore, personnel at fixed locations are more likely to know how to clean-up spills than are truck drivers. Also, personnel at fixed sites are more likely to have equipment to contain and clean up a spill or release.

5. Table 3 shows that historically DEQ responded in the field to more spills than currently as follows:

   1981 - 109 of 234 = 47%
   1982 - 118 of 263 = 45%
   1983 - 170 of 372 = 46%
   1984 - 181 of 367 = 49%

   This can principally be explained because more recently DEQ field staff have consciously attempted to provide technical assistance over the telephone to the responsible party and/or local government at the scene. We have also relied more heavily on local government to report to us on the quality of cleanup and only respond when local government is unable to represent our interests.

6. Of all spills or releases reported, only 34% are initially reported by the responsible party. By group of products, responsible parties reported 29% of oil spills, 38% of hazardous material spills and 55% of other spills. From the data analyzed, no conclusion can be drawn relative to compliance with legal reporting requirement since the report only records the first call received.

7. Of all spills reported, the following breakdown occurs relative to reportable quantities (RQ):

	Percent	Number
Greater than federal/state RQ	23	20
Less than fed RQ but greater than state RQ	4	3
Less than state/fed RQ	16	14
No fed RQ but greater than state RQ*	19	17
Unknown quantity at time of spill	28	25
Not regulated material	10	9
Total Products Spilled	100%	88

*Note: For oil spills on land there is no federal reportable quantity at this time. The state reportable quantity is 42 gallons. Seventeen spills or 31% of all petroleum spills fell into the category. These same 17 spills represents 19% of all spills).

It is important to note that only 3 spills fell into the middle ground between the federal and state reportable quantity level and all those were initially reported by someone other than the responsible party.

It is also important to note that more than half of all spills probably didn't have to be reported: less than state RQ, unknown quantity at time of spill or not a regulated material (48 of 88 or 55%). Oil and hazardous materials were similar (27% of 55 = 49%, 12 of 24 = 50% respectively) to the overall percentage. One other way of looking at these numbers shows that 14 of the 48 or 29% were reported by responsible parties while 34 of 48 or 71% were reported by others.

Because copies of spill rules were not available throughout this entire period, we also analyzed the data against the previous state reporting requirement in OAR 340 - Division 108 (see Attachment 1). In this case, the state 42 gallon level for oil spills on land did not exist so these spills are included in the not regulated category. The results are as follows:

	Percent	Number
Greater than federal and state RQ	19	17
Less than federal RQ but greater than state RQ	5	4
Less than state and federal RQ	8	7
Unknown quantity at time of spill	29	25
Not a regulated material	39	35
Total Products Spilled	100%	88

Because of the dominate influence of oil spills and unknown quantity at time of spills, we also analyzed separately that data that involved hazardous chemicals involving a known quantity of products. The results are as follows:

	Percent	Number
Greater than federal and state RQ	42	8
Less than federal RQ but greater than state RQ	16	3
Less than state and federal RQ	42	8
Total Products Spilled	100%	19

One other related issue is emerging that will complicate Oregon's attempts to maintain lower RQ values - the frequency with which EPA may evaluate and change their RQ values. On September 29, 1986, EPA evaluated the values for 102 substances on the RQ list. The results involved raising the RQ's for 31 chemicals, lowering the RQ's for 30 chemicals and leaving at their original level 34 chemicals. In addition, seven (7) hazardous waste streams had their RQ values raised. These changes became effective December 29, 1986 thereby changing 68 federal RQ entries on our Appendix I list which we just mailed out. In the same Federal Register of September 29, 1986, EPA indicated that they were concluding a potential carcinogenicity and/or chronic toxicity evaluation on an additional 275 chemicals. A notice of proposed rulemaking will apparently appear in a January Federal Register. EPA's List is also subject to future changes as a result of the new emergency planning and community right-to-know requirements of the recently reauthorized Superfund program.

Alternatives and Evaluation

The Department initially intended this to be an information report as requested by the Commission at its September 12, 1986 meeting. As the Department continued to evaluate the data, however, a significantly different action appeared called for.

Before starting its analysis, the Department felt that our lower values should have resulted in a significant number of additional calls than Within the next six months, the Department would hold hearings to make the rule final, analyze all of 1986's data to see if this 80 day sample is representative and complete its work on establishing RQ values for communicable disease agents and radioactive materials regulated by the health division.

Summary

1. No significant increase in the number of reported spills or releases has occurred between October 1 and December 19, 1986.

2. More than half (55%) of all reported spills and releases probably involved amounts less than even the state's lower reportable quantity level. Another 23% represented spills in quantities greater than the

Table 1

Oil & Hazardous Materials Spills and Releases

Month October

Incident Number	Reported By Responsible Party	Product Spilled	Quantity If Known	State* RQ	Federal* RQ
1	yes	oil	15 gallons	42 gallons	--
2	yes	vinegar	50 gallons	--	--
3	yes	oil	10 gallons	any amount	any amount
4	yes	diesel	1,200 gallons	42 gallons	--
5	no	gasoline	?	42 gallons	--
6	no	Dinoseb	8 pounds	100 pounds	1,000 pounds
7	no	diesel	?	42 gallons	--
8	no	Pentachloro-nitrobenzene	200 pounds	1 pound	1 pound
9	yes	kerosene	1/4 gallon	42 gallons	--
10	no	diesel	30 gallons	42 gallons	--
11	no	gasoline	433 gallons	42 gallons	--
12	no	Nitrogen Fertilizer	300 gallons	--	--
13	no	Pontamine Dye in Potassium Hydroxide	450 pounds	10 pounds	100 pounds
14	no	oil	?	any amount	any amount
15	no	gasoline	5 gallons	any amount	any amount
16	yes	diesel	1,000 gallons	42 gallons	--
17	yes	Sodium Hydroxide	25 pounds	100 pounds	1,000 pounds
18	no	oil	275 gallons	42 gallons	--
19	yes	corrosive	8 pounds	10 pounds	100 pounds
20	yes	paint	10 gallons	--	--
21	no	oil	5 gallons	any amount	any amount
22	no	1, 3 dichloro-propene	166 pounds	500 pounds	5,000 pounds
23	yes	diesel	2,000 gallons	42 gallons	--
24	no	oil	?	any amount	any amount
25	no	Methyl ethyl ketone peroxide	33 pounds	1 pound	10 pounds
26	yes	oil	50 gallons	42 gallons	--
27	no	gasoline	?	42 gallons	--
28	yes	Ammonia gas	?	10 pounds	100 pounds
29	no	gasoline	?	42 gallons	--
30	no	diesel	?	any amount	any amount
31	no	PCB oil	?	1 pound	10 pounds
32	no	gasoline	20 gallons	42 gallons	--
33	no	diesel	125 gallons	42 gallons	--
34	no	Paraquat	?	--	--
35	no	Lamp black	25 pounds	--	--
36	yes	Battery acid	500 pounds	10 pounds	100 pounds
37	no	oil	?	any amount	any amount
38	no	diesel	150 gallons	42 gallons	--
39	yes	gasoline	?	42 gallons	--
40	no	Malathion	?	10 pounds	100 pounds
41	no	diesel	150 gallons	any amount	any amount
42	yes	PCB	17 pounds	1 pound	10 pounds
43	no	gasoline	50 gallons	42 gallons	--

* Oil spilled into public water is reportable to both the state and federal government at any amount. Oil spilled on land is reportable to the state at 42 gallons. There is no comparable federal requirement.

Table 1

Oil and Hazardous Materials Spills and Releases

Month November

Incident Number	Reported By Responsible Party	Product Spilled	Quantity If Known	State RQ	Federal RQ
1	yes	Bromoxynil heptanate	8 pounds	--	--
		Bromoxynil bnterate	6 pounds	--	--
		Toluene	12 pounds	100 pounds	1,000 pounds
		Xylene	7 pounds	100 pounds	1,000 pounds
2	no	diesel	100 gallons	42 gallons	--
3	no	chlorine	2-1/4 pounds	1 pound	10 pounds
4	yes	diesel	1,000 gallons	42 gallons	--
5	yes	diesel	50 gallons	42 gallons	--
6	no	oil	?	any amount	any amount
7	yes	diesel	200 gallons	any amount	any amount
8	no	diesel	?	any amount	any amount
9	no	oil	?	any amount	any amount
10	yes	diesel	1 gallon	any amount	any amount
11	no	gasoline	?	any amount	any amount
12	no	oil	20 gallons	42 gallons	--
13	no	Propane	?	10 pounds	100 pounds
14	no	diesel	?	any amount	any amount
15	yes	organic acids	1/4 gallon	--	--
16	no	Methanol	?	500 pounds	5,000 pounds
17	yes	PCB oil	0.000049 pounds	1 pound	10 pounds
18	no	diesel	100 gallons	any amount	any amount
19	no	gasoline	?	any amount	any amount
20	no	gasoline	?	any amount	any amount
21	yes	oil	1 gallon	any amount	any amount

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Table 1

Oil and Hazardous Materials Spills and Releases

Month December

Incident Number	Reported By Responsible Party	Product Spilled	Quantity If Known	State RQ	Federal RQ
1	no	Radioactive waste	1 drum	any amount	any amount
2	no	paint/paint sludge	2,750 pounds	10 pounds	100 pounds
3	no	diesel	55 gallons	42 gallons	--
4	no	diesel	50 gallons	42 gallons	--
5	no	diesel	50 gallons	any amount	any amount
6	no	diesel	25 gallons	42 gallons	--
7	no	diesel	?	42 gallons	--
8	no	gasoline	2,200 gallons	any amount	any amount
9	no	gasoline	?	42 gallons	--
10	no	oil	?	any amount	any amount
11	yes	diesel	200 gallons	42 gallons	--
12	no	fatty acid	?	--	--
13	no	Phosphoric acid	4,170 pounds	500 pounds	5,000 pounds
	no	diesel	?	any amount	any amount
	yes	diesel	200 gallons	42 gallons	--
16	no	acid solution	40 pounds	10 pounds	100 pounds
	no	lime	100 pounds	10 pounds	100 pounds
17	yes	gasoline	400 gallons	42 gallons	--
18	no	gasoline	15 gallons	any amount	any amount
19	no	diesel	10 gallons	42 gallons	--
20	yes	Methyl Amine	8 pounds	10 pounds	100 pounds

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Table 2

NOTE: Table 2 is an analysis of spill reports logged in by the Hazardous Materials Section for the period October 1 through December 19, 1986. Eighty-four (84) spill incidents occurred involving eighty-eight (88) products.

ALL SPILLS - 84: ALL PRODUCTS SPILLED - 88

Total All Product Spills - 88 (100%)

Reported by Responsible Party - 30 (30 of 88 = 34%)
Reported by Governmental Agency - 45 (45 of 88 = 51%)
Reported by Other Person - 13 (13 of 88 = 15%)

Transportation Spills - 35 (35 of 88 = 40%)

DEQ field response - 14 (14 of 35 = 40%)
No DEQ field response - 21 (21 of 35 = 60%)

Fixed Site Spills - 53 (53 of 88 = 60%)

DEQ field response - 15 (15 of 53 = 28%)
No DEQ field response - 38 (38 of 53 = 72%)

Reported by Responsible Party - 30 (30 of 88 = 34%)

Greater than fed/state RQ - 7 (7 of 30 = 23%)
Less than fed RQ - greater than state RQ - 0 (0%)
No fed RQ - greater than state RQ - 9 (9 of 30 = 30%)
Less than state/fed RQ - 7 (7 of 30 = 23%)
Unknown quantity - 2 (2 of 30 = 7%)
Not regulated material - 5 (5 of 30 = 17%)

Reported by Other Party - 58 (58 of 88 = 66%)

Greater than fed/state RQ - 13 (13 of 58 = 22%)
Less than fed RQ - greater than state RQ - 3 (3 of 58 = 5%)
No fed RQ - greater than state RQ - 8 (8 of 58 = 14%)
Less than state/fed RQ - 7 (7 of 58 = 12%)
Unknown quantity - 23 (23 of 58 = 40%)
Not regulated material - 4 (4 of 58 = 7%)

Table 2

<u>HAZARDOUS MATERIAL SPILLS - 22: HAZARDOUS MATERIAL PRODUCT SPILLS - 24</u>

Total Hazardous Material Product Spills - 24 (24 of 88) = 27%)

Reported by responsible party - 9 (9 of 24 = 38%)
Reported by government agency - 12 (12 of 24 = 50%)
Reported by other person - 3 (3 of 24 = 12%)

Transportation Spills - 10 (10 of 24 = 42%)

DEQ field response - 4 (4 of 10 = 40%)
No DEQ field response - 6 (6 of 10 = 60%)

Fixed Site Spills - 14 (14 of 24 = 58%)

DEQ field response - 1 (1 of 14 = 7%)
No DEQ field response - 13 (13 of 14 = 93%)

Reported by Responsible Party - 9 (9 of 24 = 38%)

Greater than fed/state RQ - 3 (3 of 9 = 33%)
Less than fed RQ - greater than state RQ - 0 (0/%)
Less than state/fed RQ - 5 (5 of 9 = 56%)
Unknown quantity - 1 (1 of 9 = 11%)

Reported by Other Party - 15 (15 of 24 = 62%)

Greater than fed/state RQ - 6 (6 of 15 = 40%)
Less than fed RQ - greater than state RQ - 3 (3 of 15 = 20%)
Less than state/fed RQ - 2 (2 of 15 = 13%)
Unknown quantity - 4 (4 of 15 = 27%)

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Table 2

OIL SPILLS -- 55: OIL PRODUCT SPILLS - 55

Total Oil Product Spills - 55 (55 of 88 = 62%)

Reported by responsible party - 16 (16 of 55 = 29%)
Reported by government agency - 30 (30 of 55 = 55%)
Reported by other person - 9 (9 of 55 = 16%)

Transportation Spills - 22 (22 of 55 = 40%)

DEQ field response - 8 (8 of 22 = 36%)
No DEQ field response - 14 (14 of 22) = 64%

Fixed Site Spills - 33 of 55 = 60%)

DEQ field response - 14 (14 of 33 = 42%)
No DEQ field response - 19 (19 of 33) = 58%

Reported by Responsible Party - 16 (16 of 55 = 29%)

Greater than fed/state RQ - 4 (4 of 16 = 25%)
No Fed RQ - greater than state RQ - 9 (9 of 16 = 56%)
Less than state/fed RQ - 2 (2 of 16 = 13%)
Unknown quantity spilled - 1 (1 of 16 = 6%)

Reported by Non-responsible Party - 39 (39 of 55 = 71%)

Greater than fed/state RQ - 7 (7 of 39 = 18%)
No Fed RQ - greater than state RQ - 8 (8 of 39 = 20%)
Less than state/fed RQ - 5 (5 of 39 = 13%)
Unknown quantity spilled - 19 (19 of 39 = 49%)

Table 2

OTHER SPILLS - 7: OTHER PRODUCT SPILLS - 9

Total Other Product Spills - 9 (9 of 88 = 10%)

Reported by responsible party - 5 (5 of 9 = 56%)
Reported by government agency - 3 (3 of 9 = 33%)
*Reported by other person - 1 (1 of 9 = 11%)

Transportation Spills - 3 (3 of 9 = 33%)

DEQ field response - 2 (2 of 3 = 67%)
No DEQ field response - 1 (1 of 3 = 33%

Fixed Site Spills - 6 (6 of 9 = 67%)

DEQ field response - 0 (0 of 6 = 0%)
No DEQ field response - 6 (6 of 6 = 100%)

Reported by Responsible Party - 5 (5 of 9 = 55%)

Reported by Other Party - 4 (4 of 9 = 44%)

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TABLE 3: Reported Spills (1981-1985)

1981	Northwest Region	Willamette Valley Region	Southwest Region	Central Region	Eastern Region	STATEWIDE TOTALS
Petroleum Products	97	21	33	16	20	187
Chemical/Hazardous Waste	22	6	7	5	7	47
Total Spills	119	27	40	21	27	234
DEQ Field Response	30	18	33	9	19	109
1982						
Petroleum Products	84	39	26	20	24	193
Chemical/Hazardous Waste	39	12	5	7	7	70
Total Spills	123	51	31	27	31	263
DEQ Field Response	39	40	20	11	8	118
1983						
Petroleum Products	131	59	31	27	27	275
Chemical/Hazardous Waste	47	22	9	8	11	97
Total Spills	178	81	40	35	38	372
DEQ Field Response	65	48	31	15	11	170
1984						
Petroleum Products	118	60	77	10	24	289
Chemical/Hazardous Waste	31	18	19	8	1	78
Total Spills	149	78	96	18	25	367
DEQ Field Response	48	40	75	7	12	181
1985						
Petroleum Products	97	52	50	18	22	239
Chemical/Hazardous Waste	53	24	20	5	15	117
Total Spills	150	76	70	23	37	356

TABLE 4

SIZE OF SPILL BY PRODUCT CATEGORY*

	OIL	HAZ-MAT	OTHER
Lowest Quantity Spilled	2 lbs.	2 lbs.	2.25 lbs.
Mean Average Spilled	2427 lbs.	475 lbs.	433 lbs.
Median Spilled	417 lbs.	33 lbs.	25 lbs.
Highest Quantity Spilled	18,348 lbs.	4170 lbs.	2502 lbs.
Total Spilled	85,026 lbs.	8551 lbs.	3044 lbs.
Number of Spills	35	18	7

* Of all reported spills, the initial quantity spilled was known in only 68% of the cases (60 of 88).

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(c)(A) Report the spill or other incident to the Oregon Emergency Management Division (telephone 800-452-0311) if the amount of hazardous waste or hazardous substance exceeds the following reportable quantity (in the event a substance or waste falls into more than one category, the lower quantity shall be reported):

Substance or Waste Type	Reportable Quantity (pounds)
Ignitable, 40 CFR 261.21	200
Corrosive, 40 CFR 261.22	200
Reactive, 40 CFR 261.23	200
EP Toxic, 40 CFR 261.24	10
Listed, 40 CFR 261.31 and .32	10
Listed, 40 CFR 261.33(e)	2
Listed, 40 CRR 261.33(f)	10
Listed, rule 340-101-033	10
PCB, rule 340-110-001(2)	10

(Comment: "Ignitable" includes the DOT classifications "Flammable," "Oxidizer," and some "Combustible.")

(B) Transporters must report spills of any quantity that occur during transportation. Transporters must also report spills or other incidents to the National Response Center (800-424-8802) as required by 49 CFR 171.15, and, if a water transporter, as required by 33 CFR 153.203;

(C) The spill or other incident need not be reported if:

(i) It occurs on private property and is known to the owner of the property (or his representative);

(ii) It occurs on an impervious surface where it is fully contained; and

(iii) It is completely cleaned up without further incident.

(Comment: For reporting purposes, quantity calculation involving hazardous waste shall be made independent of the concentrations of the hazardous components. For example, the table in this rule requires reporting a 10 pound spill of acrolein (a rule 340-101-033 waste). This shall be interpreted as requiring reporting a 10 pound spill of a waste containing acrolein whether the concentration of acrolein is 3, 30 or 100%.)

(d) Undertake, in the most practicable manner, the collection, removal or treatment of the hazardous substance or hazardous waste in accordance with the requirements of Divisions 100 to 110 and in a manner that will minimize damage to the environment. The Department may, in any case, evaluate the action taken and may require additional action to complete the cleanup and disposal.

Cleanup Report

340-108-021 The Department may require the person responsible for a spill or other incident to submit a written report within 15 days of the spill or other incident describing all aspects of the spill and steps taken to prevent a recurrence.

(Comment: Transporters are also required by the Public Utility Commissioner to file a Hazardous Materials Incident Report (DOT Form F5800.0) within 15 days after a spill. A copy of this report may be sent to the Department in lieu of the report required by this rule.)

Definitions.

340-108-002 As used in this Division unless otherwise specified:

(1) "Barrel" means 42 U.S. gallons of oil at 60 degrees Fahrenheit.

(2) "Cleanup" includes, but is not limited to, the containment, collection, removal, treatment or disposal of oil or hazardous material; site restoration; and any investigations, monitoring, surveys, testing and other information gathering required or conducted by the department.

(3) "Cleanup costs" means all costs associated with the cleanup of a spill or release or threatened spill or release incurred by the state, its political subdivision or any person with written approval from the department when implementing ORS 466.205, 466.605 to 466.690, 466.880 (3) and (4) and 466.995 (3) or 468.800.

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

(5) "Contingency plan" means a document setting out an organized, planned and coordinated course of action to be followed in case of a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment and is prepared pursuant to 40 CFR Part 264- Subpart D or Part 265- Subpart D.

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

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

(8) "Having control over any oil or hazardous material" includes, but is not limited to, persons using, handling, processing, manufacturing, storing, treating, disposing or transporting oil or hazardous material.

(9) "Hazardous material" means:

(a) Radioactive waste and material as defined in ORS 469.300 and 469.530;

(b) Substances and wastes listed in [Appendix I of this Division.] <u>40 CFR Part 302 - Table 302.4 (List of Hazardous Substances and Reportable Quantities) and amendments, adopted prior to May 1, 1987 or in 40 CFR Part 355-Appendix A (The List of Extremely Hazardous Substances and Reportable Quantities), adopted on April 22, 1987.</u>

(10) "Modified Spill Prevention Control and Countermeasure (SPCC) Plan" means the plan to prevent the spill of oil from a non-transportation-related facility that has been modified to include those hazardous substances and hazardous wastes handled at the facility.

(11) "Oil" includes gasoline, crude oil, fuel oil, diesel oil, lubricating oil, sludge, oil refuse and any other petroleum related product.

(12) "Person" includes, but is not limited to, an individual, trust, firm, joint stock company, corporation, partnership, association, municipal corporation, political subdivision, interstate body, the state and any agency or commission thereof and the Federal Government and any agency thereof.

(13) "Reportable quantity" is an amount of oil or hazardous material which if spilled or released, or threatens to spill or release, in quantities equal to or greater than those specified in OAR 340-108-010 must be reported pursuant to OAR 340-108-020.

(14) "SPCC" means Spill Prevention, Control and Countermeasures Plan prepared in accordance with Title 40 Code of Federal Regulations - Part 112 or Part 1510.

(15) "Spill or release" means the discharge, deposit, injection, dumping, spilling, emitting, releasing, leaking or placing of any oil or hazardous material into the air or into or on any land or waters of the state, as defined in ORS 468.700, except as authorized by a permit issued under ORS chapter 454, 459, 468 or 469, ORS 466.005 to 466.385, 466.880(1) and (2), 466.890 and 466.995 (1) and (2) or federal law or while being stored or used for its intended purpose.

(16) "Threatened spill or release" means circumstances or events exist that indicate a spill or release of oil or hazardous material is likely and imminent.

(17) "Waters of the state" means 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.

Subdivision B: Reportable Quantities

340-108-010 (1) Reportable quantity means:

(a) Any quantity of radioactive material, or radioactive waste;

(b) If spilled into waters of the state, or escape into waters of the state is likely, any quantity of oil that would produce a visible oily slick, oily solids, or coat aquatic life, habitat or property with oil, but excluding normal discharges from properly operating marine engines;

(c) If spilled on the surface of the land, any quantity of oil over one barrel (42 gallons); and

(d) An amount equal to or greater than the quantity listed [under the state reportable quantity column in Appendix I of this Division for substances and wastes.] <u>in 40 CFR Part 302 - Table 302.4 (List of Hazardous Substances and Reportable Quantities) and amendments adopted prior to May 1, 1987 or in 40 CFR Part 355-Appendix A (The List of Extremely Hazardous Substances and Reportable Quantities), adopted on April 22, 1987. If the federal Environmental Protection Agency adopts revised reportable quantity levels in Table 302.4 or Appendix A, these levels will apply in lieu of the levels adopted in this rule.</u>

<u>(e) (A) One (1) pound of nerve agents (such as GB(Sarin) or VX) if spilled or released on-site;</u>

<u>(B) Any quantity of nerve agents such as GB (Sarin) or VX if spilled or released off-site;</u>

<u>(C) An ambient air concentration for nerve agents monitored at the chemical storage perimeter or depot perimeter which is equal to or greater than 3 X 10^{-6} mg/m^3 for GB and VX; or</u>

<u>(D) An ambient air concentration for nerve agents monitored at or near a point of release equal to or greater than 2 X 10^{-2} mg/m^3 GB or 4 X 10^{-2} mg/m^3 VX. (i.e. igloo monitoring).</u>

<u>(f) One (1) pound (0.454 kg) of pesticide residue as defined by 340-101-033(5)(a).</u>

(2) Spills or releases of mixtures or solutions containing any of the hazardous materials listed in [Appendix I of this Division] <u>40 CFR Part 302 - Table 302.4 (List of Hazardous Substances and Reportable Quantities) and amendments adopted prior to May 1, 1987 or in 40 CFR Part 355-Appendix A (The List of Extremely Hazardous Substances and Reportable Quantities) adopted on April 22, 1987</u> are subject to the reporting requirements of

this rule if the total quantity of all the hazardous materials in the mixture or solution (in pounds) exceeds the lowest reportable quantity [listed] referenced in [Appendix I] OAR 340-108-010(1)(d) for any one of the hazardous materials in the mixture or solution. A person may rely upon actual knowledge and readily available information such as material safety data sheets, shipping papers, hazardous waste manifests and container labels, to determine the presence and concentration of hazardous materials in a mixture or solution.

(3) The quantity determination required by Section 1 of this rule shall be the quantity of oil or hazardous material spilled or released prior to contact or mixing with any other material or substance (i.e., with soil, water, sawdust, etc.). In the case of a threatened spill or release, it shall be the amount of oil or hazardous material in the container or tank from which a spill or release is likely and imminent.

Subdivision C: Required Action

Emergency action, reporting.

340-108-020 In the event of a spill or release or threatened spill or release, the person owning or having control over oil or hazardous material shall take the following actions, as appropriate.

(1) Immediately implement the site's SPCC plan, modified SPCC plan or other applicable contingency plan if such a plan is required.

(Comment: Generators accumulating hazardous waste for less than 90 days are required to have a contingency plan prepared in accordance with 40 CFR 262.34.)

(2) If an SPCC plan, modified SPCC plan or contingency plan is not otherwise required, immediately take the following actions in the order listed:

(a) Activate alarms or otherwise warn persons in the immediate area; and

(b) Undertake every reasonable method to contain the oil or hazardous material.

(3) If a medical emergency or public safety hazard (i.e., potential fire or explosion) is determined by the responsible person to exist that requires the services of local emergency responders (fire, police, emergency medical technicians), call 911, where available, or local fire and/or police where 911 does not exist.

(4) If the amount of oil or hazardous material exceeds the reportable quantity listed in OAR 340-108-010 in any 24-hour period, report the spill or release or threatened spill or release to the Oregon Emergency Management Division.

Comment: The Oregon Emergency Management Division can be reached anytime by calling in-state 800-452-0311 or if calling from out-of-state (503) 378-4124.

(5) If the amount of hazardous material exceeds the [federal reportable] quantity [listed] referenced in [Appendix I of this Division,]
OAR 340-108-010(1)(d) report the spill or release to the National Response Center.

Comment: The National Response Center currently can be reached by calling 800-424-8802.

[APPENDIX I
LIST OF HAZARDOUS MATERIALS AND REPORTABLE QUANTITIES]

Repeal in its entirety Appendix I of OAR 340 - Division 108.

"RCRA Waste Number" column provides the waste identification numbers assigned to various substances by RCRA regulations. The column headed "Category" lists the code letters "X," "A," "B," "C," and "D," which are associated with reportable quantities of 1, 10, 100, 1000, and 5000 pounds, respectively. The "Pounds (kg)" column provides the reportable quantity for each hazardous substance in pounds and kilograms.

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory RQ	Statutory Code †	Statutory RCRA Waste Number	Final RQ Category	Final RQ Pounds(Kg)
Acenaphthene	83329		1*	2		X	1## (0.454)
Acenaphthylene	208968		1*	2		X	1## (0.454)
Acetaldehyde	75070	Ethanal	1000	1,4	U001	C	1000 (454)
Acetaldehyde, chloro-	107200	Chloroacetaldehyde	1*	4	P023	C	1000 (454)
Acetaldehyde, trichloro-	75876	Chloral	1*	4	U034	X	1#(0.454)
Acetamide, N-(aminothioxomethyl)-	591082	1-Acetyl-2-thiourea	1*	4	P002	C	1000 (454)
Acetamide, N-(4-ethoxyphenyl)-	62442	Phenacetin	1*	4	U187	X	1# (0.454)
Acetamide, N-9H-fluoren-2-yl-	53963	2-Acetylaminofluorene	1*	4	U005	X	1# (0.454)
Acetamide, 2-fluoro-	640197	Fluoroacetamide	1*	4	P057	B	100(45.4)
Acetic acid	64197		1000	1		D	5000 (2270)
Acetic acid, ethyl ester	141786	Ethyl acetate	1*	4	U112	D	5000 (2270)
Acetic acid, fluoro-, sodium salt	62748	Fluoroacetic acid, sodium salt	1*	4	P058	A	10 (4.54)
Acetic acid, lead salt	301042	Lead acetate	5000	1,4	U144	D	5000# (2270)
Acetic acid, thallium(I) salt	563688	Thallium(I) acetate	1*	4	U214	X	1## (0.454)
Acetic anhydride	108247		1000	1		D	5000 (2270)
Acetimidic acid,N-[(methylcarbamoyl) oxy]thio-, methyl ester.	16752775	Methomyl	1*	4	P066	B	100 (45.4)
Acetone	67641	2-Propanone	1*	4	U002	D	5000 (2270)
Acetone cyanohydrin	75865	2-Methyllactonitrile Propanenitrile, 2-hydroxy-2-methyl-	10	1,4	P069	A	10 (4.54)
Acetonitrile	75058	Ethanenitrile	1*	4	U003	D	5000 (2270)
3-(alpha-Acetonylbenzyl)- 4-hydroxycoumarin and salts	81812	Warfarin	1*	4	P001	B	100 (45.4)
Acetophenone	98862	Ethanone, 1-phenyl-	1*	4	U004	D	5000 (2270)
2-Acetylaminofluorene	53963	Acetamide, N-9H-fluoren-2-yl-	1*	4	U005	X	1# (0.454)
Acetyl bromide	506967		5000	1		D	5000 (2270)
Acetyl chloride	75365	Ethanoyl chloride	5000	1,4	U006	D	5000 (2270)
1-Acetyl-2-thiourea	591082	Acetamide, N-(aminothioxomethyl)-	1*	4	P002	C	1000 (454)
Acrolein	107028	2-Propenal	1	1,2,4	P003	X	1 (0.454)
Acrylamide	79061	2-Propenamide	1*	4	U007	D	5000 (2270)
Acrylic acid	79107	2-Propenoic acid	1*	4	U008	D	5000 (2270)
Acrylonitrile	107131	2-Propenenitrile	100	1,2,4	U009	B	100# (45.4)
Adipic acid	124049		5000	1		D	5000 (2270)
Alanine, 3-[p-bis(2-chloroethyl)amino]phenyl-,L-	148823	Melphalan	1*	4	U150	X	1# (0.454)
Aldicarb	116063	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino) carbonyl]oxime.	1*	4	P070	X	1 (0.454)
Aldrin	309002	1,2,3,4,10-10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-endo, exo- dimethanonaphthalene.	1	1,2,4	P004	X	1# (0.454)
Allyl alcohol	107186	2-Propen-1-ol	100	1,4	P005	B	100 (45.4)
Allyl chloride	107051		1000	1		C	1000 (454)
Aluminum phosphide	20859738		1*	4	P006	B	100 (45.4)
Aluminum sulfate	10043013		5000	1		D	5000 (2270)
5-(Aminomethyl)-3-isoxazolol	2763964	3(2H)-Isoxazolone, 5-(aminomethyl)-	1*	4	P007	C	1000 (454)
4-Aminopyridine	504245	4-Pyridinamine	1*	4	P008	C	1000 (454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Amitrole	61825	1H-1,2,4-Triazol-3-amine	1*	4	U011	X	1# (0.454)
Ammonia	7664417		100	1		B	100## (45.4)
Ammonium acetate	631618		5000	1		D	5000 (2270)
Ammonium benzoate	1863634		5000	1		D	5000 (2270)
Ammonium bicarbonate	1066337		5000	1		D	5000 (2270)
Ammonium bichromate	7789095		1000	1		C	1000# (454)
Ammonium bifluoride	1341497		5000	1		D	5000## (2270)
Ammonium bisulfite	10192300		5000	1		D	5000 (2270)
Ammonium carbamate	1111780		5000	1		D	5000 (2270)
Ammonium carbonate	506876		5000	1		D	5000 (2270)
Ammonium chloride	12125029		5000	1		D	5000 (2270)
Ammonium chromate	7788989		1000	1		C	1000# (454)
Ammonium citrate, dibasic	3012655		5000	1		D	5000 (2270)
Ammonium fluoborate	13826830		5000	1		D	5000 (2270)
Ammonium fluoride	12125018		5000	1		B	100 (45.4)
Ammonium hydroxide	1336216		1000	1		C	1000 (454)
Ammonium oxalate	6009707 5972736 14258492		5000	1		D	5000 (2270)
Ammonium picrate	131748	Phenol, 2,4,6-trinitro-, ammonium salt	1*	4	P009	A	10 (4.54)
Ammonium silicofluoride	16919190		1000	1		C	1000 (454)
Ammonium sulfamate	7773060		5000	1		D	5000 (2270)
Ammonium sulfide	12135761		5000	1		B	100 (45.4)
Ammonium sulfite	10196040		5000	1		D	5000 (2270)
Ammonium tartrate	14307438 3164292		5000	1		D	5000 (2270)
Ammonium thiocyanate	1762954		5000	1		D	5000 (2270)
Ammonium thiosulfate	7783188		5000	1		D	5000 (2270)
Ammonium vanadate	7803556	Vanadic acid, ammonium salt	1*	4	P119	C	1000 (454)
Amyl acetate iso- sec- tert-	628637 123922 626380 625161		1000	1		D	5000 (2270)
Aniline	62533	Benzenamine	1000	1,4	U012	D	5000 (2270)
Anthracene	120127		1*	2		X	1## (0.454)
Antimony ††	7440360		1*	2		X	1## (0.454)
ANTIMONY AND COMPOUNDS			1*	2			**
Antimony pentachloride	7647189		1000	1		C	1000 (454)
Antimony potassium tartrate	28300745		1000	1		B	100 (45.4)
Antimony tribromide	7789619		1000	1		C	1000 (454)
Antimony trichloride	10025919		1000	1		C	1000(454)
Antimony trifluoride	7783564		1000	1		C	1000 (454)
Antimony trioxide	1309644		5000	1		C	1000 (454)
Aroclor 1016	12674112	Polychlorinated Biphenyls (PCBs)	10	1,2		A	10# (4.54)
Aroclor 1221	11104282	Polychlorinated Biphenyls (PCBs)	10	1,2		A	10# (4.54)
Aroclor 1232	11141165	Polychlorinated Biphenyls (PCBs)	10	1,2		A	10# (4.54)
Aroclor 1242	53469219	PolychlorinatedBiphenyls (PCBs)	10	1,2		A	10# (4.54)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Aroclor 1248	12672296	Polychlorinated Biphenyls (PCBs)	10	1,2		A	10# (4.54)
Aroclor 1254	11097691	Polychlorinated Biphenyls (PCBs)	10	1,2		A	10# (4.54)
Aroclor 1260	11096825	Polychlorinated Biphenyls (PCBs)	10	1,2		A	10# (4.54)
Arsenic ††	7440382		1*	2,3		X	1#(0.454)
Arsenic acid	1327522 7778394		1*	4	P010	X	1# (0.454)
ARSENIC AND COMPOUNDS			1*	2			**
Arsenic disulfide	1303328		5000	1		D	5000# (2270)
Arsenic(III) oxide	1327533	Arsenic trioxide	5000	1,4	P012	D	5000# (2270)
Arsenic(V) oxide	1303282	Arsenic pentoxide	5000	1,4	P011	D	5000#(2270)
Arsenic pentoxide	1303282	Arsenic(V) oxide	5000	1,4	P011	D	5000# (2270)
Arsenic trichloride	7784341		5000	1		D	5000# (2270)
Arsenic trioxide	1327533	Arsenic(III) oxide	5000	1,4	P012	D	5000# (2270)
Arsenic trisulfide	1303339		5000	1		D	5000# (2270)
Arsine, diethyl-	692422	Diethylarsine	1*	4	P038	X	1# (0.454)
Asbestos †††	1332214		1*	2,3		X	1# (0.454)
Auramine	492808	Benzenamine, 4,4'-carbonimidoylbis(N,N-dimethyl-	1*	4	U014	X	1# (0.454)
Azaserine	115026	L-Serine, diazoacetate (ester)	1*	4	U015	X	1# (0.454)
Aziridine	151564	Ethylenimine	1*	4	P054	X	1# (0.454)
Azirino(2',3':3,4)pyrrolo(1,2-a)indole-4,7-dione,6-amino-8-[((aminocarbonyl)oxy)methyl]- 1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-.	50077	Mitomycin C	1*	4	U010	X	1# (0.454)
Barium cyanide	542621		10	1,4	P013	A	10 (4 54)
Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-	56495	3-Methylcholanthrene	1*	4	U157	X	1# (0.454)
Benz[c]acridine	225514	3,4-Benzacridine	1*	4	U016	X	1# (0.454)
3,4-Benzacridine	225514	Benz[c]acridine	1*	4	U016	X	1# (0.454)
Benzal chloride	98873	Benzene, dichloromethyl-	1*	4	U017	D	5000 (2270)
Benz[a]anthracene	56553	1,2-Benzanthracene Benzo[a]anthracene	1*	2,4	U018	X	1# (0.454)
1,2-Benzanthracene	56553	Benz[a]anthracene Benzo[a]anthracene	1*	2,4	U018	X	1# (0.454)
1,2-Benzanthracene, 7,12-dimethyl-	57976	7,12-Dimethylbenz[a]anthracene	1*	4	U094	X	1# (0.454)
Benzenamine	62533	Aniline	1000	1,4	U012	D	5000 (2270)
Benzenamine, 4,4'-carbonimidoylbis(N,N-dimethyl-	492808	Auramine	1*	4	U014	X	1# (0.454)
Benzenamine, 4-chloro-	106478	p-Chloroaniline	1*	4	P024	C	1000 (454)
Benzenamine, 4-chloro-2-methyl-,hydrochloride	3165933	4-Chloro-o-toluidine, hydrochloride	1*	4	U049	X	1# (0.454)
Benzenamine, N,N-dimethyl-4-phenylazo-	60117	Dimethylaminoazobenzene	1*	4	U093	X	1# (0.454)
Benzenamine, 4,4'-methylenebis(2-chloro-	101144	4,4'-Methylenebis(2-chloroaniline)	1*	4	U158	X	1# (0.454)
Benzenamine, 2-methyl-, hydrochloride	636215	o-Toluidine hydrochloride	1*	4	U222	X	1# (0.454)
Benzenamine, 2-methyl-5-nitro-	99558	5-Nitro-o-toluidine	1*	4	U181	X	1# (0.454)
Benzenamine, 4-nitro-	100016	p-Nitroaniline	1*	4	P077	D	5000 (2270)
Benzene	71432		1000	1,2,3,4	U019	C	1000# (454)
Benzene, 1-bromo-4-phenoxy-	101553	4-Bromophenyl phenyl ether	1*	2,4	U030	B	100 (45.4)
Benzene chloro-	108907	Chlorobenzene	100	1,2,4	U037	B	100 (45.4)
Benzene, chloromethyl-	100447	Benzyl chloride	100	1,4	P028	B	100# (45 4)
Benzene, 1,2-dichloro-	95501	1,2-Dichlorobenzene o-Dichlorobenzene	100	1,2,4	U070	B	100 (45 4)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Benzene, 1,3-dichloro-	541731	1,3-Dichlorobenzene m-Dichlorobenzene	1*	2,4	U071	B	100 (45.4)
Benzene, 1,4-dichloro-	106467	1,4-Dichlorobenzene p-Dichlorobenzene	100	1,2,4	U072	B	100 (45.4)
Benzene, dichloromethyl-	98873	Benzal chloride	1*	4	U017	D	5000 (2270)
Benzene, 2,4-diisocyanatomethyl-	584849 91087 26471625	Toluene diisocyanate	1*	4	U223	B	100 (45.4)
Benzene, dimethyl m- o- p-	1330207 108383 95476 106423	Xylene m- o- p-	1000	1,4	U239	C	1000 (454)
Benzene, hexachloro-	118741	Hexachlorobenzene	1*	2,4	U127	X	1# (0.454)
Benzene, hexahydro-	110827	Cyclohexane	1000	1,4	U056	C	1000 (454)
Benzene, hydroxy-	108952	Phenol	1000	1,2,4	U188	C	1000## (454)
Benzene, methyl-	108883	Toluene	1000	1,2,4	U220	C	1000 (454)
Benzene, 1-methyl-2,4-dinitro-	121142	2,4-Dinitrotoluene	1000	1,2,4	U105	C	1000# (454)
Benzene, 1-methyl-2,6-dinitro-	606202	2,6-Dinitrotoluene	1000	1,2,4	U106	C	1000# (454)
Benzene, 1,2-methylenedioxy-4-allyl-	94597	Safrole	1*	4	U203	X	1# (0.454)
Benzene, 1,2-methylenedioxy-4-propenyl-	120581	Isosafrole	1*	4	U141	X	1# (0.454)
Benzene, 1,2-methylenedioxy-4-propyl-	94586	Dihydrosafrole	1*	4	U090	X	1# (0.454)
Benzene, 1-methylethyl-	98828	Cumene	1*	4	U055	D	5000 (2270)
Benzene, nitro-	98953	Nitrobenzene	1000	1,2,4	U169	C	1000 (454)
Benzene, pentachloro-	608935	Pentachlorobenzene	1*	4	U183	X	1## (0.454)
Benzene, pentachloronitro-	82688	Pentachloronitrobenzene	1*	4	U185	X	1# (0.454)
Benzene, 1,2,4,5-tetrachloro-	95943	1,2,4,5-Tetrachlorobenzene	1*	4	U207	D	5000 (2270)
Benzene, trichloromethyl-	98077	Benzotrichloride	1*	4	U023	X	1# (0.454)
Benzene, 1,3,5-trinitro-	99354	sym-Trinitrobenzene	1*	4	U234	X	1## (0.454)
Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester.	510156	Ethyl 4,4'-dichlorobenzilate	1*	4	U038	X	1# (0.454)
1,2-Benzenedicarboxylic acid anhydride	85449	Phthalic anhydride	1*	4	U190	D	5000 (2270)
1,2-Benzenedicarboxylic acid,[bis(2-ethylhexyl)] ester	117817	Bis(2-ethylhexyl)phthalate	1*	2,4	U028	X	1# (0.454)
1,2-Benzenedicarboxylic acid,dibutyl ester	84742	n-Butyl phthalate Dibutyl phthalate Di-n-butyl phthalate	100	1,2,4	U069	A	10 (4.54)
1,2-Benzenedicarboxylic acid,diethyl ester	84662	Diethyl phthalate	1*	2,4	U088	C	1000 (454)
1,2-Benzenedicarboxylic acid,dimethyl ester	131113	Dimethyl phthalate	1*	2,4	U102	D	5000 (2270)
1,2-Benzenedicarboxylic acid,di-n-octyl ester	117840	Di-n-octyl phthalate	1*	2,4	U107	D	5000 (2270)
1,3-Benzenediol	108463	Resorcinol	1000	1,4	U201	D	5000 (2270)
1,2-Benzenediol,4-[1-hydroxy-2-(methylamino)ethyl]-	51434	Epinephrine	1*	4	P042	C	1000 (454)
Benzenesulfonic acid chloride	98099	Benzenesulfonyl chloride	1*	4	U020	B	100 (45.4)
Benzenesulfonyl chloride	98099	Benzenesulfonic acid chloride	1*	4	U020	B	100 (45.4)
Benzenethiol	108985	Thiophenol	1*	4	P014	B	100 (45.4)
Benzidine	92875	(1,1'-Biphenyl)-4,4'diamine	1*	2,4	U021	X	1# (0.454)
1,2-Benzisothiazolin-3-one,1,1-dioxide, and salts	81072	Saccharin and salts	1*	4	U202	X	1# (0.454)
Benzo[a]anthracene	56553	Benz[a]anthracene 1,2-Benzanthracene	1*	2,4	U018	X	1# (0.454)
Benzo[b]fluoranthene	205992		1*	2		X	1# (0.454)
Benzo(k)fluoranthene	207089		1*	2		X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Benzo[j,k]fluorene	206440	Fluoranthene	1*	2,4	U120	X	1## (0.454)
Benzoic acid	65850		5000	1		D	5000 (2270)
Benzonitrile	100470		1000	1		D	5000 (2270)
Benzo[ghi]perylene	191242		1*	2		X	1## (0.454)
Benzo[a]pyrene	50328	3,4-Benzopyrene	1*	2,4	U022	X	1# (0.454)
3,4-Benzopyrene	50328	Benzo[a]pyrene	1*	2,4	U022	X	1# (0.454)
p-Benzoquinone	106514	1,4-Cyclohexadienedione	1*	4	U197	X	1## (0.454)
Benzotrichloride	98077	Benzene, trichloromethyl-	1*	4	U023	X	1# (0.454)
Benzoyl chloride	98884		1000	1		C	1000 (454)
1,2-Benzphenanthrene	218019	Chrysene	1*	2,4	U050	X	1# (0.454)
Benzyl chloride	100447	Benzene, chloromethyl-	100	1,4	P028	B	100# (45.4)
Beryllium ††	7440417	Beryllium dust	1*	2,3,4	P015	X	1# (0.454)
BERYLLIUM AND COMPOUNDS			1*	2			**
Beryllium chloride	7787475		5000	1		D	5000# (2270)
Beryllium dust	7440417	Beryllium	1*	2,3,4	P015	X	1# (0.454)
Beryllium fluoride	7787497		5000	1		D	5000# (2270)
Beryllium nitrate	13597994 7787555		5000	1		D	5000# (2270)
alpha - BHC	319846		1*	2		X	1# (0.454)
beta - BHC	319857		1*	2		X	1# (0.454)
gamma - BHC	58899	Hexachlorocyclohexane (gamma isomer) Lindane	1	1,2,4	U129	X	1# (0.454)
delta - BHC	319868		1*	2		X	1## (0.454)
2,2'-Bioxirane	1464535	1,2:3,4-Diepoxybutane	1*	4	U085	X	1# (0.454)
(1,1'-Biphenyl)-4,4'diamine	92875	Benzidine	1*	2,4	U021	X	1# (0.454)
(1,1'-Biphenyl)-4,4'diamine,3,3'dichloro-	91941	3,3'-Dichlorobenzidine	1*	2,4	U073	X	1# (0.454)
(1,1'-Biphenyl)-4,4'diamine,3,3'dimethoxy-	119904	3,3'-Dimethoxybenzidine	1*	4	U091	X	1# (0.454)
(1,1'Biphenyl)-4,4'-diamine,3,3'-dimethyl-	119937	3,3'-Dimethylbenzidine	1*	4	U095	X	1# (0.454)
Bis(2-chloroethoxy) methane	111911	Ethane, 1,1'-[methylenebis(oxy)]bis(2-chloro-	1*	2,4	U024	C	1000 (454)
Bis (2-chloroethyl) ether	111444	Dichloroethyl ether Ethane, 1,1'-oxybis[2-chloro-	1*	2,4	U025	X	1# (0.454)
Bis(2-chloroisopropyl) ether	108601	Propane, 2,2'-oxybis(2-chloro-	1*	2,4	U027	C	1000 (454)
Bis(chloromethyl) ether	542881	Methane, oxybis(chloro-	1*	4	P016	X	1# (0.454)
Bis(dimethylthiocarbamoyl) disulfide	137268	Thiram	1*	4	U244	A	10 (4.54)
Bis(2-ethylhexyl)phthalate	117817	1,2-Benzenedicarboxylic acid, [bis(2-ethylhexyl)] ester	1*	2,4	U028	X	1# (0.454)
Bromine cyanide	506683	Cyanogen bromide	1*	4	U246	C	1000 (454)
Bromoacetone	598312	2-Propanone, 1-bromo-	1*	4	P017	C	1000 (454)
Bromoform	75252	Methane, tribromo-	1*	2,4	U225	B	100 (45.4)
4-Bromophenyl phenyl ether	101553	Benzene, 1-bromo-4-phenoxy-	1*	2,4	U030	B	100 (45.4)
Brucine	357573	Strychnidin-10-one, 2,3-dimethoxy-	1*	4	P018	B	100 (45.4)
1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	87683	Hexachlorobutadiene	1*	2,4	U128	X	1# (0.454)
1-Butanamine, N-butyl-N-nitroso-	924163	N-Nitrosodi-n-butylamine	1*	4	U172	X	1# (0.454)
Butanoic acid, 4-[bis(2-chloroethyl)amino]benzene-	305033	Chlorambucil	1*	4	U035	X	1# (0.454)
1-Butanol	71363	n-Butyl alcohol	1*	4	U031	D	5000 (2270)
2-Butanone	78933	Methyl ethyl ketone	1*	4	U159	D	5000 (2270)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
2-Butanone peroxide	1338234	Methyl ethyl ketone peroxide	1*	4	U160	A	10 (4.54)
2-Butenal	123739 4170303	Crotonaldehyde	100	1,4	U053	B	100 (45.4)
2-Butene, 1,4-dichloro-	764410	1,4-Dichloro-2-butene	1*	4	U074	X	1 (0.454)
Butyl acetate iso- sec- tert-	123864 110190 105464 540885		5000	1		D	5000 (2270)
n-Butyl alcohol	71363	1-Butanol	1*	4	U031	D	5000 (2270)
Butylamine iso- sec- sec- tert-	109739 78819 513495 13952846 75649		1000	1		C	1000 (454)
Butyl benzyl phthalate	85687		1*	2		B	100 (45.4)
n-Butyl phthalate	84742	1,2-Benzenedicarboxylic acid,dibutyl ester Dibutyl phthalate Di-n-butyl phthalate	100	1,2,4	U069	A	10 (4.54)
Butyric acid iso-	107926 79312		5000	1		D	5000 (2270)
Cacodylic acid	75605	Hydroxydimethylarsine oxide	1*	4	U136	X	1# (0.454)
Cadmium ††	7440439		1*	2		X	1# (0.454)
Cadmium acetate	543908		100	1		B	100# (45.4)
CADMIUM AND COMPOUNDS			1*	2			**
Cadmium bromide	7789426		100	1		B	100# (45.4)
Cadmium chloride	10108642		100	1		B	100# (45.4)
Calcium arsenate	7778441		1000	1		C	1000# (454)
Calcium arsenite	52740166		1000	1		C	1000# (454)
Calcium carbide	75207		5000	1		A	10 (4.54)
Calcium chromate	13765190	Chromic acid, calcium salt	1000	1,4	U032	C	1000# (454)
Calcium cyanide	592018		10	1,4	P021	A	10 (4.54)
Calcium dodecylbenzene sulfonate	26264062		1000	1		C	1000 (454)
Calcium hypochlorite	7778543		100	1		A	10(4.54)
Camphene, octachloro-	8001352	Toxaphene	1	1,2,4	P123	X	1# (0.454)
Captan	133062		10	1		A	10## (4.54)
Carbamic acid, ethyl ester	51796	Ethyl carbamate (Urethan)	1*	4	U238	X	1# (0.454)
Carbamic acid, methylnitroso-,ethyl ester	615532	N-Nitroso-N-methylurethane	1*	4	U178	X	1# (0.454)
Carbamide, N-ethyl-N-nitroso-	759739	N-Nitroso-N-ethylurea	1*	4	U176	X	1# (0.454)
Carbamide, N-methyl-N-nitroso-	684935	N-Nitroso-N-methylurea	1*	4	U177	X	1# (0.454)
Carbamide, thio-	62566	Thiourea	1*	4	U219	X	1# (0.454)
Carbamimidoselenoic acid	630104	Selenourea	1*	4	P103	X	1## (0.454)
Carbamoyl chloride, dimethyl-	79447	Dimethylcarbamoyl chloride	1*	4	U097	X	1# (0.454)
Carbaryl	63252		100	1		B	100 (45.4)
Carbofuran	1563662		10	1		A	10 (4.54)
Carbon bisulfide	75150	Carbon disulfide	5000	1,4	P022	D	5000## (2270)
Carbon disulfide	75150	Carbon bisulfide	5000	1,4	P022	D	5000## (2270)
Carbonic acid, dithallium (I) salt	6533739	Thallium(I) carbonate	1*	4	U215	X	1## (0.454)
Carbonochloridic acid, methyl ester	79221	Methyl chlorocarbonate	1*	4	U156	C	1000 (454)
Carbon oxyfluoride	353504	Carbonyl fluoride	1*	4	U033	C	1000 (454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Carbon tetrachloride	56235	Methane, tetrachloro-	5000	1,2,4	U211	D	5000# (2270)
Carbonyl chloride	75445	Phosgene	5000	1,4	P095	A	10 (4.54)
Carbonyl fluoride	353504	Carbon oxyfluoride	1*	4	U033	C	1000 (454)
Chloral	75876	Acetaldehyde, trichloro-	1*	4	U034	X	1#(0.454)
Chlorambucil	305033	Butanoic acid, 4-[bis(2-chloroethyl)amino]benzene-	1*	4	U035	X	1# (0.454)
CHLORDANE (TECHNICAL MIXTURE AND METABOLITES).			1*	2			**
Chlordane	57749	Chlordane, technical 4,7-Methanoindan, 1,2,4,5,6,7,8,8-octachloro- 3a,4,7,7a-tetrahydro-	1	1,2,4	U036	X	1# (0.454)
Chlordane, technical	57749	Chlordane 4,7-Methanoindan, 1,2,4,5,6,7,8,8-octachloro- 3a,4,7,7a-tetrahydro-	1	1,2,4	U036	X	1# (0.454)
CHLORINATED BENZENES			1*	2			**
CHLORINATED ETHANES			1*	2			**
CHLORINATED NAPHTHALENE			1*	2			**
CHLORINATED PHENOLS			1*	2			**
Chlorine	7782505		10	1		A	10 (4.54)
Chlorine cyanide	506774	Cyanogen chloride	10	1,4	P033	A	10 (4.54)
Chlornaphazine	494031	2-Naphthylamine, N,N-bis(2-chloroethyl)-	1*	4	U026	X	1# (0.454)
Chloroacetaldehyde	107200	Acetaldehyde, chloro-	1*	4	P023	C	1000 (454)
CHLOROALKYL ETHERS			1*	2			**
p-Chloroaniline	106478	Benzenamine, 4-chloro-	1*	4	P024	C	1000 (454)
Chlorobenzene	108907	Benzene, chloro-	100	1,2,4	U037	B	100 (45.4)
4-Chloro-m-cresol	59507	p-Chloro-m-cresol Phenol, 4-chloro-3-methyl-	1*	2,4	U039	D	5000 (2270)
p-Chloro-m-cresol	59507	4-Chloro-m-cresol Phenol, 4-chloro-3-methyl-	1*	2,4	U039	D	5000 (2270)
Chlorodibromomethane	124481		1*	2		B	100 (45.4)
1-Chloro-2,3-epoxypropane	106898	Epichlorohydrin Oxirane, 2-(chloromethyl)-	1000	1,4	U041	C	1000# (454)
Chloroethane	75003		1*	2		X	1## (0.454)
2-Chloroethyl vinyl ether	110758	Ethene, 2-chloroethoxy-	1*	2,4	U042	C	1000 (454)
Chloroform	67663	Methane, trichloro-	5000	1,2,4	U044	D	5000# (2270)
Chloromethyl methyl ether	107302	Methane, chloromethoxy-	1*	4	U046	X	1# (0.454)
beta-Chloronaphthalene	91587	2-Chloronaphthalene Naphthalene, 2-chloro-	1*	2,4	U047	D	5000 (2270)
2-Chloronaphthalene	91587	beta-Chloronaphthalene Naphthalene, 2-chloro-	1*	2,4	U047	D	5000 (2270)
2-Chlorophenol	95578	o-Chlorophenol Phenol, 2-chloro-	1*	2,4	U048	B	100 (45.4)
o-Chlorophenol	95578	2-Chlorophenol Phenol, 2-chloro-	1*	2,4	U048	B	100 (45.4)
4-Chlorophenyl phenyl ether	7005723		1*	2		D	5000 (2270)
1-(o-Chlorophenyl)thiourea	5344821	Thiourea, (2-chlorophenyl)-	1*	4	P026	B	100 (45.4)
3-Chloropropionitrile	542767	Propanenitrile, 3-chloro-	1*	4	P027	C	1000 (454)
Chlorosulfonic acid	7790945		1000	1		C	1000 (454)
4-Chloro-o-toluidine, hydrochloride	3165933	Benzenamine, 4-chloro-2-methyl-,hydrochloride	1*	4	U049	X	1# (0.454)
Chlorpyrifos	2921882		1	1		X	1 (0.454)
Chromic acetate	1066304		1000	1		C	1000## (454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory RQ	Statutory Code †	Statutory RCRA Waste Number	Final RQ Category	Final RQ Pounds(Kg)
Chromic acid	11115745 7738945		1000	1		C	1000# (454)
Chromic acid, calcium salt	13765190	Calcium chromate	1000	1,4	U032	C	1000# (454)
Chromic sulfate	10101538		1000	1		C	1000## (454)
Chromium ††	7440473		1*	2		X	1# (0.454)
CHROMIUM AND COMPOUNDS			1*	2			**
Chromous chloride	10049055		1000	1		C	1000## (454)
Chrysene	218019	1,2-Benzphenanthrene	1*	2,4	U050	X	1# (0.454)
Cobaltous bromide	7789437		1000	1		C	1000(454)
Cobaltous formate	544183		1000	1		C	1000 (454)
Cobaltous sulfamate	14017415		1000	1		C	1000 (454)
Coke Oven Emissions	N.A.		1*	3		X	1# (0.454)
Copper ††	7440508		1*	2		X	1## (0.454)
COPPER AND COMPOUNDS			1*	2			**
Copper cyanide	544923		1*	4	P029	A	10 (4.54)
Coumaphos	56724		10	1		A	10 (4.54)
Creosote	8001589		1*	4	U051	X	1# (0.454)
Cresol(s) m- o- p-	1319773 108394 95487 106445	Cresylic acid	1000	1,4	U052	C	1000## (454)
Cresylic acid m- o- p-	1319773 108394 95487 106445	Cresol(s)	1000	1,4	U052	C	1000## (454)
Crotonaldehyde	123739 4170303	2-Butenal	100	1,4	U053	B	100 (45.4)
Cumene	98828	Benzene, 1-methylethyl-	1*	4	U055	D	5000 (2270)
Cupric acetate	142712		100	1		B	100 (45.4)
Cupric acetoarsenite	12002038		100	1		B	100# (45.4)
Cupric chloride	7447394		10	1		A	10## (4.54)
Cupric nitrate	3251238		100	1		B	100 (45.4)
Cupric oxalate	5893663		100	1		B	100 (45.4)
Cupric sulfate	7758987		10	1		A	10## (4.54)
Cupric sulfate ammoniated	10380297		100	1		B	100 (45.4)
Cupric tartrate	815827		100	1		B	100## (45.4)
CYANIDES			1*	2			**
Cyanides (soluble cyanide salts), not elsewhere specified.	57125		1*	4	P030	A	10 (4.54)
Cyanogen	460195		1*	4	P031	B	100 (45.4)
Cyanogen bromide	506683	Bromine cyanide	1*	4	U246	C	1000 (454)
Cyanogen chloride	506774	Chlorine cyanide	10	1,4	P033	A	10 (4.54)
1,4-Cyclohexadienedione	106514	p-Benzoquinone	1*	4	U197	X	1## (0.454)
Cyclohexane	110827	Benzene, hexahydro-	1000	1,4	U056	C	1000(454)
Cyclohexanone	108941		1*	4	U057	D	5000¶(2270)
1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	77474	Hexachlorocyclopentadiene	1	1,2,4	U130	X	1# (0.454)
Cyclophosphamide	50180	2H-1,3,2-Oxazaphosphorine,2-[bis(2-chloroethyl)amino] tetrahydro-2-oxide.	1*	4	U058	X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
2,4-D Acid	94757	2,4-D, salts and esters 2,4-Dichlorophenoxyacetic acid, salts and esters	100	1,4	U240	B	100 (45.4)
2,4-D Esters	94111 94791 94804 1320189 1928387 1928616 1929733 2971382 25168267 53467111		100	1		B	100 (45.4)
2,4-D, salts and esters	94757	2,4-D Acid 2,4-Dichlorophenoxyacetic acid, salts and esters	100	1,4	U240	B	100 (45.4)
Daunomycin	20830813	5,12-Naphthacenedione, (8S-cis)-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-.	1*	4	U059	X	1# (0.454)
DDD	72548	4,4' DDD Dichlorodiphenyl dichloroethane TDE	1	1,2,4	U060	X	1# (0.454)
4,4' DDD	72548	DDD Dichlorodiphenyl dichloroethane TDE	1	1,2,4	U060	X	1# (0.454)
DDE	72559	4,4' DDE	1*	2		X	1# (0.454)
4,4' DDE	72559	DDE	1*	2		X	1# (0.454)
DDT	50293	4,4' DDT Dichlorodiphenyl trichloroethane	1	1,2,4	U061	X	1# (0.454)
4,4'DDT	50293	DDT Dichlorodiphenyl trichloroethane	1	1,2,4	U061	X	1# (0.454)
DDT AND METABOLITES			1*	2			**
Decachlorooctahydro-1,3,4-metheno-2H-cyclobuta[c,d]-pentalen-2-one.	143500	Kepone	1	1,4	U142	X	1# (0.454)
Diallate	2303164	S-(2,3-Dichloroallyl) diisopropylthiocarbamate	1*	4	U062	X	1# (0.454)
Diamine	302012	Hydrazine	1*	4	U133	X	1# (0.454)
Diaminotoluene	95807 25376458 496720 823405	Toluenediamine	1*	4	U221	X	1# (0.454)
Diazinon	5333415		1	1		X	1 (0.454)
Dibenz[a,h]anthracene	53703	1,2:5,6-Dibenzanthracene Dibenzo[a,h]anthracene	1*	2,4	U063	X	1# (0.454)
1,2:5,6-Dibenzanthracene	53703	Dibenz[a,h]anthracene Dibenzo[a,h]anthracene	1*	2,4	U063	X	1# (0.454)
Dibenzo[a,h]anthracene	53703	Dibenz[a,h]anthracene 1,2:5,6-Dibenzanthracene	1*	2,4	U063	X	1# (0.454)
1,2,7,8-Dibenzopyrene	189559	Dibenz[a,i]pyrene	1*	4	U064	X	1# (0.454)
Dibenz[a,i]pyrene	189559	1,2:7,8-Dibenzopyrene	1*	4	U064	X	1#(0.454)
1,2-Dibromo-3-chloropropane	96128	Propane, 1,2-dibromo-3-chloro-	1*	4	U066	X	1# (0.454)
Dibutyl phthalate	84742	1,2-Benzenedicarboxylic acid,dibutyl ester Di-n-butyl phthalate n-Butyl phthalate	100	1,2,4	U069	A	10 (4.54)
Di-n-butyl phthalate	84742	1,2-Benzenedicarboxylic acid,dibutyl ester n-Butyl phthalate Dibutyl phthalate	100	1,2,4	U069	A	10 (4.54)
Dicamba	1918009		1000	1		C	1000 (454)
Dichlobenil	1194656		1000	1		B	100 (45.4)
Dichlone	117806		1	1		X	1 (0.454)
S-(2,3-Dichloroallyl) diisopropylthiocarbamate	2303164	Diallate	1*	4	U062	X	1# (0.454)
3,5-Dichloro-N-(1,1-dimethyl-2-propynyl)benzamide	23950585	Pronamide	1*	4	U192	D	5000 (2270)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Dichlorobenzene (mixed)	25321226		100	1		B	100 (45.4)
1,2-Dichlorobenzene	95501	Benzene, 1,2-dichloro- o-Dichlorobenzene	100	1,2,4	U070	B	100 (45.4)
1,3-Dichlorobenzene	541731	Benzene, 1,3-dichloro- m-Dichlorobenzene	1*	2,4	U071	B	100 (45.4)
1,4-Dichlorobenzene	106467	Benzene, 1,4-dichloro- p-Dichlorobenzene	100	1,2,4	U072	B	100 (45.4)
m-Dichlorobenzene	541731	Benzene, 1,3-dichloro- 1,3-Dichlorobenzene	1*	2,4	U071	B	100 (45.4)
o-Dichlorobenzene	95501	Benzene, 1,2-dichloro- 1,2-Dichlorobenzene	100	1,2,4	U070	B	100 (45.4)
p-Dichlorobenzene	106467	Benzene, 1,4-dichloro- 1,4-Dichlorobenzene	100	1,2,4	U072	B	100 (45.4)
DICHLOROBENZIDINE			1*	2			**
3,3'-Dichlorobenzidine	91941	(1,1'-Biphenyl)-4,4'diamine,3,3'dichloro-	1*	2,4	U073	X	1# (0.454)
Dichlorobromomethane	75274		1*	2		D	5000 (2270)
1,4-Dichloro 2-butene	764410	2-Butene, 1,4-dichloro-	1*	4	U074	X	1 (0.454)
Dichlorodifluoromethane	75718	Methane, dichlorodifluoro-	1*	4	U075	D	5000 (2270)
Dichlorodiphenyl dichloroethane	72548	DDD 4,4' DDD TDE	1	1,2,4	U060	X	1# (0.454)
Dichlorodiphenyl trichloroethane	50293	DDT 4,4'DDT	1	1,2,4	U061	X	1# (0.454)
1,1-Dichloroethane	75343	Ethane, 1,1-dichloro- Ethylidene dichloride	1*	2,4	U076	C	1000 (454)
1,2-Dichloroethane	107062	Ethane, 1,2-dichloro- Ethylene dichloride	5000	1,2,4	U077	D	5000# (2270)
1,1-Dichloroethylene	75354	Ethene, 1,1-dichloro- Vinylidene chloride	5000	1,2,4	U078	D	5000# (2270)
1,2-trans-Dichloroethylene	156605	Ethene, trans-1,2-dichloro-	1*	2,4	U079	C	1000 (454)
Dichloroethyl ether	111444	Bis (2-chloroethyl) ether Ethane, 1,1'-oxybis(2-chloro-	1*	2,4	U025	X	1# (0.454)
2,4-Dichlorophenol	120832	Phenol, 2,4-dichloro-	1*	2,4	U081	B	100 (45.4)
2,6-Dichlorophenol	87650	Phenol, 2,6-dichloro-	1*	4	U082	B	100 (45.4)
2,4-Dichlorophenoxyacetic acid, salts and esters	94757	2,4-D Acid 2,4-D, salts and esters	100	1,4	U240	B	100 (45.4)
Dichlorophenylarsine	696286	Phenyl dichloroarsine	1*	4	P036	X	1# (0.454)
Dichloropropane 1,1-Dichloropropane 1,3-Dichloropropane	26638197 78999 142289		5000	1		C	1000 (454)
1,2-Dichloropropane	78875	Propylene dichloride	5000	1,2,4	U083	C	1000 (454)
Dichloropropane - Dichloropropene (mixture)	8003198		5000	1		D	5000## (2270)
Dichloropropene 2,3-Dichloropropene	26952238 78886		5000	1		D	5000## (2270)
1,3-Dichloropropene	542756	Propene, 1,3-dichloro-	5000	1,2,4	U084	D	5000## (2270)
2,2-Dichloropropionic acid	75990		5000	1		D	5000 (2270)
Dichlorvos	62737		10	1		A	10 (4.54)
Dieldrin	60571	1,2,3,4,10,10-Hexachloro-6,7-epoxy- 1,4,4a,5,6,7,8,8a-octahydro-endo,exo- 1,4:5,8- dimethanonaphthalene.	1	1,2,4	P037	X	1# (0.454)
1,2:3,4-Diepoxybutane	1464535	2,2'-Bioxirane	1*	4	U085	X	1# (0.454)
Diethylamine	109897		1000	1		C	1000## (454)
Diethylarsine	692422	Arsine, diethyl-	1*	4	P038	X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
1,4-Diethylene dioxide	123911	1,4-Dioxane	1*	4	U108	X	1# (0.454)
N,N'-Diethylhydrazine	1615801	Hydrazine, 1,2-diethyl-	1*	4	U086	X	1# (0.454)
O,O-Diethyl S-[2-(ethylthio)ethyl]phosphorodithioate	298044	Disulfoton	1	1,4	P039	X	1 (0.454)
O,O-Diethyl S-methyl dithiophosphate	3288582	Phosphorodithioic acid, O,O-diethyl S-methylester	1*	4	U087	D	5000 (2270)
Diethyl-p-nitrophenyl phosphate	311455	Phosphoric acid,diethyl p-nitrophenyl ester	1*	4	P041	B	100 (45.4)
Diethyl phthalate	84662	1,2-Benzenedicarboxylic acid,diethyl ester	1*	2,4	U088	C	1000 (454)
O,O-Diethyl O-pyrazinyl phosphorothioate	297972	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester	1*	4	P040	B	100 (45.4)
Diethylstilbestrol	56531	4,4'-Stilbenediol, alpha,alpha'-diethyl-	1*	4	U089	X	1# (0.454)
1,2-Dihydro-3,6-pyridazinedione	123331	Maleic hydrazide	1*	4	U148	D	5000 (2270)
Dihydrosafrole	94586	Benzene, 1,2-methylenedioxy-4-propyl-	1*	4	U090	X	1# (0.454)
Diisopropyl fluorophosphate	55914	Phosphorofluoridic acid,bis(1-methylethyl) ester	1*	4	P043	B	100 (45.4)
Dimethoate	60515	Phosphorodithioic acid,O,O-dimethyl S-[2(methylamino)-2-oxoethyl] ester.	1*	4	P044	A	10 (4.54)
3,3'-Dimethoxybenzidine	119904	(1,1'-Biphenyl)-4,4'diamine,3,3'dimethoxy-	1*	4	U091	X	1# (0.454)
Dimethylamine	124403	Methanamine, N-methyl-	1000	1,4	U092	C	1000## (454)
Dimethylaminoazobenzene	60117	Benzenamine, N,N-dimethyl-4-phenylazo-	1*	4	U093	X	1# (0.454)
7,12-Dimethylbenz[a]anthracene	57976	1,2-Benzanthracene, 7,12-dimethyl-	1*	4	U094	X	1# (0.454)
3,3'-Dimethylbenzidine	119937	(1,1'Biphenyl)-4,4'-diamine,3,3'-dimethyl-	1*	4	U095	X	1# (0.454)
alpha,alpha-Dimethylbenzylhydroperoxide	80159	Hydroperoxide, 1-methyl-1-phenylethyl-	1*	4	U096	A	10 (4.54)
3,3-Dimethyl-1-(methylthio)-2-butanone, O-[(methylamino)carbonyl] oxime.	39196184	Thiofanox	1*	4	P045	B	100 (45.4)
Dimethylcarbamoyl chloride	79447	Carbamoyl chloride, dimethyl-	1*	4	U097	X	1# (0.454)
1,1-Dimethylhydrazine	57147	Hydrazine, 1,1-dimethyl-	1*	4	U098	X	1# (0.454)
1,2-Dimethylhydrazine	540738	Hydrazine, 1,2-dimethyl-	1*	4	U099	X	1# (0.454)
O,O-Dimethyl O-p-nitrophenyl phosphorothioate	298000	Methyl parathion	100	1,4	P071	B	100## (45.4)
Dimethylnitrosamine	62759	N-Nitrosodimethylamine	1*	2,4	P082	X	1# (0.454)
alpha,alpha-Dimethylphenethylamine	122098	Ethanamine, 1,1-dimethyl-2-phenyl-	1*	4	P046	D	5000 (2270)
2,4-Dimethylphenol	105679	Phenol, 2,4-dimethyl-	1*	2,4	U101	B	100 (45.4)
Dimethyl phthalate	131113	1,2-Benzenedicarboxylic acid,dimethyl ester	1*	2,4	U102	D	5000 (2270)
Dimethyl sulfate	77781	Sulfuric acid, dimethyl ester	1*	4	U103	X	1# (0.454)
Dinitrobenzene (mixed)	25154545		1000	1		B	100 (45.4)
m-	99650						
o-	528290						
p-	100254						
4,6-Dinitro-o-cresol and salts	534521	Phenol, 2,4-dinitro-6-methyl-, and salts	1*	2,4	P047	A	10 (4.54)
4,6-Dinitro-o-cyclohexylphenol	131895	Phenol, 2-cyclohexyl-4,6-dinitro-	1*	4	P034	B	100 (45.4)
Dinitrophenol	25550587		1000	1		A	10 (4.54)
2,5-	329715						
2,6-	573568						
2,4-Dinitrophenol	51285	Phenol, 2,4-dinitro-	1000	1,2,4	P048	A	10 (4.54)
Dinitrotoluene	25321146		1000	1,2		C	1000# (454)
3,4-Dinitrotoluene	610399						
2,4-Dinitrotoluene	121142	Benzene, 1-methyl-2,4-dinitro-	1000	1,2,4	U105	C	1000# (454)
Dinoseb	88857	Phenol, 2,4-dinitro-6-(1-methylpropyl)-	1*	4	P020	C	1000 (454)
Di-n-octyl phthalate	117840	1,2-Benzenedicarboxylic acid,di-n-octyl ester	1*	2,4	U107	D	5000 (2270)
1,4-Dioxane	123911	1,4-Diethylene dioxide	1*	4	U108	X	1# (0.454)
DIPHENYLHYDRAZINE			1*	2			**
1,2-Diphenylhydrazine	122667	Hydrazine, 1,2-diphenyl-	1*	2,4	U109	X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Diphosphoramide, octamethyl-	152169	Octamethylpyrophosphoramide	1*	4	P085	B	100 (45.4)
Dipropylamine	142847	1-Propanamine, N-propyl-	1*	4	U110	D	5000 (2270)
Di-n-propylnitrosamine	621647	N-Nitrosodi-n-propylamine	1*	2,4	U111	X	1# (0.454)
Diquat	85007 2764729		1000	1		C	1000 (454)
Disulfoton	298044	O,O-Diethyl S-[2-(ethylthio)ethyl] phosphorodithioate	1	1,4	P039	X	1 (0.454)
2,4-Dithiobiuret	541537	Thioimidodicarbonic diamide	1*	4	P049	B	100 (45.4)
Dithiopyrophosphoric acid, tetraethyl ester	3689245	Tetraethyldithiopyrophosphate	1*	4	P109	B	100 (45.4)
Diuron	330541		100	1		B	100 (45.4)
Dodecylbenzenesulfonic acid	27176870		1000	1		C	1000 (454)
Endosulfan	115297	5-Norbornene-2,3-dimethanol,1,4,5,6,7,7-hexachloro, cyclic sulfite.	1	1,2,4	P050	X	1 (0.454)
alpha - Endosulfan	959988		1*	2		X	1 (0.454)
beta - Endosulfan	33213659		1*	2		X	1 (0.454)
ENDOSULFAN AND METABOLITES			1*	2			**
Endosulfan sulfate	1031078		1*	2		X	1 (0.454)
Endothall	145733	7-Oxabicyclo[2,2,1]heptane-2,3-dicarboxylic acid	1*	4	P088	C	1000 (454)
Endrin	72208	1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo,endo- 1,4:5,8-dimethanonaphthalene.	1	1,2,4	P051	X	1 (0.454)
Endrin aldehyde	7421934		1*	2		X	1 (0.454)
ENDRIN AND METABOLITES			1*	2			**
Epichlorohydrin	106898	1-Chloro-2,3-epoxypropane Oxirane, 2-(chloromethyl)-	1000	1,4	U041	C	1000# (454)
Epinephrine	51434	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-	1*	4	P042	C	1000 (454)
Ethanal	75070	Acetaldehyde	1000	1,4	U001	C	1000 (454)
Ethanamine, 1,1-dimethyl-2-phenyl-	122098	alpha,alpha-Dimethylphenethylamine	1*	4	P046	D	5000 (2270)
Ethanamine, N-ethyl-N-nitroso-	55185	N-Nitrosodiethylamine	1*	4	U174	X	1# (0.454)
Ethane, 1,2-dibromo-	106934	Ethylene dibromide	1000	1,4	U067	C	1000# (454)
Ethane, 1,1-dichloro-	75343	1,1-Dichloroethane Ethylidene dichloride	1*	2,4	U076	C	1000 (454)
Ethane, 1,2-dichloro-	107062	1,2-Dichloroethane Ethylene dichloride	5000	1,2,4	U077	D	5000# (2270)
Ethane, 1,1,1,2,2,2-hexachloro-	67721	Hexachloroethane	1*	2,4	U131	X	1# (0.454)
Ethane, 1,1'-[methylenebis(oxy)]bis(2-chloro-	111911	Bis(2-chloroethoxy) methane	1*	2,4	U024	C	1000 (454)
Ethane, 1,1'-oxybis-	60297	Ethyl ether	1*	4	U117	B	100 (45.4)
Ethane, 1,1'-oxybis(2-chloro-	111444	Bis (2-chloroethyl) ether Dichloroethyl ether	1*	2,4	U025	X	1# (0.454)
Ethane, pentachloro-	76017	Pentachloroethane	1*	4	U184	X	1## (0.454)
Ethane, 1,1,1,2-tetrachloro-	630206	1,1,1,2-Tetrachloroethane	1*	4	U208	X	1# (0.454)
Ethane, 1,1,2,2-tetrachloro-	79345	1,1,2,2-Tetrachloroethane	1*	2,4	U209	X	1# (0.454)
Ethane, 1,1,2-trichloro-	79005	1,1,2-Trichloroethane	1*	2,4	U227	X	1# (0.454)
Ethane, 1,1,1-trichloro-2,2-bis(p-methoxyphenyl)-	72435	Methoxychlor	1	1,4	U247	X	1 (0.454)
1,2-Ethanediylbiscarbamodithioic acid	111546	Ethylenebis(dithiocarbamic acid)	1*	4	U114	D	5000 (2270)
Ethanenitrile	75058	Acetonitrile	1*	4	U003	D	5000 (2270)
Ethanethioamide	62555	Thioacetamide	1*	4	U218	X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Ethanol, 2,2'-(nitrosoimino)bis-	1116547	N-Nitrosodiethanolamine	1*	4	U173	X	1# (0.454)
Ethanone, 1-phenyl-	98862	Acetophenone	1*	4	U004	D	5000 (2270)
Ethanoyl chloride	75365	Acetyl chloride	5000	1,4	U006	D	5000 (2270)
Ethenamine, N-methyl-N-nitroso-	4549400	N-Nitrosomethylvinylamine	1*	4	P084	X	1# (0.454)
Ethene, chloro-	75014	Vinyl chloride	1*	2,3,4	U043	X	1# (0.454)
Ethene, 2-chloroethoxy-	110758	2-Chloroethyl vinyl ether	1*	2,4	U042	C	1000 (454)
Ethene, 1,1-dichloro-	75354	1,1-Dichloroethylene Vinylidene chloride	5000	1,2,4	U078	D	5000# (2270)
Ethene, 1,1,2,2-tetrachloro-	127184	Tetrachloroethylene	1*	2,4	U210	X	1# (0.454)
Ethene, trans-1,2-dichloro-	156605	1,2-trans-Dichloroethylene	1*	2,4	U079	C	1000 (454)
Ethion	563122		10	1		A	10## (4.54)
Ethyl acetate	141786	Acetic acid, ethyl ester	1*	4	U112	D	5000 (2270)
Ethyl acrylate	140885	2-Propenoic acid, ethyl ester	1*	4	U113	C	1000 (454)
Ethylbenzene	100414		1000	1,2		C	1000 (454)
Ethyl carbamate (Urethan)	51796	Carbamic acid, ethyl ester	1*	4	U238	X	1# (0.454)
Ethyl cyanide	107120	Propanenitrile	1*	4	P101	A	10 (4.54)
Ethyl 4,4'-dichlorobenzilate	510156	Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester.	1*	4	U038	X	1# (0.454)
Ethylene dibromide	106934	Ethane, 1,2-dibromo-	1000	1,4	U067	C	1000# (454)
Ethylene dichloride	107062	1,2-Dichloroethane Ethane, 1,2-dichloro-	5000	1,2,4	U077	D	5000# (2270)
Ethylene oxide	75218	Oxirane	1*	4	U115	X	1# (0.454)
Ethylenebis(dithiocarbamic acid)	111546	1,2-Ethanediylbiscarbamodithioic acid	1*	4	U114	D	5000 (2270)
Ethylenediamine	107153		1000	1		D	5000 (2270)
Ethylenediamine tetraacetic acid (EDTA)	60004		5000	1		D	5000 (2270)
Ethylenethiourea	96457	2-Imidazolidinethione	1*	4	U116	X	1# (0.454)
Ethylenimine	151564	Aziridine	1*	4	P054	X	1# (0.454)
Ethyl ether	60297	Ethane, 1,1'-oxybis-	1*	4	U117	B	100 (45.4)
Ethylidene dichloride	75343	1,1-Dichloroethane Ethane, 1,1-dichloro-	1*	2,4	U076	C	1000 (454)
Ethyl methacrylate	97632	2-Propenoic acid, 2-methyl-, ethyl ester	1*	4	U118	C	1000 (454)
Ethyl methanesulfonate	62500	Methanesulfonic acid, ethyl ester	1*	4	U119	X	1# (0.454)
Famphur	52857	Phosphorothioic acid, O,O-dimethyl-O-[p-[(dimethylamino)- sulfonyl]phenyl] ester.	1*	4	P097	C	1000 (454)
Ferric ammonium citrate	1185575		1000	1		C	1000 (454)
Ferric ammonium oxalate	2944674 55488874		1000	1		C	1000 (454)
Ferric chloride	7705080		1000	1		C	1000 (454)
Ferric dextran	9004664	Iron dextran	1*	4	U139	X	1## (0.454)
Ferric fluoride	7783508		100	1		B	100 (45.4)
Ferric nitrate	10421484		1000	1		C	1000 (454)
Ferric sulfate	10028225		1000	1		C	1000 (454)
Ferrous ammonium sulfate	10045893		1000	1		C	1000 (454)
Ferrous chloride	7758943		100	1		B	100 (45.4)
Ferrous sulfate	7720787 7782630		1000	1		C	1000 (454)
Fluoroacetic acid, sodium salt	62748	Acetic acid, fluoro-, sodium salt	1*	4	P058	A	10 (4.54)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Fluoranthene	206440	Benzo[j,k]fluorene	1*	2,4	U120	X	1## (0.454)
Fluorene	86737		1*	2		X	1## (0.454)
Fluorine	7782414		1*	4	P056	A	10 (4.54)
Fluoroacetamide	640197	Acetamide, 2-fluoro-	1*	4	P057	B	100 (45.4)
Formaldehyde	50000	Methylene oxide	1000	1,4	U122	C	1000# (454)
Formic acid	64186	Methanoic acid	5000	1,4	U123	D	5000 (2270)
Fulminic acid, mercury(II)salt	628864	Mercury fulminate	1*	4	P065	X	1## (0.454)
Fumaric acid	110178		5000	1		D	5000 (2270)
Furan	110009	Furfuran	1*	4	U124	B	100 (45.4)
Furan, tetrahydro-	109999	Tetrahydrofuran	1*	4	U213	C	1000 (454)
2-Furancarboxaldehyde	98011	Furfural	1000	1,4	U125	D	5000 (2270)
2,5-Furandione	108316	Maleic anhydride	5000	1,4	U147	D	5000 (2270)
Furfural	98011	2-Furancarboxaldehyde	000	1,4	U125	D	5000 (2270)
Furfuran	110009	Furan	1*	4	U124	B	100 (45.4)
D-Glucopyranose, 2-deoxy-2-(3-methyl-3-nitrosoureido)-	18883664	Streptozotocin	1*	4	U206	X	1# (0.454)
Glycidylaldehyde	765344	1-Propanal, 2,3-epoxy-	1*	4	U126	X	1# (0.454)
Guanidine, N-nitroso-N-methyl-N'-nitro-	70257	N-Methyl-N'-nitro-N-nitrosoguanidine	1*	4	U163	X	1# (0.454)
Guthion	86500		1	1		X	1 (0.454)
HALOETHERS			1*	2			**
HALOMETHANES			1*	2			**
Heptachlor	76448	4,7-Methano-1H-indene,1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-.	1	1,2,4	P059	X	1#(0.454)
HEPTACHLOR AND METABOLITES			1*	2			**
Heptachlor epoxide	1024573		1*	2		X	1# (0.454)
Hexachlorobenzene	118741	Benzene, hexachloro-	1*	2,4	U127	X	1# (0.454)
Hexachlorobutadiene	87683	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	1*	2,4	U128	X	1# (0.454)
HEXACHLOROCYCLOHEXANE (all isomers)	608731		1*	2			**
Hexachlorocyclohexane (gamma isomer)	58899	gamma - BHC Lindane	1	1,2,4	U129	X	1# (0.454)
Hexachlorocyclopentadiene	77474	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	1	1,2,4	U130	X	1# (0.454)
1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo,endo-1,4:5,8-dimethanonaphthalene.	72208	Endrin	1	1,2,4	P051	X	1 (0.454)
1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo,exo-1,4:5,8-dimethanonaphthalene.	60571	Dieldrin	1	1,2,4	P037	X	1# (0.454)
Hexachloroethane	67721	Ethane, 1,1,1,2,2,2-hexachloro-	1*	2,4	U131	X	1# (0.454)
Hexachlorohexahydro-endo,endo-dimethanonaphthalene	465736	1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4,5,8-endo,endo-dimethanonaphthalene.	1*	4	P060	X	1 (0.454)
1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4,5,8-endo,endo-dimethanonaphthalene.	465736	Hexachlorohexahydro-endo,endo-dimethanonaphthalene	1*	4	P060	X	1 (0.454)
1,2,3,4,10-10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-endo, exo-dimethanonaphthalene.	309002	Aldrin	1	1,2,4	P004	X	1# (0.454)
Hexachlorophene	70304	2,2'-Methylenebis(3,4,6-trichlorophenol)	1*	4	U132	X	1## (0.454)
Hexachloropropene	1888717	1-Propene, 1,1,2,3,3,3-hexachloro-	1*	4	U243	C	1000 (454)
Hexaethyl tetraphosphate	757584	Tetraphosphoric acid, hexaethyl ester	1*	4	P062	B	100 (45.4)
Hydrazine	302012	Diamine	1*	4	U133	X	1# (0.454)
Hydrazine 1,2-diethyl-	1615801	N,N'-Diethylhydrazine	1*	4	U086	X	1# (0.454)
Hydrazine, 1,1-dimethyl-	57147	1,1-Dimethylhydrazine	1*	4	U098	X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Hydrazine, 1,2-dimethyl-	540738	1,2-Dimethylhydrazine	1*	4	U099	X	1# (0.454)
Hydrazine, 1,2-diphenyl-	122667	1,2-Diphenylhydrazine	1*	2,4	U109	X	1# (0.454)
Hydrazine, methyl-	60344	Methyl hydrazine	1*	4	P068	A	10 (4.54)
Hydrazinecarbothioamide	79196	Thiosemicarbazide	1*	4	P116	B	100 (45.4)
Hydrochloric acid	7647010		5000	1		D	5000 (2270)
Hydrocyanic acid	74908	Hydrogen cyanide	10	1,4	P063	A	10 (4.54)
Hydrofluoric acid	7664393	Hydrogen fluoride	5000	1,4	U134	B	100 (45.4)
Hydrogen cyanide	74908	Hydrocyanic acid	10	1,4	P063	A	10 (4.54)
Hydrogen fluoride	7664393	Hydrofluoric acid	5000	1,4	U134	B	100 (45.4)
Hydrogen phosphide	7803512	Phosphine	1*	4	P096	B	100 (45.4)
Hydrogen sulfide	7783064	Hydrosulfuric acid Sulfur hydride	100	1,4	U135	B	100## (45.4)
Hydroperoxide, 1-methyl-1-phenylethyl-	80159	alpha,alpha-Dimethylbenzylhydroperoxide	1*	4	U096	A	10 (4.54)
Hydrosulfuric acid	7783064	Hydrogen sulfide Sulfur hydride	100	1,4	U135	B	100## (45.4)
Hydroxydimethylarsine oxide	75605	Cacodylic acid	1*	4	U136	X	1# (0.454)
2-Imidazolidinethione	96457	Ethylenethiourea	1*	4	U116	X	1# (0.454)
Indeno(1,2,3-cd)pyrene	193395	1,10-(1,2-Phenylene)pyrene	1*	2,4	U137	X	1# (0.454)
Iron dextran	9004664	Ferric dextran	1*	4	U139	X	1## (0.454)
Isobutyl alcohol	78831	1-Propanol, 2-methyl-	1*	4	U140	D	5000 (2270)
Isocyanic acid, methyl ester	624839	Methyl isocyanate	1*	4	P064	X	1###(0.454)
Isophorone	78591		1*	2		D	5000 (2270)
Isoprene	78795		1000	1		C	1000## (454)
Isopropanolamine dodecylbenzenesulfonate	42504461		1000	1		C	1000 (454)
Isosafrole	120581	Benzene, 1,2-methylenedioxy-4-propenyl-	1*	4	U141	X	1# (0.454)
3(2H)-Isoxazolone, 5-(aminomethyl)-	2763964	5-(Aminomethyl)-3-isoxazolol	1*	4	P007	C	1000 (454)
Kelthane	115322		5000	1		A	10 (4.54)
Kepone	143500	Decachlorooctahydro-1,3,4-metheno-2H-cyclobuta[c,d]-pentalen-2-one.	1	1,4	U142	X	1# (0.454)
Lasiocarpine	303344		1*	4	U143	X	1# (0.454)
Lead ††	7439921		1*	2		X	1## (0.454)
Lead acetate	301042	Acetic acid, lead salt	5000	1,4	U144	D	5000# (2270)
LEAD AND COMPOUNDS			1*	2			**
Lead arsenate	7784409 7645252 10102484		5000	1		D	5000# (2270)
Lead chloride	7758954		5000	1		D	5000## (2270)
Lead fluoborate	13814965		5000	1		D	5000## (2270)
Lead fluoride	7783462		1000	1		C	1000## (454)
Lead iodide	10101630		5000	1		D	5000## (2270)
Lead nitrate	10099748		5000	1		D	5000## (2270)
Lead phosphate	7446277	Phosphoric acid, lead salt	1*	4	U145	X	1# (0.454)
Lead stearate	7428480 1072351 56189094 52652592		5000	1		D	5000## (2270)
Lead subacetate	1335326		1*	4	U146	X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Lead sulfate	15739807 7446142		5000	1		D	5000## (2270)
Lead sulfide	1314870		5000	1		D	5000## (2270)
Lead thiocyanate	592870		5000	1		D	5000## (2270)
Lindane	58899	gamma - BHC Hexachlorocyclohexane (gamma isomer)	1	1,2,4	U129	X	1# (0.454)
Lithium chromate	14307358		1000	1		C	1000# (454)
Malathion	121755		10	1		B	100 (45.4)
Maleic acid	110167		5000	1		D	5000 (2270)
Maleic anhydride	108316	2,5-Furandione	5000	1,4	U147	D	5000 (2270)
Maleic hydrazide	123331	1,2-Dihydro-3,6-pyridazinedione	1*	4	U148	D	5000 (2270)
Malononitrile	109773	Propanedinitrile	1*	4	U149	C	1000 (454)
Melphalan	148823	Alanine, 3-[p-bis(2-chloroethyl)amino]phenyl-,L-	1*	4	U150	X	1# (0.454)
Mercaptodimethur	2032657		100	1		A	10 (4.54)
Mercuric cyanide	592041		1	1		X	1 (0.454)
Mercuric nitrate	10045940		10	1		A	10## (4.54)
Mercuric sulfate	7783359		10	1		A	10## (4.54)
Mercuric thiocyanate	592858		10	1		A	10## (4.54)
Mercurous nitrate	10415755 7782867		10	1		A	10## (4.54)
Mercury	7439976		1*	2,3,4	U151	X	1 (0.454)
MERCURY AND COMPOUNDS			1*	2			**
Mercury, (acetato-O)phenyl-	62384	Phenylmercuric acetate	1*	4	P092	X	1##(0.454)
Mercury fulminate	628864	Fulminic acid, mercury(II)salt	1*	4	P065	X	1## (0.454)
Methacrylonitrile	126987	2-Propenenitrile, 2-methyl-	1*	4	U152	C	1000 (454)
Methanamine, N-methyl-	124403	Dimethylamine	1000	1,4	U092	C	1000## (454)
Methane, bromo-	74839	Methyl bromide	1*	2,4	U029	C	1000 (454)
Methane, chloro-	74873	Methyl chloride	1*	2,4	U045	X	1## (0.454)
Methane, chloromethoxy-	107302	Chloromethyl methyl ether	1*	4	U046	X	1# (0.454)
Methane, dibromo-	74953	Methylene bromide	1*	4	U068	C	1000 (454)
Methane, dichloro-	75092	Methylene chloride	1*	2,4	U080	C	1000 (454)
Methane, dichlorodifluoro-	75718	Dichlorodifluoromethane	1*	4	U075	D	5000 (2270)
Methane, iodo-	74884	Methyl iodide	1*	4	U138	X	1# (0.454)
Methane, oxybis(chloro-	542881	Bis(chloromethyl) ether	1*	4	P016	X	1# (0.454)
Methane, tetrachloro-	56235	Carbon tetrachloride	5000	1,2,4	U211	D	5000# (2270)
Methane, tetranitro-	509148	Tetranitromethane	1*	4	P112	A	10 (4.54)
Methane, tribromo-	75252	Bromoform	1*	2,4	U225	B	100 (45.4)
Methane, trichloro-	67663	Chloroform	5000	1,2,4	U044	D	5000# (2270)
Methane, trichlorofluoro-	75694	Trichloromonofluoromethane	1*	4	U121	D	5000 (2270)
Methanesulfonic acid, ethyl ester	62500	Ethyl methanesulfonate	1*	4	U119	X	1# (0.454)
Methanethiol	74931	Methylmercaptan Thiomethanol	100	1,4	U153	B	100 (45.4)
Methanesulfenyl chloride, trichloro-	594423	Trichloromethanesulfenyl chloride	1*	4	P118	B	100 (45.4)
4,7-Methano-1H-indene,1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-.	76448	Heptachlor	1	1,2,4	P059	X	1# (0.454)
Methanoic acid	64186	Formic acid	5000	1,4	U123	D	5000 (2270)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
4,7-Methanoindan, 1,2,4,5,6,7,8,8-octachloro- 3a,4,7,7a-tetrahydro-.	57749	Chlordane Chlordane, technical	1	1,2,4	U036	X	1# (0.454)
Methanol	67561	Methyl alcohol	1*	4	U154	D	5000 (2270)
Methapyrilene	91805	Pyridine, 2-[(2-(dimethylamino)ethyl)-2-thenylamino]-	1*	4	U155	D	5000 (2270)
Methomyl	16752775	Acetimidic acid, N-[(methylcarbamoyl)oxy]thio-, methyl ester.	1*	4	P066	B	100 (45.4)
Methoxychlor	72435	Ethane, 1,1,1-trichloro-2,2-bis(p-methoxyphenyl)-	1	1,4	U247	X	1 (0.454)
Methyl alcohol	67561	Methanol	1*	4	U154	D	5000 (2270)
2-Methylaziridine	75558	1,2-Propylenimine	1*	4	P067	X	1# (0.454)
Methyl bromide	74839	Methane, bromo-	1*	2,4	U029	C	1000 (454)
1-Methylbutadiene	504609	1,3-Pentadiene	1*	4	U186	B	100 (45.4)
Methyl chloride	74873	Methane, chloro-	1*	2,4	U045	X	1## (0.454)
Methyl chlorocarbonate	79221	Carbonochloridic acid, methyl ester	1*	4	U156	C	1000 (454)
Methyl chloroform	71556	1,1,1-Trichloroethane	1*	2,4	U226	C	1000 (454)
4,4'-Methylenebis(2-chloroaniline)	101144	Benzenamine, 4,4'-methylenebis(2-chloro-	1*	4	U158	X	1# (0.454)
2,2'-Methylenebis(3,4,6-trichlorophenol)	70304	Hexachlorophene	1*	4	U132	X	1## (0.454)
3-Methylcholanthrene	56495	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-	1*	4	U157	X	1# (0.454)
Methylene bromide	74953	Methane, dibromo-	1*	4	U068	C	1000 (454)
Methylene chloride	75092	Methane, dichloro-	1*	2,4	U080	C	1000 (454)
Methylene oxide	50000	Formaldehyde	1000	1,4	U122	C	1000# (454)
Methyl ethyl ketone	78933	2-Butanone	1*	4	U159	D	5000 (2270)
Methyl ethyl ketone peroxide	1338234	2-Butanone peroxide	1*	4	U160	A	10 (4.54)
Methyl hydrazine	60344	Hydrazine, methyl-	1*	4	P068	A	10 (4.54)
Methyl iodide	74884	Methane, iodo-	1*	4	U138	X	1# (0.454)
Methyl isobutyl ketone	108101	4-Methyl-2-pentanone	1*	4	U161	D	5000 (2270)
Methyl isocyanate	624839	Isocyanic acid, methyl ester	1*	4	P064	X	1###(0.454)
2-Methyllactonitrile	75865	Acetone cyanohydrin Propanenitrile, 2-hydroxy-2-methyl-	10	1,4	P069	A	10 (4.54)
Methylmercaptan	74931	Methanethiol Thiomethanol	100	1,4	U153	B	100 (45.4)
Methyl methacrylate	80626	2-Propenoic acid, 2-methyl-, methyl ester	5000	1,4	U162	C	1000 (454)
N-Methyl-N'-nitro-N-nitrosoguanidine	70257	Guanidine, N-nitroso-N-methyl-N'-nitro-	1*	4	U163	X	1# (0.454)
Methyl parathion	298000	O,O-Dimethyl O-p-nitrophenyl phosphorothioate	100	1,4	P071	B	100## (45.4)
4-Methyl-2-pentanone	108101	Methyl isobutyl ketone	1*	4	U161	D	5000 (2270)
Methylthiouracil	56042	4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-	1*	4	U164	X	1# (0.454)
Mevinphos	7786347		1	1		A	10 (4.54)
Mexacarbate	315184		1000	1		C	1000 (454)
Mitomycin C	50077	Azirino(2',3':3,4)pyrrolo(1,2-a)indole-4,7-dione,6-amino-8-[((aminocarbonyl)oxy)methyl]- 1,1a,2,8,8a,8b- hexahydro-8a-methoxy- 5-methyl-.	1*	4	U010	X	1# (0.454)
Monoethylamine	75047		1000	1		C	1000## (454)
Monomethylamine	74895		1000	1		B	100 (45.4)
Naled	300765		10	1		A	10 (4.54)
5,12-Naphthacenedione, (8S-cis)-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-.	20830813	Daunomycin	1*	4	U059	X	1# (0.454)
Naphthalene	91203		5000	1,2,4	U165	B	100 (45.4)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory RQ	Statutory Code †	Statutory RCRA Waste Number	Final RQ Category	Final RQ Pounds(Kg)
Naphthalene, 2-chloro-	91587	beta-Chloronaphthalene 2-Chloronaphthalene	1*	2,4	U047	D	5000 (2270)
1,4-Naphthalenedione	130154	1,4-Naphthoquinone	1*	4	U166	D	5000 (2270)
2,7-Naphthalenedisulfonic acid,3,3'-[(3,3'-dimethyl- (1,1'-biphenyl)-4,4'-diyl)- bis(azo)]bis(5-amino- 4-hydroxy)-tetrasodium salt.	72571	Trypan blue	1*	4	U236	X	1# (0.454)
Naphthenic acid	1338245		100	1		B	100 (45.4)
1,4-Naphthoquinone	130154	1,4-Naphthalenedione	1*	4	U166	D	5000 (2270)
1-Naphthylamine	134327	alpha-Naphthylamine	1*	4	U167	X	1# (0.454)
2-Naphthylamine	91598	beta-Naphthylamine	1*	4	U168	X	1# (0.454)
alpha-Naphthylamine	134327	1-Naphthylamine	1*	4	U167	X	1# (0.454)
beta-Naphthylamine	91598	2-Naphthylamine	1*	4	U168	X	1# (0.454)
2-Naphthylamine, N,N-bis(2-chloroethyl)-	494031	Chlornaphazine	1*	4	U026	X	1# (0.454)
alpha-Naphthylthiourea	86884	Thiourea, 1-naphthalenyl-	1*	4	P072	B	100 (45.4)
Nickel ††	7440020		1*	2		X	1# (0.454)
NICKEL AND COMPOUNDS			1*	2			**
Nickel ammonium sulfate	15699180		5000	1		D	5000# (2270)
Nickel carbonyl	13463393	Nickel tetracarbonyl	1*	4	P073	X	1# (0.454)
Nickel chloride	7718549 37211055		5000	1		D	5000# (2270)
Nickel cyanide	557197	Nickel(II) cyanide	1*	4	P074	X	1# (0.454)
Nickel(II) cyanide	557197	Nickel cyanide	1*	4	P074	X	1# (0.454)
Nickel hydroxide	12054487		1000	1		C	1000# (454)
Nickel nitrate	14216752		5000	1		D	5000# (2270)
Nickel sulfate	7786814		5000	1		D	5000# (2270)
Nickel tetracarbonyl	13463393	Nickel carbonyl	1*	4	P073	X	1# (0.454)
Nicotine and salts	54115	Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-, and salts	1*	4	P075	B	100 (45.4)
Nitric acid	7697372		1000	1		C	1000 (454)
Nitric oxide	10102439	Nitrogen(II) oxide	1*	4	P076	A	10 (4.54)
p-Nitroaniline	100016	Benzenamine, 4-nitro-	1*	4	P077	D	5000 (2270)
Nitrobenzene	98953	Benzene, nitro-	1000	1,2,4	U169	C	1000 (454)
Nitrogen dioxide	10102440 10544726	Nitrogen(IV) oxide	1000	1,4	P078	A	10 (4.54)
Nitrogen(II) oxide	10102439	Nitric oxide	1*	4	P076	A	10 (4.54)
Nitrogen(IV) oxide	10102440 10544726	Nitrogen dioxide	1000	1,4	P078	A	10 (4.54)
Nitroglycerine	55630	1,2,3-Propanetriol, trinitrate-	1*	4	P081	A	10 (4.54)
Nitrophenol (mixed) m- o- p-	25154556 554847 88755 100027	 2-Nitrophenol 4-Nitrophenol Phenol, 4-nitro-	1000	1		B	100 (45.4)
p-Nitrophenol	100027	4-Nitrophenol Phenol, 4-nitro-	1000	1,2,4	U170	B	100 (45.4)
2-Nitrophenol	88755	o-Nitrophenol	1000	1,2		B	100 (45.4)
4-Nitrophenol	100027	p-Nitrophenol Phenol, 4-nitro-	1000	1,2,4	U170	B	100 (45.4)
NITROPHENOLS			1*	2			**
2-Nitropropane	79469	Propane, 2-nitro-	1*	4	U171	X	1# (0.454)
NITROSAMINES			1*	2			**

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
N-Nitrosodi-n-butylamine	924163	1-Butanamine, N-butyl-N-nitroso-	1*	4	U172	X	1# (0.454)
N-Nitrosodiethanolamine	1116547	Ethanol, 2,2'-(nitrosoimino)bis-	1*	4	U173	X	1# (0.454)
N-Nitrosodiethylamine	55185	Ethanamine, N-ethyl-N-nitroso-	1*	4	U174	X	1# (0.454)
N-Nitrosodimethylamine	62759	Dimethylnitrosamine	1*	2,4	P082	X	1# (0.454)
N-Nitrosodiphenylamine	86306		1*	2		B	100 (45.4)
N-Nitrosodi-n-propylamine	621647	Di-n-propylnitrosamine	1*	2,4	U111	X	1# (0.454)
N-Nitroso-N-ethylurea	759739	Carbamide, N-ethyl-N-nitroso-	1*	4	U176	X	1# (0.454)
N-Nitroso-N-methylurea	684935	Carbamide, N-methyl-N-nitroso-	1*	4	U177	X	1# (0.454)
N-Nitroso-N-methylurethane	615532	Carbamic acid, methylnitroso-,ethyl ester	1*	4	U178	X	1# (0.454)
N-Nitrosomethylvinylamine	4549400	Ethenamine, N-methyl-N-nitroso-	1*	4	P084	X	1# (0.454)
N-Nitrosopiperidine	100754	Pyridine, hexahydro-N-nitroso-	1*	4	U179	X	1# (0.454)
N-Nitrosopyrrolidine	930552	Pyrrole, tetrahydro-N-nitroso-	1*	4	U180	X	1# (0.454)
Nitrotoluene	1321126		1000	1		C	1000 (454)
m-	99081						
o-	88722						
p-	99990						
5-Nitro-o-toluidine	99558	Benzenamine, 2-methyl-5-nitro-	1*	4	U181	X	1# (0.454)
5-Norbornene-2,3-dimethanol,1,4,5,6,7,7-hexachloro, cyclic sulfite.	115297	Endosulfan	1	1,2,4	P050	X	1 (0.454)
Octamethylpyrophosphoramide	152169	Diphosphoramide, octamethyl-	1*	4	P085	B	100 (45.4)
Osmium oxide	20816120	Osmium tetroxide	1*	4	P087	C	1000 (454)
Osmium tetroxide	20816120	Osmium oxide	1*	4	P087	C	1000 (454)
7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid	145733	Endothall	1*	4	P088	C	1000 (454)
1,2-Oxathiolane, 2,2-dioxide	1120714	1,3-Propane sultone	1*	4	U193	X	1# (0.454)
2H-1,3,2-Oxazaphosphorine,2-[bis(2-chloroethyl)amino] tetrahydro-2-oxide.	50180	Cyclophosphamide	1*	4	U058	X	1# (0.454)
Oxirane	75218	Ethyleneoxide	1*	4	U115	X	1# (0.454)
Oxirane, 2-(chloromethyl)-	106898	1-Chloro-2,3-epoxypropane Epichlorohydrin	1000	1,4	U041	C	1000# (454)
Paraformaldehyde	30525894		1000	1		C	1000 (454)
Paraldehyde	123637	1,3,5-Trioxane, 2,4,6-trimethyl-	1*	4	U182	C	1000 (454)
Parathion	56382	Phosphorothioic acid,O,O-diethyl O-(p-nitrophenyl) ester	1	1,4	P089	X	1# (0.454)
Pentachlorobenzene	608935	Benzene, pentachloro-	1*	4	U183	X	1## (0.454)
Pentachloroethane	76017	Ethane, pentachloro-	1*	4	U184	X	1## (0.454)
Pentachloronitrobenzene	82688	Benzene, pentachloronitro-	1*	4	U185	X	1# (0.454)
Pentachlorophenol	87865	Phenol, pentachloro-	10	1,2,4	U242	A	10# (4.54)
1,3-Pentadiene	504609	1-Methylbutadiene	1*	4	U186	B	100 (45.4)
Phenacetin	62442	Acetamide, N-(4-ethoxyphenyl)-	1*	4	U187	X	1# (0.454)
Phenanthrene	85018		1*	2		X	1## (0.454)
Phenol	108952	Benzene, hydroxy-	1000	1,2,4	U188	C	1000## (454)
Phenol, 2-chloro-	95578	2-Chlorophenol o-Chlorophenol	1*	2,4	U048	B	100 (45.4)
Phenol, 4-chloro-3-methyl-	59507	4-Chloro-m-cresol p-Chloro-m-cresol	1*	2,4	U039	D	5000 (2270)
Phenol, 2-cyclohexyl-4,6-dinitro-	131895	4,6-Dinitro-o-cyclohexylphenol	1*	4	P034	B	100 (45.4)
Phenol, 2,4-dichloro-	120832	2,4-Dichlorophenol	1*	2,4	U081	B	100 (45.4)
Phenol, 2,6-dichloro-	87650	2,6-Dichlorophenol	1*	4	U082	B	100 (45.4)
Phenol, 2,4-dimethyl-	105679	2,4-Dimethylphenol	1*	2,4	U101	B	100 (45.4)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Phenol, 2,4-dinitro-	51285	2,4-Dinitrophenol	1000	1,2,4	P048	A	10 (4.54)
Phenol, 2,4-dinitro-6-(1-methylpropyl)-	88857	Dinoseb	1*	4	P020	C	1000 (454)
Phenol, 2,4-dinitro-6-methyl- and salts	534521	4,6-Dinitro-o-cresol and salts	1*	2,4	P047	A	10 (4.54)
Phenol, 4-nitro-	100027	p-Nitrophenol 4-Nitrophenol	1000	1,2,4	U170	B	100 (45.4)
Phenol, pentachloro-	87865	Pentachlorophenol	10	1,2,4	U242	A	10# (4.54)
Phenol, 2,3,4,6-tetrachloro-	58902	2,3,4,6-Tetrachlorophenol	1*	4	U212	A	10 (4.54)
Phenol, 2,4,5-trichloro-	95954	2,4,5-Trichlorophenol	10	1,4	U230	A	10# (4.54)
Phenol, 2,4,6-trichloro-	88062	2,4,6-Trichlorophenol	10	1,2,4	U231	A	10# (4.54)
Phenol, 2,4,6-trinitro- ammonium salt	131748	Ammonium picrate	1*	4	P009	A	10 (4.54)
Phenyl dichloroarsine	696286	Dichlorophenylarsine	1*	4	P036	X	1# (0.454)
1,10-(1,2-Phenylene)pyrene	193395	Indeno(1,2,3-cd)pyrene	1*	2,4	U137	X	1# (0.454)
Phenylmercuric acetate	62384	Mercury, (acetato-O)phenyl-	1*	4	P092	X	1## (0.454)
N-Phenylthiourea	103855	Thiourea, phenyl-	1*	4	P093	B	100 (45.4)
Phorate	298022	Phosphorodithioic acid, O,O-diethyl S-(ethylthio), methyl ester.	1*	4	P094	X	1## (0.454)
Phosgene	75445	Carbonyl chloride	5000	1,4	P095	A	10 (4.54)
Phosphine	7803512	Hydrogen phosphide	1*	4	P096	B	100 (45.4)
Phosphoric acid	7664382		5000	1		D	5000 (2270)
Phosphoric acid,diethyl p-nitrophenyl ester	311455	Diethyl-p-nitrophenyl phosphate	1*	4	P041	B	100 (45.4)
Phosphoric acid, lead salt	7446277	Lead phosphate	1*	4	U145	X	1# (0.454)
Phosphorodithioic acid, O,O-diethyl S-methylester	3288582	O,O-Diethyl S-methyl dithiophosphate	1*	4	U087	D	5000 (2270)
Phosphorodithioic acid, O,O-diethyl S-(ethylthio), methyl ester	298022	Phorate	1*	4	P094	X	1## (0.454)
Phosphorodithioic acid,O,O-dimethyl S-[2(methylamino)-2-oxoethyl] ester.	60515	Dimethoate	1*	4	P044	A	10 (4.54)
Phosphorofluoridic acid,bis(1-methylethyl) ester	55914	Diisopropyl fluorophosphate	1*	4	P043	B	100 (45.4)
Phosphorothioic acid,O,O-diethyl O-(p-nitrophenyl) ester	56382	Parathion	1	1,4	P089	X	1# (0.454)
Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester	297972	O,O-Diethyl O-pyrazinyl phosphorothioate	1*	4	P040	B	100 (45.4)
Phosphorothioic acid, O,O-dimethyl O-[p-[(dimethylamino)-sulfonyl]phenyl] ester	52857	Famphur	1*	4	P097	C	1000 (454)
Phosphorus	7723140		1	1		X	1 (0.454)
Phosphorus oxychloride	10025873		5000	1		C	1000 (454)
Phosphorus pentasulfide	1314803	Phosphorus sulfide Sulfur phosphide	100	1,4	U189	B	100 (45.4)
Phosphorus sulfide	1314803	Phosphorus pentasulfide Sulfur phosphide	100	1,4	U189	B	100 (45.4)
Phosphorus trichloride	7719122		5000	1		C	1000 (454)
PHTHALATE ESTERS			1*	2			**
Phthalic anhydride	85449	1,2-Benzenedicarboxylic acid anhydride	1*	4	U190	D	5000 (2270)
2-Picoline	109068	Pyridine,2-methyl-	1*	4	U191	D	5000 (2270)
Plumbane, tetraethyl-	78002	Tetraethyl lead	00	1,4	P110	B	100## (45.4)
POLYCHLORINATED BIPHENYLS (PCBs)	1336363 12674112 11104282 11141165 53469219 12672296 11097691 11096825	Aroclors Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260	10	1,2		A	10# (4.54)
POLYNUCLEAR AROMATIC HYDROCARBONS			1*				

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Potassium arsenate	7784410		1000	1		C	1000# (454)
Potassium arsenite	10124502		1000	1		C	1000# (454)
Potassium bichromate	7778509		1000	1		C	1000# (454)
Potassium chromate	7789006		1000	1		C	1000# (454)
Potassium cyanide	151508		10	1,4	P098	A	10 (4.54)
Potassium hydroxide	1310583		1000	1		C	1000 (454)
Potassium permanganate	7722647		100	1		B	100 (45.4)
Potassium silver cyanide	506616		1*	4	P099	X	1 (0.454)
Pronamide	23950585	3,5-Dichloro-N-(1,1-dimethyl-2-propynyl)benzamide	1*	4	U192	D	5000 (2270)
1-Propanal, 2,3-epoxy-	765344	Glycidylaldehyde	1*	4	U126	X	1# (0.454)
Propanal, 2-methyl-2-(methylthio)-,O-[(methylamino) carbonyl]oxime.	116063	Aldicarb	1*	4	P070	X	1 (0.454)
1-Propanamine	107108	n-Propylamine	1*	4	U194	D	5000 (2270)
1-Propanamine, N-propyl-	142847	Dipropylamine	1*	4	U110	D	5000 (2270)
Propane, 1,2-dibromo-3-chloro-	96128	1,2-Dibromo-3-chloropropane	1*	4	U066	X	1# (0.454)
Propane, 2-nitro-	79469	2-Nitropropane	1*	4	U171	X	1# (0.454)
Propane, 2,2'-oxybis(2-chloro-	108601	Bis(2-chloroisopropyl) ether	1*	2,4	U027	C	1000 (454)
1,3-Propane sultone	1120714	1,2-Oxathiolane, 2,2-dioxide	1*	4	U193	X	1# (0.454)
Propanedinitrile	109773	Malononitrile	1*	4	U149	C	1000 (4.54)
Propanenitrile	107120	Ethyl cyanide	1*	4	P101	A	10 (4.54)
Propanenitrile, 3-chloro-	542767	3-Chloropropionitrile	1*	4	P027	C	1000 (454)
Propanenitrile, 2-hydroxy-2-methyl-	75865	Acetone cyanohydrin 2-Methyllactonitrile	10	1,4	P069	A	10 (4.54)
1,2,3-Propanetriol, trinitrate-	55630	Nitroglycerine	1*	4	P081	A	10 (4.54)
1-Propanol, 2,3-dibromo-, phosphate (3:1)	126727	Tris(2,3-dibromopropyl) phosphate	1*	4	U235	X	1# (0.454)
1-Propanol, 2-methyl-	78831	Isobutyl alcohol	1*	4	U140	D	5000 (2270)
2-Propanone	67641	Acetone	1*	4	U002	D	5000 (2270)
2-Propanone, 1-bromo-	598312	Bromoacetone	1*	4	P017	C	1000 (454)
Propargite	2312358		10	1		A	10 (4.54)
Propargyl alcohol	107197	2-Propyn-1-ol	1*	4	P102	C	1000 (454)
2-Propenal	107028	Acrolein	1	1,2,4	P003	X	1 (0.454)
2-Propenamide	79061	Acrylamide	1*	4	U007	D	5000 (2270)
Propene, 1,3-dichloro-	542756	1,3-Dichloropropene	5000	1,2,4	U084	D	5000## (2270
1-Propene, 1,1,2,3,3,3-hexachloro-	1888717	Hexachloropropene	1*	4	U243	C	1000 (454)
2-Propenenitrile	107131	Acrylonitrile	100	1,2,4	U009	B	100# (45.4)
2-Propenenitrile, 2-methyl-	126987	Methacrylonitrile	1*	4	U152	C	1000 (454)
2-Propenoic acid	79107	Acrylic acid	1*	4	U008	D	5000 (2270)
2-Propenoic acid, ethyl ester	140885	Ethyl acrylate	1*	4	U113	C	1000 (454)
2-Propenoic acid, 2-methyl-, ethyl ester	97632	Ethyl methacrylate	1*	4	U118	C	1000 (454)
2-Propenoic acid, 2-methyl-, methyl ester	80626	Methyl methacrylate	5000	1,4	U162	C	1000 (454)
2-Propen-1-ol	107186	Allyl alcohol	100	1,4	P005	B	100 (45.4)
Propionic acid	79094		5000	1		D	5000 (2270)
Propionic acid, 2-(2,4,5-trichlorophenoxy)-	93721	Silvex 2,4,5-TP acid	100	1,4	U233	B	100 (45.4)
Propionic anhydride	123626		5000	1		D	5000 (2270)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
n-Propylamine	107108	1-Propanamine	1*	4	U194	D	5000 (2270)
Propylene dichloride	78875	1,2-Dichloropropane	5000	1,2,4	U083	C	1000 (454)
Propylene oxide	75569		5000	1		B	100 (45.4)
1,2-Propylenimine	75558	2-Methylaziridine	1*	4	P067	X	1# (0.454)
2-Propyn-1-ol	107197	Propargyl alcohol	1*	4	P102	C	1000 (454)
Pyrene	129000		1*	2		X	1## (0.454)
Pyrethrins	121299 121211 8003347		1000	1		X	1 (0.454)
4-Pyridinamine	504245	4-Aminopyridine	1*	4	P008	C	1000 (454)
Pyridine	110861		1*	4	U196	X	1## (0.454)
Pyridine, 2-[(2-(dimethylamino)ethyl)-2-thenylamino]-	91805	Methapyrilene	1*	4	U155	D	5000 (2270)
Pyridine, hexahydro-N-nitroso-	100754	N-Nitrosopiperidine	1*	4	U179	X	1# (0.454)
Pyridine,2-methyl-	109068	2-Picoline	1*	4	U191	D	5000 (2270)
Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-, and salts	54115	Nicotine and salts	1*	4	P075	B	100 (45.4)
4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-	56042	Methylthiouracil	1*	4	U164	X	1# (0.454)
Pyrophosphoric acid, tetraethyl ester	107493	Tetraethyl pyrophosphate	100	1,4	P111	B	100## (45.4)
Pyrrole, tetrahydro-N-nitroso-	930552	N-Nitrosopyrrolidine	1*	4	U180	X	1§ (0.454)
Quinoline	91225		1000	1		D	5000 (2270)
RADIONUCLIDES			1*	3		X	1§ (0.454)
Reserpine	50555	Yohimban-16-carboxylic acid,11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-, methyl ester.	1*	4	U200	D	5000 (2270)
Resorcinol	108463	1,3-Benzenediol	1000	1,4	U201	D	5000 (2270)
Saccharin and salts	81072	1,2-Benzisothiazolin-3-one,1,1-dioxide, and salts	1*	4	U202	X	1# (0.454)
Safrole	94597	Benzene, 1,2-methylenedioxy-4-allyl-	1*	4	U203	X	1# (0.454)
Selenious acid	7783008		1*	4	U204	X	1## (0.454)
Selenium ††	7782492		1*	2		X	1## (0.454)
SELENIUM AND COMPOUNDS			1*	2			**
Selenium dioxide	7446084	Selenium oxide	1000	1,4	U204	C	1000## (454)
Selenium disulfide	7488564	Sulfur selenide	1*	4	U205	X	1# (0.454)
Selenium oxide	7446084	Selenium dioxide	1000	1,4	U204	C	1000## (454)
Selenourea	630104	Carbamimidoselenoic acid	1*	4	P103	X	1## (0.454)
L-Serine, diazoacetate (ester)	115026	Azaserine	1*	4	U015	X	1# (0.454)
Silver ††	7440224		1*	2		C	1000 (454)
SILVER AND COMPOUNDS			1*	2			**
Silver cyanide	506649		1*	4	P104	X	1 (0.454)
Silver nitrate	7761888		1	1		X	1 (0.454)
Silvex	93721	Propionic acid, 2-(2,4,5-trichlorophenoxy)- 2,4,5-TP acid	100	1,4	U233	B	100 (45.4)
Sodium	7440235		1000	1		A	10 (4.54)
Sodium arsenate	7631892		1000	1		C	1000# (454)
Sodium arsenite	7784465		1000	1		C	1000# (454)
Sodium azide	26628228		1*	4	P105	C	1000 (454)
Sodium bichromate	10588019		1000	1		C	1000# (454)
Sodium bifluoride	1333831		5000	1		D	5000## (2270)
Sodium bisulfite	7631905		5000	1		D	5000 (2270)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Sodium chromate	7775113		1000	1		C	1000# (454)
Sodium cyanide	143339		10	1,4	P106	A	10 (4.54)
Sodium dodecylbenzene sulfonate	25155300		1000	1		C	1000 (454)
Sodium fluoride	7681494		5000	1		C	1000 (454)
Sodium hydrosulfide	16721805		5000	1		D	5000 (2270)
Sodium hydroxide	1310732		1000	1		C	1000 (454)
Sodium hypochlorite	7681529 10022705		100	1		B	100 (45.4)
Sodium methylate	124414		1000	1		C	1000 (454)
Sodium nitrite	7632000		100	1		B	100## (45.4)
Sodium phosphate, dibasic	7558794 10039324 10140655		5000	1		D	5000 (2270)
Sodium phosphate, tribasic	7601549 7785844 10101890 10361894 7758294 10124568		5000	1		D	5000 (2270)
Sodium selenite	10102188 7782823		1000	1		C	1000## (454)
4,4'-Stilbenediol, alpha,alpha'-diethyl-	56531	Diethylstilbestrol	1*	4	U089	X	1# (0.454)
Streptozotocin	18883664	D-Glucopyranose, 2-deoxy-2-(3-methyl-3-nitrosoureido)-	1*	4	U206	X	1# (0.454)
Strontium chromate	7789062		1000	1		C	1000# (454)
Strontium sulfide	1314961		1*	4	P107	B	100 (45.4)
Strychnidin-10-one, and salts	57249	Strychnine and salts	10	1,4	P108	A	10 (4.54)
Strychnidin-10-one, 2,3-dimethoxy-	357573	Brucine	1*	4	P018	A	10 (4.54)
Strychnine and salts	57249	Strychnidin-10-one, and salts	10	1,4	P108	A	10 (4.54)
Styrene	100425		1000	1		C	1000 (454)
Sulfur hydride	7783064	Hydrogen sulfide Hydrosulfuric acid	100	1,4	U135	B	100## (45.4)
Sulfur monochloride	12771083		1000	1		C	1000 (454)
Sulfur phosphide	1314803	Phosphorus pentasulfide Phosphorus sulfide	100	1,4	U189	B	100 (45.4)
Sulfur selenide	7488564	Selenium disulfide	1*	4	U205	X	1# (0.454)
Sulfuric acid	7664939 8014957		1000	1		C	1000 (454)
Sulfuric acid, dimethyl ester	77781	Dimethyl sulfate	1*	4	U103	X	1# (0.454)
Sulfuric acid, thallium(I) salt	7446186 10031591	Thallium(I) sulfate	1000	1,4	P115	C	1000## (454)
2,4,5-T	93765	2,4,5-T acid 2,4,5-Trichlorophenoxyacetic acid	100	1,4	U232	C	1000 (454)
2,4,5-T acid	93765	2,4,5-T 2,4,5-Trichlorophenoxyacetic acid	100	1,4	U232	C	1000 (454)
2,4,5-T amines	2008460 6369966 6369977 1319728 3813147		100	1		D	5000 (2270)
2,4,5-T esters	93798 2545597 61792072 1928478 25168154		100	1		C	1000 (454)
2,4,5-T salts	13560991		100	1		C	1000 (454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
TDE	72548	DDD 4,4' DDD Dichlorodiphenyl dichloroethane	1	1,2,4	U060	X	1# (0.454)
1,2,4,5-Tetrachlorobenzene	95943	Benzene, 1,2,4,5-tetrachloro-	1*	4	U207	D	5000 (2270)
2,3,7,8-Tetrachlorodibenzo-p-dioxin(TCDD)	1746016		1*	2		X	1# (0.454)
1,1,1,2-Tetrachloroethane	630206	Ethane,1,1,1,2-tetrachloro-	1*	4	U208	X	1# (0.454)
1,1,2,2-Tetrachloroethane	79345	Ethane, 1,1,2,2-tetrachloro-	1*	2,4	U209	X	1# (0.454)
Tetrachloroethylene	127184	Ethene, 1,1,2,2-tetrachloro-	1*	2,4	U210	X	1# (0.454)
2,3,4,6-Tetrachlorophenol	58902	Phenol, 2,3,4,6-tetrachloro-	1*	4	U212	A	10 (4.54)
Tetraethyldithiopyrophosphate	3689245	Dithiopyrophosphoric acid,tetraethyl ester	1*	4	P109	B	100 (45.4)
Tetraethyl lead	78002	Plumbane, tetraethyl-	100	1,4	P110	B	100## (45.4)
Tetraethyl pyrophosphate	107493	Pyrophosphoric acid, tetraethyl ester	100	1,4	P111	B	100## (45.4)
Tetrahydrofuran	109999	Furan, tetrahydro-	1*	4	U213	C	1000 (454)
Tetranitromethane	509148	Methane, tetranitro-	1*	4	P112	A	10 (4.54)
Tetraphosphoric acid, hexaethyl ester	757584	Hexaethyl tetraphosphate	1*	4	P062	B	100 (45.4)
Thallic oxide	1314325	Thallium(III) oxide	1*	4	P113	X	1## (0.454)
Thallium ††	7440280		1*	2		X	1## (0.454)
THALLIUM AND COMPOUNDS			1*	2			**
Thallium(I) acetate	563688	Acetic acid, thallium(I) salt	1*	4	U214	X	1## (0.454)
Thallium(I) carbonate	6533739	Carbonic acid, dithallium (I) salt	1*	4	U215	X	1## (0.454)
Thallium(I) chloride	7791120		1*	4	U216	X	1## (0.454)
Thallium(I) nitrate	10102451		1*	4	U217	X	1## (0.454)
Thallium(III) oxide	1314325	Thallic oxide	1*	4	P113	X	1## (0.454)
Thallium(I) selenide	12039520		1*	4	P114	X	1## (0.454)
Thallium(I) sulfate	7446186 10031591	Sulfuric acid, thallium(I) salt	1000	1,4	P115	C	1000## (454)
Thioacetamide	62555	Ethanethioamide	1*	4	U218	X	1# (0.454)
Thiofanox	39196184	3,3-Dimethyl-1-(methylthio)-2-butanone,O-[(methylamino) carbonyl] oxime.	1*	4	P045	B	100 (45.4)
Thioimidodicarbonic diamide	541537	2,4-Dithiobiuret	1*	4	P049	B	100 (45.4)
Thiomethanol	74931	Methanethiol Methylmercaptan	100	1,4	U153	B	100 (45.4)
Thiophenol	108985	Benzenethiol	1*	4	P014	B	100 (45.4)
Thiosemicarbazide	79196	Hydrazinecarbothioamide	1*	4	P116	B	100 (45.4)
Thiourea	62566	Carbamide, thio-	1*	4	U219	X	1# (0.454)
Thiourea, (2-chlorophenyl)-	5344821	1-(o-Chlorophenyl)thiourea	1*	4	P026	B	100 (45.4)
Thiourea, 1-naphthalenyl-	86884	alpha-Naphthylthiourea	1*	4	P072	B	100 (45.4)
Thiourea, phenyl-	103855	N-Phenylthiourea	1*	4	P093	B	100 (45.4)
Thiram	137268	Bis(dimethylthiocarbamoyl) disulfide	1*	4	U244	A	10 (4.54)
Toluene	108883	Benzene, methyl-	1000	1,2,4	U220	C	1000 (454)
Toluenediamine	95807 25376458 496720 823405	Diaminotoluene	1*	4	U221	X	1# (0.454)
Toluene diisocyanate	584849 91087 26471625	Benzene, 2,4-diisocyanatomethyl-	1*	4	U223	B	100 (45.4)
o-Toluidine hydrochloride	636215	Benzenamine, 2-methyl-, hydrochloride	1*	4	U222	X	1# (0.454)
Toxaphene	8001352	Camphene, octachloro-	1	1,2,4	P123	X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
2,4,5-TP acid	93721	Propionic acid, 2-(2,4,5-trichlorophenoxy)- Silvex	100	1,4	U233	B	100 (45.4)
2,4,5-TP acid esters	32534955		100	1		B	100 (45.4)
1H-1,2,4-Triazol-3-amine	61825	Amitrole	1*	4	U011	X	1# (0.454)
Trichlorfon	52686		1000	1		C	1000## (454)
1,2,4-Trichlorobenzene	120821		1*	2		B	100 (45.4)
1,1,1-Trichloroethane	71556	Methyl chloroform	1*	2,4	U226	C	1000 (454)
1,1,2-Trichloroethane	79005	Ethane, 1,1,2-trichloro-	1*	2,4	U227	X	1# (0.454)
Trichloroethene	79016	Trichloroethylene	1000	1,2,4	U228	C	1000# (454)
Trichloroethylene	79016	Trichloroethene	1000	1,2,4	U228	C	1000# (454)
Trichloromethanesulfenyl chloride	594423	Methanesulfenyl chloride, trichloro-	1*	4	P118	B	100 (45.4)
Trichloromonofluoromethane	75694	Methane, trichlorofluoro-	1*	4	U121	D	5000 (2270)
Trichlorophenol	25167822		10	1		A	10# (4.54)
2,3,4-Trichlorophenol	15950660						
2,3,5-Trichlorophenol	933788						
2,3,6-Trichlorophenol	933755						
2,4,5-Trichlorophenol	95954	Phenol, 2,4,5-trichloro-					
2,4,6-Trichlorophenol	88062	Phenol, 2,4,6-trichloro-					
3,4,5-Trichlorophenol	609198						
2,4,5-Trichlorophenol	95954	Phenol, 2,4,5-trichloro-	10	1,4	U230	A	10# (4.54)
2,4,6-Trichlorophenol	88062	Phenol, 2,4,6-trichloro-	10	1,2,4	U231	A	10# (4.54)
2,4,5-Trichlorophenoxyacetic acid	93765	2,4,5-T 2,4,5-T acid	100	1,4	U232	C	1000 (454)
Triethanolamine dodecylbenzenesulfonate	27323417		1000	1		C	1000 (454)
Triethylamine	121448		5000	1		D	5000 (2270)
Trimethylamine	75503		1000	1		C	1000## (454)
sym-Trinitrobenzene	99354	Benzene, 1,3,5-trinitro-	1*	4	U234	X	1## (0.454)
1,3,5-Trioxane, 2,4,6-trimethyl-	123637	Paraldehyde	1*	4	U182	C	1000 (454)
Tris(2,3-dibromopropyl) phosphate	126727	1-Propanol, 2,3-dibromo-, phosphate (3:1)	1*	4	U235	X	1# (0.454)
Trypan blue	72571	2,7-Naphthalenedisulfonic acid,3,3'-[(3,3'-dimethyl- (1,1'-biphenyl)-4,4'-diyl)- bis(azo)]bis(5-amino-4- hydroxy)-tetrasodium salt.	1*	4	U236	X	1# (0.454)
Unlisted Hazardous Wastes			1*	4			
Characteristic of Ignitability			1*	4	D001	B	100 (45.4)
Characteristic of Corrosivity			1*	4	D002	B	100 (45.4)
Characteristic of Reactivity			1*	4	D003	B	100 (45.4)
Characteristic of EP Toxicity			1*	4			
Arsenic			1*	4	D004	X	1# (0.454)
Barium			1*	4	D005	C	1000 (454)
Cadmium			1*	4	D006	X	1# (0.454)
Chromium			1*	4	D007	X	1# (0.454)
Lead			1*	4	D008	X	1## (0.454)
Mercury			1*	4	D009	X	1 (0.454)
Selenium			1*	4	D010	X	1## (0.454)
Silver			1*	4	D011	X	1 (0.454)
Endrin			1	1,4	D012	X	1 (0.454)
Lindane			1	1,4	D013	X	1# (0.454)
Methoxychlor			1	1,4	D014	X	1 (0.454)
Toxaphene			1	1,4	D015	X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
2,4-D			100	1,4	D016	B	100 (45.4)
2,4,5-TP			100	1,4	D017	B	100 (45.4)
Uracil, 5-[bis(2-chloroethyl)amino]-	66751	Uracil mustard	1*	4	U237	X	1# (0.454)
Uracil mustard	66751	Uracil, 5-[bis(2-chloroethyl)amino]-	1*	4	U237	X	1# (0.454)
Uranyl acetate	541093		5000	1		D	5000## (2270)
Uranyl nitrate	10102064 36478769		5000	1		D	5000## (2270)
Vanadic acid, ammonium salt	7803556	Ammonium vanadate	1*	4	P119	C	1000 (454)
Vanadium(V) oxide	1314621	Vanadium pentoxide	1000	1,4	P120	C	1000## (454)
Vanadium pentoxide	1314621	Vanadium(V) oxide	1000	1,4	P120	C	1000## (454)
Vanadyl sulfate	27774136		1000	1		C	1000## (454)
Vinyl acetate	108054		1000	1		D	5000 (2270)
Vinyl chloride	75014	Ethene, chloro-	1*	2,3,4	U043	X	1# (0.454)
Vinylidene chloride	75354	1,1-Dichloroethylene Ethene, 1,1-dichloro-	5000	1,2,4	U078	D	5000# (2270)
Warfarin	81812	3-(alpha-Acetonylbenzyl)-4-hydroxycoumarin and salts	1*	4	P001	B	100 (45.4)
Xylene (mixed) m- o- p-	1330207 108383 95476 106423	Benzene, dimethyl m- o- p-	1000	1,4	U239	C	1000 (454)
Xylenol	1300716		1000	1		C	1000 (454)
Yohimban-16-carboxylic acid,11,17-dimethoxy- 18-[(3,4,5- trimethoxybenzoyl)oxy]-, methylester.	50555	Reserpine	1*	4	U200	D	5000 (2270)
Zinc ††	7440666		1*	2		X	1## (0.454)
ZINC AND COMPOUNDS			1*	2			**
Zinc acetate	557346		1000	1		C	1000## (454)
Zinc ammonium chloride	52628258 14639975 14639986		5000	1		D	5000## (2270)
Zinc borate	1332076		1000	1		C	1000## (454)
Zinc bromide	7699458		5000	1		D	5000## (2270)
Zinc carbonate	3486359		1000	1		C	1000## (454)
Zinc chloride	7646857		5000	1		D	5000## (2270)
Zinc cyanide	557211		10	1,4	P121	A	10## (4.54)
Zinc fluoride	7783495		1000	1		C	1000## (454)
Zinc formate	557415		1000	1		C	1000## (454)
Zinc hydrosulfite	7779864		1000	1		C	1000## (454)
Zinc nitrate	7779886		5000	1		D	5000## (2270)
Zinc phenolsulfonate	127822		5000	1		D	5000## (2270)
Zinc phosphide	1314847		1000	1,4	P122	C	1000## (454)
Zinc silicofluoride	16871719		5000	1		D	5000##(2270)
Zinc sulfate	7733020		1000	1		C	1000## (454)
Zirconium nitrate	13746899		5000	1		D	5000 (2270)
Zirconium potassium fluoride	16923958		5000	1		C	1000 (454)
Zirconium sulfate	14644612		5000	1		D	5000 (2270)
Zirconium tetrachloride	10026116		5000	1		D	5000 (2270)
F001			1*	4	F001	X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
The following spent halogenated solvents used in degreasing and sludges from the recovery of these solvents in degreasing operations:							
(a) Tetrachloroethylene	127184					X	1# (0.454)
(b) Trichloroethylene	79016					C	1000# (454)
(c) Methylene chloride	75092					C	1000 (454)
(d) 1,1,1-Trichloroethane	71556					C	1000 (454)
(e) Carbon tetrachloride	56235					D	5000# (2270)
(f) Chlorinated fluorocarbons	(N.A.)					D	5000 (2270)
F002			1*	4	F002	X	1# (0.454)
The following spent halogenated solvents and the still bottoms from the recovery of these solvents:							
(a) Tetrachloroethylene	127184					X	1# (0.454)
(b) Methylene Chloride	75092					C	1000 (454)
(c) Trichloroethylene	79016					C	1000# (454)
(d) 1,1,1-Trichloroethane	71556					C	1000 (454)
(e) Chlorobenzene	108907					B	100 (45.4)
(f) 1,1,2-Trichloro-1,2,2-trifluoroethane	76131					D	5000 (2270)
(g) o-Dichlorobenzene	106467					B	100 (45.4)
(h) Trichlorofluoromethane	75694					D	5000 (2270)
F003			1*	4	F003	B	100 (45.4)
The following spent non-halogenated solvents and the still bottoms from the recovery of these solvents:							
(a) Xylene	1330207					C	1000 (454)
(b) Acetone	67641					D	5000 (2270)
(c) Ethyl acetate	141786					D	5000 (2270)
(d) Ethylbenzene	100414					C	1000 (454)
(e) Ethyl ether	60297					B	100 (45.4)
(f) Methyl isobutyl ketone	108101					D	5000 (2270)
(g) n-Butyl alcohol	71363					D	5000 (2270)
(h) Cyclohexanone	108941					D	5000 (2270)
(i) Methanol	67561					D	5000 (2270)
F004			1*	4	F004	X	1## (0.454)
The following spent non-halogenated solvents and the still bottoms from the recovery of these solvents:							
(a) Cresols/Cresylic acid	1319773					C	1000# (454)
(b) Nitrobenzene	98953					C	1000 (454)
F005			1*	4	F005	X	1## (0.454)
The following spent non-halogenated solvents and the still bottoms from the recovery of these solvents:							
(a) Toluene	108883					C	1000 (454)
(b) Methyl ethyl ketone	78933					D	5000 (2270)
(c) Carbon disulfide	75150					D	5000# (2270)
(d) Isobutanol	78831					D	5000 (2270)
(e) Pyridine	110861					X	1## (0.454)
F006			1*	4	F006	X	1# (0.454)
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							
F007			1*	4	F007	A	10 (4.54)
Spent cyanide plating bath solutions from electroplating operations (except for precious metals electroplating spent cyanide plating bath solutions)							
F008			1*	4	F008	A	10 (4.54)
Plating bath sludges from the bottom of plating baths from electroplating operations where cyanides are used in the process (except for precious metals electroplating plating bath sludges)							
F009			1*	4	F009	A	10 (4.54)
Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process (except for precious metals electroplating spent stripping and cleaning bath solutions)							
F010			1*	4	F010	A	10 (4.54)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Quenching bath sludge from oil baths from metal heat treating operations where cyanides are used in the process (except for precious metals heat-treating quenching bath sludges)							
F011			1*	4	F011	A	10 (4.54)
Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations (except for precious metals heat treating spent cyanide solutions from salt bath pot cleaning)							
F012			1*	4	F012	A	10 (4.54)
Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process (except for precious metals heat treating quenching wastewater treatment sludges)							
F019			1*	4	F019	X	1# (0.454)
Wastewater treatment sludges from the chemical conversion coating of aluminum							
F024			1*	4	F024	X	1# (0.454)
Wastes, including but not limited to distillation residues, heavy ends, tars, and reactor cleanout 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(sic), wastewater, wastewater treatment sludges, spent catalysts,and wastes listed in Section 261.32.)							
K001			1*	4	K001	X	1# (0.454)
Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol							
K002			1*	4	K002	X	1# (0.454)
Wastewater treatment sludge from the production of chrome yellow and orange pigments							
K003			1*	4	K003	X	1# (0.454)
Wastewater treatment sludge from the production of molybdate orange pigments							
K004			1*	4	K004	X	1# (0.454)
Wastewater treatment sludge from the production of zinc yellow pigments							
K005			1*	4	K005	X	1# (0.454)
Wastewater treatment sludge from the production of chrome green pigments							
K006			1*	4	K006	X	1# (0.454)
Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated)							
K007			1*	4	K007	X	1# (0.454)
Wastewater treatment sludge from the production of iron blue pigments							
K008			1*	4	K008	X	1# (0.454)
Oven residue from the production of chrome oxide green pigments							
K009			1*	4	K009	X	1# (0.454)
Distillation bottoms from the production of acetaldehyde from ethylene							
K010			1*	4	K010	X	1# (0.454)
Distillation side cuts from the production of acetaldehyde from ethylene							
K011			1*	4	K011	X	1# (0.454)
Bottom stream from the wastewater stripper in the production of acrylonitrile							
K013			1*	4	K013	X	1# (0.454)
Bottom stream from the acetonitrile column in the production of acrylonitrile							
K014			1*	4	K014	D	5000 (2270)
Bottoms from the acetonitrile purification column in the production of acrylonitrile							

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory RQ	Statutory Code †	Statutory RCRA Waste Number	Final RQ Category	Final RQ Pounds(Kg)
K015 Still bottoms from thedistillation of benzyl chloride			1*	4	K015	X	1# (0.454)
K016 Heavy ends or distillation residues from the productionof carbon tetrachloride			1*	4	K016	X	1# (0.454)
K017 Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin			1*	4	K017	X	1# (0.454)
K018 Heavy ends from the fractionation column in ethyl chloride production			1*	4	K018	X	1# (0.454)
K019 Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production			1*	4	K019	X	1# (0.454)
K020 Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production			1*	4	K020	X	1# (0.454)
K021 Aqueous spent antimony catalyst waste from fluoromethanes production			1*	4	K021	X	1# (0.454)
K022 Distillation bottom tars from the production of phenol/acetone from cumene			1*	4	K022	X	1# (0.454)
K023 Distillation light ends from the production of phthalic anhydride from naphthalene			1*	4	K023	D	5000 (2[illegible]
K024 Distillation bottoms from the production of phthalic anhydride from naphthalene			1*	4	K024	D	5000 (2270)
K025 Distillation bottoms from the production of nitrobenzene by the nitration of benzene			1*	4	K025	X	1# (0.454)
K026 Stripping still tails from the production of methyl ethyl pyridines			1*	4	K026	X	1## (0.454)
K027 Centrifuge and distillation residues from toluene diisocyanate production			1*	4	K027	X	1# (0.454)
K028 Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane			1*	4	K028	X	1# (0.454)
K029 Waste from the product steam stripper in the production of 1,1,1-trichloroethane			1*	4	K029	X	1# (0.454)
K030 Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene			1*	4	K030	X	1# (0.454)
K031 By-product salts generated in the production of MSMA and cacodylic acid			1*	4	K031	X	1# (0.454)
K032 Wastewater treatment sludge from the production of chlordane			1*	4	K032	X	1# (0.454)
K033 Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane			1*	4	K033	X	1# (0.454)
K034 Filter solids from the filtration of hexachlorocyclopentadiene in the production of chlordane			1*	4	K034	X	1# (0.454)
K035 Wastewater treatment sludges generated in the production of creosote			1*	4	K035	X	1# (0.454)
K036			1*	4	K036	X	1 (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory RQ	Statutory Code †	Statutory RCRA Waste Number	Final RQ Category	Final RQ Pounds(Kg)
Still bottoms from toluene reclamation distillation in the production of disulfoton							
K037			1*	4	K037	X	1 (0.454)
Wastewater treatment sludges from the production of disulfoton							
K038			1*	4	K038	X	1# (0.454)
Wastewater from the washing and stripping of phorate production							
K039			1*	4	K039	X	1## (0.454)
Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate							
K040			1*	4	K040	X	1# (0.454)
Wastewater treatment sludge from the production of phorate							
K041			1*	4	K041	X	1# (0.454)
Wastewater treatment sludge from the production of toxaphene							
K042			1*	4	K042	X	1# (0.454)
Heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2,4,5-T							
K043			1*	4	K043	X	1# (0.454)
2,6-Dichlorophenol waste from the production of 2,4-D							
K044			1*	4	K044	A	10 (4.54)
Wastewater treatment sludges from the manufacturing and processing of explosives							
K045			1*	4	K045	A	10 (4.54)
Spent carbon from the treatment of wastewater containing explosives							
K046			1*	4	K046	X	1## (0.454)
Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds							
K047			1*	4	K047	A	10 (4.54)
Pink/red water from TNT operations							
K048			1*	4	K048	X	1# (0.454)
Dissolved air flotation (DAF) float from the petroleum refining industry							
K049			1*	4	K049	X	1# (0.454)
Slop oil emulsion solids from the petroleum refining industry							
K050			1*	4	K050	X	1# (0.454)
Heat exchanger bundle cleaning sludge from the petroleum refining industry							
K051			1*	4	K051	X	1# (0.454)
API separator sludge from the petroleum refining industry							
K052			1*	4	K052	X	1## (0.454)
Tank bottoms (leaded) from the petroleum refining industry							
K060			1*	4	K060	X	1# (0.454)
Ammonia still lime sludge from coking operations							
K061			1*	4	K061	X	1# (0.454)
Emission control dust/sludge from the primary production of steel in electric furnaces							
K062			1*	4	K062	X	1# (0.454)
Spent pickle liquor from steel finishing operations							
K069			1*	4	K069	X	1# (0.454)
Emission control dust/sludge from secondary lead smelting							
K071			1*	4	K071	X	1 (0.454)
Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used							

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
K073 Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production			1*	4	K073	X	1# (0.454)
K083 Distillation bottoms from aniline extraction			1*	4	K083	B	100 (45.4)
K084 Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds			1*	4	K084	X	1# (0.454)
K085 Distillation or fractionation column bottoms from the production of chlorobenzenes			1*	4	K085	X	1# (0.454)
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			1*	4	K086	X	1# (0.454)
K087 Decanter tank tar sludge from coking operations			1*	4	K087	X	1## (0.454)
K093 Distillation light ends from the production of phthalic anhydride from ortho-xylene			1*	4	K093	D	5000 (2270)
K094 Distillation bottoms from the production of phthalic anhydride from ortho-xylene			1*	4	K094	D	5000 (2270)
K095 Distillation bottoms from the production of 1,1,1-trichloroethane			1*	4	K095	X	1# (0.454)
K096 Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane			1*	4	K096	X	1# (0.454)
K097 Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane			1*	4	K097	X	1# (0.454)
K098 Untreated process wastewater from the production of toxaphene			1*	4	K098	X	1# (0.454)
K099 Untreated wastewater from the production of 2,4-D			1*	4	K099	X	1# (0.454)
K100 Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting (Components of this waste are identical with those of K069).			1*	4	K100	X	1# (0.454)
K101 Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds			1*	4	K101	X	1# (0.454)
K102 Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds			1*	4	K102	X	1# (0.454)
K103 Process residues from aniline extraction from the production of aniline			1*	4	K103	B	100 (45.4)
K104 Combined wastewater streams generated from nitrobenzene/aniline chlorobenzenes			1*	4	K104	X	1# (0.454)
K105 Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes			1*	4	K105	X	1# (0.454)
K106 Wastewater treatment sludge from the mercury cell process in chlorine production			1*	4	K106	X	1 (0.454)

See footnotes on following page.

† - indicates the statutory source as defined by 1, 2, 3, or 4 below
1 - indicates that the statutory source for designation of this hazardous substance under CERCLA is CWA Section 311(b)(4)
2 - indicates that the statutory source for designation of this hazardous substance under CERCLA is CWA Section 307(a)
3 - indicates that the statutory source for designation of this hazardous substance under CERCLA is CAA Section 112
4 - indicates that the statutory source for designation of this hazardous substance under CERCLA is RCRA Section 3001
†† - no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 100 micrometers (0.004 inches)
††† - the RQ for asbestos is limited to friable forms only
§ - the Agency may adjust the RQ for radionuclides in a future rulemaking; until then the statutory 1-pound RQ applies
1* - indicates that the 1-pound RQ is a CERCLA statutory RQ
** - indicates that no RQ is being assigned to the generic or broad class
# - indicates that the RQ is subject to change when the assessment of potential carcinogenicity and/or chronic toxicity is completed
- indicates that an adjusted RQ is proposed in a separate NPRM in today's Federal Register
- the Agency may adjust the RQ for methyl isocyanate in a future rulemaking; until then the statutory 1-pound RQ applies

APPENDIX A - SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES

CASRN	Hazardous Substance
50000	Formaldehyde
	Methylene oxide
50077	Azirino(2',3':3,4)pyrrolo(1,2-a)indole-4,7-dione,6-amino-8- [((aminocarbonyl)oxy)methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-
	Mitomycin C
50180	Cyclophosphamide
	2H-1,3,2-Oxazaphosphorine,2-[bis(2-chloroethyl)amino]tetrahydro-2-oxide
50293	DDT
	4,4' DDT
	Dichlorodiphenyl trichloroethane
50328	Benzo[a]pyrene
	3,4-Benzopyrene
50555	Reserpine
	Yohimban-16-carboxylic acid,11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-,methyl ester
51285	2,4-Dinitrophenol
	Phenol, 2,4-dinitro-
51434	1,2-Benzenediol,4-[1-hydroxy-2-(methylamino)ethyl]-
	Epinephrine
51796	Carbamic acid, ethyl ester
	Ethyl carbamate (Urethan)
52686	Trichlorfon
52857	Famphur
	Phosphorothioic acid, O,O-dimethyl-O-[p-[(dimethylamino)-sulfonyl]phenyl] ester
53703	Dibenz[a,h]anthracene
	1,2:5,6-Dibenzanthracene
	Dibenzo[a,h]anthracene
53963	Acetamide, N-9H-fluoren-2-yl-
	2-Acetylaminofluorene
54115	Nicotine and salts
	Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-,and salts
55185	Ethanamine, N-ethyl-N-nitroso-
	N-Nitrosodiethylamine
55630	Nitroglycerine
	1,2,3-Propanetriol, trinitrate-
55914	Diisopropyl fluorophosphate
	Phosphorofluoridic acid,bis(1-methylethyl) ester
56042	Methylthiouracil
	4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-
56235	Carbon tetrachloride
	Methane, tetrachloro-
56382	Parathion
	Phosphorothioic acid,O,O-diethyl O-(p-nitrophenyl)ester
56495	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-
	3-Methylcholanthrene
56531	Diethylstilbestrol
	4,4'-Stilbenediol, alpha,alpha'-diethyl-

APPENDIX A - SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES—Continued

CASRN	Hazardous Substance
56553	Benz[a]anthracene
	1,2-Benzanthracene
	Benzo[a]anthracene
56724	Coumaphos
57125	Cyanides (soluble cyanide salts), not elsewhere-specified
57147	1,1-Dimethylhydrazine
	Hydrazine, 1,1-dimethyl-
57249	Strychnidin-10-one, and salts
	Strychnine and salts
57749	Chlordane
	Chlordane, technical
	4,7-Methanoindan, 1,2,4,5,6,7,8,8-octachloro-3a,4,7,7a-tetrahydro-
57976	1,2-Benzanthracene, 7,12-dimethyl-
	7,12-Dimethylbenz[a]anthracene
58899	gamma - BHC
	Hexachlorocyclohexane (gamma isomer)
	Lindane
58902	Phenol, 2,3,4,6-tetrachloro-
	2,3,4,6-Tetrachlorophenol
59507	4-Chloro-m-cresol
	p-Chloro-m-cresol
	Phenol, 4-chloro-3-methyl-
60004	Ethylenediamine tetraacetic acid (EDTA)
60117	Benzenamine, N,N-dimethyl-4-phenylazo-
	Dimethylaminoazobenzene
60297	Ethane, 1,1'-oxybis-
	Ethyl ether
60344	Hydrazine, methyl-
	Methyl hydrazine
60515	Dimethoate
	Phosphorodithioic acid,O,O-dimethyl S-[2(methylamino)-2-oxoethyl] ester
60571	Dieldrin
	1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo,exo-1,4:5,8-dimethanonaphthalene
61825	Amitrole
	1H-1,2,4-Triazol-3-amine
62384	Mercury, (acetato-O)phenyl-
	Phenylmercuric acetate
62442	Acetamide, N-(4-ethoxyphenyl)-
	Phenacetin
62500	Ethyl methanesulfonate
	Methanesulfonic acid, ethyl ester
62533	Aniline
	Benzenamine
62555	Ethanethioamide
	Thioacetamide
62566	Carbamide, thio-
	Thiourea

APPENDIX A - SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES—Continued

CASRN	Hazardous Substance
62737	Dichlorvos
62748	Acetic acid, fluoro-, sodium salt
	Fluoroacetic acid, sodium salt
62759	Dimethylnitrosamine
	N-Nitrosodimethylamine
63252	Carbaryl
64186	Formic acid
	Methanoic acid
64197	Acetic acid
65850	Benzoic acid
66751	Uracil, 5-[bis(2-chloroethyl)amino]-
	Uracil mustard
67561	Methanol
	Methyl alcohol
67641	Acetone
	2-Propanone
67663	Chloroform
	Methane, trichloro-
67721	Ethane, 1,1,1,2,2,2-hexachloro-
	Hexachloroethane
70257	Guanidine, N-nitroso-N-methyl-N'-nitro-
	N-Methyl-N'-nitro-N-nitrosoguanidine
70304	Hexachlorophene
	2,2'-Methylenebis(3,4,6-trichlorophenol)
71363	1-Butanol
	n-Butyl alcohol
71432	Benzene
71556	Methyl chloroform
	1,1,1-Trichloroethane
72208	Endrin
	1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo,endo-1,4:5,8-dimethanonaphthalene
72435	Ethane, 1,1,1-trichloro-2,2-bis(p-methoxyphenyl)
	Methoxychlor
72548	DDD
	4,4' DDD
	Dichlorodiphenyl dichloroethane
	TDE
72559	DDE
	4,4' DDE
72571	2,7-Naphthalenedisulfonic acid,3,3'-[(3,3'-dimethyl-(1,1'-biphenyl)-4,4'-diyl)-bis(azo)]bis(5-amino-4-hydroxy)-tetrasodium salt
	Trypan blue
74839	Methane, bromo-
	Methyl bromide
74873	Methane, chloro-
	Methyl chloride
74884	Methane, iodo-
	Methyl iodide

APPENDIX A - SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES—Continued

CASRN	Hazardous Substance
74895	Monomethylamine
74908	Hydrocyanic acid Hydrogen cyanide
74931	Methanethiol Methylmercaptan Thiomethanol
74953	Methane, dibromo- Methylene bromide
75003	Chloroethane
75014	Ethene, chloro- Vinyl chloride
75047	Monoethylamine
75058	Acetonitrile Ethanenitrile
75070	Acetaldehyde Ethanal
75092	Methane, dichloro- Methylene chloride
75150	Carbon bisulfide Carbon disulfide
75207	Calcium carbide
75218	Ethylene oxide Oxirane
75252	Bromoform Methane, tribromo-
75274	Dichlorobromomethane
75343	1,1-Dichloroethane Ethane, 1,1-dichloro- Ethylidene dichloride
75354	1,1-Dichloroethylene Ethene, 1,1-dichloro- Vinylidene chloride
75365	Acetyl chloride Ethanoyl chloride
75445	Carbonyl chloride Phosgene
75503	Trimethylamine
75558	2-Methylaziridine 1,2-Propylenimine
75569	Propylene oxide
75605	Cacodylic acid Hydroxydimethylarsine oxide
75649	tert-Butylamine
75694	Methane, trichlorofluoro- Trichloromonofluoromethane
75718	Dichlorodifluoromethane Methane, dichlorodifluoro-
75865	Acetone cyanohydrin 2-Methyllactonitrile Propanenitrile, 2-hydroxy-2-methyl-
75876	Acetaldehyde, trichloro- Chloral
75990	2,2-Dichloropropionic acid
76017	Ethane, pentachloro- Pentachloroethane
76448	Heptachlor 4,7-Methano-1H-indene,1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-

APPENDIX A - SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES—Continued

CASRN	Hazardous Substance
77474	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro- Hexachlorocyclopentadiene
77781	Dimethyl sulfate Sulfuric acid, dimethyl ester
78002	Plumbane, tetraethyl- Tetraethyl lead
78591	Isophorone
78795	Isoprene
78819	iso-Butylamine
78831	Isobutyl alcohol 1-Propanol, 2-methyl-
78875	1,2-Dichloropropane Propylene dichloride
78886	2,3-Dichloropropene
78933	2-Butanone Methyl ethyl ketone
78999	1,1-Dichloropropane
79005	Ethane, 1,1,2-trichloro- 1,1,2-Trichloroethane
79016	Trichloroethene Trichloroethylene
79061	Acrylamide 2-Propenamide
79094	Propionic acid
79107	Acrylic acid 2-Propenoic acid
79196	Hydrazinecarbothioamide Thiosemicarbazide
79221	Carbonochloridic acid, methyl ester Methyl chlorocarbonate
79312	iso-Butyric acid
79345	Ethane, 1,1,2,2-tetrachloro- 1,1,2,2-Tetrachloroethane
79447	Carbamoyl chloride, dimethyl- Dimethylcarbamoyl chloride
79469	2-Nitropropane Propane, 2-nitro-
80159	alpha,alpha-Dimethylbenzylhydroperoxide Hydroperoxide, 1-methyl-1-phenylethyl-
80626	Methyl methacrylate 2-Propenoic acid, 2-methyl-, methyl ester
81072	1,2-Benzisothiazolin-3-one,1,1-dioxide, and salts Saccharin and salts
81812	3-(alpha-Acetonylbenzyl)-4-hydroxycoumarin and salts Warfarin
82688	Benzene, pentachloronitro- Pentachloronitrobenzene
83329	Acenaphthene
84662	1,2-Benzenedicarboxylic acid,diethyl ester Diethyl phthalate
84742	1,2-Benzenedicarboxylic acid,dibutyl ester n-Butyl phthalate Dibutyl phthalate Di-n-butyl phthalate

APPENDIX A - SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES—Continued

CASRN	Hazardous Substance
85007	Diquat
85018	Phenanthrene
85449	1,2-Benzenedicarboxylic acid anhydride Phthalic anhydride
85687	Butyl benzyl phthalate
86306	N-Nitrosodiphenylamine
86500	Guthion
86737	Fluorene
86884	alpha-Naphthylthiourea Thiourea, 1-naphthalenyl-
87650	2,6-Dichlorophenol Phenol, 2,6-dichloro-
87683	1,3-Butadiene, 1,1,2,3,4,4-hexachloro- Hexachlorobutadiene
87865	Pentachlorophenol Phenol, pentachloro-
88062	Phenol, 2,4,6-trichloro 2,4,6-Trichlorophenol
88722	o-Nitrotoluene
88755	o-Nitrophenol 2-Nitrophenol
88857	Dinoseb Phenol, 2,4-dinitro-6-(1-methylpropyl)-
91087	Benzene, 2,4-diisocyanatomethyl- Toluene diisocyanate
91203	Naphthalene
91225	Quinoline
91587	beta-Chloronaphthalene 2-Chloronaphthalene Naphthalene, 2-chloro-
91598	2-Naphthylamine beta-Naphthylamine
91805	Methapyrilene Pyridine, 2-[(2-(dimethylamino)ethyl)-2-thenylamino]-
91941	(1,1'-Biphenyl)-4,4'diamine,3,3'dichloro- 3,3'-Dichlorobenzidine
92875	Benzidine (1,1'-Biphenyl)-4,4'diamine
93721	Propionic acid, 2-(2,4,5-trichlorophenoxy)- Silvex 2,4,5-TP acid
93765	2,4,5-T 2,4,5-T acid 2,4,5-Trichlorophenoxyacetic acid
93798	2,4,5-T esters
94111	2,4-D Esters
94586	Benzene, 1,2-methylenedioxy-4-propyl- Dihydrosafrole
94597	Benzene, 1,2-methylenedioxy-4-allyl- Safrole
94757	2,4-D Acid 2,4-D, salts and esters 2,4-Dichlorophenoxyacetic acid, salts and esters

APPENDIX A - SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES—Continued

CASRN	Hazardous Substance
94791	2,4-D Esters
94804	2,4-D Esters
95476	Benzene, o-dimethyl- o-Xylene
95487	o-Cresol o-Cresylic acid
95501	Benzene, 1,2-dichloro- 1,2-Dichlorobenzene o-Dichlorobenzene
95578	2-Chlorophenol o-Chlorophenol Phenol, 2-chloro-
95807	Diaminotoluene Toluenediamine
95943	Benzene, 1,2,4,5-tetrachloro- 1,2,4,5-Tetrachlorobenzene
95954	Phenol, 2,4,5-trichloro- 2,4,5-Trichlorophenol
96128	1,2-Dibromo-3-chloropropane Propane, 1,2-dibromo-3-chloro-
96457	Ethylenethiourea 2-Imidazolidinethione
97632	Ethyl methacrylate 2-Propenoic acid, 2-methyl-, ethyl ester
98011	2-Furancarboxaldehyde Furfural
98077	Benzene, trichloromethyl- Benzotrichloride
98099	Benzenesulfonic acid chloride Benzenesulfonyl chloride
98828	Benzene, 1-methylethyl- Cumene
98862	Acetophenone Ethanone, 1-phenyl-
98873	Benzal chloride Benzene, dichloromethyl-
98884	Benzoyl chloride
98953	Benzene, nitro- Nitrobenzene
99081	m-Nitrotoluene
99354	Benzene, 1,3,5-trinitro- sym-Trinitrobenzene
99558	Benzenamine, 2-methyl-5-nitro- 5-Nitro-o-toluidine
99650	m-Dinitrobenzene
99990	p-Nitrotoluene
100016	Benzenamine, 4-nitro- p-Nitroaniline
100027	p-Nitrophenol 4-Nitrophenol Phenol, 4-nitro-
100254	p-Dinitrobenzene
100414	Ethylbenzene
100425	Styrene
100447	Benzene, chloromethyl- Benzyl chloride

APPENDIX A - SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES—Continued

CASRN	Hazardous Substance
100470	Benzonitrile
100754	N-Nitrosopiperidine Pyridine, hexahydro-N-nitroso-
101144	Benzenamine, 4,4'-methylenebis(2-chloro- 4,4'-Methylenebis(2-chloroaniline)
101553	Benzene, 1-bromo-4-phenoxy- 4-Bromophenyl phenyl ether
103855	N-Phenylthiourea Thiourea, phenyl-
105464	sec-Butyl acetate
105679	2,4-Dimethylphenol Phenol, 2,4-dimethyl-
106423	Benzene, p-dimethyl- p-Xylene
106445	p-Cresol p-Cresylic acid
106467	Benzene, 1,4-dichloro- 1,4-Dichlorobenzene p-Dichlorobenzene
106478	Benzenamine, 4-chloro- p-Chloroaniline
106514	p-Benzoquinone 1,4-Cyclohexadienedione
106898	1-Chloro-2,3-epoxypropane Epichlorohydrin Oxirane, 2-(chloromethyl)-
106934	Ethane, 1,2-dibromo- Ethylene dibromide
107028	Acrolein 2-Propenal
107051	Allyl chloride
107062	1,2-Dichloroethane Ethane, 1,2-dichloro- Ethylene dichloride
107108	1-Propanamine n-Propylamine
107120	Ethyl cyanide Propanenitrile
107131	Acrylonitrile 2-Propenenitrile
107153	Ethylenediamine
107186	Allyl alcohol 2-Propen-1-ol
107197	Propargyl alcohol 2-Propyn-1-ol
107200	Acetaldehyde, chloro- Chloroacetaldehyde
107302	Chloromethyl methyl ether Methane, chloromethoxy-
107493	Pyrophosphoric acid, tetraethyl ester Tetraethyl pyrophosphate
107926	Butyric acid
108054	Vinyl acetate
108101	Methyl isobutyl ketone 4-Methyl-2-pentanone
108247	Acetic anhydride
108316	2,5-Furandione Maleic anhydride

APPENDIX A - SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES—Continued

CASRN	Hazardous Substance
108383	Benzene, m-dimethyl- m-Xylene
108394	m-Cresol m-Cresylic acid
108463	1,3-Benzenediol Resorcinol
108601	Bis(2-chloroisopropyl) ether Propane, 2,2'-oxybis(2-chloro-
108883	Benzene, methyl- Toluene
108907	Benzene, chloro- Chlorobenzene
108941	Cyclohexanone
108952	Benzene, hydroxy- Phenol
108985	Benzenethiol Thiophenol
109068	2-Picoline Pyridine, 2-methyl-
109739	Butylamine
109773	Malononitrile Propanedinitrile
109897	Diethylamine
109999	Furan, tetrahydro- Tetrahydrofuran
110009	Furan Furfuran
110167	Maleic acid
110178	Fumaric acid
110190	iso-Butyl acetate
110758	2-Chloroethyl vinyl ether Ethene, 2-chloroethoxy-
110827	Benzene, hexahydro- Cyclohexane
110861	Pyridine
111444	Bis (2-chloroethyl) ether Dichloroethyl ether Ethane, 1,1'-oxybis(2-chloro-
111546	1,2-Ethanediylbiscarbamodithioic acid Ethylenebis(dithiocarbamic acid)
111911	Bis(2-chloroethoxy) methane Ethane, 1,1'-[methylenebis(oxy)]bis(2-chloro-
115026	Azaserine L-Serine, diazoacetate (ester)
115297	Endosulfan 5-Norbornene-2,3-dimethanol,1,4,5,6,7,7-hexachloro,cyclic sulfite
115322	Kelthane
116063	Aldicarb Propanal, 2-methyl-2-(methylthio)-,O-[(methylamino)carbonyl]oxime
117806	Dichlone
117817	1,2-Benzenedicarboxylic acid,[bis(2-ethylhexyl)] ester Bis(2-ethylhexyl)phthalate
117840	1,2-Benzenedicarboxylic acid,di-n-octyl ester Di-n-octyl phthalate

treatment and disposal, Water pollution control.

40 CFR Part 117

Hazardous substances, Penalties, Reporting and recordkeeping requirements, Water pollution control.

Dated: August 20, 1986.

Lee M. Thomas,

Administrator.

40 CFR Part 302 is amended as follows:

PART 302—DESIGNATION, REPORTABLE QUANTITIES, AND NOTIFICATION

1. The authority citation for Part 302 continues to read as follows:

Authority: Sec. 102 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. 9602; secs. 311 and 501(a) of the Federal Water Pollution Control Act, 33 U.S.C. 1321 and 1361.

2. Section 302.4 is amended by revising Table 302.4 to read as follows:

§ 302.4 Designation of hazardous substances.

* * * * *

Table 302.4—List of Hazardous Substances and Reportable Quantities

Note—The numbers under the column headed "CASRN" are the Chemical Abstracts Service Registry Numbers for each hazardous substance. Other names by which each hazardous substance is identified in other statutes and their implementing regulations are provided in the "Regulatory Synonyms" column. The "Statutory RQ" column lists the RQs for hazardous substances established by section 102 of CERCLA. The "Statutory Code" column indicates the statutory source for designating each substance as a CERCLA hazardous substance: "1" indicates that the statutory source is section 311(b)(4) of the Clean Water Act, "2" indicates that the source is section 307(a) of the Clean Water Act, "3" indicates that the source is section 112 of the Clean Air Act, and "4" indicates that the source is RCRA section 3001. The "RCRA Waste Number" column provides the waste identification numbers assigned to various substances by RCRA regulations. The column headed "Category" lists the code letters "X", "A", "B", "C", and "D", which are associated with reportable quantities of 1, 10, 100, 1000, and 5000 pounds, respectively. The "Pounds (kg)" column provides the reportable quantity for each hazardous substance in pounds and kilograms.

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Acenaphthene	83329		1*	2		B	100 (45.4)
Acenaphthylene	208968		1*	2		D	5000 (2270)
Acetic acid, thallium(I) salt	563688	Thallium(I) acetate	1*	4	U214	B	100 (45.4)
2-Amino-1-methyl benzene	95534	o-Toluidine	1*	4	U328	X	1 # (0.454)
4-Amino-1-methyl benzene	106490	p-Toluidine	1*	4	U353	X	1 # (0.454)
Ammonia	7664417		100	1		B	100 (45.4)
Ammonium bifluoride	1341497		5000	1		B	100 (45.4)
Anthracene	120127		1*	2		D	5000 (2270)
Antimony ††	7440360		1*	2		D	5000 (2270)
Benzene, hydroxy-	108952	Phenol	1000	1,2,4	U188	C	1000 (454)
Benzene, pentachloro-	608935	Pentachlorobenzene	1*	4	U183	A	10 (4.54)
Benzene, 1,3,5-trinitro-	99354	sym-Trinitrobenzene	1*	4	U234	A	10 (4.54)
Benzo[j,k]fluorene	206440	Fluoranthene	1*	2,4	U120	B	100 (45.4)
Benzo[ghi]perylene	191242		1*	2		D	5000 (2270)
p-Benzoquinone	106514	1,4-Cyclohexadienedione	1*	4	U197	A	10 (4.54)
delta - BHC	319868		1*	2		X	1 (0.454)
Captan	133062		10	1		A	10# (4.54)
Carbamimidoselenoic acid	630104	Selenourea	1*	4	P103	C	1000 (454)
Carbon bisulfide	75150	Carbon disulfide	5000	1,4	P022	B	100 (45.4)
Carbon disulfide	75150	Carbon bisulfide	5000	1,4	P022	B	100 (45.4)
Carbonic acid, dithallium(I) salt	6533739	Thallium(I) carbonate	1*	4	U215	B	100 (45.4)
Chloroethane	75003		1*	2		B	100 (45.4)
Chromic acetate	1066304		1000	1		C	1000 (454)
Chromic sulfate	10101538		1000	1		C	1000 (454)
Chromous chloride	10049055		1000	1		C	1000 (454)
Copper ††	7440508		1*	2		D	5000 (2270)
Cresol(s)	1319773	Cresylic acid	1000	1,4	U052	C	1000 # (454)
m-	108394						
o-	95487						

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
p-	106445						
Cresylic acid	1319773	Cresol(s)	1000	1,4	U052	C	1000 # (454)
m-	108394						
o-	95487						
p-	106445						
Cupric chloride	7447394		10	1		A	10 (4.54)
Cupric sulfate	7758987		10	1		A	10 (4.54)
Cupric tartrate	815827		100	1		B	100 (45.4)
1,4-Cyclohexadienedione	106514	p-Benzoquinone	1*	4	U197	A	10 (4.54)
Dichloropropane - Dichloropropene (mixture)	8003198		5000	1		B	100# (45.4)
Dichloropropene(s)	26952238		5000	1		B	100 (45.4)
2,3-Dichloropropene (isomer)	78886						
1,3-Dichloropropene	542756	Propene, 1,3-dichloro-	5000	1,2,4	U084	B	100 # (45.4)
Diethylamine	109897		1000	1		B	100 (45.4)
Dimethylamine	124403	Methanamine, N-methyl-	1000	1,4	U092	C	1000 (454)
O,O-Dimethyl O-p-nitrophenyl phosphorothioate	298000	Methyl parathion	100	1,4	P071	B	100 (45.4)
Ethane, pentachloro-	76017	Pentachloroethane	1*	4	U184	X	1 # (0.454)
Ethion	563122		10	1		A	10 (4.54)
2-Ethoxyethanol	110805	Ethylene glycol monoethyl ether	1*	4	U359	X	1 # (0.454)
Ethylene glycol monoethyl ether	110805	2-Ethoxyethanol	1*	4	U359	X	1 # (0.454)
Ferric dextran ***	9004664	Iron dextran ***	1*	4	U139	D	5000 (2270)
Fluoranthene	206440	Benzo[j,k]fluorene	1*	2,4	U120	B	100 (45.4)
Fluorene	86737		1*	2		D	5000 (2270)
Fulminic acid, mercury(II) salt	628864	Mercury fulminate	1*	4	P065	A	10 (4.54)
Hexachlorophene	70304	2,2'-Methylenebis(3,4,6-trichlorophenol)	1*	4	U132	B	100 (45.4)
Hydrogen sulfide	7783064	Hydrosulfuric acid Sulfur hydride	100	1,4	U135	B	100 (45.4)
Hydrosulfuric acid	7783064	Hydrogen sulfide Sulfur hydride	100	1,4	U135	B	100 (45.4)
Iron dextran ***	9004664	Ferric dextran ***	1*	4	U139	D	5000 (2270)
Isoprene	78795		1000	1		B	100 (45.4)
Lead ††	7439921		1*	2		X	1 # (0.454)
Lead chloride	7758954		5000	1		B	100 # (45.4)
Lead fluoborate	13814965		5000	1		B	100 (45.4)
Lead fluoride	7783462		1000	1		B	100 (45.4)
Lead iodide	10101630		5000	1		B	100 (45.4)
Lead nitrate	10099748		5000	1		B	100 # (45.4)
Lead stearate	7428480 1072351 52652592 56189094		5000	1		D	5000 (2270)
Lead sulfate	15739807 7446142		5000	1		B	100 (45.4)
Lead sulfide	1314870		5000	1		D	5000 (2270)
Lead thiocyanate	592870		5000	1		B	100 (45.4)
Mercuric nitrate	10045940		10	1		A	10 (4.54)
Mercuric sulfate	7783359		10	1		A	10 (4.54)
Mercuric thiocyanate	592858		10	1		A	10 (4.54)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code†	RCRA Waste Number	Category	Pounds(Kg)
Mercurous nitrate	10415755		10	1		A	10 (4.54)
Mercury fulminate	628864	Fulminic acid, mercury(II) salt	1*	4	P065	A	10 (4.54)
Mercury, (acetato-O)phenyl-	62384	Phenylmercuric acetate	1*	4	P092	B	100 (45.4)
Methanamine, N-methyl-	124403	Dimethylamine	1000	1,4	U092	C	1000 (454)
Methane, chloro-	74873	Methyl chloride	1*	2,4	U045	X	1# (0.454)
Methyl chloride	74873	Methane, chloro-	1*	2,4	U045	X	1# (0.454)
Methyl parathion	298000	O,O-Dimethyl O-p-nitrophenyl phosphorothioate	100	1,4	P071	B	100 (45.4)
2,2'-Methylenebis(3,4,6-trichlorophenol)	70304	Hexachlorophene	1*	4	U132	B	100 (45.4)
Monoethylamine	75047		1000	1		B	100 (45.4)
Pentachlorobenzene	608935	Benzene, pentachloro-	1*	4	U183	A	10 (4.54)
Pentachloroethane	76017	Ethane, pentachloro-	1*	4	U184	X	1# (0.454)
Phenanthrene	85018		1*	2		D	5000 (2270)
Phenol	108952	Benzene, hydroxy-	1000	1,2,4	U188	C	1000 (454)
Phenylmercuric acetate	62384	Mercury, (acetato-O)phenyl-	1*	4	P092	B	100 (45.4)
Phorate	298022	Phosphorodithioic acid, O,O-diethyl S-(ethylthio) methyl ester	1*	4	P094	A	10 (4.54)
Phosphorodithioic acid, O,O-diethyl S-(ethylthio) methyl ester.	298022	Phorate	1*	4	P094	A	10 (4.54)
Plumbane, tetraethyl-	78002	Tetraethyl lead	100	1,4	P110	A	10# (4.54)
Propene, 1,3-dichloro-	542756	1,3-Dichloropropene	5000	1,2,4	U084	B	100# (45.4)
Pyrene	129000		1*	2		D	5000 (2270)
Pyridine	110861		1*	4	U196	C	1000 (454)
Pyrophosphoric acid, tetraethyl ester	107493	Tetraethyl pyrophosphate	100	1,4	P111	A	10 (4.54)
Selenious acid	7783008		1*	4	U204	A	10 (4.54)
Selenium ††	7782492		1*	2		B	100 (45.4)
Selenium dioxide	7446084	Selenium oxide	1000	1,4	U204	A	10 (4.54)
Selenium oxide	7446084	Selenium dioxide	1000	1,4	U204	A	10 (4.54)
Selenourea	630104	Carbamimidoselenoic acid	1*	4	P103	C	1000 (454)
Sodium bifluoride	1333831		5000	1		B	100 (45.4)
Sodium nitrite	7632000		100	1		B	100 (45.4)
Sodium selenite	10102188		1000	1		B	100 (45.4)
Sulfur hydride	7783064	Hydrogen sulfide Hydrosulfuric acid	100	1,4	U135	B	100 (45.4)
Sulfuric acid, thallium(I) salt	7446186 10031591	Thallium(I) sulfate	1000	1,4	P115	B	100 (45.4)
Tetraethyl lead	78002	Plumbane, tetraethyl-	100	1,4	P110	A	10# (4.54)
Tetraethyl pyrophosphate	107493	Pyrophosphoric acid, tetraethyl ester	100	1,4	P111	A	10 (4.54)
Thallic oxide	1314325	Thallium(III) oxide	1*	4	P113	B	100 (45.4)
Thallium ††	7440280		1*	2		C	1000 (454)
Thallium(I) acetate	563688	Acetic acid, thallium(I) salt	1*	4	U214	B	100 (45.4)
Thallium(I) carbonate	6533739	Carbonic acid, dithallium(I) salt	1*	4	U215	B	100 (45.4)
Thallium(I) chloride	7791120		1*	4	U216	B	100 (45.4)
Thallium(I) nitrate	10102451		1*	4	U217	B	100 (45.4)
Thallium(III) oxide	1314325	Thallic oxide	1*	4	P113	B	100 (45.4)
Thallium(I) selenide	12039520		1*	4	P114	C	1000 (454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory RQ	Statutory Code †	Statutory RCRA Waste Number	Final RQ Category	Final RQ Pounds(Kg)
Thallium(I) sulfate	7446186 10031591	Sulfuric acid, thallium(I) salt	1000	1,4	P115	B	100 (45.4)
o-Toluidine	95534	2-Amino-1-methyl benzene	1*	4	U328	X	1 # (0.454)
p-Toluidine	106490	4-Amino-1-methyl benzene	1*	4	U353	X	1 # (0.454)
Trichlorfon	52686		1000	1		B	100 (45.4)
Trimethylamine	75503		1000	1		B	100 (45.4)
sym-Trinitrobenzene	99354	Benzene, 1,3,5-trinitro-	1*	4	U234	A	10 (4.54)
Unlisted Hazardous Wastes Characteristic of EP Toxicity	N.A.						
Selenium D010	N.A.		1*	4	D010	A	10 (4.54)
Uranyl acetate ****	541093		5000	1		B	100 (45.4)
Uranyl nitrate ****	10102064		5000	1		B	100 (45.4)
Vanadium(V) oxide	1314621	Vanadium pentoxide	1000	1,4	P120	C	1000 (454)
Vanadium pentoxide	1314621	Vanadium(V) oxide	1000	1,4	P120	C	1000 (454)
Vanadyl sulfate	27774136		1000	1		C	1000 (454)
Zinc ††	7440666		1*	2		C	1000 (454)
Zinc acetate	557346		1000	1		C	1000 (454)
Zinc ammonium chloride	52628258		5000	1		C	1000 (454)
Zinc borate	1332076		1000	1		C	1000 (454)
Zinc bromide	7699458		5000	1		C	1000 (454)
Zinc carbonate	3486359		1000	1		C	1000 (454)
Zinc chloride	7646857		5000	1		C	1000 (454)
Zinc cyanide	557211		10	1,4	P121	A	10 (4.54)
Zinc fluoride	7783495		1000	1		C	1000 (454)
Zinc formate	557415		1000	1		C	1000 (454)
Zinc hydrosulfite	7779864		1000	1		C	1000 (454)
Zinc nitrate	7779886		5000	1		C	1000 (454)
Zinc phenolsulfonate	127822		5000	1		D	5000 (2270)
Zinc phosphide	1314847		1000	1,4	P122	B	100 (45.4)
Zinc silicofluoride	16871719		5000	1		D	5000 (2270)
Zinc sulfate	7733020		1000	1		C	1000 (454)
F004 The following spent non-halogenated solvents and the still bottoms from the recovery of these solvents: (a) Cresols/Cresylic acid (b) Nitrobenzene			1*	4	F004	C	1000 # (454)
F005 The following spent non-halogenated solvents and the still bottoms from the recovery of these solvents: (a) Toluene (b) Methyl ethyl ketone (c) Carbon disulfide (d) Isobutanol (e) Pyridine			1*	4	F005	B	100 (45.4)
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 tetrachloropehnol, 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.)			1*	4	F020	X	1 # (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory RQ	Statutory Code †	Statutory RCRA Waste Number	Final RQ Category	Final RQ Pounds(Kg)
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			1*	4	F021	X	1# (0.454)
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.			1*	4	F022	X	1# (0.454)
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.)			1*	4	F023	X	1# (0.454)
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.			1*	4	F026	X	1# (0.454)
F027 Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols. (This listing does not include formulations containing hexachlorophene synthesized from prepurified 2,4,5-trichlorophenol as the sole component.)			1*	4	F027	X	1# (0.454)
F028 Residues resulting from the incineration or thermal treatment of soil contaminated with EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027.			1*	4	F028	X	1# (0.454)
K026 Stripping still tails from the production of methyl ethyl pyridines			1*	4	K026	C	1000 (454)
K039 Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate			1*	4	K039	A	10 (4.54)
K046 Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds			1*	4	K046	B	100 (45.4)
K052 Tank bottoms (leaded) from the petroleum refining industry			1*	4	K052	A	10# (4.54)
K087 Decanter tank tar sludge from coking operations			1*	4	K087	B	100 (45.4)
K111 Product washwaters from the production of dinitrotoluene via nitration of toluene.			1*	4	K111	X	1# (0.454)
K112 Reaction by-product water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene.			1*	4	K112	X	1# (0.454)
K113 Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene			1*	4	K113	X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory RQ	Statutory Code †	Statutory RCRA Waste Number	Final RQ Category	Final RQ Pounds(Kg)
K114 Vicinals from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.			1*	4	K114	X	1# (0.454)
K115 Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.			1*	4	K115	X	1# (0.454)
K116 Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine.			1*	4	K116	X	1# (0.454)
K117 Wastewater from the reaction vent gas scrubber in the production of ethylene bromide via bromination of ethene.			1*	4	K117	X	1# (0.454)
K118 Spent absorbent solids from purification of ethylene dibromide in the production of ethylene dibromide.			1*	4	K118	X	1# (0.454)
K136 Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.			1*	4	K136	X	1# (0.454)

† - indicates the statutory source as defined by 1, 2, 3, or 4 below
†† - no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 100 micrometers (0.004 inches)
1 - indicates that the statutory source for designation of this hazardous substance under CERCLA is CWA Section 311(b)(4)
2 - indicates that the statutory source for designation of this hazardous substance under CERCLA is CWA Section 307(a)
3 - indicates that the statutory source for designation of this hazardous substance under CERCLA is CAA Section 112
4 - indicates that the statutory source for designation of this hazardous substance under CERCLA is RCRA Section 3001
1* - indicates that the 1-pound RQ is a CERCLA statutory RQ
*** - Iron dextran was designated as a hazardous substance under CERCLA solely because of its listing as a hazardous waste under Section 3001 of RCRA. The Agency recently proposed to delist iron dextran under RCRA (50 FR 46468-46470, November 8, 1985). The Agency has also proposed to delist iron dextran from Table 302.4 of 40 CFR 302.4 and thereby remove its designation as a CERCLA hazardous substance.
**** - Uranyl acetate and uranyl nitrate currently are being evaluated for their radioactive properties. Their RQs may be further adjusted in a future rulemaking adjusting the RQ of radionuclides.
# - indicates that the RQ is subject to change when the assessment of potential carcinogenicity and/or chronic toxicity is completed

APPENDIX A - SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES

CASRN	Hazardous Substance
52686	Trichlorfon
62384	Mercury, (acetato-O)phenyl- Phenylmercuric acetate
70304	Hexachlorophene 2,2'-Methylenebis(3,4,6-trichlorophenol)
74873	Methane, chloro- Methyl chloride
75003	Chloroethane
75047	Monoethylamine
75150	Carbon bisulfide Carbon disulfide
75503	Trimethylamine
76017	Ethane, pentachloro- Pentachloroethane
78002	Plumbane, tetraethyl- Tetraethyl lead
78795	Isoprene
78886	2,3-Dichloropropene (isomer)
83329	Acenaphthene
85018	Phenanthrene
86737	Fluorene
95487	o-Cresol o-Cresylic acid
95534	o-Toluidine 2-Amino-1-methyl benzene
99354	Benzene, 1,3,5-trinitro- sym-Trinitrobenzene
106445	p-Cresol p-Cresylic acid
106490	p-Toluidine 4-Amino-1-methyl benzene
106514	p-Benzoquinone 1,4-Cyclohexadienedione
107493	Pyrophosphoric acid, tetraethyl ester Tetraethyl pyrophosphate
108394	m-Cresol m-Cresylic acid
108952	Benzene, hydroxy- Phenol
109897	Diethylamine
110805	Ethylene glycol monoethyl ether 2-Ethoxyethanol
110861	Pyridine
120127	Anthracene
124403	Dimethylamine Methanamine, N-methyl-
127822	Zinc phenolsulfonate
129000	Pyrene
133062	Captan
191242	Benzo[ghi]perylene
206440	Benzo[j,k]fluorene Fluoranthene
208968	Acenaphthylene
298000	Methyl parathion O,O-Dimethyl O-p-nitrophenyl phosphorothioate

(ii) Any known or anticipated acute or chronic health risks associated with the release, and,

(iii) Where appropriate, advice regarding medical attention necessary for exposed individuals.

(4) Exceptions. (i) Until April 30, 1988, in lieu of the notice specified in paragraph (b)(2) of this section, any owner or operator of a facility subject to this section from which there is a release of a CERCLA hazardous substance which is not an extremely hazardous substance and has a statutory reportable quantity may provide the same notice required under CERCLA section 103(a) to the local emergency planning committee.

(ii) An owner or operator of a facility from which there is a transportation-related release may meet the requirements of this section by providing the information indicated in paragraph (b)(2) to the 911 operator, or in the absence of a 911 emergency telephone number, to the operator. For purposes of this paragraph, a "transportation-related release" means a release during transportation, or storage incident to transportation if the stored substance is moving under active shipping papers and has not reached the ultimate consignee.

(Approved by the Office of Management and Budget under the control number 2050–0046)

§ 355.50 Penalties.

(a) *Civil penalties*. Any person who fails to comply with the requirements of § 355.40 shall be subject to civil penalties of up to $25,000 for each violation in accordance with section 325(b)(1) of the Act.

(b) *Civil penalties for continuing violations*. Any person who fails to comply with the requirements of § 355.40 shall be subject to civil penalties of up to $25,000 for each day during which the violation continues, in accordance with section 325(b)(2) of the Act. In the case of a second or subsequent violation, any such person may be subject to civil penalties of up to $75,000 for each day the violation continues, in accordance with section 325(b)(2) of the Act.

(c) *Criminal penalties*. Any person who knowingly and willfully fails to provide notice in accordance with § 355.40 shall, upon conviction, be fined not more than $25,000 or imprisoned for not more than two (2) years, or both (or, in the case of a second or subsequent conviction, shall be fined not more than $50,000 or imprisoned for not more than five (5) years, or both) in accordance with section 325(b)(4) of the Act.

Appendix A.—The List of Extremely Hazardous Substances and their Threshold Planning Quantities

[Alphabetical Order]

CAS No.	Chemical name	Notes	Reportable quantity* (pounds)	Threshold planning quantity (pounds)
75–86–5	Acetone Cyanohydrin		10	1,000
1752–30–3	Acetone Thiosemicarbazide	e	1	1,000/10,000
107–02–8	Acrolein		1	500
79–06–1	Acrylamide	d, l	5,000	1,000/10,000
107–13–1	Acrylonitrile	d, l	100	10,000
814–68–6	Acrylyl Chloride	e, h	1	100
111–69–3	Adiponitrile	e, l	1	1,000
116–06–3	Aldicarb	c	1	100/10,000
309–00–2	Aldrin	d	1	500/10,000
107–18–6	Allyl Alcohol		100	1,000
107–11–9	Allylamine	e	1	500
20859–73–8	Aluminum Phosphide	b	100	500
54–62–6	Aminopterin	e	1	500/10,000
78–53–5	Amiton	e	1	500
3734–97–2	Amiton Oxalate	e	1	100/10,000
7664–41–7	Ammonia	l	100	500
16919–58–7	Ammonium Chloroplatinate	a, e	1	10,000
300–62–9	Amphetamine	e	1	1,000
62–53–3	Aniline	d, l	5,000	1,000
88–05–1	Aniline, 2,4,6-Trimethyl-	e	1	500
7783–70–2	Antimony Pentafluoride	e	1	500
1397–94–0	Antimycin A	c, e	1	1,000/10,000
86–88–4	ANTU		100	500/10,000
1303–28–2	Arsenic Pentoxide	d	5,000	100/10,000
1327–53–3	Arsenous Oxide	d, h	5,000	100/10,000
7784–34–1	Arsenous Trichloride	d	5,000	500
7784–42–1	Arsine	e	1	100
2642–71–9	Azinphos-Ethyl	e	1	100/10,000
86–50–0	Azinphos-Methyl		1	10/10,000
1405–87–4	Bacitracin	a, e	1	10,000
98–87–3	Benzal Chloride	d	5,000	500
98–16–8	Benzenamine, 3-(Trifluoromethyl)-	e	1	500
100–14–1	Benzene, 1-(Chloromethyl)-4-Nitro-	e	1	500/10,000
98–05–5	Benzenearsonic Acid	e	1	10/10,000
98–09–9	Benzenesulfonyl Chloride	a	100	10,000
3615–21–2	Benzimidazole, 4,5-Dichloro-2-(Trifluoromethyl)-	e, g	1	500/10,000
98–07–7	Benzotrichloride	d	1	100
100–44–7	Benzyl Chloride	d	100	500
140–29–4	Benzyl Cyanide	e, h	1	500

APPENDIX A.—THE LIST OF EXTREMELY HAZARDOUS SUBSTANCES AND THEIR THRESHOLD PLANNING QUANTITIES—Continued

[Alphabetical Order]

CAS No.	Chemical name	Notes	Reportable quantity* (pounds)	Threshold planning quantity (pounds)
15271-41-7	Bicyclo[2.2.1]Heptane-2-Carbonitrile, 5-Chloro-6-((((Methylamino)Carbonyl)Oxy)Imino)-, (1s-(1-alpha, 2-beta, 4-alpha, 5-alpha, 6E))-.	e	1	500/10,000
534-07-6	Bis(Chloromethyl) Ketone	e	1	10/10,000
4044-65-9	Bitoscanate	e	1	500/10,000
10294-34-5	Boron Trichloride	e	1	500
7637-07-2	Boron Trifluoride	e	1	500
353-42-4	Boron Trifluoride Compound With Methyl Ether (1:1)	e	1	1,000
28772-56-7	Bromadiolone	e	1	100/10,000
7726-95-6	Bromine	e, l	1	500
106-99-0	Butadiene	a, e	1	10,000
109-19-3	Butyl Isovalerate	a, e	1	10,000
111-34-2	Butyl Vinyl Ether	a, e	1	10,000
1306-19-0	Cadmium Oxide	e	1	100/10,000
2223-93-0	Cadmium Stearate	c, e	1	1,000/10,000
7778-44-1	Calcium Arsenate	d	1,000	500/10,000
8001-35-2	Camphechlor	d	1	500/10,000
56-25-7	Cantharidin	e	1	100/10,000
51-83-2	Carbachol Chloride	e	1	500/10,000
26419-73-8	Carbamic Acid, Methyl-, 0-(((2,4-Dimethyl-1, 3-Dithiolan-2-yl)Methylene)Amino)-	e	1	100/10,000
1563-66-2	Carbofuran		10	10/10,000
75-15-0	Carbon Disulfide	l	100	10,000
786-19-6	Carbophenothion	e	1	500
2244-16-8	Carvone	a, e	1	10,000
57-74-9	Chlordane	d	1	1,000
470-90-6	Chlorfenvinfos	e	1	500
7782-50-5	Chlorine		10	100
24934-91-6	Chlormephos	e	1	500
999-81-5	Chlormequat Chloride	e, h	1	100/10,000
107-20-0	Chloroacetaldehyde	a	1,000	10,000
79-11-8	Chloroacetic Acid	e	1	100/10,000
107-07-3	Chloroethanol	e	1	500
627-11-2	Chloroethyl Chloroformate	e	1	1,000
67-66-3	Chloroform	d, l	5,000	10,000
542-88-1	Chloromethyl Ether	d, h	1	100
107-30-2	Chloromethyl Methyl Ether	c, d	1	100
3691-35-8	Chlorophacinone	e	1	100/10,000
1982-47-4	Chloroxuron	e	1	500/10,000
21923-23-9	Chlorthiophos	e, h	1	500
10025-73-7	Chromic Chloride	e	1	1/10,000
7440-48-4	Cobalt	a, e	1	10,000
62207-76-5	Cobalt, ((2,2'-(1,2-Ethanediylbis (Nitrilomethylidyne))Bis(6-Fluorophenolato))(2-)-N,N',O,O')-,.	e	1	100/10,000
10210-68-1	Cobalt Carbonyl	e, h	1	10/10,000
64-86-8	Colchicine	e, h	1	10/10,000
117-52-2	Coumafuryl	a, e	1	10,000
56-72-4	Coumaphos		10	100/10,000
5836-29-3	Coumatetralyl	e	1	500/10,000
95-48-7	Cresol, o-	d	1,000	1,000/10,000
535-89-7	Crimidine	e	1	100/10,000
4170-30-3	Crotonaldehyde		100	1,000
123-73-9	Crotonaldehyde, (E)-		100	1,000
506-68-3	Cyanogen Bromide		1,000	500/10,000
506-78-5	Cyanogen Iodide	e	1	1,000/10,000
2636-26-2	Cyanophos	e	1	1,000
675-14-9	Cyanuric Fluoride	e	1	100
66-81-9	Cycloheximide	e	1	100/10,000
108-91-8	Cyclohexylamine	e, l	1	10,000
287-92-3	Cyclopentane	a, e	1	10,000
633-03-4	C. I. Basic Green 1	a, e	1	10,000
17702-41-9	Decaborane(14)	e	1	500/10,000
8065-48-3	Demeton	e	1	500
919-86-8	Demeton-S-Methyl	e	1	500
10311-84-9	Dialifor	e	1	100/10,000
19287-45-7	Diborane	e	1	100
84-74-2	Dibutyl Phthalate	a	10	10,000
8023-53-8	Dichlorobenzalkonium Chloride	a, e	1	10,000
111-44-4	Dichloroethyl Ether	d	1	10,000

APPENDIX A.—THE LIST OF EXTREMELY HAZARDOUS SUBSTANCES AND THEIR THRESHOLD PLANNING QUANTITIES—Continued

[Alphabetical Order]

CAS No.	Chemical name	Notes	Reportable quantity* (pounds)	Threshold planning quantity (pounds)
149-74-6	Dichloromethylphenylsilane	e	1	1,000
62-73-7	Dichlorvos		10	1,000
141-66-2	Dicrotophos	e	1	100
1464-53-5	Diepoxybutane	d	1	500
814-49-3	Diethyl Chlorophospate	e, h	1	500
1642-54-2	Diethylcarbamazine Citrate	e	1	100/10,000
93-05-0	Diethyl-p-Phenylenediamine	a,e	1	10,000
71-63-6	Digitoxin	c, e	1	100/10,000
2238-07-5	Diglycidyl Ether	e	1	1,000
20830-75-5	Digoxin	e, h	1	10/10,000
115-26-4	Dimefox	e	1	500
60-51-5	Dimethoate		10	500/10,000
2524-03-0	Dimethyl Phosphorochloridothioate	e	1	500
131-11-3	Dimethyl Phthalate	a	5,000	10,000
77-78-1	Dimethyl Sulfate	d	1	500
75-18-3	Dimethyl Sulfide	e	1	100
75-78-5	Dimethyldichlorosilane	e, h	1	500
57-14-7	Dimethylhydrazine	d	1	1,000
99-98-9	Dimethyl-p-Phenylenediamine	e	1	10/10,000
644-64-4	Dimetilan	e	1	500/10,000
534-52-1	Dinitrocresol		10	10/10,000
88-85-7	Dinoseb		1,000	100/10,000
1420-07-1	Dinoterb	e	1	500/10,000
117-84-0	Dioctyl Phthalate	a	5,000	10,000
78-34-2	Dioxathion	e	1	500
646-06-0	Dioxolane	a, e	1	10,000
82-66-6	Diphacinone	e	1	10/10,000
152-16-9	Diphosphoramide, Octamethyl-		100	100
298-04-4	Disulfoton		1	500
514-73-8	Dithiazanine Iodide	e	1	500/10,000
541-53-7	Dithiobiuret		100	100/10,000
316-42-7	Emetine, Dihydrochloride	e, h	1	1/10,000
115-29-7	Endosulfan		1	10/10,000
2778-04-3	Endothion	e	1	500/10,000
72-20-8	Endrin		1	500/10,000
106-89-8	Epichlorohydrin	d, l	1,000	1,000
2104-64-5	EPN	e	1	100/10,000
50-14-6	Ergocalciferol	c, e	1	1,000/10,000
379-79-3	Ergotamine Tartrate	e	1	500/10,000
1622-32-8	Ethanesulfonyl Chloride, 2-Chloro-	e	1	500
10140-87-1	Ethanol, 1,2-Dichloro-, Acetate	e	1	1,000
563-12-2	Ethion		10	1,000
13194-48-4	Ethoprophos	e	1	1,000
538-07-8	Ethylbis(2-Chloroethyl)Amine	e, h	1	500
371-62-0	Ethylene Fluorohydrin	c, e, h	1	10
75-21-8	Ethylene Oxide	d, l	1	1,000
107-15-3	Ethylenediamine		5,000	10,000
151-56-4	Ethyleneimine	d	1	500
2235-25-8	Ethylmercuric Phosphate	a, e	1	10,000
542-90-5	Ethylthiocyanate	e	1	10,000
22224-92-6	Fenamiphos	e	1	10/10,000
122-14-5	Fenitrothion	e	1	500
115-90-2	Fensulfothion	e, h	1	500
4301-50-2	Fluenetil	e	1	100/10,000
7782-41-4	Fluorine	k	10	500
640-19-7	Fluoroacetamide	j	100	100/10,000
144-49-0	Fluoroacetic Acid	e	1	10/10,000
359-06-8	Fluoroacetyl Chloride	c, e	1	10
51-21-8	Fluorouracil	e	1	500/10,000
944-22-9	Fonofos	e	1	500
50-00-0	Formaldehyde	d,l	1,000	500
107-16-4	Formaldehyde Cyanohydrin	e, h	1	1,000
23422-53-9	Formetanate Hydrochloride	e,h	1	500/10,000
2540-82-1	Formothion	e	1	100
17702-57-7	Formparanate	e	1	100/10,000
21548-32-3	Fosthietan	e	1	500

APPENDIX A.—THE LIST OF EXTREMELY HAZARDOUS SUBSTANCES AND THEIR THRESHOLD PLANNING QUANTITIES—Continued

[Alphabetical Order]

CAS No.	Chemical name	Notes	Reportable quantity* (pounds)	Threshold planning quantity (pounds)
3878-19-1	Fuberidazole	e	1	100/10,000
110-00-9	Furan		100	500
13450-90-3	Gallium Trichloride	e	1	500/10,000
77-47-4	Hexachlorocyclopentadiene	d, h	1	100
1335-87-1	Hexachloronaphthalene	a, e	1	10,000
4835-11-4	Hexamethylenediamine, N,N'-Dibutyl-	e	1	500
302-01-2	Hydrazine	d	1	1,000
74-90-8	Hydrocyanic Acid		10	100
7647-01-0	Hydrogen Chloride (Gas Only)	e, l	1	500
7664-39-3	Hydrogen Fluoride		100	100
7722-84-1	Hydrogen Peroxide (Conc >52%)	e, l	1	1,000
7783-07-5	Hydrogen Selenide	e	1	10
7783-06-4	Hydrogen Sulfide	l	100	500
123-31-9	Hydroquinone	l	1	500/10,000
53-86-1	Indomethacin	a, e	1	10,000
10025-97-5	Iridium Tetrachloride	a, e	1	10,000
13463-40-6	Iron, Pentacarbonyl-	e	1	100
297-78-9	Isobenzan	e	1	100/10,000
78-82-0	Isobutyronitrile	e, h	1	1,000
102-36-3	Isocyanic Acid, 3,4-Dichlorophenyl Ester	e	1	500/10,000
465-73-6	Isodrin		1	100/10,000
55-91-4	Isofluorphate	c	100	100
4098-71-9	Isophorone Diisocyanate	b, e	1	100
108-23-6	Isopropyl Chloroformate	e	1	1,000
625-55-8	Isopropyl Formate	e	1	500
119-38-0	Isoproplymethylpyrazolyl Dimethylcarbamate	e	1	500
78-97-7	Lactonitrile	e	1	1,000
21609-90-5	Leptophos	e	1	500/10,000
541-25-3	Lewisite	c, e, h	1	10
58-89-9	Lindane	d	1	1,000/10,000
7580-67-8	Lithium Hydride	b, e	1	100
109-77-3	Malononitrile		1,000	500/10,000
12108-13-3	Manganese, Tricarbonyl Methylcyclopentadienyl	e, h	1	100
51-75-2	Mechlorethamine	c, e	1	10
950-10-7	Mephosfolan	e	1	500
1600-27-7	Mercuric Acetate	e	1	500/10,000
7487-94-7	Mercuric Chloride	e	1	500/10,000
21908-53-2	Mercuric Oxide	e	1	500/10,000
108-67-8	Mesitylene	a, e	1	10,000
10476-95-6	Methacrolein Diacetate	e	1	1,000
760-93-0	Methacrylic Anhydride	e	1	500
126-98-7	Methacrylonitrile	h	1	500
920-46-7	Methacryloyl Chloride	e	1	100
30674-80-7	Methacryloyloxyethyl Isocyanate	e, h	1	100
10265-92-6	Methamidophos	e	1	100/10,000
558-25-8	Methanesulfonyl Fluoride	e	1	1,000
950-37-8	Methidathion	e	1	500/10,000
2032-65-7	Methiocarb		10	500/10,000
16752-77-5	Methomyl	h	100	500/10,000
151-38-2	Methoxyethylmercuric Acetate	e	1	500/10,000
80-63-7	Methyl 2-Chloroacrylate	e	1	500
74-83-9	Methyl Bromide	l	1,000	1,000
79-22-1	Methyl Chloroformate	d, h	1,000	500
624-92-0	Methyl Disulfide	e	1	100
60-34-4	Methyl Hydrazine		10	500
624-83-9	Methyl Isocyanate	f	1	500
556-61-6	Methyl Isothiocyanate	b, e	1	500
74-93-1	Methyl Mercaptan		100	500
3735-23-7	Methyl Phenkapton	e	1	500
676-97-1	Methyl Phosphonic Dichloride	b, e	1	100
556-64-9	Methyl Thiocyanate	e	1	10,000
78-94-4	Methyl Vinyl Ketone	e	1	10
502-39-6	Methylmercuric Dicyanamide	e	1	500/10,000
75-79-6	Methyltrichlorosilane	e, h	1	500
1129-41-5	Metolcarb	e	1	100/10,000
7786-34-7	Mevinphos		10	500

APPENDIX A.—THE LIST OF EXTREMELY HAZARDOUS SUBSTANCES AND THEIR THRESHOLD PLANNING QUANTITIES—Continued

[Alphabetical Order]

CAS No.	Chemical name	Notes	Reportable quantity* (pounds)	Threshold planning quantity (pounds)
315-18-4	Mexacarbate		1,000	500/10,000
50-07-7	Mitomycin C	d	1	500/10,000
6923-22-4	Monocrotophos	e	1	10/10,000
2763-96-4	Muscimol	a, h	1,000	10,000
505-60-2	Mustard Gas	e, h	1	500
7440-02-0	Nickel	a, d	1	10,000
13463-39-3	Nickel Carbonyl	d	1	1
54-11-5	Nicotine	c	100	100
65-30-5	Nicotine Sulfate	e	1	100/10,000
7697-37-2	Nitric Acid		1,000	1,000
10102-43-9	Nitric Oxide	c	10	100
98-95-3	Nitrobenzene	l	1,000	10,000
1122-60-7	Nitrocyclohexane	e	1	500
10102-44-0	Nitrogen Dioxide		10	100
62-75-9	Nitrosodimethylamine	d, h	1	1,000
991-42-4	Norbormide	e	1	100/10,000
0	Organorhodium Complex (PMN-82-147)	e	1	10/10,000
65-86-1	Orotic Acid	a, e	1	10,000
20816-12-0	Osmium Tetroxide	a	1,000	10,000
630-60-4	Ouabain	c, e	1	100/10,000
23135-22-0	Oxamyl	e	1	100/10,000
78-71-7	Oxetane, 3,3-Bis(Chloromethyl)-	1	e	500
2497-07-6	Oxydisulfoton	e, h	1	500
10028-15-6	Ozone	e	1	100
1910-42-5	Paraquat	e	1	10/10,000
2074-50-2	Paraquat Methosulfate	e	1	10/10,000
56-38-2	Parathion	c, d	1	100
298-00-0	Parathion-Methyl	c	100	100/10,000
12002-03-8	Paris Green	d	100	500/10,000
19624-22-7	Pentaborane	e	1	500
76-01-7	Pentachloroethane	a, d	1	10,000
87-86-5	Pentachlorophenol	a, d	10	10,000
2570-26-5	Pentadecylamine	e	1	100/10,000
79-21-0	Peracetic Acid	e	1	500
594-42-3	Perchloromethylmercaptan		100	500
108-95-2	Phenol		1,000	500/10,000
97-18-7	Phenol, 2,2'-Thiobis(4,6-Dichloro-	e	1	100/10,000
4418-66-0	Phenol, 2,2'-Thiobis(4-Chloro-6-Methyl-Phenol, 2,2'-Thiobis (4-Chloro-6-Methyl)-	e	1	100/10,000
64-00-6	Phenol, 3-(1-Methylethyl)-, Methylcarbamate	e	1	500/10,000
58-36-6	Phenoxarsine, 10,10'-Oxydi-	e	1	500/10,000
696-28-6	Phenyl Dichloroarsine	d, h	1	500
59-88-1	Phenylhydrazine Hydrochloride	e	1	1,000/10,000
62-38-4	Phenylmercury Acetate		100	500/10,000
2097-19-0	Phenylsilatrane	e, h	1	100/10,000
103-85-5	Phenylthiourea		100	100/10,000
298-02-2	Phorate		10	10
4104-14-7	Phosacetim	e	1	100/10,000
947-02-4	Phosfolan	e	1	100/10,000
75-44-5	Phosgene	l	10	10
732-11-6	Phosmet	e	1	10/10,000
13171-21-6	Phosphamidon	e	1	100
7803-51-2	Phosphine		100	500
2703-13-1	Phosphonothioic Acid, Methyl-, O-Ethyl O-(4-(Methylthio)Phenyl) Ester	e	1	500
50782-69-9	Phosphonothioic Acid, Methyl-, S-(2-(Bis(1-Methylethyl)Amino)Ethyl O-Ethyl Ester	e	1	100
2665-30-7	Phosphonothioic Acid, Methyl-, O-(4-Nitrophenyl) O-Phenyl Ester	e	1	500
3254-63-5	Phosphoric Acid, Dimethyl 4-(Methylthio) Phenyl Ester	e	1	500
2587-90-8	Phosphorothioic Acid, O,O-Dimethyl-S-(2-Methylthio) Ethyl Ester	c, e, g	1	500
7723-14-0	Phosphorus	b, h	1	100
10025-87-3	Phosphorus Oxychloride	d	1,000	500
10026-13-8	Phosphorus Pentachloride	b, e	1	500
1314-56-3	Phosphorus Pentoxide	b, e	1	10
7719-12-2	Phosphorus Trichloride		1,000	1,000
84-80-0	Phylloquinone	a, e	1	10,000
57-47-6	Physostigmine	e	1	100/10,000
57-64-7	Physostigmine, Salicylate (1:1)	e	1	100/10,000
124-87-8	Picrotoxin	e	1	500/10,000

APPENDIX A.—THE LIST OF EXTREMELY HAZARDOUS SUBSTANCES AND THEIR THRESHOLD PLANNING QUANTITIES—Continued

[Alphabetical Order]

CAS No.	Chemical name	Notes	Reportable quantity* (pounds)	Threshold planning quantity (pounds)
110-89-4	Piperidine	e	1	1,000
5281-13-0	Piprotal	e	1	100/10,000
23505-41-1	Pirimifos-Ethyl	e	1	1,000
10025-65-7	Platinous Chloride	a, e	1	10,000
13454-96-1	Platinum Tetrachloride	a, e	1	10,000
10124-50-2	Potassium Arsenite	d	1,000	500/10,000
151-50-8	Potassium Cyanide	b	10	100
506-61-6	Potassium Silver Cyanide	b	1	500
2631-37-0	Promecarb	e, h	1	500/10,000
106-96-7	Propargyl Bromide	e	1	10
57-57-8	Propiolactone, Beta-	e	1	500
107-12-0	Propionitrile		10	500
542-76-7	Propionitrile, 3-Chloro-		1,000	1,000
70-69-9	Propiophenone, 4-Amino-	e, g	1	100/10,000
109-61-5	Propyl Chloroformate	e	1	500
1331-17-5	Propylene Glycol, Allyl Ether	a, e	1	10,000
75-56-9	Propylene Oxide	l	100	10,000
75-55-8	Propyleneimine	d	1	10,000
2275-18-5	Prothoate	e	1	100/10,000
95-63-6	Pseudocumene	a, e	1	10,000
129-00-0	Pyrene	c	5,000	1,000/10,000
140-76-1	Pyridine, 2-Methyl-5-Vinyl-	e	1	500
504-24-5	Pyridine, 4-Amino-	h	1,000	500/10,000
1124-33-0	Pyridine, 4-Nitro-, 1-Oxide	e	1	500/10,000
53558-25-1	Pyriminil	e, h	1	100/10,000
10049-07-7	Rhodium Trichloride	a, e	1	10,000
14167-18-1	Salcomine	e	1	500/10,000
107-44-8	Sarin	e, h	1	10
7783-00-8	Selenious Acid		10	1,000/10,000
7791-23-3	Selenium Oxychloride	e	1	500
563-41-7	Semicarbazide Hydrochloride	e	1	1,000/10,000
3037-72-7	Silane, (4-Aminobutyl)Diethoxymethyl-	e	1	1,000
128-56-3	Sodium Anthraquinone-1-Sulfonate	a, e	1	10,000
7631-89-2	Sodium Arsenate	d	1,000	1,000/10,000
7784-46-5	Sodium Arsenite	d	1,000	500/10,000
26628-22-8	Sodium Azide (Na(N3))	b	1,000	500
124-65-2	Sodium Cacodylate	e	1	100/10,000
143-33-9	Sodium Cyanide (Na(CN))	b	10	100
62-74-8	Sodium Fluoroacetate		10	10/10,000
131-52-2	Sodium Pentachlorophenate	e	1	100/10,000
13410-01-0	Sodium Selenate	e	1	100/10,000
10102-18-8	Sodium Selenite	h	100	100/10,000
10102-20-2	Sodium Tellurite	e	1	500/10,000
900-95-8	Stannane, Acetoxytriphenyl-	e, g	1	500/10,000
57-24-9	Strychnine	c	10	100/10,000
60-41-3	Strychnine, Sulfate	e	1	100/10,000
3689-24-5	Sulfotep		100	500
3569-57-1	Sulfoxide, 3-Chloropropyl Octyl	e	1	500
7446-09-5	Sulfur Dioxide	e, l	1	500
7783-60-0	Sulfur Tetrafluoride	e	1	100
7446-11-9	Sulfur Trioxide	b, e	1	100
7664-93-9	Sulfur Acid		1,000	1,000
77-81-6	Tabun	c, e, h	1	10
13494-80-9	Tellurium	e	1	500/10,000
7783-80-4	Tellurium Hexafluoride	e, k	1	100
107-49-3	TEPP		10	100
13071-79-9	Terbufos	e, h	1	100
78-00-2	Tetraethyllead	c, d	10	100
597-64-8	Tetraethyltin	c, e	1	100
75-74-1	Tetramethyllead	c, e, l	1	100
509-14-8	Tetranitromethane		10	500
1314-32-5	Thallic Oxide	a	100	10,000
10031-59-1	Thallium Sulfate	h	100	100/10,000
6533-73-9	Thallous Carbonate	c, h	100	100/10,000
7791-12-0	Thallous Chloride	c, h	100	100/10,000

APPENDIX A.—THE LIST OF EXTREMELY HAZARDOUS SUBSTANCES AND THEIR THRESHOLD PLANNING QUANTITIES—Continued

[Alphabetical Order]

CAS No.	Chemical name	Notes	Reportable quantity* (pounds)	Threshold planning quantity (pounds)
2757-18-8	Thallous Malonate	c, e, h	1	100/10,000
7446-18-6	Thallous Sulfate		100	100/10,000
2231-57-4	Thiocarbazide	e	1	1,000/10,000
21564-17-0	Thiocyanic Acid, 2-(Benzothiazolylthio)Methyl Ester	a, e	1	10,000
39196-18-4	Thiofanox		100	100/10,000
640-15-3	Thiometon	a, e	1	10,000
297-97-2	Thionazin		100	500
108-98-5	Thiophenol		100	500
79-19-6	Thiosemicarbazide		100	100/10,000
5344-82-1	Thiourea, (2-Chlorophenyl)-		100	100/10,000
614-78-8	Thiourea, (2-Methylphenyl)-	e	1	500/10,000
7550-45-0	Titanium Tetrachloride	e	1	100
584-84-9	Toluene 2,4-Diisocyanate		100	500
91-08-7	Toluene 2,6-Diisocyanate		100	100
110-57-6	Trans-1,4-Dichlorobutene	e	1	500
1031-47-6	Triamiphos	e	1	500/10,000
24017-47-8	Triazofos	e	1	500
76-02-8	Trichloroacety Chloride	e	1	500
115-21-9	Trichloroethylsilane	e, h	1	500
327-98-0	Trichloronate	e, k	1	500
98-13-5	Trichlorophenylsilane	e, h	1	500
52-68-6	Trichlorophon	a	100	10,000
1558-25-4	Trichloro(Chloromethyl)Silane	e	1	100
27137-85-5	Trichloro(Dichlorophenyl)Silane	e	1	500
998-30-1	Triethoxysilane	e	1	500
75-77-4	Trimethylchlorosilane	e	1	1,000
824-11-3	Trimethylolpropane Phosphite	e, h	1	100/10,000
1066-45-1	Trimethyltin Chloride	e	1	500/10,000
639-58-7	Triphenyltin Chloride	e	1	500/10,000
555-77-1	Tris(2-Chloroethyl)Amine	e, h	1	100
2001-95-8	Valinomycin	c, e	1	1,000/10,000
1314-62-1	Vanadium Pentoxide		1,000	100/10,000
108-05-4	Vinyl Acetate Monomer	d, l	5,000	1,000
3048-64-4	Vinylnorbornene	a, e	1	10,000
81-81-2	Warfarin		100	500/10,000
129-06-6	Warfarin Sodium	e, h	1	100/10,000
28347-13-9	Xylylene Dichloride	e	1	100/10,000
58270-08-9	Zinc, Dichloro(4,4-Dimethyl-5((((Methylamino) Carbonyl)Oxy)Imino)Pentanenitrile)-,(T-4)-	e	1	100/10,000
1314-84-7	Zinc Phosphide	b	100	500

*Only the statutory or final RQ is shown. For more information, see 40 CFR Table 302.4

Notes:

a This chemical does not meet acute toxicity criteria. Its TPQ is set at 10,000 pounds.

b This material is a reactive solid. The TPQ does not default to 10,000 pounds for non-powder, non-molten, non-solution form.

c The calculated TPQ changed after technical review as described in the technical support document.

d Indicates that the RQ is subject to change when the assessment of potential carcinogenicity and/or other toxicity is completed.

e Statutory reportable quantity for purposes of notification under SARA sect 304(a)(2).

f The statutory 1 pound reportable quantity for methyl isocyanate may be adjusted in a future rulemaking action.

g New chemicals added that were not part of the original list of 402 substances.

h Revised TPQ based on new or re-evaluated toxicity data.

j TPQ is revised to its calculated value and does not change due to technical review as in proposed rule.

k The TPQ was revised after proposal due to calculation error.

l Chemicals on the original list that do not meet toxicity criteria but because of their high production volume and recognized toxicity are considered chemicals of concern ("Other chemicals").

APPENDIX B.—THE LIST OF EXTREMELY HAZARDOUS SUBSTANCES AND THEIR THRESHOLD PLANNING QUANTITIES

[CAS Number Order]

CAS No.	Chemical name	Notes	Reportable quantity* (pounds)	Threshold planning quantity (pounds)
0	Organorhodium Complex (PMN-82-147)	e	1	10/10,000
50-00-0	Formaldehyde	d, l	1,000	500
50-07-7	Mitomycin C	d	1	500/10,000
50-14-6	Ergocalciferol	c, e	1	1,000/10,000

APPENDIX B.—THE LIST OF EXTREMELY HAZARDOUS SUBSTANCES AND THEIR THRESHOLD PLANNING QUANTITIES—Continued

[CAS Number Order]

CAS No.	Chemical name	Notes	Reportable quantity* (pounds)	Threshold planning quantity (pounds)
51-21-8	Fluorouracil	e	1	500/10,000
51-75-2	Mechlorethamine	c, e	1	10
51-83-2	Carbachol Chloride	e	1	500/10,000
52-68-6	Trichlorophon	a	100	10,000
53-86-1	Indomethacin	a, e	1	10,000
54-11-5	Nicotine	c	100	100
54-62-6	Aminopterin	e	1	500/10,000
55-91-4	Isofluorphate	c	100	100
56-25-7	Cantharidin	e	1	100/10,000
56-38-2	Parathion	c, d	1	100
56-72-4	Coumaphos		10	100/10,000
57-14-7	Dimethylhydrazine	d	1	1,000
57-24-9	Strychnine	c	10	100/10,000
57-47-6	Physostigmine	e	1	100/10,000
57-57-8	Propiolactone, Beta-	e	1	500
57-64-7	Physostigmine, Salicylate (1:1)	e	1	100/10,000
57-74-9	Chlordane	d	1	1,000
58-36-6	Phenoxarsine, 10,10'-Oxydi-	e	1	500/10,000
58-89-9	Lindane	d	1	1,000/10,000
59-88-1	Phenylhydrazine Hydrochloride	e	1	1,000/10,000
60-34-4	Methyl Hydrazine		10	500
60-41-3	Strychnine, Sulfate	e	1	100/10,000
60-51-5	Dimethoate		10	500/10,000
62-38-4	Phenylmercury Acetate		100	500/10,000
62-53-3	Aniline	d, l	5,000	1,000
62-73-7	Dichlorvos		10	1,000
62-74-8	Sodium Fluoroacetate		10	10/10,000
62-75-9	Nitrosodimethylamine	d, h	1	1,000
64-00-6	Phenol, 3-(1-Methylethyl)-, Methylcarbamate	e	1	500/10,000
64-86-8	Colchicine	e, h	1	10/10,000
65-30-5	Nicotine Sulfate	e	1	100/10,000
65-86-1	Orotic Acid	a, e	1	10,000
66-81-9	Cycloheximide	e	1	100/10,000
67-66-3	Chloroform	d, l	5,000	10,000
70-69-9	Propiophenone, 4-Amino-	e, g	1	100/10,000
71-63-6	Digitoxin	c, e	1	100/10,000
72-20-8	Endrin		1	500/10,000
74-83-9	Methyl bromide	l	1,000	1,000
74-90-8	Hydrocyanic Acid		10	100
74-93-1	Methyl Mercaptan		100	500
75-15-0	Carbon Disulfide	l	100	10,000
75-18-3	Dimethyl Sulfide	e	1	100
75-21-8	Ethylene Oxide	d, l	1	1,000
75-44-5	Phosgene	l	10	10
75-55-8	Propyleneimine	d	1	10,000
75-56-9	Propylene Oxide	l	100	10,000
75-74-1	Tetramethyllead	c, e, l	1	100
75-77-4	Trimethylchlorosilane	e	1	1,000
75-78-5	Dimethyldichlorosilane	e, h	1	500
75-79-6	Methyltrichlorosilane	e, h	1	500
75-86-5	Acetone Cyanohydrin		10	1,000
76-01-7	Pentachloroethane	a, d	1	10,000
76-02-8	Trichloroacetyl Chloride	e	1	500
77-47-4	Hexachlorocyclopentadiene	d, h	1	100
77-78-1	Dimethyl Sulfate	d	1	500
77-81-6	Tabun	c, e, h	1	10
78-00-2	Tetraethyllead	c, d	10	100
78-34-2	Dioxathion	e	1	500
78-53-5	Amiton	e	1	500
78-71-7	Oxetane, 3,3-Bis(Chloromethyl)-	e	1	500
78-82-0	Isobutyronitrile	e, h	1	1,000
78-94-4	Methyl Vinyl Ketone	e	1	10
78-97-7	Lactonitrile	e	1	1,000
79-06-1	Acrylamide	d, l	5,000	1,000/10,000
79-11-8	Chloroacetic Acid	e	1	100/10,000
79-19-6	Thiosemicarbazide		100	100/10,000

Before the Environmental Quality Commission of the State of Oregon

Proposed adoption of "Oil and Hazardous Materials Spills and Releases" rules to OAR 340-108-002; OAR 340-108-010; OAR 340-108-020 and repeal OAR 340 - Division 108 - Appendix I in its entirety	)	Statement of Need for Proposed Rule and Fiscal and Economic Impact

Statutory Authority

ORS 466.205, .640 and .645 require cleanup of spills and releases of oil or hazardous materials, including hazardous substances, hazardous waste, radioactive material and waste and communicable disease agents, and impose strict liability without regard to fault.

ORS 466.020 and .625 direct the Environmental Quality Commission to adopt rules necessary to carry out the cleanup requirements.

Need for the Rule

The Department recently analyzed data from 222 spills of oil or hazardous materials covering the period October 1 to March 31, 1987. During that period only 3% of the spills involved products that spilled in quantities between the state and federal reportable quantity level. Thirty (30) percent spilled quantities greater than the federal and state level. Forty-eight (48) percent involved quantities less than the state and federal levels. The rest involved oil spilling on land in quantities greater than 42 gallons.

In addition, the Department learned that 66% of all initial reports of spills and releases are made by someone other than the responsible party.

Based on these facts, the Department is proposing to revise its reportable quantity values to be the same as the federal values in 40 CFR Table 302.4 as amended prior to May 1, 1987 or in 40 CFR Part 355-Appendix A.

Principal Documents Relied Upon

ORS Chapter 466

OAR 340 - Division 108

40 Code of Federal Regulation - Part 302

40 Code of Federal Regulations - Part 355

September 29, 1986 Federal Register - Superfund Programs; Reportable Quantity Adjustments; Final Rule

March 16, 1987 Federal Register - Hazardous Substances; Reportable Quantity Adjustments; Proposed Rules

April 22, 1987 Federal Register - Extremely Hazardous Substances List and Threshold Planning Quantities; Emergency Planning and Release Notification Requirements; Final Rule

April 4, 1985 Federal Register - Notification Requirements; Reportable Quantity Adjustments; Final Rule and Proposed Rule

May 25, 1983 Federal Register - Notification Requirements; Reportable Quantity Adjustments; . . .

August 29, 1979 Federal Register - Hazardous Substances; Determination of Reportable Quantities; Designation; . . .

March 13, 1978 Federal Register - Water Programs: Hazardous Substances

December, 1985 - Chemical Emergency Preparedness Program - Interim Guidance - Chemical Profiles

March, 1985 - Technical Background Document to Support Rulemaking Pursuant to CERCLA Section 102- Volumes 1 and 2

Fiscal and Economic Impact

Revision of similar but different state reportable quantity values to make them the same as federal reportable quantity values should have a slight positive economic impact on all business by making compliance easier. Rather than tracking two values, the revision provides for consistency between state and federal reportable quantity values.

SM710.K

Attachment IV
Agenda Item I
7/17/87 EQC Meeting

Before the Environmental Quality Commission of the State of Oregon

Proposed adoption of temporary revisions to "Definitions" OAR 340-108-002(9)(b) "Subdivision B: Reportable Quantities" OAR 340-108-010(1)(d) and (2) and repeal OAR 340 - Division 108 - Appendix I	)))))	Land Use Consistency

The proposed rules do not affect land use as defined in the Department's coordination program approved by the Land Conservation and Development Commission.

SM710.L

MEMORANDUM

To: Environmental Quality Commission

From: Linda K. Zucker, Hearings Officer

Subject: Agenda Item I, July 17, 1987, EQC Meeting

Hearings Officer's Report on Permanent Revisions to Spill Rules: Reportable Quantities

Background

A public hearing was held at 10:00 a.m., June 4, 1987 on proposed permanent revisions to agency rules on reporting of spills and releases of hazardous materials. Specifically, DEQ proposes to (1) adopt federal reportable quantity levels found at 40 CFR Part 302; (2) adopt federal reportable quantity levels found at 40 CFR Part 355; and (3) adopt reportable quantities for nerve agents and pesticide spills.

Jim Pitzer of the Umatilla Army Depot advised that the United States Army has determined that sovereign immunity shields the depot from regulation by Oregon's reportable quantity rules. However, because the Army may choose to comply voluntarily, the depot proposes that the State of Oregon not require reporting of the nerve agent GB (or SARIN) and to allow the reporting level for VX to remain at the levels established by EPA rules. That is, instead of DEQ's proposal that "any quantity" be reportable, only spills or upsets of a pound or more would be reported. The US Surgeon General has established Time Weighted Averages for GB and VX in which an unprotected individual may work for an 8-hour period with no adverse health effects. These health based levels are higher than the proposed reportable levels allowed. (Written testimony available).

Douglas Morrison of the Northwest Pulp & Paper Association (NWPPA) reported that the Association favors adoption of the federal List of Hazardous Substances and reportable quantities found at 40 CFR Table 302.4, but opposes adoption of the federal list of Extremely Hazardous Substances and their Threshold Planning Quantities found at 40 CFR 355 Appendix A. Multiple lists are burdensome and confusing and inconsistent with the wishes of the pulp and paper industry to see a simplified program, the intent of EPA to merge the lists, and the purported intent of DEQ to adopt reportable quantities identical to CERCLA legislation. There are currently three separate programs which require reports of spills: CERCLA, Oregon Spill and Release Rules, and Title III. The CERCLA Section 302 list of reportable quantities is common to all three. EPA has announced it intends to merge the CERCLA list and the Extremely Hazardous Substances list in the future. Some of the 256 substances on the Extremely Hazardous Substances (Section 355) list which do not appear on the CERCLA (Section 302) list do not carry the high level of risk DEQ is attempting to reach under its Spill Response Program. To avoid over regulation, DEQ should follow EPA's lead and add the List 355 substances only when the lists are merged. (Written testimony available.)

Jim Brown, an attorney with Bogle & Gates, recalled that the Environmental Quality Commission adopted by emergency rule the federal reportable quantity levels in 40 CFR Table 302.4 after considerable discussion. When the issue came up for permanent rule making, at the eleventh hour DEQ proposed an additional list from 40 CFR 355, purportedly at industry request to avoid double reporting. In fact, industry opposes the proposal. Moreover, it does not accomplish its intended purpose. EPA looks for conformity, not creativity or practicality in deciding whether it will give final authorization to a state program. DEQ should follow EPA's lead in developing the regulatory standard and concentrate state staff on other hazardous waste functions such as generator inspections, compliance and inspection reports, and facility reviews. Brown urges adoption of Section 302 list and rejection of Section 355 list.

John Jackovitch is a health physicist with Precision Cast Parts Corporation. The corporation handles materials which have low radioactive levels. In his view, the requirement that "any" spill be reported is impractical to apply, unduly restrictive, and will lead to continuous reporting. It is in apparent conflict with state health and energy regulations which allow limited releases into the air and water. The current established limits have several orders of magnitude of conservatism built into them, below which one should not expect detrimental effects. Jackovitch proposes that DEQ make its reportable quantities conform to the existing limits set by other agencies.

Barry Davis, an environmental health engineer from the Centers for Disease Control (CDC) in Atlanta, Georgia, objected to the proposed requirement to report "any" release of nerve agents. Instead, DEQ should use "any detectable" release as the regulatory standard. The Center, as the designated US Department of Health and Human Services Agency, has given a great deal of consideration to the issue. Frequent false positive readings occur when monitors are set to detect very low levels. The frequency of false positive reports tend to dilute effective action on significant releases. Reporting levels should be tied to public health protection considerations. To accomplish this CDC proposes that DEQ adopt general population levels (GPLs) of $3X10^{-6}$ (.000003) mg/m^3 for agents GB and VX. These levels provide a safety factor of about 1000 for the most vulnerable members of the public. Allowable work place levels should be $3X10^{-4}$ (.0003) $mg/^3$ for GB and $1X10^{-5}$ (.00001) mg/m^3 for VX as an 8-hour time weighted average. (Written testimony available.)

Linda K. Zucker:y
HY5396
229-5383
June 22, 1987

UMATILLA ARMY DEPOT 6-4-87

OFFICIAL STATEMENT

The Umatilla Army Depot takes this opportunity to state its concerns regarding the State of Oregon's proposed rule adoption in the area of Reportable Quantities (RQ's) as they apply to nerve agents such as GB (Sarin) and VX.

The nerve agent GB, commonly referred to as Sarin, is included in the EPA's list of extremely Hazardous Substances (40 CFR 355, Appendix A) with a Reportable Quantity of 1 lb. It is anticipated that agent VX will soon be listed with the same RQ (1 lb.).

The Oregon Department of Environmental Quality, however, proposes to regulate these agents more stringently by requiring that releases of "any quantity of nerve agents" be a reportable quantity. (See 340-108-010.)

Due to technological constraints, there is no physical means to measure "any quantity" of release. Additionally, the Surgeon General of the United States has established Time Weighted Averages for GB and VX in which an unprotected individual may work for an eight-hour period with no adverse health effects. This health-based level is above the level at which the State of Oregon would require a report.

Therefore, based on the above, the Umatilla Depot Activity proposes that the State of Oregon adopt regulations which will allow the RQ for Sarin and VX to remain at the level established by EPA rules. We recommend that 340-108-010(1)(e) be deleted.

Umatilla Army Depot 6-4-87

The Army has determined that rules such as Oregon's rules on Reportable Quantities do not apply to Army facilities such as Umatillo Army Depot. This is because neither the Comprehensive Environmental Response Compensation Act of 1980 nor the Emergency Planning and Community Right-to-Know Act of 1986 contain a waiver of sovereign immunity which would authorize Oregon to apply these rules to federal facilities.

Nevertheless, to the extent the Army might decide to voluntarily adhere to these rules, the Umatillo Army Depot wishes to provide some comments with respect to the proposed rule which defines reportable quantity to include "any quantity of nerve agent". This contrasts with the Appendix to 40 CFR 355 (52 Fed Reg 13378-13410, 22 Apr 87) which specifies reportable quantities for the various nerve agents (GB [Sarin], GA [Tabun], [redacted])...

SARIN

....

NORTHWEST PULP&PAPER

Testimony of Northwest Pulp
and Paper Association

June 4, 1987

Proposed Rulemaking on Reportable
Quantities for Spill and Release Rules
OAR Chapter 340 Division 108

The Northwest Pulp and Paper Association (NWPPA) is pleased for the opportunity to comment on the Department of Environmental Quality's (DEQ) proposed amendments to the Spill and Release Rules OAR chapter 340 Div. 108. NWPPA is in favor of adopting the pertinent federal reportable quantities (RQ) for spills of hazardous substances. Specifically, the RQ's as adopted by the EPA and found at 40 CFR Part 302 should be incorporated by reference as the applicable Oregon RQ's under OAR 340-108. NWPPA is not in favor, at this time, of incorporataing by reference into OAR 340-108 the RQ's from 40 CFR Part 355 for Emergency Planning and Notification.

At a meeting of industry representatives and DEQ staff on May 8, 1987, there was some discussion of a "one-list" concept. This discussion arose because of a statement by EPA published in the preamble to the Final Rule on Emergency Planning and Release Notification Requirements, 52 Fed. Reg. 13378, April 22, 1987. That statement reads:

> EPA intends to designate under section 102 of CERCLA all extremely hazardous substances which are not already defined as "hazardous substances" under section 101(14)

> of CERCLA. The designation will include all 256 extrememly hazardous substances that are not presently "hazardous substances" under CERCLA. 52 Fed. Reg. at 13386.

Thus, EPA intends to merge the CERCLA list and the Extremely Hazardous Substances List (EHS) in the future. A single list with the same RQ's for two programs is far better than two lists with different RQ's. EPA proposes the former; DEQ proposes the latter.

By prematurely incorporating the EHS list into the Spill and Release rules, reporting becomes more complicated. There are currently three separate programs which require reports of spills: CERCLA, Oregon's Spill and Release Rules, and Title III. The CERCLA § 302 list of RQ's is common to all three. Currently, the use of the EHS list under Title III results in a cumulative total of four lists under three programs.

The proposal to adopt by reference the EHS list for the Spill Rules adds a list as shown in Table I. This is not in accordance with the wishes of the pulp and paper industry to see a simplified program, nor with the intent of EPA to merge the lists, nor with the purported intent of DEQ to adopt RQ's identical to CERCLA. A "better" program would use one list for those programs which have similar purposes -- such as the case with the three programs discussed here.

Moreover, a "best" program can be envisioned which would abandon redundant programs and incorporate all hazardous material reporting requirements into one program which satisfies the purposes of all. The state would be free as is the case under Title III to adopt different requirements for situations peculiar to that state.

Table 1

		CERCLA	Spill Rules	Title III	Cumulative No. of Lists
1.	Proposed	§ 302	§ 302/355	§ 302/355	5
2.	Current	§ 302	§ 302	§ 302/355	4
3.	"Better"	-------------	one list	----------	3
4.	"Best"	X	X	one list	1

In the interim, we urge DEQ to remember that EPA intends to merge the CERCLA and EHS RQ lists. This likely will not happen, however, until EPA experiences a period of reporting under Title III, and is able to adjust some of the RQ's to coincide with the degree of risk presented by a release. Some of the 256 substances on the EHS list which do not appear on the CERCLA list have statutory RQ's of one pound. Until EPA clarifies the definitions of federally permitted releases and continuous releases, industry notifications of some of these substances will inundate state emergency planning commissions and local emergency planning committees. By incorporating the EHS list into the spill and release rules, you also propose to inundate the Oregon Emergency Management Division or 911 with these frequent reports.

In summary, NWPPA urges you to (1) adopt the federal RQ's as they appear at 40 CRF § 302.4; (2) not adopt the federal RQ's as they appear at 40 CRF § 355 and (3) follow EPA's lead in merging the lists at the appropriate time.

LAW OFFICES

BOGLE & GATES

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PLEASE REPLY TO PORTLAND OFFICE

FILE:

June 5, 1987

Hazardous & Solid Waste Division
Dept. of Environmental Quality
RECEIVED
JUN 05 1987

Mr. Richard P. Reiter
Hazardous and Solid Waste Division
DEQ
811 Sixth Avenue
Portland, Oregon 97204

Re: OAR 340-108 Proposed Final RQs

Dear Rich,

On behalf of our clients, who are generators of hazardous waste, BOGLE & GATES is pleased to comment on the Department of Environmental Quality's (DEQ's) proposed final Reportable Quantity (RQ) spill rules for OAR Chapter 340, Division 108. We are in favor of and support the DEQ's adopting the Federal RQs set forth at 40 CFR Part 302. However, we believe that the proposed incorporation of the Extremely Hazardous Substances List of 40 CFR Part 355 within OAR 340 108 is ill advised and premature.

As you are aware, significant discussions and numerous meetings have occurred over the past year regarding the "Reportable Quantities" for spills of CERCLA Sec. 101(14)"Hazardous Substances". As a result of meetings last December and the analysis results of actual Oregon hazardous substances spill reports, the DEQ agreed to adopt the Federal RQs by reference [e.g. 40 CFR Sec. 302 including Table 302.4].

This agreement was embodied in the EQC's January 1987 adoption of an emergency rule for these RQs. The EQC's approval for the June 4, 1987 hearing was to adopt, as a final rule, the changes embodied in the emergency rule.

However, at the 12th hour, in an undated letter the DEQ proposed to change these final rules to include within the meaning of OAR 340-108-002(8) "Hazardous Material", the Extremely Hazardous Substances set forth at 40 CFR Part 355. As well as including these same 40 CFR Sec 355 Extremely Hazardous Substances within the spill RQs of OAR 340-108-020(5). Allegedly, these changes are being made at Industry's request to avoid having to refer to two separate tables. However the DEQ's proposal does not and cannot accomplish this laudable objective.

There are several reasons why the DEQ should not currently pursue this objective:

1. The Extremely Hazardous Substances List is part of the The Emergency Planning and Community Right-To-Know Act of 1986 which, while codified as Title III of SARA, is a separate and distinct law. Therefore independent administrative rules applicable to the two separate, while closely related, Federal laws is necessary. EPA has recognized this by codifying the pertinent rules at 40 CFR Sec 302 & 355 respectively.

2. The EPA has chosen not to include the Extremely Hazardous Substances with 40 CFR Sec. 302, where the CERCLA RQs are found; but, instead has chosen to codify these regulations at 40 CFR Sec. 355. From prior Oregon experiences with hazardous waste-related rule adoptions necessary to obtain final program authorization, it is fair to say that creativity and practicality in rules are not highly favored by the EPA.

3. The programs which will evolve as a result of SARA Title III are currently in their infancy and will undoubtedly undergo several changes and modifications in the next few years, just as RCRA and CERCLA have done. The development of the final RQs for 40 CFR Sec. 302 is a prime example of this process. As those final changes occur, the DEQ will probably be required to adopt them, if the existing implementation patterns established under RCRA and CERCLA hold true to form. Therefore the DEQ should allow the EPA, with its larger staff and greater resources, "fine tune" the RQs of 40 CFR Sec 355; while DEQ staff concentrates on other hazardous waste programs of greater importance to Oregonians (e.g.: Inspecting all generator facilities annually; notifying facilities of the results of compliance inspections on a timely basis; identify past

and/or abandoned disposal sites, as passage of SB 122 will require, so that clean up of these sites can proceed; etc.).

4. In the April 22,1987 Federal Register, announcing the Final Rule for the Extremely Hazardous Substances List (52 Fed Reg 13378), the EPA said that the Extremely Hazardous Substances of 40 CFR Sec. 355 which are not already classified as CERCLA Sec 102 hazardous substances will be listed as Sec. 102 hazardous substances (52 Fed. Reg. 13392). Furthermore, the statutory RQs for the Extremely Hazardous Substances List, set pursuant to SARA Sec 304, would also be adjusted. Since the EPA is going to do this work anyway, the DEQ should postpone its proposal to include the Extremely Hazardous Substances List in OAR 340-108 at this time.

In conjunction with our basic opposition to the inclusion of the 40 CFR 355 List within OAR 340-108, we would add the following specific comments:

a. At OAR 340-108-002(8)(b) delete the reference to 40 CFR 355 Appendix A.

b. At OAR 340-108-010(1)(e) the word "Savin" should be spelled "Sarin".

c. At OAR 340-108-020(5) delete the reference to 40 CFR 355 Appendix A from the rule. If this request is denied, then the word "and" in the phrase "May 1, 1987 and in 40 CFR 355" should be changed to "or" so that the release doesn't have to exceed the RQs for both 40 CFR Sec. 302 and 355 to be reportable, as the proposed wording implies.

In summary, BOGLE & GATES urges the DEQ to adopt the Federal RQs of 40 CFR Sec 302 within OAR 340-108 and table, for the time being, efforts to also include 40 CFR Sec. 355 RQs. We thank the

DEQ for the opportunity to comment on this proposal and ask to be kept appraised of any further developments on this matter, including receiving the DEQ staff report to the EQC.

Sincerely,

BOGLE & GATES

James C. Brown

JCB/llh

Testimony of Barry J. Davis, Environmental Health Engineer, Centers for Disease Control Control, Atlanta, Georgia at Public Hearing, June 4, 1987, in Portland, Oregon concerning Oregon Department of Environmental Quality proposed revisions of rules for Reportable Quantities of Hazardous Materials.

By law, the U.S. Department of Health and Human Services (HHS) is required to oversee the public health aspects of the destruction of the chemical munition stockpile and to approve any transportation and/or disposal operations. We at the Centers for Disease Control (CDC), as the designated HHS agency, have also struggled with the issue of required reporting of possible agent releases as the Army fulfills its congressional mandate to dispose of the stockpile. We claim no monopoly on wisdom in such matters, but would like to share some concerns which we have with the proposed rule for reporting releases of nerve agents and to share some conclusions which we have reached regarding this issue.

In order to require reporting of agent releases, it is necessary to define what constitutes a release more precisely than "any" release. It is a fact that no process will completely eliminate all emissions of contaminants. While the Army is utilizing state-of-the-art munition processing, incineration, and pollution abatement technology, we must recognize that no technology is absolute. To require reporting of all releases during demilitarization, if strictly interpreted, would mean continuous reporting, which we view as impractical and unnecessary for the protection of public health.

A second approach would be to require reporting of any "detectable" release of agent. We also see problems with this approach. The monitoring technology available results in high numbers of false positive results near the limits of detection. To require reporting of all such positives could be counterproductive in that the "lambs that cried wolf" phenomena could (and probably would) occur and truly significant releases would be lost in the volume of false positives. Furthermore, we feel that reporting of such concentrations is not necessary for the protection of public health, but is unnecessarily burdensome. In my personal view, other potentially adverse impacts of using detection limits as the criteria for reporting are the negative incentives to improve monitoring technology and to use large numbers of sampling monitors.

A third approach is to set reporting levels which are based on public health protection considerations. With this approach in mind, the CDC has convened panels of toxicology and other experts to review the literature pertaining to the chemical agents to be disposed of in order to: (1) ascertain if there are enough data to establish public health protection limits, and (2) if so, to establish allowable general population and work place levels for each agent.

As a result of these panels, CDC has recommended and the Army has adopted general population levels (GPLs) of $3X10^{-6}$ (.000003) mg/m^3 for agents GB and VX. These levels provide a safety factor of about 1000 for the most vulnerable members of the public. Allowable work place levels recommended were $3X10^{-4}$ (.0003) $mg/^3$ for GB and $1X10^{-5}$ (.00001) mg/m^3 for VX as an 8-hour time weighted average. The recommendations of the recent VX panel have been published in the Federal Register (May 28, 1987) and are open for public review and comment.

We have also reviewed allowable agent stack concentrations proposed by the Army. As you know, it is virtually impossible to directly translate such levels into true public health risk considerations. Rather, we have taken the approach that the stack limit is largely an engineering matter and that it should be: (1) indicative of a well designed, constructed, and operated incineration facility, (2) an early indication of upset conditions and, (3) capable of being accurately measured in a timely manner. We feel that the stack levels adopted by the Army ($3X10^{-4} mg/m^3$) for agent GB and VX meet these criteria and by worst case risk assessment and dispersion modeling techniques have determined that they present no public health threat.

In view of the above considerations and our mandate to assure the protection of public health, the CDC has adopted the position that the Army is required to notify us when the established GPL for the agent being processed is exceeded at a perimeter monitoring station. This approach has worked for us; it allows us to be informed of agent releases of potential public health importance without being unnecessarily bureaucratic. We hope that the D.E.Q. will consider this approach during rule-making and permitting deliberations.

Attachment VI
Agenda Item I
7/17/87 EQC Meeting

MEMORANDUM

To: Environmental Quality Commission

From: Richard Reiter, Manager
Hazardous Materials Section

Subject: Responsiveness Summary - June 4, 1987
Public Hearing on Proposed Revisions to Public Hearing on OAR 340-Division 108

As we understand Jim Brown's and Doug Morrison's concerns regarding proposed adoption of 40 CFR Part 355-Appendix A by reference, they are:

1. If the Commission adopts the two lists, industry will have to comply with four lists (i.e. 40 CFR Table 302.4, 40 CFR Part 355-Appendix A, OAR 340-Division 108 (40 CFR Table 302.4 and 40 CFR Part 355-Appendix A).

2. EPA plans potential changes to at least 256 of the substances on the 40 CFR Part 355-Appendix A list at some future, unspecified date.

3. EPA has purposefully adopted separate lists because two different, but related, federal laws are involved (Comprehensive, Environmental, Response, Compensation and Liability Act of 1980 and Superfund Amendments and Reauthorization Act of 1986).

4. DEQ staff should concentrate its scarce resources on other programs of greater importance than "fine tuning" the reportable quantities in 40 CFR Part 355.

In response, we would offer the following observations:

1. We are creating no new lists - we are incorporating into the state program exact duplicates of federal regulations. Once incorporated, the federal values become part of the state program for use by DEQ personnel.

2. We agree there will be future changes to Appendix A. There will also be changes to Table 302.4 as when EPA proposed on March 16, 1987 to adjust 273 substances that were not adjusted on April 4, 1985 or September 29, 1986. At this point in time, changes to federal hazardous waste and superfund rules appear unavoidable and inevitable.

3. We agree that at some future unspecified date EPA states it will merge Table 302.4 and Appendix A.

4. When and if EPA makes any changes to either Table 302.4 or Appendix A, it is our intent to update the state program as early as possible. In the meantime, however, we know of no other way to maintain uniformity with these federal programs, than to adopt these two lists by reference.

5. Whether or not we adopt Appendix A, industry must use it and must report to the State of Oregon. Specifically, 40 CFR 355.40(b)(1) reads as follows:

   "(b) Notice Requirements (1) The owner or operator of a facility subject to this section shall immediately notify the community emergency coordinator for the local emergency planning committee of any area likely to be affected by the release and the State Emergency Response Commission of any state likely to be affected by the release.

6. The State Emergency Response Commission has concluded that this emergency notification should be made to the Oregon Emergency Management Division at 1-800-452-0311 consistent with our Rule 340-108-020(4).

Based on the above, it is our recommendation to incorporate 40 CFR Part 355-Appendix A in OAR 340-Division 108 by reference.

Jim Pitzer and Barry Davis raised concern as to the reporting of "any" spill or release of nerve agents. In lieu of the Department's proposal, some alternative values were proposed as identified in the Hearing's Officer's Report. Subsequent to the hearing, additional discussions occurred between Messrs. Pitzer and Davis and Brett McKnight of our staff and agreement was reached on the following reportable quantity values:

(e) (1). One (1) pound of nerve agents (such as GB(Sarin) or VX) if spilled or released on-site;

(2). Any quantity of nerve agents such as GB (Sarin) or VX if spilled or released off-site;

(3). An ambient air concentration for nerve agents monitored at the chemical storage perimeter or depot perimeter which is equal to or greater than 3×10^{-6} mg/m^3 for GB and VX; or

(4) An ambient air concentration for nerve agents monitored at or near a point of release equal to or greater than 2×10^{-2} mg/m^3 GB or 4×10^{-2} mg/m^3 VX. (i.e. igloo monitoring).

Mr. Jackovitch questioned a portion of the existing rules that require reporting "any" spill or release of radioactive material or wastes. Mr. Jackovitch points out that current Health Division or Department of Energy regulations allow limited released into air and water.

The Department has reviewed this matter with the Health Division and Department of Energy and is informed that for emergency situations "any spill or release" is an appropriate standard. To account for permitted or allowable releases while radioactive materials and wastes are being properly used or managed, the existing definition for spill or release specifically provide:

> "Spill or release" means the discharge, deposit, injection, dumping, spilling, emitting, releasing, leaking or placing of any oil or hazardous material into the air or into or on any land or waters of the state, as defined in ORS 468.700, <u>except as authorized by a permit issued under ORS Chapters 454, 459, 468 or 469, ORS 466.005 to 466.385, 466.880(1) and (2), 466.890 and 466.995(1) and (2) or federal law or while being stored or used for its intended purpose.</u>

No change is proposed to the current rule regarding radioactive materials or wastes.

Rich Reiter:m
SM710.Q
229-5774
June 23, 1987

Oregon Department of Environmental Quality

Attachment VII
Agenda Item I
7/17/87, EQC Meeting

A CHANCE TO COMMENT ON...

Proposed Rules Amending Spill Cleanup Requirements

Date Prepared: 4/27/87
Hearing Date: 6/4/87
Comments Due: 6/5/87
Close of Business 5:00 p.m.

WHO IS AFFECTED: Persons who manufacture, produce, distribute, store, handle, transport or otherwise use oil and hazardous materials including hazardous substances and hazardous waste.

BACKGROUND: Persons owning or having control over oil or hazardous materials that are spilled or released must report the spill or release if a certain quantity is spilled or released. The Environmental Quality Commission adopted rules on Reportable Quantities (RQ) in September 1986, which were similar to but lower than comparable federal levels. Following this action, the Department completed a detailed analysis of the effect of its rules and in January of 1987, recommended to the Commission that they adopt temporary rules to revise state Reportable Quantity Levels to be the same as federal Reportable Quantity Levels in 40 CFR Table 302.4. The Environmental Quality Commission approved these temporary rules. Unless adopted as permanent rules within 180 days, temporary rules expire at the end of this 180 day period.

WHAT IS PROPOSED: Adopt permanent rules to revise the state's Reportable Quantity Levels to be the same as the federal Reportable Quantity Levels.

WHAT ARE THE HIGHLIGHTS: The Department completed a detailed analysis of its Reportable Quantity Rules during the period of October 1, 1986 to March 31, 1987. Of the 222 products spilled or released during this period, only six (6) involved quantities between the state and federal amounts. Since so few spills are affected by the state's lower levels, and since different rules make it more difficult for business to comply with environmental regulations, the Department is proposing to adopt the federal Reportable Quantity Levels.

HOW TO COMMENT: A public hearing to receive oral or written comments is scheduled for:

Thursday, June 4, 1987
10:00 a.m.
DEQ Portland Headquarters
Fourth Floor Conference Room
811 S.W. Sixth Avenue

(over)

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

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.

Written comments may be submitted at the public hearing or mailed to DEQ, Hazardous and Solid Waste Division, Attention: Richard P. Reiter, 811 S.W. Sixth Avenue, Portland, OR 97204, and must be received by the close of business (5:00 p.m.) on June 5, 1987.

WHAT IS THE NEXT STEP:

After the public hearing, DEQ will evaluate the comments, prepare a response to comments and make a recommendation to the Environmental Quality Commission at its regularly scheduled meeting on July 17, 1987. The Environmental Quality Commission may adopt as recommended, amend and adopt, or take no action.

For more information, contact the DEQ's Hazardous and Solid Waste Division at (503) 229-5759. Copies of the proposed rules can be obtained from the Department after May 12, 1987 by calling or writing and asking for "Oil and Hazardous Material Cleanup Rules."

ZB6667

NEIL GOLDSCHMIDT
GOVERNOR

Environmental Quality Commission

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

MEMORANDUM

To: Environmental Quality Commission

From: Director

Subject: Agenda Item J, July 17, 1987, EQC Meeting

Informational Report: The Oregon Toxic Air Pollutant Emission Inventory and Related Indoor Air Quality Issues

Background

In February of 1987 the Department released the results of the Oregon Toxic Air Pollutant Emissions Inventory (Attachment 1). This inventory was funded by EPA and conducted during 1985-1986 to quantify the emissions of toxic substances into Oregon's air. The inventory was considered to be a prerequisite to the development of a toxic air pollutant (TAP) control program. The TAP emissions inventory is being used as a tool in setting priorities for substances to be controlled or regulated under the TAP control program, currently being developed.

One of the conclusions reached as a result of the TAP emissions inventory is that in Oregon, area sources are responsible for the emissions of the greatest quantities of toxic air pollutants. Area sources are sources for which the emissions at a single point are too small to be important, but when all of the individual points within a geographical area are considered as a group their combined emissions become important. Woodstoves and motor vehicles, for example, are area sources. The report also concluded that area sources that result in emissions of TAPs in indoor environments were of strong concern. Specifically cited was the example of exposure to second hand cigarette smoke.

Joe Weller, State program Director for the American Lung Association of Oregon, wrote a letter complimenting the Oregon Air Toxic Emission Inventory (attachment 2). Of particular interest to Mr. Weller was the recognition of tobacco smoke as a toxic air pollutant. His letter went on to ask whether or not the Department officially endorses the recommendations contained in the report and if the Environmental Quality Commission would review and adopt those recommendations relevant to tobacco smoke.

Evaluation:

The Oregon Toxic Air Pollutant study investigated 118 potentially significant TAPs that might occur in Oregon (Attachment 1, Table I-3 of Appendix 1). It also identified 24 industrial source categories and 18 area sources that were likely to be important toxic air pollutant sources in Oregon (Attachment 1, Tables I-1 and I-2 of Appendix 1). Finally, the study used source-specific information, DEQ files and information on source activities and emissions obtained from a literature search to calculate the emissions from the identified sources. It is important to note that because of the many assumptions and estimates that were required in this study, the emissions of any source may be under or over predicted by as much as a factor of four. Therefore, the emissions listed in the report should not be considered to be absolute values. They are intended to be used to compare the relative magnitude of emissions from various sources.

The TAP emissions inventory cannot be used by itself to compare the overall impact of particular sources on public health. The quantity of pollutant emitted is only one factor to be considered. The relative toxicity of the TAP and the potential for human exposure are also important considerations. With those cautions in mind, several recommendations were made in the TAP emissions inventory report. One of the most important conclusions was the finding that area sources are responsible for the greatest quantities of emissions of TAPs in Oregon. Of potentially greatest concern are the following six area sources:

<u>Area Sources of Concern</u>

Cigarette Smoke (passive exposure)	Motor Vehicles
Open Burning (field/slash)	Pesticides
Residential Heating	Solvent Usage

Assessing indoor Air Quality (IAQ) problems was not one of the purposes of the TAP emissions inventory project. However, during the course of the study it became apparent that several of the sources identified in the study caused the release of TAPs in the indoor environment. Of the six sources identified above, the following four involve significant indoor emissions: Cigarette Smoke, Pesticides, Residential Fuel, and Solvent Usage. There are many other potentially significant indoor sources of toxic air pollutants that occur in home, office and commercial environments but were not discussed in the report. They include: naturally occurring radon, exhaust gases from gas cook stoves, formaldehyde release from particle board and asbestos.

Non-occupational indoor air quality is an important sub-category of the air toxics issue. Indoor releases of air toxics occur in confined spaces where they may not be easily dispersed. The result is that concentrations of many air contaminants are often higher indoors than out. To make matters worse, it has been estimated that average Americans spend 80 to 90 percent of their time in indoor environments. The most sensitive members of the society (small children, the elderly and infirm) may spend even greater amounts of time indoors.

In a recent report, titled <u>Unfinished Business: A Comparative Assessment of Environmental Problems</u> (February 1987), EPA ranked the risks associated with various environmental problem areas. The report was intended to be used internally by EPA to evaluate Agency priorities. The report showed that indoor air quality created one of the biggest risks of any of the environmental problems ranked. The same report showed that public perception of the risk associated with indoor air was relatively low. Results of the assessment are summarized below:

EPA Estimated Ranking of Health Risks

		Ranking of Risk
Cancer Risks:	Worker exposure to chemicals	1 (tied)
	Indoor radon	1 (tied)
	Pesticide residues on food	3
	Indoor air (non-radon)	4 (tied)
	Consumer exposure to chemicals	4 (tied)
	Hazardous/toxic air pollutants (outdoor; 20 substances)	6
	Hazardous waste sites	8
Non-cancer health:	Criteria air pollutants (outdoor)	1
	Hazardous/toxic air pollutants (outdoor; 20 substances)	2
	Other air pollutants (outdoor)	3
	Indoor radon	4
	Indoor air (non-radon)	5
	Hazardous waste sites	16
Public perception:	Hazardous waste sites	1
	Outdoor air	4
	Indoor air	10

The Oregon Toxic Air Pollutant Emissions Inventory gave particular emphasis to cigarette smoke even though the total emissions of toxics from cigarettes is relatively low. This is because the dose of toxics to the lungs of the smoker who directly inhales the smoke is quite high. The involuntary exposure of persons to side stream cigarette smoke is unquestionably also a concern. However, its ranking, in terms of public health risk, in an air toxic hierarchy has not been clear. Recent information has helped to clarify the issue. Consider the emissions of one TAP from three sources in Oregon shown below:

Acetaldehyde Emissions (1)

Source	Tons/Year
Cigarettes	5
Wood heating	430
Slash burning	7430

Acetaldehyde is a common component of smoke for which we have data. It is a probable human carcinogen; one of many carcinogens in smoke. It is intended here to illustrate the relative magnitude of TAP emissions from the three smoke sources shown and does not imply that acetaldeyde is responsible for all the effects of the smoke. In terms of emissions, cigarettes are clearly the smallest of the three sources listed. However, when exposure is considered, the relative ranking changes with respect to health effects as listed below:

Estimated Annual Cancer Deaths in Oregon

Cigarette smoke, direct inhalation	1370 (2)
Cigarette smoke, involuntary exposure	50 (2)
Smoke from wood heating (outdoor)	46 (3)
Smoke from slash burning (outdoor)	14 (3)

(1) Oregon TAP Emissions Inventory.
(2) EPA National Workshop on Developing and Implementing Air Toxics Control Programs (adjusted to Oregon population).
(3) Draft Report by OMNI Environmental Services, "Preliminary Health Effects Evaluation for Pollutants Generated by Field Burning, Slash Burning and Residential Wood Combustion", May 1987.

The above data are only estimates and are subject to wide error bands. They do show, however, that direct exposure to cigarette smoke has a major impact on public health in Oregon even though the total emissions of TAPs from cigarettes is relatively low. Involuntary exposure to cigarette smoke also has a significant effect on public health. The health impact of certain outdoor TAP emissions are also significant as demonstrated by the impacts from wood burning. The risks from other outdoor TAP's will be identified as the Department completes its TAP program development work over the next year.

Since the indoor release of TAPs presents a serious health threat, DEQ could take actions to support efforts to reduce involuntary exposure to cigarette smoke and other indoor air pollutants. Such actions could include the following:

1. Support appropriate indoor air legislation.
2. Endorse activities of the American Lung Association and other groups working to protect persons from involuntary exposures.
3. Provide to the public available information on risks associated with TAPs, including those emitted indoors, and methods to minimize exposures.

Summation

1. The Department completed a Toxic Air Pollutant (TAP) emission inventory in February of 1987 as a first step in developing a TAP control program for the state.

2. The Department will use the TAP emission inventory data along with information about the toxicity of each TAP and its public exposure levels to estimate the relative health risks of the TAP's to help prioritize future Department control efforts.

3. During the TAP emissions inventory project, it became apparent that a number of sources involved indoor release of toxic air pollutants.

4. Indoor releases of TAPs are of strong concern because they occur in confined spaces and because the average person spends 80-90 percent of their time in indoor environments.

5. Public perception of risks from indoor air pollution, such as those caused by cigarette smoke, is much lower than estimates of the actual risks.

6. Some outdoor TAP's, such as wood heating smoke, have been estimated to have adverse health effects in the same range as that of passive, involuntary cigarette smoking; that is, about 50 annual cancer deaths per year in Oregon.

7. The Oregon Lung Association has asked whether the Department and EQC endorse the recommendations of the TAP emissions inventory report specifically with respect to cigarette smoke.

8. The EQC could support Department actions, primarily public education, to reduce exposure to indoor air contaminants, including passive exposure to cigarette smoke.

Director's Recommendation:

The Director recommends that the Commission accept the Oregon Toxic Air Pollutant Emissions Inventory and support appropriate Department actions which would protect those exposed to indoor air pollutants.

Lydia Taylor
Fred Hansen

Attachments: 1. Oregon Toxic Air Pollutant Emissions Inventory,
2. Joe Weller letter of June 4, 1987,

FH:a
AA6507
229-5300
6/25/87

Attachement 2
Agenda Item J
July 17, 1987 EQC Meeting

AMERICAN LUNG ASSOCIATION *of Oregon*

319 S.W. Washington, Suite 520
Portland, Oregon 97204
(503) 224-5145

June 4, 1987

Fred Hansen
Director, Department of Environmental Quality
811 S.W. 6th Avenue
Portland, Oregon 97204

I have a copy of the recently released Oregon Toxic Air Pollutant Emissions Inventory. As you know, this is a document researched and published by D.E.Q.

Of particular concern to ALAO is exposure to involuntary tobacco smoke. The T.A.P. Study addresses this issue in a very refreshing manner. I believe most agencies would have ducked the issue. Two quotes from the report stand out. "...cigarettes are probably the most toxic source in Oregon." "D.E.Q. should strongly support legislation or other actions to protect those involuntarily exposed."

The Lung Association has been introducing legislation to protect non smokers since 1975. Our highest priority is to protect non smokers at work, since lengthy exposures occur there. It appears that our 1987 bill will be unsuccessful.

An initiative petition will be circulated to end all smoking indoors in Oregon with a few exceptions. The T.A.P. report can be a valuable document to those of us involved with the petition.

Does D.E.Q. officially endorse the recommendations contained in the report? Will E.Q.C. review the report and adopt it or parts of it?

Could D.E.Q. personnel appear at a press conference announcing the results of the T.A.P. study, specifically the section on cigarette smoke?

Regardless of the answers to the above questions I do want to give high marks to the authors of the report and to D.E.Q. for publishing the information.

Sincerely,

Joe Weller

Joe Weller
State Program Director

/jms

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
JUN 08 1987
OFFICE OF THE DIRECTOR

THE

OREGON TOXIC AIR

POLLUTANT EMISSION INVENTORY

IS AVAILABLE

UPON WRITTEN REQUEST

TO THE AIR QUALITY DIVISION

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

811 S.W. SIXTH AVENUE

PORTLAND, OREGON 97204

OREGON
TOXIC AIR POLLUTANT
EMISSIONS INVENTORY

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
811 SW SIXTH AVENUE
PORTLAND, OREGON 97204

FEBRUARY 1987

CREDITS

The Department gratefully acknowledges the contributions of Ms. Ann Batson and Mr. Ed Woods in compiling the emission inventory and drafting this report, of Ms. Wendy Sims in assisting on the project and in finalizing this report, of Lloyd Kostow for providing input and supervision for the project, and of the support staff. The assistance of the word processing staff, particularly Mr. Art Johnson, and the data processing section was essential to the success of the project.

EXECUTIVE SUMMARY

The Department of Environmental Quality undertook a statewide study in 1985-1986 to assess the emissions of toxic air pollutants. The study was designed to expand the existing data base on particulate and volatile organic compound emissions to include specific compounds which could cause public health impacts. The current particulate and VOC control programs have significantly reduced the emissions of toxic pollutants but do not account for the varying toxicity of different pollutants. The study was conducted to enable DEQ to assess the sources, emission rates, and potential for health impacts of toxic air pollutants.

A list of potentially significant toxic air pollutants was developed which included 118 compounds. The industrial sources likely to be generating toxic compound emissions were identified. Survey forms keyed to specific industrial processes, such as surface coating or storage tanks, were developed. For some industrial sources, existing files were relied on to provide information. Surveys were mailed to 429 sources for which files were not expected to be adequate. The survey return rate was 72 percent. Area sources including non-traditional air pollution sources such as sewage treatment plants and landfills were also evaluated. The non-traditional sources have been identified in recent years as possible sources of significant airborne emissions.

Emissions for each source were estimated based on survey returns, DEQ files, and information on source activities and emissions obtained from published literature. Most of the values should be considered preliminary because of the lack of specific source tests.

Generally, conservative assumptions were made if actual emissions were unknown. In some cases, such as the electronics industry, emissions may change significantly in a short period of time if products change. Increasing concern over occupational exposure is also changing the atmospheric emissions of toxic compounds. In a number of cases, data collection was hampered by the lack of emission factors or usage data. Perhaps the most significant data problem is the unavailability of pesticide usage data in the state.

The final sections of this report address the geographic distribution of pollutant emissions and indoor air quality impacts. Although this project was not intended to analyze indoor air quality, this section is included because it became apparent that many of the sources inventoried had the potential to cause significant health effects inside buildings.

Any evaluation of toxic agents should consider the type and strength of toxic effects from each pollutant. This survey presents a quantification of toxic air pollutant emissions but does not attempt to judge health impacts. A program for assessing the relative importance of the toxic air pollutants emitted in Oregon must be developed as part of any regulatory program. The reader of this report must recognize that the pollutants with highest emissions are not necessarily of greatest importance in considering further program development.

AREA SOURCE RECOMMENDATIONS

Area sources cause the greatest quantities of the toxic air pollutant emissions in Oregon. The following area sources are of potentially greatest concern.

Cigarette Smoke

Cigarette smoke has potentially significant impact on non-smokers. Support should be given to programs for reducing passive exposure to cigarette smoke in indoor settings.

Motor Vehicles

Hydrocarbon, carbon monoxide, and nitrogen oxide emissions have been the subject of major motor vehicle control programs. As a major source of several toxic air pollutants, the impact of motor vehicles from a toxic air pollutant perspective should be further analyzed.

Open Burning

The open burning category includes agricultural burning, backyard burning, and slash and wildfire forestry burns. A separate health effects study is being prepared by DEQ and should be used to guide further action. Improved emission factors should be developed for forestry burns.

Pesticides

Pesticide usage has potentially significant impacts on workers and the public. A tracking system for pesticide usage needs to be instituted in Oregon.

Residential Fuel

Wood heating emissions contribute to both outdoor and indoor air pollution. The potential health impacts of this source category should be reviewed to assess the need for further control of toxic air pollutants beyond the reductions resulting from the new stove certification program.

Solvent Usage

Solvent usage accounts for a large portion of the area source emissions. Like many of the area sources, emissions are population dependent, with highest emissions in the Portland area. Along with industrial sources, these area sources can contribute to complex mixtures of pollutants, referred to as "urban soup" within cities. Areawide modeling is recommended to analyze the impacts of this urban soup in the Portland area. Specific solvent applications are included in the Areas Sources discussion.

POINT SOURCE RECOMMENDATIONS

Additional refinements can be made to the point source inventory as more emission data becomes available. Several studies are underway at DEQ and other agencies to evaluate emissions and exposures from sources considered in this report. Results of those studies can be applied to sources identified as being of potential concern. For sources operating with Air Contaminant Discharge Permits, the files should be updated on toxic air pollutant emissions as permit renewals are processed.

Based on the survey results, several point sources have been targeted for further analysis. These sources were selected as being representative of different types of industries in the state, having relatively large emissions of toxic air pollutants, and as emittors of some of the toxic air pollutants emitted in the greatest amounts. Ambient impact analyses will be performed for each of these sources. The impact levels can be evaluated for possible health effects on nearby residents or businesses. Other point sources can be prioritized based on the results of these impact analyses.

The sources to be modeled include a high technology campus, a paper coating facility, and a formaldehyde manufacturer. A heavy metal emitting facility is also being considered for further analysis.

The high technology campus was selected as the largest electronics industry source in the state. The electronics facilities generally use numerous solvents, many of which are listed as toxic air pollutants, in a variety of production processes. In addition to evaluating the ambient impacts of the inventoried emissions, continuing analysis of toxic air pollutant emissions at high-technology facilities is necessary. Growth and evolution of the industry may rapidly alter the toxic air pollutant emissions.

The paper coating facility was selected as the largest single source of toluene emissions. Toluene is used as a solvent in many applications throughout the state and is one of the most-emitted toxic air pollutants in the state. Evaluation of the paper coating facility will provide information on the potential for adverse ambient impact, both for toluene and from major fugitive emission sources.

Formaldehyde and resin manufacturing constitute the principle chemical manufacturing industry in the state. Like toluene, formaldehyde is one of the toxic air pollutants determined to be emitted in the greatest quantities in Oregon. The formaldehyde and resin manufacturing facility selected for analysis was chosen as being representative of the industry and for the quality of the data and proximity of residential development.

The toxic air pollutant emissions from these three sources are all gaseous organic compounds, including regulated volatile organic compounds and other exempt compounds. Another potentially significant type of toxic emission is heavy metals in fume and fine particulate form. The final source recommended for modeling in the upcoming analysis is a heavy metal emitting facility.

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SECTION I: INTRODUCTION

The Clean Air Act Amendments of 1977 included provisions to protect the public from the effects of toxic air pollutants; a toxic air pollutant being any airborne substance which could cause serious illness or death. There are thousands of chemicals used in our daily lives that have the potential to cause these adverse health effects, which can range in severity from skin irritation to death. Most of these chemicals are volatile organic compounds (VOCs) and metals. VOCs are a large group of carbon-containing chemicals. Some common sources of VOCs are gaseous by-products of combustion, gasoline, solvents in paints and cleaners, and many other petroleum products. Metals that can be toxic include arsenic, manganese, lead, etc. Most of these metals are emitted as particles. This report addresses the emission of certain potentially toxic air pollutants, or TAPs, in Oregon.

Although many of these chemicals have the potential to be toxic, any actual danger to human health depends on the level and duration of exposure, among other factors. The reader should bear this in mind when reviewing this report. The quantity of emissions is only one component in a matrix of health impact determinants. It will be an ongoing effort of the Department of Environmental Quality (DEQ) to determine whether or not each of these chemicals are present at high enough concentrations and frequencies to be considered toxic to the public. One of the other factors to remember when reviewing the results of this study is that individual TAPs vary widely in their toxicity and their effects. The difference in toxicities means that exposure to small amounts of some chemicals may be dangerous but the same amount of another TAP may have no adverse effects. Some TAPs may cause one effect, i.e., cancer, but another TAP will not cause this reaction. Thus, the TAPs emitted in the greatest quantities in Oregon may not cause the greatest problems. As an example, cigarette smoke is emitted in relatively small amounts in Oregon. However, smokers draw the TAP-containing smoke directly into their lungs, resulting in a high exposure. So even though the emissions are low statewide compared to other TAPs, cigarettes are probably the most toxic source in Oregon.

OREGON'S TOXIC AIR POLLUTANT STUDY

To begin to determine which, and how much, of the many TAPs are emitted in Oregon, DEQ conducted a year-long study in 1985-1986. This study was designed to determine:

- o the specific TAPs emitted in Oregon,
- o the quantities of each TAP emitted,
- o the most important sources of air toxicants in Oregon, and
- o whether there are any locations which have high enough emissions of TAPs that adverse health impacts could occur in the exposed populations.

This process involved five steps, the first of which was to review the available literature to determine what the most common sources of TAPs are and which TAPs they emit. From the literature search, a list of Standard Industrial Classifications (U.S. Office of Management Budget, 1972), or SICs, that were most likely to contain the sources emitting TAPs was compiled. The second step was to compile a list of industrial sources in Oregon which had the same SIC codes as those identified by the literature search. These sources were selected using sources listed as VOC and particulate matter sources in the DEQ criteria pollutant emissions inventory (DEQ EI), in the Chemical Producer's Directory, from recent DEQ work on identification of sources of VOCs not included in the emissions inventory, and from the Directory of Oregon Manufacturers (Oregon Economic Development Department, 1985). Table I-1 shows the industrial source categories identified as likely to be important sources of TAPs in Oregon.

Table I-1

INDUSTRIAL SOURCES EVALUATED FOR TOXIC EMISSIONS IN OREGON

Asphalt Batch Plants
Cement Manufacturing
Chemical Manufacturing
Crop Preparation Services
Dry Cleaners
Fabric Products
Food Products
Furniture and Fixtures
Instruments
Lumber and Wood Products
Machinery
Metals and Metal Products
Miscellaneous Manufacturing
Personal Services
Petroleum Industries
Power Generation
Printing and Publishing
Pulp and Paper Products
Rubber and Plastic Products
Surface Coating
Textile Manufacturing
Transportation Equipment
Wholesale Trade
Wood Preserving

The third step in the process was to compile a list of area sources that were the most likely TAP emitters in Oregon. An area source is any source for which the emissions from individual points are too small to be considered important, but, when considered as a group, do become significant. For instance, automobiles are area sources, emitting only small amounts of pollutants singly but large amounts when taken as a group. Table I-2 shows other area sources that are considered likely emitters of TAPs. The sources included on this list were mainly chosen from the DEQ EI on the basis of their VOC emissions, since most of the TAPs identified in the literature search were VOCs. While the DEQ EI is quite complete for the most common VOC area sources, it is less thorough for sources with small-scale emissions or those not important in urban areas. Therefore, two sources known to have adverse health effects, cigarettes and pesticides, were added to those in the DEQ EI. Another four sources were added to the list that have just recently been identified as possible sources of large quantities of VOCs: publicly owned treatment works (municipal sewage treatment plants); landfills; and water treatment plants.

Table I-2

AREA SOURCES EVALUATED FOR TAP EMISSIONS IN OREGON

Architectural Coatings
Auto Refinishing
Cigarette Smoke
Cutback Asphalt
Degreasing and other Miscellaneous Solvent Use
Drycleaning
Gasoline Marketing
Graphic Arts
Household Solvent Use
Landfills
Motor Vehicles
Open Burning
Pesticides
Publicly Owned Treatment Works
Residential Fuel Combustion (oil, coal, wood)
Waste-Oil Combustion
Water Treatment
Wood Treatment

Neither the industrial nor the area source lists contain any sources of "natural" TAPs, such as radon. To avoid unnecessary duplication of effort the lists also do not contain any manmade sources of TAPs which are regulated for health protection under other State or EPA programs. This includes asbestos, beryllium, mercury, vinyl chloride, and radionuclides (NESHAPs pollutants) as well as dioxin and furans, which are the subject of a nationwide study by EPA. It was the determination of the Department that these programs should adequately protect health and that considerable effort could be expended to try to characterize these sources without achieving greater protection.

The fourth step in developing the TAP emissions inventory was to develop a list of toxics most likely to be of concern. This step was necessary because there are literally thousands of chemicals which could be considered potentially toxic. Since it would not be possible to address all of these chemicals under the financial and temporal constraints of this study, it was important to concentrate on those that were of concern in other states or were most likely to be emitted in significant quantities in Oregon. The most appropriate list identified in the literature was felt to be that developed by the Philadelphia Air Management Services (1983), with the addition of several chemicals that were not on the list but that were under consideration for control by EPA. Table I-3 shows the resultant list of 118 chemicals.

Table I-3

POTENTIALLY TOXIC COMPOUNDS

75-07-0	Acetaldehyde
107-02-8	Acrolein
107-13-1	Acrylonitrile / Propenenitrile / Vinyl Cyanide
309-00-2	Aldrin
107-05-1	Allyl Chloride
92-67-1	4-Aminodiphenyl / 4-Aminobiphenyl / P-Biphenylamine
61-82-5	3-Amino-1, 2, 4-Triazole / 5-(4-Acetaminodiphenyl)-3-Amino-5-Triazol Hydrate
7740-36-0	Antimony and Compounds
7740-38-2	Arsenic and Compounds
1332-21-4	Asbestos
71-43-2	Benzene
92-87-5	Benzidine / 4,4-Biphenyldiamine / 4,4-Diphenylenediamine
50-32-8	Benzo (a) Pyrene / 3, 4-Benzophrene / BAP
100-44-7	Benzyl Chloride
7440-41-7	Beryllium and Compounds
608-73-1	BHC / 1, 2, 3, 4, 5, 6-Hexachlorocyclohexane
58-84-9	Lindane and Isomers
111-44-4	Bis (2-Chloroethyl) Ether
542-88-1	Bis (Chloromethyl) Ether / Chloro (Chloroethoxy) Methane / BCME
111-42-2	Bis (2-Hydroxyethyl)-Dithiocarbamic Acid / Potassium salt
7440-43-9	Cadmium and Compounds
133-06-2	Captan
63-25-2	Carbaryl
56-23-5	Carbon Tetrachloride / Tetrachloromethane
76-13-1	CFC 113
133-90-4	Chloramben
12789-03-6	Chlordane
108-90-7	Chlorobenzene
510-15-6	Chlorobenzilate
67-66-3	Chloroform / Trichloromethane
107-30-2	Chloromethyl Methyl Ether / CMME
126-99-8	Chloroprene
7440-47-3	Chromium and Compounds (Hexavalent)
1319-77-3	Cresola / O,M,P-Cresol / Cresylic Acid
50-29-3	DDT/DDD
96-12-8	1, 2-Dibromo-3-Chloropropane
25321-22-6	Dichlorobenzene
91-94-1	3, 3-Dichlorobenzidine / 3,3 Dichlorobiphenyl 4,4-Diamine
94-75-7	2,4-Dichlorophenoxy Acetic Acid / 2,4-D
60-57-1	Dieldrin
117-81-7	Di (2-Ethyl Hexyl Phthalate)
79-44-7	Dimethylcarbamyl Chloride / Dimethylcarbamic Acid Chloride
57-14-7	1,1-Dimethyl Hydrazine / Asymmetric Dimethyl Hydrazine
77-78-1	Dimethyl Sulfate
SEQ-128	Dioxins
123-91-1	Dioxane / 1,4-Diethylene Dioxide / Glycole Ethylene Ether

115-29-7	Endosulfan
72-20-8	Endrin
106-89-8	Epichlorohydrin
142-59-6	Ethylenebisdithiocarbamic Acid Salts
106-93-4	Ethylene Dibromide / 1,2-Dibromoethane
107-06-2	Ethylene Dichloride / 1,2-Dichloroethane
75-21-8	Ethylene Oxide / 1,2-Eponyethane
96-45-7	Ethylene Thiourea / 2-Imidazolidinethione / 1,3-Ethylene-2-Thiourea / ETU
151-56-4	Ethyleneimine
106-89-8	Epichlorohydrin / 1-chloro-2,3-Epoxypropane
50-00-0	Formaldehyde
76-44-8	Heptachlor
118-71-1	Hexachlorobenzene
87-68-3	Hexachlorobutadiene / Hexachloro-1,3-Butadiene
77-47-4	Hexachlorocyclopentadiene
680-31-9	Hexamethyl Phosphoramide / Tris (dimethylamino) Phosphine Oxide
302-01-2	Hydrazine / Diamine
115-21-2	Kelthane
143-50-0	Kepone
7439-92-1	Lead and Compounds
108-31-6	Maleic Anhydride
7439-96-5	Manganese and Compounds
7439-97-6	Mercury and Compounds
72-43-5	Methoxychlor
74-83-9	Methyl Bromide
74-87-3	Methyl Chloride
101-14-4	4,4-Methylene Bis(2-Chloroaniline / 3,3-Dichloro-4,4-Diaminodiphenyl-methane
75-09-2	Methylene Chloride / Dichloromethane
71-55-6	Methyl Chloroform / 1,1,1-Trichloroethane
74-88-4	Methyl Iodide
2385-85-5	Mirex
60-34-4	Monomethyl Hydrazine
91-59-8	B-Naphthylamine / 2-Aminonaphthalene
7440-02-0	Nickel and Compounds
98-95-3	Nitrobenzene
51-28-5	Nitrofen
79-46-0	2-Nitropropane
62-75-9	n-Nitrosodimethylamine
59-89-2	Nitrosomopholine
56-38-2	Parathion
SEQ-6	Particulate Polycyclic Aromatic Hydrocarbons / PPAH
87-86-5	Pentachlorophenol
127-18-4	Perchloroethylene / Tetrachloroethylene
108-95-2	Phenol
75-44-5	Phosgene
135-88-6	n-Phenyl-BNaphthylamine / n-Phenyl-2-Naphthylamine
SEQ-56	Polybrominated Biphenyls / PBB
1336-36-3	Polychlorinated Biphenyls / PCB
1120-71-4	Propane Sultone / 3-Hydroxy-1-Propanesulfonic Acid Sulfone
57-57-8	B-Propiolactone / 3-Hydroxypropionic Acid Lactone
75-55-8	Propylene Imine / 2-Methylaziridine

75-56-9	Propylene Oxide / 1,2-Epoxypropane
82-68-8	Quintozene / Pentachloronitrobenzene / PCNB
8001-50-1	Strobane / Terpene Polyclorinates
140-57-8	2-(p-Tert-butylphenoxy)-Isopropyl-2-Chlorethyl Sulfite
1746-01-6	Tetrachlorinated Dibenzo-P-Dioxins / TCDD / Dioxin
79-34-5	Tetrachloroethane / 1,1,2,2-Tetrachloroethane
7440-28-0	Thallium and Compounds
119-93-7	O.Tolidine / 3,3-Dimethylbenzidine / Diaminoditolyl
108-88-3	Toluene
79-01-6	Trichloroethylene / TCE
25167-82-2	Trichlorophenol Isomers
93-76-5	2,4,5-Trichlorophenoxy Acetic Acid / 2,4,5-T
1582-09-8	Trifluralin
8001-35-2	Toxaphene
593-60-2	Vinyl Bromide / Bromoethylene
75-01-4	Vinyl Chloride / Chloroethylene
106-87-6	Vinyl Cyclohexene Dioxide / 1,2-Epoxy-4-(Epoxyethyl) Cyclohexane
75-35-4	Vinylidene Chloride / 1,1-Dichloroethylene
79-00-5	Vinyl Trichloride / 1,1,2-Trichloroethane
1330-20-7	Xylene

After the list of toxics was prepared, the fifth step was to prepare SIC-specific surveys to be sent to the sources identified in the second step of this process. An example of these survey forms are contained in Appendix A. These surveys were sent to 429 sources, with 309, or 72 percent, being returned. If sources did not submit the requested information, they were contacted by phone if they were considered likely emitters of significant amounts of TAPs. Most of these sources then provided the requested information. If information submitted by sources in an SIC category indicated that use of TAPs was very low, the sources in the same category that did not return the survey were not contacted, since their emissions were considered likely to be negligible.

The final step in the process was to calculate the emissions from area and industrial sources using source-specific information from the surveys and DEQ files, as well as published information on source activities and emissions identified in the literature. Because this study started in 1985 and was designed to evaluate emissions on a calendar year basis, emissions were calculated for 1984. The methods and results used to calculate emissions for each of the area and industrial source categories are described in the body of this report. The source-specific emission inventory is contained in Appendix B.

These emissions must be viewed as preliminary. Adequate information on many source activities and their emissions simply do not exist. For the majority of sources, which have not been source tested for the pollutants of interest, emission factors published for similar sources were used. At best, using this type of factor results in uncertainties in emission estimates of at least a factor of two. When the uncertainties in source activities and processes are added, this inventory could easily be under- or over-predicting any source's emissions by a factor of four. Before this information is used for control purposes, the assumptions used should be carefully reviewed and better information gathered to provide a more accurate estimate.

This inventory is more appropriate for use in comparing the relative importance of sources. Even when using it for this purpose, it should be remembered that many sources do not appear to be important simply because emission factors do not exist for that source. For instance, slash burning and woodstoves appear to be the major sources of acetaldehyde. Field burning does not appear to be a source of that pollutant, but only because no emission factor for acetaldehyde from field burning was identified. Similarly, woodstoves appear to emit many more types of TAPs than other combustion sources such as field and slash burning. Again, this is simply an outgrowth of the information available being more complete for woodstoves than for the other two sources.

Section II: Emissions Inventory

The following discussion on the sources inventoried is not prioritized in any way. All area sources are discussed in alphabetical order. All industrial sources are discussed within the SIC category under which they fall. SIC codes are arranged in increasing numerical order. For each source category, the assumptions made, emission factors used, emissions calculated, and recommendations for further action are documented.

Section II-1: AREA SOURCES

II-1.1: Architectural Coatings

This category includes paints and other coatings that are applied to any structure, excluding those used for coating industrial products. Many of the solvents contained in paints are potentially toxic. Although the solvent content of paints is not regulated in Oregon, a shift from oil-based to water-based paints appears to be taking place, as a result of the increased cost of solvents and the greater ease of application for water-based paints (Bosserman, 1985). The amount of VOCs emitted from area source application of paints is available from the DEQ emissions inventory, based on per capita point usage. EPA (1980b) provides estimates of the percentages of VOCs that are TAPs. However, these emission factors are probably outdated, since they do not account for the shift toward water-based paints that has occurred over the past several years. Since DEQ has determined that the types of paints used in Oregon are probably quite similar to those used in California, the emission factors developed for the California Air Resources Board (Radian, 1985a, 1985b) were used. These emission factors, shown below, were applied to the DEQ EI for VOCs.

Table II-1

TAPs in Paint

Percent of VOCs in Paints by Weight

Pollutant	EPA	ARB	Seattle METRO
toluene	5	15	13
xylene	–	3	12
dichloromethane	–	1	–

Using these emission factors, the TAPs calculated by county are shown in Table II-2.

Any non-occupational health effects from architectural coating are likely to result from acute exposure, since the public is unlikely to be continuously exposed to non-industrial sources of surface coating. Adverse health effects should be minimized if the public follows the manufacturers' recommendations of providing for adequate ventilation during application of surface coatings. As discussed under Section II-1.9, should a public awareness

Table II-2

TAPs from Architectural Coatings

	1984 Population	Total VOCs (tons)	Dichloromethane (pounds)	Toluene (pounds)	Xylene (pounds)
BAKER	16000	36.8	898	11195	2002
BENTON	68500	157.55	3844	47927	8571
CLACKAMAS	246300	566.49	13822	172326	30817
CLATSOP	32900	75.67	1846	23019	4116
COLUMBIA	36200	83.26	2032	25328	4529
COOS	61000	140.3	3423	42679	7632
CROOK	13000	29.9	730	9096	1627
CURRY	17100	39.33	960	11964	2140
DESCHUTES	64000	147.2	3592	44778	8008
DOUGLAS	91400	210.22	5129	63949	11436
GILLIAM	1950	4.48	109	1364	244
GRANT	8050	18.51	452	5632	1007
HARNEY	7250	16.67	407	5073	907
HOOD RIVER	16400	37.72	920	11474	2052
JACKSON	135100	310.73	7582	94524	16904
JEFFERSON	12200	28.06	685	8536	1526
JOSEPHINE	60300	138.69	3384	42189	7545
KLAMATH	58200	133.86	3266	40720	7282
LAKE	7600	17.48	427	5317	951
LANE	268500	617.55	15068	187859	33595
LINCOLN	37300	85.79	2093	26097	4667
LINN	89900	206.77	5045	62899	11248
MALHEUR	27800	63.94	1560	19451	3478
MARION	210000	483	11785	146929	26275
MORROW	7500	17.25	421	5247	938
MULTNOMAH	652300	1500.29	36607	456388	81616
POLK	45000	103.5	2525	31485	5630
SHERMAN	2200	5.06	123	1539	275
TILLAMOOK	22000	50.6	1235	15393	2753
UMATILLA	60600	139.38	3401	42399	7582
UNION	24800	57.04	1392	17352	3103
WALLOWA	7550	17.36	424	5282	945
WASCO	22500	51.75	1263	15742	2815
WASHINGTON	260200	598.46	14602	182052	32556
WHEELER	1400	3.22	79	980	175
YAMHILL	57000	131.1	3199	39881	7132
TOTAL			154330	1924065	344079

program on the contents, the use, and disposal of common solvents used in and around the home be undertaken, architectural coatings should be included.

II-1.2 Auto Refinishing

One of the categories EPA considers an important source of VOC emissions is auto refinishing shops. Many of the paints and paint removers used by these shops contain TAPs. The TAPs from this category were determined by applying the following emission percentages (EPA, 1980b) to DEQ's per-capita estimates of VOCs from auto refinishing activities:

Table II-3

TAPs Emitted as VOCs from Auto Refinishing

Pollutant	Percent of VOC
toluene	17.0
benzene	17.5

The resulting county emissions are shown in Table II-4.

If EPA's per-capita VOC estimates and the TAP fractions are still accurate, the emissions from this source category are relatively large. However, these results are highly conservative since there have been considerable changes in the composition of solvents used in paints and for cleaning since the emission factors were developed. A better source of information on the TAP emissions from this category should be sought and the emissions estimates improved. If, after this has been done, the emissions are still of the same order of magnitude, DEQ may wish to estimate the exposures of persons living adjacent to auto refinishing shops when they model area sources.

II-1.3 Cigarette Smoke

Although cigarette smoke is emitted in small quantities relative to many of the other TAPs, its emissions have been shown to have a wide range of adverse health effects, both to those who actively smoke and to those passively exposed to the smoke. This source was included in the inventory because it is the single largest proven cause of death from TAPs in Oregon.

According to the American Lung Association, approximately 6,300,000 cigarettes are purchased in the Oregon. The emissions per cigarette are (Surgeon General's Report, U.S. Department of Health and Human Services, 1985):

Table II-4

TAPs from Auto Refinishing

COUNTY	1984 Population	Total VOCs (tons)	Toluene (pounds)	Benzene (pounds)
BAKER	16000	16	5440	5600
BENTON	68500	68.5	23290	23975
CLACKAMAS	246300	246.3	83742	86205
CLATSOP	32900	32.9	11186	11515
COLUMBIA	36200	36.2	12308	12670
COOS	61000	61	20740	21350
CROOK	13000	13	4420	4550
CURRY	17100	17.1	5814	5985
DESCHUTES	64000	64	21760	22400
DOUGLAS	91400	91.4	31076	31990
GILLIAM	1950	1.95	663	682
GRANT	8050	8.05	2737	2817
HARNEY	7250	7.25	2465	2537
HOOD RIVER	16400	16.4	5576	5740
JACKSON	135100	135.1	45934	47285
JEFFERSON	12200	12.2	4148	4270
JOSEPHINE	60300	60.3	20502	21105
KLAMATH	58200	58.2	19788	20370
LAKE	7600	7.6	2584	2660
LANE	268500	268.5	91290	93975
LINCOLN	37300	37.3	12682	13055
LINN	89900	89.9	30566	31465
MALHEUR	27800	27.8	9452	9730
MARION	210000	210	71400	73500
MORROW	7500	7.5	2550	2625
MULTNOMAH	652300	652.3	221782	228305
POLK	45000	45	15300	15750
SHERMAN	2200	2.2	748	770
TILLAMOOK	22000	22	7480	7700
UMATILLA	60600	60.6	20604	21210
UNION	24800	24.8	8432	8680
WALLOWA	7550	7.55	2567	2642
WASCO	22500	22.5	7650	7875
WASHINGTON	260200	260.2	88468	91070
WHEELER	1400	1.4	476	490
YAMHILL	57000	57	19380	19950
TOTAL			935000	962500

Table II-5

Major Toxic Agents in Cigarette Smoke (Unaged)[a]

Agent	Biologic Activity[b]	Concentration/Cigarette Range Reported	Concentration/Cigarette U.S. Cigarettes
Catechols	CoC	40-460 ug	270 ug
Nicotine	T	0.1-20 um	1.5 ug
Formaldehyde	CT, CoC	20-90 ug	30 ug
Hydrogen cyanide	CT, T	30-200 ug	110 ug
Acrolein	CT	25-1,400 ug	70 ug
Acetaldehyde	CT	18-1,400 ug	800 ug

[a] Cigarettes may also contain other biologically active agents which were not included in Table I-3.

[b] C denotes carcinogen; TI, tumor initiator, CoC, cocarcinogen; CT, cilia toxic agent; and T, toxic agent.

Although each of these chemicals has been determined to be toxic, they have been added together in the inventory and entered as a single emission factor for cigarette smoke, since it is always inhaled as a composite. The emissions of cigarette smoke by county are shown in Table II-6.

Cigarette smoke is one of the few TAPs with quantified health effects. According to the American Lung Association of Oregon more than 365,000 Americans die each year from cigarette smoking related disease. The causes of death include lung cancer, emphysema, chronic bronchitis, and heart disease. Not only smokers are at risk. The Lung Association reports that an additional 4,000 infants die every year as a result of their mothers smoking habits and 5,000 deaths result annually from non-smokers' passive exposure to smoke. In addition to these consequences, smoking can cause discomfort in non-smokers, such as burning of the eyes and nasal passages.

Since cigarette smoke is a known toxicant, exposures to non-smokers should be carefully controlled in areas where protracted exposures could be experienced, particularly in the workplace. Current regulations for smoking in public buildings may not be adequate to protect public health unless designated smoking areas have a separate ventilation system or another method of removing smoke from the general air circulation pattern. Adverse health effects on the smoker are evidently a socially acceptable risk, albeit a very high one. Since this exposure is voluntary, there is little DEQ can do to minimize these direct impacts. However, DEQ should strongly support legislation or other actions to protect those involuntarily exposed.

TABLE II-6
TOXICS FROM CIGARETTE SMOKE

County	1984 Population	Catechols (pounds)	Nicotine (pounds)	Formaldehyde (pounds)	Hydrogen Cyanide (pounds)	Acerolein (pounds)	Acetaldeyhde (pounds)
BAKER	16000	24	122	2	9	6	6
BENTON	68500	103	523	10	37	24	27
CLACKAMAS	246300	371	1881	38	134	87	98
CLATSOP	32900	50	251	5	18	12	13
COLUMBIA	36200	54	276	6	20	13	14
COOS	61000	92	466	9	33	22	244
CROOK	13000	20	99	2	7	5	52
CURRY	17100	26	131	3	9	6	68
DESCHUTES	64000	96	489	10	35	23	256
DOUGLAS	91400	138	698	14	50	32	366
GILLIAM	1950	3	15	0	1	1	8
GRANT	8050	12	61	1	4	3	32
HARNEY	7250	11	55	1	4	3	29
HOOD RIVER	16400	25	125	3	9	6	66
JACKSON	135100	203	1032	21	74	48	540
JEFFERSON	12200	18	93	2	7	4	49
JOSEPHINE	60300	91	460	9	33	21	241
KLAMATH	58200	88	444	9	32	21	233
LAKE	7600	11	58	1	4	3	30
LANE	268500	404	2050	41	146	95	1074
LINCOLN	37300	56	285	6	20	13	149
LINN	89900	135	687	14	49	32	360
MALHEUR	27800	42	212	4	15	10	111
MARION	210000	316	1604	32	115	74	840
MORROW	7500	11	57	1	4	3	30
MULTNOMAH	652300	982	4981	100	356	230	2609
POLK	45000	68	344	7	25	16	180
SHERMAN	2200	3	17	0	1	1	9
TILLAMOOK	22000	33	168	3	12	8	88
UMATILLA	60600	91	463	9	33	21	242
UNION	24800	37	189	4	14	9	99
WALLOWA	7550	11	58	1	4	3	30
WASCO	22500	34	172	3	12	8	90
WASHINGTON	260200	392	1987	40	142	92	1041
WHEELER	1400	2	11	0	1	0	6
YAMHILL	57000	86	435	9	31	20	228
TOTAL		4139	20999	430	1501	975	9558

II-1.4 CUTBACK ASPHALT

This category includes TAPs emitted from the application of cutback asphalt (asphalt cements liquified with petroleum solvents) in the construction and maintenance of roadways and other paved areas. Cutback asphalt has been suggested as an important source of VOCs by EPA, but is no longer used in significant quantities in Oregon. Cutback asphalt has generally been replaced by emulsified asphalt, for which no information on toxic emissions was identified in the literature. Since DEQ has determined that this is not an important source of VOCs, further action on this source category is not recommended.

II-1.5 DEGREASING

Sources in this category include all sources using solvent for degreasing in the manufacturing and maintenance industries that are too small to be inventoried separately, such as gas stations and small manufacturers. Large industrial sources that use solvents for degreasing are reported separately in the industrial section of this report. As part of this study, major industrial sources using solvents for degreasing were surveyed. It was assumed that area source degreasers would use the same types of solvents, in the proportions as the larger sources. The percent of individual TAPs comprising the total degreasing solvent surveyed is shown below:

Table II-7

VOC Components Used in Area Source Degreasing

Component	Percent of VOCs
Toluene	10.2
Perchloroethylene	14.7
Methyl Chloroform	73.0
Trichloroethylene	1.3
Miscellaneous	1
Total	100

Assuming that all of the solvents evaporate, they constitute VOC emissions. Applying these TAP percentages to the VOC estimates already calculated in the DEQ EI, the estimates for each county are shown in Table II-8.

These estimates may be considerably high, since this method assumes that all of the VOCs are TAPs. In reality, some of the solvents used for degreasing are probably not TAPs. However, usage rates were only requested for those solvents listed in Table I-3.

TABLE II-8

TOXICS FROM INDUSTRIAL DEGREASERS

County	1984 Population	Total VOCs (tons)	Toluene (Pounds)	Perchloroethylene (Pounds)	Methyl Chloroform (Pounds)	Trichloroethylene (Pounds)
BAKER	16000	4.00	816	1176	5840	104
BENTON	68500	17.12	3493	5035	25002	445
CLACKAMAS	246300	61.57	12561	18103	89899	1601
CLATSOP	32900	8.22	1678	2418	12008	214
COLUMBIA	36200	9.05	1846	2661	13213	235
COOS	61000	15.25	3111	4483	22265	396
CROOK	13000	3.25	663	955	4745	84
CURRY	17100	4.27	872	1257	6241	111
DESCHUTES	64000	16.00	3264	4704	23360	416
DOUGLAS	91400	22.85	4661	6718	33361	594
GILLIAM	1950	0.49	99	143	712	13
GRANT	8050	2.01	411	592	2938	52
HARNEY	7250	1.81	370	533	2646	47
HOOD RIVER	16400	4.10	836	1205	5986	107
JACKSON	135100	33.77	6890	9930	49311	878
JEFFERSON	12200	3.05	622	897	4453	79
JOSEPHINE	60300	15.07	3075	4432	22009	392
KLAMATH	58200	14.55	2968	4278	21243	378
LAKE	7600	1.90	388	559	2774	49
LANE	268500	67.12	13693	19735	98002	1745
LINCOLN	37300	9.32	1902	2742	13614	242
LINN	89900	22.47	4585	6608	32813	584
MALHEUR	27800	6.95	1418	2043	10147	181
MARION	210000	52.50	10710	15435	76650	1365
MORROW	7500	1.87	382	551	2737	49
MULTNOMAH	652300	163.07	33267	47944	238089	4240
POLK	45000	11.25	2295	3307	16425	292
SHERMAN	2200	0.55	112	162	803	14
TILLAMOOK	22000	5.50	1122	1617	8030	143
UMATILLA	60600	15.15	3091	4454	22119	394
UNION	24800	6.20	1265	1823	9052	161
WALLOWA	7550	1.89	385	555	2756	49
WASCO	22500	5.62	1147	1654	8212	146
WASHINGTON	260200	65.05	13270	19125	94973	1691
WHEELER	1400	0.35	71	103	511	9
YAMHILL	57000	14.25	2907	4189	20805	370
TOTAL			140250	202125	1003750	17875

California Air Resources Board (1982) conclusions that automotive repair shops use stoddard solvent and mineral spirits while industrial sources use stoddard solvent, ketones, and alcohols as well as the halogenated solvents, supports the conclusion that the estimate in this report is too high. Another factor that may also lead to an overestimation of emissions is that all of the solvent vaporizes at the site. A significant amount of the solvent may be disposed of in the water system and would evaporate at sites distant from the plant where it was used.

Using the assumption that all the VOCs are TAPs, degreasing is a significant source. Whether its health effects are significant should be further considered before control is recommended; since the emissions are spread over a large area and are intermittent, the exposures may be quite low. It is possible that studies currently underway by EPA will provide further information concerning this source category. Therefore, further literature review should be conducted on the types of solvents used and ambient levels likely to occur from this source category.

II-1.6 DRYCLEANING

The main types of solvents used in the drycleaning industry are Stoddard solvent, which is derived from petroleum, and perchloroethylene, a synthetic solvent. Only perchloroethylene was included as a TAP in Table 1-3. DEQ originally surveyed large drycleaners in 1979 to support the State Implementation Plan for ozone. Only two large industrial dry cleaners that use Stoddard solvent were large enough to be considered point sources (>25 tons emitted/year) at that time. All of the smaller perchloroethylene drycleaners were considered to be area sources in this study. VOC emissions from drycleaning are included in the DEQ criteria pollutant emission inventory using per-capita estimates of drycleaning activity based on surveys conducted in 1982. The most recent TAP emission factors identified for dry cleaners, for dry cleaners in Idaho (Engineering Science, 1985), were used.

Table II-9

TAPs Emitted as VOCs from Drycleaners

TAP	Percent of VOC
Stoddard	36
Perchloroethylene	56
Freon	8
Total	100

When these factors are applied to DEQ's VOC estimates, the following emissions shown on Table II-10 are calculated:

Table II-10

TAP Emissions from Dry Cleaning

COUNTY	1984 Population	Total VOCs (tons)	Perchloroethylene (pounds)
BAKER	16000	6.50	7,280
BENTON	68500	27.20	30,464
CLACKAMAS	246300	97.40	109,088
CLATSOP	32900	13.10	14,672
COLUMBIA	36200	14.40	16,128
COOS	61000	24.60	27,552
CROOK	13000	5.20	5,824
CURRY	17100	7.00	7,840
DESCHUTES	64000	25.30	28,336
DOUGLAS	91400	36.20	40,544
GILLIAM	1950	0.80	896
GRANT	8050	3.20	3,584
HARNEY	7250	2.90	3,248
HOOD RIVER	16400	8.50	9,520
JACKSON	135100	53.30	59,696
JEFFERSON	12200	4.0	5,376
JOSEPHINE	60300	27.70	26,544
KLAMATH	58200	23.30	26,096
LAKE	7600	3.00	3,360
LANE	268500	107.20	120,064
LINCOLN	37300	14.70	16,464
LINN	89900	35.70	39,984
MALHEUR	27800	10.80	12,096
MARION	210000	82.40	92,288
MORROW	7500	2.90	2,348
MULTNOMAH	652300	223.00	249,760
POLK	45000	17.80	19,936
SHERMAN	2200	0.90	1,008
TILLAMOOK	22000	8.60	9,632
UMATILLA	60600	24.00	26,880
UNION	24800	9.70	10,864
WALLOWA	7550	2.90	3,248
WASCO	22500	9.00	10,080
WASHINGTON	260200	103.00	115,360
WHEELER	1400	0.60	672
YAMHILL	57000	22.50	25,200
TOTAL			1,181,932

Like degreasing sources, additive drycleaning emissions make them a very important source. Since perchloroethylene is a suspected human carcinogen and exposure of persons living near drycleaners could be important, this source warrants further consideration. A literature review of the ambient exposures that have been estimated from this source is advised. This source should also be included in any aggregate risk modeling.

II-1.7 GASOLINE MARKETING

Gasoline marketing includes the storage and handling of petroleum fuels at terminals, bulk plants, barges, and service stations. DEQ already calculates VOC emissions for this source category by county. The emissions from gasoline are not identical to the composition of the gasoline, but to the composition of the static vapors that collect above stored gasoline. The composition of the vapors will depend on the gasoline formulation, which varies widely between areas and between types of gasoline. Since emissions from Oregon gasolines have not been characterized, SAI's (1985) factors for static vapors from a composite of gasoline types (unleaded, regular, premium, etc.) were used. The TAPs, as a percentage of the VOC emissions from gasoline are:

Table II-11

TAPs Emission Factors for
Static Gasoline Vapors

TAP	Percent of VOC by Weight
Benzene	0.77
Toluene	0.66
Xylene	0.20

Table II-12 shows the resultant emissions.

An unpublished study being conducted by EPA has concluded that the risk to the general public from gasoline vapors is mainly from intermittent exposure as the tank is being filled in areas where self-service is permitted. In Oregon, where self-service is prohibited, these risks would be reduced. EPA's study is also considering the effects on members of the public living near gasoline stations. When this study is published, their assumptions and modeling techniques should be reviewed and their results adjusted to reflect conditions that occur in Oregon.

II-1.8 GRAPHIC ARTS

Area sources of graphic arts include small sources using letterpress, lithographic, flexographic, or rotogravure printing processes. The emissions from these sources result from solvents in inks and paper coatings as well as solvents used in cleaning inks off of reusable process equipment. DEQ already calculates countywide VOC emissions from graphic

Table II-12

TAP EMISSIONS FROM GASOLINE MARKETING

County	1984 Population	Total VOCs (tons)	Benzene pounds)	Toluene (pounds)	Xylene (pounds)
BAKER	16000	67.3	1032	884	286
BENTON	68500	289.3	4343	3722	1128
CLACKAMAS	246300	727.9	10888	9332	2828
CLATSOP	32900	139.1	2094	1795	544
COLUMBIA	36200	152.5	2310	1980	600
COOS	61000	256.8	3927	3366	1020
CROOK	13000	55.0	832	713	216
CURRY	17100	71.8	1109	950	288
DESCHUTES	64000	269.2	4035	3458	1048
DOUGLAS	91400	381.3	5775	4950	1500
GILLIAM	1950	7.9	139	119	36
GRANT	8050	33.6	508	436	132
HARNEY	7250	30.3	477	409	124
HOOD RIVER	16400	69.5	1047	898	272
JACKSON	135100	428.5	6391	5478	1660
JEFFERSON	12200	51.6	770	660	200
JOSEPHINE	60300	254.6	3788	3247	984
KLAMATH	58200	245.6	3727	3194	968
LAKE	7600	32.5	477	409	124
LANE	268500	1131.6	17109	14665	4444
LINCOLN	37300	157.0	2356	2020	612
LINN	89900	379.1	5698	4884	1480
MALHEUR	27800	117.8	1709	1465	444
MARION	210000	699.8	10364	8884	2692
MORROW	7500	31.4	477	409	124
MULTNOMAH	652300	1346.9	20420	17503	5304
POLK	45000	166.2	2479	2479	644
SHERMAN	2200	9.0	139	119	36
TILLAMOOK	22000	93.1	1386	1188	360
UMATILLA	60600	255.7	3835	3287	996
UNION	24800	104.3	1555	1333	404
WALLOWA	7550	31.4	477	409	124
WASCO	22500	95.3	1432	1228	372
WASHINGTON	260200	692.1	10287	8818	2672
WHEELER	1400	5.6	77	66	20
YAMHILL	57000	240.0	3588	3076	932
TOTAL			137057	117833	35618

arts area sources using default EPA (1985a) assumptions of 0.8 lb/capita-year. The best source of information for the types of TAPs in graphic arts solvents identified was EPA's "VOC Species Data Manual (EPA 1980b)". The emission factors are provided for each type of printing process, so further assumptions were made that gravure and lithographic processes each account for 20% of the total graphic arts VOC emissions. TAPs were not identified for the other types of printing processes. The weighted emissions factors derived using these assumptions are:

Table II-13

TAPs in Graphic Arts Solvents

TAP	Percent of VOCs
Dichloromethane	3.5
Formaldehyde	2.2
Toluene	0.8
Xylene	0.5

The emissions calculated using these factors are shown in Table II-14.

The industrial source surveys of graphic arts firms showed that use of solvents are declining and the toxic elements of ink are being replaced with non-toxic compounds. As a result of these trends, it is felt that the emissions estimated using EPA's emission factors (developed from data collected in the late 1970's) are an overestimate. As a result of the significant reductions of TAPs already occurring in this industry, this source category is not recommended for further study.

II-1.9 HOUSEHOLD SOLVENT USE

TAPs are contained in many solvents in numerous products used around the house, garage, or yard. These products include cleaning compounds, floor waxes, cosmetics, health and beauty aids, and polishes. TAPs in paints and other surface coatings used around the house have already been discussed under the "Architectural Coating" category. Another category of household products containing TAPs, pesticides, is discussed later in this report. No information was identified specific to household solvent use in Oregon so the DEQ VOC estimates, calculated using EPA's figure of 6.3 lb/capita (EPA, 1980a), were used. According to EPA (1980b), VOCs content of household solvents is as shown on Table II-15. Of these chemicals, only formaldehyde is listed as a TAP in Table I-3. Resultant emissions are shown in Table II-16.

Table II-14

TAP EMISSIONS FROM AREA SOURCE GRAPHIC ARTS

County	Total VOCs (tons)	Dichloromethane (pounds)	Formaldehyde (pounds)	Toluene (pounds)	Xylene (pounds)
BAKER	6.4	448	281.6	102.4	64
BENTON	27.4	1918	1205.6	438.4	274
CLACKAMAS	98.52	6896.4	4334.88	1576.32	985.2
CLATSOP	13.16	921.2	579.04	210.56	131.6
COLUMBIA	14.48	1013.6	637.12	231.68	144.8
COOS	24.4	1708	1073.6	390.4	244
CROOK	5.2	364	228.8	83.2	52
CURRY	6.84	478.8	300.96	109.44	68.4
DESCHUTES	25.6	1792	1126.4	409.6	256
DOUGLAS	36.56	2559.2	1608.64	584.96	365.6
GILLIAM	0.78	54.6	34.32	12.48	7.8
GRANT	3.22	225.4	141.68	51.52	32.2
HARNEY	2.9	203	127.6	46.4	29
HOOD RIVER	6.56	459.2	288.64	104.96	65.6
JACKSON	54.04	3782.8	2377.76	864.64	540.4
JEFFERSON	4.88	341.6	214.72	78.08	48.8
JOSEPHINE	24.12	1688.4	1061.28	385.92	241.2
KLAMATH	23.28	1629.6	1024.32	372.48	232.8
LAKE	3.04	212.8	133.76	48.64	30.4
LANE	107.4	7518	4725.6	1718.4	1074
LINCOLN	14.92	1044.4	656.48	238.72	149.2
LINN	35.96	2517.2	1582.24	575.36	359.6
MALHEUR	11.12	778.4	489.28	177.92	111.2
MARION	84	5880	3696	1344	840
MORROW	3	210	132	48	30
MULTNOMAH	224.92	15744.4	9896.48	3598.72	2249.2
POLK	18	1260	792	288	180
SHERMAN	0.88	61.6	38.72	14.08	8.8
TILLAMOOK	8.8	616	387.2	140.8	88
UMATILLA	24.24	1696.8	1066.56	387.84	242.4
UNION	9.92	694.4	436.48	158.72	99.2
WALLOWA	3.02	211.4	132.88	48.32	30.2
WASCO	9	630	396	144	90
WASHINGTON	104.08	7285.6	4579.52	1665.28	1040.8
WHEELER	0.56	39.2	24.64	8.96	5.6
YAMHILL	22.8	1596	1003.2	364.8	228
TOTAL		74480	46816	17024	10640

Table II-15

VOCs from Household Solvent Use

Chemical Name	Percent by Weight
isobutane	5.30
naphtha	4.50
formaldehyde	.60
acetone	1.40
ethyl alcohol	36.90
isopropyl alcohol	38.50
glycol ether	8.30
propylene glycol	3.20
N-butyl acetate	1.30
Total	100.00

These emission estimates are highly uncertain. EPA's per-capita VOC estimates are based on outdated, nationwide data. A study conducted by the California Air Resources Board (1982) suggests that the emission factor should be 4.5 lb/capita-year. In AP-42, EPA reports 9.3 lb/capita-year. The emissions estimates also assume that all of the solvents in household products evaporate at the site. In reality, significant amounts may be discarded into landfills or the water system. Although the uncertainty in these estimates are very high, there is little doubt that the potential exists for misuse of TAP-containing household products that could result in acute exposure to the public. Much of the problem could be prevented through public education on the contents of household products, how they should be used, and how they should be disposed. METRO (1985) provides an example of how such a program is being developed. METRO's results should be reviewed to determine whether a public awareness program is warranted in Oregon.

II-1.10 LANDFILLS

Landfills have not traditionally been considered a major source of air pollutants. However, recent studies have shown that significant amounts of TAPs can be volatilized from the residential, commercial, and industrial wastes which are disposed of in a landfill. The types of potentially hazardous wastes from each of these streams has been characterized by Cal Recovery (1986) for King County, Washington. The individual components they identified are shown in Table II-17. Many of these components are potential soures of toxic air pollutants.

Seventeen landfills in thirteen counties were identified as potential sources of significant amounts of TAPs. These landfills have both commercial or industrial wastes, which have the highest potential for generating significant quantities of toxic gases, and residential waste.

Table II-16

TOXICS FROM HOUSEHOLD SOLVENT USAGE

County	1984 Population	Total VOCs (tons)	Formaldehyde (pounds)
BAKER	16000	50.40	605
BENTON	68500	215.77	2589
CLACKAMAS	246300	775.84	9310
CLATSOP	32900	103.63	1244
COLUMBIA	36200	114.03	1368
COOS	61000	192.15	2306
CROOK	13000	40.95	491
CURRY	17100	53.86	646
DESCHUTES	64000	201.60	2419
DOUGLAS	91400	287.91	3455
GILLIAM	1950	6.14	74
GRANT	8050	25.36	304
HARNEY	7250	22.84	274
HOOD RIVER	16400	51.66	620
JACKSON	135100	425.56	5107
JEFFERSON	12200	38.43	461
JOSEPHINE	60300	189.94	2279
KLAMATH	58200	183.33	2200
LAKE	7600	23.94	287
LANE	268500	845.77	10149
LINCOLN	37300	117.49	1410
LINN	89900	283.18	3398
MALHEUR	27800	87.57	1051
MARION	210000	661.50	7938
MORROW	7500	23.62	283
MULTNOMAH	652300	2054.74	24657
POLK	45000	141.75	1701
SHERMAN	2200	6.93	83
TILLAMOOK	22000	69.30	832
UMATILLA	60600	190.89	2291
UNION	24800	78.12	937
WALLOWA	7550	23.78	285
WASCO	22500	70.87	850
WASHINGTON	260200	819.63	9836
WHEELER	1400	4.41	53
YAMHILL	57000	179.55	2155
TOTAL			103950

TABLE II-17

Potentially Hazardous Wastes in Municipal Solid Waste in King County, Washington (tons per year)

	Residential	Commercial	Industrial	Self Haul	Total
Cleaners	297.2	72.1	14.9	98.6	482.8
Solvents	14.7	41.7	527.1	489.0	1072.4
Paints	254.0	186.7	170.7	2871.0	3482.4
Oils	346.8	38.8	254.7	39.2	679.5
Acids	2.9	0.2	24.6	0.0	27.7
Bases	8.3	2214.0	1184.0	35.0	3441.2
Pesticides	19.2	8.2	0.0	49.1	125.7
Aerosols	17.9	1.1	0.0	49.1	68.2
Batteries	220.2	76.9	12.0	310.6	619.7
Cosmetics	80.9	17.0	9.3	15.6	122.9
Medicine	33.2	2.9	3.2	2.0	41.3
Alcohols	15.9	11.8	1.9	1.4	31.0
Waxes	14.8	0.0	0.0	52.0	66.8
Mercury	0.0	0.0	2.0	0.0	2.0
Adhesives	18.4	0.4	8.6	492.0	519.5
Inks	5.1	224.7	75.5	6.4	311.8

The residential waste produces large volumes of methane and other less toxic gases which can act as a driving force for the release of the more toxic gases. Five of the landfills are closed to the receipt of additional waste, but would be expected to continue to volatilize TAPs from materials already buried in the landfills. Only one landfill has an active gas collection system. Since the landfill gases for all the other landfills are emitted over many acres at each site, the landfills were inventoried as area sources.

Because of the lack of emphasis on landfills in past air pollution studies, emission data is scarce and highly variable. The data judged most characteristic of Oregon landfills was the data collected for the Cedar Hills landfill, located near Seattle, Washington (Larson and Wineman, 1985). The TAP emission factors developed for this landfill based on the monitoring data are shown in Table II-18. below. The emissions calculated for the 17 Oregon landfills, based on acreage only, are given in Table II-19.

There are some potentially large errors introduced by applying the Cedar Hills emission factors to Oregon's landfills. First, the emissions are dependent on the types of wastes landfilled, climate, physical and temporal characteristics, and other factors. Cedar Hills undoubtedly differs in many of these respects from the Oregon landfills, which also differ among themselves. Also, Cedar Hills is a vented landfill, but most of Oregon's

Table II-18

TAP Emission Factors for Landfills

Pollutant	Emissions lb/yr-acre
trichloroethylene	10.1
toluene	96.6
tetrachloroethylene	17.3
methylene chloride	3.2
1,1,1 trichloroethane	11.0
chloroform	18.5
vinylidene chloride	11.9

landfills are not vented and there is no data available to convert emission factors from a vented facility to one which is not. Thus, there is a considerable margin of error likely in the emissions estimates shown in Table II-19.

The practice of dumping hazardous wastes which can contain a significant amount of TAPs from industrial and commercial sources into landfills is now restricted, although TAP input from household wastes and some commercial and industrial wastes will continue. Since the input will be considerably reduced and gas evolution occurs over many years after placement of the waste, sampling the input streams to the landfill will not show what is actually being evolved from the wastes already stored in the landfills. DEQ may wish to review the information on ambient levels monitored at landfills in Seattle and perform a preliminary risk assessment to determine if these levels present a hazard to persons living on the boundaries of landfills before any decisions are made to further study this source.

II-1.11 MOTOR VEHICLES

Motorized vehicles have long been recognized as major sources of VOCs. Although this category includes a wide range of motorized vehicles, such as aircraft, and roadway, waterway,and railway vehicles, this analysis concentrated only on the roadway vehicles, since they contribute the majority of the VOCs. DEQ has already calculated 1984 vehicle miles traveled (VMT) and VOC emissions for both gasoline and diesel roadway vehicles. These figures were combined with appropriate values for TAP emissions found in the literature. Emission factors for benzene, formaldehyde, toluene, and xylene were available from the "VOC Species Data Manual" (EPA, 1980b) for both catalytic and non-catalytic vehicles as a percent of VOC. CARB (1984) provided more recent emission factors for benzene, so those factors were used instead of EPA's. Emission factors for lead for catalytic and non-catalytic vehicles were derived from EPA's AP-42 on a grams/mile basis. In support of the Lead State Implementation Plan, DEQ had already calculated a weighted emission factor of 0.044 grams of lead /mile, based on their estimates of the percentages of VMT traveled by catalytic and non-catalytic vehicles in 1984. These emission factors are shown in Table II-20.

Table II-19

TAP Emissions From Municipal Waste Landfills

County	Landfill(s)	Acreage	Trichloro-ethylene (pounds)	Toluene (pounds)	Tetrochloro-ethylene (pounds)	Benzene (pounds)	Xylene (pounds)	Methylene Chloride (pounds)	1,1,1 Tri-Chloroethane (pounds)	Vinyliden Chloride (pounds)
Benton	Coffin Butte	100	1010	9660	1730	567	1850	322	1100	1190
Clackamas	Rossmans	25 (1)	253	2420	432	142	462	80	275	298
Columbia	Santosh	20	202	1930	346	113	370	644	220	238
Douglas	Roseburg	100	1010	9660	1730	567	1850	322	1100	1190
Jackson	South Stage	80	808	7730	1380	452	1480	258	880	952
Josephine	Grants Pass	40	404	3860	692	226	740	129	440	476
Lane	Short Mountain	100	1010	9660	1730	567	1856	322	1100	1190
Linn	Lebanon	40	404	3860	692	226	740	129	440	476
Marion	Browns Island	90	1520	1450	2600	850	2780	483	1650	1780
	Woodburn	150								
Multnomah	LaVelle	20	2880	27500	4930	1620	5270	918	3140	3390
	Killingsworth	30								
	St. Johns	235								
Yamhill	Newberg	60	909	8690	1560	510	1660	290	990	1070
	River Bend	30								
Tillamook	Tillamook	30	303	2900	519	170	555	97	330	357
Washington	Hillsboro	40	404	3860	692	226	740	129	440	476
Total			11110	106230	19033	6236	20347	4123	12105	13083

Table II-20

Weighted Emission Factors for Gasoline and Diesel Vehicles

TAP	Percent of VOC Gas	Diesel	Total (g/mi)
Benzene	2	2	
Formaldehyde	6	12	
Lead			0.044
Toluene	11	2	
Xylene	3	0.3	

The emissions calculated from the county-specific VMT and VOC already available in the DEQ emission inventory are shown in Table II-21.

Mobile sources rank high among the top 10 TAP sources in the state. As a combustion source they emit many TAPs which are not listed here because accurate emission factors are not available. Like woodstoves, motor vehicles are a combustion source that many individuals come into contact with for a number of hours daily, especially those who live or work near busy roadways or in densely populated areas. Both woodstoves and motor vehicles should have a high priority for further analysis because they impact a much greater number of people, with greater frequency, and often in an urban setting where potential impacts are compounded by the presence of other TAPs.

II-1.12 OPEN BURNING

The most important sources in the open burning category are field and forestry burning. Field burning takes place mainly within the grass seed and grain growing portions of the Willamette Valley, Central, and Eastern Oregon and is used as a method of disposing of grass stubble and sterilizing the soil to prevent the spread of fungal diseases of the grass seed crop. Forestry burning includes both planned burns for disposing of residues after harvest (slash burning) and wildfires.

The amount of field burning in the Willamette Valley is carefully tracked by DEQ. The amount of slash burning has been the subject of recent studies by DEQ and the US Forest Service (FS). As a result of these studies, the tracking of slashburning activities are much improved. However, when this data was compiled, wildfires were not tracked carefully, especially those on non-FS lands. The data bases that have been compiled by DEQ on the number of acres burned by county were used to calculate the TAP emissions for these sources by using factors measured directly from the sources.

The types of TAPs emitted by field and slash burning are probably quite similar, consisting of polycyclic organic matter (POM), benzo(a)pyrene

TABLE II-21

MOTOR VEHICLE EMISSIONS

COUNTY NAME	TOTAL LEAD (pounds)	GASOLINE VEHICLES: TOTAL VOC (tons)	GASOLINE VEHICLES: BENZENE (pounds)	GASOLINE VEHICLES: FORMALDEHYDE (pounds)	GASOLINE VEHICLES: TOLUENE (pounds)	GASOLINE VEHICLES: XYLENE (pounds)	DIESEL VEHICLES: TOTAL VOC (tons)	DIESEL VEHICLES: BENZENE (pounds)	DIESEL VEHICLES: FORMALDEHYDE (pounds)	DIESEL VEHICLES: TOLUENE (pounds)	DIESEL VEHICLES: XYLENE (pounds)
BAKER	20160	780	62400	93600	171600	46800	364	14560	88816	13104	2184
BENTON	37248	174	13920	20880	38280	10440	227	9080	55388	8172	1362
CLACKAMAS	165024	950	76000	114000	209000	57000	524	20960	127856	18864	3144
CLATSOP	29568	205	16400	24600	45100	12300	118	4720	28792	4248	708
COLUMBIA	25056	148	11840	17760	32560	8880	135	5400	32940	4860	810
COOS	46752	297	23760	35640	65340	17820	328	13120	80032	11808	1968
CROOK	9216	55	4400	6600	12100	3300	36	1440	8784	1296	216
CURRY	15648	110	8800	13200	24200	6600	26	1040	6344	936	156
DESCHUTES	50304	325	26000	39000	71500	19500	138	5520	33672	4968	828
DOUGLAS	102720	788	63040	94560	173360	47280	862	34480	210328	31032	5172
GILLIAM	9600	94	7520	11280	20680	5640	106	4240	25864	3816	636
GRANT	8736	66	5280	7920	14520	3960	22	880	5368	792	132
HARNEY	8544	67	5360	8040	14740	4020	48	1920	11712	1728	288
HOOD RIVER	20544	162	12960	19440	35640	9720	217	8680	52948	7812	1302
JACKSON	100224	622	49760	74640	136840	37320	452	18080	110288	16272	2712
JEFFERSON	14400	112	8960	13440	24640	6720	106	4240	25864	3816	636
JOSEPHINE	49248	325	26000	39000	71500	19500	334	13360	81496	12024	2004
KLAMATH	51936	359	28720	43080	78980	21540	1171	46840	285724	42156	7026
LAKE	7872	58	4640	6960	12760	3480	31	1240	7564	1116	186
LANE	180576	1043	83440	125160	229460	62580	1523	60920	371612	54828	9138
LINCOLN	34944	248	19840	29760	54560	14880	118	4720	28792	4248	708
LINN	87744	633	50640	75960	139260	37980	872	34880	212768	31392	5232
MALHEUR	27840	203	16240	24360	44660	12180	269	10760	65636	9684	1614
MARION	149568	902	72160	108240	198440	54120	596	23840	145424	21456	3576
MORROW	11904	101	8080	12120	22220	6060	187	7480	45628	6732	1122
MULTNOMAH	347616	1866	149280	223920	410520	111960	1139	45560	277916	41004	6834
POLK	35328	228	18240	27360	50160	13680	257	10280	62708	9252	1542
SHERMAN	7776	74	5920	8880	16280	4440	106	4240	25864	3816	636
TILLAMOOK	22080	161	12880	19320	35420	9660	87	3480	21228	3132	522
UMATILLA	53376	367	29360	44040	80740	22020	639	25560	155916	23004	3834
UNION	21024	142	11360	17040	31240	8520	355	14200	86620	12780	2130
WALLOWA	5760	37	2960	4440	8140	2220	32	1280	7808	1152	192
WASCO	27936	220	17600	26400	48400	13200	243	9720	59292	8748	1458
WASHINGTON	182880	1093	87440	131160	240460	65580	214	8560	52216	7704	1284
WHEELER	2112	18	1440	2160	3960	1080	10	400	2440	360	60
YAMHILL	39168	230	18400	27600	50600	13800	110	4400	26840	3960	660
TOTAL	2010432	13263	1061040	1591560	2917860	795780	12002	480080	2928488	432072	72012

(BaP), and aldehydes. However, factors such as fuel composition and burning conditions (fire temperature, humidity, etc.) may result in very different emission factors of the individual compounds for the two sources. According to Forest Service research underway to measure TAP emission factors from slash burns (Ward and Hardy, 1986), a great deal of variability in the emission factors occurs even within a single source type.

The slash burning emission factors shown in Table II-22 show the emission factors determined in the 1985 FS study for one unit in the coastal range (Maria) and one in the dryer Cascade Mountains (Diamond Lake). Since the emissions from the two geographic areas differed so widely, the Maria emission factors were applied to all burns in the coastal mountains and the Diamond Lake emission factors were applied to all non-coastal burns.

Table II-22
Slash Burning Emission Factors
ug/kg of Fuel Burned

	Maria	Diamond Lake
phenanthrene	1,211.49	9.37
anthracene	206.78	0.00
methylphenantrenes	1,257.57	0.00
1-methylphenantrene	561.61	0.00
2-methylphenantrene	235.58	0.00
3-methylphenantrene	127.11	8.80
dimethylphenantrene	363.14	0.00
fluoranthene	808.83	38.16
acephenanthrylene	304.20	20.64
pyrene	731.35	185.17
methylprenes	460.94	35.54
benzo(g,h,i)fluoranthene	0.00	20.52
1,2-benathene	292.66	4.61
chrysene	486.93	41.88
benzo(b,j,k)fluoranthene	377.06	47.53
benzo(a)fluoranthene	117.06	21.80
1,2-benathene	292.66	4.61
perylene	0.00	15.60
indenofluoranthene	0.00	35.29
indenopyrene	0.00	52.92
benzo(g,h,i)perylene	0.00	51.38
anthranthrene	0.00	21.76
other PAH	4,199.49	535.14
total non-BaP	12,034.24	1,227.13
BaP	143.70	73.51
Total PAH	12,177.94	1,300.64
Acetaldehyde	1.95 g/kg	2.50 g/kg

Table II-23

TOXIC EMISSIONS FROM FORESTRY BURNING

County	SLASH BURNING BaP (pounds)	SLASH BURNING PPAH (pounds)	SLASH BURNING Acetaldehyde (pounds)	WILDFIRES BaP (pounds)	WILDFIRES PPAH (pounds)	WILDFIRES Acetaldehyde (pounds)
BAKER	2	28	58198	0.0	0	1600
BENTON	11	182	379000	0.0	0	0
CLACKAMAS	15	241	501800	0.3	4	8600
CLATSOP (Coast)	18	1545	251004	0.2	15	2480
COLUMBIA (Coast)	22	1893	307632	0.0	0	0
COOS (Coast)	51	4388	713076	2.7	233	38800
CROOK	18	282	587748	0.5	9	18300
CURRY	10	166	345000	0.0	0	0
DESCHUTES	0	0	0	7.1	114	237300
DOUGLAS	92	1478	3079600	1.3	20	41800
GILLIAM	0	0	0	0.0	0	200
GRANT	30	476	990811	1.8	29	61200
HARNEY	6	97	201441	7.9	126	263000
JACKSON	28	442	921800	0.0	0	0
JEFFERSON	0	0	0	0.7	12	24500
JOSEPHINE	6	98	203800	0.0	0	0
KLAMATH	43	686	1429400	4.7	75	155900
LAKE	0	0	0	7.7	123	256500
LANE	60	956	1992600	0.2	3	5500
LINCOLN	32	510	1062200	0.0	0	0
LINN	21	341	710800	0.0	0	0
MALHEUR	0	4	8468	2.3	36	75800
MARION	9	145	301400	1.1	17	35000
MORROW	0	0	586	0.0	0	0
MULTNOMAH	0	17	15000	0.0	0	0
POLK (Coast)	11	946	153660	1.1	95	15840
SHERMAN	0	0	0	0.1	2	3700
TILLAMOOK (Coast)	32	2714	441012	0.6	48	7920
UMATILLA	0	0	1000	0.0	0	0
UNION	0	0	5320	1.3	21	43100
WALLOWA	0	0	1631	0.1	2	3800
WASCO	0	0	0	0.1	1	1900
WASHINGTON (Coast)	8	652	105924	0.7	57	9440
WHEELER	0	0	847	0.1	2	3100
YAMHILL	5	74	154000	0.0	0	0
TOTALS	529	18323	14866559	42	1042	3300560

Applying these factors for BaP and acetaldehyde to the slash burning records by county gives the emissions estimates shown in Table II-23. Wildfire emissions were calculated using the same emission factors since no other data is available. Other PAH compounds were not included in the inventory for any open burning source since they are not included in Table I-3 or counted for other types of sources.

The emission factors for TAPs from field burning have not been as well characterized. The only information on individual TAP emissions identified in the literature search was reported in the 1978 Field Burning Report (Oregon DEQ, 1978).

Table II-24

Field Burning Median Emission Factors

TAP	lb/ton fine particulate matter
Benzo(e)pyrene	0.15
Benzo(k)fluoranthene	0.07
Benzo(a)pyrene	0.07
Benzo(g,h,i)perylene	0.05
Chrysene	0.05

These emission factors are not nearly as complete as those for slash burning, having measured many fewer PAHs and no aldehydes. Assuming that the source activities are correct and the emission factors measured on just a few burns are characteristic of all other burns, the following emissions were calculated for the source. BaP and all PAHs, as PPAH, were included in the inventory for field burning.

Table II-25

TAPs Emitted From Field Burning
(pounds)

County	Benzo(e) Pyrene	Benzo(k) Fluoranthene	Benzo(a) Pyrene	Benzo(g,h,i) Perylene	Chrysene
Benton	224	105	105	75	75
Clackamas	33	15	15	11	11
Jefferson	205	95	95	68	68
Lane	219	102	102	73	73
Linn	1,144	534	534	381	381
Marion	398	186	186	133	133
Polk	179	84	84	60	60
Washington	5	2	2	2	2
Yamhill	79	37	37	26	26
Total	2,485	1,160	1,160	828	828

The amount of human exposure to these sources is probably quite small because the sources are intermittent and usually significantly diluted before population centers are impacted by the plumes. Certain areas just east of the Willamette Valley receive significant amounts of field burning smoke for short periods. Since the source is intermittent, long-term health effects would not be expected to be as important as short-term health effects for sensitive individuals, such as those with respiratory ailments, especially in the most highly impacted areas east of the Valley. The health effects of these two sources are currently the subject of a study being sponsored by the DEQ Field Burning Office. The results of this study should be used to guide future DEQ action on these sources.

Since the emission factors for many TAPs have not been well characterized for these sources, especially field burning, it is recommended that better data be collected. The Forest Service has recently suggested revisions to the slash burning emission factors, particularly for the coastal burns, which should be included in any further analysis of these emissions. Since the forestry burning activities have only recently been closely tracked, there are still some problems with the tracking system, mainly in the method of assigning the burns to individual counties. Better tracking methods for both planned burns and wildfires should be developed. Additional open burning sources, including agricultural land clearing and rangeland burning, should be evaluated if data on these activities becomes available.

II-1.13 PESTICIDES

Pesticides are any substances used to control pests such as insects, rodents, or weeds. The State of Oregon registers certain pesticides but does not track which pesticides or the amounts of pesticides which are being used. The best source of information identified was the report by Witt (1984), who conducted user surveys to estimate the amounts and types of pesticides used. His results are shown in Table II-26.

Creosote and pentachlorophenol use are discussed separately under Wood Treatment.

To determine whether significant changes have occurred in the types of pesticides used, a small-scale survey of public agency use of pesticides was conducted as part of this study. The results of this survey, are compared to the Witt data from 1981 in Table II-27.

The emissions for toxics from pesticides depend on many factors, including: the chemical composition of the pesticides (both active ingredients and carriers), the method of applications (spray, dusting, soil additive, etc.) and weather conditions. Determining the emissions from pesticides is further complicated because manufacturer's are not required to identify non-active ingredients, or carriers, in the pesticides. These carriers are

Table II-26

Pesticides Used in 1981 in Oregon

Common Name	Pounds Used	Common Name	Pounds Used
Creosote	15,000,000	Difenzoquat	23,000
Dichloropropane/propene	2,938,000	Picloram	22,200
Pentachlorphenol	1,590,000	Diallate	22,000
2,4-D	1,175,350	Propargite	21,600
Oil	1,125,700	Trichlorfon	21,300
Chromated copper arsenate	1,000,000	Nitrofen	20,800
Diuron	525,800	Hexazinone	20,000
Metam-sodium	440,000	Paraquat	19,700
Dinoseb	423,400	Endosulfan	19,700
EPTC	395,500	Dimethoate	19,570
Sulfur	360,000	Acid copper chromate	17,000
Captan	320,000	Dinocap	16,700
Bromoxynil	308,400	Ferbam	16,400
Carbaryl	305,000	Tribasic copper	15,000
Atrazine	288,700	Methyl bromide	15,000
Diclofop-methyl	288,000	Oxydemeton-methyl	14,400
Ammoniacal copper arsenate	230,000	PCNB	14,000
Maneb	189,500	Acephate	13,000
MCPA	171,000	Chlorpyrifos	12,600
Carboxin	153,000	Chlorothalonil	12,120
Carbon tetrachloride	150,000	MSMA	12,100
Dicamba	145,950	Tebuthiuron	11,250
Aldicarb	141,500		
Fonofos	139,900	Methoxychlor	10,800
Glyphosate	137,850	Dichlobenil	10,670
Mancozeb	134,000	Metaldehyde	10,000
Malathion	131,440	Oryzalin	10,000
Terbutryn	130,000	Dicofol	9,700
Propham	130,000	Oxythioquinox	9,700
Diazinon	120,460	Pendimethalin	9,000
Ziram	118,300	Profluralin	8,700
Bordeaux	110,600	Phosalone	8,300
Simazine	108,900	Endothall	8,000
Nickel sulfate	100,000	Chloramben	8,000
Copper hydroxide	96,500	Pyrazon	8,000
Trifluralin	90,500	Chlordane	8,000
Alachlor	81,700	Propachlor	8,000
Chlorpropham	77,500	Fenvalerate	7,100
Dodine	75,700	Chloropicrin	7,000
Metribuzin	74,800	Methomyl	6,900
Vernolate	64,500	Fenthion	6,800
Phorate	64,300	Demeton	6,800
Lindane	59,000	Captafol	6,800
Phosmet	58,800	Methiocarb	6,400

Common Name	Pounds Used	Common Name	Pounds Used
Benomyl	58,300	Methidathion	6,300
Zineb	51,100	Butylate	6,100
DCPA	51,000	Bensulide	6,000
Bentazon	51,000	Eggs, putrified	5,800
Ethylene dibromide	50,000	Oxamyl	5,300
Disulfoton	49,400	Phenmedipham	5,000
Terbacil	45,150	Aluminum phosphide	5,000
Calcium polysulfide	45,000	DNOC	4,100
Maleic hydrazide	45,000	Naled	4,100
Bromacil	42,500	CDAA	4,000
Asulam	42,350	Triallate	4,000
Methamidophos	41,500	Vinclozolin	4,000
Fosamine ammonium	41,200	Rotenone	3,300
Napropamide	40,500	Triclopyr	3,200
Parathion	37,400	Naptalam	3,000
Amitrole	35,500	Zinc	3,000
Cyhexatin	35,300	Sodium metaborate	2,900
2,4-DP	34,200	DCNA	2,800
Azinphos-methyl	33,220	Metalaxyl	2,750
Pronamide	33,200	Chloroxuron	2,600
Carbon disulfide	30,000	Sodium chlorate	2,200
Toxaphene	29,100	Norflurazon	1,500
Carbofuran	27,000	Diphenamid	1,500
Amitraz	25,200	2,4,5-T	1,400
Triadimefon	25,200	Ethion	1,400
Ethofumesate	24,000	Sodium fluosilicate	1,000
Cycloate	24,000	Bethrodine	1,000

Table II-27

Example of Changes in Pesticide Use 1981-1984

Oregon Highway Division

Pesticide	Pounds Used 1981	Pounds Used 1984
Karmek, Diuron	34,000	13,900
Princep, Simazene	26,000	15,400
Auitrole	20,000	26,300
Atrazine	19,000	42,800
Krenite	17,000	4,800
Bromacil, Krovar	13,000	0
2,4-D	21,000	2,800
Casoran	3,200	88,200
Glyphosate, Roundup	1,400	1,040
Dalapon	1,100	100
Kirb	500	600
Spike	350	0
Fenac	300	0
Tordon	150	3,200
Prometon	150	0
Oxadiazon, Ronstar	150	8,100
Dicamba, Banvel	100	2,700
Embark	20	60
Diazinon	0	400
Weedon	0	2,400
Oust	0	1,000
Trimec		

frequently xylene or benzene, which are on the list of TAPs inventoried in this study. The only comprehensive method of calculating emission factors from pesticides found to be available was that developed by the California Air Resources Board (1984). This method is complex and requires detailed information on the types and amounts of pesticides used and the vapor pressures of the pesticides. Since Oregon doesn't track this information, the following simplifying assumptions were made:

- pesticides with vapor pressures either unknown or known to be less than 10-7 mm Hg were assumed to have insignificant emissions;
- pesticides with vapor pressures of 0.3 mm Hg or greater were assumed to volatilize within one month of application;
- pesticides that are highly adsorbed become irreversibly sequestered and are not available for evaporation,
- 30% of highly biodegradable pesticides are assumed to be lost due to biodegredation; the other 70% is assumed to evaporate within one year of application.

Using these assumptions, the total amount of pesticides and their carriers evaporated is 5,827,000 lbs., exclusive of creosote and pentachlorophenol wood treatment which is treated separately. Since the uncertainty in types, amounts and chemical composition of pesticides is so high and since the calculation of their emissions had to be considerably simplified, it was felt to be misleading to estimate emissions of individual pesticides. Instead, pesticides are reported only as a category. Since pesticide use is not available by county, it was reported as a statewide total.

Pesticides are possibly one of the most underrated TAPs in our society. Since both the active and inert ingredients of pesticides have the potential for causing adverse health effects, it is strongly recommended that the Oregon Department of Agriculture institute a system for tracking the types and amounts of pesticides used and the approximate locations at which they are applied. When this information becomes available, a method, such as that used by California, should be used to calculate emissions. Exposure levels to pesticides both in farming communities and from household use should be estimated and a risk assessment performed.

II-1.14 PUBLICLY OWNED TREATMENT WORKS (POTWs)

POTWs, or municipal sewage treatment plants, were divided into three categories for this inventory: those which service one or more facilities with industrial pretreatment plans required under the Clean Water Act (referred to as "industrial plants"), those with a capacity of at least one million gallons per day but which do not require any industrial pretreatment plans (referred to as "non-industrial"), and the remaining smaller POTWs. Emissions were calculated for 21 plants in the industrial category and 33 non-industrial large plants. Emissions were not calculated for the small plants, since their emissions should be negligible.

POTWs have not traditionally been considered as sources of air pollution, so there is limited testing of these sources. The largest plants in Oregon were contacted to determine if any of them had source-specific information on volatile TAPs. None of them had performed such testing. In the absence of source-specific emission factors, data collected for the Puget Sound Air Pollution Control Agency on some POTWs under their jurisdiction were used (Engineering Science, 1986). Since the TAP emissions depend on the nature and quantity of influent wastes, the types of treatment used at each facility, and numerous other factors, emission factors from two different plants in the Puget Sound area were used. Emission factors for the industrial plants were based on the emissions from the Renton Sewage Treatment Plant in King County, Washington. This plant has heavy industrial waste input. Emission factors from the smaller Chambers Creek, Washington, sewage treatment plant were used for the non-industrial plants, since this plant's emissions should be more characteristic of this second class of POTWs. The emission factors derived for the two types of plants are:

Table II-28

Emission Factors for POTWs

TAP	lb TAP/year(MGD) Capacity Industrial	Non-Industrial
toluene	29	5.7
tetrachloroethylene	61	-
methylene chloride	113	-
chloroform	9	-
trichloroethylene	68	114
phenol	6	-
benzene	8	-

The emissions calculated using these factors are shown in Table II-29.

These emissions can be considered extremely uncertain because of the many assumptions that had to be made due to the scarcity of emissions information for this type of source. Each facility was assumed to have operated at design capacity, with emissions proportional to the operating rate. A very conservative bias was applied by using the Renton plant data for all plants with industrial treatment plans because most of the Oregon facilities service areas which are much less industrialized than the Renton area. The type of industry serviced and relative contribution of industrial discharge to the total flow also varies from plant to plant. Further, it was assumed that the influent composition to each non-industrial plant in Oregon was equivalent to the Chambers Creek, Washington facility, which is located in a primarily residential area. The effect of different types of treatment processes was not calculated. Emissions of pollutants other than those identified in the Washington study were not considered.

The emissions from this source category are not large, relative to some of the other sources in the inventory. Also, with increasing restrictions on the disposal of potentially toxic compounds and the increasing requirements for pretreatment by major industries, the importance of this source should decrease. However, since the emission estimates have a high degree of uncertainty, the pretreatment plans should be reviewed to determine which compounds are most likely emitted. If the plans indicate that the estimates presented herein may be significantly low, this category should be reassessed. A further refinement would be to include the emissions which occur at the on-site industrial treatment facilities and throughout the sewer system. Adequate data or techniques to evaluate sewer system emissions do not currently exist.

Table II-29

POTW EMISSIONS

	Toluene	Tetrachloro-Ethylene	Methylene Chloride	Chloro-form	Trichloro-Ethylene	Phenol	Benzene
BENTON	279	591	1095	87	655	63	76
CLACKAMAS	510	1036	1920	153	1582	111	133
CLATSOP	24				479		
COLUMBIA	13				251		
COOS	193	407	754	60	451	43	53
CURRY	6				114		
DESCHUTES	34				684		
DOUGLAS	162	219	406	32	1385	23	28
HOOD RIVER	21				424		
JACKSON	450	913	1694	134	1366	98	118
JOSEPHINE	23				456		
KLAMATH	220	365	677	54	1358	39	47
LANE	1420	2983	5532	439	3481	319	384
LINCOLN	26				524		
LINN	275	530	982	78	1067	57	68
MALHEUR	12				243		
MARION	1105	2319	4302	342	2728	248	298
MULTNOMAH	3427	7202	13356	1060	8404	771	927
POLK	18				371		
UMATILLA	75				1499		
UNION	81	170	316	25	189	18	22
WASCO	30				599		
WASHINGTON	706	1218	2258	179	3865	130	157
YAMHILL	173	366	678	54	405	39	47
TOTAL	9625	18319	33970	2697	39420	2057	2358

II-2.15 RESIDENTIAL FUEL

This category includes TAP emissions from the combustion of fuels used for residential space heating: oil, natural gas, and wood. Although DEQ calculates VOC emissions for these three sources, TAP emission factors as a percent of VOC are available only for oil and natural gas. To calculate woodstove and fireplace emissions, emission factors based on tons of fuel burned had to be used. Wood use was estimated by extrapolating the results of the Medford and Portland Wood Use Surveys to the rest of the state.

The emission factors for all three types of fuels are shown in Table II-30. Factors for oil and gas combustion were taken from the Volatile Compounds Species Data Manual (EPA, 1980). For wood combustion, the factors were taken from the Radian (1984) study for the state of Washington. Additional factors for BaP were obtained from Peters (1982).

Table II-30

TAP Emission Factors for Residential Fuel Consumption

TAP	Wood Combustion Emissions in lbs TAP/ton fuel: Woodstoves	Wood Combustion Emissions in lbs TAP/ton fuel: Fireplaces
BaP	0.02	0.0034
PPAH	0.55	0.058
Acetaldehyde	0.24	1.4
Dioxin	0.000037	0.000037
Formaldehyde	0.48	3.0
Manganese	1.0	1.0
Phenols	2.0	2.0

TAP	Oil and Gas Combustion Percent of VOC: Oil	Oil and Gas Combustion Percent of VOC: Gas
Benzene		9
Formaldehyde	49	18
Toluene		4.5

The emissions calculated using these emission factors are contained in Tables II-31 through II-32.

There is a great deal of uncertainty in these emissions, resulting both from the extrapolation of wood-use from two areas to the rest of the state and because the emission factors used for woodburning devices are based on only a few of the many different devices, fuels, and burning conditions. These uncertainties aside, the exposure of the public to wood-burning emissions may be relatively high, especially when indoor exposures are considered.

The likely health impacts of residential wood combustion are also a subject of the study sponsored by the DEQ Field Burning Office.

The woodstove certification program developed and implemented by DEQ will result in lower emission factors for new woodstoves. A detectable area-wide improvement will not occur for a number of years since pre-existing woodstoves are not regulated. Additional emphasis on retrofits and other programs may be warranted by the results of the health impact study.

II-16 WASTE OIL

A concerted effort has been underway in recent years to reuse waste oils, that is, oil contaminated through use in vehicles and other machinery. Factors for heavy metal emissions were found in the Washington Toxic Air Contaminant Study (Radian, 1984). These factors do not take into account any reduction in average metal content which now are occurring as a result of the control of waste oils under the Toxic Substance Control Act. The emission factors are as follows:

Table II-31

RESIDENTIAL WOOD COMBUSTION EMISSIONS

County	Households	Cords per Household	Woodstove Cords	Fireplace Cords	Total Acetaldehyde (pounds)
BAKER	6912	1.15	6518	1431	6243
BENTON	25158	0.9	18567	4076	17783
CLACKAMAS	88921	0.71	39774	23360	73936
CLATSOP	16566	0.9	12226	2684	11710
COLUMBIA	13617	0.9	10049	2206	9625
COOS	25482	0.9	18806	4128	18012
CROOK	5444	1.15	5134	1127	4917
CURRY	7266	0.9	5362	1177	5136
DESCHUTES	27562	1.15	25991	5705	24894
DOUGLAS	35375	1.15	33359	7323	31951
GILLIAM	933	1.15	880	193	843
GRANT	3506	1.15	3306	726	3167
HARNEY	3319	1.15	3130	687	2998
HOOD RIVER	6436	1.15	6069	1332	5813
JACKSON	52024	1.15	49059	10769	46989
JEFFERSON	4547	1.15	4288	941	4107
JOSEPHINE	23262	1.15	21936	4815	21010
KLAMATH	24346	1.15	22958	5040	21990
LAKE	3181	1.15	3000	658	2873
LANE	110545	0.9	81582	17908	78140
LINCOLN	20569	0.9	15180	3332	14539
LINN	35054	0.9	25870	5679	24778
MALHEUR	10439	1.15	9844	2161	9429
MARION	79490	0.9	58664	12877	56188
MORROW	3095	1.15	2919	641	2795
MULTNOMAH	246030	0.71	110049	64632	204569
POLK	17399	0.9	12840	2819	12299
SHERMAN	946	1.15	892	196	854
TILLAMOOK	12070	0.9	8908	1955	8532
UMATILLA	23110	1.15	21793	4784	20873
UNION	9477	1.15	8937	1962	8560
WALLOWA	3198	1.15	3016	662	2888
WASCO	8864	1.15	8359	1835	8006
WASHINGTON	96546	0.71	43185	25363	80277
WHEELER	701	1.15	661	145	633
YAMHILL	20160	0.9	14878	3266	14250
TOTAL					861,608

Table II-31 (Continued)

RESIDENTIAL WOOD COMBUSTION EMISSIONS

County	Total BaP (pounds)	Total Dioxin (pounds)	Total Formaldehyde (pounds)	Total Manganese (pounds)	Total PPAH (pounds)	Total Phenol (pounds)
BAKER	237	1	12987	13910	6419	27821
BENTON	674	1	36993	39624	18284	79248
CLACKAMAS	1531	4	156048	110484	40654	220969
CLATSOP	444	1	24359	26091	12040	52183
COLUMBIA	365	1	20023	21447	9876	42894
COOS	683	1	37469	40134	18520	80268
CROOK	186	–	10229	10956	5056	21912
CURRY	195	–	10684	11444	5281	22888
DESCHUTES	944	2	51785	55469	25595	25595
DOUGLAS	1211	3	66465	71192	32851	142384
GILLIAM	32	–	1753	1878	866	3755
GRANT	120	–	6587	7056	3256	14112
HARNEY	114	–	6236	6679	3082	13359
HOOD RIVER	220	–	12092	12952	5977	25905
JACKSON	1781	4	97746	104698	48312	209397
JEFFERSON	156	–	8543	9151	4223	18302
JOSEPHINE	796	2	43706	46815	21602	93630
KLAMATH	834	2	45743	48996	22609	97993
LAKE	109	–	5977	6402	2954	12804
LANE	2962	6	162548	174108	80341	348217
LINCOLN	551	1	30245	32396	14949	64792
LINN	939	2	51544	55210	25476	110420
MALHEUR	357	1	19614	21008	9694	42017
MARION	2130	5	116884	125197	57771	250393
MORROW	106	–	5815	6229	2875	12457
MULTNOMAH	4236	11	431760	305692	112483	611385
POLK	466	1	25584	27403	12645	54807
SHERMAN	32	–	1777	1904	879	3808
TILLAMOOK	323	1	17748	19010	8772	38020
UMATILLA	791	2	43421	46509	21461	93018
UNION	324	1	17806	19072	8801	38145
WALLOWA	109	–	6009	6436	2970	12872
WASCO	303	1	16654	17839	8232	35678
WASHINGTON	1663	4	169432	119962	44140	239924
WHEELER	24	–	1317	1411	651	2822
YAMHILL	540	1	29644	31752	14652	63504
TOTAL	26490	59	1803224	1656515	714264	3313029

Table II-32

RESIDENTIAL OIL AND GAS HEATING EMISSIONS

County	Distillate Oil VOC (tons)	Formaldehyde (pounds)	Natural Gas VOC (tons)	Benzene (pounds)	Formaldehyde (pounds)	Toluene (pounds)
BAKER	0.24	233.76	0.32	58	115	29
BENTON	0.28	272.72	1.61	290	580	145
CLACKAMAS	2.3	2240.2	5.05	909	1818	454
CLATSOP	0.59	574.66	0.48	86	173	43
COLUMBIA	0.32	311.68	0.33	59	119	30
COOS	0.83	808.42	0.01	2	4	1
CROOK	0.12	116.88	0.11	20	40	10
CURRY	0.02	19.48	0	0	0	0
DESCHUTES	0.38	370.12	0.65	117	234	58
DOUGLAS	0.75	730.50	0.68	122	245	61
GILLIAM	0.05	48.7	0	0	0	0
GRANT	0.14	136.36	0	0	0	0
HARNEY	0.24	233.76	0	0	0	0
HOOD RIVER	0.23	224.02	0.12	22	43	11
JACKSON	0.61	594.14	1.64	295	590	148
JEFFERSON	0.12	116.88	0.06	11	22	5
JOSEPHINE	0.29	282.46	0.48	86	173	43
KLAMATH	0.51	496.74	0.82	148	295	74
LAKE	0.12	116.88	0	0	0	0
LANE	1.37	1334.38	2.22	400	799	200
LINCOLN	0.17	165.58	0.4	72	144	36
LINN	0.45	438.3	2.01	362	724	181
MALHEUR	0.54	525.96	0.36	65	130	32
MARION	1.88	1831.12	4.6	828	1656	414
MORROW	0.10	97.40	0	0	0	0
MULTNOMAH	12.07	11756.18	14.66	2639	5278	1319
POLK	0.33	321.42	0.29	52	104	26
SHERMAN	0.06	58.44	0	0	0	0
TILLAMOOK	0.14	136.36	0	0	0	0
UMATILLA	0.51	496.74	0.73	131	263	66
UNION	0.24	233.76	0.55	99	198	50
WALLOWA	0.14	136.36	0	0	0	0
WASCO	0.19	185.06	0.12	22	43	11
WASHINGTON	1.57	1529.18	7.68	1382	2765	691
WHEELER	0.02	19.48	0	0	0	0
YAMHILL	0.38	370.12	0.48	86	173	43
TOTAL		30090		8363	16728	4179

Table II-33
Used Oil Emission Factors

Pollutant	Emissions (pounds/1000 gallons)
ARSENIC	0.0014
BERYLLIUM	0.0075
CADMIUM	0.011
CHROMIUM	0.034
MANGANESE	0.034
MERCURY	2.42
NICKEL	0.069

This assumes that all of the metals in the waste oil are emitted to the atmosphere air while toxic organic constituents are destroyed in the combustion process.

The Hazardous and Solid Waste Division of DEQ estiamtes that 5.5 million gallons of used oil were burned in Oregon in 1984. This total usage was prorated by county on a population basis. Applying the emission factors given above to the estimated usage in each county results in the emissions listed in Table II-34.

A major portion of reused waste oils comes from automobile engines, where it can be contaminated with lead. Lead levels can be presumed to be higher than levels of the other metals listed above. The concentration of lead will decrease in the future as the number of vehicles using leaded fuel decreases and as the allowable level of lead in automotive fuel decreases. For the present, an emission factor for lead, not available from the Washington study, should be identified and lead emissions under the TSCA limitations deterimined.

Waste-oil use is primarily in industrial boilers, apartment boilers, and small space-heaters in small commercial establishments. It is possible that their use may expose persons living or working close to boilers using waste oil fuels. Their emissions are relatively small statewide, with the higher emission likely from large industrial boilers burning waste oils. Due to their relatively small emissions statewide and probable importance as an industrial source emission, they should be accorded secondary status for further consideration statewide. However, examination of exposures resulting from a large waste-oil boiler may be warranted as a test case.

II-1.17 WATER TREATMENT

This category includes sources which use chlorine to disinfect water. The TAP of concern is the chloroform which is created from the reaction of chlorine with humic acids in the water. Some industries use chlorine to treat their process waters; the resultant chloroform emissions are reported under the sources' SIC codes in the industrial section of this report. The two sources included as area sources are municipal water treatment plants

Table II-34

Used Oil Emissions

COUNTY	ARSENIC (pounds)	BERYLLIUM (pounds)	CADMIUM (pounds)	CHROMIUM (pounds)	MANGANESE (pounds)	MERCURY (pounds)	NICKEL (pounds)
BAKER	0.05	0.2	0.4	1.1	1.1	77	2.2
BENTON	0.19	1.0	1.5	4.7	4.7	332	9.5
CLACKAMAS	0.69	3.7	5.4	16.7	16.7	1192	34.0
CLATSOP	0.09	0.5	0.7	2.2	2.2	159	4.5
COLUMBIA	0.10	0.5	0.8	2.5	2.5	175	5.0
COOS	0.17	2.4	1.3	4.1	4.1	295	8.4
CROOK	0.04	0.2	0.3	0.8	0.8	63	1.8
CURRY	0.05	0.3	0.4	1.2	1.2	83	2.4
DESCHUTES	0.18	1.0	1.4	4.4	4.4	310	8.8
DOUGLAS	0.26	1.4	2.0	6.2	6.2	442	12.6
GILLIAM	0.01	0.0	0.0	0.1	0.1	9	0.3
GRANT	0.02	0.1	0.2	0.5	0.5	39	1.1
HARNEY	0.02	0.1	0.2	0.5	0.5	35	1.0
HOOD RIVER	0.05	0.3	0.4	1.1	1.1	79	2.3
JACKSON	0.38	2.0	3.0	9.2	9.2	654	18.6
JEFFERSON	0.04	0.2	0.3	0.8	0.8	59	1.7
JOSEPHINE	0.17	0.9	1.3	4.1	4.1	292	8.3
KLAMATH	0.16	0.9	1.3	4.0	4.0	282	8.0
LAKE	0.02	0.1	0.2	0.5	0.5	37	1.0
LANE	0.75	4.0	5.9	18.3	18.3	1300	37.1
LINCOLN	0.10	0.6	0.8	2.5	2.5	181	7.3
LINN	0.25	1.4	2.0	6.1	6.1	435	12.4
MALHEUR	0.08	0.4	0.6	1.9	1.9	135	3.8
MARION	0.59	3.2	4.6	14.3	14.3	1016	29.0
MORROW	0.02	0.1	0.2	0.5	0.5	36	1.0
MULTNOMAH	1.83	9.8	14.4	44.4	44.4	3157	90.0
POLK	0.13	0.7	1.4	3.1	3.1	218	6.2
SHERMAN	0.01	0.0	0.1	0.1	0.1	11	0.3
TILLAMOOK	0.06	0.3	0.5	1.5	1.5	107	3.0
UMATILLA	0.17	0.9	1.3	4.1	4.1	293	8.4
UNION	0.07	0.4	0.6	1.7	1.7	120	3.4
WALLOWA	0.02	0.1	0.2	0.5	0.5	37	1.0
WASCO	0.07	0.3	0.5	1.5	1.5	109	3.1
WASHINGTON	0.73	3.9	5.7	17.7	17.7	1259	35.9
WHEELER	0.0	0.0	0.0	0.1	0.1	7	0.2
YAMHILL	0.16	0.9	1.3	3.9	3.9	276	7.9
TOTAL	8	41	61	187	187	13310	380

(MWTPs) and publicly owned treatment works (POTWs). It is estimated that facilities in Oregon treat approximately 310 billion liters of water in MWTPs and 230 billion liters of water at POTWs annually.

Chloroform emission factors derived from EPA (1984c) for these sources are 41 ug per liter of water treated (ug/l) for MWTPs and 9 ug/l for POTWs.

Emissions from POTWs were actually measured at 14 ug/l but part of that results from chlorine already added to the water before it reaches the treatment plant. The emissions from prior chlorination were assigned to MWTPs for this project. According to the EPA document, chlorination at the POTW accounts for an increase of 9 ug/l. The emissions shown below in Table II-35 are based on these emission factors, assuming that all of the chloroform formed in the water volatilizes somewhere in the distribution system. The county-specific emissions were calculated by assuming that statewide water use is directly proportional to population.

While chloroform from water treatment is not one of the TAPs emitted in the highest quantities in the state, its impact may be significant. A recent study conducted in Philadelphia (Haemiseggar et al, 1985), a highly industrialized city, concluded that the highest health risk from cancer resulted not from industries in the study area but from chloroform from MWTPs. This study should be further examined for its applicability in Oregon. If its results appear applicable, water treatment should be included in aggregate risk modeling conducted in the future by DEQ.

II-18 WOOD TREATMENT

Creosote and pentachlorophenol are the chemicals most commonly used for wood treatment in Oregon. These chemicals are painted or sprayed onto wood or the wood is soaked in them to control sapstain or to prevent other damage due to insects and other organisms. Several of the large wood-treating sources were surveyed. The emissions from these plants are reported under the industrial source portion of this report. In addition to these large sources, numerous small manufacturing plants, such as sawmills, use these chemicals. They are also sold over the counter to homeowners and builders. Sufficient information to calculate the emissions from each of these source-types was not available. The only comprehensive data that could be identified was that there were 1.5 million pounds of pentachlorophenol used statewide (EPA, 1984k) and 15 million pounds of creosote (Witt, 1984). Since there was no information on changes in the amount of wood treated between the base years used for these documents and 1984, the figures were used without adjustment.

Emissions of creosote and pentachlorophenol would occur both during storage, transfer, and wood-treatment processes. At the time these emissions were calculated, no good source of emission factors for small

Table II-35

WATER TREATMENT EMISSIONS

COUNTY	1984 POPULATION	CHLOROFORM (pounds)
BAKER	16000	196
BENTON	68500	840
CLACKAMAS	246300	3019
CLATSOP	32900	403
COLUMBIA	36200	444
COOS	61000	748
CROOK	13000	159
CURRY	17100	210
DESCHUTES	64000	784
DOUGLAS	91400	1120
GILLIAM	1950	24
GRANT	8050	99
HARNEY	7250	89
HOOD RIVER	16400	201
JACKSON	135100	1656
JEFFERSON	12200	150
JOSEPHINE	60300	739
KLAMATH	58200	713
LAKE	7600	93
LANE	268500	3291
LINCOLN	37300	457
LINN	89900	1102
MALHEUR	27800	341
MARION	210000	2574
MORROW	7500	92
MULTNOMAH	562300	6891
POLK	45000	552
SHERMAN	2200	27
TILLAMOOK	22000	270
UMATILLA	60600	743
UNION	24800	304
WALLOWA	7550	93
WASCO	22500	276
WASHINGTON	260200	3189
WHEELER	1400	17
YAMHILL	57000	699
TOTAL		32600

wood-treatment sources were identified; the only emission factors found were for large sources using pressurized retorts to treat large quantities of wood. For the small sources, emissions were calculated based on an estimate by Dant and Russell, Inc. (DEQ, 1979) that 99% of the creosote and pentachlorophenol solutions are initially retained by the wood. Some additional solvent would vaporize from the wood at the site where it is put into use, but no estimates for the loss were available. Because the vapor pressure for these chemicals is low, it was felt that a 1% loss estimate should be used. Using this figure, the emissions calculated by apportioning creosote to counties on the basis of population are shown in Table II-36.

In addition to the uncertainty in the emission factors, there are several other areas of error inherent in these calculations:

- Emissions may not be proportional to population, actually being higher in rural counties than urbanized areas.

- Source tests of an industrial treatment plant (Engineering Science, 1986) have shown that napthalene is the main constituent emitted from both of the wood-treatment solutions. Napthalene was not on the list of TAPs for which information was requested in the surveys, so its emissions statewide have not been assessed.

- Due to the low volatility of these chemicals, DEQ has mainly been concerned about them as a water quality problem and data on their use is currently being collected by the Water Quality Section. When available, these updated estimates should be evaluated for use in place of the more gross estimates used for these calculations. Additional input from the Water Quality Section may be helpful in determining the extent to which volatilization occurs.

If somewhat accurate estimates cannot be made, at least one small wood-treatment source should be source tested and the emissions recalculated using the improved emission factors.

Table II-36
TAPs FROM WOOD PRESERVING

COUNTY	1984 POPULATION	PENTA-CHLOROPHENOL (pounds)
BAKER	16000	87
BENTON	68500	374
CLACKAMAS	246300	1343
CLATSOP	32900	179
COLUMBIA	36200	197
COOS	61000	333
CROOK	13000	71
CURRY	17100	93
DESCHUTES	64000	349
DOUGLAS	91400	499
GILLIAM	1950	11
GRANT	8050	44
HARNEY	7250	40
HOOD RIVER	16400	89
JACKSON	135100	737
JEFFERSON	12200	67
JOSEPHINE	60300	329
KLAMATH	58200	317
LAKE	7600	41
LANE	268500	1465
LINCOLN	37300	203
LINN	89900	490
MALHEUR	27800	152
MARION	210000	1145
MORROW	7500	41
MULTNOMAH	652300	3558
POLK	45000	245
SHERMAN	2200	12
TILLAMOOK	22000	120
UMATILLA	60600	331
UNION	24800	135
WALLOWA	7550	41
WASCO	22500	123
WASHINGTON	260200	1419
WHEELER	1400	8
YAMHILL	57000	311
TOTAL		14999

Section II-2 Point Sources

The results presented in this section of the report deal with industrial sources which were thought to individually have the potential of emitting significant amounts of potentially toxic pollutants. Smaller industrial sources were included under area sources because their emissions were felt to be unimportant individually but had the potential to be significant TAPs sources as a group. Most of these larger industrial sources were surveyed by mail. To reduce the burden on industrial sources, DEQ files were used for those sources which were already well characterized through the particulate air quality permitting system. For the sources that were surveyed, information from source tests and material balances was requested. It was rarely available for the TAPs of interest, since these pollutants have not been of concern until recently. Consequently, most of the emission estimates from these sources are extremely uncertain, even though the sources provided information on their use of individual TAPs. Where no source-specific data was available, published emission factors were used, if available. These can vary extensively from plant to plant, and there is no assurance that Oregon plants are similar to those used to determine emission factors in the literature. For some sources and TAPs, there are no published emission factors. In these cases, the emission factors for the most similar sources that had emission factors were used. Obviously, these results have the highest degree of uncertainty. As noted earlier, emissions were inventoried for the 1984 calendar year.

The assumptions made for each source category and the calculated emissions are documented in this report by SIC category. The emissions are presented as a plant total, but these may include many sources within the plant such as storage tanks, degreasing, surface coating, and manufacturing processes. Information on emissions by Basic Equipment Code have been stored in the computer database at DEQ but that level of detail is too great for this report. Some plants have more than one SIC code. Since one of the purposes of this study is to try to identify the most important emitters of TAPs by source category (SIC), the plants emissions are usually reported under each SIC. In the future, changes should be made to the database to be able to breakdown a source's emissions into the amounts that result from each SIC-specific activity. At present, it is not possible to distinguish between emissions from different SIC activities within the toxics emission inventory system. Therefore, the totals presented in this section of the report will not necessarily equal the total amount of each TAP emitted statewide, as shown in the detailed inventory in Appendix B, due to some double counting of sources with multiple SICs.

II-2.1 CROP PREPARATION SERVICES FOR MARKETING
SIC 07

Pesticides are often used to treat seeds and grains which are in the process of being prepared for marketing. Pesticides are applied both as pellets, which volatilize when they are exposed to air, or are sprayed onto the seeds or grains being treated. Five sources were surveyed, all of which responded, and most of which used none of the TAPs listed in Table I-3.

As a conservative assumption, all of the pesticides used were assumed to volatilize, none remaining on the grains and seeds. Even using this conservative assumption, the emissions calculated for this category, shown in Table 37, are minimal.

Table II-37

TAP Emissions from Crop Preparation
(pounds)

County	Carbaryl	Methoxychlor	2,4-D
Lane	12	2	6

This category is not recommended for further study, due to the minor nature of these emissions.

II-2.2 FOOD AND KINDRED PRODUCTS
SIC 20

Sources included in this category are engaged in manufacturing feed for animals, including humans. Fifteen sources were surveyed: three flour mills, one frozen food processor, ten animal feed producers, and one source which manufactures sugar from sugar beets. Other studies have indicated that pesticide use can be significant in animal feed preparation and that large amounts of formaldehyde are used in the sugar beet industry. The frozen food and animal feed producers all indicated that they used none of the TAPs listed in Table I-3. One of the flour mills used small amounts of methyl bromide and methyl chloride, all of which were assumed to vaporize at the site. The process using formaldehyde in the one sugar manufacturer identified in Oregon involves formalin, which is converted to organic acids at a later step in the process. Also, the formaldehyde used is in an aqueous solution, which has an extremely low vapor pressure. For these reasons, it was felt that the formaldehyde emissions from this source would be negligible. No emission factors for this type of source were identified in the literature search to provide any better estimates. The only emissions inventoried were those for the flour mill, shown below:

Table II-38

Flour Mill Emissions
(pounds)

County	Methyl Bromide	Methyl Chloride
Multnomah	1492	30

II-2.3 TEXTILE MILL PRODUCTS SIC 22

The only type of source identified in Oregon which falls into this SIC category are wool weaving mills, of which there were 11 identified and surveyed in the state. According to EPA (1985a), VOCs can be emitted from textile fabric manufacturers, mainly as the raw wool is cleaned or fabric is printed during the finishing process. In printing, a design is applied to constructed fabric by roller, flat screen, or rotary screen methods. VOCs are present in solvents in print pastes or inks. Of the seven sources responding to the survey, all but one indicated that they do not use any toxics in their plants except for the small amounts of cleaning solvent used for spot cleaning fabrics after they are woven. The exception was a plant in Marion County. Assuming that all of the cleaning solvents used evaporate, the calculated emissions for this category are:

Table II-39

Emissions From Textile Mills
(pounds)

County	Perchlorethylene	Xylene
Marion	1208	1020

Due to the small magnitude of the emissions, the existing sources in this category should be considered a low priority for further study.

II-2.4 APPAREL AND OTHER FINISHED PRODUCTS MADE FROM FABRICS SIC 23

Two sources with this SIC designation were identified and surveyed . Since neither source returned their survey, there are no emission estimates available for this category.

II-2.5 LUMBER AND WOOD PRODUCTS, EXCEPT FURNITURE SIC 24

Three quite different types of sources fall into this SIC category: millwork, which includes doors, sashes, moldings, etc; wood preserving; and particle board manufacturers. Since the processes and emissions from these three types of sources are so different, they are discussed separately.

Millwork

Sources in this category produced fabricated millwork, such as cabinets, doors, and wood trim. There are a number of millwork plants in Oregon but they were not surveyed, since it was felt that there would be sufficient data in DEQ files to characterize their emissions. The files contained detailed information on only one source, which used paints containing solvents that were on the list of TAP's. This source's emissions were calculated by assuming that all of the solvents in the paints evaporated. Another plant, under the same ownership, was assumed to use the same types of paints and solvents and its emissions were estimated by ratioing the first plant's emission on the basis of production. The emissions calculated for the two plants are shown in Table II-40.

Table II-40

TAP Emission from Millwork Plants
(pounds)

County	Toluene	Xylene
Josephine	9776	26676
Washington	552938	274318

The emissions for other millwork plants were not calculated, since sufficient information on their processes was not available. Since the emissions from one of the plants for which emissions were calculated are relatively large, the emissions for some of the plants not considered may also be fairly high. As the permits for sources in this category come up for renewal, information on their TAP use and emissions should be acquired.

Wood Preserving

There are a considerable number of sources engaging in wood preservation in Oregon, using pentachlorophenol, creosote, and compounds containing arsenic and chromium. Emission factors for wood-treating sources were not available at the time the list of TAPs was developed. Emission factors measured recently at a plant in Washington (Engineering Science, 1986) show that naphthalene is the main VOC emitted by large industrial sources pressure-treating wood with either creosote or pentachlorophenol:

Table II-41

Pentachlorophenol Cycle Emissions

	(pounds)			
Compound	Conditioning (48 hr)	Final (1 hr)	Fugitive (1/2 hr)	Cycle Total (56 hr)
Naphthalene	110	0.930	0.120	111
Acenaphthalene	<0.0528	<0.0009	<0.006	<0.0597
Acenaphthene	1.65	0.0234	0.006	1.68
Phenanthrene	0.115	0.0016	0.006	.123
Fluoranthene	<0.0528	<0.0009	<0.006	<0.597
Fluorene	0.461	0.0092	0.012	0.482
Pyrene	<0.0528	<0.0009	<0.006	<0.0597
Pentachlorophenol	<0.0528	<0.0009	0.360	<0.414
Anthracene	<0.0528	<0.0009	<0.006	<0.0597

[a] < indicates values calculated at lower limit of detection.

Table II-42

Creosote Cycle Emissions
(pounds)

Compound	Conditioning (48 hr)	Final (1 hr)	Fugitive (1/2 hr)	Cycle Total (56 hr)
Naphthalene	106	1.06	4.68	111
Acenaphthalene	0.101	0.0097	.0613	0.172
Acenaphthene	0.154	0.0472	1.40	1.60
Phenanthrene	0.0576	0.004	0.172	0.233
Fluoranthene	<0.0432[a]	<0.0012	0.0195	<0.0639
Fluorene	0.197	0.0295	0.373	0.599
Pyrene	<0.0432	<0.0012	0.012	<0.0564
Pentachlorophenol	<0.0432	<0.0012	0.0083	<0.0527
Anthracene	<0.0432	<0.0012	0.0465	<0.0477

[a] < indicates values calculated at lower limit of detection.

Since napthalene wasn't included on the list of TAPs surveyed for, its emissions were not calculated solely for this source category. Only emissions from sources using pentachlorophenol, the only listed TAP used by these sources, are discussed here. The original intent was to rely on results of a survey conducted by DEQ's Water Quality Division on pentachlorophenol use to characterize the emissions from the numerous small sources in the state. However, the results of this survey were not available in time to be included in this report. Instead, most of the emissions from wood-treating sources are based on statewide use and discussed under area sources and not individual industrial sources. However, the ten largest wood-preserving plants were surveyed, with six responding.. The processes of the three respondents who indicated they used TAPs were compared to the source tested in Washington and found to be nearly identical, so the emissions/load factor measured at the Washington plant was applied to the number of loads at the Oregon plants, with the following results:

Table II-43

TAP Emissions from Wood Treatment
(pounds)

County	Pentachlorophenol
Multnomah	80
Wasco	740

These calculated emissions are quite small. However, napthalene would be emitted in much greater quantity at these plants. The DEQ toxicologist should be requested to determine whether the amount of napthalene emitted by these sources would be likely to cause adverse impacts. If it is determined that problems might exist, napthalene should be added to the list of TAPs and better information collected on its emissions statewide.

In addition to the pentachlorophenal and creosote processes, some wood is pressure-treated with solutions containing chromium and arsenic. Emission factors were not found for these processes. One of the two survey respondents which used these solutions had a wet scrubber and venting controls on the process. Emissions from the chromium and arsenic processes are expected to be less significant than the organic treatment solution emissions.

Plywood

Plywood manufacturing is an important industrial source category in Oregon. Plywood consists of thin wood veneers bonded with an adhesive. During plywood assembly, veneers are layered with thermosetting resin. The veneer/resin assembly is tranferred to a hot press where the bonding occurs, with some associated release of solvents in the resin. The only one of the listed TAPs that is used in this type of source is formaldehyde, which is a component of the resin. However, almost all of the formaldehyde is in a polymerized form and does not volatilize easily. However, there has been concern in recent year about indoor levels of formaldehyde resulting from the slow release of formaldehyde from plywood contained in buildings. In fact, this concern has resulted in process changes that minimize formaldehyde emissions. According to EPA, the amounts of organic compounds released from the adhesives during plywood pressing operations are negligible, so formaldehyde emissions were not calculated.

One source indicated that solvents other than formaldehyde were emitted from a plywood coating operation. Emissions, base on solvent evaporation, are as follows:

Table II-44

TAP Emissions from Plywood Manufacturing
(pounds)

County	Toluene	Xylene
Lane	29550	7460

Because the emissions are small and because steps have been taken to reduce the indoor air quality effects from this source, no further study on plywood emissions is recommended at this time. However, if an emission factor for formaldehyde release from plywood manufacturing becomes available, it should be applied to the Oregon plants and the importance of this category reassessed.

II-2.6 FURNITURE AND FIXTURES
SIC 25

TAP emissions from this source category result from solvents in the surface coatings (paints, lacquers, etc.) used in manufacturing furniture and fixtures. Two sources out of the five surveyed responded, only one of which used paints that contained solvents or pigments on the list of TAPs. All of the solvents in the paints were assumed to evaporate when applied. It was assumed that none of the pigments containing TAPs would be released in the painting process. The emissions for this source were calculated to be:

Table II-45

TAP Emissions from Furniture and Fixture Manufacturing
(pounds)

County	Toulene	Xylene	Methyl Chloroform
Multnomah	670	670	13000

The amounts of TAP used by this type of source appear to be moderate. Non-occupational health effects from this category should be small if the non-responding sources do not use significantly more TAPs than the respondents. To more accurately ascertain this, information from the other sources should be collected when their source permits are renewed.

II-2.7 PAPER AND ALLIED PRODUCTS
SIC 26

This source category consists of three subcategories: pulp and paper mills, paperboard mills, and paper coating and glazing plants.

Pulp and Paper Mills

There are several different processes for converting raw wood to pulp, then paper. They do not, however, involve the use of any of the listed TAPs. The only source of TAPs identified in the literature search was the use of chlorine to bleach pulp, with resultant production and emission of chloroform. When pulp mills were surveyed, information on their use of chlorine for bleaching was requested, in addition to the TAPs listed in Table I-3. Although one plant in Oregon produces bleached pulp, none of the plants returning the survey indicated that they used chlorine for bleaching. However, several of them indicated that they used chlorine for purifying process water.

Two of the plants responding to the survey burned waste oil as fuel. The TAP emissions from these boilers were calculated and found to be quite small, so they are not reported as an emission specific to this source but under the area source section of this report. Some of the facilities also reported TAP emissions from surface coating operations as shown in Table II-46.

To estimate the chloroform emissions from water purification, the emission factor for chloroform from drinking water was scaled up by the ratio of the amount of chlorine used per liter of water at the plant divided by the amount used to treat a liter of drinking water. The resultant emission factor was 0.70 lbs of chloroform/million pounds of treated water.

The chloroform emissions for this source are also shown in Table II-46.

Table II-46

Pulp and Paper Mill Emissions
(pounds)

County	Chloroform	Xylene	Toluene	Methyl Chloroform
Clackamas	251328	10	6	-
Clatsop	142949	270	1039	-
Columbia	250165	-	-	-
Marion	-	-	-	138
Yamhill	-	114	102	-

Since the survey did not specifically ask for information on the use of chlorine for anything but pulp bleaching operations, some sources may not have reported on their use of chlorine for disinfecting water. DEQ may wish to determine how widespread the use of chlorine is for this purpose. From the data above, the emissions of chloroform from these plants appear to represent a lower exposure to the general public than chloroform emitted from drinking water treatment, since the emissions are of such a smaller magnitude and are less widely distributed. This is true, even if all the unreported plants use similar amounts of chlorine. Unless further study shows that chloroform from drinking water poses an unacceptable risk, this source would not be recommended as a top priority for further study.

Paperboard Mills

Four sources in this category responded to the survey. The plants indicated that no TAPs were used. Although two sources burned waste oil as a fuel, the emissions were very small and were included in the area source waste-oil category.

Paper Coating and Glazing

Only two sources in Oregon fall within this category. Since the surface coatings used by these sources may contain considerable amounts of VOCs, DEQ has already characterized their emissions as part of the ozone control strategy. The information in the files was used rather than requesting that the sources respond to surveys. None of the VOCs used by one of the sources contained any of the TAPs listed in Table I-3. The other source used several coatings containing solvents on the list of TAPs. This source uses a carbon bed absorber with a 95% tested efficiency for toluene. Based on the total amount of TAPs used at the plant and the reductions in emissions due to the control equipment, the following emissions were calculated:

Table II-47

TAP Emissions from Paper Coating
(pounds)

County	Toluene
Multnomah	2890000

Since the emissions from this category are quite large, DEQ is currently modeling the toluene levels to which persons living and working near this plant would be exposed. Results of this modeling should be used to determine whether further study of this source category is warranted.

II-2.8 PRINTING, PUBLISHING, AND ALLIED INDUSTRIES SIC 27

Based on the results of the literature search, it was felt that this category could contain sources emitting significant amounts of TAPs from solvent use and ink constituents. As a result, a large number of sources (55) in this category were surveyed. Based on the returns from the 24 respondents, it was found that the use of solvents was actually quite small and that the trend in the past several years has been to replace the toxic constituents of ink with non-toxic compounds. As a result, this source category did not prove to be nearly as important as originally expected. To calculate emissions from this category, all of the solvents used in degreasing and surface coating operations were assumed to be volatilized into the atmosphere. Based on the total amount of solvent used by these sources, the emissions were calculated to be:

Table II-48

TAP Emissions from Printing and Publishing Industries
(pounds)

	Clackamas	Lane	Marion	Multnomah	Wshington
Benzene	-	-	140	1740	-
Chromium	-	-	-	-	-
Formaldehyde	-	-	15	-	-
Lead	-	-	-	-	-
Manganese	-	-	15	-	-
Methylene Chloride	-	-	-	65	403
Methyl Chloroform	-	-	42	-	410
Toluene	-	24974	-	-	-
Trichloroethylene	66	-	-	-	-
Xylene	-	-	-	-	292

Since the amounts of TAPs used by sources is small and declining, further study is not recommended.

II-2.9 CHEMICALS AND ALLIED PRODUCTS
SIC 28

Industrial Inorganic Chemicals

Many of the survey respondents in this source category were reclassified to a more appropriate SIC category, based on the process from which emissions occurred.

Only one of the seven sources remaining in this category had emissions of a compound listed in Table I-3. Emissions for this source, a lead oxide manufacturer, were calculated from results of a baghouse exhaust source test and are shown in Table II-49.

Table II-49

TAP Emissions from Inorganic Chemical Manufacturing
(pounds)

County	Lead
Washington	252

Due to the wide variety of industrial organic chemical processes, generalizations drawn from this data would be inaccurate. Sources with unknown emissions must be examined individually for possible similarities to sources in this category for which emission factors have been determined. The results shown in Table II-49 may be applicable, for example, to other lead-producing operations which were not inventoried.

Resins

Resin manufacturers in Oregon mainly produce resins for use in the wood-products industry. These resins are usually based on three compounds: formaldehyde, phenol, and epichlorohydrin. These compounds are involved in polymerization reactions during the resin production processes, thereby making much of the chemicals unavailable for release to the atmosphere. Some plants also manufacture their own formaldehyde, resulting in additional emissions of that chemical. Also contained in this category are coating resin manufacturers using compounds containing mercury, lead, manganese, toluene, xylene, and maleic anhydride. There are also considerable emissions from storage and transfer of the raw materials used as input for these manufacturing processes.

Several of the sources in this category had source tests or source-specific material balances available. If these were not available, the emission factors for this category supplied by EPA (1984e, 1985i) were used, except for the storage tank emissions which were calculated using AP-42 methods (EPA, 1985a). The emission factors shown in Table II-50 summarize the information available from several sources for formaldehyde manufacturing: source-test results provided by one industry, a material balance provided by another, and estimates for non-Oregon sources provided by EPA. The EPA estimates are presented as a range, the low end of the range representing a well-controlled source and the high end representing an uncontrolled source. Table II-51 shows the EPA (1984e) emission factors for resin production.

Table II-50

Emission Factors for Formaldehyde Production

Information Source	Emission Factor lbs Emitted/lbs Produced
Source Test	3.5×10^{-5}
Material Balance	0.6×10^{-3}
EPA	
Silver Catalyst	1×10^{-4} to 8×10^{-4}
Metal Oxide Catalyst	1×10^{-5} to 5×10^{-4}

Table II-51

Resin Manufacturing Emission Factors

Source	Grams Emitted/Kilogram 37% Formaldehyde Used
Process Vents	0.15 - 1.5
Storage Facilities	0.03 - 0.2
Fugitive	0.03 - 0.2

Emission factors from the source-test match quite well with EPA estimates. The factors based on the material balance are high relative to the other methods of calculating emissions, unless it already includes fugitive emissions. The emissions calculated using the most applicable emission factors for these sources are shown in Table II-52.

Table II-52

TAP Emissions from Organic Resin Manufacturing
(pounds)

County	Toluene	Phenol	Xylene	Formaldehyde	Benzene
Jackson	-	60	-	1220	-
Lane	-	2903	-	85268	400
Linn	-	70	-	26000	-
Multnomah	170	21	1085	-	-
Union	-	20	-	2627	-

Resin manufacturers represent some of the highest emissions from individual industrial sources. Consequently, one of these sources has been chosen for modeling by DEQ. Further action with regard to this source category should be dependent on whether or not the exposures calculated from that plant appear to present a hazard to human health.

Soaps and Other Cleaning Products

Of the two sources responding in this category, both used TAPs in their manufacturing processes. Since no emission factors were available for cleaning product manufacturing, it was assumed that 1-2% of the solvent would volatilize on site. Using these emission factors, the source would emit:

Table II-53

TAP Emissions from the Manufacture of Soaps
(pounds)

County	Toluene	Perchloro-ethylene	Cresola	Formal-dehyde	Methyl Chloroform	Methylene Chloride
Multnomah	40	280	120	51	511	6082

Since the emissions from this category are small, it should be considered a low priority for additional consideration.

Paints

This category contains manufacturers and formulators of paints, 15 of which were identified and surveyed. The TAP emissions from this category result from the solvents added to pigments to make paints as well as from the toxic components of the pigments themselves. The emissions from these plants result mainly from process losses, storage tanks, and in the case of formulators, from open tank blending of paints. However, most of the solvents remain in the product and do not volatilize until the paint is applied. The emission factors from AP-42 (EPA, 1985a) are therefore quite low; EPA's estimate is that about 1-2% of the solvent evaporates during manufacturing processes and that 0.5-1% of the pigment is lost in handling. Using these emission factors, the emissions calculated for the 12 respondents are:

Table II-54

TAP Emissions from Paint Manufacturing
(pounds)

	Lane	Marion	Multnomah
Toluene	12170	22580	4338
Di (2-Ethyl Hexyl Phthalate)	-	32	-
Perchloroethylene	-	-	280
Xylene	41146	228	6342
Formaldeyhde	-	-	51
Lead	-	-	187
Mercury	-	-	18
Methylene Chloride	7360	23067	6015
Propylene Oxide	-	371	-
2-Nitropropane	-	-	177

As described under the section on area source architectural coating, a trend toward decreasing solvent content in paints is occuring. Since the individual sources' emissions from this category are relatively low compared to some other categories, paint manufacturing should be given low priority, especially since it is unlikely that further regulation would result in significantly reduced TAPs.

Pesticides and Agricultural Chemicals

This category includes one plant manufacturing fertilizer and pesticides, one manufacturing pesticides only, both located in Multnomah County. Combined emissions are shown below.

Table II-55

TAP Emissions from the Manufacture of
Pesticides and Agricultural Equipment
(pounds)

County	Xylene	2,4,-Dichlorophenoxy Acetic Acid
Multnomah	1847	175

Adhesives and Sealants

The five sources surveyed in this category all responded. Only one, an adhesives manufacturer, used TAPs. This source used small amounts of vinyl trichloride, formaldehyde, methylene chloride, and phenol. Since all of these except vinyl trichloride polymerize during the manufacturing processes, it was assumed that only vinyl trichloride had significant emissions. Emissions for this category are:

Table II-56

TAP Emissions from the Manufacture
of Adhesives and Sealants
(pounds)

County	Vinyl Trichloride
Multnomah	123

Ink Manufacturing

In the past, solvents such as carbon tetrachlororide, tetrachloroethylene, toluene and xylene were used as solvents in the manufacturing of inks, and toxic metals were used in the pigments. Five sources were identified and surveyed. Of the two that returned the survey, only one used any of the TAPs listed in Table I-3. Pigments used to make the ink contain lead and chromium and the pigments are mixed with another TAP, toluene. The emission factors for ink manufacturing in AP-42 provide emission factors of 2 lb of particulate/ton of pigment, or in this case, ton of TAP, used. The AP-42 (EPA, 1985a) VOC emission factors were provided in lb/ton of product. Since the basis of calculations was amount of TAP used and not total TAP per unit of product, EPA's factors were not used for solvent loss. Instead, since very little of the TAP-containing solvents would volatilize at the source (most of it would be shipped in the ink to a printing plant), it was assumed that only 1 percent of the solvents would volatilize at the ink manufacturing plant. The emissions calculated using this assumption are:

Table II-57

TAP Emissions from Ink Manufacturing
(pounds)

County	Toluene	Lead	Chromium
Multnomah	96	42	42

Since this plant manufactures a considerable amount of ink but has very low emissions, it was not deemed worthwhile to follow-up on the plants that did not respond to the survey. Due to the low emissions, this source category is considered low priority for further examination.

Miscellaneous Chemicals and Chemical Preparations

This source category includes manufacturers of chemical products which are not classified in any other category. The sources, which produce a diverse array of chemicals, are generally small operations. Emissions for the one source which reported emissions in the survey were as follows:

Table II-58

Emissions From Miscellaneous Chemical Preparations
(pounds)

County	Xylene
Multnomah	34

Given the low emission rate for this source, this source category has low priority for further consideration. Individual sources within the category would warrant further attention if they are discovered to be emitting particularly toxic air contaminants.

II-2.10 PETROLEUM REFINING AND RELATED INDUSTRIES
SIC 29

Paving Mixtures and Blocks

The information from DEQ's permit files was examined for the four largest paving asphalt producers in the state. Radian (1984) provides emission factors for formaldehyde and polycylic organic matter (PPAH) for this source category. Since the formaldehyde emission factor of 0.00015 lbs of formaldehyde/ton of asphalt was larger than the PPAH emission factors, it was applied to the production of the four largest plants to determine whether it was worth calculating the emissions from the many smaller sources in this category. Formaldehyde emissions were calculated at only 25 lbs/year for the largest source and less than that for the other three. Based on this screening, it was determined that this category is not worth pursuing further unless better data showing greater emissions is developed.

Emissions are negligible for the TAPs for which emission factors are currently available.

Asphalt Felts and Coatings

The emissions for this source category were assumed to be similar to those discussed under paving mixtures, since no emission factors specific to this category were identified. Using those emission factors, it appears that the emissions from this source category are also negligible. However, if better emission factors become available, these sources of emissions should be reassessed.

Petroleum Rerefining

One used-oil rerefiner within this category was surveyed. Using the EPA AP-42 procedure for calculating storage tank losses, the emissions were determined to be:

Table II-59

Petroleum Rerefining Emissions
(pounds)

County	Trichloreothylene
Multnomah	44

A more rigorous review of this source category might show additional process emissions. Given the low magnitude of the calculated emissions and likely process emissions, this source category is of low priority for additional investigation. More significant emissions would be expected at the facilities using large quantities of used oil as a fuel.

II-2.11 RUBBER AND MISCELLANEOUS PLASTIC PRODUCTS SIC 30

Of the three sources surveyed, only two, a polyurethane foam manufacturer and an elastmeric silicone producer, used TAPs listed in Table I-3. A battery separater manufacturer for which emissions data was in the permit files was also included in this category. Emissions are as follows.

Table II-60
Emissions From Miscellaneous Plastic Products
(pounds)

County	Methylene Chloride	Toluene	Methyl Chloroform	Trichloro-ethylene
Benton	-	-	-	631,400
Multnomah	1627	-	-	-
Yamhill	-	750	4970	-

Emissions modeling has been performed for the largest of these sources. The other two soures do not warrant further consideration at this time.

II-2.12 LEATHER AND LEATHER PRODUCTS SIC 31

According to information identified in the literature search, tanning of hides uses a solution predominantly composed of trivalent chromium sulfate. After tanning, the hides are finished, which can include coating with various polymers and dyes which may contain additional TAPs. Eight sources in this SIC category were identified in Oregon and surveyed. Of the seven sources that responded, only one used any of the listed TAPs. This source used small amounts of manganese sulfate and formaldehyde. Emissions for this source were not estimated because emission factors were not identified and the amounts of TAPs used were insignificant. The potential for TAP emissions from this source category appears so low that it is not recommended for further study.

II-2.13 STONE, CLAY, GLASS, AND CONCRETE PRODUCTS SIC 32

Glass Products

Of the five sources identified and surveyed, two responded. One of the sources, an art glass manufacturer, used very small amounts of metals in its processes. Emissions from these processes should be negligible. Another source located in Multnomah County used TAPs only for degreasing. Assuming that all of the solvent evaporated, emissions would be:

Table II-61

TAP Emissions From Glass Manfuacture
(pounds)

County	Methyl Chloroform
Multnomah	7,010

Based on the limited TAP use by the sources that responded to the survey, this source category is not likely to be an important source of TAPs and should be given a low priority for further analysis.

Cement

Two cement manufacturers were identified in Oregon. One of the plants did not operate during 1984 and is currently being dismantled. The principle emission sources at cement manufacturing facilities are the kiln and the boilers. TAPs of concern for the kilns are chromium and nickel. Emission factors described by EPA (1984f and 1984g) and summarized below were used to estimate emissions from this source.

Table II-62

Emission Factors for Wet Cement Process
(pounds/1000 tons cement)

	Nickel	Chromium
Kiln	0.2 - 2.0	.004 - .03
Clinker cooler	0.1	.001 - .01
Grinding	.004	<3.4
Total	1.6	.05

The emissions calculated are:

Table II-63

TAP Emissions from Cement Manufacturing
(pounds)

County	Nickel	Chromium
Baker	700	20

Due to the low magnatude of these emissions, further action on this source category is not likely to be necessary.

Abrasives, Mineral Wool, Gaskets, Packing and Sealing Devices

Four sources in this category (SIC 329) were identified and surveyed, three of which responded. The main use of TAPs was in solvents used for cleaning and surface coating at one of the sources. All of the solvents used were assumed to evaporate at the site. The emissions calculated are shown below.

Table II-64

TAP Emissions from the Manufacture of Abrasives,
Gaskets, and Mineral Wool
(pounds)

County	Toluene	Methyl Chloroform
Yamhill	750	4970

Since this source category does not appear to be a major TAP source, it should be given a low priority for additional analysis.

II-2.14 PRIMARY METAL INDUSTRIES SIC 33

Blast Furnaces, Steel Works, and Rolling and Finishing Mills

One source in this classification completed the survey. The source reported cadmium and lead emissions as a percentage of total particulate emissions from the baghouse. Chromium emissions were also calculated. Sprayed-on surface coating emissions at the facility are controlled by a water wall. Controlled emissions were calculated to be:

Table II-65

TAP Emissions for Steel Works and Rolling Mills (pounds)

County--Multnomah	
Toluene	735
Xylene	576
Lead	3441
Cadmium	45
Chromium	1188
Propylene Oxide	5

Gray Iron Foundaries

Sources in this category are engaged in the manufacturing of gray iron castings by melting, alloying, and molding pig iron and scrap iron. Emissions from this type of source result from potentially toxic metals contained in the raw materials and emitted as particulate matter. Emissions can result either from storage and transfer (fugitive emissions) or from processes such as the melting furnace, especially during operations such as charging, backcharging, alloying, slag removal, and tapping operations when the furnace lids are open. For fugitive emissions, it was assumed that 0.04 lbs of lead were emitted per ton of product produced (EPA, 1978). No TAP emission factors were identified directly for the process emissions, just factors based on the amount of particulate matter emitted. Therefore, the total particulate emissions were first calculated using the AP-42 factor of 0.2 lbs/ton of product for a source equipped with a bag filter and were apportioned to TAPs based on EPA (1973) as follows:

Table II-66

Emission Factors for Grey Iron Foundaries

TAP	% of Particles Emitted
Arsenic	0.5
Lead	3.0
Manganese	0.2

The emissions calculated using these emission factors and reported solvent usage are:

Table II-67

TAP Emissions from Gray Iron Foundries
(pounds)

County	Lead	Manganese	Arsenic	Trichloroethylene
Multnomah	1076	94	26	-
Washington	-	-	-	7

Although only three of the eight sources surveyed responded, it does not appear that this category of source is sufficiently important to make characterization of emissions from the other sources a high priority.

Investment Foundaries

Six sources in Oregon fall under this SIC category. The largest emitter is a source which manufactures metal alloy castings in Multnomah County. These sources use materials containing cadmium, manganese, and nickel in their manufacturing processes. For cleaning and surface preparation, use considerable amounts of trichloroethylene, perchloroethylene, and trichlorotrifluoroethane are used. Metal emissions were calculated by material balances and/or emission factors from EPA (1984f, 1984g). Two sources provided the amounts of solvents used and the amounts recycled. All solvents not recycled were assumed to volatilize. The emissions calculated using these assumptions for the three sources which responded to the survey are:

Table II-68

TAP Emissions from Steel Investment Foundries
(pounds)

	Clackamas	Multnomah
Perchloroethylene	6768	8460
Manganese	91	3
Nickel	3644	5516
Cadmium	116	4
Chromium	2338	4128
Trichloroethylene	140300	139690

Any further action on this individual source categpry should be dependent on the results of the modeling of the heavy metal emitting source.

Primary Smelting and Refining of Nonferrous Metals

There are five sources contained in this category: one involved in the mining and smelting of nickel ores, another in titanium manufacturing, a third in the manufacturing of nonferrous metals, and two primary aluminum producers. Of the raw materials used in these industries, only nickel is on the list of potential TAPs. Use of solvents by sources in this category appear to be relatively small. For the nickel emission factors, the EPA (1984f) emission factor of 2.4 lbs of nickel per ton of nickel produced was used. For solvents, the sources provided information on the amounts used and the amounts recycled. All solvents not recycled were assumed to be emitted to the atmosphere. The emissions calculated using these assumptions shown in Table II-69.

The aluminum plant which responded to the survey did not report usage of any listed TAPs. However, fluoride emissions potential from aluminum production is high. The emission of fluoride compounds from aluminum plants has been controlled in accordance with Department regulations to acceptable levels. Additional controls should not be necessary.

Table II-69

TAP Emissions from Primary Smelting
and Refining of Nonferrous Metals
(pounds)

County	Toluene	Methyl Chloroform	Nickel	Phosgene
Douglas	-	-	28800	-
Linn	3150	121276	-	1000

Emissions from this category are fairly large. However, the Douglas County source has been permanently closed. Since the emissions reported for the other sources are primarily organic solvents, the modeling results from other sources can be used to estimate the ambient impact of these sources. The health effects of other heavy metals which may be emitted by these sources should also be reviewed.

Secondary Smelting and Refining of Nonferrous Metals

The sources identified under this category consist of an aluminum production plant, a secondary lead smelter and refinery, and two scrap metal salvage operations. Only the lead smelter had significant emissions of a listed TAP. Two of the sources burned waste oil. Since the waste-oil emissions are already included under area source use of waste oil and since the individual sources' emissions are small, they are not reported separately here.

For the lead smelter, the lead emissions were determined from a source test. The source also indicated it used antimony, arsenic, and cadmium, for which no source tests were available. It was assumed that these additional compounds would be emitted in the same proportion as lead was based on the amount in the process input. The emissions calculated for the lead smelter and salvage operations are:

Table II-70

TAP Emissions from Secondary Smelting and Refining of Nonferrous Metals
(pounds)

County	Lead	Antimony
Clackamas	105	-
Columbia	1484	31

Cadmium and arsenic are not included in this table as emissions were calculated to be no more than 1 pound per year. Relative to other sources, the emissions of the TAPs from these plants are small, less than a ton a year of lead. The primary source has ceased operation since 1984. Accordingly, this category should probably be considered a low priority for further study.

Non-Ferrous Foundaries

There are a variety of sources in this category in Oregon, including aluminum, brass, and bronze foundries. While these metals are not on Table I-3, TAPs may be used as minor process inputs or as solvents. A representative brass foundry responded to the survey. The source indicated that manganese, lead, and nickel were used as process inputs and solvents were used in casting and painting operations. No emission factors were identified for this type of source, so the same assumptions were made for the metallic compound emissions as were documented above for the gray iron foundary, except that the source was assumed to have no controls. Therefore, an emission factor of 17 lbs/ton was used instead of 0.2. All of the solvents used in painting operations were assumed to vaporize. Also, all of the free phenol in the resin used for coating sand for castings was assumed to vaporize. This is probably an overestimate since most of it would polymerize, but the calculated phenol emissions are still very small. The emissions calculated are:

Table II-71

TAP Emissions from Nonferrous Foundries
(pounds)

Multnomah County

Toluene	634
Phenol	71
Perchloroethylene	363
Xylene	3062
Lead	159
Manganese	53

Since both the metallic and solvent TAPs are so low, this source by itself should not be a high priority for further analysis. However, most of the sources in this category are located in the Portland area. If solvent emissions are determined to be causing ambient TAP problems in the Portland airshed, additional analysis should be done to determine the emissions from other sources in this category. The aggregate impact of the source category could then be evaluated.

II-2.15 FABRICATED METAL PRODUCTS, EXCEPT MACHINERY AND TRANSPORTATION EQUIPMENT

SIC 34

Sources in this category are engaged in fabricating products such as metal cans, tinware, hand-tools, cutlery, general hardware, and other fabricated metal products. The emissions of TAPs from sources in this category result almost entirely from surface coating and degreasing operations. Thirty three sources were identified and surveyed in this category; 21 sources returned their surveys. To calculate the emissions, the following assumptions were made:

- o All of the solvents used for surface coating evaporate.
- o Unless it was indicated that the degreasing waste was disposed of by an alternate method, all of the solvents used for degreasing were assumed to evaporate.

The resultant emissions are:

Table II-72

TAP Emissions from Fabricated Metal Products
(pounds)

County	Trichloro-ethylene	Toluene	Xylene	Methyl Chloroform	Perchloro-ethylene
Clackamas	-	1020	1700	-	7150
Klamath	-	-	-	556	-
Multnomah	2640	34621	26399	-	27198

Although this category contains a number of sources, each source's emissions are fairly low. Therefore, it is probably not necessary to request the information from the sources not responding to the surveys. In addition to the emissions from solvent use, the only metallic compound that appears to be used in quantity by one or more of these sources is zinc, which is not on the list of TAPs. It does not, however, appear that the zinc emissions would be high enough to warrant studying the health effects of zinc to determine whether or not it should be included on the list of TAPs.

II-2.16 MACHINERY, EXCEPT ELECTRICAL
SIC 35

This category consists mainly of sources manufacturing heavy equipment and large tools. However, it also includes some firms engaged in manufacturing computers and peripherals. Of the twelve sources that fall under this SIC category that were identified and surveyed, eight returned their surveys. The results of those surveys are discussed below under two separate categories: Electronic Computing Equipment and Other Machinery.

Electronic Computing Equipment

Only three sources in this classification were surveyed since the DEQ permit files were expected to contain sufficient information to characterize the TAPs emitted by these sources. However, the information for most of the non-surveyed sources provided data only on total VOC emissions and not whether the VOCs contained TAPs. The emissions for these sources could not be included in this report.

Due to the tremendous growth in the electronics industry since the 1972 classification of industries (U.S. OBM, 1972), the current SIC codes are imprecise for classifying the "high-technology" industries. Rather than separating the affected sources between SIC 35 and SIC 36, the emissions for Electronic Computing Equipment have been combined with SIC 36. The emission-generating processes are very similar for these two SIC groups.

Other Machinery

TAP emitted from sources in this category result from painting and degreasing operations that include the use of potentially toxic solvents. Unless the sources indicated that they recycled the solvents or that the processes were equipped with emissions controls, all of the solvents were assumed to evaporate. The emissions calculated for this category are:

Table II-73

TAP Emissions from Other Machinery Manufacturing
(pounds)

County	Toluene	Xylene	Benzene	Methyl Chloroform	Chromium
Clackamas	1887	60	104	42211	-
Linn	-	-	-	-	15
Polk	26281	-	-	-	-

The emissions of these sources, ranging from less than one ton to 20 tons are not particularly high when compared to some of the other individual sources that were inventoried. Also, the largest sources in this category have already been controlled as a result of DEQ's programs to reduce VOC emissions for ozone reduction, potentially making further reductions extremely expensive. This category should probably be considered a low to moderate priority for further study.

II-2.17 ELECTRICAL AND ELECTRONIC MACHINERY, EQUIPMENT, AND SUPPLIES SIC 36

This category consists primarily of sources manufacturing or assembling electronic components or equipment. Several sources are engaged in assembling printed circuit boards. Altogether, sixteen sources in this SIC category responded to the survey. As discussed in Section II-2.16, the Electronic Computing Equipment sources are included with SIC 36 due to the obsolesence of the SIC codes.

Although it was felt that the potential for use of solvents containing TAPs were quite high for these sources, the actual use indicated by survey was significantly lower than expected. The solvents containing TAPs were used mainly for surface coating and degreasing operations. The emissions calculated were dependent on whether or not the vapors were recycled or removed by control equipment. In general, they were not controlled. All TAPs neither recycled nor recaptured were assumed to be vented to the atmosphere instead of being disposed of in the water system. In addition to the solvents, some of the source reported TAP emissions from the use of lead solder.

The emissions calculated for this category are shown in Table II-74.

The emissions from this source category were smaller than anticipated. However, since information in DEQ's files was incomplete for some of the sources in this category, the emissions may actually be larger. Information on TAPs used by sources whose emissions have not been characterized should be collected when permits are issued or renewed. Also, this is a highly competitive, rapidly changing industry and the processes using TAPs are subject to continual change. There is a potential for significant changes in the types of TAPs used and the use of solvents not included on the original list of TAPs which may have adverse health impacts. Some sources have already reported a reduction in TAP usage since 1984. Because of these uncertainties, this category should be given a higher priority for continued study than the numbers alone would suggest, with additional attention given to those TAPs which were not included in the original survey but have potentially significant usage in this SIC category.

II-2.18 TRANSPORTATION EQUIPMENT SIC 37

Sources in this category are engaged in the manufacture of trucks, boats, and motor homes. TAP emissions come from solvents used in painting and cleaning operations. Most of the paints used contained none of the listed TAPs. All of the TAPs in paints and used for degreasing were assumed to evaporate, unless emissions controls were installed. The emission factor of lbs of TAP emitted per unit produced varied widely by product with the highest emissions resulting from the manufacture of motor homes. The TAP emissions calculated for this category are:

Table II-74

TAP Emission from the Manufacturing of
Electronics Computing Equipment and
Electrical and Electronic Machinery, Equipment,
and Supplies
(pounds)

County	Epi-chlorohydrin	Toluene	Xylene	Formal-dehyde	Benzene	Methyl Chloroform	Lead	CFC 113	Methylene Chloride	Trichloro-Ethylene
Benton	–	85	405	–	–	3100	–	–	80	2900
Clackamas	–	–	–	500	915	1489	–	–	–	–
Jackson		3560	15702	–	–	12000	–	–	80	–
Josephine	–	959	1020	–	–	–	35	–	56	–
Multnomah	–	565	14133	–	–	398	67	–	64	–
Polk	590	2445	151	–	–	590	974	–	–	–
Washington	–	76	55	–	–	–	–	30	45	–

Table II-75

TAP Emissions from Manufacturing
Transportation Equipment
(pounds)

County	Toluene	Xylene	Methyl Chloride
Jackson	950	1690	-
Lane	271	-	1779
Multnomah	1900	1900	-

Both the emissions from the individual plants and from the category as a whole are relatively small and do not warrant immediate attention.

II-2.19 MEASURING, ANALYZING AND CONTROLLING INSTRUMENTS; PHOTOGRAPHIC, MEDICAL AND OPTICAL GOODS; WATCHES AND CLOCKS SIC 38

Of the five sources surveyed for this category, information was available for four and showed that only two used TAPs. One, a manufacturer of medical supplies, used fairly small amounts of methyl chloroform for degreasing. The other source, a manufacturer of photographic supplies, uses large amounts of toluene. This source is equipped with a thermal oxidizer which has an estimated 95% destruction efficiency. The emissions from this source category are calculated to be:

Table II-76

TAP Emissions from SIC 38 Sources
(pounds)

County	Methyl Chloride	Toluene
Clackamas	480	-
Jackson	-	400000

A preliminary determination should be made of whether emissions of this magnitude are likely to cause adverse health effects. Most of the information on the health effects of toluene will already be available as the result of the modeling of toluene exposures that is being conducted for another source by DEQ. If, based on the available information, it appears that adverse health effects may occur, the exposures due to this source should be modeled.

II-2.20 MISCELLANEOUS MANUFACTURING INDUSTRIES SIC 39

Only one source was identified for this category, a manufacturer of fishing lures. This source uses TAP-containing solvents for buffing and painting and uses nickel- and chromium-containing materials for electroplating.

The metallic emissions from electroplating were assumed to be negligible. For the solvents, the difference between the feed input and the amount removed for reprocessing or disposal was assumed to be lost to the atmosphere.

The emissions for this source are estimated to be:

Table II-77

TAP Emissions From SIC 39 Sources
(pounds)

County	Toluene	Trichloroethylene
Hood River	800	9915

Because the emissions from this source are already controlled, there should be no need for further action at this time.

II-2.21 ELECTRIC AND STEAM SUPPLY SIC 49

There are several large facilities generating power in Oregon and numerous small ones. The large facilities include Boardman, a coal-fired plant, and Trojan, a nuclear power plant. Hydroelectric generating stations were not considered to produce any TAPs. Although nuclear power plants emit radionuclides, which are potentially toxic, they were not considered in this study since a set of regulations is already in place that are designed to protect public health from this source's emissions. The gas and oil-fired generating stations had minimal usage in 1984, so emissions were determined to be negligible.

The emissions from the coal-fired plant were calculated based on results reported by Radian (1984) for coal combustion units equipped with electrostatic precipitators. Both the emission factors used and the emissions calculated are shown below.

Table II-78

Emission Factors for Coal-Fired Power Plants

Compound	Coal (pounds/ton)	Auxilliary Oil (lb/1000 gallons)
Arsenic	0.004	--
Beryllium	0.0001	--
Cadmium	<0.0001	--
Chromium	0.004	0.007
Formaldehyde	0.002	0.033
Manganese	0.002	0.004
Mercury	0.0003	--
Nickel	0.005	0.14
PPAH	0.00004	0.000175

Using these factors, emissions were calculated to be:

Table II-79

TAP Emissions for a Coal-Fired Power Plant (pounds)

Morrow County

Arsenic	2040
Beryllium	50
Cadmium	50
Chromium	2040
Formaldehyde	1030
Manganese	1020
Mercury	150
Nickel	2600
Particulate Polycyclic Aromatic Hydrocarbons	200

Although these emissions are small, the plant was operating well under capacity during 1984. It is recommended that the emissions be calculated for the full capacity of the plant before it is determined whether this source needs further consideration.

In addition to these large sources, this category includes the many smaller boilers used to provide heat or steam for commercial and industrial sources. The emissions from the smaller boilers were not considered for this project.

II-2.22 WHOLESALE TRADE - NONDURABLE GOODS SIC 51

This category includes establishments engaged primarily in the distribution of nondurable goods. This includes a wide range of goods, from farm products to petroleum products. The types of sources felt to be of concern as having the potential to emit toxics were the grain, chemicals, petroleum and petroleum products, and paints distributors.

Chemical Distribution

Three chemical distributors were identified and surveyed. Two of the distributors handled compounds from the TAP list. Emissions calculations were based on an assumed solvent loss of 1.5% during repackaging by one distributor. The other distributors used bulk storage tanks, so tank loss emissions were calculated using the formulas in AP-42. The resulting emissions are:

Table II-80

TAP Emissions from Chemical Distribution
(pounds)

County	Toluene	Perchloro-ethylene	Xylene	Methylene Chloride	Trichloroethylene
Multnomah	-	-	-	1150	-
Washington	240	80	20	420	170

These sources should be assigned a low priority for further investigation unless new emission factors are developed which would indicate higher losses.

Gasoline Distribution

Through efforts to control VOCs to reduce ozone, the distribution of gasoline has been identified as an important source of VOCs, some of which are TAPs. DEQ has already characterized emissions from gasoline distributers and required controls for bulk plants and terminals in ozone nonattainment areas. The emissions for all small sources, such as gas stations, are described in the area source section of this report. The emissions for the bulk plants and terminals that are large enough to be considered point sources are discussed separately in this section. TAP emissions were estimated from the VOC emissions that had already been by calculated by DEQ for these large sources by applying the breakdown of gasoline vapors provided in the VOC Species Data Manual (EPA, 1980b):

Table II-81

Emission Factors for Gasoline Vapors

TAP	% of VOC
Benzene	2.4
Toluene	9.4
Xylene	13.5

The TAP emissions would be:

Table II-82

TAP Emissions from Petroleum
Bulk Stations and Terminals
(pounds)

County	Toluene	Xylene	Benzene
Lane	10690	15900	2977
Linn	18337	26335	4681
Multnomah	72648	95388	26206

Relative emissions are higher in Lane and Linn Counties than in Multnomah County due to the lack of control equipment. Some control equipment is being installed at the facility in Linn County during 1986. A low priority should be given to further reductions at the controlled facilities unless area modeling indicates that benzene, xylene, or toluene ambient levels may be causing health effects.

Grain Distributors

The literature search indicated that sources engaged in the storage and transfer of grain had the potential to emit significant TAPs from the pesticides used to minimize pest damage during storage. Twenty grain storage facilities were identified and surveyed, with twelve responding. The only TAPs used by the respondents were xylene, methoxychlor, carbon tetrachloride, and heptachlor. The use of carbon tetrachloride and heptachlor are now restricted and as soon as supplies on hand run out, these sources will no longer be able to use these pesticides. Since their use was small, these two chemicals were not inventoried. Of the other two pesticides, methoxychlor is an active ingredient and xylene is a commonly used carrier for the active ingredients in pesticide formulations. Assuming that all of the pesticide volatilizes and is emitted to the atmosphere with none remaining in the grain, the estimated emissions of these two compounds is shown below:

Table II-83

TAP Emissions from Grain Storage
(pounds)

County	Xylene	Methoxychlor
Multnomah	5008	33
Sherman	850	-
Wasco	255	-

After working on the area sources of pesticides, discussed in Section II.1 of this report, the decision was made not to distinguish between the different types of pesticides, since most of them have potentially adverse affects on health if they are encountered in high enough concentrations. Instead, all pesticides were lumped into a single category. Unfortunately, that decision was made after the surveys were sent out. Since the surveys requested information on only the TAPs listed in Table I-3, and since this table included only a few pesticides, the actual use of pesticides from this category is probably underestimated. However, phone conversations with grain distributors showed that they use very little of any kind of pesticides, applying it only when pests are actually present, not as a routine preventative measure. As a result, it is felt that this category is probably not an important source of TAPs and should be considered low priority for further study.

Paints, Varnishes, and Supplies

Two companies, engaged in the distribution of paint, varnishes, and supplies, returned the survey. No significant TAP emissions were reported.

II-2.23 PERSONAL SERVICES
SIC 72

The only type of source inventoried in this category was drycleaners. The largest drycleaners were identified using DEQ's VOC inventory. Of the eleven sources inventoried, seven responded. Of the seven, only two used perchloroethylene, the only solvent used by drycleaners on the list of TAPs. Both sources used filter systems to reuse part of the solvents. The remaining solvent was distilled, with disposal of spent filters and distillation bottoms off site. The AP-42 estimate of perchloroethylene use is based on the number of pounds of clothes cleaned, a statistic found in earlier studies to be poorly tracked by Oregon sources (Pacific Environmental Services, 1979). Instead, the AP-42 (EPA, 1985a) emission factors shown below (lbs of perchloroethylene emitted per 100 lbs of clothes cleaned) were ratioed and applied to solvent use:

Table II-84

Drycleaning Emission Factors

	Range	Maximum	% of Total
Vaporized at site	0.9 - 9	9	77
Filter Disposal	0.5 - 1.1	1.1	9
Residue Disposal	0.5 - 1.6	1.6	14
Total	1.9 - 11.7	11.7	100

Of the total used per 100 lbs of clothes, 23% (9 + 14) was disposed of in the filter or residue and was assumed to cause no on-site emissions. The remaining 77% was applied to the total perchloroethylene used to provide a rough estimate of the amount of perchloroethylene emitted at major drycleaning establishments. Table II-85 shows the emissions calculated using this assumption:

Table II-85

TAP Emissions from Major Drycleaners
(pounds)

County	Perchloroethylene
Jackson	6000
Washington	1730

As major point sources, these sources are relatively small. Probably of greater importance is drycleaning contribution as an area source.

Section III: Additional Analysis of Inventory Results

For each point and area source category, this report includes a discussion of the significance of the TAP emissions and recommendations concerning additional analysis. This section of the report focuses on the location of the emissions rather than the source characteristics. First, the distribution by county of the ten TAPs found to be emitted in the greatest quantities statewide is considered. Following that, the increased significance of some of the source categories within buildings, particularly homes, is briefly considered.

Section III-1 Geographic Distribution of Results

The total statewide emissions of each toxic air pollutant inventoried are presented in Appendix B. For nine of the ten pollutants emitted in the greatest quantity, relative emissions by county are shown on the figures in this section. These pollutants are acetaldehyde, toluene, formaldehyde, phenol, benzene, lead and compounds, xylene, manganese and compounds, and methyl chloroform. Pesticide emissions cannot be determined by county as explained in Section II-1.13, so a map of pesticide emissions is not included.

The reader with a knowledge of Oregon demographics can use these figures in analyzing possible regulatory needs. The figures give indications of the exposure of concentrated populations to the individual pollutants. The figures can also be used to assess the predominant nature of the emissions of each pollutant, be it proportional to population density, agricultural (or other non-urban) intensity, or limited to urban areas. Taken together, the figures can be used to locate "hot spots", or areas with high emissions of various TAPs.

It is important to note that each map shows the county-by-county emissions of each TAP relative to the total emission of that single TAP. No attempt has been made to compare the relative toxicity of the pollutants.

Section III-2 Indoor Air Quality Considerations

While indoor air quality evaluation was not one of the purposes of this project, it became apparent that a number of the emission sources involved indoor release of toxic air pollutants. Indoor releases are of strong concern since they occur in the breathing zone, rather than at elevated points, and are not rapidly dispersed, particularly in weatherized homes and commercial buildings with recirculating heating, ventilating, and air conditioning systems. In addition, the exposed population includes children and other sensitive individuals who may spend significant amounts of time in the contaminated area. Therefore, it was decided to highlight in this section the sources of indoor air contamination identified in this report.

The amount of indoor air contamination released in the home is dependent on a number of occupant lifestyle factors. The most significant source, cigarette smoking, is a totally voluntary activity which results in exposure to the smoker and any others in the building. Residential space heating is a major source of acetaldehyde, benzene, formaldehyde, toluene, phenol, and PPAH. The emissions generally occur outside of the residences. However, combustion products have been found at elevated levels within homes heated by woodstoves. This can be caused by leakage of smoke from the stove or fireplace into the living space, particularly during loading, and, to a lesser extent, by infiltration of the smoke emitted from the chimney back into the house under certain meteorological conditions. This should be considered to be a serious source of toxic air pollutant exposure for those living in homes heated by woodstoves and fireplaces.

Other indoor air polluton sources considered in the project are architectural coatings, drycleaning, and household solvent use. Solvent-based paints can be the source of infrequent exposure, particularly if good ventilation practices are not followed during application and drying of the coatings.

Drycleaning can be a source of indoor air contamination in the home if the garments which have been drycleaned are returned to the home before all of the solvent has volatilized. High levels of residual solvent may be less common than in the past but have not been eliminated, so garments should be checked for contamination prior to returning them to the living space.

Common household solvents contain an array of toxic chemicals, as described in Section II-1.9. The degree of exposure to these chemicals depends on the individual household's selection, use practices, and storage methods for the products.

This is not intended to be a comprehensive review of possible indoor air pollutants. Radon, asbestos, gas cooking stove exhaust, and formaldehyde off-gassing from particleboard are just four examples of indoor air pollutants that were not considered in this project. Numerous other indoor air pollution sources are found in the home, office, and commercial environments.

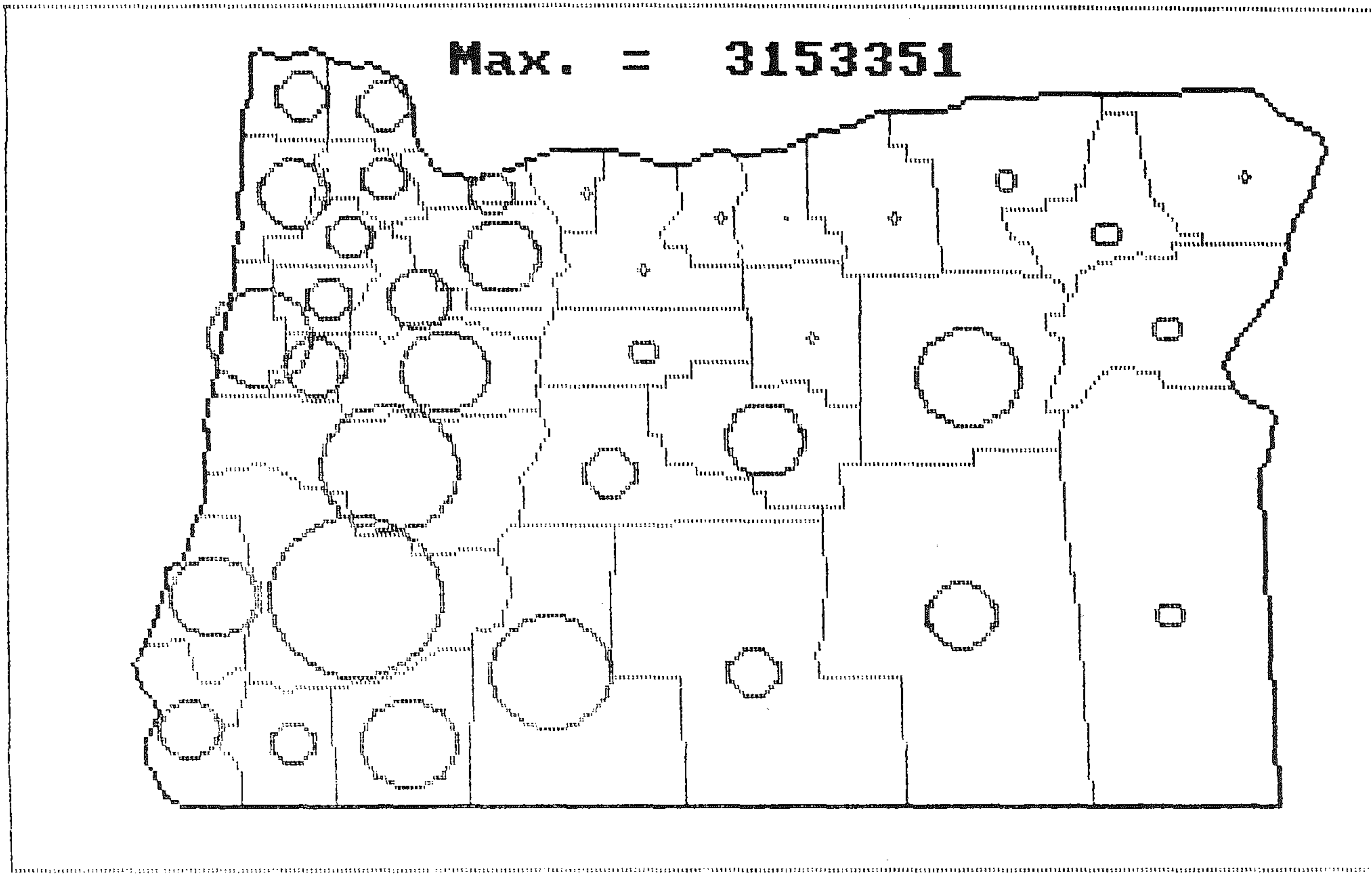

FIGURE III - 1

Acetaldehyde Emissions (lb/year)

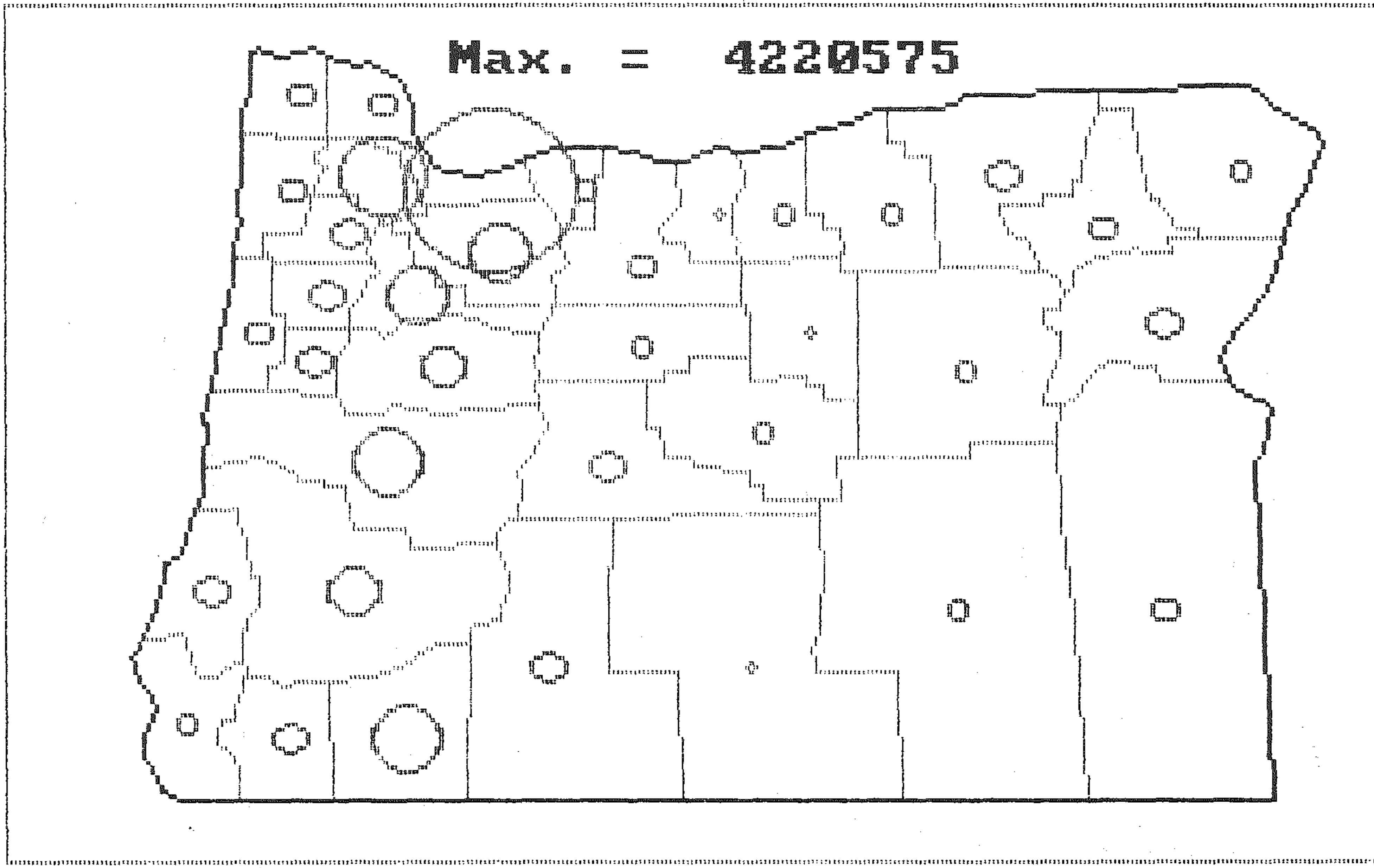

FIGURE III - 2

Toluene Emissions (lb/year)

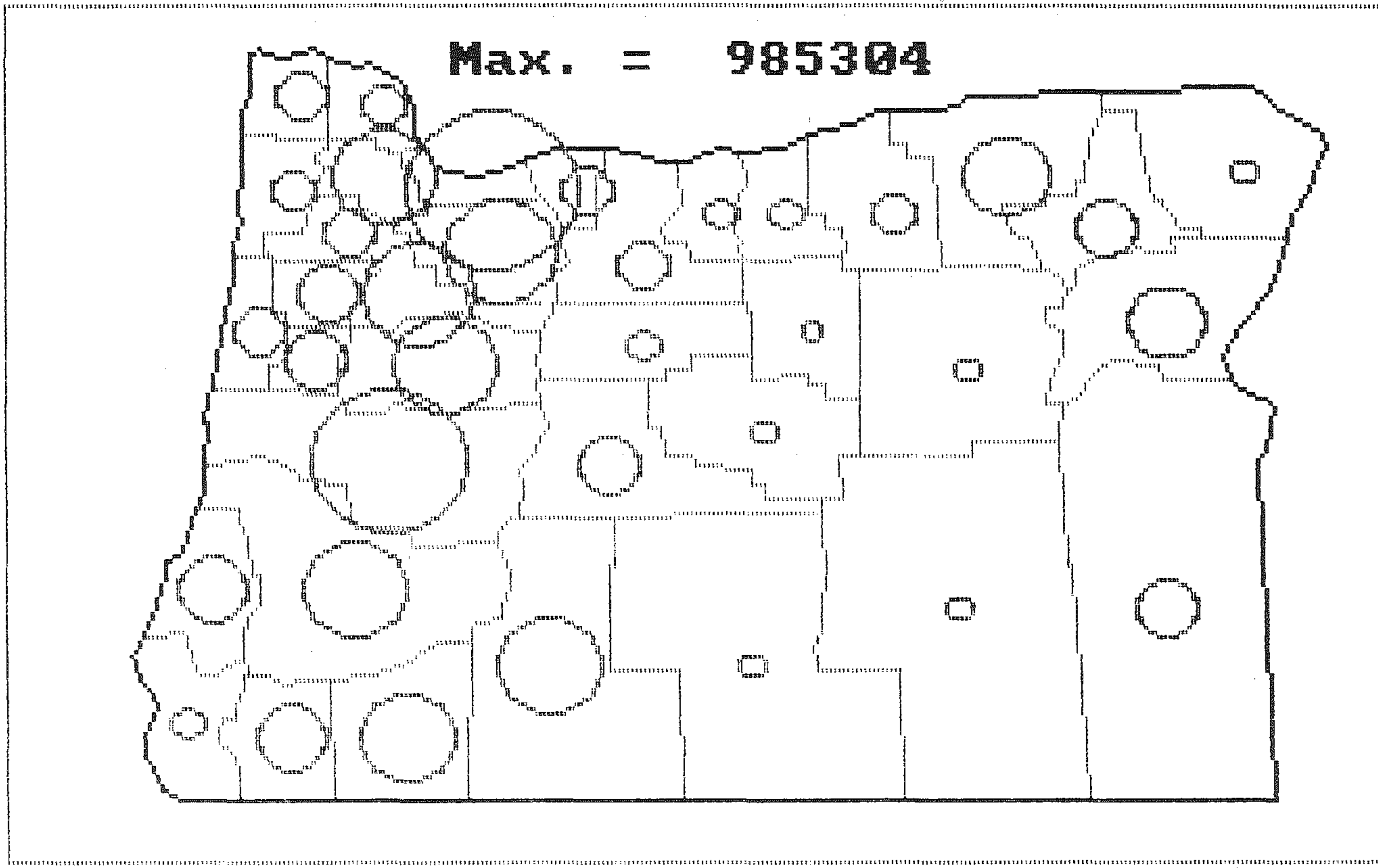

FIGURE III - 3

Formaldehyde Emissions (lb/year)

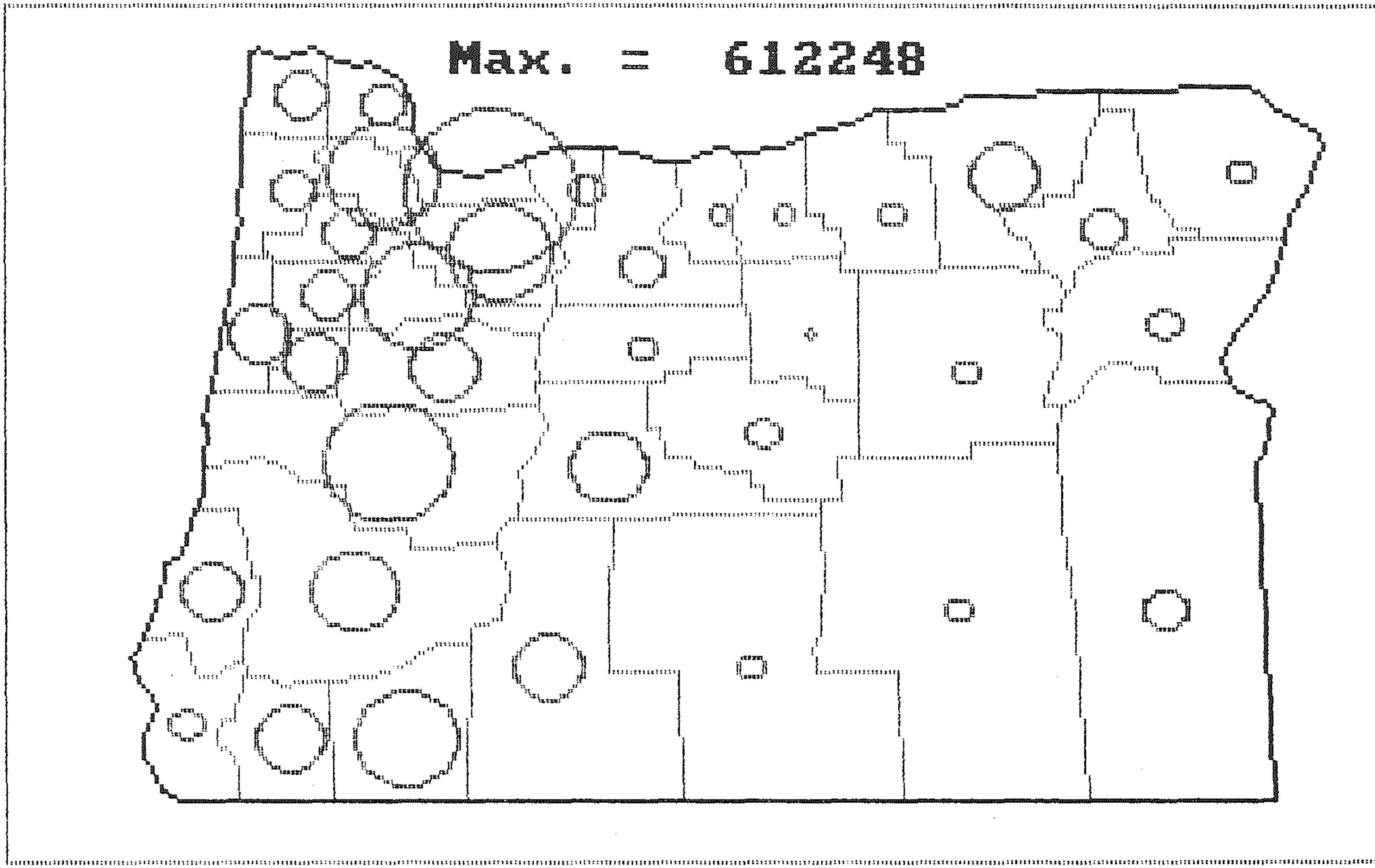

FIGURE III - 4

Phenol Emissions (lb/year)

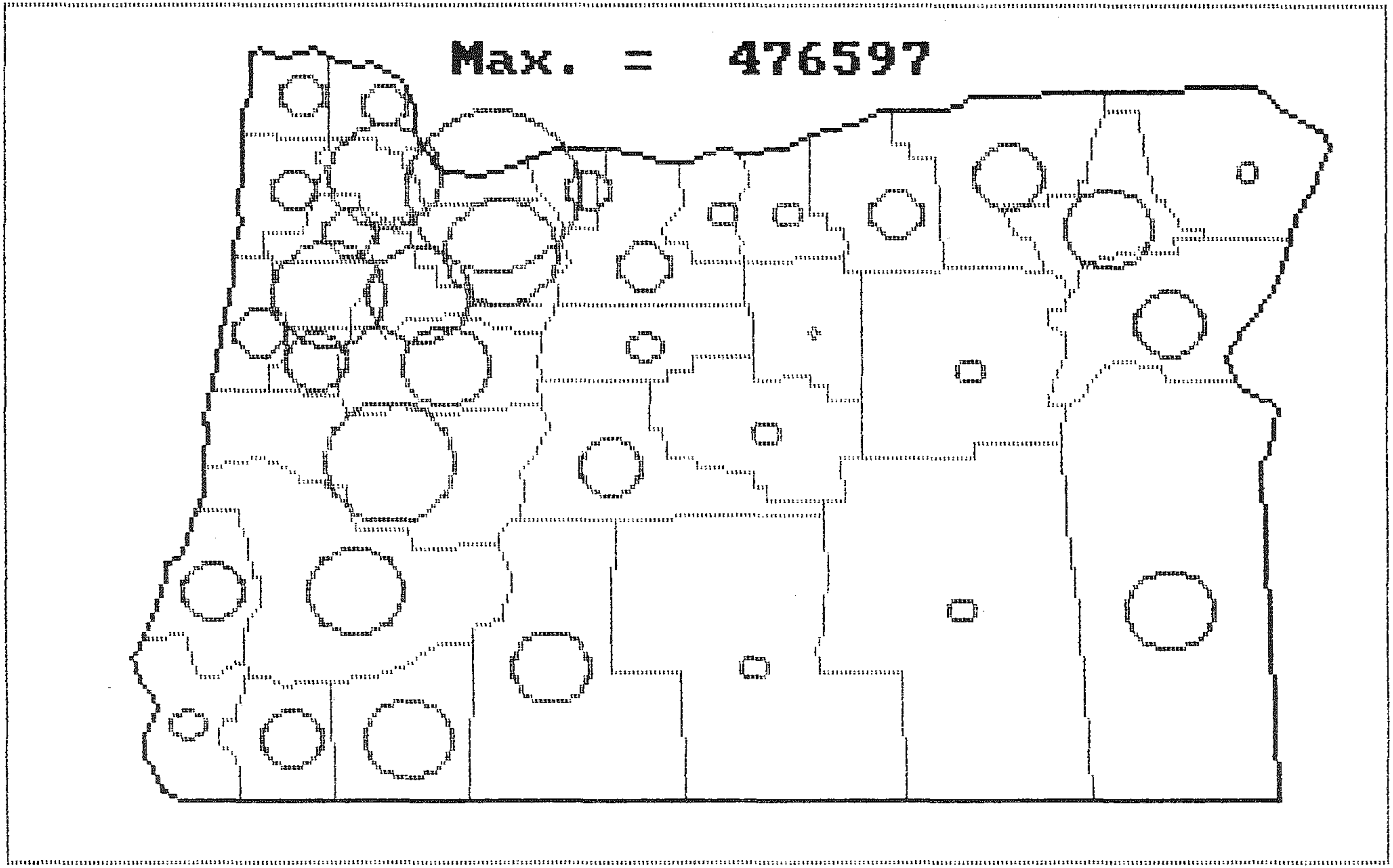

FIGURE III - 5

Benzene Emissions (lb/year)

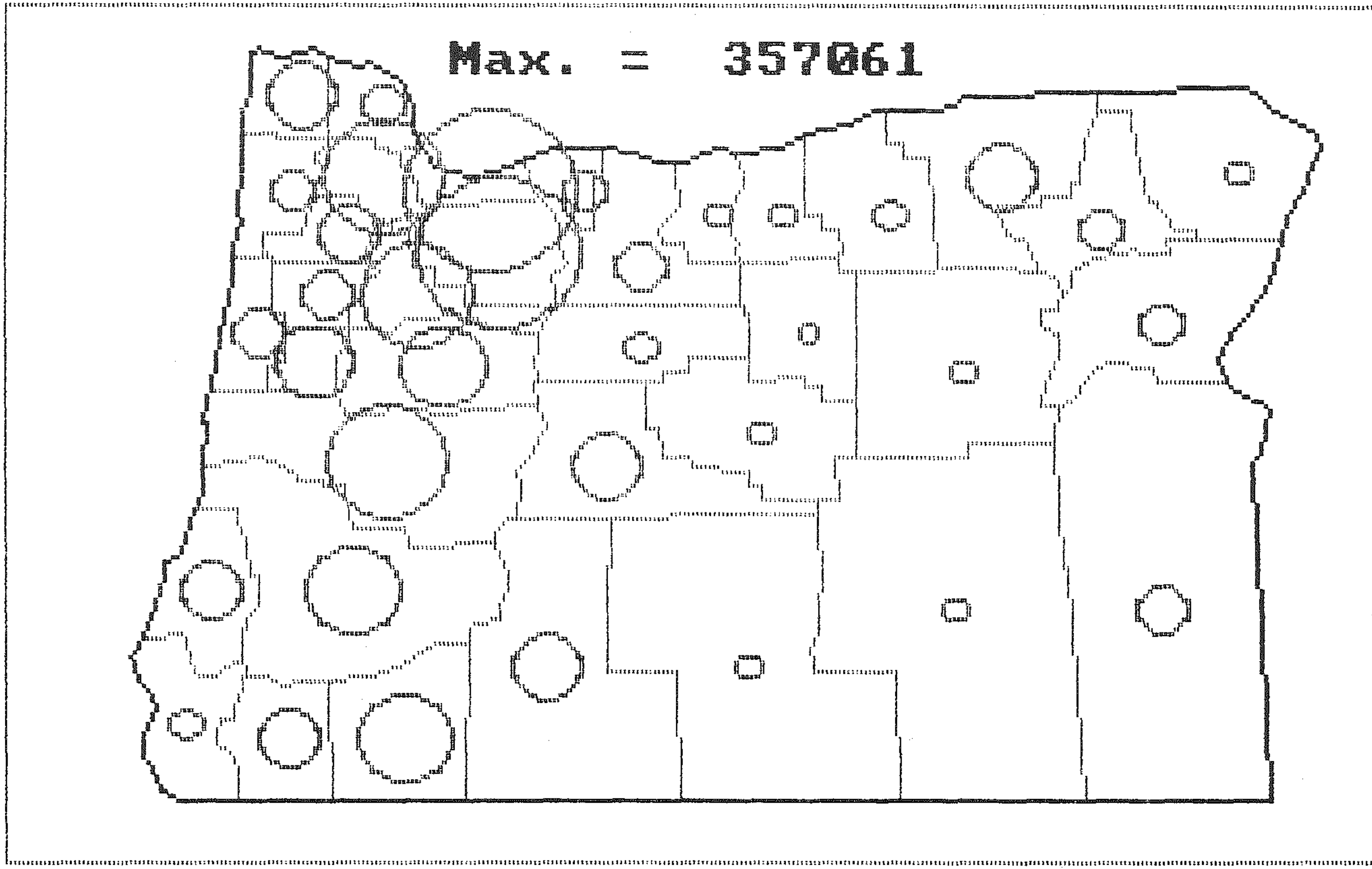

FIGURE III - 6

Lead Emissions (lb/year)

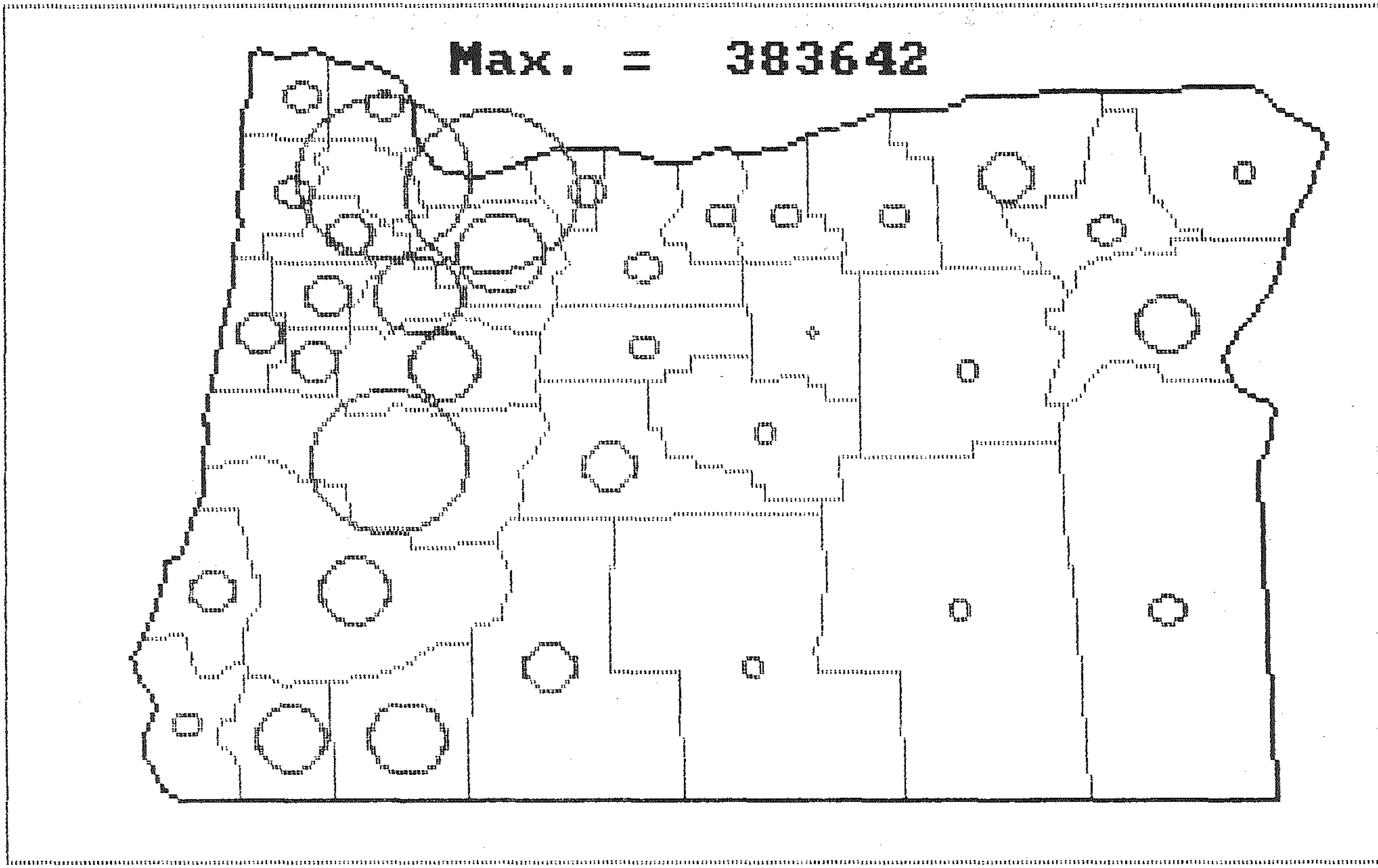

FIGURE III - 7

Xylene Emissions (lb/year)

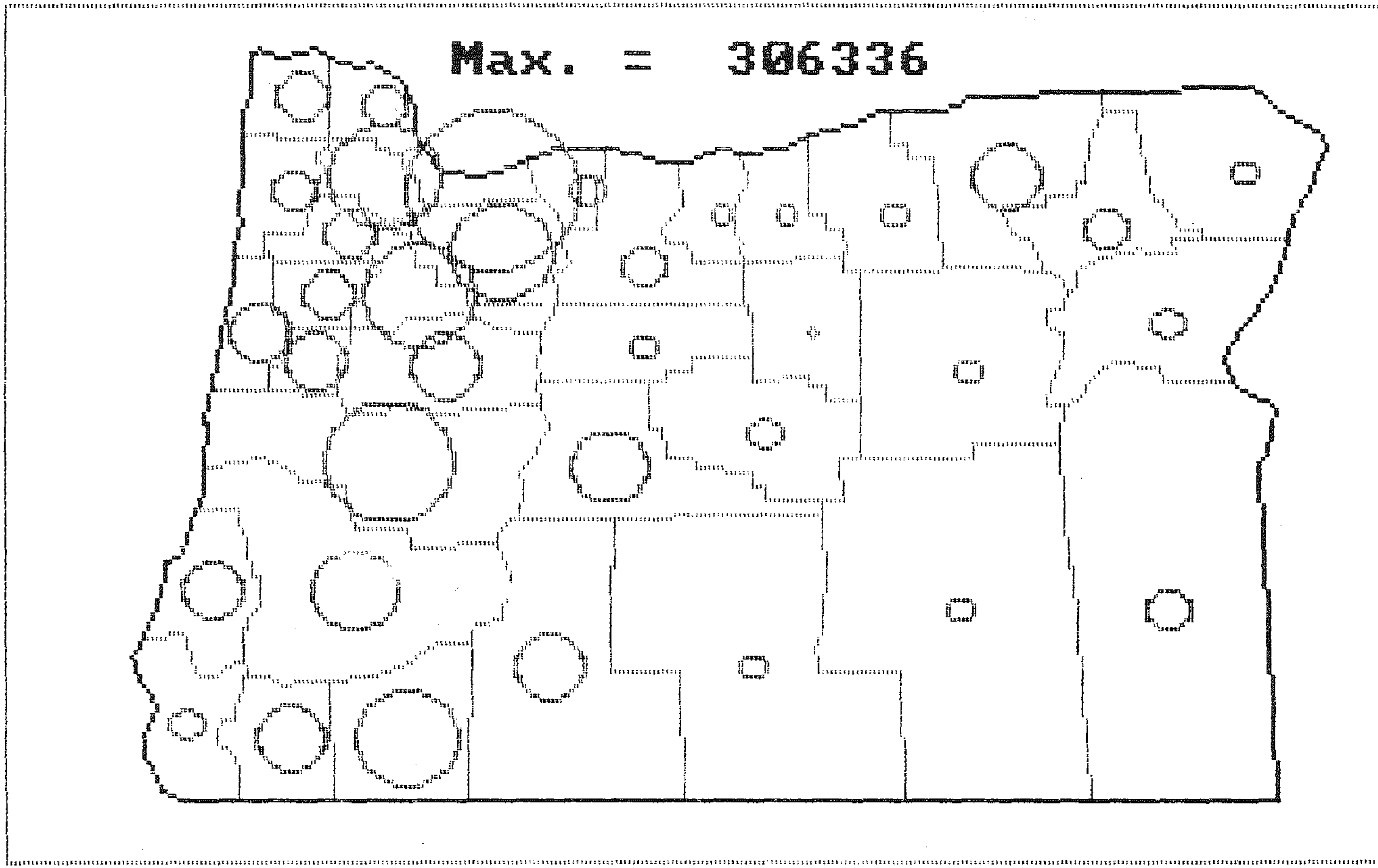

FIGURE III - 8

Manganese Emissions (lb/year)

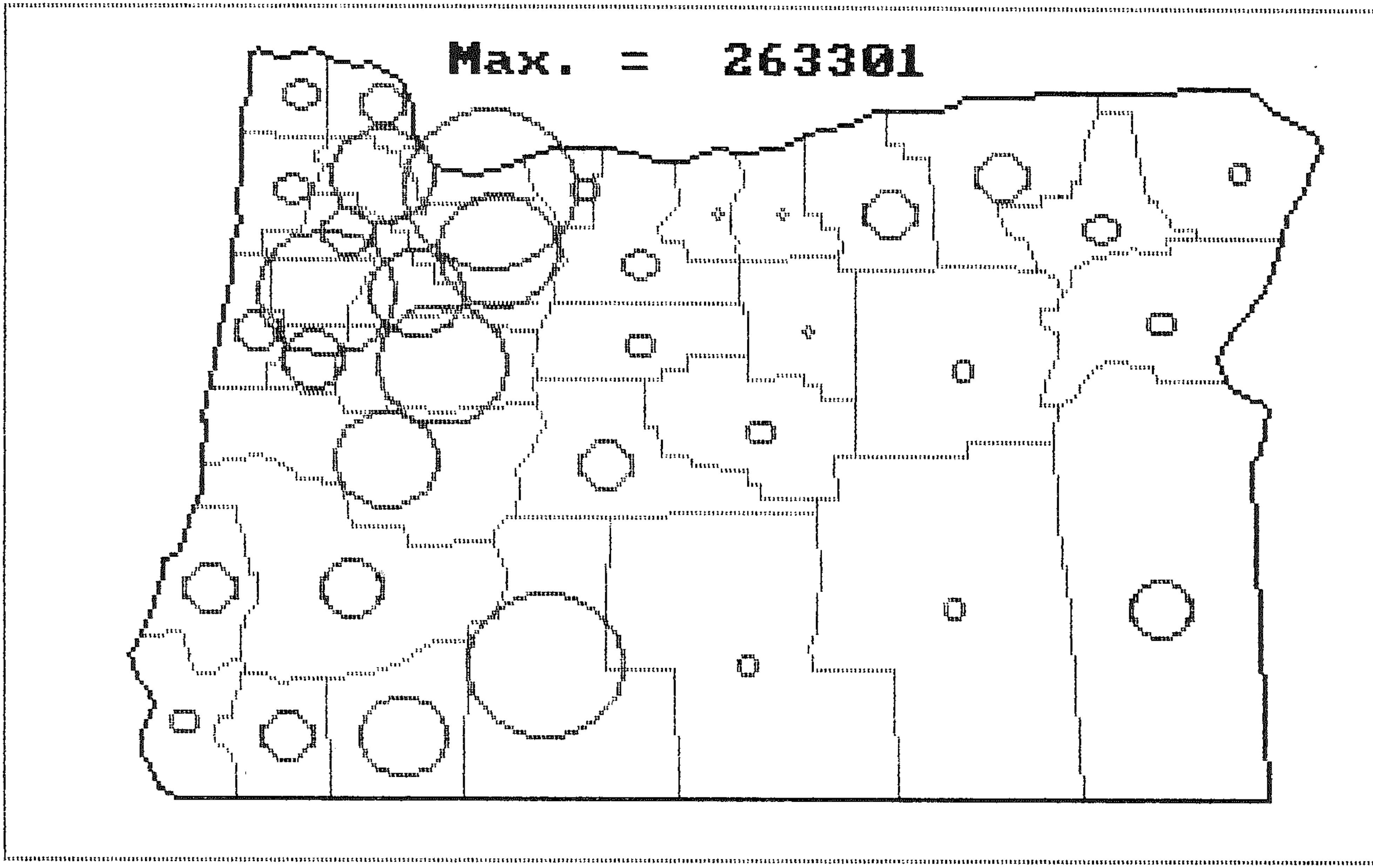

FIGURE III - 9

Methyl Chloroform Emissions (lb/year)

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VICTOR ATIYEH
GOVERNOR

Department of Environmental Quality

522 S.W. 5th AVENUE, BOX 1760, PORTLAND, OREGON 97207

October 8, 1985

Until recently air pollution control activities have concentrated on a few broad categories of pollutants. These efforts have resulted in significant improvements in the overall quality of our air. However, incidents over the past few years have pointed out that small quantities of highly toxic pollutants or lifetime exposures to less toxic pollutants can cause serious short-term and long-term health effects. To evaluate the potential risk to Oregonians, the Department of Environmental Quality is compiling an inventory of sources of potentially toxic air pollutants. Under Oregon Administrative Rule (OAR) 340-20-005, the DEQ is requesting emissions information for certain pollutants from sources. Some companies have previously provided information on volatile organic compounds (VOCs). This request for information asks for the specific chemical composition of VOCs as well as amounts of compounds containing certain metals to help determine the type and quantity of toxic substances emitted in Oregon.

A list of potentially toxic substances of interest to the DEQ is attached. To determine whether any of these substances are used in your facility, please consult the Material Safety Data Sheets or any other information supplied by the manufacturer on the materials you use. If any of these substances are used or generated on your plant site, the Department is requesting that you complete the attached questionnaire to the best of your ability. Detailed instructions are on the back of each form. You may leave blank any questions you are unable to answer. In addition, some of the forms may not apply to your operation. If so, disregard them. It is important, however, to provide as much information as possible so that emission estimates will be as accurate as possible. Please return the completed questionnaires and copies of any Material Safety Data Sheets to the DEQ by November 15, 1985. The DEQ mailing address is PO Box 1760, Portland, 97207.

Any data clearly labeled as confidential will be handled as provided for in Oregon Revised Statute (ORS) 192.500. Only summaries of estimated toxic emissions from sources will appear in the final inventory.

If none of the substances on the list are involved in your operation, please complete the general information form, indicate that there are no toxic compounds on your plant site and return the form to the DEQ.

The information obtained from these surveys will be used to determine if there are toxic pollutants emitted in sufficient quantities in Oregon to pose a potential threat to human health from routine exposures or accidental exposures (spills). This survey will certainly result in closer scrutiny of some specific pollutants, geographical areas and industries. However, regulations will only be considered if it is determined that potentially toxic pollutants are emitted in sufficient quantities to cause adverse health impacts. Prior to the adoption of any regulation, the Department will provide notice to the public and allow for input from any interested parties.

If you have questions about the toxics inventory or need assistance in completing the questionnaire, contact Ann Batson or Ed Woods by calling the Department's toll-free telephone number 1-800-452-4011. In the Portland area call 229-5085.

Sincerely,

Tom Bispham

Thomas R. Bispham
Administrator
Air Quality Division

EW:s
Enclosures

FOR AGENCY USE ONLY		
	County	Plant I.D.
SIC	SIC	SIC

TOXIC AIR CONTAMINANT EMISSIONS SURVEY FORM
General Information

1. Company and Division

2. Mailing Address   Street   Number of Employees

City   State   Zip Code

3. Person to Contact   Title   Telephone Number

4. Plant Location (including name of locality)

5. UTM Coordinates
X Coordinate ______.___   Y Coordinate ______.___   UTM Zone ______   Plant Elevation above M.S.L. (ft) ________

6. General Nature of Business

7. Annual Production (1984)

8. 1984 Production by Season:

Dec - Feb ______ %   Jun - Aug ______ %

Mar - May ______ %   Sep - Nov ______ %

9. If You Incinerate Any Wastes, Indicate:

Type of Waste ____________________

Amount Burned ____________________ (Tons / Year)

10. Name of the Owner or Responsible Official   Title

11. Signature   Date

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August 1985

DEQ FORM NO. 16840

INSTRUCTIONS FOR
"GENERAL INFORMATION" FORM

If your facility does not use or generate any of the substances listed in the table of Potentially Toxic Substances (Table 1), please complete only this General Information Form. At the bottom of the form, indicate that there are no toxics at your plant site and return the form to the DEQ.

If there are questions on any of the forms that you are unable to answer, leave those questions blank. Whenever available, include copies of the Material Safety Data Sheets when the questionnaires are returned to the DEQ.

If you have any questions, please call Ann Botson or Ed Woods on the DEQ toll free number (1-800-452-4011). In the Portland area call 229-5085.

1. Company and Division and Date of Submittal -- Specify the name under which the company operates and the division, if it is a subdivision of a larger company.

2. Mailing, Address and Number of Employees -- Show the mailing address for the plant, not the headquarters address. List the approximate number of employees at the plant.

3. Person to Contact -- Indicate the name, title, and phone number of the person at the plant to contact concerning the information on these forms.

4. Plant Location -- If different than the mailing address, locate the plant by its actual street address.

5. UTM Coordinates, Plant Elevation -- Show the UTM X coordinate, Y coordinate, and UTM zone, if known. Show the plant elevation above mean sea level in feet.

6. General Nature of Business -- Describe the major products or services of the plant. Provide the Standard Industrial Code (SIC), if known.

7. Annual Production -- Indicate the annual production and include units for 1984.

8. Production by Season -- Show the percentage of the yearly production that takes place in each season.

9. Waste Incineration -- If any wastes are incinerated on site, indicate the type and amount of waste burned. Attach a separate sheet, if necessary.

10. Name of Owner or Responsible Official and Title -- Indicate the name and title of the plant owner or official responsible for the information supplied on these forms.

11. Signature and Date -- Include the signature of the owner or responsible official and the date the form is signed.

IF YOUR COMPANY USES, STORES OR HANDLES ANY COMPOUNDS CONTAINING CHEMICALS LISTED IN THE ATTACHED TABLE OF "POTENTIALLY TOXIC COMPOUNDS" (TABLE 1), PLEASE COMPLETE ALL APPROPRIATE ATTACHED FORMS.

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PROCESSING AND MANUFACTURING OPERATIONS USING VOLATILE ORGANIC COMPOUNDS

1. Company Name		Plant Location			Information for Calendar Year 1984
2. Process or Operation Identification					
3. Maximum Capacity					
4. VOC Description and Vapor Pressure (Attach Material Safety Data Sheets)					
5. Amount of VOCs in Feed Input (1984 -- Tons/Yr)					
6. Amount of VOCs in Product Output (1984 -- Tons/Yr)					
7. VOCs in Byproducts	Amount (Tons/Yr)				
	Method of Disposal				
8. VOC Emission Rates					
9. Stack or Vent Data	Height	(Ft)			
	Exit Area	(Ft^2)			
	Exit Velocity	(Ft/Min)			
	Exit Volume	(ACFM)			
	Exit Temp.	(^oF)			
	Common Stack Points				
10. Pollution Control Equipment	Type				
	% Efficiency				
11. Operating Hours - 1984	Hours/Day				
	Days/Week				
	Weeks/Year				

AH347.10
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DEQ FORM NO. 16836

INSTRUCTIONS FOR
"PROCESSING AND MANUFACTURING OPERATIONS USING
VOLATILE ORGANIC COMPOUNDS" FORM

1. Company Name, Plant Location, and Information for Calendar Year -- Specify the company name and plant location. NOTE: All information should calendar year 1984 conditions.

2. Process or Operation Identification -- Assign an identifying name or number to each process or operation which uses a Volatile Organic Compound (VOC). A VOC is any organic compound which has a vapor pressure of 0.1 mm Hg at standard conditions (20°C and 760 mm Hg). Some VOCs are sold under trade names such as Socal, Amsco, Stoddard, and Cellosolve; common names such as paint thinner, lacquer and resin; or chemical names such as xylene, formaldehyde, methyl ethyl ketone, perchloroethylene, and isopropyl alcohol. NOTE: If any compound listed in the table of Potentially Toxic Compounds (Table 1) is contained in the VOC, complete the "Toxics in Processing and Manufacturing Operations" form in addition to this form. Up to three (3) processes or operations can be described on each form. Please make additional copies of the form as necessary.

3. Maximum Capacity -- List the product and the maximum production rate for the process or operation and indicate units.

4. VOC Description -- Identify all Volatile Organic Compounds used as input to the operation or process from Material Safety Data Sheets, other manufacturer's information, or personal knowledge. Use additional columns or add additional sheets if more than one VOC is involved in a process or operation.

5. Amount of VOCs in Feed Input -- Show the amount of each VOC in tons per year in the process or operation feed input.

6. Amount of VOCs in Product Output -- Indicate the amount of each VOC in tons/year that is incorporated into the product.

7. VOCs in Byproducts -- Estimate the amount of each Volatile Organic Compound in tons per year that is contained in any byproduct or waste. Indicate the method of disposal of any waste.

8. VOC Emission Rates -- If data from material balances or stack tests are available, show the expected emission rates and units. Please attach any calculations you have made. If no material balance information or stack tests are available leave this blank. The emission rates will be calculated from published emission factors.

9. Stack or Vent Data -- For the vent or stack for each process, provide the indicated parameters. The height of the vent or stack is measured from ground level; the exit area is the cross-sectional area of the opening in square feet; the flow rate is in actual (not standard) cubic feet per minute.

10. Pollution Control Equipment -- If present, identify the type of pollution control equipment on the operation or process and the efficiency with which it collects the VOCs emitted.

11. Operating Hours -- Indicate the hours per day, days per week, and weeks per year each process or operation functioned in 1984.

AH347.11
August 1985

TOXICS IN PROCESSING AND MANUFACTURING OPERATIONS

1. Company Name	Plant Location	Information for Calendar Year 1984

2. Process or Operation Identification			
3. Maximum Capacity			
4. Toxic Identification Numbers (From Table 1)			
5. Toxics in Feed Input (1984 -- Lbs/Yr)			
6. Toxics in Product Output (1984 -- Lbs/Yr)			
7. Toxics in Byproducts:	Amount (Lbs/Yr)		
	End Use		
8. Toxics in Intermediate Products Amount (Lbs/Yr)			
9. Toxic Emission Rates (Lbs/Yr)			
10. Stack or Vent Data	Height (Ft)		
	Exit Area (Ft^2)		
	Exit Velocity (Ft/Min)		
	Exit Volume (ACFM)		
	Exit Temp. (^oF)		
	Common Stack Points		
11. Pollution Control Equipment	Type		
	% Efficiency		
12. Operating Hours - 1984	Hours/Day		
	Days/Week		
	Weeks/Year		

AH347.9
August 1985

DEQ FORM NO. 16835

INSTRUCTIONS FOR
"PROCESSING AND MANUFACTURING OPERATIONS" FORM

1. Company Name, Plant Location, and Information for Calendar Year -- Specify the company name and plant location. NOTE: All information should calendar year 1984 conditions.

2. Process or Operation Identification -- Assign an identifying name or number to each process or operation which uses a compound listed in the table of Potentially Toxic Compounds (Table 1). Two processes or operations can be described on each form. Please make additional copies of the form as needed.

3. Maximum Capacity -- List the maximum production rate for the process or operation and indicate units.

4. Toxic Identification Number -- Determine the chemical composition of material used as input to the operation or process from Material Safety Data Sheets, other manufacturer's information, or personal knowledge. If any of these substances are listed in the attached table of Potentially Toxic Compounds (Table 1), enter the identification number from the table. Attach Material Safety Data Sheets identifying the toxic compounds, if available. There is space for four toxic compounds to be identified for each operation or process. Use additional columns or add additional sheets if more than four toxic compounds are involved in a process or operation.

5. Toxics in Feed Input -- Show the identification number (from 4 above) and the amount of each toxic compound in pounds per year contained in the process or operation feed input.

6. Toxics in Product Output -- Indicate the identification number and the amount of the toxic that is incorporated into the product.

7. Toxics in Byproducts -- Indicate the identification number and estimate the amount (pounds per year) of any toxic compound listed in the table of Potentially Toxic Compounds (Table 1) that is not incorporated in the product. (For example: A compound contained in a waste material.) Indicate the method of disposal or final use of the toxic containing material.

8. Toxics in Intermediate Products -- Identify any toxic from Table 1 formed in intermediate steps of the process which has the potential to be emitted through storage, transfer or accidental release. These intermediate products may be completely or partially consumed in the manufacture of the final product. Indicate the quantity formed in pounds per year.

9. Toxic Emission Rates -- If data from material balances or stack tests are available, show the expected emission rates and units for any compound listed in Table 1. Please attach your calculations. If no material balance information or stack tests are available leave this blank. The emission rates will be calculated from published emission factors.

10. Stack or Vent Data -- For the vent or stack for each process, provide the indicated parameters. The height of the vent or stack is measured from ground level; the exit area is the cross-sectional area of the opening in square feet; the flow rate is in actual (not standard) cubic feet per minute.

11. Pollution Control Equipment -- If present, identify the type of pollution control equipment on the operation or process and the efficiency with which it collects the toxics emitted.

12. Operating Hours -- Indicate the hours per day, days per week, and weeks per year each process or operation normally functioned in 1984.

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August 1985

DEGREASING, CLEANING, AND SURFACE PREPARATION

1. Company Name	Plant Location	Information for Calendar Year 1984	
2. Operation Identification			
3. Type of Operation (Use Code 1)*			
4. Type of Solvent (Attach Material Safety Data Sheet)			
5. Amount of Solvent Purchased in 1984 (Gal)			
6. Amount of Solvent Sent for Reprocessing or Disposal in 1984 (Gal)			
7. Amount of Solvent Returned After Reprocessing in 1984 (Gal)			
8. Waste Solvent Disposal Method (Use Code 2)**			
9. Toxic Identification No. (From Table 1)			
10. Amount of Toxics in Solvent (Volume %)			
11. Emission Rates Based on Stack Test/Material Balance (Attach Calculation)			

* Code 1 -- Type of Operation

A. Cold Cleaner
B. Open Top Vapor
C. Conveyorized, Vapor
D. Conveyorized, Non-Boiling
E. Surface Preparation
F. Other (Please Specify)

** Code 2 -- Disposal Method

A. Discharged into Sewer
B. Reclaimed by Salvager
C. Sent to Treatment, Storage or Disposal Facility
D. Incinerated
E. Other (Please Specify)

INSTRUCTIONS FOR
"DEGREASING, CLEANING, AND SURFACE PREPARATION" FORM

1. Company Name, Plant Location, and Calendar Year Information -- Specify the company name and location. NOTE: All information should reflect calendar year 1984 conditions.

2. Operation Identification -- Assign an identifying number or name to each operation.

3. Type of Operation -- Using Code 1 at the bottom of the form, specify the type of operation.

4. Type of Solvent -- Identify the type of solvent used for each operation (i.e., Stoddard, perchloroethylene, trichloroethylene, isopropyl alcohol, etc.). If a brand name solvent is used, please attach the manufacturer's Material Safety Data Sheets or other information on the solvent's chemical composition.

5. Amount of Solvent Purchased -- List the gallons of solvent purchased in 1984 for each operation.

6. Amount of Solvent Sent for Reprocessing or Disposal -- Indicate the number of gallons in 1984 reprocessed outside your facility or disposed of by methods other than reprocessing.

7. Amount of Solvent Returned after Reprocessing -- If applicable, specify the gallons of solvent in 1984 that were returned to the plant after reprocessing to be reused in the indicated operations.

8. Waste Solvent Disposal -- Using Code 2 below, indicate which disposal method was used in 1984 for waste solvents.

9. Toxic Identification Number -- Determine the chemical composition of the solvent using Material Safety Data Sheets, other information supplied by the manufacturer or personal knowledge. If any of the substances in the solvent are listed in the table of Potentially Toxic Compounds (Table 1), enter the identification number from the table. Space is left for four toxic compounds from the table to be identified for each operation. Use additional columns for the operation or attach additional sheets if there are more than four toxic compounds in the solvent.

10. Amount of Toxics in Solvent -- Show the percent by volume of any compound listed in the table of Potentially Toxic Compounds (Table 1) contained in the solvent.

11. Emission Rates -- If data from a stack test or material balance are available, list the expected emission rates (lb/1000 gal) for each compound from the table of Potentially Toxic Compounds (Table 1). Please attach your calculations. If no stack tests or material balances are available, leave this blank. The emission rates will be calculated using published emission factors.

AH347.4A
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USE OF WASTE OILS, RECYCLED OILS AND/OR SOLVENTS FOR FUEL

Company Name	Plant Location	Information for Calendar Year 1984

1. Boiler or Burner I.D.					
2. Source of Waste Oils, Recycled Oils, and/or Solvents					
3. Type and Amount of Waste Oils, Recycled Oils, and/or Solvents Burned in Unit in 1984 (Gal/Year)					
4. Toxic Materials in Oils or Solvents (Use Table 1)					
5. Type and Efficiency of Pollution Control Equipment					
6. Operating Hours When Using Waste/Recycled Oils or Solvents	Hours/Day Days/Week Week/Year				

INSTRUCTIONS FOR

"USE OF WASTE OILS, RECYCLED OILS, AND/OR SOLVENTS FOR FUEL" FORM

1. Boiler or Burner I.D. -- Your identification for the boiler or burner using the waste oils, recycled oils, and/or solvents. Up to four (4) burners can be identified on each form. Please make additional copies of the form as necessary.

2. Source of Waste Oils, Recycled Oils, and/or Solvents -- Indicate the process that generated the waste oil or solvent or the supplier that delivered the recycled oil or solvent.

3. Type and Amount of Waste Oils, Recycled Oils, and/or Solvents Burned -- Enter the amount (gallons) of waste or recycled oil or solvent and the grade(s) burned in each boiler or burner.

4. Toxic Materials in Waste Oils, Recycled Oils, and/or Solvents -- If information such as Material Safety Data sheets, other manuracturer's or suppliers information, or personal knowledge exists, determine the chemical composition of the oils or solvents. If any of the substances are listed in the table of Potentially Toxic Compounds (Table 1), enter the identification number from the table. Space is left for four (4) toxic compounds from the table to be identified for each burner. Use additional columns for the operation or attach additional sheets if there are more than four (4) toxic compounds in the oils or solvent.

5. Type and Efficiency of Pollution Control Equipment -- Describe the boiler or burner control equipment, if any, and the estimated efficiency.

6. Operating Hours -- Indicate the hours that the boiler operated in 1984 when all or part of the fuel was waste/recycled oils or solvents.

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SURFACE COATING OPERATIONS

Company Name	Plant Location		Information for Calendar Year 1984
1. Description of Coating Operation			
2. Type and Amount of Coating Purchased (Attach Material Safety Data Sheets)			
3. Density of Coating Purchased (Pounds/Gallon)			
4. Percentage of Solvent in Purchased Coating (Volume %)			
5. Type and Amount of Solvents Added to Coating (Attached Material Safety Data Sheets)			
6. Type and Efficiency of Control Equipment			
7. Toxic Identification Nos. (From Table 1)			
8. Emissions of Toxic Compounds			

AH347.8
August 1985

DEQ FORM NO. 16838

INSTRUCTIONS FOR
"SURFACE COATING OPERATIONS" FORM

1. Description of Coating Operation -- For each coating operation at your plant, include type of application (spray, roller, brush, saturation, lamination, etc.) and assign an identification name or number. Up to three coating operations can be described on each form. Please make additional copies of the form as necessary.

2. Type and Amount of Coating Purchased -- Indicate type of coating (ink, paint, varnish, lacquer, enamel, stain, adhesive, resin, etc.) purchased and amount (gallons) used in 1984. Attach Material Safety Data Sheets from the coating manufacturer.

3. Density of Coating Purchased -- Density of the coating as received from the manufacturer in pounds per gallon.

4. Percentage of Solvent in Purchased Coating -- Percentage (by volume) of each solvent in the coating as received from the manufacturer. Some examples of solvents are: thinner, mineral spirits, cellosolve, naptha, socal, reducer, kerosene, ketones, alcohols, styrene, xylene, toluene, etc.

5. Type and Amount of Solvents Added to Coating -- Indicate the name and amount (gallons) of each solvent added to the purchased coating prior to application. If a brand name solvent is used, please attach the Material Safety Data Sheet or other manurfacturer's information on the chemical composition of the solvent added to the coating.

6. Type and Efficiency of Control Equipment -- Describe any control system which reduces emissions of the solvents or coatings, and estimate the efficiency (%) of the control system. Types of control equipment include water wall, gas fired afterburner, etc.

7. Toxic Identification Number -- Determine the chemical composition of the solvent using Material Safety Data Sheets, other information supplied by the manufacturer or personal knowledge. If any of the substances in the solvent are listed in the table of Potentially Toxic Compounds (Table 1), enter the identification number from the table. Space is left for four toxic compounds from the table to be identified for each operation. Use additional columns for the operation or attach additional sheets if there are more than four toxic compounds in the solvent.

8. Emission of Toxic Compounds -- For any compounds listed in the table of Potentially Toxic Compounds (Table 1) which are released during the coating operation or subsequent curing, calculate the amount (in pounds) and attach calculations. If emission rates are unknown, leave this section blank. Emission rates will be calculated using published emission factors or material balances.

AH347.8A
August 1985

STORAGE TANKS
(LIQUID FUELS, SOLVENTS, HYDROCARBONS, AND OTHER VOLATILE ORGANIC COMPOUNDS)

1. Company Name	Plant Location		Information for Calendar Year 1984
2. Tank Identification			
3. Type of Storage Tanks: Above/Below Ground Fixed/Moveable			
4. Name & Vapor Pressure of Material Stored (Attach Material Safety Data Sheets if Available)			
5. Density of Material Stored: (lb / gal)			
6. Tank Capacity (Gallons)			
7. 1984 Throughput (Gallons)			
8. Submerged or Splash Fill			
9. Pollution Control Equipment: Type of Control Equipment Estimated Efficiency (%)			
10. Emission Rate (Tons/Year) (Attach Calculations)			
11. Toxic Identification No. (From Table 1)			
12. Amount of Toxic in Stored Material (Vol %)			

AH347.1
August 1985

DEQ FORM NO. 18632

INSTRUCTION FOR

"STORAGE TANKS" FORM

1. Company Name, Plant Location, and Information for Calendar Year -- List the company name and plant location. Note that all information should reflect calendar year 1984 conditions.

2. Tank Identification -- Assign an identifying number or name to each storage tank, which contains a Volatile Organic Compound (VOC). A VOC is any organic compound with a vapor pressure greater than 0.1 mm Hg at standard conditions (20°C and 760 mm Hg). Some VOCs are sold under trade names or common names such as Amsco, Socal, Mineral Spirits, paint thinner, Cellosolve, Naptha, DeVoe, Stoddard, Vorinal, etc. Some are sold under their actual chemical name, such as formaldehyde, perchloroethylene, alcohols, styrene, xylene, toluene, and ketones.

3. Type of Storage Tank -- Indicate whether the storage tank is above or below ground; and whether it is fixed or moveable.

4. Name and Vapor Pressure of Material Stored -- Identify the chemical or brand name for each material stored. If a brand name is used, please attach the manufacturer's Material Safety Data Sheet or other information on the material's chemical composition. For each material, list the vapor pressure, if known.

5. Density of Material Stored -- For each chemical stored, provide the density (pounds/gallon).

6. Tank Capacity -- Specify each tank's holding capacity in gallons.

7. Annual Throughput -- The number of gallons of each material which passed through each tank in 1984.

8. Submerged or Splash Fill -- Indicate whether the tank is filled using submerged or splash methods.

9. Pollution Control Equipment -- For each tank indicate type of control equipment and efficiency. Some typical types of pollution controls for tanks are vapor adsorption, incineration, refrigerated liquid scrubber, floating roof, etc.

10. Material Emission Rate -- If emission factors are known, estimate the number of tons of VOC escaping from the tank due to tank breathing and working losses. Please attach your calculations. If emission rates from this tank are not known, leave this blank. The emission rates will be calculated using published emission factors.

11. Toxic Identification Number -- Determine the chemical composition of the stored material using Material Safety Data Sheets, other information supplied by the manufacturer, or personal knowledge. If any of these substances are listed in the table of Potentially Toxic Compounds (Table 1), enter the identification number from the table. Space is left for four toxic compounds to be identified for each storage tank. Use additional columns for the tank or add additional sheets if more than four toxic compounds are contained in the stored material.

12. Amount of Toxics in Stored Material -- Show the percent by volume of the toxic in the stored material.

AH347.1A
August 1985

DRY CLEANING

1. Company Name	Plant Location	Information for Calendar Year 1984

2. NORMAL OPERATING SCHEDULE:

_________ hrs/day _________ days/week _________ weeks/year

3. APPROXIMATE PERCENT OF SEASONAL SALES:

Dec - Feb _________ % Mar - May _________ %
Jun - Aug _________ % Sep - Nov _________ %

4. TYPE, AMOUNT, AND DENSITY OF SOLVENT CLEANER PURCHASED IN 1984:

Type/Amount			Density	
Perchloroethylene	_________	gallons/year	_________	lbs/gal
Stoddard Solvent	_________	gallons/year	_________	lbs/gal
Other (Specify)	_________	gallons/year	_________	lbs/gal
Other (Specify)	_________	gallons/year	_________	lbs/gal

5. SOLVENT RECYCLING:

	Amount of Solvent Sent for Reprocessing or Disposal (Gal/Year)	Amount of Solvent Returned from Reprocessing (Gal/Year)
Perchloroehylyene	_________	_________
Stoddard Solvent	_________	_________
Other (Specify)	_________	_________

6. METHOD OF DISPOSAL OF STILL BOTTOMS AND/OR SPENT FILTERS:

____
____
____

PLEASE ATTACH MATERIAL SAFETY DATA SHEET FOR ALL SOLVENTS USED, EXCEPT PERCHLOROETHYLENE

AH347.2
August 1985

DEQ FORM NO. 18633

INSTRUCTION FOR

"DRY CLEANING" FORM

1. Company Name, Plant Location, and Information for Calendar Year -- Specify the company name and plant location. Note that all information should reflect calendar year 1984 conditions.

2. Normal Operating Schedule -- Indicate how many hours/day, days/week and weeks/year you usually operate.

3. Approximate Percent of Seasonal Sales -- Show the approximate percent of the yearly sales that occur in each season.

4. Type, Amount and Density of Solvent -- Specify the amount of each type of solvent purchased in 1984. If any solvent other than perchloroethylene is used, please attach the Material Safety Data Sheet or other manufacturer's information on the chemical composition of the solvent.

5. Solvent Recycling -- Indicate the number of gallons in 1984 reprocessed outside your facility or disposed of by methods other than reprocessing. If applicable, specify the gallons of solvent in 1984 that were returned to the plant after reprocessing to be reused.

6. Method of Disposal of Still Bottoms and/or Spent Filters -- Describe the methods of disposal if done on site, or indicate the disposal company which removes this waste.

AH347.2A
August 1985

APPENDIX B
STATEWIDE TAP EMISSIONS

POLLUTANT	CAS NO.	EMISSIONS LBS/YR
ACETALDEHYDE	75-07-0	17138577
TOLUENE	108-88-3	10803794
FORMALDEHYDE	50-00-0	6648570
PESTICIDES	SEQ00	6000000
PHENOL	108-95-2	3318518
BENZENE	71-43-2	3023998
LEAD AND COMPOUNDS	7439-92-1	2256967
XYLENE	1330-20-7	1961880
MANGANESE AND COMPOUNDS	7439-96-5	1658432
METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	1612172
PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	1529666
TRICHLOROETHYLENE	79-01-6	1022416
PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	722627
CHLOROFORM / TRICHLOROMETHANE	67-66-3	679744
METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	497311
NICKEL AND COMPOUNDS	7440-02-0	44202
NICOTINE	54-11-5	37691
BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	28221
PENTACHLOROPHENOL	87-86-5	15819
MERCURY AND COMPOUNDS	7439-97-6	13533
VINYLIDENE CHLORIDE / 1,1-DICHLOROETHYLENE	75-35-4	13083
EPICHLOROHYDRIN	106-89-8	12290
CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	10136
VINYL TRICHLORIDE / 1,1,2-TRICHLOROETHANE	79-00-5	7507
ARSENIC AND COMPOUNDS	7740-38-2	2223
METHYL BROMIDE	74-83-9	1492
PHOSGENE	75-44-5	1000
ARAMITE	140-57-8	719
PROPYLENE OXIDE / 1,2-EPOXYPROPANE	75-56-9	376
DICHLOROBENZENE	25321-22-6	313
CADMIUM AND COMPOUNDS	7440-43-9	273
2,4-DICHLOROPHENOXY ACETIC ACID / 2,4-D	94-75-7	181
2-NITROPROPANE	79-46-0	177
CRESOLA / O,M,P-CRESOL / CRESYLIC ACID	1319-77-3	120
BERYLLIUM AND COMPOUNDS	7440-41-7	91
DIOXINS	SEQ-128	59
METHOXYCHLOR	72-43-5	35
DI (2-ETHYL HEXYL PHTHALATE)	117-81-7	32
ANTIMONY AND COMPOUNDS	7740-36-0	31
CFC 113	76-13-1	30
METHYL CHLORIDE	74-87-3	30
TETRACHLOROETHANE / 1,1,2,2-TETRACHLOROETHANE	79-34-5	29
ETHYLENE DICHLORIDE / 1,2-DICHLOROETHANE	107-06-2	14
CARBARYL	63-25-2	12

APPENDIX C
POINT SOURCE TAP EMISSIONS

SIC CODE	EI NUMBER	SOURCE_NAME	POLLUTANT	CAS NO.	EMISSIONS LB/YR
721	20-9065	GLASS SPRAY SERVICE	2,4-DICHLOROPHENOXY ACETIC ACID / 2,4-D	94-75-7	6
		GLASS SPRAY SERVICE	CARBARYL	63-25-2	12
		GLASS SPRAY SERVICE	METHOXYCHLOR	72-43-5	2
2041	26-2013	TERMINAL FLOUR MILLS	METHYL BROMIDE	74-83-9	1492
		TERMINAL FLOUR MILLS	METHYL CHLORIDE	74-87-3	30
2231	24-8037	PETTY GROVE INDSTRS, INC.	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	1208
		PETTY GROVE INDSTRS, INC.	XYLENE	1330-20-7	1020
2431	17-46	DIAMOND CABINETS	TOLUENE	108-88-3	9776
		DIAMOND CABINETS	XYLENE	1330-20-7	26676
	34-2060	DIAMOND CABINETS	TOLUENE	108-88-3	552938
		DIAMOND CABINETS	XYLENE	1330-20-7	274318
2436	20-7452	STATES INDUSTRIES INC.	TOLUENE	108-88-3	29550
		STATES INDUSTRIES INC.	XYLENE	1330-20-7	7460
2491	6-105	CONRAD WOOD PRESERVING	ARSENIC AND COMPOUNDS	7740-38-2	100
		CONRAD WOOD PRESERVING	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	100
	26-1964	MCCORMICK & BAXTER CO	ARSENIC AND COMPOUNDS	7740-38-2	51
		MCCORMICK & BAXTER CO	PENTACHLOROPHENOL	87-86-5	80
	33-3	JH BAXTER & CO	ARSENIC AND COMPOUNDS	7740-38-2	
		JH BAXTER & CO	PENTACHLOROPHENOL	87-86-5	740
2499	2-2515	EVANS PRODUCTS BSP	TRICHLOROETHYLENE	79-01-6	631400
2541	26-3180	BODEN STORE FIXTURES, INC	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	13000
		BODEN STORE FIXTURES, INC	TOLUENE	108-88-3	670
		BODEN STORE FIXTURES, INC	XYLENE	1330-20-7	670

SIC CODE	EI NUMBER	SOURCE_NAME	POLLUTANT	CAS NO.	EMISSIONS LB/YR
2611	36-6142	PUBLISHERS PAPER CO	ETHYLENE DICHLORIDE / 1,2-DICHLOROETHANE	107-06-2	14
		PUBLISHERS PAPER CO	MERCURY AND COMPOUNDS	7439-97-6	30
		PUBLISHERS PAPER CO	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	34
		PUBLISHERS PAPER CO	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	37
		PUBLISHERS PAPER CO	TOLUENE	108-88-3	102
		PUBLISHERS PAPER CO	VINYL TRICHLORIDE / 1,1,2-TRICHLOROETHANE	79-00-5	53
		PUBLISHERS PAPER CO	XYLENE	1330-20-7	114
2621	2-2515	EVANS PRODUCTS BSP	TRICHLOROETHYLENE	79-01-6	631400
	3-1850	PUBLISHERS PAPER CO	CHLOROFORM / TRICHLOROMETHANE	67-66-3	251328
		PUBLISHERS PAPER CO	XYLENE	1330-20-7	10
	4-4	CROWN ZELLERBACH COMPANY	CHLOROFORM / TRICHLOROMETHANE	67-66-3	142949
		CROWN ZELLERBACH COMPANY	TOLUENE	108-88-3	1039
		CROWN ZELLERBACH COMPANY	XYLENE	1330-20-7	270
	5-1849	BOISE CASCADE PAPERS	CHLOROFORM / TRICHLOROMETHANE	67-66-3	250165
	24-4171	BOISE CASCADE CORP	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	138
	36-6142	PUBLISHERS PAPER CO	ETHYLENE DICHLORIDE / 1,2-DICHLOROETHANE	107-06-2	14
		PUBLISHERS PAPER CO	MERCURY AND COMPOUNDS	7439-97-6	30
		PUBLISHERS PAPER CO	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	34
		PUBLISHERS PAPER CO	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	37
		PUBLISHERS PAPER CO	TOLUENE	108-88-3	102
		PUBLISHERS PAPER CO	VINYL TRICHLORIDE / 1,1,2-TRICHLOROETHANE	79-00-5	53
		PUBLISHERS PAPER CO	XYLENE	1330-20-7	114
2631	6-15	WEYERHAEUSER PAPER CO.	NICKEL AND COMPOUNDS	7440-02-0	8
	20-8850	WEYERHAUSER	MERCURY AND COMPOUNDS	7439-97-6	24
		WEYERHAUSER	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	27
		WEYERHAUSER	TETRACHLOROETHANE / 1,1,2,2-TETRACHLOROETHANE	79-34-5	29
		WEYERHAUSER	TOLUENE	108-88-3	80
		WEYERHAUSER	VINYL TRICHLORIDE / 1,1,2-TRICHLOROETHANE	79-00-5	41
		WEYERHAUSER	XYLENE	1330-20-7	90
2641	26-2777	CROWN ZELLERBACH	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	2
		CROWN ZELLERBACH	LEAD AND COMPOUNDS	7439-92-1	13
		CROWN ZELLERBACH	TOLUENE	108-88-3	2890000

APPENDIX C
POINT SOURCE TAP EMISSIONS

SIC CODE	EI NUMBER	SOURCE_NAME	POLLUTANT	CAS NO.	EMISSIONS LB/YR
2711	20-9077	INDUSTRIAL PUBLISHING	TOLUENE	108-88-3	24594
	24-8041	EAGLE NEWSPAPERS, INC.	BENZENE	71-43-2	70
	24-8045	STATESMAN-JOURNAL CO.	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	42
	26-3045	OREGONIAN PUBLISHING CO.	BENZENE	71-43-2	1740
		OREGONIAN PUBLISHING CO.	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	65
2751	26-2777	CROWN ZELLERBACH	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	2
		CROWN ZELLERBACH	LEAD AND COMPOUNDS	7439-92-1	13
		CROWN ZELLERBACH	TOLUENE	108-88-3	2890000
2752	20-9098	NORTHWEST WEB	TOLUENE	108-88-3	380
	24-8041	EAGLE NEWSPAPERS, INC.	BENZENE	71-43-2	70
2782	24-8047	MEAD PRODUCTS	FORMALDEHYDE	50-00-0	15
		MEAD PRODUCTS	MANGANESE AND COMPOUNDS	7439-96-5	15
		MEAD PRODUCTS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	15
	34-2724	BANKPRINT COMPANY, INC.	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	192
		BANKPRINT COMPANY, INC.	XYLENE	1330-20-7	292
	34-2725	DELUXE CHECK PRINTERS INC	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	410
		DELUXE CHECK PRINTERS INC	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	211
2793	3-2701	OREGON PRINTING PLATES	TRICHLOROETHYLENE	79-01-6	66
2819	20-510	BORDEN, INC.	FORMALDEHYDE	50-00-0	5268
		BORDEN, INC.	PHENOL	108-95-2	983
	26-1814	HERCULES INCORPORATED	EPICHLOROHYDRIN	106-89-8	11740
		HERCULES INCORPORATED	FORMALDEHYDE	50-00-0	70
		HERCULES INCORPORATED	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	61950
	26-3002	WACKER SILTRONIC CORP	TRICHLOROETHYLENE	79-01-6	6200
	34-2660	DAELCO, INC.	LEAD AND COMPOUNDS	7439-92-1	252

SIC CODE	EI NUMBER	SOURCE_NAME	POLLUTANT	CAS NO.	EMISSIONS LB/YR
2821	15-41	ROGUE VALLEY POLYMERS INC	FORMALDEHYDE	50-00-0	1220
		ROGUE VALLEY POLYMERS INC	PHENOL	108-95-2	60
	20-1221	CHEMBOND CORP.	BENZENE	71-43-2	400
		CHEMBOND CORP.	FORMALDEHYDE	50-00-0	80000
		CHEMBOND CORP.	PHENOL	108-95-2	2000
	22-1024	GEORGIA-PACIFIC RESINS	FORMALDEHYDE	50-00-0	26000
		GEORGIA-PACIFIC RESINS	PHENOL	108-95-2	70
	26-1902	MCCLOSKEY CORP	TOLUENE	108-88-3	170
		MCCLOSKEY CORP	XYLENE	1330-20-7	1085
	26-3182	WEST COAST ADHESIVES CO.	PHENOL	108-95-2	21
	31-28	BORDEN INC	FORMALDEHYDE	50-00-0	2627
		BORDEN INC	PHENOL	108-95-2	20
2834	26-3184	HALL LABORATORIES	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	108480
2841	26-3187	MT HOOD CHEMICAL CORP.	CRESOLA / O,M,P-CRESOL / CRESYLIC ACID	1319-77-3	120
		MT HOOD CHEMICAL CORP.	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	511
		MT HOOD CHEMICAL CORP.	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	67
		MT HOOD CHEMICAL CORP.	TOLUENE	108-88-3	40
	26-3188	ASSOCIATED CHEMISTS,INC.	FORMALDEHYDE	50-00-0	51
		ASSOCIATED CHEMISTS,INC.	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	6015
		ASSOCIATED CHEMISTS,INC.	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	280
2851	20-2805	FORREST PAINT	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	7360
		FORREST PAINT	TOLUENE	108-88-3	9940
		FORREST PAINT	XYLENE	1330-20-7	41140
	20-8656	VELCO INC.	TOLUENE	108-88-3	2230
		VELCO INC.	XYLENE	1330-20-7	6
	24-8043	NORRIS PAINT COMPANY	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	23067
		NORRIS PAINT COMPANY	PROPYLENE OXIDE / 1,2-EPOXYPROPANE	75-56-9	371
		NORRIS PAINT COMPANY	TOLUENE	108-88-3	22490
		NORRIS PAINT COMPANY	XYLENE	1330-20-7	124
	24-8044	RELIANCE UNIVERSAL, INC.	DI (2-ETHYL HEXYL PHTHALATE)	117-81-7	32

APPENDIX C
POINT SOURCE TAP EMISSIONS

SIC CODE	EI NUMBER	SOURCE_NAME	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		RELIANCE UNIVERSAL, INC.	TOLUENE	108-88-3	90
		RELIANCE UNIVERSAL, INC.	XYLENE	1330-20-7	104
	26-3146	RODDA PAINT COMPANY	2-NITROPROPANE	79-46-0	177
		RODDA PAINT COMPANY	LEAD AND COMPOUNDS	7439-92-1	187
		RODDA PAINT COMPANY	MERCURY AND COMPOUNDS	7439-97-6	18
		RODDA PAINT COMPANY	TOLUENE	108-88-3	4066
		RODDA PAINT COMPANY	XYLENE	1330-20-7	5316
	26-3148	SHERWIN-WILLIAMS CO.	TOLUENE	108-88-3	22
		SHERWIN-WILLIAMS CO.	XYLENE	1330-20-7	26
	26-3188	ASSOCIATED CHEMISTS,INC.	FORMALDEHYDE	50-00-0	51
		ASSOCIATED CHEMISTS,INC.	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	6015
		ASSOCIATED CHEMISTS,INC.	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	280
	26-3192	MILLER PAINT CO., INC.	TOLUENE	108-88-3	250
		MILLER PAINT CO., INC.	XYLENE	1330-20-7	1000
2873	26-3171	CHARLES H LILLY CO.	2,4-DICHLOROPHENOXY ACETIC ACID / 2,4-D	94-75-7	175
		CHARLES H LILLY CO.	XYLENE	1330-20-7	972
2879	26-2403	RHONE-POULENC, INC	XYLENE	1330-20-7	875
	26-3171	CHARLES H LILLY CO.	2,4-DICHLOROPHENOXY ACETIC ACID / 2,4-D	94-75-7	175
		CHARLES H LILLY CO.	XYLENE	1330-20-7	972
2891	26-3195	FULLER, H.B. COMPANY	VINYL TRICHLORIDE / 1,1,2-TRICHLOROETHANE	79-00-5	123
2893	26-3198	CROWN ZELLERBACH INK DIV.	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	42
		CROWN ZELLERBACH INK DIV.	LEAD AND COMPOUNDS	7439-92-1	42
		CROWN ZELLERBACH INK DIV.	TOLUENE	108-88-3	96
2899	26-3162	CHEMAX, INC.	XYLENE	1330-20-7	34
2992	26-3021	HARBOR OIL INC	TRICHLOROETHYLENE	79-01-6	44

APPENDIX C
POINT SOURCE TAP EMISSIONS

SIC CODE	EI NUMBER	SOURCE_NAME	POLLUTANT	CAS NO.	EMISSIONS LB/YR
3069	36-1020	ELASTOMERIC SILICONE PROD	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	4970
		ELASTOMERIC SILICONE PROD	TOLUENE	108-88-3	750
3079	26-3219	UNITED FOAM CORP.	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	1627
3221	26-1876	OWENS-ILLINOIS	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	7013
3241	1-29	ASH GROVE CEMENT WEST INC	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	20
		ASH GROVE CEMENT WEST INC	NICKEL AND COMPOUNDS	7440-02-0	700
3272	22-1037	OREGON STRAND BOARD CO	FORMALDEHYDE	50-00-0	11880
3293	36-1020	ELASTOMERIC SILICONE PROD	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	4970
		ELASTOMERIC SILICONE PROD	TOLUENE	108-88-3	750
3312	26-1865	GILMORE STEEL CORPORATION	CADMIUM AND COMPOUNDS	7440-43-9	45
		GILMORE STEEL CORPORATION	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	1188
		GILMORE STEEL CORPORATION	LEAD AND COMPOUNDS	7439-92-1	3441
		GILMORE STEEL CORPORATION	PROPYLENE OXIDE / 1,2-EPOXYPROPANE	75-56-9	5
		GILMORE STEEL CORPORATION	TOLUENE	108-88-3	735
		GILMORE STEEL CORPORATION	XYLENE	1330-20-7	576
3321	26-2067	ESCO CORPORATION PLANT 3	LEAD AND COMPOUNDS	7439-92-1	244
		ESCO CORPORATION PLANT 3	MANGANESE AND COMPOUNDS	7439-96-5	21
	26-2068	ESCO CORPORATION PLANT 1	ARSENIC AND COMPOUNDS	7740-38-2	26
		ESCO CORPORATION PLANT 1	LEAD AND COMPOUNDS	7439-92-1	832
		ESCO CORPORATION PLANT 1	MANGANESE AND COMPOUNDS	7439-96-5	73
	34-1879	WESTERN FOUNDRY COMPANY	TRICHLOROETHYLENE	79-01-6	67
3324	3-2674	PRECISION CASTPARTS CORP.	CADMIUM AND COMPOUNDS	7440-43-9	116
		PRECISION CASTPARTS CORP.	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	2338

APPENDIX C
POINT SOURCE TAP EMISSIONS

SIC CODE	EI NUMBER	SOURCE_NAME	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		PRECISION CASTPARTS CORP.	MANGANESE AND COMPOUNDS	7439-96-5	91
		PRECISION CASTPARTS CORP.	NICKEL AND COMPOUNDS	7440-02-0	3644
		PRECISION CASTPARTS CORP.	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	6768
		PRECISION CASTPARTS CORP.	TRICHLOROETHYLENE	79-01-6	140300
	26-1867	PRECISION CAST PARTS	CADMIUM AND COMPOUNDS	7440-43-9	4
		PRECISION CAST PARTS	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	4128
		PRECISION CAST PARTS	MANGANESE AND COMPOUNDS	7439-96-5	3
		PRECISION CAST PARTS	NICKEL AND COMPOUNDS	7440-02-0	5516
		PRECISION CAST PARTS	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	8460
		PRECISION CAST PARTS	TRICHLOROETHYLENE	79-01-6	139690
3325	26-1869	COLUMBIA STEEL CASTING CO	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	73
		COLUMBIA STEEL CASTING CO	MANGANESE AND COMPOUNDS	7439-96-5	450
		COLUMBIA STEEL CASTING CO	NICKEL AND COMPOUNDS	7440-02-0	4
		COLUMBIA STEEL CASTING CO	XYLENE	1330-20-7	84
3339	10-7	HANNA NICKEL SMELTING	NICKEL AND COMPOUNDS	7440-02-0	28800
	22-328	OREGON METALLURGICAL CORP	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	1110
	22-547	TELEDYNE WAH CHANG ALBANY	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	120166
		TELEDYNE WAH CHANG ALBANY	PHOSGENE	75-44-5	1000
		TELEDYNE WAH CHANG ALBANY	TOLUENE	108-88-3	3150
3341	3-2079	PORTABLE EQUIP SLVGE CO	LEAD AND COMPOUNDS	7439-92-1	105
	5-2574	BERGSOE METAL CORP	ANTIMONY AND COMPOUNDS	7740-36-0	31
		BERGSOE METAL CORP	ARSENIC AND COMPOUNDS	7740-38-2	1
		BERGSOE METAL CORP	LEAD AND COMPOUNDS	7439-92-1	1484
3356	22-547	TELEDYNE WAH CHANG ALBANY	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	120166
		TELEDYNE WAH CHANG ALBANY	PHOSGENE	75-44-5	1000
		TELEDYNE WAH CHANG ALBANY	TOLUENE	108-88-3	3150
3362	26-1870	OREGON BRASS WORKS	LEAD AND COMPOUNDS	7439-92-1	159
		OREGON BRASS WORKS	MANGANESE AND COMPOUNDS	7439-96-5	53
		OREGON BRASS WORKS	PHENOL	108-95-2	71
		OREGON BRASS WORKS	TOLUENE	108-88-3	634
		OREGON BRASS WORKS	XYLENE	1330-20-7	3062

SIC CODE	EI NUMBER	SOURCE_NAME	POLLUTANT	CAS NO.	EMISSIONS LB/YR
3362	26-2435	THOMAS INDUSTRIES INC	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	363
		THOMAS INDUSTRIES INC	TOLUENE	108-88-3	590
		THOMAS INDUSTRIES INC	TRICHLOROETHYLENE	79-01-6	2640
		THOMAS INDUSTRIES INC	XYLENE	1330-20-7	665
3411	26-2332	CONTINENTAL CAN CO., USA	TOLUENE	108-88-3	23200
3412	26-3035	MYERS CONTAINER CORP	XYLENE	1330-20-7	7000
3421	26-3170	GERBER LEGENDARY BLADES	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	26835
		GERBER LEGENDARY BLADES	TOLUENE	108-88-3	107
		GERBER LEGENDARY BLADES	XYLENE	1330-20-7	593
3423	3-2632	STANLEY-PROTO IND. TOOLS	TOLUENE	108-88-3	1020
		STANLEY-PROTO IND. TOOLS	XYLENE	1330-20-7	1700
3429	26-2435	THOMAS INDUSTRIES INC	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	363
		THOMAS INDUSTRIES INC	TOLUENE	108-88-3	590
		THOMAS INDUSTRIES INC	TRICHLOROETHYLENE	79-01-6	2640
		THOMAS INDUSTRIES INC	XYLENE	1330-20-7	665
	26-3163	CONTINENTAL BRASS, INC.	TOLUENE	108-88-3	6900
		CONTINENTAL BRASS, INC.	XYLENE	1330-20-7	2500
3433	2-2515	EVANS PRODUCTS BSP	TRICHLOROETHYLENE	79-01-6	631400
3451	18-77	QUALITY COMPONENTS, INC.	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	556
3469	18-77	QUALITY COMPONENTS, INC.	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	556
3471	22-6015	ALBANY INDUSTRL MCHN INC.	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	15

APPENDIX C
POINT SOURCE TAP EMISSIONS

SIC CODE	EI NUMBER	SOURCE_NAME	POLLUTANT	CAS NO.	EMISSIONS LB/YR
3479	3-2637	NORTHWEST PIPE & CASING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	7150
	26-3036	AMCOAT, INC	TOLUENE	108-88-3	3824
		AMCOAT, INC	XYLENE	1330-20-7	15641
3531	3-2704	WARN INDUSTRIES INC.	BENZENE	71-43-2	104
		WARN INDUSTRIES INC.	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	42211
		WARN INDUSTRIES INC.	TOLUENE	108-88-3	1887
		WARN INDUSTRIES INC.	XYLENE	1330-20-7	60
3537	27-8029	CATERPILLAR INDUSTRIAL	TOLUENE	108-88-3	26281
3553	22-6015	ALBANY INDUSTRL MCHN INC.	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	15
3573	2-5	HEWLETT-PACKARD	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	3100
		HEWLETT-PACKARD	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	80
		HEWLETT-PACKARD	TOLUENE	108-88-3	85
		HEWLETT-PACKARD	TRICHLOROETHYLENE	79-01-6	2900
		HEWLETT-PACKARD	XYLENE	1330-20-7	405
	17-68	LITTON INDUSTRS/GDNC DIV.	TOLUENE	108-88-3	80
		LITTON INDUSTRS/GDNC DIV.	XYLENE	1330-20-7	1020
	34-2801	FLOATING POINT SYSTEM INC	ARAMITE	140-57-8	719
		FLOATING POINT SYSTEM INC	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	660
3599	22-6015	ALBANY INDUSTRL MCHN INC.	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	15
3612	15-194	BAULTEAU STANDARD, INC.	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	12000
		BAULTEAU STANDARD, INC.	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	610
		BAULTEAU STANDARD, INC.	TOLUENE	108-88-3	3560
		BAULTEAU STANDARD, INC.	XYLENE	1330-20-7	15702

SIC CODE	EI NUMBER	SOURCE_NAME	POLLUTANT	CAS NO.	EMISSIONS LB/YR
3613	34-2706	CIRCLE A W PRODUCTS CO.	TOLUENE	108-88-3	55
		CIRCLE A W PRODUCTS CO.	XYLENE	1330-20-7	55
3622	3-2706	ELECTRODYNE, INC.	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	489
3629	17-67	OREGON TECHNICAL PRODUCTS	LEAD AND COMPOUNDS	7439-92-1	35
		OREGON TECHNICAL PRODUCTS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	56
		OREGON TECHNICAL PRODUCTS	TOLUENE	108-88-3	879
3644	34-2706	CIRCLE A W PRODUCTS CO.	TOLUENE	108-88-3	55
		CIRCLE A W PRODUCTS CO.	XYLENE	1330-20-7	55
3674	34-2699	PACIFIC HYBRID MICROELECT	CFC 113	76-13-1	30
		PACIFIC HYBRID MICROELECT	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	45
		PACIFIC HYBRID MICROELECT	TOLUENE	108-88-3	21
3677	3-2706	ELECTRODYNE, INC.	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	489
3679	3-2707	ELECTRONIC CONTROLS DESGN	BENZENE	71-43-2	915
		ELECTRONIC CONTROLS DESGN	FORMALDEHYDE	50-00-0	500
		ELECTRONIC CONTROLS DESGN	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	1000
	17-68	LITTON INDUSTRS/GDNC DIV.	TOLUENE	108-88-3	80
		LITTON INDUSTRS/GDNC DIV.	XYLENE	1330-20-7	1020
	27-8028	PRAEGITZER INDUSTRIES	EPICHLOROHYDRIN	106-89-8	550
		PRAEGITZER INDUSTRIES	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	590
		PRAEGITZER INDUSTRIES	TOLUENE	108-88-3	1390
3691	3-2634	JOHNSON CONTROLS, INC	LEAD AND COMPOUNDS	7439-92-1	2400
	27-8012	GNB INC. AUTO BATTERY DIV	LEAD AND COMPOUNDS	7439-92-1	974
		GNB INC. AUTO BATTERY DIV	TOLUENE	108-88-3	1055
		GNB INC. AUTO BATTERY DIV	XYLENE	1330-20-7	151

APPENDIX C
POINT SOURCE TAP EMISSIONS

SIC CODE	EI NUMBER	SOURCE_NAME	POLLUTANT	CAS NO.	EMISSIONS LB/YR
3693	36-1021	HEWLETT-PACKARD COMPANY	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	2040
		HEWLETT-PACKARD COMPANY	TOLUENE	108-88-3	110
3694	26-3156	WILLAMETTE ELTRC PRDS. CO	LEAD AND COMPOUNDS	7439-92-1	67
		WILLAMETTE ELTRC PRDS. CO	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	398
		WILLAMETTE ELTRC PRDS. CO	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	64
		WILLAMETTE ELTRC PRDS. CO	TOLUENE	108-88-3	565
		WILLAMETTE ELTRC PRDS. CO	XYLENE	1330-20-7	14133
3696	3-2707	ELECTRONIC CONTROLS DESGN	BENZENE	71-43-2	915
		ELECTRONIC CONTROLS DESGN	FORMALDEHYDE	50-00-0	500
		ELECTRONIC CONTROLS DESGN	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	1000
3711	20-9037	COUNTRY CAMPERS, INC.	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	1779
		COUNTRY CAMPERS, INC.	TOLUENE	108-88-3	271
3732	15-200	ALUMAWELD BOATS, INC.	TOLUENE	108-88-3	950
		ALUMAWELD BOATS, INC.	XYLENE	1330-20-7	1690
3825	34-2638	TEKTRONIX INC	DICHLOROBENZENE	25321-22-6	313
		TEKTRONIX INC	FORMALDEHYDE	50-00-0	8
		TEKTRONIX INC	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	9827
		TEKTRONIX INC	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	14030
		TEKTRONIX INC	PHENOL	108-95-2	196
		TEKTRONIX INC	TOLUENE	108-88-3	24251
		TEKTRONIX INC	TRICHLOROETHYLENE	79-01-6	19467
		TEKTRONIX INC	VINYL TRICHLORIDE / 1,1,2-TRICHLOROETHANE	79-00-5	7290
		TEKTRONIX INC	XYLENE	1330-20-7	5085
3841	3-2709	MEDICAL TECHNOLOGY INC.	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	480
3861	15-29	3M COMPANY	TOLUENE	108-88-3	400000

SIC CODE	EI NUMBER	SOURCE_NAME	POLLUTANT	CAS NO.	EMISSIONS LB/YR
3949	14-26	LUHR JENSEN & SONS,INC.	TOLUENE	108-88-3	800
		LUHR JENSEN & SONS,INC.	TRICHLOROETHYLENE	79-01-6	9915
4911	25-16	PORTLAND GENERAL ELECTRIC	ARSENIC AND COMPOUNDS	7740-38-2	2040
		PORTLAND GENERAL ELECTRIC	BERYLLIUM AND COMPOUNDS	7440-41-7	50
		PORTLAND GENERAL ELECTRIC	CADMIUM AND COMPOUNDS	7440-43-9	50
		PORTLAND GENERAL ELECTRIC	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	2040
		PORTLAND GENERAL ELECTRIC	FORMALDEHYDE	50-00-0	1030
		PORTLAND GENERAL ELECTRIC	MANGANESE AND COMPOUNDS	7439-96-5	1020
		PORTLAND GENERAL ELECTRIC	MERCURY AND COMPOUNDS	7439-97-6	150
		PORTLAND GENERAL ELECTRIC	NICKEL AND COMPOUNDS	7440-02-0	2600
		PORTLAND GENERAL ELECTRIC	PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	20
4953	3-2079	PORTABLE EQUIP SLVGE CO	LEAD AND COMPOUNDS	7439-92-1	105
4961	3-1850	PUBLISHERS PAPER CO	CHLOROFORM / TRICHLOROMETHANE	67-66-3	251328
		PUBLISHERS PAPER CO	XYLENE	1330-20-7	10
	6-15	WEYERHAEUSER PAPER CO.	NICKEL AND COMPOUNDS	7440-02-0	8
	15-29	3M COMPANY	TOLUENE	108-88-3	400000
	20-510	BORDEN, INC.	FORMALDEHYDE	50-00-0	5268
		BORDEN, INC.	PHENOL	108-95-2	983
	20-1221	CHEMBOND CORP.	BENZENE	71-43-2	400
		CHEMBOND CORP.	FORMALDEHYDE	50-00-0	80000
		CHEMBOND CORP.	PHENOL	108-95-2	2000
	22-547	TELEDYNE WAH CHANG ALBANY	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	120166
		TELEDYNE WAH CHANG ALBANY	PHOSGENE	75-44-5	1000
		TELEDYNE WAH CHANG ALBANY	TOLUENE	108-88-3	3150
	24-4171	BOISE CASCADE CORP	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	138
	26-2027	CHEVRON USA, INC.	BENZENE	71-43-2	100
		CHEVRON USA, INC.	TOLUENE	108-88-3	2150
		CHEVRON USA, INC.	XYLENE	1330-20-7	2250
	26-2403	RHONE-POULENC, INC	XYLENE	1330-20-7	875
	26-2435	THOMAS INDUSTRIES INC	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	363
		THOMAS INDUSTRIES INC	TOLUENE	108-88-3	590
		THOMAS INDUSTRIES INC	TRICHLOROETHYLENE	79-01-6	2640

APPENDIX C
POINT SOURCE TAP EMISSIONS

SIC CODE	EI NUMBER	SOURCE_NAME	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		THOMAS INDUSTRIES INC	XYLENE	1330-20-7	665
	26-2777	CROWN ZELLERBACH	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	2
		CROWN ZELLERBACH	LEAD AND COMPOUNDS	7439-92-1	13
		CROWN ZELLERBACH	TOLUENE	108-88-3	2890000
	26-3002	WACKER SILTRONIC CORP	TRICHLOROETHYLENE	79-01-6	6200
	36-6142	PUBLISHERS PAPER CO	ETHYLENE DICHLORIDE / 1,2-DICHLOROETHANE	107-06-2	14
		PUBLISHERS PAPER CO	MERCURY AND COMPOUNDS	7439-97-6	30
		PUBLISHERS PAPER CO	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	34
		PUBLISHERS PAPER CO	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	37
		PUBLISHERS PAPER CO	TOLUENE	108-88-3	102
		PUBLISHERS PAPER CO	VINYL TRICHLORIDE / 1,1,2-TRICHLOROETHANE	79-00-5	53
		PUBLISHERS PAPER CO	XYLENE	1330-20-7	114
5153	26-2003	BUNGE CORPORATION (KERR)	XYLENE	1330-20-7	3829
	26-2009	CARGILL CO INC	METHOXYCHLOR	72-43-5	33
		CARGILL CO INC	XYLENE	1330-20-7	680
	26-2807	COLUMBIA GRAIN, INC.	XYLENE	1330-20-7	499
	28-4	MIDCOLUMBIA GRAIN GROWERS	XYLENE	1330-20-7	255
	28-5	MID COLUMBIA GRAIN GRWS	XYLENE	1330-20-7	85
	28-8	MIDCOLUMBIA GRAIN GROWERS	XYLENE	1330-20-7	170
	28-9	MIDCOLUMBIA GRAIN GROWERS	XYLENE	1330-20-7	170
	28-10	MIDCOLUMBIA GRAIN GROWERS	XYLENE	1330-20-7	170
	33-18	MID COLUMBIA GRAIN GROWER	XYLENE	1330-20-7	170
	33-28	MIDCOLUMBIA GRAIN GROWERS	XYLENE	1330-20-7	85
5161	26-3173	MCKESSON CHEMICAL CO.	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	1150
	34-2712	GREAT WESTERN CHEMICAL CO	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	420
		GREAT WESTERN CHEMICAL CO	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	80
		GREAT WESTERN CHEMICAL CO	TOLUENE	108-88-3	240
		GREAT WESTERN CHEMICAL CO	TRICHLOROETHYLENE	79-01-6	170
		GREAT WESTERN CHEMICAL CO	XYLENE	1330-20-7	20

SIC CODE	EI NUMBER	SOURCE_NAME	POLLUTANT	CAS NO.	EMISSIONS LB/YR
5171	20-9113	SOUTHERN PACIFIC PIPELINE	BENZENE	71-43-2	2977
		SOUTHERN PACIFIC PIPELINE	TOLUENE	108-88-3	10690
		SOUTHERN PACIFIC PIPELINE	XYLENE	1330-20-7	140520
	26-2026	UNION OIL COMPANY OF CA	BENZENE	71-43-2	2414
		UNION OIL COMPANY OF CA	TOLUENE	108-88-3	9456
		UNION OIL COMPANY OF CA	XYLENE	1330-20-7	13581
	26-2027	CHEVRON USA, INC.	BENZENE	71-43-2	100
		CHEVRON USA, INC.	TOLUENE	108-88-3	2150
		CHEVRON USA, INC.	XYLENE	1330-20-7	2250
	26-2028	SHELL OIL CO	BENZENE	71-43-2	11967
		SHELL OIL CO	TOLUENE	108-88-3	11967
		SHELL OIL CO	XYLENE	1330-20-7	16667
	26-2029	MOBIL OIL CO	BENZENE	71-43-2	3400
		MOBIL OIL CO	TOLUENE	108-88-3	13750
		MOBIL OIL CO	XYLENE	1330-20-7	19150
	26-2030	ATLANTIC RICHFIELD CO	BENZENE	71-43-2	3800
		ATLANTIC RICHFIELD CO	TOLUENE	108-88-3	15425
		ATLANTIC RICHFIELD CO	XYLENE	1330-20-7	21790
	26-2478	TEXACO	BENZENE	71-43-2	175
		TEXACO	TOLUENE	108-88-3	700
		TEXACO	XYLENE	1330-20-7	1000
	26-2479	GATX	BENZENE	71-43-2	2600
		GATX	TOLUENE	108-88-3	10450
		GATX	XYLENE	1330-20-7	14550
	26-2966	TIME OIL CO	BENZENE	71-43-2	1650
		TIME OIL CO	TOLUENE	108-88-3	6600
		TIME OIL CO	XYLENE	1330-20-7	9150
5191	20-9050	EUGENE FARMERS CO-OP	XYLENE	1330-20-7	5000
7216	15-202	WELDONS CLEANING CENTER	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	6000
	34-2664	COOK'S CLEANERS	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	1730

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
BAKER	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	898
		TOLUENE	108-88-3	11195
		XYLENE	1330-20-7	2002
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	169
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	5840
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	1176
		TOLUENE	108-88-3	816
		TRICHLOROETHYLENE	79-01-6	104
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	7280
	GASOLINE MARKETING	BENZENE	71-43-2	1032
		TOLUENE	108-88-3	884
		XYLENE	1330-20-7	286
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	281
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	448
		TOLUENE	108-88-3	102
		XYLENE	1330-20-7	64
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	605
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	76960
		FORMALDEHYDE	50-00-0	182416
		LEAD AND COMPOUNDS	7439-92-1	20160
		TOLUENE	108-88-3	184704
		XYLENE	1330-20-7	48984
	PESTICIDES APPLICATION	PESTICIDES	SEQ00	6000000
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	6243
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	237
		DIOXINS	SEQ-128	1
		FORMALDEHYDE	50-00-0	12987
		MANGANESE AND COMPOUNDS	7439-96-5	13910
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	6419
		PHENOL	108-95-2	27821
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	58
		FORMALDEHYDE	50-00-0	115
		TOLUENE	108-88-3	29
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	234
	SLASH BURNING	ACETALDEHYDE	75-07-0	58198
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	2
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	28
	SURFACE COATING	BENZENE	71-43-2	5600
		TOLUENE	108-88-3	5440
	WASTE OIL COMBUSTION	ARSENIC AND COMPOUNDS	7740-38-2	
		CADMIUM AND COMPOUNDS	7440-43-9	
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	1
		MANGANESE AND COMPOUNDS	7439-96-5	1
		MERCURY AND COMPOUNDS	7439-97-6	77
		NICKEL AND COMPOUNDS	7440-02-0	2
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	196
	WILD FIRES	ACETALDEHYDE	75-07-0	1600
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	87

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
BENTON	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	3844
		TOLUENE	108-88-3	47927
		XYLENE	1330-20-7	8571
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	724
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	25002
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	5035
		TOLUENE	108-88-3	3493
		TRICHLOROETHYLENE	79-01-6	445
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	30464
	FIELD BURNING	BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	105
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	478
	GASOLINE MARKETING	BENZENE	71-43-2	4343
		TOLUENE	108-88-3	3722
		XYLENE	1330-20-7	1128
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	1205
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	1918
		TOLUENE	108-88-3	438
		XYLENE	1330-20-7	274
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	2589
	LANDFILL	BENZENE	71-43-2	567
		METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	1100
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	322
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	1730
		TOLUENE	108-88-3	9660
		TRICHLOROETHYLENE	79-01-6	1010
		VINYLIDENE CHLORIDE / 1,1-DICHLOROETHYLENE	75-35-4	1190
		XYLENE	1330-20-7	1850
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	23000
		FORMALDEHYDE	50-00-0	76268
		LEAD AND COMPOUNDS	7439-92-1	37248
		TOLUENE	108-88-3	46452
		XYLENE	1330-20-7	11802
	POTW	BENZENE	71-43-2	76
		CHLOROFORM / TRICHLOROMETHANE	67-66-3	87
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	1095
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	591
		PHENOL	108-95-2	63
		PHENOL	108-95-2	98
		TOLUENE	108-88-3	279
		TRICHLOROETHYLENE	79-01-6	655
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	17783
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	674
		DIOXINS	SEQ-128	1
		FORMALDEHYDE	50-00-0	36993
		MANGANESE AND COMPOUNDS	7439-96-5	39624
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	18284
		PHENOL	108-95-2	79248
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	290
		FORMALDEHYDE	50-00-0	580

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		TOLUENE	108-88-3	145
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	273
	SLASH BURNING	ACETALDEHYDE	75-07-0	379000
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	11
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	482
	SURFACE COATING	BENZENE	71-43-2	23975
		TOLUENE	108-88-3	23290
	WASTE OIL COMBUSTION	BERYLLIUM AND COMPOUNDS	7440-41-7	1
		CADMIUM AND COMPOUNDS	7440-43-9	2
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	5
		MANGANESE AND COMPOUNDS	7439-96-5	5
		MERCURY AND COMPOUNDS	7439-97-6	332
		NICKEL AND COMPOUNDS	7440-02-0	10
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	840
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	374
CLACKAMAS	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	13822
		TOLUENE	108-88-3	172326
		XYLENE	1330-20-7	30817
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	2609
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	89899
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	18103
		TOLUENE	108-88-3	12561
		TRICHLOROETHYLENE	79-01-6	1601
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	109088
	FIELD BURNING	BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	15
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	69
	GASOLINE MARKETING	BENZENE	71-43-2	10888
		TOLUENE	108-88-3	9332
		XYLENE	1330-20-7	2828
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	4334
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	100
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	6896
		TOLUENE	108-88-3	1576
		XYLENE	1330-20-7	985
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	9310
	LANDFILL	BENZENE	71-43-2	142
		METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	275
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	80
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	432
		TOLUENE	108-88-3	2420
		TRICHLOROETHYLENE	79-01-6	253
		VINYLIDENE CHLORIDE / 1,1-DICHLOROETHYLENE	75-35-4	298
		XYLENE	1330-20-7	462
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	96960
		FORMALDEHYDE	50-00-0	241856
		LEAD AND COMPOUNDS	7439-92-1	165024
		TOLUENE	108-88-3	227864
		XYLENE	1330-20-7	60144

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
	POTW	BENZENE	71-43-2	133
		CHLOROFORM / TRICHLOROMETHANE	67-66-3	153
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	1920
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	1036
		PHENOL	108-95-2	111
		TOLUENE	108-88-3	510
		TRICHLOROETHYLENE	79-01-6	1582
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	73936
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	1531
		DIOXINS	SEQ-128	4
		FORMALDEHYDE	50-00-0	156048
		MANGANESE AND COMPOUNDS	7439-96-5	110484
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	40654
		PHENOL	108-95-2	220969
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	909
		FORMALDEHYDE	50-00-0	1818
		TOLUENE	108-88-3	454
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	2240
	SLASH BURNING	ACETALDEHYDE	75-07-0	501800
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	15
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	241
	SURFACE COATING	BENZENE	71-43-2	86205
		TOLUENE	108-88-3	83742
	WASTE OIL COMBUSTION	ARSENIC AND COMPOUNDS	7740-38-2	1
		BERYLLIUM AND COMPOUNDS	7440-41-7	4
		CADMIUM AND COMPOUNDS	7440-43-9	5
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	17
		MANGANESE AND COMPOUNDS	7439-96-5	17
		MERCURY AND COMPOUNDS	7439-97-6	1192
		NICKEL AND COMPOUNDS	7440-02-0	34
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	3019
	WILD FIRES	ACETALDEHYDE	75-07-0	8600
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	4
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	1343
CLATSOP	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	1846
		TOLUENE	108-88-3	23019
		XYLENE	1330-20-7	4116
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	349
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	12008
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	2418
		TOLUENE	108-88-3	1678
		TRICHLOROETHYLENE	79-01-6	214
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	14672
	GASOLINE MARKETING	BENZENE	71-43-2	2094
		TOLUENE	108-88-3	1795
		XYLENE	1330-20-7	544
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	579
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	10

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	921
		TOLUENE	108-88-3	210
		XYLENE	1330-20-7	131
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	1244
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	21120
		FORMALDEHYDE	50-00-0	53392
		LEAD AND COMPOUNDS	7439-92-1	29568
		TOLUENE	108-88-3	49348
		XYLENE	1330-20-7	13008
	POTW	TOLUENE	108-88-3	24
		TRICHLOROETHYLENE	79-01-6	479
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	11710
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	444
		DIOXINS	SEQ-128	1
		FORMALDEHYDE	50-00-0	24359
		MANGANESE AND COMPOUNDS	7439-96-5	26091
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	12040
		PHENOL	108-95-2	52183
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	86
		FORMALDEHYDE	50-00-0	173
		TOLUENE	108-88-3	43
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	575
	SLASH BURNING	ACETALDEHYDE	75-07-0	251004
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	18
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	1546
	SURFACE COATING	BENZENE	71-43-2	11505
		TOLUENE	108-88-3	11186
	WASTE OIL COMBUSTION	BERYLLIUM AND COMPOUNDS	7440-41-7	1
		CADMIUM AND COMPOUNDS	7440-43-9	1
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	2
		MANGANESE AND COMPOUNDS	7439-96-5	2
		MERCURY AND COMPOUNDS	7439-97-6	159
		NICKEL AND COMPOUNDS	7440-02-0	5
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	403
	WILD FIRES	ACETALDEHYDE	75-07-0	2480
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	15
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	179
COLUMBIA	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	2032
		TOLUENE	108-88-3	25328
		XYLENE	1330-20-7	4529
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	383
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	13213
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	2261
		TOLUENE	108-88-3	1846
		TRICHLOROETHYLENE	79-01-6	235
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	16128
	GASOLINE MARKETING	BENZENE	71-43-2	2310
		TOLUENE	108-88-3	1980

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		XYLENE	1330-20-7	600
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	637
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	10
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	1013
		TOLUENE	108-88-3	231
		XYLENE	1330-20-7	144
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	1368
	LANDFILL	BENZENE	71-43-2	113
		METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	220
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	644
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	346
		TOLUENE	108-88-3	1930
		TRICHLOROETHYLENE	79-01-6	202
		VINYLIDENE CHLORIDE / 1,1-DICHLOROETHYLENE	75-35-4	238
		XYLENE	1330-20-7	370
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	17240
		FORMALDEHYDE	50-00-0	50700
		LEAD AND COMPOUNDS	7439-92-1	25056
		TOLUENE	108-88-3	37420
		XYLENE	1330-20-7	9690
	POTW	TOLUENE	108-88-3	13
		TRICHLOROETHYLENE	79-01-6	251
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	9625
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	365
		DIOXINS	SEQ-128	1
		FORMALDEHYDE	50-00-0	20023
		MANGANESE AND COMPOUNDS	7439-96-5	21447
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	9896
		PHENOL	108-95-2	42894
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	59
		FORMALDEHYDE	50-00-0	119
		TOLUENE	108-88-3	30
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	312
	SLASH BURNING	ACETALDEHYDE	75-07-0	307632
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	22
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	1893
	SURFACE COATING	BENZENE	71-43-2	12670
		TOLUENE	108-88-3	12308
	WASTE OIL COMBUSTION	BERYLLIUM AND COMPOUNDS	7440-41-7	1
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	3
		MANGANESE AND COMPOUNDS	7439-96-5	3
		MERCURY AND COMPOUNDS	7439-97-6	175
		NICKEL AND COMPOUNDS	7440-02-0	5
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	444
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	197
COOS	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	3423
		TOLUENE	108-88-3	42679
		XYLENE	1330-20-7	7632

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	866
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	22265
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	4483
		TOLUENE	108-88-3	3111
		TRICHLOROETHYLENE	79-01-6	396
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	27552
	GASOLINE MARKETING	BENZENE	71-43-2	3927
		TOLUENE	108-88-3	3366
		XYLENE	1330-20-7	1020
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	1073
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	20
		TOLUENE	108-88-3	390
		XYLENE	1330-20-7	244
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	2306
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	36880
		FORMALDEHYDE	50-00-0	115672
		LEAD AND COMPOUNDS	7439-92-1	46752
		TOLUENE	108-88-3	77148
		XYLENE	1330-20-7	19788
	OIL FIRED BOILER	NICKEL AND COMPOUNDS	7440-02-0	1708
	POTW	BENZENE	71-43-2	53
		CHLOROFORM / TRICHLOROMETHANE	67-66-3	60
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	754
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	407
		PHENOL	108-95-2	43
		TOLUENE	108-88-3	193
		TRICHLOROETHYLENE	79-01-6	451
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	18012
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	683
		DIOXINS	SEQ-128	1
		FORMALDEHYDE	50-00-0	37469
		MANGANESE AND COMPOUNDS	7439-96-5	40134
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	1852
		PHENOL	108-95-2	80268
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	2
		FORMALDEHYDE	50-00-0	4
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	808
	SLASH BURNING	ACETALDEHYDE	75-07-0	713076
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	51
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	4388
	SURFACE COATING	BENZENE	71-43-2	21350
		TOLUENE	108-88-3	20740
	WASTE OIL COMBUSTION	BERYLLIUM AND COMPOUNDS	7440-41-7	2
		CADMIUM AND COMPOUNDS	7440-43-9	1
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	4
		MANGANESE AND COMPOUNDS	7439-96-5	4
		MERCURY AND COMPOUNDS	7439-97-6	295
		NICKEL AND COMPOUNDS	7440-02-0	8
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	748
	WILD FIRES	ACETALDEHYDE	75-07-0	38800

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	3
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	233
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	333
CROOK	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	730
		TOLUENE	108-88-3	9096
		XYLENE	1330-20-7	1627
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	185
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	4745
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	955
		TOLUENE	108-88-3	663
		TRICHLOROETHYLENE	79-01-6	84
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	5824
	GASOLINE MARKETING	BENZENE	71-43-2	832
		TOLUENE	108-88-3	713
		XYLENE	1330-20-7	216
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	228
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	5
		TOLUENE	108-88-3	83
		XYLENE	1330-20-7	52
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	491
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	5840
		FORMALDEHYDE	50-00-0	15384
		LEAD AND COMPOUNDS	7439-92-1	9216
		TOLUENE	108-88-3	13396
		XYLENE	1330-20-7	3516
	OIL FIRED BOILER	NICKEL AND COMPOUNDS	7440-02-0	364
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	4917
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	186
		FORMALDEHYDE	50-00-0	10229
		MANGANESE AND COMPOUNDS	7439-96-5	10956
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	5056
		PHENOL	108-95-2	21912
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	20
		FORMALDEHYDE	50-00-0	40
		TOLUENE	108-88-3	10
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	117
	SLASH BURNING	ACETALDEHYDE	75-07-0	587748
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	18
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	282
	SURFACE COATING	BENZENE	71-43-2	4550
		TOLUENE	108-88-3	4420
	WASTE OIL COMBUSTION	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	1
		MANGANESE AND COMPOUNDS	7439-96-5	1
		MERCURY AND COMPOUNDS	7439-97-6	63
		NICKEL AND COMPOUNDS	7440-02-0	2
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	159
	WILD FIRES	ACETALDEHYDE	75-07-0	18300
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	1

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	9
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	71
CURRY	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	960
		TOLUENE	108-88-3	11964
		XYLENE	1330-20-7	2140
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	243
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	6241
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	1257
		TOLUENE	108-88-3	872
		TRICHLOROETHYLENE	79-01-6	111
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	7840
	GASOLINE MARKETING	BENZENE	71-43-2	1109
		TOLUENE	108-88-3	950
		XYLENE	1330-20-7	288
	GRAPHIC ARTS	BENZENE	71-43-2	4789
		FORMALDEHYDE	50-00-0	300
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	10
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	478
		TOLUENE	108-88-3	109
		XYLENE	1330-20-7	68
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	646
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	9840
		FORMALDEHYDE	50-00-0	19544
		LEAD AND COMPOUNDS	7439-92-1	15648
		TOLUENE	108-88-3	25136
		XYLENE	1330-20-7	6756
	OIL FIRED BOILER	NICKEL AND COMPOUNDS	7440-02-0	478
	POTW	TOLUENE	108-88-3	6
		TRICHLOROETHYLENE	79-01-6	114
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	5136
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	195
		FORMALDEHYDE	50-00-0	10684
		MANGANESE AND COMPOUNDS	7439-96-5	11444
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	5281
		PHENOL	108-95-2	22888
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	197
	SLASH BURNING	ACETALDEHYDE	75-07-0	345000
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	10
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	166
	SURFACE COATING	BENZENE	71-43-2	5985
	WASTE OIL COMBUSTION	CADMIUM AND COMPOUNDS	7440-43-9	
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	1
		MANGANESE AND COMPOUNDS	7439-96-5	1
		MERCURY AND COMPOUNDS	7439-97-6	83
		NICKEL AND COMPOUNDS	7440-02-0	2
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	210
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	93

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
DESCHUTES	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	3592
		TOLUENE	108-88-3	44778
		XYLENE	1330-20-7	8008
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	909
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	23360
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	4704
		TOLUENE	108-88-3	3264
		TRICHLOROETHYLENE	79-01-6	416
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	28336
	GASOLINE MARKETING	BENZENE	71-43-2	4035
		TOLUENE	108-88-3	3458
		XYLENE	1330-20-7	1048
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	1126
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	1792
		TOLUENE	108-88-3	409
		XYLENE	1330-20-7	256
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	2419
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	31520
		FORMALDEHYDE	50-00-0	72672
		LEAD AND COMPOUNDS	7439-92-1	50304
		TOLUENE	108-88-3	76468
		XYLENE	1330-20-7	20328
	POTW	TOLUENE	108-88-3	34
		TRICHLOROETHYLENE	79-01-6	684
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	24894
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	944
		DIOXINS	SEQ-128	2
		FORMALDEHYDE	50-00-0	51785
		MANGANESE AND COMPOUNDS	7439-96-5	55469
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	25595
		PHENOL	108-95-2	110937
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	117
		FORMALDEHYDE	50-00-0	234
		TOLUENE	108-88-3	58
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	370
	SURFACE COATING	BENZENE	71-43-2	22400
		TOLUENE	108-88-3	21760
	WASTE OIL COMBUSTION	BERYLLIUM AND COMPOUNDS	7440-41-7	1
		CADMIUM AND COMPOUNDS	7440-43-9	1
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	4
		MANGANESE AND COMPOUNDS	7439-96-5	4
		MERCURY AND COMPOUNDS	7439-97-6	310
		NICKEL AND COMPOUNDS	7440-02-0	9
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	784
	WILD FIRES	ACETALDEHYDE	75-07-0	237300
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	7
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	114
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	349

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
DOUGLAS	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	5192
		TOLUENE	108-88-3	63949
		XYLENE	1330-20-7	11436
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	1298
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	33361
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	6718
		TOLUENE	108-88-3	4661
		TRICHLOROETHYLENE	79-01-6	594
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	40544
	GASOLINE MARKETING	BENZENE	71-43-2	5775
		TOLUENE	108-88-3	4950
		XYLENE	1330-20-7	1500
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	1608
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	2559
		TOLUENE	108-88-3	584
		XYLENE	1330-20-7	365
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	3455
	LANDFILL	BENZENE	71-43-2	567
		METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	1100
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	322
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	1730
		TOLUENE	108-88-3	9660
		TRICHLOROETHYLENE	79-01-6	1010
		VINYLIDENE CHLORIDE / 1,1-DICHLOROETHYLENE	75-35-4	1190
		XYLENE	1330-20-7	1850
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	97520
		FORMALDEHYDE	50-00-0	304888
		LEAD AND COMPOUNDS	7439-92-1	102720
		TOLUENE	108-88-3	204392
		XYLENE	1330-20-7	52452
	POTW	BENZENE	71-43-2	28
		CHLOROFORM / TRICHLOROMETHANE	67-66-3	32
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	406
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	219
		PHENOL	108-95-2	23
		TOLUENE	108-88-3	162
		TRICHLOROETHYLENE	79-01-6	1385
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	31951
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	1211
		DIOXINS	SEQ-128	3
		FORMALDEHYDE	50-00-0	66465
		MANGANESE AND COMPOUNDS	7439-96-5	71192
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	32851
		PHENOL	108-95-2	142384
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	122
		FORMALDEHYDE	50-00-0	245
		TOLUENE	108-88-3	61
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	730
	SLASH BURNING	ACETALDEHYDE	75-07-0	3079600

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	92
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	1478
	SURFACE COATING	BENZENE	71-43-2	31990
		TOLUENE	108-88-3	31076
	WASTE OIL COMBUSTION	BERYLLIUM AND COMPOUNDS	7440-41-7	1
		CADMIUM AND COMPOUNDS	7440-43-9	2
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	6
		MANGANESE AND COMPOUNDS	7439-96-5	6
		MERCURY AND COMPOUNDS	7439-97-6	442
		NICKEL AND COMPOUNDS	7440-02-0	13
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	1120
	WILD FIRES	ACETALDEHYDE	75-07-0	41800
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	1
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	20
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	499
GILLIAM	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	109
		TOLUENE	108-88-3	1364
		XYLENE	1330-20-7	244
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	28
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	712
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	143
		TOLUENE	108-88-3	99
		TRICHLOROETHYLENE	79-01-6	13
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	896
	GASOLINE MARKETING	BENZENE	71-43-2	139
		TOLUENE	108-88-3	119
		XYLENE	1330-20-7	36
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	34
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	54
		TOLUENE	108-88-3	12
		XYLENE	1330-20-7	7
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	74
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	11760
		FORMALDEHYDE	50-00-0	37144
		LEAD AND COMPOUNDS	7439-92-1	9600
		TOLUENE	108-88-3	24496
		XYLENE	1330-20-7	6276
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	843
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	32
		FORMALDEHYDE	50-00-0	1753
		MANGANESE AND COMPOUNDS	7439-96-5	1878
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	866
		PHENOL	108-95-2	3755
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	490
	SURFACE COATING	BENZENE	71-43-2	682
		TOLUENE	108-88-3	663
	WASTE OIL COMBUSTION	CADMIUM AND COMPOUNDS	7440-43-9	
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		MANGANESE AND COMPOUNDS	7439-96-5	
		MERCURY AND COMPOUNDS	7439-97-6	9
		NICKEL AND COMPOUNDS	7440-02-0	
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	24
	WILD FIRES	ACETALDEHYDE	75-07-0	200
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	11
GRANT	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	452
		TOLUENE	108-88-3	5632
		XYLENE	1330-20-7	1007
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	113
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	2938
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	592
		TOLUENE	108-88-3	411
		TRICHLOROETHYLENE	79-01-6	52
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	3584
	GASOLINE MARKETING	BENZENE	71-43-2	508
		TOLUENE	108-88-3	436
		XYLENE	1330-20-7	132
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	141
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	225
		TOLUENE	108-88-3	51
		XYLENE	1330-20-7	32
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	304
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	6160
		FORMALDEHYDE	50-00-0	13288
		LEAD AND COMPOUNDS	7439-92-1	8736
		TOLUENE	108-88-3	15312
		XYLENE	1330-20-7	4092
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	3167
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	120
		FORMALDEHYDE	50-00-0	6587
		MANGANESE AND COMPOUNDS	7439-96-5	7056
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	3256
		PHENOL	108-95-2	14112
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	136
	SLASH BURNING	ACETALDEHYDE	75-07-0	990811
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	30
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	476
	SURFACE COATING	BENZENE	71-43-2	2817
		TOLUENE	108-88-3	2737
	WASTE OIL COMBUSTION	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	1
		MANGANESE AND COMPOUNDS	7439-96-5	1
		MERCURY AND COMPOUNDS	7439-97-6	39
		NICKEL AND COMPOUNDS	7440-02-0	1
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	99
	WILD FIRES	ACETALDEHYDE	75-07-0	61200
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	2
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	29

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	44
HARNEY	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	407
		TOLUENE	108-88-3	5073
		XYLENE	1330-20-7	907
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	103
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	2646
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	583
		TOLUENE	108-88-3	370
		TRICHLOROETHYLENE	79-01-6	47
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	3248
	GASOLINE MARKETING	BENZENE	71-43-2	477
		TOLUENE	108-88-3	409
		XYLENE	1330-20-7	124
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	127
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	203
		TOLUENE	108-88-3	46
		XYLENE	1330-20-7	29
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	274
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	7280
		FORMALDEHYDE	50-00-0	19752
		LEAD AND COMPOUNDS	7439-92-1	8544
		TOLUENE	108-88-3	16468
		XYLENE	1330-20-7	4308
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	2998
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	114
		FORMALDEHYDE	50-00-0	6236
		MANGANESE AND COMPOUNDS	7439-96-5	6679
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	3082
		PHENOL	108-95-2	13359
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	234
	SLASH BURNING	ACETALDEHYDE	75-07-0	201441
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	6
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	97
	SURFACE COATING	BENZENE	71-43-2	2537
		TOLUENE	108-88-3	2465
	WASTE OIL COMBUSTION	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	1
		MANGANESE AND COMPOUNDS	7439-96-5	1
		MERCURY AND COMPOUNDS	7439-97-6	35
		NICKEL AND COMPOUNDS	7440-02-0	1
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	89
	WILD FIRES	ACETALDEHYDE	75-07-0	263000
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	8
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	126
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	40
HOOD RIVER	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	920
		TOLUENE	108-88-3	11474

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		XYLENE	1330-20-7	2052
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	234
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	5986
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	1205
		TOLUENE	108-88-3	836
		TRICHLOROETHYLENE	79-01-6	107
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	9520
	GASOLINE MARKETING	BENZENE	71-43-2	1047
		TOLUENE	108-88-3	898
		XYLENE	1330-20-7	272
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	288
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	459
		TOLUENE	108-88-3	104
		XYLENE	1330-20-7	65
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	620
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	21640
		FORMALDEHYDE	50-00-0	72388
		LEAD AND COMPOUNDS	7439-92-1	20544
		TOLUENE	108-88-3	43452
		XYLENE	1330-20-7	11022
	POTW	TOLUENE	108-88-3	21
		TRICHLOROETHYLENE	79-01-6	424
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	5813
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	220
		FORMALDEHYDE	50-00-0	12092
		MANGANESE AND COMPOUNDS	7439-96-5	12952
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	5977
		PHENOL	108-95-2	25905
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	22
		FORMALDEHYDE	50-00-0	43
		TOLUENE	108-88-3	11
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	224
	SURFACE COATING	BENZENE	71-43-2	5740
		TOLUENE	108-88-3	5576
	WASTE OIL COMBUSTION	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	1
		MANGANESE AND COMPOUNDS	7439-96-5	1
		MERCURY AND COMPOUNDS	7439-97-6	79
		NICKEL AND COMPOUNDS	7440-02-0	2
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	201
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	89
JACKSON	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	7582
		TOLUENE	108-88-3	94525
		XYLENE	1330-20-7	16904
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	1918
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	49311
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	9930
		TOLUENE	108-88-3	6890
		TRICHLOROETHYLENE	79-01-6	878

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	59696
	GASOLINE MARKETING	BENZENE	71-43-2	6391
		TOLUENE	108-88-3	5478
		XYLENE	1330-20-7	1660
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	2377
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	3782
		TOLUENE	108-88-3	864
		XYLENE	1330-20-7	540
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	5107
	LANDFILL	BENZENE	71-43-2	452
		METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	880
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	258
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	1380
		TOLUENE	108-88-3	7730
		TRICHLOROETHYLENE	79-01-6	808
		VINYLIDENE CHLORIDE / 1,1-DICHLOROETHYLENE	75-35-4	952
		XYLENE	1330-20-7	1480
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	67840
		FORMALDEHYDE	50-00-0	184928
		LEAD AND COMPOUNDS	7439-92-1	100224
		TOLUENE	108-88-3	153112
		XYLENE	1330-20-7	40032
	POTW	BENZENE	71-43-2	118
		CHLOROFORM / TRICHLOROMETHANE	67-66-3	134
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	1694
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	913
		PHENOL	108-95-2	98
		TOLUENE	108-88-3	450
		TRICHLOROETHYLENE	79-01-6	1366
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	46989
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	1781
		DIOXINS	SEQ-128	4
		FORMALDEHYDE	50-00-0	97746
		MANGANESE AND COMPOUNDS	7439-96-5	104698
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	48312
		PHENOL	108-95-2	209397
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	295
		FORMALDEHYDE	50-00-0	590
		TOLUENE	108-88-3	148
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	594
	SLASH BURNING	ACETALDEHYDE	75-07-0	921800
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	28
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	442
	SURFACE COATING	BENZENE	71-43-2	47285
		TOLUENE	108-88-3	45934
	WASTE OIL COMBUSTION	BERYLLIUM AND COMPOUNDS	7440-41-7	2
		CADMIUM AND COMPOUNDS	7440-43-9	3
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	9
		MANGANESE AND COMPOUNDS	7439-96-5	9
		MERCURY AND COMPOUNDS	7439-97-6	654

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		NICKEL AND COMPOUNDS	7440-02-0	19
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	1656
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	737
JEFFERSON	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	685
		TOLUENE	108-88-3	8536
		XYLENE	1330-20-7	1526
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	173
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	4453
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	897
		TOLUENE	108-88-3	622
		TRICHLOROETHYLENE	79-01-6	79
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	5376
	FIELD BURNING	BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	95
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	436
	GASOLINE MARKETING	BENZENE	71-43-2	770
		TOLUENE	108-88-3	660
		XYLENE	1330-20-7	200
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	214
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	341
		TOLUENE	108-88-3	78
		XYLENE	1330-20-7	48
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	461
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	13200
		FORMALDEHYDE	50-00-0	39304
		LEAD AND COMPOUNDS	7439-92-1	14400
		TOLUENE	108-88-3	28456
		XYLENE	1330-20-7	7356
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	41079
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	156
		FORMALDEHYDE	50-00-0	8543
		MANGANESE AND COMPOUNDS	7439-96-5	9151
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	4223
		PHENOL	108-95-2	18302
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	11
		FORMALDEHYDE	50-00-0	22
		TOLUENE	108-88-3	5
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	117
	SURFACE COATING	BENZENE	71-43-2	4270
		TOLUENE	108-88-3	4148
	WASTE OIL COMBUSTION	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	1
		MANGANESE AND COMPOUNDS	7439-96-5	1
		MERCURY AND COMPOUNDS	7439-97-6	59
		NICKEL AND COMPOUNDS	7440-02-0	2
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	150
	WILD FIRES	ACETALDEHYDE	75-07-0	24500
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	1
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	12
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	67

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
JOSEPHINE	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	3384
		TOLUENE	108-88-3	42189
		XYLENE	1330-20-7	7545
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	855
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	22009
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	4432
		TOLUENE	108-88-3	3075
		TRICHLOROETHYLENE	79-01-6	392
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	26544
	GASOLINE MARKETING	BENZENE	71-43-2	3788
		TOLUENE	108-88-3	3247
		XYLENE	1330-20-7	984
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	1061
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	1688
		TOLUENE	108-88-3	385
		XYLENE	1330-20-7	241
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	2279
	LANDFILL	BENZENE	71-43-2	226
		METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	440
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	129
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	692
		TOLUENE	108-88-3	3860
		TRICHLOROETHYLENE	79-01-6	404
		VINYLIDENE CHLORIDE / 1,1-DICHLOROETHYLENE	75-35-4	476
		XYLENE	1330-20-7	740
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	39360
		FORMALDEHYDE	50-00-0	120496
		LEAD AND COMPOUNDS	7439-92-1	49248
		TOLUENE	108-88-3	83524
		XYLENE	1330-20-7	21504
	POTW	TOLUENE	108-88-3	23
		TRICHLOROETHYLENE	79-01-6	456
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	21010
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	796
		DIOXINS	SEQ-128	2
		FORMALDEHYDE	50-00-0	43706
		MANGANESE AND COMPOUNDS	7439-96-5	46815
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	21602
		PHENOL	108-95-2	93630
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	86
		FORMALDEHYDE	50-00-0	173
		TOLUENE	108-88-3	43
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	282
	SLASH BURNING	ACETALDEHYDE	75-07-0	203800
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	6
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	98
	SURFACE COATING	BENZENE	71-43-2	21105
		TOLUENE	108-88-3	20502

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
	WASTE OIL COMBUSTION	BERYLLIUM AND COMPOUNDS	7440-41-7	1
		CADMIUM AND COMPOUNDS	7440-43-9	1
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	4
		MANGANESE AND COMPOUNDS	7439-96-5	4
		MERCURY AND COMPOUNDS	7439-97-6	292
		NICKEL AND COMPOUNDS	7440-02-0	8
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	739
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	329
KLAMATH	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	3266
		TOLUENE	108-88-3	40720
		XYLENE	1330-20-7	7282
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	827
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	212439
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	4278
		TOLUENE	108-88-3	2968
		TRICHLOROETHYLENE	79-01-6	378
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	26096
	GASOLINE MARKETING	BENZENE	71-43-2	3727
		TOLUENE	108-88-3	3194
		XYLENE	1330-20-7	968
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	1024
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	1629
		TOLUENE	108-88-3	372
		XYLENE	1330-20-7	232
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	2200
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	75560
		FORMALDEHYDE	50-00-0	328804
		LEAD AND COMPOUNDS	7439-92-1	51936
		TOLUENE	108-88-3	121136
		XYLENE	1330-20-7	28566
	POTW	BENZENE	71-43-2	47
		CHLOROFORM / TRICHLOROMETHANE	67-66-3	54
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	677
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	365
		PHENOL	108-95-2	39
		TOLUENE	108-88-3	220
		TRICHLOROETHYLENE	79-01-6	1358
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	21990
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	834
		DIOXINS	SEQ-128	2
		FORMALDEHYDE	50-00-0	45743
		MANGANESE AND COMPOUNDS	7439-96-5	48996
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	22609
		PHENOL	108-95-2	97993
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	148
		FORMALDEHYDE	50-00-0	295
		TOLUENE	108-88-3	74
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	497

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
	SLASH BURNING	ACETALDEHYDE	75-07-0	1429400
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	43
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	686
	SURFACE COATING	BENZENE	71-43-2	20370
		TOLUENE	108-88-3	19788
	WASTE OIL COMBUSTION	BERYLLIUM AND COMPOUNDS	7440-41-7	1
		CADMIUM AND COMPOUNDS	7440-43-9	1
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	4
		MANGANESE AND COMPOUNDS	7439-96-5	4
		MERCURY AND COMPOUNDS	7439-97-6	282
		NICKEL AND COMPOUNDS	7440-02-0	8
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	713
	WILD FIRES	ACETALDEHYDE	75-07-0	155900
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	5
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	75
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	317
LAKE	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	427
		TOLUENE	108-88-3	5317
		XYLENE	1330-20-7	951
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	107
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	2774
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	559
		TOLUENE	108-88-3	388
		TRICHLOROETHYLENE	79-01-6	49
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	3360
	GASOLINE MARKETING	BENZENE	71-43-2	477
		TOLUENE	108-88-3	409
		XYLENE	1330-20-7	124
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	133
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	212
		TOLUENE	108-88-3	48
		XYLENE	1330-20-7	30
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	287
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	5880
		FORMALDEHYDE	50-00-0	14524
		LEAD AND COMPOUNDS	7439-92-1	7872
		TOLUENE	108-88-3	13876
		XYLENE	1330-20-7	3666
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	2873
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	109
		FORMALDEHYDE	50-00-0	5977
		MANGANESE AND COMPOUNDS	7439-96-5	6402
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	2954
		PHENOL	108-95-2	12804
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	117
	SURFACE COATING	BENZENE	71-43-2	2660
		TOLUENE	108-88-3	2584
	WASTE OIL COMBUSTION	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	1

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		MANGANESE AND COMPOUNDS	7439-96-5	1
		MERCURY AND COMPOUNDS	7439-97-6	37
		NICKEL AND COMPOUNDS	7440-02-0	1
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	93
	WILD FIRES	ACETALDEHYDE	75-07-0	256500
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	8
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	123
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	41
LANE	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	15068
		TOLUENE	108-88-3	187859
		XYLENE	1330-20-7	33595
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	3910
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	98002
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	19735
		TOLUENE	108-88-3	13693
		TRICHLOROETHYLENE	79-01-6	1745
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	120064
	FIELD BURNING	BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	102
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	466
	GASOLINE MARKETING	BENZENE	71-43-2	17109
		TOLUENE	108-88-3	14665
		XYLENE	1330-20-7	4444
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	4725
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	7518
		TOLUENE	108-88-3	1718
		XYLENE	1330-20-7	1074
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	10149
	LANDFILL	BENZENE	71-43-2	567
		METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	1100
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	322
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	1730
		TOLUENE	108-88-3	9660
		TRICHLOROETHYLENE	79-01-6	1010
		VINYLIDENE CHLORIDE / 1,1-DICHLOROETHYLENE	75-35-4	1190
		XYLENE	1330-20-7	1850
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	144360
		FORMALDEHYDE	50-00-0	496772
		LEAD AND COMPOUNDS	7439-92-1	180576
		TOLUENE	108-88-3	284288
		XYLENE	1330-20-7	71718
	POTW	BENZENE	71-43-2	384
		CHLOROFORM / TRICHLOROMETHANE	67-66-3	439
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	5532
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	2983
		PHENOL	108-95-2	319
		TOLUENE	108-88-3	1420
		TRICHLOROETHYLENE	79-01-6	3481
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	78140

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	2962
		DIOXINS	SEQ-128	6
		FORMALDEHYDE	50-00-0	162548
		MANGANESE AND COMPOUNDS	7439-96-5	174108
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	80341
		PHENOL	108-95-2	348217
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	400
		FORMALDEHYDE	50-00-0	799
		TOLUENE	108-88-3	200
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	1334
	SLASH BURNING	ACETALDEHYDE	75-07-0	1992600
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	60
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	956
	SURFACE COATING	BENZENE	71-43-2	93975
		TOLUENE	108-88-3	91290
	WASTE OIL COMBUSTION	ARSENIC AND COMPOUNDS	7740-38-2	1
		BERYLLIUM AND COMPOUNDS	7440-41-7	4
		CADMIUM AND COMPOUNDS	7440-43-9	6
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	18
		MANGANESE AND COMPOUNDS	7439-96-5	18
		MERCURY AND COMPOUNDS	7439-97-6	1300
		NICKEL AND COMPOUNDS	7440-02-0	37
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	3291
	WILD FIRES	ACETALDEHYDE	75-07-0	5500
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	3
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	1465
LINCOLN	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	2093
		TOLUENE	108-88-3	26097
		XYLENE	1330-20-7	4667
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	529
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	13614
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	2742
		TOLUENE	108-88-3	1902
		TRICHLOROETHYLENE	79-01-6	242
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	16464
	GASOLINE MARKETING	BENZENE	71-43-2	2356
		TOLUENE	108-88-3	2020
		XYLENE	1330-20-7	612
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	656
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	1044
		TOLUENE	108-88-3	238
		XYLENE	1330-20-7	149
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	1410
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	24560
		FORMALDEHYDE	50-00-0	58552
		LEAD AND COMPOUNDS	7439-92-1	34944
		TOLUENE	108-88-3	58808
		XYLENE	1330-20-7	15588

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
	POTW	TOLUENE	108-88-3	26
		TRICHLOROETHYLENE	79-01-6	524
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	14539
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	551
		DIOXINS	SEQ-128	1
		FORMALDEHYDE	50-00-0	30245
		MANGANESE AND COMPOUNDS	7439-96-5	32396
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	14949
		PHENOL	108-95-2	64792
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	72
		FORMALDEHYDE	50-00-0	144
		TOLUENE	108-88-3	36
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	166
	SLASH BURNING	ACETALDEHYDE	75-07-0	1062200
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	32
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	510
	SURFACE COATING	BENZENE	71-43-2	13055
		TOLUENE	108-88-3	12682
	WASTE OIL COMBUSTION	BERYLLIUM AND COMPOUNDS	7440-41-7	1
		CADMIUM AND COMPOUNDS	7440-43-9	1
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	3
		MANGANESE AND COMPOUNDS	7439-96-5	3
		MERCURY AND COMPOUNDS	7439-97-6	181
		NICKEL AND COMPOUNDS	7440-02-0	7
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	457
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	203
LINN	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	5045
		TOLUENE	108-88-3	62899
		XYLENE	1330-20-7	11248
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	1277
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	32813
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	6608
		TOLUENE	108-88-3	4585
		TRICHLOROETHYLENE	79-01-6	584
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	39984
	FIELD BURNING	BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	534
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	2440
	GASOLINE MARKETING	BENZENE	71-43-2	5698
		TOLUENE	108-88-3	4884
		XYLENE	1330-20-7	1480
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	1582
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	2517
		TOLUENE	108-88-3	575
		XYLENE	1330-20-7	359
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	3398
	LANDFILL	BENZENE	71-43-2	226
		METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	440
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	129

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	692
		TOLUENE	108-88-3	3860
		TRICHLOROETHYLENE	79-01-6	404
		VINYLIDENE CHLORIDE / 1,1-DICHLOROETHYLENE	75-35-4	476
		XYLENE	1330-20-7	740
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	85520
		FORMALDEHYDE	50-00-0	288728
		LEAD AND COMPOUNDS	7439-92-1	87744
		TOLUENE	108-88-3	170652
		XYLENE	1330-20-7	43212
	POTW	BENZENE	71-43-2	68
		CHLOROFORM / TRICHLOROMETHANE	67-66-3	78
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	982
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	530
		PHENOL	108-95-2	57
		TOLUENE	108-88-3	275
		TRICHLOROETHYLENE	79-01-6	1067
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	24778
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	939
		DIOXINS	SEQ-128	2
		FORMALDEHYDE	50-00-0	51544
		MANGANESE AND COMPOUNDS	7439-96-5	55210
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	25476
		PHENOL	108-95-2	110420
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	362
		FORMALDEHYDE	50-00-0	724
		TOLUENE	108-88-3	181
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	438
	SLASH BURNING	ACETALDEHYDE	75-07-0	710800
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	21
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	341
	SURFACE COATING	BENZENE	71-43-2	31465
		TOLUENE	108-88-3	30566
	WASTE OIL COMBUSTION	BERYLLIUM AND COMPOUNDS	7440-41-7	1
		CADMIUM AND COMPOUNDS	7440-43-9	2
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	6
		MANGANESE AND COMPOUNDS	7439-96-5	6
		MERCURY AND COMPOUNDS	7439-97-6	435
		NICKEL AND COMPOUNDS	7440-02-0	12
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	1102
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	490
MALHEUR	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	1560
		TOLUENE	108-88-3	19451
		XYLENE	1330-20-7	3478
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	394
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	32813
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	2043
		TOLUENE	108-88-3	1418

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		TRICHLOROETHYLENE	79-01-6	181
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	12096
	GASOLINE MARKETING	BENZENE	71-43-2	1709
		TOLUENE	108-88-3	1465
		XYLENE	1330-20-7	444
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	489
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	7787
		TOLUENE	108-88-3	177
		XYLENE	1330-20-7	111
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	1051
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	27000
		FORMALDEHYDE	50-00-0	88996
		LEAD AND COMPOUNDS	7439-92-1	27840
		TOLUENE	108-88-3	54344
		XYLENE	1330-20-7	13794
	POTW	TOLUENE	108-88-3	12
		TRICHLOROETHYLENE	79-01-6	243
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	9429
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	357
		DIOXINS	SEQ-128	1
		FORMALDEHYDE	50-00-0	19614
		MANGANESE AND COMPOUNDS	7439-96-5	21008
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	9694
		PHENOL	108-95-2	42017
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	65
		FORMALDEHYDE	50-00-0	130
		TOLUENE	108-88-3	32
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	526
	SLASH BURNING	ACETALDEHYDE	75-07-0	8468
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	4
	SURFACE COATING	BENZENE	71-43-2	97305
		TOLUENE	108-88-3	9452
	WASTE OIL COMBUSTION	CADMIUM AND COMPOUNDS	7440-43-9	1
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	2
		MANGANESE AND COMPOUNDS	7439-96-5	2
		MERCURY AND COMPOUNDS	7439-97-6	135
		NICKEL AND COMPOUNDS	7440-02-0	4
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	341
	WILD FIRES	ACETALDEHYDE	75-07-0	75800
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	2
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	36
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	152
MARION	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	11785
		TOLUENE	108-88-3	146929
		XYLENE	1330-20-7	26275
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	2981
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	76650
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	15435

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		TOLUENE	108-88-3	10710
		TRICHLOROETHYLENE	79-01-6	1365
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	92288
	FIELD BURNING	BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	186
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	850
	GASOLINE MARKETING	BENZENE	71-43-2	10364
		TOLUENE	108-88-3	8884
		XYLENE	1330-20-7	2692
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	3696
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	5880
		TOLUENE	108-88-3	1344
		XYLENE	1330-20-7	840
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	7938
	LANDFILL	BENZENE	71-43-2	850
		METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	1650
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	483
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	2600
		TOLUENE	108-88-3	14500
		TRICHLOROETHYLENE	79-01-6	1520
		VINYLIDENE CHLORIDE / 1,1-DICHLOROETHYLENE	75-35-4	1780
		XYLENE	1330-20-7	2780
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	96000
		FORMALDEHYDE	50-00-0	253664
		LEAD AND COMPOUNDS	7439-92-1	149568
		TOLUENE	108-88-3	219896
		XYLENE	1330-20-7	57696
	POTW	BENZENE	71-43-2	298
		CHLOROFORM / TRICHLOROMETHANE	67-66-3	342
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	4302
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	2319
		PHENOL	108-95-2	248
		TOLUENE	108-88-3	1105
		TRICHLOROETHYLENE	79-01-6	2728
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	56188
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	2130
		DIOXINS	SEQ-128	5
		FORMALDEHYDE	50-00-0	116884
		MANGANESE AND COMPOUNDS	7439-96-5	125197
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	57771
		PHENOL	108-95-2	250393
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	828
		FORMALDEHYDE	50-00-0	1656
		TOLUENE	108-88-3	414
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	1831
	SLASH BURNING	ACETALDEHYDE	75-07-0	301400
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	9
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	145
	SURFACE COATING	BENZENE	71-43-2	73500
		TOLUENE	108-88-3	71400
	WASTE OIL COMBUSTION	ARSENIC AND COMPOUNDS	7740-38-2	1

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		BERYLLIUM AND COMPOUNDS	7440-41-7	3
		CADMIUM AND COMPOUNDS	7440-43-9	5
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	14
		MANGANESE AND COMPOUNDS	7439-96-5	14
		MERCURY AND COMPOUNDS	7439-97-6	1016
		NICKEL AND COMPOUNDS	7440-02-0	29
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	2574
	WILD FIRES	ACETALDEHYDE	75-07-0	35000
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	1
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	17
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	1145
MORROW	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	421
		TOLUENE	108-88-3	5247
		XYLENE	1330-20-7	938
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	106
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	27370
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	551
		TOLUENE	108-88-3	382
		TRICHLOROETHYLENE	79-01-6	49
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	3248
	GASOLINE MARKETING	BENZENE	71-43-2	477
		TOLUENE	108-88-3	409
		XYLENE	1330-20-7	124
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	132
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	210
		TOLUENE	108-88-3	48
		XYLENE	1330-20-7	30
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	283
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	15560
		FORMALDEHYDE	50-00-0	57748
		LEAD AND COMPOUNDS	7439-92-1	11904
		TOLUENE	108-88-3	28952
		XYLENE	1330-20-7	7182
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	2795
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	106
		FORMALDEHYDE	50-00-0	5815
		MANGANESE AND COMPOUNDS	7439-96-5	6229
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	2875
		PHENOL	108-95-2	12457
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	97
	SLASH BURNING	ACETALDEHYDE	75-07-0	586
	SURFACE COATING	BENZENE	71-43-2	26250
		TOLUENE	108-88-3	25500
	WASTE OIL COMBUSTION	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	1

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		MANGANESE AND COMPOUNDS	7439-96-5	1
		MERCURY AND COMPOUNDS	7439-97-6	36
		NICKEL AND COMPOUNDS	7440-02-0	1
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	92
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	41
MULTNOMAH	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	36607
		TOLUENE	108-88-3	456388
		XYLENE	1330-20-7	81616
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	9258
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	238089
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	47944
		TOLUENE	108-88-3	33267
		TRICHLOROETHYLENE	79-01-6	4240
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	249760
	GASOLINE MARKETING	BENZENE	71-43-2	20420
		TOLUENE	108-88-3	17503
		XYLENE	1330-20-7	5304
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	9896
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	210
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	15744
		TOLUENE	108-88-3	3598
		XYLENE	1330-20-7	2249
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	24657
	LANDFILL	BENZENE	71-43-2	1620
		METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	3140
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	918
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	4930
		TOLUENE	108-88-3	27500
		TRICHLOROETHYLENE	79-01-6	2880
		VINYLIDENE CHLORIDE / 1,1-DICHLOROETHYLENE	75-35-4	3390
		XYLENE	1330-20-7	5270
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	194840
		FORMALDEHYDE	50-00-0	501836
		LEAD AND COMPOUNDS	7439-92-1	347616
		TOLUENE	108-88-3	451524
		XYLENE	1330-20-7	118794
	POTW	BENZENE	71-43-2	927
		CHLOROFORM / TRICHLOROMETHANE	67-66-3	1060
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	13356
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	7202
		PHENOL	108-95-2	771
		TOLUENE	108-88-3	3427
		TRICHLOROETHYLENE	79-01-6	8404
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	204569
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	4236
		DIOXINS	SEQ-128	11
		FORMALDEHYDE	50-00-0	431760
		MANGANESE AND COMPOUNDS	7439-96-5	305692

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	112483
		PHENOL	108-95-2	611385
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	2639
		FORMALDEHYDE	50-00-0	5278
		TOLUENE	108-88-3	1319
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	11756
	SLASH BURNING	ACETALDEHYDE	75-07-0	15000
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	17
	SURFACE COATING	BENZENE	71-43-2	228305
		TOLUENE	108-88-3	221782
	WASTE OIL COMBUSTION	ARSENIC AND COMPOUNDS	7740-38-2	2
		BERYLLIUM AND COMPOUNDS	7440-41-7	10
		CADMIUM AND COMPOUNDS	7440-43-9	14
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	44
		MANGANESE AND COMPOUNDS	7439-96-5	44
		MERCURY AND COMPOUNDS	7439-97-6	3157
		NICKEL AND COMPOUNDS	7440-02-0	90
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	6891
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	3558
POLK	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	2525
		TOLUENE	108-88-3	31485
		XYLENE	1330-20-7	5630
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	640
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	164259
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	33074
		TOLUENE	108-88-3	2295
		TRICHLOROETHYLENE	79-01-6	292
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	19936
	FIELD BURNING	BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	84
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	382
	GASOLINE MARKETING	BENZENE	71-43-2	2479
		TOLUENE	108-88-3	2479
		XYLENE	1330-20-7	644
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	792
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	1260
		TOLUENE	108-88-3	288
		XYLENE	1330-20-7	180
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	1701
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	28520
		FORMALDEHYDE	50-00-0	90068
		LEAD AND COMPOUNDS	7439-92-1	35328
		TOLUENE	108-88-3	59412
		XYLENE	1330-20-7	15222
	POTW	TOLUENE	108-88-3	18
		TRICHLOROETHYLENE	79-01-6	371
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	12299
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	466

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		DIOXINS	SEQ-128	1
		FORMALDEHYDE	50-00-0	25584
		MANGANESE AND COMPOUNDS	7439-96-5	27403
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	12645
		PHENOL	108-95-2	54807
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	52
		FORMALDEHYDE	50-00-0	104
		TOLUENE	108-88-3	26
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	321
	SLASH BURNING	ACETALDEHYDE	75-07-0	153660
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	11
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	946
	SURFACE COATING	BENZENE	71-43-2	155705
		TOLUENE	108-88-3	15300
	WASTE OIL COMBUSTION	BERYLLIUM AND COMPOUNDS	7440-41-7	1
		CADMIUM AND COMPOUNDS	7440-43-9	1
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	3
		MANGANESE AND COMPOUNDS	7439-96-5	3
		MERCURY AND COMPOUNDS	7439-97-6	218
		NICKEL AND COMPOUNDS	7440-02-0	6
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	552
	WILD FIRES	ACETALDEHYDE	75-07-0	15840
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	1
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	95
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	245
SHERMAN	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	427
		TOLUENE	108-88-3	1539
		XYLENE	1330-20-7	275
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	31
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	803
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	162
		TOLUENE	108-88-3	112
		TRICHLOROETHYLENE	79-01-6	14
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	1008
	GASOLINE MARKETING	BENZENE	71-43-2	139
		TOLUENE	108-88-3	119
		XYLENE	1330-20-7	36
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	38
		FORMALDEHYDE	50-00-0	61
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	61
		TOLUENE	108-88-3	14
		XYLENE	1330-20-7	8
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	83
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	10160
		FORMALDEHYDE	50-00-0	34744
		LEAD AND COMPOUNDS	7439-92-1	7776
		TOLUENE	108-88-3	20096
		XYLENE	1330-20-7	5076

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	854
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	32
		FORMALDEHYDE	50-00-0	1777
		MANGANESE AND COMPOUNDS	7439-96-5	1904
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	879
		PHENOL	108-95-2	3808
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	58
	SURFACE COATING	BENZENE	71-43-2	770
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	123
		TOLUENE	108-88-3	748
	WASTE OIL COMBUSTION	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	
		MANGANESE AND COMPOUNDS	7439-96-5	
		MERCURY AND COMPOUNDS	7439-97-6	11
		NICKEL AND COMPOUNDS	7440-02-0	
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	27
	WILD FIRES	ACETALDEHYDE	75-07-0	3700
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	2
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	12
TILLAMOOK	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	1235
		TOLUENE	108-88-3	15393
		XYLENE	1330-20-7	2753
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	312
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	8030
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	1617
		TOLUENE	108-88-3	1122
		TRICHLOROETHYLENE	79-01-6	143
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	9632
	GASOLINE MARKETING	BENZENE	71-43-2	1386
		TOLUENE	108-88-3	1188
		XYLENE	1330-20-7	360
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	387
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	616
		TOLUENE	108-88-3	140
		XYLENE	1330-20-7	88
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	832
	LANDFILL	BENZENE	71-43-2	170
		METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	330
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	97
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	519
		TOLUENE	108-88-3	2900
		TRICHLOROETHYLENE	79-01-6	303
		VINYLIDENE CHLORIDE / 1,1-DICHLOROETHYLENE	75-35-4	357
		XYLENE	1330-20-7	555
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	16360
		FORMALDEHYDE	50-00-0	40548
		LEAD AND COMPOUNDS	7439-92-1	22080
		TOLUENE	108-88-3	38552
		XYLENE	1330-20-7	10182

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	8532
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	323
		DIOXINS	SEQ-128	1
		FORMALDEHYDE	50-00-0	17748
		MANGANESE AND COMPOUNDS	7439-96-5	19010
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	8772
		PHENOL	108-95-2	38020
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	136
	SLASH BURNING	ACETALDEHYDE	75-07-0	441012
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	32
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	2714
	SURFACE COATING	BENZENE	71-43-2	7700
		TOLUENE	108-88-3	7480
	WASTE OIL COMBUSTION	CADMIUM AND COMPOUNDS	7440-43-9	1
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	2
		MANGANESE AND COMPOUNDS	7439-96-5	2
		MERCURY AND COMPOUNDS	7439-97-6	107
		NICKEL AND COMPOUNDS	7440-02-0	3
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	270
	WILD FIRES	ACETALDEHYDE	75-07-0	7920
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	1
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	48
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	120
UMATILLA	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	3401
		TOLUENE	108-88-3	42399
		XYLENE	1330-20-7	7582
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	859
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	22119
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	4454
		TOLUENE	108-88-3	3091
		TRICHLOROETHYLENE	79-01-6	394
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	26880
	GASOLINE MARKETING	BENZENE	71-43-2	3835
		TOLUENE	108-88-3	3287
		XYLENE	1330-20-7	996
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	1066
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	1696
		TOLUENE	108-88-3	387
		XYLENE	1330-20-7	242
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	2291
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	54920
		FORMALDEHYDE	50-00-0	199956
		LEAD AND COMPOUNDS	7439-92-1	53376
		TOLUENE	108-88-3	103744
		XYLENE	1330-20-7	25854
	POTW	TOLUENE	108-88-3	75
		TRICHLOROETHYLENE	79-01-6	1499
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	20873

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	791
		DIOXINS	SEQ-128	2
		FORMALDEHYDE	50-00-0	43421
		MANGANESE AND COMPOUNDS	7439-96-5	46509
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	21461
		PHENOL	108-95-2	93018
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	131
		FORMALDEHYDE	50-00-0	263
		TOLUENE	108-88-3	66
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	497
	SLASH BURNING	ACETALDEHYDE	75-07-0	1000
	SURFACE COATING	BENZENE	71-43-2	21210
		TOLUENE	108-88-3	20604
	WASTE OIL COMBUSTION	BERYLLIUM AND COMPOUNDS	7440-41-7	1
		CADMIUM AND COMPOUNDS	7440-43-9	1
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	4
		MANGANESE AND COMPOUNDS	7439-96-5	4
		MERCURY AND COMPOUNDS	7439-97-6	293
		NICKEL AND COMPOUNDS	7440-02-0	8
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	743
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	331
UNION	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	1392
		TOLUENE	108-88-3	17352
		XYLENE	1330-20-7	3103
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	352
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	9052
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	1823
		TOLUENE	108-88-3	1265
		TRICHLOROETHYLENE	79-01-6	161
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	10864
	GASOLINE MARKETING	BENZENE	71-43-2	1555
		TOLUENE	108-88-3	1333
		XYLENE	1330-20-7	404
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	436
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	694
		TOLUENE	108-88-3	158
		XYLENE	1330-20-7	99
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	937
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	25560
		FORMALDEHYDE	50-00-0	103660
		LEAD AND COMPOUNDS	7439-92-1	21024
		TOLUENE	108-88-3	44020
		XYLENE	1330-20-7	10650
	POTW	BENZENE	71-43-2	22
		CHLOROFORM / TRICHLOROMETHANE	67-66-3	25
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	316
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	170
		PHENOL	108-95-2	18

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		TOLUENE	108-88-3	81
		TRICHLOROETHYLENE	79-01-6	189
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	8560
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	324
		DIOXINS	SEQ-128	1
		FORMALDEHYDE	50-00-0	17806
		MANGANESE AND COMPOUNDS	7439-96-5	19072
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	8801
		PHENOL	108-95-2	38145
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	99
		FORMALDEHYDE	50-00-0	198
		TOLUENE	108-88-3	49
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	234
	SLASH BURNING	ACETALDEHYDE	75-07-0	5320
	SURFACE COATING	BENZENE	71-43-2	86800
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	1392
		TOLUENE	108-88-3	8432
	WASTE OIL COMBUSTION	CADMIUM AND COMPOUNDS	7440-43-9	1
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	2
		MANGANESE AND COMPOUNDS	7439-96-5	2
		MERCURY AND COMPOUNDS	7439-97-6	120
		NICKEL AND COMPOUNDS	7440-02-0	3
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	304
	WILD FIRES	ACETALDEHYDE	75-07-0	43100
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	1
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	21
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	135
WALLOWA	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	424
		TOLUENE	108-88-3	52822
		XYLENE	1330-20-7	945
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	107
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	2756
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	5553
		TOLUENE	108-88-3	385
		TRICHLOROETHYLENE	79-01-6	49
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	3248
	GASOLINE MARKETING	BENZENE	71-43-2	477
		TOLUENE	108-88-3	409
		XYLENE	1330-20-7	124
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	132
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	211
		TOLUENE	108-88-3	48
		XYLENE	1330-20-7	30
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	285
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	4240
		FORMALDEHYDE	50-00-0	12248
		LEAD AND COMPOUNDS	7439-92-1	5760
		TOLUENE	108-88-3	9292

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		XYLENE	1330-20-7	2412
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	2888
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	109
		FORMALDEHYDE	50-00-0	6009
		MANGANESE AND COMPOUNDS	7439-96-5	6436
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	2970
		PHENOL	108-95-2	12872
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	136
	SLASH BURNING	ACETALDEHYDE	75-07-0	1631
	SURFACE COATING	BENZENE	71-43-2	2642
		TOLUENE	108-88-3	2567
	WASTE OIL COMBUSTION	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	1
		MANGANESE AND COMPOUNDS	7439-96-5	1
		MERCURY AND COMPOUNDS	7439-97-6	37
		NICKEL AND COMPOUNDS	7440-02-0	1
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	93
	WILD FIRES	ACETALDEHYDE	75-07-0	3800
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	2
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	41
WASCO	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	1263
		TOLUENE	108-88-3	15742
		XYLENE	1330-20-7	2815
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	319
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	8212
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	1654
		TOLUENE	108-88-3	1147
		TRICHLOROETHYLENE	79-01-6	146
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	10080
	GASOLINE MARKETING	BENZENE	71-43-2	1432
		TOLUENE	108-88-3	1228
		XYLENE	1330-20-7	372
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	396
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	630
		TOLUENE	108-88-3	144
		XYLENE	1330-20-7	90
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	850
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	27320
		FORMALDEHYDE	50-00-0	85692
		LEAD AND COMPOUNDS	7439-92-1	27936
		TOLUENE	108-88-3	57148
		XYLENE	1330-20-7	14658
	POTW	TOLUENE	108-88-3	30
		TRICHLOROETHYLENE	79-01-6	599
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	8006
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	303
		DIOXINS	SEQ-128	1
		FORMALDEHYDE	50-00-0	16654
		MANGANESE AND COMPOUNDS	7439-96-5	17839

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	8232
		PHENOL	108-95-2	35678
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	22
		FORMALDEHYDE	50-00-0	43
		TOLUENE	108-88-3	11
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	185
	SURFACE COATING	BENZENE	71-43-2	7875
		TOLUENE	108-88-3	7650
	WASTE OIL COMBUSTION	CADMIUM AND COMPOUNDS	7440-43-9	1
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	2
		MANGANESE AND COMPOUNDS	7439-96-5	2
		MERCURY AND COMPOUNDS	7439-97-6	109
		NICKEL AND COMPOUNDS	7440-02-0	3
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	276
	WILD FIRES	ACETALDEHYDE	75-07-0	1900
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	1
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	123
WASHINGTON	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	14602
		TOLUENE	108-88-3	182052
		XYLENE	1330-20-7	32556
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	3694
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	94973
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	19125
		TOLUENE	108-88-3	13270
		TRICHLOROETHYLENE	79-01-6	1691
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	115360
	FIELD BURNING	BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	2
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	10
	GASOLINE MARKETING	BENZENE	71-43-2	10287
		TOLUENE	108-88-3	8818
		XYLENE	1330-20-7	2672
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	4579
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	7285
		TOLUENE	108-88-3	1665
		XYLENE	1330-20-7	1040
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	9836
	LANDFILL	BENZENE	71-43-2	226
		METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	440
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	129
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	692
		TOLUENE	108-88-3	3860
		TRICHLOROETHYLENE	79-01-6	404
		VINYLIDENE CHLORIDE / 1,1-DICHLOROETHYLENE	75-35-4	476
		XYLENE	1330-20-7	740
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	96000
		FORMALDEHYDE	50-00-0	183376
		LEAD AND COMPOUNDS	7439-92-1	182880
		TOLUENE	108-88-3	248164

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AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		XYLENE	1330-20-7	66864
	POTW	BENZENE	71-43-2	157
		CHLOROFORM / TRICHLOROMETHANE	67-66-3	179
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	2258
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	1218
		PHENOL	108-95-2	130
		TOLUENE	108-88-3	706
		TRICHLOROETHYLENE	79-01-6	3865
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	80277
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	1663
		DIOXINS	SEQ-128	4
		FORMALDEHYDE	50-00-0	169432
		MANGANESE AND COMPOUNDS	7439-96-5	119962
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	44140
		PHENOL	108-95-2	239924
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	1382
		FORMALDEHYDE	50-00-0	2765
		TOLUENE	108-88-3	691
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	1529
	SLASH BURNING	ACETALDEHYDE	75-07-0	105924
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	8
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	652
	SURFACE COATING	BENZENE	71-43-2	91070
		TOLUENE	108-88-3	88468
	WASTE OIL COMBUSTION	BERYLLIUM AND COMPOUNDS	7440-41-7	4
		CADMIUM AND COMPOUNDS	7440-43-9	6
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	18
		MANGANESE AND COMPOUNDS	7439-96-5	18
		MERCURY AND COMPOUNDS	7439-97-6	1259
		NICKEL AND COMPOUNDS	7440-02-0	36
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	3189
	WILD FIRES	ACETALDEHYDE	75-07-0	9400
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	1
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	57
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	1419
WHEELER	ARCHITECTURAL COATINGS	METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	79
		TOLUENE	108-88-3	980
		XYLENE	1330-20-7	175
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	20
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	511
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	103
		TOLUENE	108-88-3	71
		TRICHLOROETHYLENE	79-01-6	9
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	672
	GASOLINE MARKETING	BENZENE	71-43-2	77
		TOLUENE	108-88-3	66
		XYLENE	1330-20-7	20
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	24

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	39
		TOLUENE	108-88-3	8
		XYLENE	1330-20-7	5
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	53
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	1840
		FORMALDEHYDE	50-00-0	4600
		LEAD AND COMPOUNDS	7439-92-1	2112
		TOLUENE	108-88-3	4320
		XYLENE	1330-20-7	1140
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	633
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	24
		FORMALDEHYDE	50-00-0	1317
		MANGANESE AND COMPOUNDS	7439-96-5	1411
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	651
		PHENOL	108-95-2	2822
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	1929
	SLASH BURNING	ACETALDEHYDE	75-07-0	847
	SURFACE COATING	BENZENE	71-43-2	490
		TOLUENE	108-88-3	476
	WASTE OIL COMBUSTION	CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	
		MANGANESE AND COMPOUNDS	7439-96-5	
		MERCURY AND COMPOUNDS	7439-97-6	7
		NICKEL AND COMPOUNDS	7440-02-0	
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	17
	WILD FIRES	ACETALDEHYDE	75-07-0	3100
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	2
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	8
YAMHILL	ARCHITECTURAL COATINGS	TOLUENE	108-88-3	39881
		XYLENE	1330-20-7	7132
	CIGARETTE SMOKE	CIGARETTE SMOKE	54-11-5	809
	DEGREASERS (COLD)	METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	20805
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	4189
		TOLUENE	108-88-3	2907
		TRICHLOROETHYLENE	79-01-6	370
	DRY CLEANING	PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	25200
	FIELD BURNING	BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	37
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	169
	GASOLINE MARKETING	BENZENE	71-43-2	3588
		TOLUENE	108-88-3	3076
		XYLENE	1330-20-7	932
	GRAPHIC ARTS	FORMALDEHYDE	50-00-0	1003
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	1003
		TOLUENE	108-88-3	364
		XYLENE	1330-20-7	228
	HOUSEHOLD SOLVENT USE	FORMALDEHYDE	50-00-0	2155
	LANDFILL	BENZENE	71-43-2	510
		METHYL CHLOROFORM / 1,1,1-TRICHLOROETHANE	71-55-6	990
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	290

APPENDIX D
AREA SOURCE TAP EMISSIONS

COUNTY	SOURCE	POLLUTANT	CAS NO.	EMISSIONS LB/YR
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	1560
		TOLUENE	108-88-3	8690
		TRICHLOROETHYLENE	79-01-6	909
		VINYLIDENE CHLORIDE / 1,1-DICHLOROETHYLENE	75-35-4	1070
		XYLENE	1330-20-7	1660
	MOTOR VEHICLES-GASOLINE	BENZENE	71-43-2	22800
		FORMALDEHYDE	50-00-0	54440
		LEAD AND COMPOUNDS	7439-92-1	39168
		TOLUENE	108-88-3	54560
		XYLENE	1330-20-7	14460
	POTW	BENZENE	71-43-2	47
		CHLOROFORM / TRICHLOROMETHANE	67-66-3	54
		METHYLENE CHLORIDE / DICHLOROMETHANE	75-09-2	678
		PERCHLOROETHYLENE / TETRACHLOROETHYLENE	127-18-4	366
		PHENOL	108-95-2	39
		TOLUENE	108-88-3	173
		TRICHLOROETHYLENE	79-01-6	405
	RESIDENTIAL SPACE HEATING	ACETALDEHYDE	75-07-0	14250
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	540
		DIOXINS	SEQ-128	1
		FORMALDEHYDE	50-00-0	29644
		MANGANESE AND COMPOUNDS	7439-96-5	31752
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	14652
		PHENOL	108-95-2	63504
	RESIDENTIAL SPACE HEATING-GAS	BENZENE	71-43-2	86
		FORMALDEHYDE	50-00-0	173
		TOLUENE	108-88-3	43
	RESIDENTIAL SPACE HEATING-OIL	FORMALDEHYDE	50-00-0	370
	SLASH BURNING	ACETALDEHYDE	75-07-0	154000
		BENZO (A) PYRENE / 3,4-BENZOPHRENE / BAP	50-32-8	5
		PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS /PPAH	SEQ-6	74
	SURFACE COATING	BENZENE	71-43-2	19950
		TOLUENE	108-88-3	19380
	WASTE OIL COMBUSTION	BERYLLIUM AND COMPOUNDS	7440-41-7	1
		CADMIUM AND COMPOUNDS	7440-43-9	1
		CHROMIUM AND COMPOUNDS (HEXAVALENT)	7440-47-3	4
		MANGANESE AND COMPOUNDS	7439-96-5	4
		MERCURY AND COMPOUNDS	7439-97-6	276
		NICKEL AND COMPOUNDS	7440-02-0	8
	WATER TREATMENT	CHLOROFORM / TRICHLOROMETHANE	67-66-3	699
	WOOD PRESERVING-ANTISTAIN	PENTACHLOROPHENOL	87-86-5	311

NEIL GOLDSCHMIDT
GOVERNOR

Environmental Quality Commission

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

MEMORANDUM

To: Environmental Quality Commission

From: Director

Subject: Agenda Item No. K - July 17, 1987, EQC Meeting

Informational Report: Issues, Concerns, and Legislation Associated with Marine Paints Containing Tributyl Tins (TBT)

Introduction

Concerns about the toxic effect of organotin compounds, especially tributyl tins (TBT), are worldwide. The Department was alerted to the tributyl tin toxicity issue in September 1986 at an international toxicology meeting where scientists from the United Kingdom reported that aquatic life toxicity effects occurred in many coastal areas around the world at concentrations as low as parts per trillion.

In an effort to learn more about TBT compounds and determine if they may be present and a potential problem in Oregon's estuaries, the Department began to research and compile information on how TBT is used, what environmental impacts result from its use, and the concentrations at which acute and chronic toxicity effects occur. In addition, the Department tracked national and international regulatory decisions that were initiated or implemented to control TBT. Department chemists began the process of developing the capability and refining the sensitive analytical procedures necessary to detect TBT at low levels to enable the Department to conduct coastal water surveys. The 1987 Legislature also introduced several bills to restrict the use of TBT antifouling paints. The following overview on TBT is based on the most recent information available to Department staff from the published literature, and from scientists in other states and countries.

TBT Toxicity

Tributyl tins are organotin compounds containing three butyl groups attached to a tin atom that effectively act as a biocide. Elemental, or inorganic tin, does not cause large adverse toxicological effects to humans or wildlife. However, organic forms of tin, especially TBT, do pose toxicological risks because of their ability to penetrate biological membranes and interfere with cellular functions (1). TBT is currently used as an active ingredient in antifouling paint formulations to prevent or retard the attachment and growth of undesirable organisms on boat and ship hulls. A small amount of biocide is leached from the paint surface over an extended period of time to kill barnacles and tubeworms. These growths increase hull friction and weight reducing fuel efficiency, and increasing maintenance for boat owners. A coat of TBT antifouling paint remains effective for several years, extending the time between dry docking and repainting.

Antifouling paints with TBT have been commercially available for many years, although the extent of the use has not been quantified. Current estimates from retail sales suggest that TBT paints represent approximately 20% of all marine paints sold. An increase in the use of these paints has caused an increase in the concentration of butyl tin compounds in the water column and sediments. The TBT enters the environment both from leaching from the bottom of the boats and from painting activities. Levels are highest near boatyards, marinas, and areas with intense boating activities and relatively poor water exchange.

Studies have shown that TBT is highly toxic to a wide spectrum of non-target organisms such as economically important oysters, clams, mussels, and fish, as well as the target "fouling" organisms, at concentrations as low as parts per trillion (1 part per 1,000,000,000,000). TBT has also been found to bioaccumulate in the tissues of shellfish and fish (2), at very much higher concentrations than are found in the environment.

Short term exposure to high concentrations (part per billion) and long term exposure to low concentrations (parts per trillion) of TBT have been shown to adversely affect growth, development and survival of both marine and freshwater biota. Potential human health effects from consumption of contaminated food organisms and from direct exposure to TBT paints are as yet <u>unknown</u> (3).

The use of TBT antifouling paints was restricted in 1982 in France after high TBT levels were found in coastal waters and were linked with detrimental effects on marine resources, especially France's economically important commercial oyster industry (4). Oysters <u>(Crassostrea gigas)</u> developed deformed, thickened shells when exposed to TBT, and reproduction decreased substantially. TBT is the only known toxic substance to cause this type of malformation (see Attachment 1). Since the ban, the oyster industry has recovered in France. Switzerland and Germany followed and have banned use of TBT paints in all freshwaters (5). The United Kingdom enacted legislation in 1985 to control use of antifouling paint in both marine and freshwaters when it was discovered that TBT was present in many estuaries in concentrations high enough to cause mortality and/or deformities in marine organisms. Populations of the common dog whelk (Nucella lapillus), a seashell once plentiful along the coast, declined dramatically, while oysters developed shell abnormalities, similar to those found in France. After the restriction on TBT paints was implemented, the United Kingdom initiated a monitoring study to determine how effective the restriction of TBT was in protecting the resources. They planned to review the data in 1987, and revise the regulations as necessary.

EPA Special Review

Based on these findings, the United States Environmental Protection Agency initiated a Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) "Special Review" in January 1986 of pesticide products containing TBT active ingredients used as paint additives. The "Special Review" was designed to determine whether restrictions needed to be imposed in the U.S. on use of TBT paints to prevent further impacts on aquatic organisms. EPA targeted nine TBT compounds registered for use in antifouling paints for evaluation in the "Special Review".

The "Special Review" process requires compilation and examination of all existing laboratory and field data to quantify the human health and environmental risks and benefits of using TBT compounds in order to support the continued registration of the pesticide. EPA Office of Pesticides has requested a DATA CALL-IN NOTICE for scientists and paint manufacturers to submit information available. Where information was not available, studies would be conducted that could describe the environmental fate and transport of TBT, acute and chronic bioassays, bioaccumulation and biomagnification data, analytical methodology, environmental monitoring information, worker exposure and safety, TBT residues in fish and shell fish tissue, volumes of active ingredients used nationwide, and leaching rates of paints containing TBT. Based on environmental and human health information submitted to EPA, recommendations for action on the future use of TBT paints will be developed. EPA's goal is to provide a nationwide policy that could consistently control the use of TBT paints. A draft report may be available by late 1987 or early 1988 with the results of the DATA CALL-IN NOTICE (6).

TBT Regulations

Many coastal states moved forward with separate action, however, and initiated legislation in 1987 to implement a TBT control program immediately, rather than wait until 1988 when EPA completes the "Special Review". Many of the states already found significant levels of TBT in estuarine waters, and wanted to arrest any further environmental degradation or impacts to aquatic resources. For example, a sampling program in California of coastal and delta waters, and estuarine sediments, showed that 62% of estuaries from San Diego to Crescent City had high concentrations of TBT near the marinas. In addition, oysters developed shell deformities when transplanted to San Diego Bay, which was known to be contaminated with TBT.

Because of concerns in Chesapeake Bay, Virginia and Maryland unanimously passed legislation that allows only vessels larger than 25 meters and aluminum hull boats to use TBT paints with low leach rates of 5.0 micrograms per centimeter squared per day (Attachment 2). This leach rate was recommended as the rate that would environmentally degrade at a similar rate as its "leached", or introduced, into marine waters, but would still be effective as an antifoulant. Parallel efforts occurred on the west coast where the Pacific Legislative Task Force consisting of California, Oregon, Washington and Alaska also introduced legislation controlling TBT.

In Oregon, the 1987 Legislature unanimously passed SB551 similar to the Virginia and Maryland bills, which restricts the sale and use of TBT paints, and SB554 which requires the Department and the Marine Board to develop a public information brochure that describes responsible use, removal and disposal of TBT paints (Attachment 3). The majority of TBT contamination occurs in slow flushing, shallow estuaries where boatyard practices and marinas with moored recreational vessels (less than 25 m), contribute a high influx of TBT. Based on this information, the Department believed that restricting the sale of TBT antifouling paints with low leach rates to licensed pesticide dealers for use on vessels over 25 m in length (that spend a minimum amount of time in port) and with aluminum hulls, would be the first step towards protecting marine resources by significantly decreasing the amount of TBT that enters the marine environment.

United Kingdom Ban

In February 1987, the United Kingdom evaluated monitoring data that had been collected since the legislation was enacted in 1985. Based on the results of the surveys, the United Kingdom found that the existing controls enacted in 1985 were not effective enough in reducing contamination and protecting sensitive species (Attachment 4). They then proposed to totally ban retail sales and to decrease the water quality criteria from 20.0 parts per trillion to 2.0 parts per trillion. In addition, the European Commission is now proposing a uniform ban for all European countries.

TBT In South Slough

While investigating a minor oil spill in March 1987 in Charleston near South Slough, Department staff inspected marinas and boat yards in the area. In the process of tracking the environmental impacts from the oil spill, staff were notified by a local oyster grower that oyster culture had been difficult in areas near the boat yards, and the oysters that did grow were deformed and stunted. Several oyster shells collected in Joe Ney

Slough and Brown's Cove, at the boundary of South Slough Sanctuary, were found to have abnormal spherical shapes and thickened shells, very similar to oysters contaminated by TBT in the United Kingdom and France. The concentration and distribution of TBT in the South Slough area, or any other Oregon estuaries with boat yards and marinas, was unknown, and could not be measured immediately since the Department laboratory was not yet equipped and knowledgeable about TBT analysis. In the absence of quantitative information, shell samples were sent to a shellfish expert at Moss Landing Marine Laboratory, (Monterey, California) who has examined TBT contaminated oyster shells from around the world. In addition, Department staff visited with scientists at the Plymouth Environmental Toxicology Laboratory while on leave in the United Kingdom to discuss the suspected contamination problems and to acquire the most updated research information available.

The oysters shells collected near South Slough were found to have a high degree of deformation and chambering. The types of deformities found are known to be induced by exposure to TBT that would have to be present in the oyster growing areas over a period of many years. Based on the small size of the four year old oysters, and the thickness of the shells, experts at the Marine Laboratory suspect that South Slough has been contaminated with TBT. Even the "control" oysters collected from North Bay were found to be "chambered", but to a lesser degree.

Based on assessment of the shells and the concerns about daily oyster harvesting activities in the area, the Department immediately established an oyster tissue and water quality sampling study. The purpose of the study was to determine if TBT is present in measurable quantities in water and oyster tissues, and if so, whether it was present in high enough concentrations to cause a human health risk from shellfish consumption. Six areas around South Slough Sanctuary were sampled to determine if a TBT gradient existed in the oyster growing areas. The samples were sent to Moss Landing Marine Laboratory for TBT analysis (Attachment 5).

Results

The results of the laboratory analysis will be available after July 10, 1987, and will be presented at the Commission meeting with a Director's recommendation for action based on those results.

Lydea Taylor
Fred Hansen

Attachments

1. Photographs of Oysters
2. Fact Sheet on Leachrates
3. Legislation
4. News Release
5. Staff Memo
6. Results of Sample Analysis

WC2138
229-6018
June 25, 1987

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(3) Cardwell, Rick D., and Arthur W. Sheldon. A Risk Assessment Concerning the Fate and Effects of Tributyltins in the Aquatic Environment.

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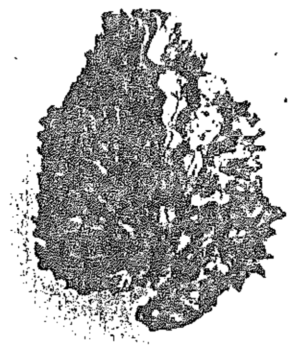
WC1956

SIDE VIEW

NORMAL
OYSTER



TBT
OYSTER

TOP VIEW

NORMAL
OYSTER

TBT
OYSTER

CROSS SECTION

NORMAL
OYSTER

TBT
OYSTER

ATTACHMENT 2

FACT SHEET ON LEACH RATES FOR TRIBUTYLTIN ANTIFOULING PAINTS

Krystyna U. Wolniakowski
Department of Environmental Quality

1. WHAT ARE LEACH RATES?

A leach rate is the time required for tributyl tin (TBT) compounds to be released or dissolved from the paint surface into the water column from boat hulls. This rate is dependent on the type of paint formulation (the concentration of active TBT in the paint, and whether it is a copolymer paint or free-association paint), the method of testing used, and specific environmental factors such as salinity, temperature and water flows.

2. WHAT TYPES OF PAINTS HAVE HIGH LEACH RATES?

Free association paints, in general, have the highest leach rates because of the specific paint complex. When freshly applied and put in the water, a high concentration of TBT is immediately released into the water column for up to 30 days. After that time, the surface of the paint changes to slow the TBT release until it becomes totally ineffective from formation of surface insolubles. The lifetime of this paint is about 2 years. Copolymer paints also have a high initial release rate, though not as high as free association paints, but have a lifetime of up to 7 years because the dissolution rate is low but constant.

3. WHY DO WE CARE ABOUT LEACH RATES?

The rate which the TBT is released into the water column can affect its toxicity to aquatic organisms. If it is leached out at a rate that is proportional to its degradation in the environment, and at concentrations below toxic levels, short term toxic effects from initial high concentrations in the water column, and long term chronic effects from sustained leaching over time, can be avoided. Currently, the high leach rates have caused an impact on aquatic life communities because the concentrations in the water column and sediments have been greater than the rate which they can degrade to less toxic forms.

4. WHAT IS AN ACCEPTABLE LEACH RATE?

EPA is considering the recommendation for a leach rate of 5.0 micrograms per square centimeter per day at steady state conditions as determined in accordance with an EPA testing procedure outlined in the EPA Data-Call-In Notice of July 29, 1986, on tributyl tin in antifouling paints under the Federal Insecticide, Fungicide, and Rodenticide Act, 7 USC, Section 136. The recommended leach rate will be published in September of 1987. Since leach rates do vary by the type of test used and when it was conducted, using the standard EPA test procedure will assure that paints can be adequately compared.

5. WILL PAINTS WITH ACCEPTABLE LEACH RATES STILL CAUSE AQUATIC TOXICITY?

It is very difficult to predict exactly what water column concentrations of TBT will result from the different leaching rates because of environmental variables. Based on the data received so far in the EPA Data-Call-in Notice, a leach rate of 5.0 may adequately protect aquatic resources, while still providing enough antifouling capability. However, some stipulation should be considered in the legislation to allow more restrictive leach rates if either EPA changes its recommendation, or that site specific environmental impacts occur from using leach rates of 5.0.

6. ARE TBT PAINTS AVAILABLE WITH THESE LEACH RATES?

Yes, there are several commercially available TBT paints with leach rates of 5.0 or less. However, only copper based paints with very small concentrations of TBT have leach rates around 1.0. Some states have recommended 1.0 as an acceptable leach rate, but these paints are not widely available. In addition, the testing method use to recommend 1.0 were most likely not EPA methods. An economic hardship would probably not result if shipyards were required to use paints with leach rates at or near 5.0 micrograms/cm2/day.

7. EVEN WITH ACCEPTABLE LEACH RATES, ARE THERE OTHER PRECAUTIONS THAT ARE NECESSARY TO ASSURE ENVIRONMENTAL AND HUMAN SAFETY?

Public and commercial shipyard operators need to be informed and educated about the proper use, removal and disposal of any TBT paints. TBT paints should only be allowed to be applied and removed at commercial boatyards for alloy-hulled boats and large boats over 25 meters. Commercial boatyard operators need to be aware of all the precautions that are necessary to protect themselves as well as the nearby waters. Dust and paint scrapings from the sandblasting must be contained to eliminate contamination. Even if private use is banned on small boats, the private consumer will need to know how to remove the paint that is currently on the boat when it needs to be painted again.

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64th OREGON LEGISLATIVE ASSEMBLY--1987 Regular Session

A-Engrossed
Senate Bill 551

Ordered by the Senate April 14
Including Senate Amendments dated April 14

Sponsored by Senators BRADBURY, BRENNEMAN, Representatives HANNEMAN, HOSTICKA (at the request of Pacific Fisheries Legislative Task Force)

SUMMARY

The following summary is not prepared by the sponsors of the measure and is not a part of the body thereof subject to consideration by the Legislative Assembly. It is an editor's brief statement of the essential features of the measure.

[Prohibits use of paints containing tributyltin or organotin derivative unless development of method of use that doesn't release tributyltin or organotin derivative into marine environment. Provides for civil penalty for violation.]
Proscribes sale or use of tributyltin-based marine antifouling paint except for specified uses or circumstances.

A BILL FOR AN ACT

Relating to toxic substances.

Be It Enacted by the People of the State of Oregon:

SECTION 1. Sections 2 to 6 of this Act are added to and made a part of ORS chapter 634.

SECTION 2. As used in sections 2 to 6 of this 1987 Act:

(1) "Low-leaching tributyltin antifouling paint or coating" means a tributyltin-based marine antifouling paint or coating that has a steady state release rate of not more than 5.0 micrograms per square centimeter per day as determined in accordance with a United States Environmental Protection Agency (EPA) testing procedure as outlined in the EPA data call-in notice of July 29, 1986, on tributyltin in antifoulant paints under the Federal Insecticide, Fungicide and Rodenticide Act, 7 U.S.C. 136. If a lower release rate is determined by the Environmental Quality Commission to be necessary to protect health or the environment, such rate, if adopted by rule by the commission, shall be the acceptable release rate.

(2) "Tributyltin-based marine antifouling paint or coating" means a paint, coating or treatment that contains tributyltin or a triorganotin compound used as a substitute for tributyltin and that is intended to control fouling organisms in a freshwater or marine environment.

(3) "Waters of the state" has the meaning given that term in ORS 468.700.

SECTION 3. Except as provided in sections 4 to 6 of this 1987 Act, a person may not sell, offer to sell or use in this state tributyltin-based marine antifouling paint or coating unless a method of using such paint or coating exists that does not result in the release of tributyltin or derivative or organotin into the waters of the state.

SECTION 4. A tributyltin-based marine antifouling paint or coating may be sold or used in this state if the paint or coating is:

(1) Sold and used in accordance with sections 5 and 6 of this 1987 Act; and

(2)(a) A low-leaching tributyltin antifouling paint or coating used on aluminum hulls;

(b) A low-leaching tributyltin antifouling paint or coating used on a ship that is more than 25 meters in length; or

NOTE: Matter in **bold face** in an amended section is new; matter *[italic and bracketed]* is existing law to be omitted.

(c)(A) In a spray can containing 16 ounces or less of paint or coating; and

(B) Commonly referred to as an outboard or lower drive unit paint.

SECTION 5. (1) Except as provided in subsection (2) of this section, in addition to any other limitation on a restricted use pesticide under this chapter, on and after the effective date of this 1987 Act:

(a) A low-leaching marine tributyltin antifouling paint or coating may be sold in Oregon only by a pesticide dealer licensed under ORS 634.112.

(b) A pesticide dealer licensed under ORS 634.112 may sell low-leaching tributyltin antifouling paint or coating only to a person who certifies in writing that the paint or coating is to be used for one of the uses allowed under section 4 of this 1987 Act.

(2) Notwithstanding any provision of ORS chapter 634 or any rule adopted thereunder, a pesticide dealer may sell low-leaching tributyltin antifouling paint or coating to any person, whether or not the person is a licensed applicator.

SECTION 6. (1) Any pesticide dealer licensed under ORS 634.112 who sells low-leaching tributyltin antifouling paint or coating shall submit a periodic report to the State Department of Agriculture.

(2) The report required under subsection (1) of this section shall be submitted to the department on a periodic basis as established by the department. The report shall include the following information about sales of low-leaching tributyltin antifouling paint or coating:

(a) The name of any person purchasing the paint or coating;

(b) The amount sold to each purchaser; and

(c) The use for which the purchaser certified the paint or coating was to be used.

(c)(A) In a spray can containing 16 ounces or less of paint or coating; and

(B) Commonly referred to as an outboard or lower drive unit paint.

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(a) The name of any person purchasing the paint or coating;

(b) The amount sold to each purchaser; and

(c) The use for which the purchaser certified the paint or coating was to be used.

64th OREGON LEGISLATIVE ASSEMBLY--1987 Regular Session

A-Engrossed
Senate Bill 554

Ordered by the Senate April 14
Including Senate Amendments dated April 14

Sponsored by Senators BRADBURY, BRENNEMAN, Representatives HANNEMAN, HOSTICKA (at the request of Pacific Fisheries Legislative Task Force)

SUMMARY

The following summary is not prepared by the sponsors of the measure and is not a part of the body thereof subject to consideration by the Legislative Assembly. It is an editor's brief statement of the essential features of the measure.

Requires State Marine Board to develop informational brochure about tributyltin and mail brochure [*with certificate of number or renewal of certificate of number*] **to each registered owner of a boat 20 or more feet in length.** Requires State Marine Board to consult with Department of Environmental Quality in developing brochure.

A BILL FOR AN ACT

Relating to tributyltin.

Be It Enacted by the People of the State of Oregon:

SECTION 1. (1) In consultation with the Department of Environmental Quality, the State Marine Board shall develop a brochure to provide information to boat owners about tributyltin. The brochure shall include at least the following:

(a) Information about the effects of tributyltin on marine environment and fish and shellfish occupying the marine environment;

(b) Alternative methods available to control the fouling of organisms on boats, docks, buoys and other marine structures; and

(c) A summary of any state law that regulates marine antifouling paints containing tributyltin or a triorganotin compound.

(2) Before April 15, 1988, the board shall mail the brochure developed under subsection (1) of this section to each registered owner of a boat that is 20 or more feet in length.

(3) The board shall provide copies of the brochure developed under subsection (1) of this section to local port offices and marine supply establishments for distribution to the general public.

NOTE: Matter in bold face in an amended section is new; matter [*italic and bracketed*] is existing law to be omitted.

TBT LEGISLATION INTRODUCED IN OTHER STATES

Virginia: Passed unanimously

HJR190 - Memorializes Congress and EPA to cancel registration of TBT compounds used in free association paints, and to expand EPA's current review of pesticide registration of TBT used in anti-fouling paints to include all registered TBT compounds.

- Urges Congress and EPA to support the states in their efforts to develop effective regional solutions to this issue.

HJR326 - Requests the State Water Control Board to continue to act as expeditiously as possible in adopting a water quality standard sufficient to protect aquatic resources of the Commonwealth from toxicity and undesirable bioaccumulation from TBT compounds.

- Requests that the Board coordinate its efforts with Maryland.

HB1603 - Ban on sale or possession of TBT, except in commercial boat yards. TBT with acceptable leach rates can be used on vessels greater than 25 meters in length, or that have aluminum hulls.

- Requires public education program.

- A person may distribute, sell, or apply TBT paint with acceptable leach rates if paint is sold in 16 oz spray can for use on boat motors.

Virginia Department of Agriculture adopted Emergency Regulations that:

- Defined acceptable leach rates for TBT paints at 5.0 microgram per square centimeter per day at steady state conditions.

- Prohibited TBT paint on vessels less than 25 meters except aluminum hull boats. Vessels larger than 25 meters or aluminum hull boats may use TBT paint with acceptable leach rates.

- Cancelled registrations of all TBT based paints except certified acceptable leach rate paints tested in accordance with EPA testing procedures.

- Permitted sale of TBT paints in 16 oz. aerosol cans with acceptable leach rates, for use on outboard motors and lower units.

- Regulations in effect until July 1, 1988, or until permanent regulations are adopted under the adminsitrative process.

Maryland: Passed Unanimously

SB499 and HB651 - Defines acceptable leach rates to be 1.0 microgram per square centimeter per day at steady state conditions.

- Bans the sale or possession or use of TBT antifouling paints except for commercial boatyards using TBT with acceptable leach rates on boats greater than 25 meters in length.

- Permits sale and use of acceptable leach rate TBT paints if sold in a 16 oz spray can for outboard motors or lower units.

- DOA may seize an antifouling paint used or possessed in violation of this bill.

- Establishes maximum penalty of $2,500 fine for violation.

- Directs the development of water quality standards for the concentration of TBT in waters of the state and the regulation of point sources releasing TBT in accordance with the water quality standard.

- Directs the development of an education program to advise boaters, boatyards, marine suppliers, and other users of TBT paints.

- Directs the publishing of a detailed list of antifouling paints in use in the state that contain TBT, and which have acceptable leach rates.

Washington: Passed

SB5978 - Use and sale of TBT antifouling paint shall be prohibited after April 1, 1988.

California: (In Hearings)

Assembly Bill 637: Use and sale of TBT antifouling paint shall be prohibited on vessels less than 25 m in length. TBT paints with a leach rate of 5.0 micrograms per centimeter squared per day may be used on vessels over 25 m in length or with aluminum hulls. 16 oz spray cans are exempted.

United Kingdom

In January 1986, the UK enforced regulations that prohibit the retail sale and supply of antifouling paints containing organotin compounds where the total tin concentration is greater than 5.5% by weight in copolymer paints, or the total concentration in tin in other non-copolymer paints exceeds 2.5% by weight of tin.

These regualtions were meant to control use on small pleasure crafts, ban the sale of free-association paints containing high concentration of organotins, and sets an upper limit on organotins in copolymer paints.

The Department of Environment has taken steps to determine the effectiveness of this legislation. They have:

- o Set ambient water quality standards at 20 ppt, (or 20 parts per 1,000,000,000,000)
- o Set up a monitoring program, and
- o Instituted a research program to fill in data gaps.

Based on the results of the monitoring program, last month the UK initiated a total ban on TBT paints for use on small boats since they found that the existing controls were not effective enough in reducing contamination to acceptable levels to protect sensitive species, and lowered the water quality standard from 20.0 ppt to 2.0 ppt. Scotland and Ireland are following the same program for TBT control.

France

In January 1982, France announced a ban on TBT paint containing more than 3 percent by weight organotin for boats less than 25 meters in length. Hulls made of alloys were exempt.

Switzerland and Germany

Banned all use of TBT antifouling paints in freshwaters.

DEPARTMENT OF THE
ENVIRONMENT
NEWS RELEASE

97 24 February 1987

BAN ON TBT ANTI-FOULING PAINTS

The Government is to ban the supply of tributyl tin (TBT) based anti-fouling paints for use on small boats, following evidence that TBT kills, retards or deforms a wide variety of marine life, Environment Minister William Waldegrave told the House of Commons today.

This follows discussions between the Department of the Environment, the Scottish Office and the Ministry of Agriculture, Fisheries and Food on the best long term solutions for controlling the use of anti-fouling paints.

New controls to prevent the retail sale of these paints would also make it illegal to treat fish farm nets and cages with products containing TBT.

From 1 July it will be illegal to sell, supply or use any anti-fouling paint which has not been approved by Government.

Pursuant to a written Parliamentary Question on 13 January from Mr Jeremy Hanley (MP for Richmond and Barnes), Mr Waldegrave said:

"In the light of evidence that the existing controls have not been effective in reducing contamination of the aquatic environment to acceptable levels and of evidence that the existing environmental quality target has been set too high to protect the most sensitive species, the Government has decided that further controls are necessary.

"The Government intends, therefore, making further regulation under Section 100 of the Control of Pollution Act as soon as possibl to ban the retail sale of anti-fouling paints containing TBT. Thi should effectively prevent their use on small craft.

"In addition the regulations will prohibit products containin TBT being used to treat fish farm nets and cages.

"From 1 July all anti-fouling paints including TBT will becom subject to the provisions of the Food & Environment Protection Ac and, as my Rt Hon Friend, the Minister of State at the Ministry o Agriculture Fisheries and Food announced in his reply to the Ho Member for South Shields on 3 February, he has asked the Advisor Committee on Pesticides to consider and advise on the scientifi evidence on TBT in the aquatic environment, with a view to makin appropriate recommendations well before 1 July."

NOTES TO EDITORS

IN July 1985 the Government announced a package of measures, includin regulations to control the tin content of anti-fouling paints, th establishment of a water quality target concentration, a two-yea monitoring and research programme, proposals for screening all ne yacht anti-fouling agents, and guidance to boat owners on the prope use of these paints (Press Notice 373 of 24 July 1985).

Earlier this year the Government announced that results from las year's monitoring programme indicated that the water environmen quality target concentration for TBT of 20 nanograms per litre ha been exceeded in ther majority of the estuaries being studied and tha a marked improvement in the monitoring results this year seeme unlikely. Action was also announced to restrict immediately the us of TBT paints in the Broads area, where levels were found to excee significantly the EQT (Press Notice 15 of 13 January 1987).

Regulations introduced at the end of January reduced further th organo-tin content of these paints, from 7.5% to 5.5%, in line with technical advances.

Evidence at 1 January 1986 suggested that TBT was having effects a concentrations as low as 100 ng/l (ie 1 part in 10,000,000,000). An Environmental Quality Target (EQT) was set at 20 ng/l to give a realistic safety margin. New Research has shown that effects of TBT could be detected both in laboratory experiments and from environmental observations at levels considerably below the original EQT. Further, research in Scotland has confirmed that salmon nets (for caged farming) which had been treated with TBT were also causing environmental problems.

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It has become obvious that a safety margin does not exist and that th effect of reducing the COPA-TBT regulations from 7.5% to 5.5% i uary 1987 will not be enough to reduce TBT concentrations to a acceptable level.

The problem is most significant where there are large numbers of smal boats in shallow estuarial waters. Normally large vessels are in dee water where there is good dilution. Large boats laid up are nc normally a problem because they become fouled and do not give of significant quantities of TBT. Nevertheless the Government ha already taken steps to re-align its monitoring programme to ensur that this assessment is correct.

Under COPA interested parties will be consulted over the next fe weeks. Following this the regulations will be laid before Parliamer before being brought into effect.

From 1 July 1987, all anti-fouling paints and surface coatings whether or not they contain TBT, and whether applied to yachts, large vessels or fish farm nets or cages, will be brought within th statutory pesticides approval scheme under Part III of the Food an Environment Protection Act 1985. From that date, no anti-foulin treatment may be sold, supplied, stored, advertised or used unless th product concerned has been examined by the Independent Advisor Committee on Pesticides and approved by Ministers.

Press Enquiries: 01 212 3494/3/5/6
(out of hours: 01 212 7132)
Public Enquiries: 01 212 3434
(ask for Public Enquiries Unit)

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STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY | INTEROFFICE MEMO

TO: Neil Mullane
Planning Section Manager

DATE: June 26, 1987

FROM: Krystyna Wolniakowski

SUBJECT: TBT Update

BACKGROUND

For your records, I would like to provide a chronology and summary of the TBT situation in South Slough, and some recommendations for follow-up actions.

- In March, Mike Graybill, South Slough Sanctuary Manager, Neil Richmond, ODFW shellfish biologist, and Bruce Hammon, DEQ environmental analyst, investigated an oil spill and discovered abnormal oysters in South Slough near the boat yards and dry docks, where TBT paints were used.

- Neil Richmond sent several oyster shells collected in Joe Ney Slough and Brown's Cove to California Fish and Game for analysis to determine if they were contaminated with TBT. The shells were examined by Mark Stephenson, associate water quality biologist at Moss Landing Marine Lab in Monterey. Mr. Stephenson is a noted authority on oysters and has examined thousands of shells from around the world. The most extensive work was conducted in California estuaries.

  Based on the degree of shell deformation and chambering, Mr. Stephenson said that the Oregon oysters were "the worst he has seen". Even the so-called "normal" ones that were sent to him showed a level of chambering that indicated TBT exposure.

- Since South Slough is an ecologically important area with unique marine resources, and an economically important area for commercial oyster harvesting, TBT contamination could be both a potential environmental risk and a human health risk. Given the degree of abnormal shell development, we suspected the TBT concentration in the water could be in the parts per billion (1 part in 1,000,000,000), but we did not have any idea how much was actually present in the water or sediments. Concentrations as low as 20 parts per trillion (20 parts in 1,000,000,000,000) are known to produce chronic toxicity effects. Furthermore, no human health criteria exist for human consumption of TBT contaminated oysters.

- To address the environmental and potential human health concerns, we decided to immediately conduct a survey to determine whether TBT was in fact present, and if so, at what concentrations, and if a gradient in concentration existed around possible sources. In addition, we contacted the Health Division to coordinate information exchange and determine where we could seek out advice on human health risks, if TBT was detected in oyster tissues. The DEQ Lab is in the process of developing the capability to analyze TBT, but was not ready to do so at the time of the survey. I contacted Moss Landing Marine Laboratory and they offered to process the samples for us and provided sampling protocol information. I also contacted NOAA to ask for federal funding.

- The survey to collect oyster tissue and water quality samples was scheduled for low tide June 15 and 16.

<u>SAMPLING SURVEY</u>

Neil Richmond of ODFW, Bruce Hammon and I conducted a field survey for oysters on June 15. We selected six station sites that represented a gradient from potentially contaminated sites near the boat yards to "clean" sites at South Slough Sanctuary and North Bay. Our first site was in Joe Ney Slough about 1/4 mile from the Charleston Boat works at Qualman Farms. Every oyster we collected appeared stunted and abnormally ball shaped with thickened dense shells.

The next site was Browns' Cove where the oysters appeared similar in shape and size. Mr. Qualman offered to guide us to his other oyster growing areas around the slough. He told us that the oysters from Joe Ney and Brown's Cove were at least four years old, although they were only as large as the two year age class.

Site 3 was located in Winchester Arm within the South Slough Sanctuary. The oysters were fairly young and small but most <u>appeared</u> normal. Site 4 was located in Seng Stacken Slough, an adjoining area to Winchester Arm. Most of the oysters collected at this site <u>appeared</u> normal, but some slightly thickened shells were present.

Site 5 was the confluence of the two arms near Valino Island. Some slightly thickened shell samples were also found at this location.

Site 6, the control site, was in North Bay near the causeway road. The oysters all <u>appeared</u> normal in size and shape for their year class.

Dick Nichols joined us on June 16 to collect five water quality samples. Site locations were in Joe Ney Slough, Browns Cove, Valino Island confluence, Charleston Marina near the Coast Guard docks, and in North Bay, to correspond roughly to areas where the oysters were collected. The oysters were collected at low tide and the water samples at slack tide. The samples were packaged in coolers on dry ice and sent to Moss Landing Marine Labs for analysis.

Following the sampling effort, Dick Nichols, Bruce and I conducted an aerial survey of the South Slough and Coos Bay from Coast Guard helicopters. We observed the current directions and eddy patterns in the slough, and noted where the dry docks, boat basins, and ship yards were located. Although it was high tide, and no sandblasting or ship yard activities were ongoing, their proximity to the water and previous reports of their practices warrant further investigation. In Joe Ney Slough, just up river from the oyster growing area, we observed oily sheen pockets in the still backwater areas, isolated from any "activities." We appreciated the Coast Guard's effort to assist us, and we will follow up with a thank-you to them.

Back at the ODFW office, we sectioned a "TBT oyster" with a bandsaw and preserved the meat in formalin to compare it with a "normal oyster." The chambering was vivid; the shell was delicate and crumbled in our hands. The meat appeared darker than normal.

RESULTS AND RECOMMENDATIONS

Although the results from tissue analysis are not available yet, Mr. Stephenson from Moss Landing Marine Laboratory found that 111 of 112 oysters collected during the survey showed signs of chambering when the shell was sectioned. The results for the tissue and water quality samples should be available around July 10.

Based on observations during the field survey, and the fact that we may have the only known TBT/oyster situation in the country where so many oysters are affected (according to the EPA DATA-CALL-IN Project Manager, Dr. Janet Anderson), I recommend the following actions:

1. Get our lab up to speed on TBT analysis as quickly as possible. Donna Larson participated in a training session at Moss Landing Lab and will soon be able to analyze TBT in seawater and tissues. This would enable us to test more areas more frequently.

2. Conduct a "dry lab" survey of oyster growing areas in other estuaries, i.e. Yaquina and Tillamook, collect shells from those areas, and section them. If we find some "chambered" specimens, we can do more in-depth water quality and tissue sampling when our lab has the capability. At least we would have some idea if any other problem areas exist in Oregon.

3. Present an information report to the EQC describing the South Slough situation at the July 17 meeting in Coos Bay.

4. Coordinate closely with the Health Division. Depending on the results of the tissue analysis, we should follow-up on the potential human health risks with scientific authorities who might be able to advise us on what we should do if TBT is present, and then develop an advisory plan, with state and county health officials, and local community representatives.

5. Establish a shipyard/dry dock survey to determine whether BMP's are being followed, and if not, where? and why not? and what can we do about it?

6. Develop the TBT information pamphlet as <u>soon</u> as possible (as directed by SB554). I received a call from the Painters Union and they were very concerned about dermal exposure to the paint during application, as well as how to improve painting practices for environmental protection.

WY5457

INSERT

Results and Discussion

The results from water quality and oyster samples collected in South Slough on June 15 and 16, 1987, confirm the presence of TBT. The water quality samples collected at five locations ranged from 7.0 nanograms/l (or 7.0 parts per trillion) to 14.0 nanograms/l of TBT. The oyster tissue analysis for TBT ranged from 49.74 micrograms/Kg of tissue (parts per billion), to 189.0 micrograms/Kg. Although the TBT concentration in the water is minute and barely above the detectable level, the concentration in the tissues of the oysters is around 10,000 times higher. Oysters are known to bioaccumulate TBT in their tissues at concentrations from 6,000 to 50,000 times higher than is found in the water. In addition, of the 112 oysters collected, 111 showed signs of chambering in the shells which is indicative of continuous TBT exposure over several years. If oysters remain in water with TBT present, they will continue to accumulate TBT in their tissues until a high enough concentration is reached to cause mortality. However, if TBT is removed from the water, oysters contaminated with TBT will "depurate", or rinse themselves of the TBT gradually. Shell growth will also return to normal.

Site	Tissue (Parts per billion)	Water Quality (Parts per trillion)
1. Joe Ney Slough	87.83	7.0
2. Browns Cove	75.80	14.0
3. Winchester Arm	49.74	*
4. Seng Stacken Arm	80.97	*
5. Confluence of Winchester and Seng Stacken Arm	102.00	12.0
6. North Bay	189.00	9.0
7. Boat Basin	-	10.0

* Site 5 confluence combines Sites 3 and 4.

These results were provided to the Oregon Health Division for evaluation to determine if these levels were safe for human consumption of the oysters. From an environmental perspective, it appears that the waters of Coos Bay are well mixed and the TBT may be carried throughout the estuary with the tidal flows. The results indicate that TBT is present at locations beyond the marina and boat harbor.

At this time, neither the Environmental Protection Agency nor the Food and Drug Administration have published a human health advisory on the acceptable daily intake of TBT in food. However, preliminary research results from animal studies suggest that the levels of TBT found in Coos Bay are unlikely to cause adverse health effects, according to the Health Division.

Directors Recommendation

Although no published water quality standards or human health risk information exist, the presence of TBT in the oysters continues to concern the Department. In the absence of regulatory information, the Department believes that implementing actions to reduce and eventually eliminate toxic levels of TBT from entering waters of the state and affecting aquatic life is essential. Therefore, the Department will continue to seek out the most up-to-date information available, and to pursue funding opportunities and cooperative efforts with federal organizations to monitor and manage potential sources of TBT for maximum environmental protection. By reducing the amount of TBT introduced into the environment, the amount that may be currently present in Oregon's estuaries should gradually degrade to less toxic forms and create less environmental risks in the near future.

To accomplish this goal, the Department proposes to do the following:

1. Evaluate existing conditions in other oyster growing estuaries such as Yaquina Bay and Tillamook Bay to compare with Coos Bay, and determine if other sensitive marine organisms such as clams, might also be affected by TBT.

2. Investigate shipyard dry dock practices to determine what improvements may be necessary to manage paint application and removal procedures to reduce the amount of TBT entering sensitive estuarine areas.

3. Develop a public information bulletin, as directed by SB 554, as quickly as possible to provide information on environmental effects of TBT, and to present guidelines for recreational boat owners on how to responsibly remove and dispose of TBT paints prior to new non-TBT paint application.

It is recommended that the Commission concur with the proposed course of action to be pursued by the Department.

Fred

Fred Hansen

STATE OF OREGON 1859
NEIL GOLDSCHMIDT GOVERNOR

Environmental Quality Commission

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

MEMORANDUM

To: Environmental Quality Commission

From: Director

Subject: Agenda Item L, July 17, 1987 EQC Meeting

Proposed Repeal of Temporary Rule Amending Solid Waste Permit Application Processing Fee for Large General Purpose Domestic Waste Landfills, OAR 340-61-120

Background and Evaluation

At the June 12, 1987 EQC meeting, the Commission adopted a temporary rule amendment to the Solid Waste Permit Fee Schedule, OAR 340-61-120, providing for an $85,000 permit application processing fee for large general purpose domestic waste landfills. (Refer to Attachment 1, Agenda Item 2, June 12, 1987 EQC Meeting.)

Since that meeting, the legislature has passed House Bill 2619 (Attachment 2) which amends Section 3, Chapter 679, Oregon Laws 1985 (SB662) to require the Department to "investigate, evaluate, review and process any permit application for landfills and associated transfer stations proposed to receive solid waste from Multnomah, Clackamas and Washington Counties." This amendment means the Department will be able to cover its costs of processing the permit applications for the Waste Management and Tidewater Barge landfill proposals from the existing SB662 $1 per ton fee on disposal of solid waste in the Metro region.

Therefore, the temporary rule adopted at the June 12th meeting is no longer necessary and should be repealed by the Commission.

Recommendation

It is recommended that the Commission repeal the temporary rule amending OAR 340-61-120 adopted at the June 12, 1987 EQC meeting.

Lydia Taylor
Fred Hansen

Attachment I Agenda Item 2, June 12, 1987 EQC Meeting
Attachment II House Bill 2619

Michael J. Downs, f
ZF2179
229-5356
June 30, 1987

STATE OF OREGON 1859
NEIL GOLDSCHMIDT
GOVERNOR

Environmental Quality Commission

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

MEMORANDUM

To: Environmental Quality Commission

From: Director

Subject: Agenda Item L, July 17, 1987 EQC Meeting

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Lydia Taylor
Fred Hansen

Attachment I Agenda Item 2, June 12, 1987 EQC Meeting
Attachment II House Bill 2619

Michael J. Downs, f
ZF2179
229-5356
June 30, 1987

DEQ-46

ATTACHMENT I

Environmental Quality Commission

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

MEMORANDUM

To: Environmental Quality Commission

From: Director

Subject: Agenda Item 2, June 12, 1987, EQC Meeting
Proposed Adoption of Temporary Rule Amending Solid Waste Permit Application Processing Fee for Large General Purpose Domestic Waste Landfills, OAR 340-61-120

Background

At the May 29, 1987 EQC meeting, the Department proposed that the Commission adopt a temporary rule providing for an $85,000 permit application processing fee for each general purpose domestic waste landfill designed to receive more than 100,000 tons per year of solid waste and to be greater than 100 acres in size. (Refer to Attachment 1 which presents Agenda Item E, May 29, 1987, EQC Meeting).

The Department determined that this fee is necessary to provide adequate resources to allow timely and competent review of two sites being developed by private companies as alternatives to the SB 662 landfill siting process. Waste Management of Oregon (WMO) has proposed a site near Arlington and Tidewater Barge Lines (TBL) has proposed a site near Boardman. Both companies want to move rapidly through the solid waste permit process, thus providing Metro with viable alternatives to developing a landfill in the Portland metropolitan area.

After listening to testimony at the public hearing on May 29th on the proposed temporary rule, the Commission postponed a decision on how to fund the additional staff and requested the Department to investigate the following alternatives:

1. Use of the existing funding mechanism ($1/ton fee on all solid waste disposed in the Portland metropolitan area) under SB 662 to pay the Department's costs in processing the WMO and TBL permit applications.

2. Refunding to the applicant any portion of the permit application fee not used by the Department, if the Commission adopts the $85,000 fee.

3. Other funding alternatives that would ensure that the people who generate the solid waste pay the cost of processing the permit application for disposal of the solid waste.

Alternatives and Evaluation

The Department is vigorously pursuing the alternative of using SB 662 funds to cover its costs in reviewing the WMO and TBL proposals. This alternative will require legislative action and the Department is investigating all avenues to obtain the appropriate legal authority in the waning days of the current legislative session. At the time this staff report was prepared, no avenue with a fair chance of success has been found. A report updating the Department's efforts will be provided to the Commission at its June 12th meeting.

The Department has not identified any other funding alternative that would accomplish the Commission's objective of ensuring that the landfill development costs (including the cost of the Department's permit processing) are passed through to the people who generate the solid waste. It could be argued that the proposed permit fee accomplishes that objective in the case of successful landfill siting, as the developer will likely amortize its development costs through the tipping fees it charges over the life of the landfill. This is the most equitable result since the costs will be passed to the generators of solid waste whether they reside in Portland, Clark County or elsewhere.

The Department has also investigated the feasibility of refunding to the applicant any portion of the permit application processing fee that the Department does not use in reviewing and processing the applicant's proposal. The Department agrees that refunding unused fees may be appropriate in this instance because the fee would be high and there is no way to predict with certainty that it will all be used. The temporary rule (Attachment 2) has been modified to provide for refund of unused fee revenue.

Most fees paid to the Department for permit application processing only cover part of the agency's review costs. The remaining costs are normally paid from federal funds and general funds. Further, the actual costs of permit review can vary significantly for similar facilities depending upon the quality and completeness of the information submitted with the permit application, the environmental sensitivity of the site (e.g.., urban vs. rural) and the public perception of how good a neighbor the facility will be. Normally, the general and federal funds smooth out the variability in agency costs for permit review so that the Department doesn't need to constantly adjust its staff resources as each new permit application is processed.

The WMO and TBL proposals represent a special case as they will overwhelm the current capability of the solid waste program. Thus, a special permit fee is needed to provide the necessary resources, and since the Department cannot predict with certainty its actual costs to process these proposals, a refund mechanism is appropriate.

Finally, the Department has reconsidered its recommendation that the Commission authorize a public hearing to make the proposed temporary rule permanent. The Department would like to draft comprehensive changes to its solid waste permit fee schedules and return to the Commission with a request for public hearing authorization. This would allow the affected parties to assist in developing the proposal before public hearing and to work for more equitable distribution of fees than is contained in the proposed temporary rule.

Summation

1. At the Commission's May 29, 1987 meeting, the Department proposed adoption of a temporary rule amending solid waste permit application processing fees for large general purpose domestic waste landfills. The temporary rule would increase the processing fee from $1,000 to $85,000.

2. The increased fee is required to pay Department costs to investigate and process permit applications from Waste Management of Oregon and Tidewater Barge Lines for landfills in north central Oregon. These landfills are proposed as alternatives to the landfill selected under the SB 662 siting process.

3. At the May 29th meeting, the Commission postponed any decision on the proposed temporary rule and asked the Department to investigate other alternatives to fund the costs of processing the permit applications.

4. The Department investigated use of the SB 662 funding mechanism. At the time that this report was written, the Department has not identified an avenue to obtain legislative authorization to utilize 662 monies to investigate and process the two permit applications.

5. The Department also investigated the feasibility of refunding the unused portion of the processing fee for the WMO and TBL permit applications. The refunding provision is appropriate in this case where the permit applicant is being requested to pay the Department's costs to review its application and it is not possible to predict in advance the exact amount of those costs. However, it would not be appropriate to adopt the refund provision universally for the Department's permitting programs.

6. At the May 29th Commission meeting, the Department requested authorization to conduct a public hearing to make the proposed temporary rule permanent. The Department now believes that it should work with affected parties to develop a more equitable solid waste permit fee structure before it requests authorization to conduct a public hearing.

Recommendation

Based upon the findings in the Summation, it is recommended that the Commission adopt the proposed temporary rule amending OAR 340-61 as set forth in Attachment 2. It is further recommended that the Commission direct the Department to work with affected parties to develop an equitable permit application fee schedule and return to the Commission for authorization to proceed to public hearings on permanent rule amendments.

Fred Hansen

Attachments 1. Agenda Item E, May 29, 1987 EQC Meeting
2. Proposed Temporary Rule Amendments, OAR 340-61-120.

Mike Downs:m
SM1109
229-5356
June 10, 1987

Attachment 1
Agenda Item 2
June 12, 1987 EQC Meeting

STATE OF OREGON 1859
NEIL GOLDSCHMIDT GOVERNOR

Environmental Quality Commission

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

MEMORANDUM

To: Environmental Quality Commission

From: Director

Subject: Agenda Item E, May 29, 1987, EQC Meeting

Public Hearing and Proposed EQC Adoption of Temporary Rule Amending Solid Waste Permit Application Processing Fee for Large General Purpose Domestic Waste Landfills, OAR 340-61-120

Background

By September 1987, the Department is expecting to receive Solid Waste Facility Permit applications for two new, very large general purpose landfills in north central Oregon. Attachment 2 describes a proposal by Waste Management, Inc. (WMI) near Arlington and Attachment 1 describes a proposal by Tidewater Barge Lines (TBL) near Boardman. Both sites are being proposed as alternatives to siting a landfill in the Portland Metropolitan area. A major transfer station (separate permit necessary), in the Portland area, will likely be an integral part of either project.

These proposals pose a dilemma for the Department. The type and intensity of the review necessary to evaluate a proposed landfill of the size and complexity of the two applications we expect requires substantial resources, as demonstrated by the budget associated with the SB662 siting effort. On the other hand, our current solid waste fee schedule doesn't contemplate such a situation.

The Department has not received an application for a major solid waste disposal site in several years. The SB662 siting process has set a new level of investigation, review and public expectations for major solid waste disposal sites. This is especially true for any proposed landfill to serve the Portland metro area. The Department has already told the engineers for WMI that the detail and level of study for its site is expected to be similar to the SB662 work.

The Department has gained significant knowledge and experience in solid waste disposal site investigation and evaluation through the SB662 siting process. The additional resources needed to adequately deal with these new permit applications are estimated to be similar in level and technical competence to those required for the SB662 project:

1. A hydrogeologist to guide the development of and review and analyze geotechnical studies and site evaluations. This work is essential to ensure that the Department gets the information needed to adequately review the permit application and so that applicants do not spend time and money needlessly.

2. An engineer to be the lead staff person on the technical aspects of the sites including plan and feasibility study reviews, final design approval and drafting permits.

The time demands on the present Solid Waste Section staff will be substantial. Besides the technical investigations and reviews, staff will be called upon regularly to attend public meetings, consult with local government representatives and generally represent the Department. The choice of a Portland area landfill site as part of the SB662 process will add to the section's workload as well. As SB662 staffing ends and Metro begins preparation of an environmental impact statement for wetlands and submits a permit application for the 662 site, the Solid Waste Section will be required to respond (although these activities would be funded by the SB662 fee).

The Solid Waste Section currently does not have adequate staff resources to deal with investigating and processing the proposed permit applications for the WMI and TBL sites. Present personnel (3 staff) in the section are totally committed. The Department couldn't anticipate the current competition among several large landfill projects for the Portland area garbage and, therefore, didn't budget the resources necessary to complete the work that is imminent.

The Department is proposing to raise the Solid Waste Permit Application Fees, provided for by ORS 468.065 and ORS 459.235, to meet this critical staffing need. The Statement of Need for Rulemaking, required by ORS 183.335(5) is Attachment 3 to this report.

Alternatives and Evaluation

Present Division rules (OAR 340-61-120) require a $1000 application fee for major facilities (facilities receiving more than 25,000 tons of solid waste per year). This fee is to be used to pay the Department's costs for investigating proposed landfills and determining whether to issue or deny a solid waste permit. In actuality, a $1,000 application fee will only pay a small portion of the Department's costs for processing a permit application for a facility like that proposed by WMI or TBL.

The permit application fee could be raised to cover a major portion or all of the Department's costs. This could be accomplished by establishing a new category for major general purpose domestic waste landfills designed to receive more than 100,000 tons per year of waste and greater than 100 acres in size. The new application fee would be $85,000 and apply to all such permit applications received after May 29, 1987.

An emergency (temporary) rule change would be necessary in order to assure the increased fee is in place before a complete permit application is submitted. A temporary rule remains in effect for 180 days. The intent would be to make the rule permanent so that other proposals similar to the WMI and TBL sites would pay the same fee. A proposed temporary rule is included as Attachment 4.

While the permanent rulemaking option would normally be preferred it will take several months to complete and therefore not meet the WMI and TBL application schedules. The Department must begin to assemble the additional resources now to be prepared to respond to the WMI and TBL projects in a timely manner. Failure to bring the staff on board quickly will adversely affect the applicants due to long delays in processing the permit applications and adversely affect the public interest by leaving the Department unable to adequately review the technical information and protect the environment. WMI is on a fast-track to obtain local land use approvals and submit a complete solid waste permit application to the Department. TBL also now has commenced this process with Morrow County. Therefore, the temporary rule is the approach of choice.

WMI, TBL and other interested parties have been contacted regarding the proposed $85,000 permit application processing fee. Naturally, some concern was expressed, but there was understanding that adequate Department staff must exist to investigate and review such major proposals and move the process along in a timely manner.

Summation

1. The Department expects to soon receive at least two solid waste facility permit applications for very large general purpose landfills proposed by private operators to receive solid waste from the Portland area.

2. The Department has determined that two full-time staff and professional services ($175,000) will be required to give the level of investigation and review equivalent to that established by the Department in the SB662 siting process experience, to adequately meet the public's interests and protect the environment.

3. Staffing in the Department's Solid Waste Section is not adequate to deal with the anticipated new permit applications. Hydrogeologic expertise does not exist in the section and is not available on loan sufficient to evaluate major new sites.

4. A temporary rule can be adopted which increases the solid waste facility permit application processing fee required by OAR 340-61-120 for a major facility, sufficient to cover the Departments costs of investigating and making a final decision on the permit application.

5. If the temporary rule is not adopted, the Department will not have adequate resources to provide a competent and timely review of the WMI and TBL permit applications. Therefore, the environment would not be adequately protected and processing of the permit application would be seriously delayed, resulting in serious prejudice to the public interest and the interest of the parties concerned (WMI and TBL).

Director's Recommendation

Based upon the findings in the Summation, it is recommended that the Commission hold a public hearing and, based on that public hearing, adopt the proposed temporary rule amending OAR 340-61-120 as set forth in Attachment 5. It is also recommended that the Commission authorize the Department to hold public hearings on the issue of whether to make the temporary rule permanent.

Fred Hansen

Attachments 5
- Attachment 1 - Memo of February 17, 1987 to Mike Downs from Ernie Schmidt, Subject: Morrow County Solid Waste Disposal Project. (TBL)
- Attachment 2 - Memo of March 12, 1987 to File from Ernie Schmidt, Subject: Proposed Waste Management Landfill Near Arlington, Oregon (WMI)
- Attachment 3 - Statement of Need for Rulemaking and Fiscal and Economic Impact Land Use Consistency Statement
- Attachment 4 - Proposed Temporary Rule
- Attachment 5 - Public Hearing Notice on Proposed Temporary Rule

Ernest A Schmidt:f
229-5157
May 11, 1987
SF2000

ATTACHMENT 1

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE MEMO

TO: Mike Downs

DATE: February 17, 1987

FROM: Ernie Schmidt

SUBJECT: Morrow County Solid Waste Disposal Project

We have been presented a preliminary permit application and feasibility report prepared by Seton, Johnson and Odell Engineers, on behalf of Tidewater Barge Lines, Inc. (TBL) and Wastech, Inc., for a proposed large privately owned municipal waste landfill in Morrow County. The site would receive solid waste from ports-of-call on the Columbia River system, which has been transported by barge and unloaded across the Port of Morrow dock at Boardman. TBL is the largest barge and terminal company operating on the Columbia/Snake River system.

The permit application was submitted incomplete, to get some early review by the Department and guidance as to how to complete the application.

Background

In October 1986, TBL submitted a proposal to Clark County, Washington in response to that county's Request for Qualifications for a Municipal Solid Waste Disposal Facility. The county generates about 550 tons/day of solid waste. As proposed, a transfer station would be constructed at TBL's dock on the Vancouver side of the Columbia River. Residential garbage, some demolition and some commercial/industrial waste, would be compacted and pushed into standard unit size enclosed shipping containers, 8' X 8' X 40' long or optionally 20' long. The containers would then be stacked onto a relatively small barge (900 ton) to be included with other barges in regular tows upriver. Two such barges each 3 days would handle Clark County. This would be a small addition to commodity transport on the Columbia River.

Wastech, Inc. is a new firm being split out of the GSX (Genstar) group. Principles are Wayne Trewhitt, President, Ted Rattray (British Columbia operations) and Merle Irvine (Oregon operations). They operate the Metro CTRC, transport the waste to St. Johns Landfill, and operate the Oregon Processing and Recovery Center (OPRC) materials recovery facility. They run similar facilities in British Columbia and have very recently been awarded a contract to operate a new landfill at Cache Creek - including transportation of waste 250 miles one way from Vancouver, B.C. and wood chips back for Georgia-Pacific.

Wastech proposes to expand OPRC (in Portland) to receive from Clark County, select loads of commercial, industrial and demolition loads which are processible to recover paper products and a densified refuse derived fuel (DRDF). The paper products recovery (with trommels) has been successful for some time. Wastech has demonstrated the preparation of DRDF prepared at Tacoma, Washington and trial burned it at three locations, including the Smurfit (Publishers) Newberg Paper Mill. Reportedly, combustion characteristics were promising. The talks are continuing with Smurfit.

At Boardman, the existing dock and offloading equipment is designed to handle the proposed containers and is under-utilized. Containers would be set on trailers for transport to the disposal site. The Port is willing to provide long-term rate and service guarantees.

A longer term consideration possible at Boardman is construction of an energy recovery facility to provide steam to the food processing plants in the Port industrial area. They reportedly can use about 280,000 lb./hr. of steam. By comparison, the Marion County incinerator is rated at 132,000 lb./hr., both boilers combined.

The estimated annual operating cost (gate fee at transfer station) in 1986 dollars was proposed to Clark County at $32/ton. This is roughly split $10/ton for landfill and $22/ton for handling and transportation prior to the landfill.

Landfill Site

I visited the proposed landfill site on January 6, 1986, with the landowner Larry Lindsey, Bryan Johnson of Seton, Johnson and Odell, Wayne Trewhitt and Merle Irvine, Wes Hickey of TBL, and Bob Miller of the Port of Morrow. The conceptual proposal involves 230 acres on the southwest side of Finley Buttes, 16 miles from Boardman. Access is direct from the port area to the site via Bombing Range Road, bordering the east side of the bombing range. No residences are passed en-route.

The site is located within 10,000 acres owned by Mr. Lindsey and is zoned agricultural. The Finley Buttes are an erosional landmark with slopes up to 10%. It is proposed to area-fill across several draws - the maximum depth to be 85'. The draws are grassed over and gentle in shape. They appear to have been formed over a very long time by infrequent storm events. Precipitation ranges from 5 to 15 inches per year, with an annual average of 9 inches. There is no water basin above the site. It has never been cultivated and is too rough for circle irrigation. Present use is cattle grazing at a ratio of one cow per 35 acres. Foliage is grasses and scattered rabbit brush.

Geology and groundwater hydrology information submitted is very general. Based on known regional geology, it is expected that soils at Finley Buttes range from 90' to 300' thick over Columbia River basalt flows. Overlying soils are sedimentary deposits. They are assumed to be slowly permeable and not contain any significant groundwater. The basalts contain excellent aquifers, which are the subject of considerable attention by the Water

Landfill Site (Continued)

Resources Department (WRD), due to overpumping and water rights litigation.

A copy of the landfill proposal was forwarded to Mike Zwart at (WRD) for comment. He reports that this location is on a divide between a designated critical groundwater withdrawal area and a proposed critical area. There are relatively more sediments overlying the basalt bedrock here than in the region generally. The potentiometric surface of the groundwater used for irrigation is at approximately 575' MSL, (not 675' MSL indicated in report) which is 75 feet below the estimated bedrock surface. Wells in the region may extend 1,000 feet deep to get large volumes of water.

Preliminary Site Evaluation

Based only on surface observations and from an engineering design standpoint, the proposed site looks workable. Only 230 acres are involved in this conceptual proposal, but it appears that considerably more land and capacity could be available. The 230 acres are estimated to last 25 years at a fill rate of 180,000 tons/year. Although a very favorable water balance can be displayed, any design would have to include lining and leachate collection, treatment and disposal - probably by sprinkle irrigation. Suitable land for irrigation is limitless. There is no indication of recent erosion in the draws. The site should be easily protected from surface water, since it is located at the highest local elevation.

The area is subject to high winds and dust storms. The surface soils are light and will blow when disturbed, therefore, special care would have to be taken to control dust and stabilize disturbed soils. Provision of adequate water to the site to control dust, provide fire protection, etc. could be a problem. The design would have to include handling cloudburst type storm events.

Considerable on-site and vicinity investigation into geology and groundwater hydrology characteristics will be necessary before it is possible to go beyond this cursory view that the site is suitable for landfill.

Issues

Local Acceptance

The Port of Morrow is actively seeking business and openly supports the project. Louis Carlson, the new County Judge, (from Heppner and was on the Port Commission) expressed cautious interest. The county has wanted to site a landfill in the north end for many years. No residences would be directly impacted by the transportation or landfill. The attitudes of the large commercial farming interests is unknown. One would expect opposition from some source.

Need for Site (340-61-026(5))

There is some need for better disposal within Morrow County. The Turner landfill, serving the Heppner area (south county) is operating on year-to-year lease from a private landowner who has threatened closure. The operation has been only marginally acceptable. North county solid waste goes to the Hermiston site (22 miles) and is adequately disposed. Primarily, the need for the site would have to be established by the area whose waste enters the site and could be partially based on any unique siting characteristics of the Morrow County location. An evaluation of alternatives would be necessary to justify/support the Morrow County choice.

Land Use and Recycling (ORS 459.055 and the Opportunity to Recycle Act)

The site is zoned Exclusive Farm Use (EFU). As such, a Waste Reduction Program must be developed by "the local government unit responsible for solid waste disposal pursuant to statute or agreement between governmental units" (ORS 459.055(2)). In addition, ORS 459.250 requires that the Department shall require as a condition to issuing a permit that a place for collecting source separated recyclable material, located either at the disposal site or at another location more convenient to the population served by the disposal site is provided for every person whose solid waste enters the disposal site. Between these two statutes, it seems we should expect out-of-state generators of solid waste entering a disposal site in Oregon to meet conditions at least equal to conditions placed on in-state generators. Clark County should be expected to implement the opportunity to recycle at least equivalent to what would be acceptable in the metropolitan Portland area in Oregon.

ES:m
SF1714

cc: Steve Gardels
Janet Gillaspie
Steve Greenwood
Lorie Parker

Two Portland companies propose to barge garbage to Morrow landfill

By HOLLY DANKS
and HARRY BODINE
of The Oregonian staff

Two Portland companies announced Tuesday that they want to ship metropolitan-area garbage to Eastern Oregon by barge and dump it in a 600-acre landfill they propose to build 16 miles south of Boardman.

Spokesmen for Tidewater Barge Lines, the largest barge line on the Columbia/Snake River system, and Wastech, which operates the Oregon Processing and Recovery Center in Portland and the Clackamas Transfer and Recycling Center in Oregon City, presented their program at a Portland news conference. They later spelled out details to the Metropolitan Service District's solid waste committee.

Called the Finley Buttes Landfill project, named for the remote area of Morrow County proposed as the dump site, the plan offers "a cost-effective and environmentally sound alternative to the Bacona Road and Ramsey Lake metropolitan landfill sites," Jacob Tanzer, a Portland attorney representing the two companies, said.

The shipping and dumping operation could be under way by the end of 1988 or early 1989 and could serve the Portland-Clark County, Wash., area for more than 20 years, Tanzer said.

The project, though similar to one proposed by Waste Management, Inc., is better, Tanzer said, because it would use existing recycling facilities in Portland and Oregon City, ship the garbage in sealed containers as part of existing barge traffic and dump the waste in an area already zoned and environmentally suited for a landfill.

Waste Management Inc., the largest trash handler in the United States, unveiled similar plans in March to ship Portland-area waste to a site southeast of Arlington in Gilliam County by either barge or train. Chem-Security Systems Inc., a subsidiary, already runs a toxic waste dump near Arlington.

The Portland area generates almost 1 million tons of garbage per year, most of which is buried in the St. Johns landfill. But the landfill is scheduled to close in 1989.

To replace St. Johns, the Oregon Department of Environmental Quality is scheduled to select by June 30 a new landfill site that Metro in turn would acquire and operate to serve Multnomah, Washington and Clackamas counties. Metro simultaneously is considering five private post garbage or convert it into resource derived fuel in an effort to reduce the amount of waste being buried in landfills.

Wayne Trewhitt, Wastech president, said there was less chance of ground water contamination at Finley Buttes than at Portland-area sites being considered.

Because of Morrow County's semiarid climate, there aren't any potential problems with wastes leaching into the water table, he said.

Trewhitt said the Boardman shipping plan would cost waste-company customers less than if garbage is dumped at Ramsey Lake, Bacona Road or Arlington landfills. It also would give business to the severely underused Port of Morrow and would boost that area's economy, he added.

Although there is some opposition in Morrow County, the project had been received favorably during informal talks with local officials and community leaders, Trewhitt said.

Although truck traffic south of Boardman will increase 20 percent if the project is approved, no houses are along the route, Trewhitt noted.

The land proposed for the dump site now is privately owned, but Tanzer said that Tidewater and Wastech held an option to buy it.

The Tidewater-Wastech proposal "could not come at a more opportune time," Tor Lyshaug, Metro's acting director of solid waste, said.

"The picture has changed substantially in the last two months," he said. Metro has new alternatives for dealing with solid waste "at relatively reasonable prices. The new regime (Cusma's administration) can take part of the credit for that."

St. Johns tired of garbage

By HARRY BODINE
of The Oregonian staff

Lents and St. Johns-area residents testified Tuesday night that a solid-waste recovery plant — preferably a composting operation — may be a good idea, but it should not be built in their neighborhoods.

"St. Johns has done enough," resident Daniel L. Wear told the Metropolitan Service District's Resource Recovery Citizens Review Committee in a hearing at Westminster Presbyterian Church in Northeast Portland.

His views were echoed by more than a dozen persons who expressed their views on five proposals Metro is considering to burn garbage, convert it into compost or manufacture resource-derived fuel pellets as alternatives to burying waste in landfills.

William Huston, who lives in Mount Scott near the former Dwyer Lumber Co. property south of Southeast Foster Road, suggested that Metro should find a less-populated area for one of the proposals it is considering, a composting plant.

"Two miles east there is nothing," Huston said.

Reversing the trend of comments, Columbia County Commissioner Michael J. Sykes endorsed a mass garbage burning plant Fluor/Southern Electric International proposes to build in St. Helens.

In addition to solving Columbia County's solid-waste disposal problem, a "waste to energy" plant would provide electricity that would ensure that Boise Cascade Corp. would continue to operate its St. Helens plant for 20 years, Sykes said.

Answering questions from the audience after testimony, Metro officials assured those present that the regional agency would consider seriously two recent proposals to transport Portland-area garbage up the Columbia River to new long-term landfill sites in Gilliam and Morrow counties.

Dave Phillips, citizens resource recovery committee chairman, reminded the audience that his panel's charge was to recommend a course of action for Metro on alternative technologies, not landfills.

The committee is scheduled to make its recommendation May 21 to Rena Cusma, Metro's executive officer. One additional public hearing, called by the Columbia County Board of Commissioners, is scheduled for 7:30 p.m. May 20 at the courthouse in St. Helens.

ATTACHMENT 2

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE MEMO

TO: File

DATE: March 12, 1987

FROM: Ernie Schmidt

SUBJECT: Proposed Waste Management Landfill Near Arlington, Oregon

Friday, March 6, 1987, representatives of Waste Management of North America met with DEQ staff to begin technical discussion of W-M's proposed municipal landfill in Gilliam County. Present were:

Douglas Strauch P.E.
District Engr. - No. Calif. Dist.
W-M of California, Inc.
2055 Gateway Place, Suite 240
San Jose, CA 95110
(408) 295-8544

Travis Hughes, Ph.D.
Vice Pres. Technical Programs
P.E. LaMoreaux & Assoc's (PELA)
P.O. Box 2310
Tuscaloosa, AL 35403
(205) 752-5543

For DEQ:

Bob Danko
Ernie Schmidt

Fred Bromfeld
Neil Mullane

Mr. Strauch is responsible for the technical aspects of the proposed project. The overall project will be managed by Rick Daniels at the W-M of Oregon office in Portland (249-8078). The manager of the Portland office is Doug Ogden.

PELA is W-M's geotechnical consultant and has also been the primary consultant for Chem-Waste Management on the nearby hazardous waste disposal site. The results of a preliminary on-site investigation by PELA were reviewed.

Conceptually, the landfill would ultimately cover 688 acres within two sections of land which are included in a total 2,000 acre area under option from Stone Ranches, Inc. (See attached figure). The centroid of the landfill would be about 6 miles south of Arlington and the Columbia River. Maximum depth of fill would be 165 feet including a 25 foot excavation. Total capacity is estimated at 90 X 10^6 yards. At an average fill rate of 2,000 tons/day, the site would last 102 years.

Transportation could be by rail or barge. Rail is being looked at carefully, because rail access already exists close to the site and this would avoid offloading containers of solid waste through the City of Arlington. They would also have to contend with an annual two week period, during which river traffic is stopped to accommodate locks maintenance. Barge haul would, however, tend to be cheaper and perhaps less subject to accident. We were not able to pin down an overall disposal cost figure at this early date.

Most of the discussion centered on the physical nature of the proposed site. It is a gentle draw extending north and south with intermittent drainage to the north and east, eventually to China Creek which passes through Arlington and also carries water only intermittently. Five exploratory borings have been completed to depths ranging from 55 feet to 125 feet. These revealed 7 - 10 feet of loess on top of 10 - 75 feet of permeable sands and gravels, which overly the Selah clay strata. The borings stopped within the Selah. Regional geology suggests the Selah is 75 - 125 feet deep overlying deep Priest Rapids Basalt. The lower portion of the Selah is saturated and although it is a poor aquifer, it is the water that the design of the nearby CSSI site is intended to protect. The permeability of this clay may run from 10^{-5} to 10^{-7} CM/SEC. W-M hopes to use it in any liner construction.

The Selah clay appears to be very slowly recharged by incident precipitation. Infrequent moisture fronts apparently move downward from the ground surface. Although average precipitation is only about 9 inches annually, the landfill design would have to include a liner system with leachate collection and treatment. The climate will tend to minimize the generation of leachate, but in the long-run will not prevent it.

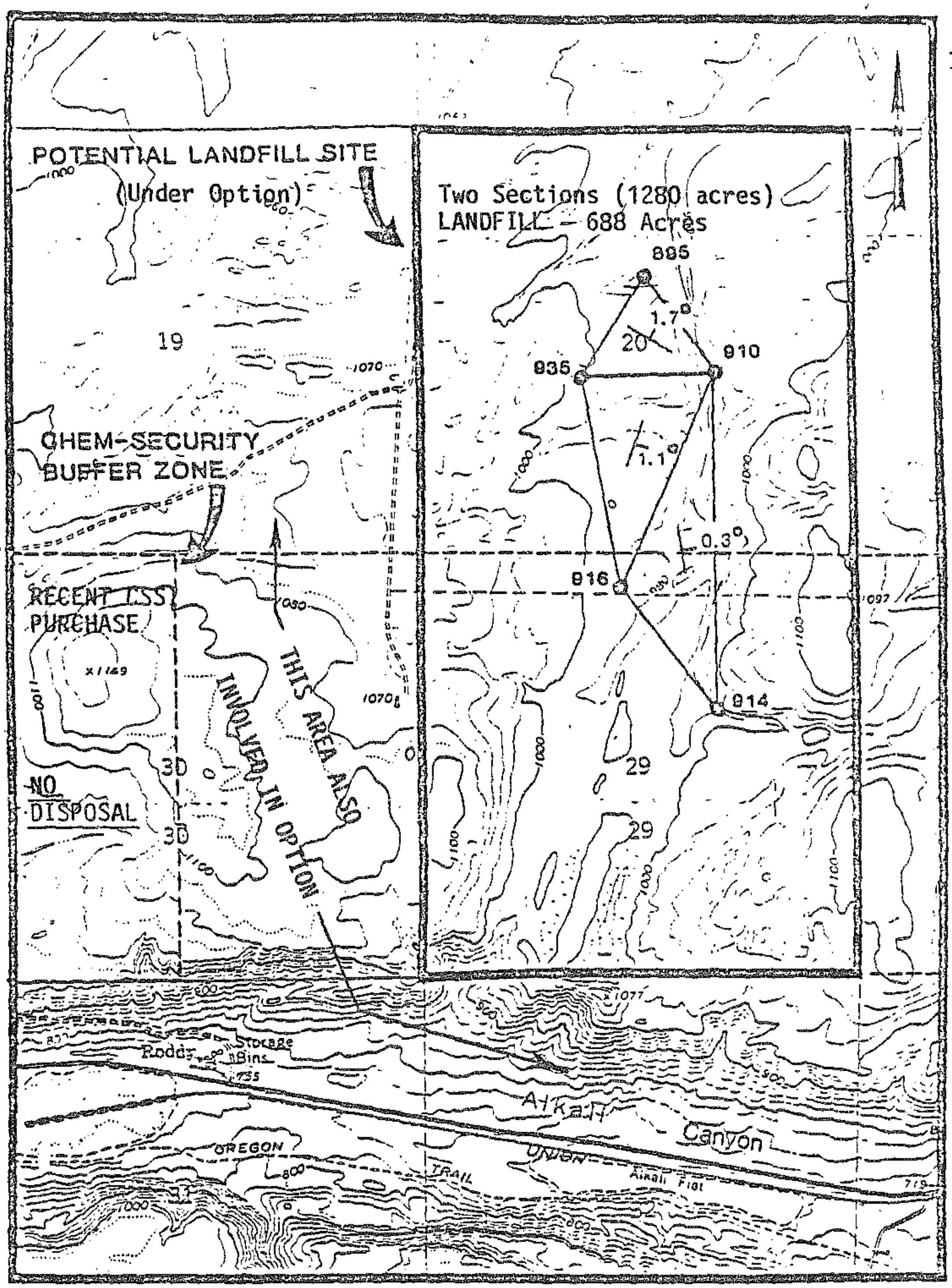
The Department's feasibility study requirements were reviewed. A geotechnical investigation equivalent to that performed under the Department's SB662 siting process was indicated as appropriate for this proposal.

cc: Fred Hansen
Mike Downs
Steve Greenwood
Bob Danko
Steve Gardels

CSSI

HW DISPOSAL

SITE



0 SCALE 6000

feet

TOTAL AREA UNDER OPTION FOR SOLID WASTE LANDFILL PURPOSES APPROXIMATELY 2,000 ACRES

Base map from USGS 7 1/2 minute topographic maps.

EAS 3/11/87

910 EXPLORATORY BOREHOLE, ELEVATION OF TOP OF SELAH SHOWN.

1.1° AVERAGE STRIKE AND DIP, TOP OF SELAH MEMBER.

FIGURE 2. AVERAGE STRIKE AND DIP OF THE TOP OF THE SELAH MEMBER FROM TRIANGULATION BETWEEN BOREHOLES.

Prepared by:

P.E. LAMOREAUX & ASSOCIATES, INC.

Attachment 3
Agenda Item E
May 29, 1987 EQC Meeting

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION
OF THE STATE OF OREGON

In the Matter of Amending OAR 340-61-120	))))	Statement of Need for Temporary Rule Amendment and Fiscal and Economic Impact and Land Use Consistency

STATEMENT OF NEED FOR RULEMAKING:

Pursuant to ORS 183.335(7), this statement provides information on the Environmental Quality Commission's intended action to adopt a temporary rule.

1. Legal Authority

   ORS 459.235 and ORS 468.065 allow the Environmental Quality Commission to establish fees for permits issued for solid waste disposal sites.

2. Need for the Rule

   The Department expects to soon receive at least two solid waste facility permit applications for major landfills proposed to serve the Portland area. Additional Department staffing is needed to investigate the applications, determine whether the sites are approvable and issue or deny the permits in a timely manner. A temporary rule is needed to increase the permit processing fee paid by each applicant sufficient to cover the Department's costs of evaluating each site and processing the permit application. The normal rulemaking process could not be completed in time to establish the new fees before receipt of the permit applications.

3. Principal Documents Relied Upon in This Rulemaking

   a. ORS Chapter 459

   b. ORS Chapter 468

   c. OAR 340, Division 61, Solid Waste Management.

   d. "Preliminary Feasibility Study Report for Morrow County Solid Waste Disposal Project" dated December 19, 1986 by Seton, Johnson and Odell, Inc.

   e. "Preliminary On-Site Investigation of a Potential WMNA Solid Waste Landfill Site, Gilliam County, Oregon" dated March 5, 1987 by P.E. LaMoreaux and Associates.

   The above documents are available for public inspection at the office of the Department of Environmental Quality, 811 S.W. 6th Avenue, Portland, Oregon, during regular business hours, 8 a.m. to 5 p.m.

Attachment 3
Agenda Item E
May 29, 1987 EQC Meeting

FISCAL AND ECONOMIC IMPACT:

This temporary rule is expected to have very little small business impact. The proposed application fee is small compared to the total cost of establishing a major solid waste landfill site and will have negligible effect on the ultimate cost to the public for solid waste disposal.

LAND USE CONSISTENCY STATEMENT:

The proposed rule does not affect land use as defined in the Department's coordination program approved by the Land Conservation and Development Commission.

SF2000.3

Attachment 2
Agenda Item 2
June 12, 1987 EQC Meeting

Rule 340-61-120 is proposed to be amended as follows:

(Note: Underlined language is new)

Permit Fee Schedule

340-61-120(1) Filing Fee. A filing fee of $50 shall accompany each application for issuance, renewal, modification, or transfer of a Solid Waste Disposal Permit. This fee is non-refundable and is in addition to any application processing fee or annual compliance determination fee which might be imposed.

(2) Application Processing Fee. An application processing fee varying between $25 and $1,000, <u>except as provided in subsection (2)(h) of this section,</u> shall be submitted with each application. The amount of the fee shall depend on the type of facility and the required action as follows:

(a) A new facility (including substantial expansion of an existing facility):

(A) Major facility[1] $1,000
(B) Intermediate facility[2] .... $ 500
(C) Minor facility[3] .... $ 175

[1] Major Facility Qualifying Factors:
- -a- Received more than 25,000 tons of solid waste per year; or
- -b- Has a collection/treatment system which, if not properly constructed, operated and maintained, could have a significant adverse impact on the environment as determined by the Department.

[2] Intermediate Facility Qualifying Factors:
- -a- Received at least 5,000 but not more than 25,000 tons of solid waste per year; or
- -b- Received less than 5,000 tons of solid waste and more than 25,000 gallons of sludge per month.

[3] Minor Facility Qualifying Factors:
- -a- Received less than 5,000 tons of solid waste per year; and
- -b- Received less than 25,000 gallons of sludge per month.

All tonnages based on amount received in the immediately preceding fiscal year, or in a new facility the amount to be received the first fiscal year of operation.

(b) Preliminary feasibility only (Note: the amount of this fee may be deducted from the complete application fee listed above):
(A) Major facility ....$ 600
(B) Intermediate facility ....$ 300
(C) Minor facility ....$ 100

(c) Permit renewal (including new operational plan, closure plan or improvements):
(A) Major facility ....$ 500
(B) Intermediate facility ....$ 250
(C) Minor facility ....$ 75
(d) Permit renewal (without significant change):
(A) Major facility ....$ 200
(B) Intermediate facility ....$ 100
(C) Minor facility ....$ 50
(e) Permit modification (including new operational plan, closure plan or improvements):
(A) Major facility ....$ 500
(B) Intermediate facility ....$ 250
(C) Minor facility ....$ 75
(f) Permit modification (without significant change in facility design or operation): All categories.........................$ 25

(g) Permit modification (Department initiated): All categories...no fee
(h)(A) An application processing fee of $85,000 shall be submitted with each application for a major new general purpose domestic waste landfill received by the Department after May 29, 1987. For purposes of this subsection, a major new general purpose domestic waste landfill shall be defined as one designed to receive 100,000 or more tons per year of domestic solid waste and designed for a landfill area of 100 or more acres.
(B) The application processing fee may be used by the Department for costs it incurs in investigating the permit application and reaching a determination of whether to issue or deny the requested permit.
(C) Any portion of the application processing fee required under subsection (h)(A) of this section, which exceeds the Department's expenses in reviewing and processing the application, shall be refunded to the applicant.
(3) Annual Compliance Determination Fee (In any case where a facility fits into more than one category, the permittee shall pay only the highest fee):

(a) Domestic Waste Facility:
(A) A landfill which received 500,000 tons or more of solid waste per year:..$60,000
(B) A landfill which received at least 400,000 but less than 500,000 tons of solid waste per year:.................$48,000
(C) A landfill which received at least 300,000 but less than 400,000 tons of solid waste per year:.................$36,000
(D) A landfill which received at least 200,000 but less than 300,000 tons of solid waste per year:.................$24,000
(E) A landfill which received at least 100,000 but less than 200,000 tons of solid waste per year:.................$12,000
(F) A landfill which received at least 50,000 but less than 100,000 tons of solid waste per year:.................$ 6,000

(G) A landfill which received at least 25,000 but less than 50,000 tons of solid waste per year:..................$ 3,000

(H) A landfill which received at least 10,000 but less than 25,000 tons of solid waste per year:...................................$ 1,200

(I) A landfill which received at least 5,000 but not more than 10,000 tons of solid waste per year:............................$ 500

(J) A landfill which received at least 1,000 but not more than 5,000 tons of solid waste per year:.............................$ 100

(K) A landfill which received less than 1,000 tons of solid waste per year:..$ 50

(L) A transfer station, incinerator, resource recovery facility and each other facility not specifically classified above which received more than 10,000 tons of solid waste per year: ....$ 500

(M) A transfer station, incinerator, resource recovery facility and each other facility not specifically classified above which received less than 10,000 tons of solid waste per year:.........................$ 50

(b) Industrial Waste Facility:

(A) A facility which received 10,000 tons or more of solid waste per year:..$1,000

(B) A facility which received at least 5,000 tons but less than 10,000 tons of solid waste per year:......................................$ 500

(C) A facility which received less than 5,000 tons of solid waste per year:...$ 100

(c) Sludge Disposal Facility:

(A) A facility which received 25,000 gallons or more of sludge per month:..$ 100

(B) A facility which received less than 25,000 gallons of sludge per month:..$ 50

(C) Closed Disposal Site: Each landfill which closes after July 1, 1984:...10% of the fee which would be required, in accordance with subsections (3)(a), (3)(b), and (3)(c) above, if the facility was still in operation or $50 whichever is greater.

(e) Facility With Monitoring Well: In addition to the fees described above, each facility with one or more wells for monitoring groundwater or methane, surface water sampling points, or any other structures or locations requiring the collection and analysis of samples by the Department, shall be assessed a fee. The amount of the fee shall depend on the number of wells (each well in a multiple completion well is considered to be a separate well) or sampling points as follows:

(A) A facility with six or less monitoring wells or sampling points:..$1,100

(B) A facility with more than six monitoring wells or sampling points:..$2,000

(4) Annual Recycling Program Implementation Fee. An annual recycling program implementation fee shall be submitted by each domestic waste disposal site, except transfer stations and closed landfills. This fee is in addition to any other permit fee which may be assessed by the Department. The amount of the fee shall depend on the amount of solid waste received as follows:

(a) A disposal site which received 500,000 tons or more of solid waste per year:..$19,000

(b) A disposal site which received at least 400,000 but less than 500,000 tons of solid waste per year:.............................$15,200

(c) A disposal site which received at least 300,000 but less than 400,000 tons of solid waste per year:.............................$11,400

(d) A disposal site which received at least 200,000 but less than 300,000 tons of solid waste per year:.............................$ 7,600

(e) A disposal site which received at least 1100,000 but less than 200,000 tons of solid waste per year:.............................$ 3,800

(f) A disposal site which received at least 50,000 but less than 100,000 tons of solid waste per year:.............................$ 1,900

(g) A disposal site which received at least 25,000 but less than 50,000 tons of solid waste per year:......................................$ 950

(h) A disposal site which received at least 10,000 but less than 25,000 tons of solid waste per year:..............................$ 375

(i) A disposal site which received at least 5,000 but less than 10,000 tons of solid waste per year:......................................$ 175

(j) A disposal site which received at least 1,000 but less than 5,000 tons of solid waste per year:......................................$ 30

(k) A disposal site which received less than 1,000 tons of solid waste per year:..$ 15

Stat. Auth.: ORS Ch. 459 & 468

Hist.: DEQ 3-1984, F. & ef. 3-7-84

64th OREGON LEGISLATIVE ASSEMBLY--1987 Regular Session

CONFERENCE COMMITTEE AMENDMENTS TO B-ENGROSSED HOUSE BILL 2619

June 24

Amended Summary

Allows [*local governments*] **cities and counties** to dedicate part of solid waste disposal site user fee to rehabilitation and enhancement of **area around and** disposal site. Requires citizen committee to plan rehabilitation and enhancement. Requires Environmental Quality Commission to establish program for certifying local recycling programs and authorizes commission to exempt by rule certain amounts of waste from program requirements. Prescribes certain solid waste collection requirements within metropolitan service district if regional disposal site is used. Defines "regional disposal site" [*as site that receives more than 75,000 tons of solid waste per year from commercial haulers outside immediate service area of disposal site*]. Allows board of county commissioners to impose per ton surcharge on waste received at regional disposal site within its boundaries and prescribes fee schedule for surcharge. Requires establishment of local citizens advisory committee when application for regional disposal site is made. Requires department to study management of solid waste throughout state.

Speaker Katz:

Your Conference Committee to whom was referred B-engrossed House Bill 2619, having had the same under consideration, respectfully reports it back with the recommendation that the House concur in the printed Senate amendments dated June 5 and that the bill be amended and repassed.

On page 1 of the printed B-engrossed bill, line 2, delete the first "and" and after "459.235" insert "and sections 3 and 5, chapter 679, Oregon Laws 1985; and repealing section 3, chapter 679, Oregon Laws 1985".

Delete lines 4 through 22 and delete pages 2 through 6 and insert:

"**SECTION 1.** Sections 2 to 16 of this Act are added to and made a part of ORS 459.005 to 459.285.

"**SECTION 2.** Each city or county that has a disposal site operating under the provisions of ORS 459.005 to 459.285 and for which the city or county collects a fee may apportion an amount of the service or user charges collected for solid waste disposal at each publicly owned or franchised solid waste disposal site within or for the city or county and dedicate and use the moneys obtained for rehabilitation and enhancement of the area around the disposal site from which the fees have been collected. That portion of the service and user charges set aside by the city or county for the purposes of this section shall be not more than $1 for each ton of solid waste. If a city apportions moneys under this section, the county in which the city is located may not also apportion moneys under this section.

"**SECTION 3.** Each city or county that apportions money under section 2 of this 1987 Act shall establish a citizens advisory committee to select plans, programs and projects for the rehabilitation and enhancement of the area around disposal sites for which the city or county has apportioned moneys under section 2 of this 1987 Act. If a city establishes a citizens advisory committee under this section, a board of county commissioners may not also establish a local citizens advisory committee under this section.

"**SECTION 4.** As used in sections 2 and 3 of this 1987 Act:

"(1) 'Disposal site' has the meaning given that term in ORS 459.005, but does not include a material recovery, recycling or reuse facility.

"(2) 'Disposal site' does not include a regional disposal site as defined in ORS 459.005.

"**SECTION 5.** (1) The metropolitan service district may provide for the disposal of solid waste from Clackamas, Multnomah or Washington County at a disposal site or sites other than the site selected by the Environmental Quality Commission under section 5, chapter 679, Oregon Laws 1985.

"(2) The Department of Environmental Quality shall not use the selection of a disposal site under chapter 679, Oregon Laws 1985, to find that there is not a clearly demonstrated need for a site or sites selected by the metropolitan service district for disposal of waste under subsection (1) of this section.

"**SECTION 6.** (1) Except as otherwise provided by rules adopted by the Environmental Quality Commission under subsection (3) of this section, after July 1, 1988, a regional disposal site may not accept solid waste generated from any local or regional government unit within or outside the State of Oregon unless the Department of Environmental Quality certifies that the government unit has implemented an opportunity to recycle that meets the requirements of ORS 459.165 to 459.200 and 459.250.

"(2) The Environmental Quality Commission shall adopt rules to establish a program for certification of recycling programs established by local or regional governments in order to comply with the requirement of subsection (1) of this section.

"(3) Not later than July 1, 1988, the commission shall establish by rule the amount of solid waste that may be accepted from an out-of-state local or regional government before the local or regional government must comply with the requirement set forth in subsection (1) of this section. Such rule shall not become effective until July 1, 1990.

"(4) Subject to review of the Executive Department and the prior approval of the appropriate legislative review agency, the department may establish a certification fee in accordance with ORS 468.065.

"(5) After July 1, 1988, if the metropolitan service district sends solid waste generated within the boundary of the metropolitan service district to a regional disposal site, the metropolitan service district shall:

"(a) At least semiannually operate or cause to be operated a collection system or site for receiving household hazardous waste;

"(b) Provide residential recycling containers, as a pilot project implemented not later than July 1, 1989; and

"(c) Provide an educational program to increase participation in recycling and household hazardous materials collection programs.

"**SECTION 7.** (1) Each board of county commissioners of a county in which a regional disposal site is operating under provisions of ORS 459.005 to 459.285 may impose a surcharge on the solid waste received at the regional disposal site. The county may negotiate with the owner or operator of the regional disposal site to establish the amount of the surcharge imposed under this subsection. If the regional disposal site is publicly owned, the board of county commissioners shall give priority in expending the moneys to mitigation of adverse impacts on the area in and around the regional disposal site and related transfer stations located in the county including but not limited to rehabilitation and enhancement of the area, development of alternate water systems, road construction and maintenance and mitigation of adverse affects on wildlife and the environment, if provisions to mitigate such adverse impacts are not assured by permit conditions or bond requirements.

"(2) If the parties negotiating a surcharge under subsection (1) of this section do not reach an agreement within 90 days after the Department of Environmental Quality receives an application under ORS 459.235 for a permit for the regional disposal site, the board of county commissioners shall unilaterally impose the following surcharge:

"(a)	For the first 2,000 tons per day	$ 0.75/ton
"(b)	For each ton between 2,000 to 4,000 tons per day	$ 1.00/ton
"(c)	For each ton above 4,000 tons per day	$ 1.25/ton

"(3) If a board of county commissioners imposes the surcharge under subsection (2) of this section:

"(a) The surcharge shall be adjusted annually in accordance with the Portland Consumer Price Index;

"(b) Up to 10 percent of the surcharge shall go into a transition fund to be used by the county after the regional disposal site is closed for the purpose of minimizing the dislocation resulting from the loss of revenue from closure of the site; and

"(c) Of that portion of the surcharge not placed into a transition fund under paragraph (b) of this subsection, give priority in expending the moneys to mitigation of adverse impacts on the area in and around the regional disposal site and related transfer stations located in the county including but not limited to rehabilitation and enhancement of the area, development of alternate water systems, road construction and maintenance and mitigation of adverse effects on wildlife and the environment, if provisions to mitigate such adverse impacts are not assured by permit conditions or bond requirements.

"**SECTION 8.** As used in sections 8 to 12 of this 1987 Act:

"(1) 'Committee' means a local citizens advisory committee established under section 9 of this 1987 Act.

"(2) 'Permittee' means a person operating a regional disposal site under a permit issued under ORS 459.245.

"**SECTION 9.** (1) Except as provided in subsection (3) of this section, the board of county commissioners of a county in which a regional disposal site is proposed to be located shall establish a local citizens advisory committee when the Department of Environmental Quality receives an application for a regional disposal site within the county. The board shall select members of the committee who reflect a fair and equal representation of each of the following groups:

"(a) Residents residing near or adjacent to the regional disposal site.

"(b) Owners of real property adjacent to or near the regional disposal site.

"(c) Persons who reside in or own real property within the county in which the regional disposal site is located.

"(d) Employes of the permittee.

"(e) Local organizations and citizen interest groups whose majority of members either:

"(A) Are electors of the county in which the regional disposal site is located; or

"(B) Own real property in the county in which the regional disposal site is located.

"(2) Members of the local citizens advisory committee shall serve a term of two years. The committee shall elect from among its members a chairperson of the committee with such duties and powers as the committee imposes. The committee shall meet at least four times each year for so long as the regional disposal site is proposed or operating.

"(3) If the regional disposal site is operated by a metro-politan service district, the local citizens advisory committee shall be established by the governing body of the metropolitan service district.

"**SECTION 10.** Notwithstanding the term of office specified by section 9 of this 1987 Act, of the initial members of a local citizens advisory committee created pursuant to section 9 of this 1987 Act, one-half shall serve for a term ending one year after their appointment.

"**SECTION 11.** The duties of the local citizens advisory committee established under section 9 of this 1987 Act shall include but need not be limited to:

"(1) Reviewing with the permittee, the regional disposal site including but not limited to siting, operation, closure and long-term monitoring of the regional disposal site; and

"(2) Providing a forum for citizen comments, questions and concerns about the regional disposal site and promoting a dialogue between the community in which the regional disposal site is to be located and the owner or operator of the regional disposal site. The committee shall prepare an annual written report summarizing the local citizens' concerns and the manner in which the owner or operator is addressing those concerns. The report shall be considered by the Department of Environmental Quality in issuing and renewing a solid waste permit under ORS 459.245.

"**SECTION 12.** The permittee shall notify the local citizens advisory committee established under section 9 of this 1987 Act when the permittee proposes to apply for a change to any state or local permit.

"**SECTION 12a.** Notwithstanding any other provision of ORS 268.330 or 268.515 or section 9, chapter 679, Oregon Laws 1985, the metropolitan service district shall use moneys collected by the district as service or user fees for solid waste disposal for activities of the metropolitan service district related to solid waste and related planning, administrative and overhead costs of the district.

"**SECTION 13.** (1) The metropolitan service district shall implement the provisions of the solid waste reduction program as adopted by the metropolitan service district.

"(2) After the effective date of this 1987 Act, before the metropolitan service district council adopts an amendment to the district's solid waste reduction program, the district shall submit the proposed amendment to the Department of Environmental Quality for review and comment. The department shall review the proposed amendment to determine whether the amendment meets the requirements of section 8, chapter 679, Oregon Laws 1985.

"**SECTION 14.** (1) Not later than July 1, 1988, and every two years thereafter, the metropolitan service district shall report to the commission on the implementation of its solid waste reduction program approved under section 8, chapter 679, Oregon Laws 1985, or as amended in accordance with section 13 of this 1987 Act.

"(2) The report submitted by the metropolitan service district under this section shall be in writing and shall include, but need not be limited to:

"(a) A summary of the progress of the metropolitan service district in acquiring property and permits for the site selected under chapter 679, Oregon Laws 1985.

"(b) The current status of implementation of the metropolitan service district's solid waste reduction program including the use of landfill disposal sites, recycling opportunities and the use of resource recovery technologies.

"(c) A summary of the amount and percent of solid waste that is currently reused, recycled or disposed of in a solid waste disposal site and a comparison of such amounts and percentages to the operated by a wrecker issued a certificate under ORS 822.110.

"(9) 'Land disposal site' means a disposal site in which the method of disposing of solid waste is by landfill, dump, pit, pond or lagoon.

"(10) 'Land reclamation' means the restoration of land to a better or more useful state.

"(11) 'Local government unit' means a city, county, metropolitan service district formed under ORS chapter 268, sanitary district or sanitary authority formed under ORS chapter 450, county service district formed under ORS chapter 451, regional air quality control authority formed under ORS 468.500 to 468.530 and 468.540 to 468.575 or any other local government unit responsible for solid waste management.

"(12) 'Metropolitan service district' means a district organized under ORS chapter 268 and exercising solid waste authority granted to such district under ORS chapters 268 and 459.

"(13) 'Permit' includes, but is not limited to, a conditional permit.

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

"(15) 'Recyclable material' means any material or group of materials that can be collected and sold for recycling at a net cost equal to or less than the cost of collection and disposal of the same material.

"**(16) 'Regional disposal site' means:**

"**(a) A disposal site selected pursuant to chapter 679, Oregon Laws 1985; or**

"**(b) A disposal site that receives, or a proposed disposal site that is designed to receive more than 75,000 tons of solid waste a year from commercial haulers from outside the immediate service area in which the disposal site is located. As used in this paragraph, 'immediate service area' means the county boundary of all counties except a county that is within the boundary of the metropolitan service district. For a county within the metropolitan service district, 'immediate service area' means the metropolitan service district boundary.**

"[*(16)*] **(17)** 'Resource recovery' means the process of obtaining useful material or energy resources from solid waste and includes:

"(a) 'Energy recovery,' which means recovery in which all or a part of the solid waste materials are processed to utilize the heat content, or other forms of energy, of or from the material.

"(b) 'Material recovery,' which means any process of obtaining from solid waste, by presegregation or otherwise, materials which still have useful physical or chemical properties after serving a specific purpose and can, therefore, be reused or recycled for the same or other purpose.

"(c) 'Recycling,' which means any process by which solid waste materials are transformed into new products in such a manner that the original products may lose their identity.

"(d) 'Reuse,' which means the return of a commodity into the economic stream for use in the same kind of application as before without change in its identity.

"[*(17)*] **(18)** 'Solid waste collection service' or 'service' means the collection, transportation or disposal of or resource recovery from solid wastes but does not include that part of a business operated under a certificate issued under ORS 822.110.

"[*(18)*] **(19)** 'Solid waste' means all putrescible and nonputrescible wastes, including but not limited to garbage, rubbish, refuse, ashes, waste paper and cardboard; sewage sludge, septic tank and cesspool pumpings or other sludge; commercial, industrial, demolition and construction wastes; discarded or abandoned vehicles or parts thereof; discarded home and industrial appliances; manure, district's existing and projected annual goals for the next two years for:

"(A) The amount and percent of solid waste that will be reused, recycled or disposed of in a solid waste disposal site operated by the metropolitan service district or in a solid waste disposal site that the district has entered into an agreement to use; and

"(B) The amount in tons by which solid waste disposed of annually in a landfill operated by the district or which the district has entered into an agreement to use will be reduced.

"(d) A summary of the metropolitan service district's solid waste budget.

"**SECTION 15.** The commission shall review the report submitted by the metropolitan service district submitted under section 14 of this 1987 Act to determine:

"(1) Whether the district's activities related to solid waste disposal comply with the district's solid waste reduction program and any goals established by the district in previous reports submitted under section 14 of this 1987 Act; and

"(2) Whether the program and all disposal sites operated by or used by the district continue to meet the criteria established under ORS 459.015.

"**SECTION 16.** Not later than September 1, 1988, the Department of Environmental Quality shall make a preliminary report to the President of the Senate and the Speaker of the House of Representatives and to the appropriate legislative interim committee. The preliminary report shall address the criteria required in the metropolitan service district report under section 14 of this 1987 Act. The department shall submit a full report to the Legislative Assembly on or before January 1, 1989, and every two years thereafter, to correspond with the report submitted to the commission under section 14 of this 1987 Act.

"**SECTION 17.** ORS 459.005 is amended to read:

"459.005. As used in ORS 459.005 to 459.285, unless the context requires otherwise:

"(1) 'Affected person' means a person or entity involved in the solid waste collection service process including but not limited to a recycling collection service, disposal site permittee or owner, city, county and metropolitan service district.

"(2) 'Area of the state' means any city or county or combination or portion thereof or other geographical area of the state as may be designated by the commission.

"(3) 'Board of county commissioners' or 'board' includes county court.

"(4) 'Collection franchise' means a franchise, certificate, contract or license issued by a city or county authorizing a person to provide collection service.

"(5) 'Collection service' means a service that provides for collection of solid waste or recyclable material or both.

"(6) 'Commission' means the Environmental Quality Commission.

"(7) 'Department' means the Department of Environmental Quality.

"(8) 'Disposal site' means land and facilities used for the disposal, handling or transfer of or resource recovery from solid wastes, including but not limited to dumps, landfills, sludge lagoons, sludge treatment facilities, disposal sites for septic tank pumping or cesspool cleaning service, transfer stations, resource recovery facilities, incinerators for solid waste delivered by the public or by a solid waste collection service, composting plants and land and facilities previously used for solid waste disposal at a land disposal site; but the term does not include a facility subject to the permit requirements of ORS 468.740; a landfill site which is used by the owner or person in control of the premises to dispose of soil, rock, concrete or other similar nondecomposable material, unless the site is used by the public either directly or through a solid waste collection service; or a site vegetable or animal solid and semisolid wastes, dead animals and other wastes; but the term does not include:

"(a) Hazardous wastes as defined in ORS 466.005.

"(b) Materials used for fertilizer or for other productive purposes or which are salvageable as such materials are used on land in agricultural operations and the growing or harvesting of crops and the raising of fowls or animals.

"[*(19)*] **(20)** 'Solid waste management' means prevention or reduction of solid waste; management of the storage, collection, transportation, treatment, utilization, processing and final disposal of solid waste; or resource recovery from solid waste; and facilities necessary or convenient to such activities.

"[*(20)*] **(21)** 'Source separate' means that the person who last uses recyclable material separates the recyclable material from solid waste.

"[*(21)*] **(22)** 'Transfer station' means a fixed or mobile facility normally used, as an adjunct of a solid waste collection and disposal system or resource recovery system, between a collection route and a disposal site, including but not limited to a large hopper, railroad gondola or barge.

"[*(22)*] **(23)** 'Waste' means useless or discarded materials.

"[*(23)*] **(24)** 'Wasteshed' means an area of the state having a common solid waste disposal system or designated by the commission as an appropriate area of the state within which to develop a common recycling program.

"**SECTION 18.** ORS 459.235 is amended to read:

"459.235. (1) Applications for permits shall be on forms prescribed by the department. An application shall contain a description of the existing and proposed operation and the existing and proposed facilities at the site, with detailed plans and specifications for any facilities to be constructed. The application shall include a recommendation by the local government unit or units having jurisdiction and such other information the department deems necessary in order to determine whether the site and solid waste disposal facilities located thereon and the operation will comply with applicable requirements.

"(2) Subject to the review of the Executive Department and the prior approval of the appropriate legislative review agency, permit fees may be charged in accordance with ORS 468.065 (2).

"**(3) If the application is for a regional disposal facility, the applicant shall file with the department a surety bond in the form and amount established by rule by the commission. The bond or financial assurance shall be executed in favor of the State of Oregon and shall be in an amount as determined by the department to be reasonably necessary to protect the environment, and the health, safety and welfare of the people of the state. The commission may allow the applicant to substitute other financial assurance for the bond, in the form and amount the commission considers satisfactory.**

"**SECTION 19.** Section 3, chapter 679, Oregon Laws 1985, is amended to read:

"Sec. 3. (1) The Department of Environmental Quality shall conduct a study, including a survey of possible and appropriate sites, to determine the preferred and appropriate disposal sites for disposal of solid waste within or for Clackamas, Multnomah and Washington Counties.

"(2) The study required under this section shall be completed not later than July 1, 1986. Upon completion of the study, the department shall recommend to the commission preferred locations for disposal sites within or for Clackamas, Multnomah and Washington Counties. The department may recommend a location for a disposal site that is outside those three counties, but only if the city or county that has jurisdiction over the site approves the site and the method of solid waste disposal recommended for the site. The recommendation of preferred locations for disposal sites under this subsection shall be made not later than January 1, 1987.

"**(3) The department shall investigate, evaluate, review and process any permit application for landfills and associated transfer stations proposed to receive solid waste from Multnomah, Clackamas and Washington Counties.**

"**SECTION 20.** Section 5, chapter 679, Oregon Laws 1985, is amended to read:

"Sec. 5. (1) The commission, not later than July 1, 1987, shall issue an order directing the Department of Environmental Quality to establish a disposal site under [*this 1985 Act*] **chapter 679, Oregon Laws 1985,** within Clackamas, Multnomah or Washington County or, subject to subsection (2) of section 3 of [*this 1985 Act*] **chapter 679, Oregon Laws 1985,** within another county.

"(2) In selecting a disposal site under this section, the commission shall review the study conducted under section 3 of [*this 1985 Act*] **chapter 679, Oregon Laws 1985,** and the locations for disposal sites recommended by the department under section 3 of [*this 1985 Act*] **chapter 679, Oregon Laws 1985.**

"(3)(a) When findings are issued by the department under subsection (4) of this section, the commission in selecting a disposal site under [*this 1985 Act*] **chapter 679, Oregon Laws 1985,** must comply with the state-wide planning goals adopted under ORS 197.005 to 197.430 and with the acknowledged comprehensive plan and land use regulations of the local government unit with jurisdiction over the area in which the disposal site is located.

"(b) However, when findings are not issued under subsection (4) of this section, the standards established by section 4 of [*this 1985 Act*] **chapter 679, Oregon Laws 1985,** take precedence over provisions in the comprehensive plan or land use regulations of the affected local government unit, and the commission may select a disposal site in accordance with those standards instead of, and without regard to, any provisions for locating and establishing disposal sites that are contained in the comprehensive plan or land use regulations of the affected local government unit. Any provision in a comprehensive plan or land use regulation that prevents the location and establishment of a disposal site that can be located and established under the standards set forth in section 4 of [*this 1985 Act*] **chapter 679, Oregon Laws 1985,** shall not apply to the selection of a disposal site under [*this 1985 Act*] **chapter 679, Oregon Laws 1985.**

"(4) The department, not later than July 1, 1986, may determine whether the acknowledged comprehensive plans and land use regulations of the counties in which possible disposal sites being considered by the department are situated contain standards for determining the location of land disposal sites that are identical to or consistent with the standards specified in section 4 of [*this 1985 Act*] **chapter 679, Oregon Laws 1985.** If the standards contained in the comprehensive plan and land use regulations of a county are identical to or consistent with the standards specified in section 4 of this [*1985 Act*] **chapter 679, Oregon Laws 1985,** the department may issue written findings to that effect and shall submit the findings to the commission.

"(5) When selecting a disposal site under [*this 1985 Act*] **chapter 679, Oregon Laws 1987,** the commission may attach limitations or conditions to the development, operation or maintenance of the disposal site, including but not limited to, setbacks, screening and landscaping, off-street parking and loading, access, performance bonds, noise or illumination controls, structure height and location limits, construction standards and periods of operation.

"(6) If the Environmental Quality Commission directs the Department of Environmental Quality to establish or complete the establishment of a disposal site under this section, the department shall establish the site subject only to the approval of the commission. Notwithstanding any other provision of this [*1985 Act*] **chapter 679, Oregon Laws 1985** or any city, county or other local government charter or ordinance to the contrary, the Department of Environmental Quality may establish a disposal site under this section without obtaining any license, permit, franchise or other form of approval from a local government unit.

"(7) The department shall identify conflicts with surrounding uses for any disposal site established under [*this 1985 Act*] **chapter 679, Oregon Laws 1985,** and, to the extent practicable, shall mitigate or require the operator of the site to mitigate those conflicts.

"(8) Notwithstanding any other provision of law, any order of the Environmental Quality Commission requiring the Department of Environmental Quality to establish a disposal site at the location selected by the commission under this section shall not expire before July 1, 1989.

"**SECTION 21.** (1) The Department of Environmental Quality shall study the management of solid waste throughout the state. The study shall include:

"(a) A review of the capacity of all domestic solid waste disposal sites and the need for locating new sites;

"(b) The identification of significant regional solid waste disposal problem areas; and

"(c) A survey of local governments to determine their willingness to participate in regional solid waste management planning.

"(2) Not later than December 15, 1988, the Director of the Department of Environmental Quality shall make the results of the study required under subsection (1) of this section available to the President of the Senate and the Speaker of the House of Representatives of the Sixty-fourth Legislative Assembly, who shall refer the results of the study to the appropriate legislative committee.

"**SECTION 22.** Section 3, chapter 679, Oregon Laws 1985, is repealed July 1, 1989.".

/s/ Ron Cease
Representative

/s/ Fred Parkinson
Representative

/s/ Nancy Peterson
Representative

/s/ Bill Bradbury
Senator

/s/ Rod Monroe
Senator

Health & Environment

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Feature Article

Chlorinated Water And Cancer: Is There A Link?

In 1908, a lawsuit charging that water supplied to Jersey City, New Jersey was neither pure nor wholesome spurred the city's waterworks to chlorinate the water. In 1910, the judge reviewing the case noted chlorine's apparent efficacy in destroying "germs" and declared, "The solution described leaves no deleterious substances in the water. . ."

Recent findings suggest, however, that chlorination's immense and time-tested benefits in controlling infectious disease may be partly offset by an increase in cancer. Nevertheless, if there is a danger, the relative risks (disease rate in exposed populations divided by the rate in unexposed populations) are likely to be small (less than 2 or 3) compared to such risk factors as cigarette smoking for lung cancer (relative risks 5 to 15). But so many people—about 190 million Americans—drink chlorinated water from community systems, that even small increases in risk could translate into thousands of potentially avoidable cancers each year.

Chlorine reacts with organic chemicals

If there is a problem, what's the source? In the early 1970s, improved chemical analysis detected myriad chlorinated organic chemicals in drinking waters, albeit at low levels. In 1974, environmental chemists learned that chlorine interacts with organic chemicals (mostly naturally-occurring humic and fulvic acids) in untreated water to form chloroform and other trihalomethanes (THM). A nationwide EPA survey found THMs in finished, but not untreated waters. Chlorinated surface waters generally show much higher levels than ground water.

Among the THMs, chloroform is carcinogenic in laboratory rodents; the others are mutagenic in *Salmonella* bacteria (Ames tests). However, 30 to 70 percent of the chlorine that binds to organic chemicals in drinking water is associated with higher-molecular weight, nonvolatile compounds, rather than the volatile THMs.

Concentrates of nonvolatile byproducts are mutagenic in *Salmonella* (Ames tests), transform fibroblasts in tissue culture, and, in limited testing, induce tumors in rodents. Advanced analytical chemistry has revealed that some of these nonvolatile compounds are highly mutagenic. Currently, we suspect that some of these nonvolatile byproducts may increase the risk of cancer.

Surface and groundwaters differ

Epidemiologic assessment of whether cancer can be linked to chlorination byproducts needn't wait for a detailed understanding of their chemical and toxicologic characteristics. The contrasts in byproduct levels between most disinfected surface and groundwaters are so great that differences between populations based on surface versus groundwater use can be exploited in evaluating risk.

A growing body of evidence

Three overlapping phases of epidemiologic investigations, each more precise than the last, suggest that drinking chlorinated surface water may increase risk of some cancers. The earliest studies compared cancer rates in areas where people drank treated surface water with rates in places where most people drank untreated ground water. After statistical adjustments for industrialization, population density, migration, and other factors, many studies found associations with bladder, colon, and rectal cancers (*Drinking Water and Health,* Vol. 3: 5-21, NAS, 1980).

While geographic studies generally can't quantify risks, they do help identify issues to be evaluated with more precise research. Case-control death certificate studies, and case-control studies of newly-diagnosed cancer patients have sharpened the focus further.

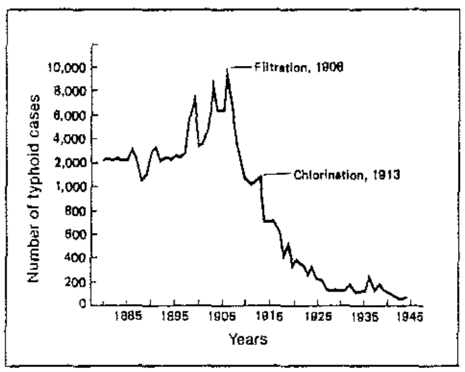
Six case-control mortality studies have been conducted in the U.S. Typically, the investigators selected deaths from the cancers of interest and also selected control deaths, matched to cases on age and sex, from computerized listings, and compared the most recent water sources for both. Five of the six studies found elevated risks, up to twice the expected number of colon, rectal, and bladder cancers, with associations found for surface vs ground or chlorinated vs non-chlorinated (*Ann. Rev. Public Health* **3:** 339-57, 1982). The sixth found no association for colon or rectal cancers (*J. NCI* **72**:563-568, 1984).

Interview studies add precision

The most precise studies, case-control interview studies of incident cases, offer an excellent opportunity to address limitations in earlier work and develop defensible risk estimates. Because these studies gather information directly from newly-diagnosed patients and comparable healthy controls, they allow investigators to control for such confounding risks as smoking, diet, family medical history, and occupational exposures. Initial findings from three such studies are available.

The first, a colon cancer case-control study in Wisconsin, found no evidence that THMs in drinking water pose a significant risk of colon cancer. There is, however, a difficulty in interpreting these results. The Great Lakes, used for drinking water by many Wisconsin communities, contain low organic chemical burdens, and, as a result, low THM levels. Thus the contrast between highly-exposed and unexposed people in the study was less than in many other places. The second, a study of

Chlorination has benefits as well as risks



Water treatment dramatically lowered typhoid incidence in Philadelphia.

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As the feature points out, chlorination has time-tested public health benefits—benefits that explain why 73 percent of all municipal water supplies use chlorine disinfection.

Chlorination kills bacteria, such as those that cause typhoid, cholera, and other enteric diseases; intestinal protozoans; flatworms, such as schistosomes; and viruses, such as those that cause polio and hepatitis.

Since the introduction of chlorination in 1908, waterborne disease has dropped dramatically in the U.S. In Philadelphia alone, as the figure shows, chlorination and filtration together led to a nearly 99 percent decrease in typhoid cases.

In contrast, said microbiologist Charles Gerba, Ph.D., of the University of Arizona, "In the Third World, 25,000 people die each day from drinking untreated water. The World Health Organization estimates that 80 percent of all the world's disease stems from microorganisms in contaminated water."

In short, the consensus among health scientists seems to be that, until we have other reliable methods of disinfection, chlorination's benefits far outweigh the risks.

disinfection 与 colon [illegible]

200 colon cancer cases and 407 controls in North Carolina, found colon cancer associated with home consumption of chlorinated water among people over 60 years old.

In the third study, at the National Cancer Institute, we recently analyzed data from a population-based case-control study of almost 3000 bladder cancer patients and 6000 healthy controls from ten U.S. areas.

In the study, trained interviewers queried cases and controls in their homes. We asked about risk factors, including smoking, and occupational and medical history; fluid intake from beverages; and lifetime residential history, including primary water source (private well, community supply, bottled, other) at each residence. In an ancillary survey of water utilities in study areas, we gathered historical water source and treatment information. With these data we constructed a lifetime, year-by-year record of water source and chlorination for each subject.

Risks rise as intake rises

When we analyzed bladder cancer risk among white respondents (2805 cases, 5258 controls) we found a small, but highly significant, increase in risk with intake for people who drank chlorinated surface water for at least 40 years. After correcting for age, smoking, and other factors, we found that people who drank the most tap water, in the highest 20 percent of the study group, had a bladder cancer risk about 1.7 to twice that in the lowest 20 percent. Long-term groundwater users, on the other hand, showed no increase in cancer risk with increased tap water intake.

When we measured risk by how long people had been drinking chlorinated surface waters, we found no relationship overall. We did, however, find increased risks with duration of exposure among non-smokers, especially those whose tap water consumption was above the population median. The risk from 60 or more years of exposure was triple that among non-smokers who drank unchlorinated groundwater.

Our results confirm and extend earlier work linking bladder cancer to consumption of chlorinated surface waters. But let me place these studies in perspective. First, chlorine disinfection confers immense health benefits—and we know little about the side effects of substitutes. Second, there is a question about what level of confidence to place in findings from single epidemiologic studies, especially when the relative risks are small. Clearly, other investigators need to replicate our results in different settings. Nevertheless, before confirmatory evidence is available, prudent public health practice would dictate that we minimize exposure to chlorination byproducts, yet ensure adequate disinfection to remove infectious agents.

A report of this study is in press in the *Proceedings of the Sixth Conference on Water Chlorination*, Lewis Publishers, Ann Arbor, MI. The NCI study, also sponsored by the FDA and EPA, was headed by Robert Hoover, M.D., and Patricia Hartge, Sc.D., and involved the collaboration of many investigators.

by Kenneth P. Cantor, Ph.D.
Environmental Epidemiology Branch
National Cancer Institute

Commentary

The Water-Cancer Connection: Can Epidemiology Prove It?

by Peter Isacson, M.D. Professor of Epidemiology
Dept. of Preventive Medicine
University of Iowa College of Medicine

Can cancer be related to the water we drink? The study Kenneth Cantor describes in the lead article strongly suggests an association between chlorination, or some water factor linked to chlorination, and human bladder cancer.

Almost two decades have passed since known or suspected human carcinogens were first found in finished municipal water supplies. One of them, chloroform produced by chlorination, exposes millions of Americans. The potential for a major public health problem is unquestionably there. Yet progress has been slow.

Detecting the pattern takes time

How can we explain this? There are three major factors, the first being the nature of cancer itself. Most human cancers have a multiplicity of causes and a prolonged, many-year incubation period. These facts pose difficulties in assessing initial exposure.

The second factor lies in the inherent limitations of epidemiological studies in humans. Because epidemiologists cannot manipulate their study subjects as laboratory scientists can, they must be opportunists, finding existing situations of exposure and non-exposure and evaluating pertinent risk factors. For case-control studies, this requires detailed personal interviews of large numbers of people; the studies are labor-intensive and expensive. All this is complicated by the fact that Americans are mobile people.

Scientific doubts slowed the search

A third factor has been the scientific community's skepticism about the likelihood of a chlorination-cancer association. I recently read a critique of a proposal to the National Institutes of Health for a case-control study of chlorination and colorectal cancer. Although considered methodologically sound, the proposal was not funded for the following reason: "The major reservation . . . is the background upon which the hypothesis is presented. One could argue that it is important to do such a study . . . to dispel the suggested association, although zealots for the cause will rarely accept a negative study to dispel an association." Even if the association were positive, the reviewers added, the value would be relatively small because ". . . there are no practical options to disinfection by chlorination."

This critique, written in 1982, would be far less likely today in light of the findings presented in Cantor's study. But the general attitude had an effect. Considering the problem's potential importance, few investigators have worked on it.

Drawbacks of NCI study

One criticism of Cantor's study is that the data do not establish chloroform or any other trihalomethane (THM) as the only potential causal variables. This is because the water supplies most likely to be chlorinated—surface or shallow ground—are also likely to be contaminated by other constituents. The data show no firm evidence that chlorination isn't simply a surrogate for other causal water variables or whether chlorination byproducts other than THMs might be responsible.

Study links water and cancer

But to dwell on these points can lead to missing the most important finding of all: that the data suggest that *some constituent of drinking water is associated with certain cancers.* Whether or not the factor is chlorination, it is still of major public health importance.

This is true even if the risk is small, for the impact of an environmental carcinogen depends not only on its carcinogenicity in humans but also on the number of people exposed to it. The next logical step in epidemiologic studies of water and cancer is to assay potentially dangerous compounds other than THMs as exposure variables.

Does epidemiology ever prove anything? To some extent, the answer depends on what we mean by "proof." Epidemiology can develop sufficiently strong associations that for practical purposes—regulatory action—can be considered causal. Does anyone really doubt that cigarettes or asbestos are responsible for lung cancer, or ionizing radiation for leukemias?

One statement we can certainly make is that laboratory studies can never prove or disprove a causal relationship between environmental contaminants and human cancer. Animal studies yield estimates of safe human exposure levels when human data are insufficient; they add plausibility to causal considerations. But they should never be considered a substitute for rigorous epidemiologic studies in humans.

Cantor's review shows that epidemiologic studies of water and cancer are making headway. Now that we're seeing some progress on this issue, support and encouragement of further efforts will be a most important public health service.

Questions & Answers

Each month, experts in environmental health answer questions related to the feature topics. David Parker, M.D., M.P.H., of the Minnesota Dept. of Health coordinates this effort. Send questions to the* Health & Environment Digest*, 5901 Brooklyn Blvd., Suite 109, Minneapolis, MN 55429.

Q: Under the Safe Drinking Water Act, the EPA recommends disinfection of all public water supplies by 1989. Does this mean all supplies are to be chlorinated?

A: No. Disinfectants used to purify drinking water supplies include: chlorine, ozone, chlorine dioxide, and chloramine. Of these, chlorine is the most effective at controlling pathogenic microorganisms. Disinfection of drinking water has virtually extinguished such waterborne diseases as typhoid and cholera in this country.

—Jennifer Orme, Office of Drinking Water, U.S. EPA

Q: Your May issue brought to mind a question I've had for years. Has anyone studied airborne

Continued on page 8

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Comments on the EQC Water Quality Management
Plan for Accommodation of Growth and Development
OAR 340-41-026(2)

Related to Agenda Item D
July 17, 1987 Meeting
Oregon Environmental Quality Commission

R. A. Schmall
Smurfit Newsprint Corporation

Although the Item D request for an increase in a point-source BOD discharge allowance has been withdrawn, the EQC should not overlook the need to examine the adequacy of its water quality management plan. For a complex river system like the Willamette, the allocation of BOD loads to accommodate increased needs for the river's finite assimilative capacity won't be easy. The EQC's plan needs to be adequate not only in its goal of water quality, but in its scope and justification. It needs to be clear enough to avoid misinterpretation by not only existing and potential dischargers, but by the DEQ and other segments of the state government.

1. The DEQ's background report (p. 9) substantiates the need to " ...reevaluate and update the water quality management plan for the Willamette Basin." We, too, believe this need exists.

2. To be adequate, the management plan needs to be based on the same kind of policy decision making that went into the State Implementation Plan for air quality. The issues related to the Willamette River are analogous to airshed issues like PSD, non-attainment, PSEL's, "bubbling", banking, and offsets.

3. To formulate a Willamette River plan which is more than a policy statement, the EQC will need to know what the river can handle and the probable demands for any available excess assimilative capacity. Much has changed, and much has been learned since the State Sanitary Authority demonstrated remarkable wisdom in establishing the management plan approximately twenty years ago. A high-priority, adequately funded study directed by the DEQ would be timely.

4. Numerous questions need to be addressed. Some immediately obvious ones include:

   a. What shape is each stretch of the river in now?

   b. Since the management policy was adopted, two point-source discharges have disappeared (pulp mills with enormous oxygen demand loads). How much additional assimilative capacity resulted and where does it exist? Should it be used? If so, who gets it? Load reductions of this magnitude were probably not anticipated.

   c. Should reserve capacity be saved to accommodate sewage treatment plant discharge increases caused by population growth, or should it be shared with industrial dischargers? If some reserve were allocated to industry, would existing and new sources be treated in the same way?

   d. If load reductions become necessary to protect water quality, who sheds first? Would the last recipients of discharge allowances (i.e., new or expanded facilities) shed before others? Would having "highest and best practicable treatment" be a criterion? Would municipalities and industry be treated equally? Would the guidelines be different for a temporary problem than for a permanent one?

   e. The volumetric flow rate (cubic feet per second) is a major--perhaps <u>the</u> major--parameter affecting overall river water quality. Are there opportunities to ensure that summer stream flows do not become lower? (perhaps via formal agreement with the Corps of Engineers). Is it possible to enhance flow?

Smurfit Newsprint Corporation (formerly Publishers Paper Co.) operates newsprint mills adjacent to the Willamette River in Newberg and Oregon City. We are very interested in the Willamette River and plans for water quality management.

July 15, 1987

NORTHWEST
PULP&PAPER

Fred Hansen, Director
Department of Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204

Dear Fred:

This letter is an appeal to you requesting a delay in adoption of Agenda Items G, Amendments to Water Quality Standards; and Agenda Item I, Revisions to Oil and Hazardous Material Spills and Releases.

Normally we would work out our concerns directly with the DEQ staff who are typically thoughtful and thorough in considering our concerns as the agency moves forward with needed regulations. In both cases, problems with short notice periods and summer schedules have prevented us from being able to reach DEQ staff.

In the case of Agenda Item G, Amendments to Water Quality Standards, we commented as the rule was being prepared but only received the final language on July 13th, four working days before the scheduled July 17th adoption date. It appears from the final packages that several of our concerns may have been omitted or misunderstood in the staff analysis and we need more time to discuss the issue with the DEQ staff.

In the case of Agenda Item I, Revisions to Oil and Hazardous Materials Spills and Releases, we also commented in the course of the comment period but found a substantial change, made just before the close of the comment period, which was only identified in a cover letter transmitting the final proposed rule.

We are concerned that this change may have unintended adverse consequences to both the agency and the regulated community which have not been fully examined. A particular problem exists with this rule because of the associated liability issues.

Enclosed are additional supporting materials on both issues. Thank you for considering our concerns.

Sincerely,

Llewellyn Matthews

Llewellyn Matthews, Executive Director

LM:sd
Enclosures

NWPPA COMMENTS
ON
OREGON ENVIRONMENTAL QUALITY COMMISSION
AGENDA ITEM I.
JULY 17, 1987

DEQ proposes (Agenda Item I, July 17, 1987 EQC meeting) to incorporate by reference the 40 CFR Part 355, Appendix A List of Extremely Hazardous Substances as "Hazardous Materials." DEQ also proposes to incorporate by reference the same list of substances and their reportable quantities as subject to the reporting requirements of the spill and release rules. NWPPA respectfully requests an extension of time to further analyze the impact of this rule and to work with DEQ staff to arrive at a full understanding of this adoption.

By adopting the list of Extremely Hazardous Substances as "Hazardous Materials" under ORS 466.630 and OAR 340-108-002(9)(b), the DEQ imposes new requirements, in addition to reporting, for releases of these substances. ORS 466.640 establishes strict liability for releases of hazardous materials, and for threatened releases. ORS 466.645 requires any person liable for a release to "immediately cleanup the spill or release under the direction of the department." Liability and cleanup responsibility are not a part of the federal law for which the list of Extremely Hazardous Substances was designed.

NWPPA needs additional time to form a position on whether the new liabilities keyed to this list are reasonable. Therefore, we request an extension of time to fully analyze the adoption of the Extremely Hazardous Substances List into Oregon's spill and release rule.

DEQ originally prepared notice of its intent to adopt the 40 CFR 302.4 list and its reportable quantities on April 27, 1987. Hearings were set for June 4 with comments due June 5, 1987. Subsequently, DEQ wanted to also adopt the 40 CFR 355 Appendix A list. DEQ changed the text of the proposed rule to accomplish this.

DEQ then sent out a letter referencing the intent to add the additional list. With this letter was the new proposed rule and the original public notice form ("A Chance to Comment On. . .") which did not reflect the change. This was confusing in that we had two copies of the same notice over two very different proposed rules. Only a careful reading of the cover letter would have revealed the changes to the proposal.

Because of this, we did not realize that the proposed rule had changed and had very little time to fully analyze the rule prior to the public hearing. Therefore we wish additional time to analyze the rule.

NORTHWEST PULP&PAPER

August 6, 1986

Krystyna Wolniakowski
Department of Environmental Quality
PO Box 1760
Portland, OR 97207

RE: NWPPA COMMENTS ON DEQ REVISIONS TO WATER QUALITY STANDARDS

The Northwest Pulp and Paper Association is an industrial trade association which represents the pulp and paper industry of Washington and Oregon on energy and environmental management issues of concern to the industry. Our Oregon members include: Crown Zellerbach, Georgia-Pacific Corporation, International Paper Company, Smurfit Newsprint Corporation and the Weyerhaeuser Company.

We appreciate the opportunity to provide the following comments on the Department of Environmental Quality's proposed revisions to the State Water Quality Standards. Our comments focus on the Department's proposed revisions to the mixing zone policy and revised language for toxic substances as these are of greatest concern to our members.

MIXING ZONE POLICY

COMMENT 1: The water quality criteria proposed by the Department in 4(d)(6) of both versions of the mixing zone policy would result in de facto elimination of the mixing zone.

The mixing zone by definition is a zone where water quality criteria do not apply. It is the Department's stated purpose in its mixing zone policy to "allow a defined portion of a stream to serve as a zone of initial dilution for wastewaters and receiving waters to thoroughly mix," and, "The Department may suspend all or a part of the water quality standards, or set less restrictive standards in the defined mixing zone." Yet, at the same time, the Department proposes to include water quality criteria which must be met within the mixing zone that are similar to, or duplicate effluent standards contained in NPDES permits or other state water quality criteria.

These duplicative requirements have no place in a mixing zone policy and in fact only serve to defeat the purpose of a mixing zone.

Water quality standards must be met at the mixing zone boundary at low stream flow conditions. There is no point to having a mixing zone policy at all if other complex water quality standards or criteria such as those proposed by the Department must be met both within and at the boundary of the mixing zone. The Department's as well as the discharger's monitoring burden would be increased with no demonstrated beneficial effect on the receiving water

The Department should delete the language in (4)(d) altogether or revise the language to read "be free of sufficient to cause" which would ensure that water quality conditions within the mixing zone are preserved but would not require that rigorous effluent water quality standards be met.

COMMENT 2: A chronic toxicity bioassay should not be required within the mixing zone.

There are many reasons why a chronic bioassay testing requirement, particularly within a mixing zone area is premature. A chronic toxicity bioassay requirement applied within the mixing zone is contrary to EPA's current mixing zone policy. EPA's policy as contained in the 1983 Water Quality Standards Handbook and in the attached "Technical Support Document for Water Quality Based Toxics Control" describes the mixing zone as an "allocated impact zone where numeric water quality criteria can be exceeded as long as acutely toxic conditions are prevented." Further, EPA's policy states that "In order to prevent lethal conditions in the regulatory mixing zone, the State can prohibit lethal concentrations in the pipe itself or require high rate diffusers and criterion maximum concentration compliance within a short distance of the outfall." (The definitions of CMC and CCC are marked in the attached Chapter Two of the EPA Technical Support Document, page 10).

The key points here are acutely toxic conditions within the mixing zone must be prevented and lethal pollutant concentrations should be prohibited in the discharge pipe itself - a function of NPDES permit requirements, or within a short distance of the discharge; i.e., the boundary outside the mixing zone. It is important to point out that most industrial wastewater dischargers, including all pulp and paper mill dischargers to fresh waters, already are required in their NPDES permits to conduct acute toxicity bioassays on treated wastewater effluents for salmonid species.

Also, questions abound regarding the chronic bioassay test methodology itself and validity of test results. Questions include: Can the test procedure actually duplicate stream conditions? Can cause of mortality be conclusively related to a chronic toxicity condition? What is an appropriate time period for a chronic bioassay - how long does it take for conditions to manifest themselves? What should chronic testing focus on, mortality, illness, reproductive changes? What species should be tested? etc. In addition, a chronic toxicity bioassay is very costly - estimates range from $1,000 to about $6,000 per test.

The chronic bioassay test technology is simply not developed sufficiently. It is our understanding that EPA is in the process of developing a series of chronic bioassays to be run on effluent that may be included in NPDES permits at a future date. From these data, the dilution required to achieve lowest observed effect level could be estimated.

It is simply inappropriate at this time to require a chronic toxicity bioassay of questionable significance and great cost in addition to an existing acute toxicity bioassay requirement, within the mixing zone.

COMMENT 3: The Department's discretion to require mixing zone monitoring or bioassays "at any time" and to require changes in outfall location as proposed in 4(f) and (g) respectively is overly broad and could result in greatly increased operating costs as well as enormous capital expenditures to dischargers.

As mentioned, the cost of toxicity bioassays both acute and chronic can be very expensive, $1,000 up to $6,000 per test. Additional bioassay testing should be required only if the Department can demonstrate that conditions within the mixing zone are causing an adverse impact on beneficial uses outside the mixing zone and not "at any time" or at the Department's whim. Such a demonstration could be made based on the results of NPDES acute toxicity tests or violations of water quality effluent standards. We recommend that the language in 4(f) be revised to read:

> "The Department may [as necessary] require mixing zone monitoring studies and/or bioassays to be conducted [at any time] to evaluate water quality or biological status within [and outside] the mixing zone boundary if the Department can demonstrate that conditions within the mixing zone unreasonably affect any existing beneficial uses in the receiving waters.

[Note: The language "and outside" also should be removed because it refers to conditions outside the mixing zone and is therefore beyond the scope of a mixing zone policy.]

Of even greater concern is the Department's proposal in 4(g) to change a mixing zone designation or outfall location based on its perception that water quality within the mixing zone is "unreasonably affecting any existing or potential beneficial uses in the receiving waters." Relocation of an outfall is extremely costly and while costs are site-specific, can range from 1/2 to 5 million dollars. Outfall relocation or redesign should only be required if a conclusive demonstration can be made that the quality of receiving waters is being significantly impacted. For this reason we recommend that the language be revised to read as follows:

> "The Department may change a mixing zone designation or outfall location if it determines that the water quality within the mixing zone unreasonably and measurably affects any existing [or potential] beneficial uses in the receiving waters, and an economically feasible alternative exists.

[Note: The reference to "potential" beneficial uses should be deleted as it refers to an unknown future and cannot be defined.]

With the recommended revised language, the environmental benefit as well as the economic cost can be taken into account in any decisions to relocate or redesign outfalls.

COMMENT 4: Whatever mixing zone policy is adopted by the Commission should include a public hearing process for any major changes or modifications to the policy.

We support the Department's approach to revising its mixing zone policy which provides guidelines to assist in the definition and establishment of mixing zones, without including proscriptive standards. In this way, the Department can maintain maximum flexibility to address site specific situations and apply less or more stringent criteria as needed. The difference between the mixing zone versions A and B is not easily discernible although version A apparently includes guidelines whereas version B merely refers to guidelines. In either case we feel it is most important that the adopted mixing zone policy provide for public input for any major (not minor) modifications to the policy.

TOXICS SUBSTANCES REVISED LANGUAGE

COMMENT 1: The Department should remove the bioassay monitoring requirement "as the Department deems necessary" from the Toxics Substances Standards.

It is entirely appropriate for the Department to revise the toxics standard into a single standard and incorporate EPA's latest ambient water quality toxics criteria into the standard. However the Department's proposed revisions go well beyond a simple reorganization and update of the toxics standard by also requiring that bioassays be conducted "as the Department deems necessary."

Such a bioassay requirement does not belong in a state toxics substances policy. Rather, such a requirement should be included in effluent and waste discharge permits and, as has been pointed out, usually is. It is inappropriate for the Department to include such a requirement in the revised Toxic Substances Standard. Such an action is duplicative and could be confusing.

We recommend that the bioassay monitoring requirement be deleted from the toxics standard entirely, or secondarily be re-worded as follows:

> "Bioassessment studies shall be conducted, as the Department deems necessary, to monitor the toxicity of complex effluents or other suspected toxic discharges to aquatic life. If the effluent meets the toxic substances criteria in (b) above, the cost of any bioassays shall be borne by the Department. If toxicity occurs, the Department shall consider measures necessary to reduce toxicity through permit modification.

In this way, the cost of bioassay monitoring would be allocated fairly between the Department and those regulated and ensure that unnecessary bioassay monitoring is not required.

COMMENT 2: The Department should change the language in Toxic Substances (2)(p)(a) to include "background levels".

Toxic substances may be present in certain state waters naturally in high concentrations. For this reason the Department should change the wording in Toxic Substances (2)(p)(a) to read "Toxic substances shall not be [present] introduced above background levels in the waters of the state at levels which are [or may become] injurious to public health, safety, or welfare; aquatic life; or other designated beneficial uses.

[Note: the reference to "or may become" should be deleted because it refers to an unknown future and cannot be defined.]

SUMMARY

To summarize, we feel the Department should:

- remove water quality criteria requirements in the mixing zone policy which duplicate effluent standards and thus defeat the purpose of a mixing zone;
- remove the requirement for chronic toxicity bioassay monitoring within the mixing zone;
- ensure that the Department discretion to require bioassay monitoring in the mixing zone or changes in outfall location is based on a demonstration that water quality is being impacted;
- include a public hearing process for "major" modifications to the mixing zone policy;
- remove the bioassessment requirement from the state Toxics Standard.

Thank you for the opportunity to comment. Please call if you have any questions or comments.

Sincerely,

Terry Boner

Terry Boner
Energy/Environmental Analyst

TB:sd

Metropolitan
Wastewater
Management
Commission

COMMISSION MEMBERS
Christine Larson—Springfield Councilperson
Jerry Rust—Lane County Commissioner
Steve Duffy—Eugene Lay Representative
Emily Schue—Eugene Councilperson
Scott Engstrom—Springfield Lay Representative
Mark Westling—Eugene Lay Representative
William Kittredge—Lane County Lay Representative

225 NORTH 5TH ST. — SPRINGFIELD CITY HALL — SPRINGFIELD, OREGON 97477 TELEPHONE (503) 747-4551

July 15, 1987

Department of Environmental Quality
Water Quality Division
811 Southwest Sixth Avenue
Portland, Oregon 97204

SUBJECT: Testimony for Environmental Quality Commission Regarding a Request for an Exception to OAR 340-41-026(2), by Pope and Talbot Pulp, Inc.

We support the Department of Environmental Quality Director's recommendations to the Environmental Quality Commission on the above request.

Since practical technology is available to allow Pope and Talbot to expand production, and comply with existing BOD and color limits, we support a maintenance of the current BOD and color limits from May 1 to October 31 of each year. We also support the recommendations to authorize the Department of Environmental Quality to permit increased winter BOD discharges, if the Department determines that there is a demonstrated need; and also to eliminate the color limitation from November 1 to April 30 of each year.

These recommendations from the Director are also in keeping with a request we recently received from the Administrator of the Water Quality Division to assure that our facility is operated and maintained to provide the maximum treatment efficiency possible during low summer Willamette River flows.

Sincerely,

William V. Pye

William V. Pye
Regional Wastewater Manager

WVP:pey

RECEIVED
JUL 16 1987
Water Quality Division
Dept. of Environmental Quality

RESULTS AND DISCUSSION

Chlorination Products

Figure 1 shows the chromatograms of the GC/FID analysis of the methylated ethyl acetate extract of HA chlorinated at a Cl_2/C molar ratio of 3.35. Ethyl acetate was shown to be more effective in extracting polar chlorination products than diethyl ether. Notably, the aromatic polycarboxylic acids and the cyano-substituted alkanoic acids were found mainly in the ethyl acetate extract.

The chlorine dose used strongly influenced the composition of the product mixture. With a high chlorine dose more products were found which appeared early in the chromatogram, whereas at low chlorine dose most products were found to elute late in the chromatogram. Structures were assigned to more than 100 different reaction products by the combined use of GC/MS with EI and CI. The principal products for the different classes of organic compounds are given in Table I.

Table I. Principal Reaction Products for Different Classes of Organic Compounds in the Chlorination of Terrestrial Humic Acid

Compounds Class	Compounds Identified (No.)	Principal Compound
Nonchlorinated products		
Aliphatic monobasic acids	25	Hexacosanoic acid
Aliphatic dibasic acids	8	Butanedioic acid
Cyano-substituted acids	2	3-Cyanopropanoic acid
Aromatic carboxylic acids	13	1,2,4-Benzenetricarboxylic acid
Heterocyclic acids	2	Methylfuranedicarboxylic acid
Miscellaneous	6	Indole
Chlorinated Products		
Aliphatic monobasic acids		
α-Monochlorinated	6	2-Chloropentanoic acid
α,α-Dichlorinated	6	Dichloroethanoic acid
Other substitution	9	Trichloroethanoic acid
Unsaturated	7	2,3-Dichloropropenoic acid
Aliphatic dibasic acids		
α-Monochlorinated	4	Chlorobutanedioic acid
α,α-Dichlorinated	5	2,2-Dichlorobutanedioic acid
Other substitution	5	Tetrachlorohexanedioic acid
Unsaturated	10	Dichlorobutenedioic acid
Aromatic carboxylic acids	6	2-Chlorophenylacetic acid
Chloroform precursors	11	See Table II
Miscellaneous	6	Chloral

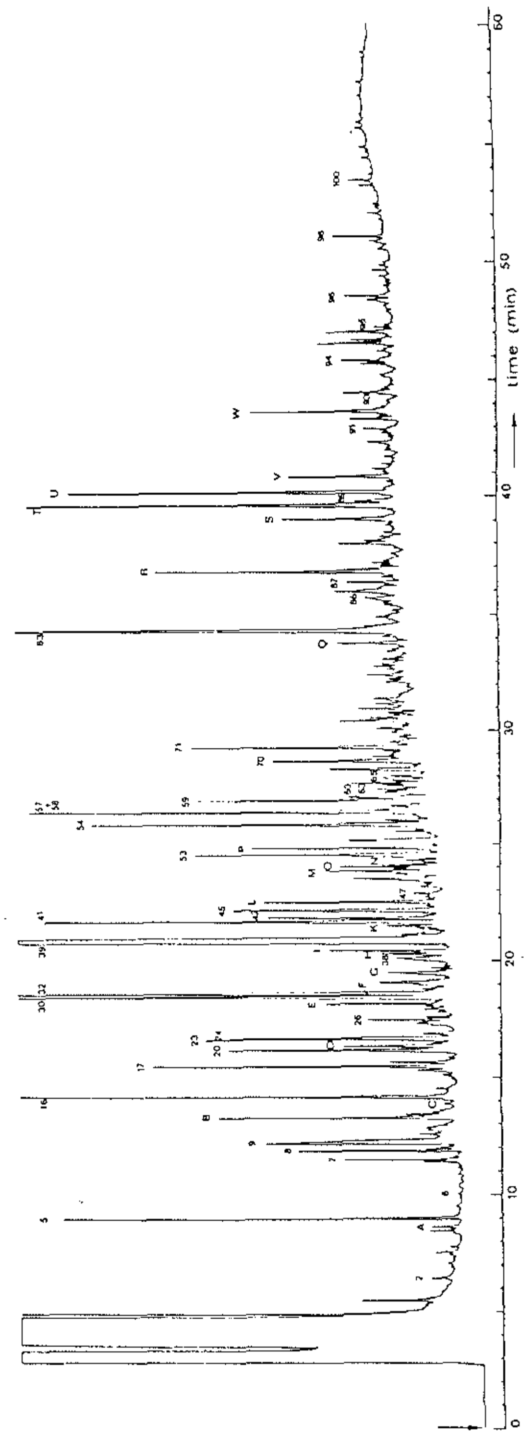

Figure 1. Capillary gaschromatogram of HA chlorination products. Methylated ethyl acetate extract. Chlorine dose 3.35 mol Cl_2 per mol C. The numbers refer to a full list of identified products (see Reference 26). Letters denote products that were found in the ethyl acetate extract and not in the preceding diethyl ether extract.

SCHWABE, WILLIAMSON, WYATT, MOORE & ROBERTS
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1211 S. W. FIFTH AVENUE
PORTLAND, OREGON 97204-3795
TELEPHONE (503) 222-9981

CABLE ADDRESS "ROBCAL"
TELEX-151563
TELECOPIER (503) 796-2900

DONALD A. HAAGENSEN

Hazardous & Solid Waste Division
Dept. of Environmental Quality
RECEIVED
JUL 16 1987

TO: Environmental Quality Commission

FROM: Donald A. Haagensen
For Chem-Security Systems, Inc.

RE: Agenda Item H, July 17, 1987, EQC Meeting

<u>Proposed Adoption of Amendments to Rules Concerning Hazardous Waste Management Fees, OAR 340-102-065, and 340-105-113, and Proposed Repeal of OAR 340-120-030.</u>

DATE: July 16, 1987

Chem-Security Systems, Inc. appeared at the public hearing and filed written comments on the proposed rules dated April 17 concerning hazardous waste management fees, OAR 340-102-065 and 340-105-113. The final proposed rules prepared by the Department for the July 17 Environmental Quality Commission meeting reflect certain of these comments.

The final proposed rules do <u>not</u> reflect Chem-Security's comment that the annual hazardous waste generation fee in proposed OAR 340-102-065 should not apply to a treatment and disposal facility like Chem-Security's Arlington facility that already pays substantial fees. In 1986 Chem-Security paid a $150,000 annual treatment and disposal fee to the Department as well as $1,076,000 in fees under a statute requiring payment of $10 per ton of hazardous waste brought to the facility. The 1987 Legislature has doubled the fee to $20 per ton.

Chem-Security continues to believe that it should not be subject to annual generation fees. However, the Department's commitment in Attachment IV at page 1 to consider on "a case-by-case basis" Chem-Security's position on the wastes, if any, that will be subject to annual generation fees will allow Chem-Security to work with the Department in the determination of the fees to be paid. Chem-Security is willing to accept this approach at this time trusting that all concerned will understand that Chem-Security does not have an unlimited ability to absorb cost and fee increases.

I

NWPPA COMMENTS
ON
OREGON ENVIRONMENTAL QUALITY COMMISSION
AGENDA ITEM I.
JULY 17, 1987

DEQ proposes (Agenda Item I, July 17, 1987 EQC meeting) to incorporate by reference the 40 CFR Part 355, Appendix A List of Extremely Hazardous Substances as "Hazardous Materials." DEQ also proposes to incorporate by reference the same list of substances and their reportable quantities as subject to the reporting requirements of the spill and release rules. NWPPA respectfully requests an extension of time to further analyze the impact of this rule and to work with DEQ staff to arrive at a full understanding of this adoption.

By adopting the list of Extremely Hazardous Substances as "Hazardous Materials" under ORS 466.630 and OAR 340-108-002(9)(b), the DEQ imposes new requirements, in addition to reporting, for releases of these substances. ORS 466.640 establishes strict liability for releases of hazardous materials, and for threatened releases. ORS 466.645 requires any person liable for a release to "immediately cleanup the spill or release under the direction of the department." Liability and cleanup responsibility are not a part of the federal law for which the list of Extremely Hazardous Substances was designed.

NWPPA needs additional time to form a position on whether the new liabilities keyed to this list are reasonable. Therefore, we request an extension of time to fully analyze the adoption of the Extremely Hazardous Substances List into Oregon's spill and release rule.

DEQ originally prepared notice of its intent to adopt the 40 CFR 302.4 list and its reportable quantities on April 27, 1987. Hearings were set for June 4 with comments due June 5, 1987. Subsequently, DEQ wanted to also adopt the 40 CFR 355 Appendix A list. DEQ changed the text of the proposed rule to accomplish this.

DEQ then sent out a letter referencing the intent to add the additional list. With this letter was the new proposed rule and the original public notice form ("A Chance to Comment On. . .") which did not reflect the change. This was confusing in that we had two copies of the same notice over two very different proposed rules. Only a careful reading of the cover letter would have revealed the changes to the proposal.

Because of this, we did not realize that the proposed rule had changed and had very little time to fully analyze the rule prior to the public hearing. Therefore we wish additional time to analyze the rule.

INFORMAL AGENDA

by Bruce Hammon

WHAT: Breakfast with the Environmental Quality Commission (EQC). Local topic, including discussion on sewage works improvements by the cities of Coos Bay and North Bend and the Charleston Sanitary District.

WHERE: Thunderbird Motor Inn (South Umpqua Room)
1313 North Bayshore Drive
Coos Bay, Oregon

WHEN: July 17, 1987 - 7:30 a.m.

AGENDA

Chair or Department of Environmental Quality (DEQ) Director: Introduction of Sandra "Sandy" Diedrich of the Coos-Curry Council of Governments (C-COG).

Topic of Discussion: An update on the Coos Bay Drainage Basin Bacterial Water Quality Management Plan, also known as "The Shellfish Study."

Sandra Diedrich: An overview and update on the shellfish survey/management plan completed in June 1983; a discussion of the importance of the study to the Bay Area from economic and environmental perspectives; finally, a discussion of the people and political entities that have contributed to the clean-up effort. (7 minutes)

Chair or DEQ Director: Recognition of Sandra Diedrich and C-COG staff for involvement with initial management plan development and subsequent plan administration by C-COG participants (North Bend, Coos Bay, and Charleston Sanitary District).

Sandra Diedrich: Brief introduction of Lynn Heusinkveld, Charleston Sanitary District

Lynn Heusinkveld: Introduction of District members/officials and an update on sewer projects in Charleston Sanitary District (5 minutes)

Sandra Diedrich: Brief introduction of Ron Stillmaker, Public Works Director, City of North Bend

Ron Stillmaker: Introduction of City of North Bend mayor/council members and staff and an update on sewer projects within the City of North Bend (5 minutes)

Sandra Diedrich: Brief introduction of Joe Schwarm, Public Works Director, City of Coos Bay

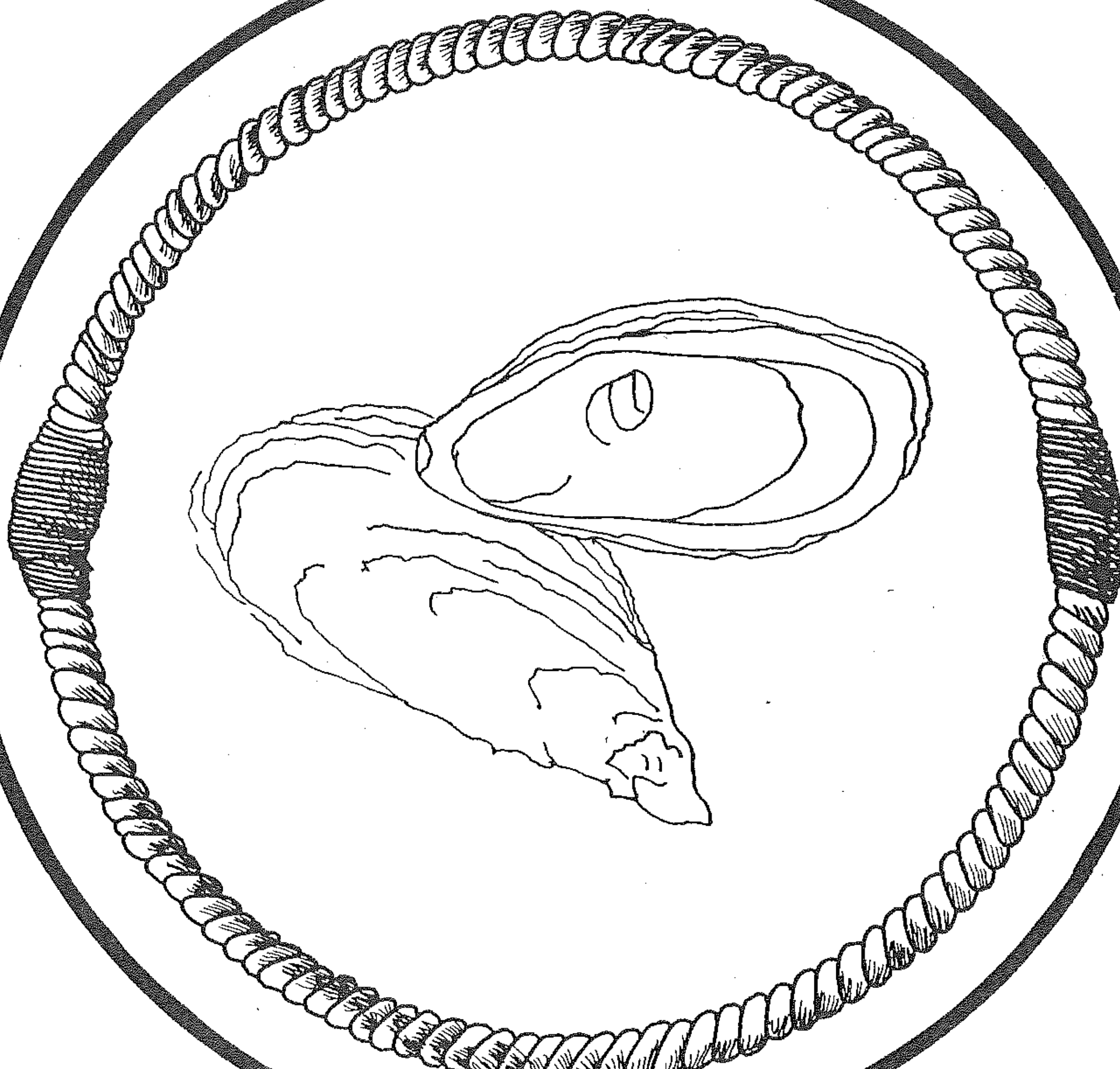
Joe Schwarm: Introduction of City of Coos Bay mayor/council and staff and update on sewer projects within City of Coos Bay (5 minutes)

Chair: Recognition of the citizens and officials of Coos Bay, North Bend, and Charleston Sanitary District for their action and continued commitment to improving water quality in the Coos Bay.

xc: Fred Hansen
Tina Payne
Tom Bispham
Gary Grimes
Sandra Diedrich
Ron Stillmaker
Joe Schwarm
Lynn Heusinkveld

THE COOS BAY SHELLFISH STUDY

- PARTNERSHIP
- PARTICIPATION
- PROBLEM SOLVING

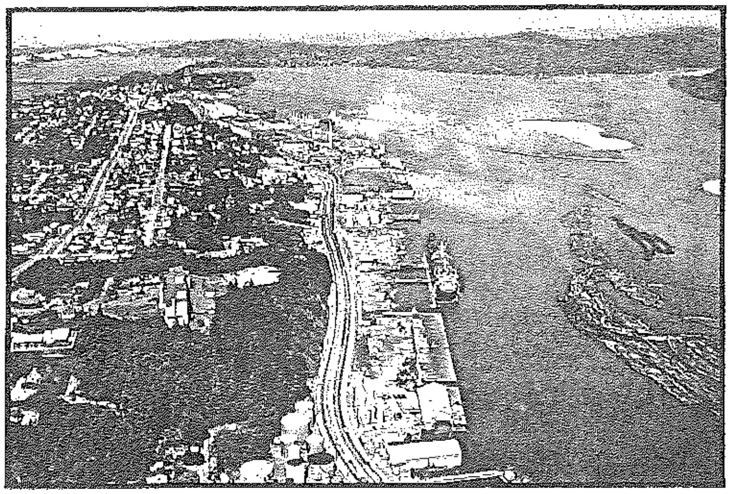


THE COOS BAY DRAINAGE BASIN
BACTERIAL WATER QUALITY MANAGEMENT PLAN

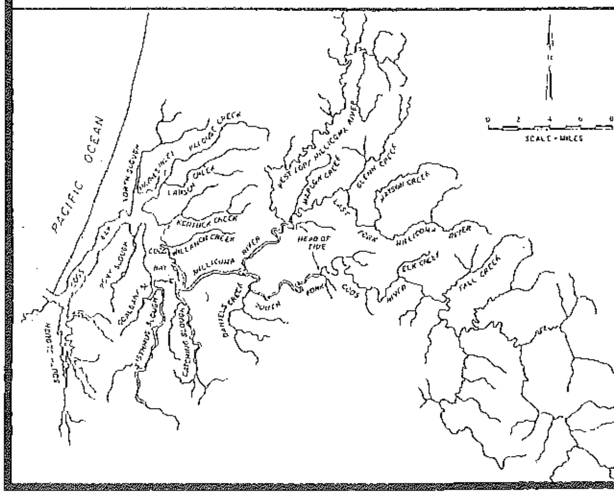
a portfolio

FEBRUARY 1984

THE STUDY'S SETTING: THE COOS BAY ESTUARY AND DRAINAGE BASIN



- Oregon's largest estuary
- Principal feature of the rugged, scenic southwestern coast
- Flooded mouth of the Coos River
- Over 12,000 acres of submerged and submersible lands in the Estuary
- Drainage system for the Bay includes 605 square miles with about 30 tributaries
- The Bay itself is 13 miles long
- Tidal influence extends 27 miles from the Pacific's edge
- Annual average precipitation of 61 inches at mid-Bay in North Bend and 100 inches at the headwaters of the Millicoma River, a principal tributary
- January is typically the month of heaviest rainfall; July, the typically driest month
- Diversity is a principal characteristic of Coos Bay: currently supports the world's largest volume deep-draft lumber shipping port and the nation's first estuarine sanctuary
- Landscape features include rocky shores, dunes, slough sub-systems, urban development, alluvial valleys and plains, rural homesteading, and farms



A HISTORY OF ECONOMIC USES RELATED TO THE NATURAL RESOURCES...

The urban population of 26,000 in the Cities of Coos Bay and North Bend share the resources of the area with several thousand more residents in the urbanizing area of Charleston and with residents in the semi-rural and rural areas fringing the Bay, the sloughs, and the tributaries.

The estuary is a focal point for Southwest Oregon industrial-commercial development. The Army Corps of Engineers began dredging and maintaining a main shipping channel in 1937, originally maintained at 24 feet.

Now, with a channel depth of 37 feet, Coos Bay is one of Oregon's three deep-draft development estuaries and a principal West Coast shipping port.

Other modifications include the filling of tidelands for urban uses and the diking of areas for agricultural use. Important uses of the Bay have included fisheries, shipping, log rafting and storage, agriculture, moorage, industrial processing, recreation, and commercial shellfish harvesting.

CHANGING CONDITIONS IN THE BAY'S WATER QUALITY AND FOR THE SHELLFISH INDUSTRY...

Approximately 25 years ago, the oyster industry in Coos Bay was extensive. Hundreds of acres were in production. Due to increased population densities after World War II, fecal contamination forced shellfish production to move from the East Bay and Haynes Inlet to the less polluted waters of South Slough.

The cities and the urbanizing areas recognized the problems created by the inadequately treated sewage. By the 1970's, three new sewage treatment plants had been constructed and extensive unsewered areas had been connected to treatment systems. Lack of funding hampered rapid improvement although users of the Bay and residents took many aggressive steps to improve the conditions.

A PERCEIVED IMPROVEMENT IN WATER QUALITY COULD NOT BE QUANTIFIED...

There was a sense that water quality in the Bay had improved. But, there had not been uniform, consistent measuring of water quality conditions.

As the effects of changing economic trends and the deepening recession were seriously felt in the area, increased interest was given to examining economic options available to the area. Among those considered was expansion of commercial shellfish harvesting. By 1980, this option was at an impasse.

WHY THE STUDY WAS NEEDED

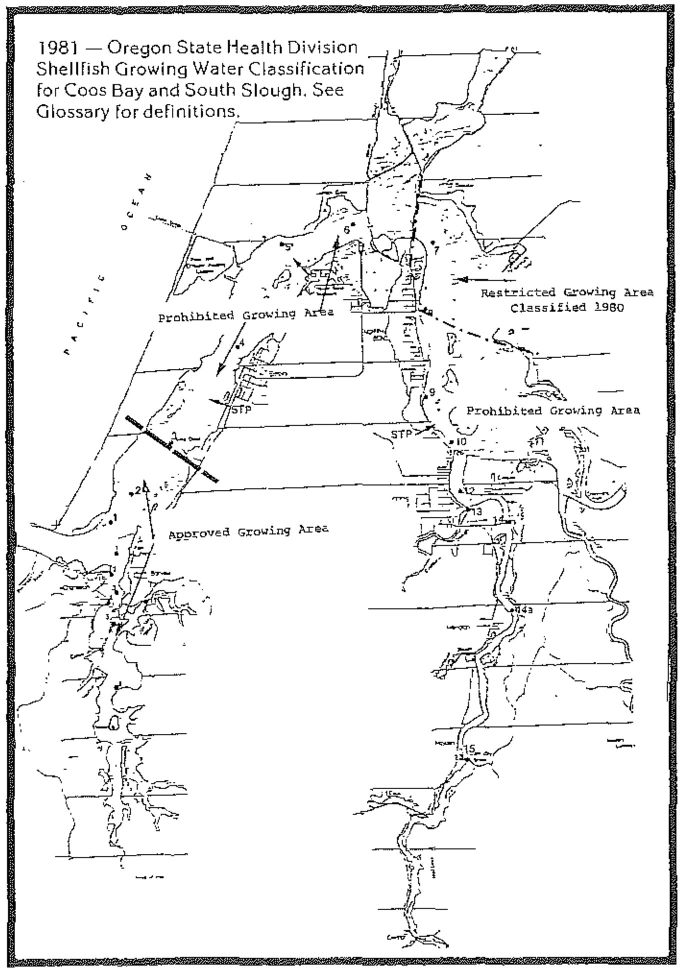
THE OREGON STATE HEALTH DIVISION CLASSIFIES GROWING AREAS ACCORDING TO KNOWN WATER QUALITY...

The Oregon State Health Division's Shellfish Sanitation Program was charged with the responsiblity for enforcing the Federal Food and Drug Administration's fecal contamination standards for commercial shellfish harvesting.

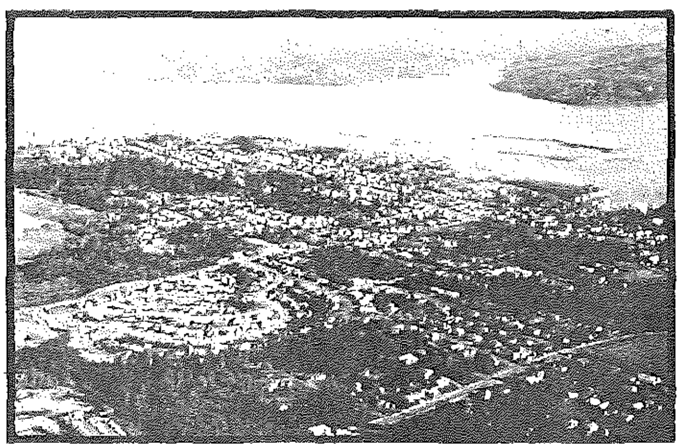
The national standards were developed and are enforced because of the habit of many oyster fans to eat the delicacy raw.

Coos Bay had been classified into areas of approved, restricted, and prohibited according to known extent of fecal contamination. These classifications are established by the Health Division.

However, the State's environmental management agency, the Department of Environmental Quality, is charged with the responsibility of monitoring water quality, setting water quality standards, and regulating the discharge of contaminants into public waters.



1981 — Oregon State Health Division Shellfish Growing Water Classification for Coos Bay and South Slough. See Glossary for definitions.



THE OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY MEASURES WATER QUALITY AND REGULATES SOURCES OF FECAL CONTAMINATION...

The Department of Environmental Quality had performed ambient or random testing and monitoring of Coos Bay's water quality but did not have the specific data or specific understanding to answer the questions of either the shellfish growers or the Oregon State Health Division.

It was apparent to the growers, the Health Division, and the Department of Environmental Quality that a thorough and accurate identification of existing water quality conditions in Coos Bay was needed.

FEDERAL FOOD AND DRUG ADMINISTRATION AND STATE OF OREGON SHELLFISH GROWING WATER AND MARKET OYSTER MEAT STANDARDS APPLICABLE TO ESTUARINE AND FRESH WATERS IN THE COOS BAY DRAINAGE BASIN

Agency	Marketed Oyster Meats	Estuarine Shellfish Growing Waters	Freshwater and Now Shellfish Growing Estuarine Waters
Food & Drug Admin. (FDA)	For 100 gm. oyster meat: total coliform 60,000 fecal coliform 230 count 500,000	For 100 mm. of sample: median of 70 total coliform: 10% of samples not greater than 230 per 100 milliliters	No standard
Oregon St. Health Division (OSHD)	Same as FDA	Same as FDA	No standard
Depart. of Envir. Quality (DEQ)	No standard	For 100 milliliters of sample: median of 14 fecal coliform; 10% of samples not greater than 43 per 100 milliliters	For 100 milliliters of sample: log mean of 200 fecal coliform for 5 samples in 30 days; 10% of samples not greater than 400 for period

HOW THE STUDY BEGAN

FUNDING FOR A STUDY TO ANSWER QUESTIONS IS SECURED...

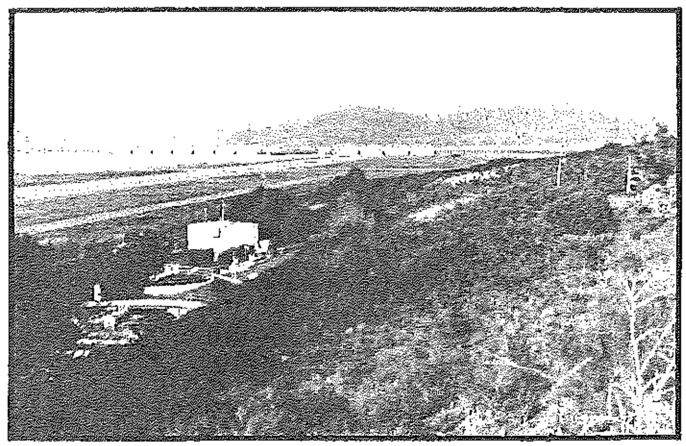
The Department of Environmental Quality looked to its delegated authority under the Federal Water Pollution Control Act, commonly known as the Clean Water Act of 1972 (Public Law 92-500 as amended in 1977 and 1981), and saw the opportunity to use that authority and the resources available through the law to address the Coos Bay situation.

In July of 1981, the Environmental Protection Agency funded a Section 208 study for the Department of Environmental Quality to investigate the water quality of Coos Bay, to identify the causes of pollution, and, then, develop a plan to improve the situation.

THEN, THE BIG QUESTION: WOULD THE LOCAL AREA ACCEPT THE STUDY, LET ALONE WHATEVER RESULTS IT MIGHT HAVE?

However, funding of the study did not solve the problems of the local area's acceptance of the study effort and the credibility of the investigation to local interests.

Historically, environmental investigations conducted by "outsiders" had been done with little local participation and with little reflection of local interests. As an isolated area with extreme economic problems, there was little local confidence that another "study" could produce a good result for the area.



A UNIQUE PARTNERSHIP BETWEEN A STATE REGULATORY AGENCY AND A REGIONAL ASSOCIATION OF LOCAL GOVERNMENTS IS FORMED TO PROVIDE LOCAL INTERESTS WITH PARTICIPATION IN THE STUDY AS WELL AS TO PROVIDE THE STATE AND FEDERAL INTERESTS WITH RESULTS WHICH HAVE OPTIMUM OPPORTUNITIES FOR IMPLEMENTATION.

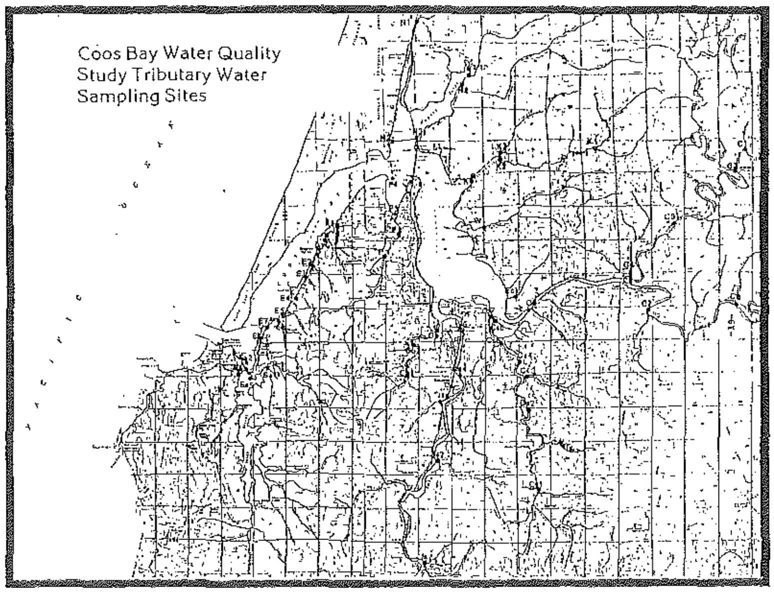
Regardless of the Federal requirements for public participation, the Department of Environmental Quality recognized the project needed viable, supportive, local public participation to be worthwhile. Using a unique approach, the Department contracted for the public participation portion of the project to the Coos-Curry Council of Governments, a regional association of units of local governments.

This unique partnership between a state regulatory agency and a local government association made the public involvement effort operate as a coordinated but semi-autonomous function of the study. This gave overall project involvement to all affected interests, local government oversight of the study, and communication among technical, institutional, political, and public interests in the study issues.

A Community Advisory Committee was formed by the Coos-Curry Council of Governments to include local governments, the shellfish industry, Bay users, and the general public. A Technical Advisory Committee was also formed by CCCOG to include local, state, and federal agency personnel, private sector technicians, and scientific interests. While the focal point for the public participation was two advisory committees, other activities such as individual briefings, public workshops, media communications, material distributions, and special study groups were vital features of public contributions to the study efforts. Field tours on land and from the water were also highlights.

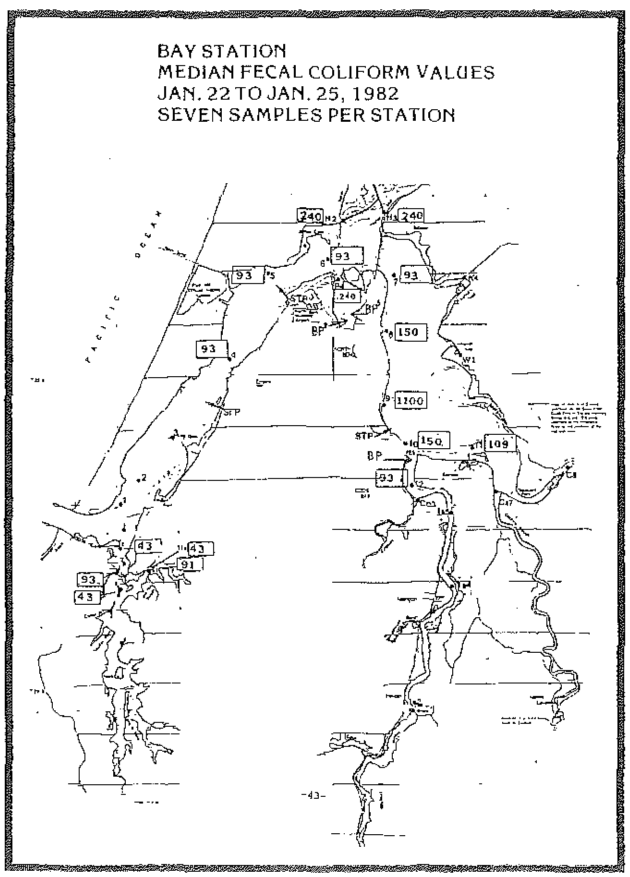
HOW THE STUDY WAS CONDUCTED

For two years, an intensive investigation of the Coos Bay area water quality situation was conducted and ways to improve the conditions were explored. The study included a comprehensive analysis of all existing information related to the problem, drainage basin-wide water quality sampling in varying weather conditions, circulation and hydrologic investigations, and special technical efforts related to economic conditions as well as the cost-benefits of water quality capital improvements to facilitate shellfish industry expansion.

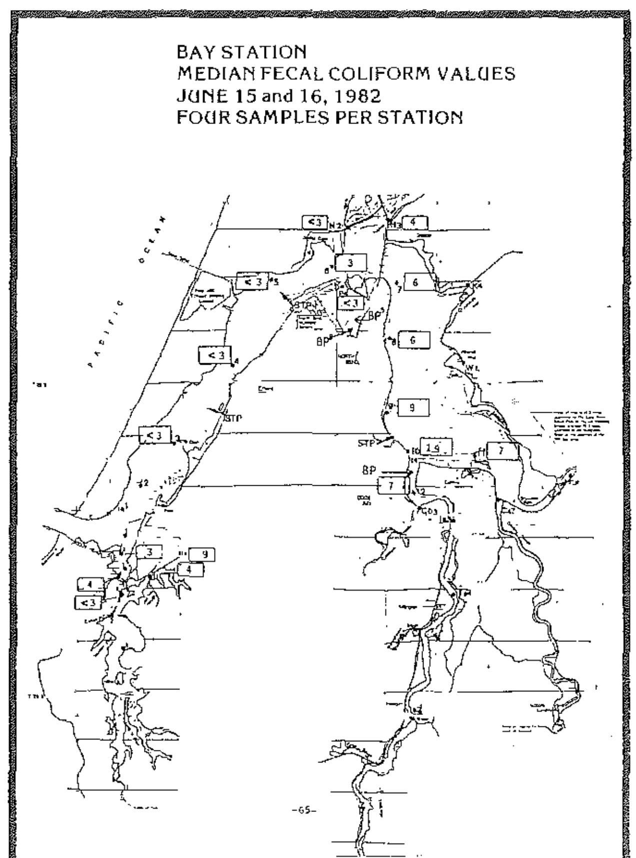


Coos Bay Water Quality Study Tributary Water Sampling Sites

WATER QUALITY SAMPLING AND TESTING UNDER VARYING WEATHER CONDITIONS...



BAY STATION
MEDIAN FECAL COLIFORM VALUES
JAN. 22 TO JAN. 25, 1982
SEVEN SAMPLES PER STATION

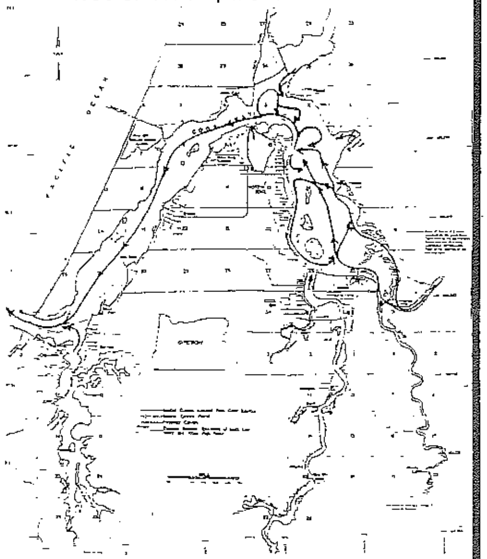


BAY STATION
MEDIAN FECAL COLIFORM VALUES
JUNE 15 and 16, 1982
FOUR SAMPLES PER STATION

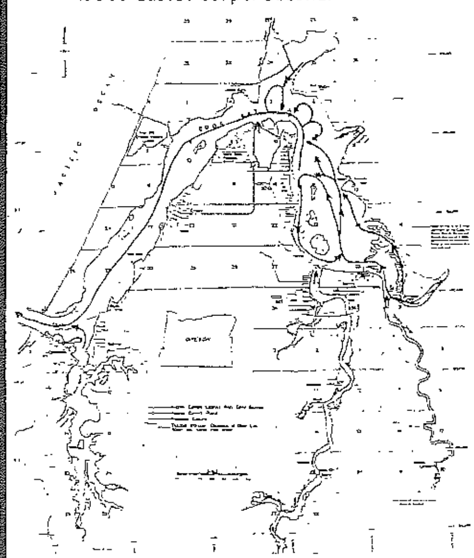
HOW THE STUDY WAS CONDUCTED

CIRCULATION AND HYDROLOGIC INVESTIGATIONS. . .

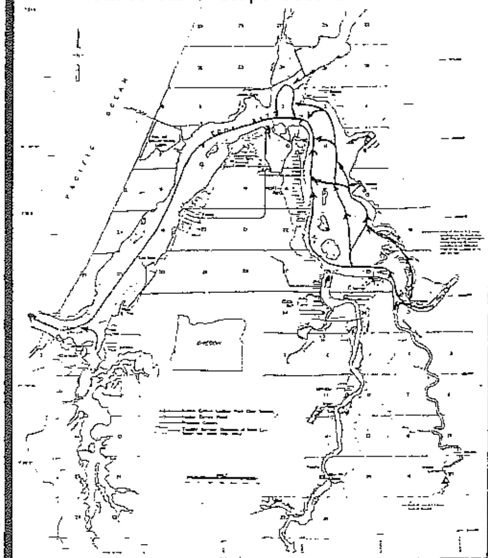
Hydraulic Model Prediction Showing Direction of Net Water Movement in 24 Hours When Inflow From the Coos River is 30 Cubic Feet per Second.



Hydraulic Model Prediction Showing Direction of Net Water Movement in 24 Hours When Inflow From the Coos River is 500 Cubic Feet per Second.



Hydraulic Model Prediction Showing Direction of Net Water Movement in 24 Hours When Inflow From the Coos River is 2500 Cubic Feet per Second.



BACKGROUND INVESTIGATIONS AND OTHER SPECIAL TECHNICAL EFFORTS. . .

NEWS RELEASE
FOR IMMEDIATE RELEASE

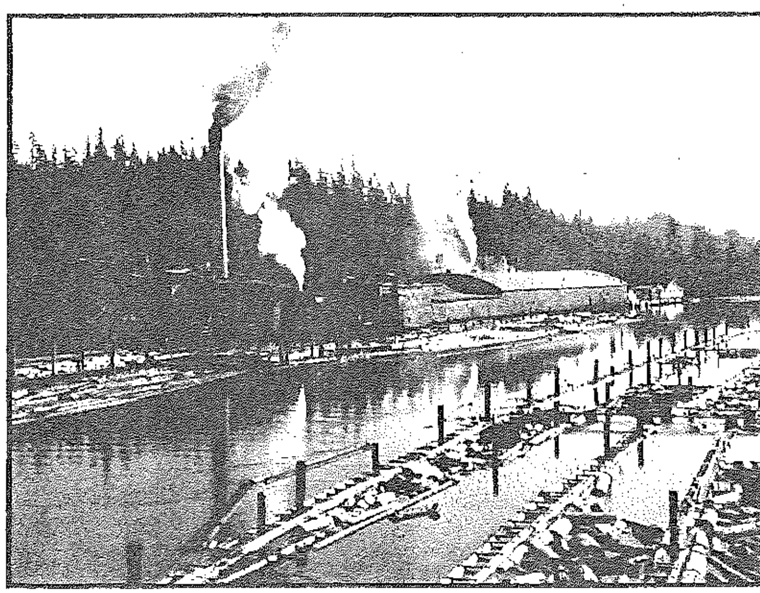
RED DYE TO APPEAR IN BAY WATERS

(North Bend, OR) — Department of Environmental Quality scientists will release small quantities of red marking dye at a number of points in Coos Bay and tributary sloughs during daylight hours from April 12th to April 22nd to study water circulation patterns.

The dye will be released in the main channel, South Slough, near the Highway 101 bridge, at sewage treatment plant outfalls, and at the mouth of the Coos River, among other places.

The releases will occur on incoming or outgoing tides during the daytime to allow visual tracking of the fluorescent red dye.

This study of Coos Bay circulation is part of a cooperative research project between the Department of Environmental Quality and the Coos-Curry Council of Governments. For more information, contact Sandra Diedrich at the Coos-Curry Council of Governments, 756-2563, in North Bend, or the D.E.Q. Coos Bay Branch Office at 269-2721.



PUBLIC PARTICIPATION BRINGS DIVIDENDS

Citizens Needed To Guide Two-Year Shellfish Study

The state Department of Environmental Quality and the federal Environmental Protection Agency are putting together a two-year study of water quality as it relates to shellfish harvesting.

The Bay Area will be included in the project that seeks "sources, causes and solutions" to pollution problems that hamper shellfish development. Information from the study will be used to set up future shellfish production areas.

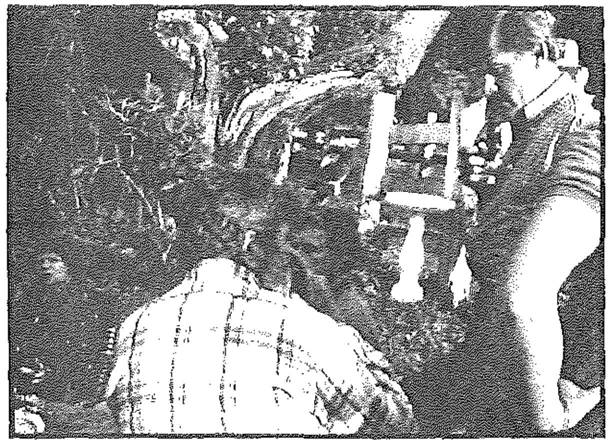
Local manager for the study is the Coos-Curry Council of Governments, which is seeking members for a community advisory group that will guide the project.

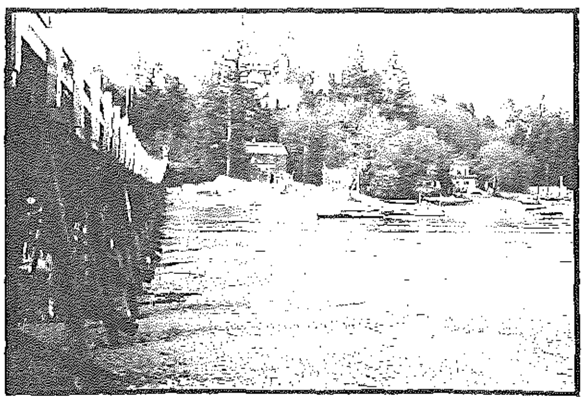
The committee will include representatives from the three Bay Area cities, as well as from the county at large, the port, Charleston Sanitary District, the county's soil and conservation district, and Coast Guard.

CCCOG officials say they need representatives from Bay Area waterfront industries, agriculture, fisheries, shellfish harvesting, timber industry, environmental interest groups and "citizens who have no economic interest in the scope of the study."

Nominations for committee membership should be mailed to CCCOG, Box 847, North Bend. Deadline is Oct. 2.

The Community and Technical Advisors assisted the study team to gain a perspective of local situations, to formulate sampling designs, to analyze data, to identify additional, needed investigations, and to formulate workable implementation options.





Oregonian Monday Oct. 18, 1982.

Coos oyster industry hopes to expand

By JILL CARROLL
Correspondent, The Oregonian

COOS BAY — The Coos Bay oyster industry may be able to expand in the next few years because of a two-year study under way by state and local governments.

John Jackson, of the state Department of Environmental Quality, told a public meeting last week in Coos Bay that there are some serious pollution problems in the bay limiting shellfish harvest, but many can be overcome.

"Even though we've got some negatives here, at least we know what they are. I don't think the situation is hopeless. A lot can be done," he said.

Based on water quality data available to state health officials, shellfish can be harvested now only from a few parts of the bay. Harvest in some areas is limited to certain times of the year.

By law, the state Health Division, through its responsibility to the U.S. Food and Drug Administration, has to determine whether shellfish can be harvested to meet federal health standards.

During the 1940s and 1950s, several firms and individuals raised and harvested oysters in Coos Bay's tidal flats. But most of them went out of business as the port developed and more industry moved into the area.

Kurt Swanson and other oyster growers now want to expand the small industry in the bay and have supported the study.

"I have everything to gain and nothing to lose from this," Swanson said. "I feel a good comprehensive study has been carried out and I have an optimistic look into the future."

The study, funded by a grant from the U.S. Environmental Protection Agency, began in July 1981 and will be completed in June 1983. It is sponsored by the DEQ and Coos-Curry Council of Government.

This year, Jackson and a colleague sampled water in the bay during periods of high and low rainfall, monitoring fecal coliform levels from untreated sewage.

Oysters filter their food from water and can build up concentrations of fecal coliform and other bacteria present in the water. If the oysters are eaten raw, disease-producing organisms are ingested, too, and can cause serious illness, he said.

The DEQ water samples showed that fecal coliform levels were high during periods of heavy rainfall and low during dry summer months, Jackson said.

"The summer period in Coos Bay provides an opportunity to harvest shellfish. Now we have to define the boundaries of the summer period," he said.

Heavy rainfall apparently taxes the three sewage treatment plants on the bay, sometimes causing them to dump untreated sewage into Coos Bay, he said. Also, some residential areas near the bay have faulty septic systems.

Improvements were made in sewage treatment systems on the bay this summer, but lack of funds has been a limiting factor, Jackson said. The success of these projects won't be known until this winter's rainy season.

Sandra Diedrich, director of the Coos-Curry council said the next step in the study will be to determine options available to oyster growers, develop a management plan and submit growers' requests for oyster harvesting to the State Health Division.

Increase proposed in Coos Bay oyster harvest

COOS BAY (AP) — Better water quality in upper Coos Bay has prompted the state Health Department to propose increasing oyster harvesting there.

"It's a major step," said Coos County Commissioner Jack Beebe. "The door was closed before."

Commercial growers caution it will take time to tell whether the expansion is economically feasible.

Data collected by a shellfish group studying the bay's water quality prompted the state's proposal, said Sandra Diedrich, director of the Coos-Curry Council of Governments.

The harvest had been limited to the summer months.

Under the proposal, the area of the upper bay east of the McCullough Bridge will be open to restricted oyster harvesting from January through May, harvesting from June through part of October and restricted for the rest of the year.

Water quality often deteriorates in the winter months because winter rains overload the area's water treatment plants, allowing untreated effluent to go into the bay. In addition, winter runoff from farms also contributed to the water quality problem.

However, Diedrich said harvesting will be allowed in the winter in some areas when periods of dry weather eliminate those problems.

"People need not fear that an expanded shellfish industry will preclude other industries" from locating on the bay, she said.

"The upshot is that several areas of the bay that up until this point have been closed for harvesting are now open for a good chunk of the year," she told The World newspaper.

If water quality shows more improvement, some conditions may be relaxed further.

Larry Qualman, a large oyster grower, called the proposal "definitely a step forward" but said until the bay is open all year, "I don't think it will have much of an impact."

The public participation efforts were so successful that when a local political situation threatened the integrity of the cooperative effort, some of the strongest early critics became the strongest public supporters.

4-21-83

Doesn't want it linked to consolidation

Political aspects of shellfish study concern commissioner

By JAMES [illegible]
Staff Writer

Concerns that the work being done by an advisory committee to improve the shellfish industry in Coos Bay is being used for political purposes in the consolidation bid were raised at the group's regular meeting Wednesday evening.

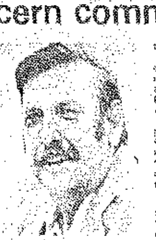
Coos County Commissioner Jack Beebe said he was "a little concerned" about information he has seen in print using the ongoing study to make a point about consolidation.

"We're trying to free up part of the bay for the harvesting of shellfish," Beebe said.

He said consolidation "should be people who never attended any meetings [illegible] that are not exactly [illegible] used in another political arena."

The study is being completed with the help of representatives from the Oregon State Health Division and the Department of Environmental Quality. Beebe mentioned their continued involvement in the study could be jeopardized if they see their work being used in a different context.

"If it gets in a battle where it doesn't belong, I'm afraid the agencies might get



JACK BEEBE
'Don't [illegible]'

discouraged," he said. He said he hopes people debating the consolidation study would do so on its own merits and "not try to [illegible] the shellfish study in the process."

The committee approved a position stating it favors continuation of following "the most expeditious methods to achieve the goal of eliminating high bacteria counts" of sewage into the bay.

At issue are findings being made by the committee regarding what measures need to be taken to clean up the bay for extended shellfish harvesting. These findings point to deficiencies in both cities' sewer collection systems.

DEQ representative John Jackson, project manager for the shellfish study, said the entire bay never can be made safe for shellfish harvesting year round. "To get to the state of 100 percent cleanup, everybody would have to leave town," he said.

The problem with sewage in the bay stems from "bypassing," which occurs when sewage and storm water are diverted from the plant and put directly into the bay during periods of heavy rain. This is caused by storm water being routed into the sewage treatment plant, exceeding the work flow for the plant to handle, Jackson said.

Water also seeps into the system through "infiltration," caused by cracks in the lines carrying the sewage to the plant.

In North Bend, the bypassing problem is caused primarily by inflow, which is where most of the money and [illegible]

(Continued on Page 2)

Commissioner: Don't link issues

(Continued from Page 1)

being diverted, Jackson said. Correcting infiltration is a very expensive proposition, he added, with relatively little gain toward solving the bypass problem.

The cost of correcting the problem is estimated at \$[illegible] for the short term and over \$1 million for a long term solution to the problem. The cost of correcting infiltration has not been estimated because all resources are being directed toward inflow, Jackson said.

In Coos Bay, meanwhile, the inflow problem has virtually been largely corrected, Jackson said. Though some bypassing is occurring because of infiltration. The cost of correcting this problem is estimated at \$[illegible] million, he said.

These figures are cost estimates, Jackson said, and recommendations from the DEQ to each of the cities. The DEQ is continuing to work with both cities to correct the bypassing problem and operating within each city's financial resources, he said.

Part of the purpose of the study is to give each of the cities ammunition to use in applying for state and federal funding that may become available in the future.

As long as progress continues to be made, the DEQ will not take an enforcement posture toward either city, he said.

Asked the extent of the bypassing problem, Coos-Curry Council of Governments Director Sandra Diedrich said water quality in the last [illegible] years has improved "significantly." The study committee hopes to continue making improvements to lengthen the times in which shellfish can be safely harvested.

OVER SIXTY PUBLIC AND TECHNICAL ISSUES WERE RAISED AND RESOLVED

AMONG THOSE ARE THE FOLLOWING. . .

QUESTION: How accurate and credible are the water quality sampling methods?

ANSWER: Methods were state-of-the-art and scientifically credible.

* * *

QUESTION: What are the financial capabilities of the local entities to undertake water quality capital improvements?

ANSWER: The local entities are strapped due to the area's economic distress but each entity has already expended funds which have resulted in notable improvements.

* * *

QUESTION: What new regulations could result from the study?

ANSWER: The work will produce no new or more stringent regulations.

* * *

QUESTION: What areas of the Bay are truly suited for expanded shellfish harvesting?

ANSWER: The South Slough, the East Bay, Haynes Inlet, North Slough, and portions of the Empire waterfront are the prime areas.

* * *

QUESTION: Will the expansion of the commercial shellfish industry stop other needed industrial growth?

ANSWER: No, because areas which are best suited for each do not infringe on each other.

* * *

QUESTION: How and why has the water quality situation in Coos Bay changed?

ANSWER: The water quality in Coos Bay has significantly improved in the last 20 years. During periods of low rainfall, it is overall very good. These improvements have occurred because of public and private investments in rectifying sources of contamination.

* * *

QUESTION: To what extent are heavy metals present in Coos Bay?

ANSWER: No material evidence of their presence was detected.

QUESTION: To what extent do log storage and handling practices in Coos Bay contribute to the seasonally high coliform count?

ANSWER: Klebsiella from wood materials is a coliform similar to fecal coliform but is not present in a significant way to influence the seasonally high coliform counts.

* * *

QUESTION: Are there alternative growing practices which can be used to harvest the shellfish to avoid costly captial improvements?

ANSWER: There are practices known as relay and depuration, which are feasible in varying degrees.

* * *

QUESTION: What will result in the greatest water quality improvements related to fecal contamination for Coos Bay?

ANSWER: Assisting the cities of Coos Bay and North Bend solve the inflow and infiltration problems during periods of heavy rainfall. When the collection system has to by-pass the treatment plants due to the tremendous volumes of water entering the system, the by-passing degrades water quality.

* * *

QUESTION: What are the prospects for zero contamination from fecal sources in Coos Bay?

ANSWER: Even with substantial improvement in the by-passing problem, with resolving failed onsite sub-surface septic system problems, and with addressing livestock waste practices, as appropriate, a zero contamination situation is improbable. This is due to weather conditions of the area.

However, systematic work on the three problem areas will create an optimum situation for all but the periods of heavy rainfall. Study data and analyses provide the tools to predict the proper waiting periods for the Bay to flush varying conditions.

QUESTION: Isn't the amount of money spent on the project pretty dear for an industry which is still in an emerging stage?

ANSWER: Study information has a series of other important uses as well. It has provided the first basin-wide water quality baseline against which future situations and conditions can be measured.

It has produced the first complete circulation and hydrologic profile of Coos Bay which can benefit any number of needs and interests. A computer model of the Bay has been developed which can respond to any number of inquiries to answer needs.

It has produced the first accurate picture of what the contamination contributors specifically are and are not and how these contributors specifically influence conditions of the Bay.

It has provided local entities with previously unobtainable documentation which will assist in acquiring resources for remedies.

It has provided the Oregon State Health Division and the Department of Environmental Quality with specific areas where shoreline surveys need to be done to help solve the failed subsurface septic system problems.

It has provided agricultural interests with an identification of where appropriate technical and financial assistance should be given to livestock waste management.

Further, the study has given local, state, and federal interests a better understanding of the real conditions and functioning of the Coos Bay system. Already, this information base has been used to solve a permit issue unrelated to the purpose of the study.

* * *

QUESTION: How has the study benefitted the area?

ANSWER: Besides the benefits just mentioned, areas of the shellfish production have been conditionally reclassified for certain seasons. This accomplishment is nearly impossible. Keeping an area open is much easier than re-opening an area once it is closed because of contamination.

The study and the management plan have put into place the ways to open the "windows" wider as data indicate that conditions have improved.

The area now has improved working relationships with several regulatory agencies key to other issues of the locality. The climate for many areas of problem-solving has improved.

The study and the management plan have also proved the underlying compatibility of the diverse uses of Coos Bay given that each use meets the requirements particular to it.

Lastly, but very important, the project is a very notable success story about resolving complex environmental management issues which are very politically sensitive.

* * *

QUESTION: Is the completion of the study and the management plan the end of the story?

ANSWER: The objectives of the study were accomplished. However, the local area and the State have made a commitment to work together to implement the management plan.

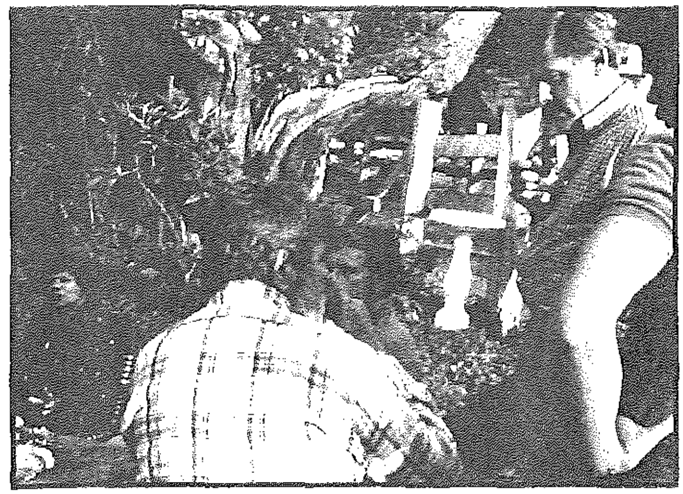
The CCCOG has formed a Coos Bay Water Quality Advisory Committee to oversee the monitoring of the plan. The Department of Environmental Quality and the Oregon State Health Division have made a commitment to help CCCOG keep the committee current on the results of the plan and the on-going testing program.

The Committee will meet at least twice a year to review progress and recommend changes. They are also available to address related concerns. Local interests with the help of the Department of Environmental Quality are pursuing financial resources to help with improvements.

The story at this point is the end of a successful project and the beginning of more changes to improve conditions and to benefit all of the users of the Bay.

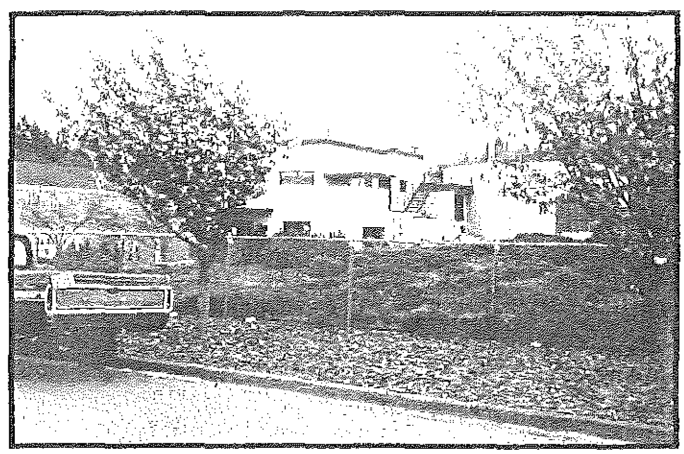
THE RESULTS

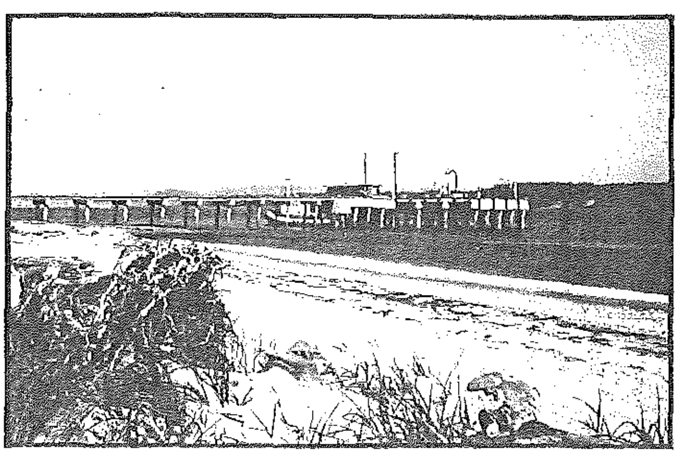
ACHIEVING THE NEAR IMPOSSIBLE: RECLASSIFYING PROHIBITED GROWING AREAS FOR HARVESTING UNDER CERTAIN CONDITIONS AND DURING CERTAIN SEASONS; SETTING UP WAYS TO OPEN THE "WINDOWS" WIDER AS CONDITIONS IMPROVE.



PROVIDING GREATER PROTECTION FOR ALL THE BENEFICIAL USES OF THE BAY AND FOR THE ECONOMIC ACTIVITIES SUPPORTED BY THE BAY'S RESOURCES.

PROVIDING A BLUEPRINT FOR IMPROVING CONDITIONS AS IT IS FINANCIALLY OBTAINABLE AND ECONOMICALLY FEASIBLE.





PROVIDING INVALUABLE INFORMATION TO HELP THE AREA PROTECT OTHER INTERESTS AND SOLVE OTHER PUBLIC CONCERNS AND ISSUES.

COOS BAY SHELLFISH COMMUNITY WATER QUALITY COMMITTEE MEMBERS:

Cal Heckard
Lloyd Walker
O.C. Stanwood
Doug Mahurin
Ben Fawver
Brian Dedmon
Ruth Day
Jack Wilskey
Frank Rood
Irene Johnson
Helen Goche
Mark Maring
Jack Beebe
Bill Curtis
Tom Purvis
John Mohr
John Emmett
Lt. Glen Kapitzke
Sandy Diedrich
Al Anglin
Lilli Clausen
John Gjertsen
Lynn Heusinkveld
Al Roth

COOS BAY SHELLFISH TECHNICAL ADVISORY COMMITTEE MEMBERS:

Ron Fox
Vic Schweitz
Larry Qualman
Joe Petrovich
Kurt Swanson
Ken Messerle
Lynn Cannon
John Sweet
Rubin Kretzschmar
Dr. Jong Lee
Paul Heikkila
Ellen McCrae
Bill Mullarkey
Cal Gregg
Carl Dentler
Blair Holman
Tom Gaumer
Helen Goche
Ron Stillmaker
Jim Loftis
Al Anglin
Sandy Diedrich

PARTICIPATING AGENCIES

Oregon Department of Environmental Quality
Coos-Curry Council of Governments
Oregon State Health Division
Coos County
City of Coos Bay
City of North Bend
Oregon Department of Fish and Wildlife
Port of Coos Bay
Oregon Department of Forestry
U.S. Army Corps of Engineers
Oregon State University Extension Service
Sause Brothers
Oregon State Soil Conservation Service
City of Eastside
Charleston Sanitary District
Coos County Soil & Water Conservation District
U.S. Coast Guard
Weyerhaeuser

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NEIL GOLDSCHMIDT
GOVERNOR

Department of Environmental Quality

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Honorable William S. Schroeder, Mayor
and City Council Members
City of Coos Bay
City Hall
Coos Bay, OR 97420

Dear Mayor Schroeder and City Council:

The Environmental Quality Commission has scheduled its July 17, 1987 meeting in Coos Bay. The Commission has not met on the south coast for some time. The Commission traditionally holds a breakfast meeting prior to the regular scheduled session for purposes of reviewing subjects of interest that are not on the regular meeting agenda.

We would be pleased if you would join us at the breakfast session. The Commission would be particularly interested in an informational discussion on the status of your sewage treatment plant improvement projects. You may want to include key city staff.

The breakfast meeting will be held at 7:30 a.m. in the banquet facilities of the Thunderbird Motel, Highway 101 in North Bend. We all look forward to your joining us and discussing the significant actions you are taking to protect and enhance the Coos Bay estuary. We would also like to talk about any other subjects you feel important. We are also inviting the Mayor and City Council of North Bend to participate in the same manner.

Please notify Tina Payne of the number of possible attendees either at the above address or by telephone at 229-5301.

Sincerely,

Fred Hansen
Director

FH:b
GB6788

NEIL GOLDSCHMIDT
GOVERNOR

Department of Environmental Quality

811 S.W. SIXTH AVENUE, PORTLAND, OREGON 97204 PHONE: (503) 229-5696

Honorable Timm A. Slater, Mayor
and City Council Members
City of North Bend
City Hall
North Bend, OR 97459

Dear Mayor Slater and City Council:

The Environmental Quality Commission has scheduled its July 17, 1987 meeting in Coos Bay. The Commission has not met on the south coast for some time. The Commission traditionally holds a breakfast meeting prior to the regular scheduled session for purposes of reviewing subjects of interest that are not on the regular meeting agenda.

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NEIL GOLDSCHMIDT
GOVERNOR

Department of Environmental Quality

811 S.W. SIXTH AVENUE, PORTLAND, OREGON 97204 PHONE: (503) 229-5696

Coos County Board of Commissioners
County Courthouse
Coquille, OR 97423

Dear Commissioners:

The Environmental Quality Commission has scheduled its July 17, 1987 meeting in Coos Bay. The Commission has not met on the south coast for some time. The Commission traditionally holds a breakfast meeting prior to the regular scheduled session for purposes of reviewing subjects of interest that are not on the regular meeting agenda.

We would be pleased if you would join us at the breakfast meeting which will be held at 7:30 a.m. in the banquet facilities of the Thunderbird Motel, Highway 101 in North Bend. We are also inviting the mayor and city councils of North Bend and Coos Bay to discuss their sewage treatment plant projects with the Commission. We would also like to talk about any other subjects you feel important.

We look forward to your joining us. Please notify Tina Payne of the number of possible attendees either at the above address or by telephone at 229-5301.

Sincerely,

Fred Hansen
Director

FH:b
GB6788

DEQ-1A (2-86)

NEIL GOLDSCHMIDT
GOVERNOR

Department of Environmental Quality

811 S.W. SIXTH AVENUE, PORTLAND, OREGON 97204 PHONE: (503) 229-5696

June 29, 1987

The Honorable Jim D. Whitty
Oregon House of Representatives
H C 52
Box 658
Coos Bay, OR 97420

Dear Mr. Whitty:

The Environmental Quality Commission has scheduled its July 17, 1987 meeting in Coos Bay. The Commission has not met on the south coast for some time. The Commission traditionally holds a breakfast meeting prior to the regular scheduled session for purposes of reviewing subjects of interest that are not on the regular meeting agenda.

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We look forward to your joining us. Please notify Tina Payne at the above address or by telephone at 229-5301 if you plan to attend.

Sincerely,

Fred Hansen
Director

FH:b
GB6790

DEQ-1A (2-86)

NEIL GOLDSCHMIDT
GOVERNOR

Department of Environmental Quality

811 S.W. SIXTH AVENUE, PORTLAND, OREGON 97204 PHONE: (503) 229-5696

June 29, 1987

The Honorable Walt Schroeder
Oregon House of Representatives
95102 Rogue River Heights
Gold Beach, OR 97444

Dear Mr. Schroeder:

The Environmental Quality Commission has scheduled its July 17, 1987 meeting in Coos Bay. The Commission has not met on the south coast for some time. The Commission traditionally holds a breakfast meeting prior to the regular scheduled session for purposes of reviewing subjects of interest that are not on the regular meeting agenda.

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We look forward to your joining us. Please notify Tina Payne at the above address or by telephone at 229-5301 if you plan to attend.

Sincerely,

Fred Hansen
Director

FH:b
GB6798

COPY

DEQ-1A (2-86)

NEIL GOLDSCHMIDT
GOVERNOR

Department of Environmental Quality

811 S.W. SIXTH AVENUE, PORTLAND, OREGON 97204 PHONE: (503) 229-5696

June 29, 1987

The Honorable Bill Bradbury
Oregon State Senate
1930 Beach Loop Road
P.O. Box 1499
Bandon, OR 97411

Dear Senator Bradbury:

The Environmental Quality Commission has scheduled its July 17, 1987 meeting in Coos Bay. The Commission has not met on the south coast for some time. The Commission traditionally holds a breakfast meeting prior to the regular scheduled session for purposes of reviewing subjects of interest that are not on the regular meeting agenda.

We would be pleased if you would join us at the breakfast meeting which will be held at 7:30 a.m. in the banquet facilities of the Thunderbird Motel, Highway 101 in North Bend. We are also inviting the mayor and city councils of North Bend and Coos Bay and the Coos County Board of Commissioners.

We look forward to your joining us. Please notify Tina Payne at the above address or by telephone at 229-5301 if you plan to attend.

Sincerely,

Fred Hansen
Director

FH:b
GB6790

DEQ-1A (2-86)

obscured in any way. The words "SMOKING AREA", "SMOKING PERMITTED" or "NO SMOKING" on signs, except those signs allowed in section (5) of this rule, shall be printed in letters of no less than one (1) inch in height.

(7) "NO SMOKING" signs only need to be posted in areas adjacent to smoking areas so that a clear delineation exists.

(8) Restaurants with controlled seating may place a sign at the entry which indicates the availability of smoking and no smoking areas upon request in lieu of the posting requirements of section (1) of this rule.

333-15-045 Ashtrays

Portable ashtrays are prohibited in all no smoking areas.

333-15-050 Mechanical Air Filtration Systems

(1) Mechanical air filtration systems shall be permitted in restaurants in lieu of designated smoking areas provided:

- (a) The air flow rate and inflow-outflow pattern of air is sufficient to draw tobacco smoke directly into the air filtration system and preclude its drift from a table to an adjoining table.
- (b) An air filtration system is utilized which is effective to an efficiency rating of 85% removal or more by ASHRAE Standard 52 - 76 Dust Spot Test.
- (c) System is of adequate capacity to serve the entire dining and waiting area.

(2) In order for the Division to approve an exemption for an air filtration system, the applicant will be required to furnish certification by an engineer qualified in air ventilation that in design, installation and performance said system meets subsection (1) (a) - (c) of this rule.

333-15-055 Compliance

No public place is required to make any changes in ventilation or barriers unless they wish to be a designated smoking area in entirety as provided in rule 333-15-035 (2) (f).

333-15-060 Waivers

The Administrator of the Division may waive the provision of these rules;

(1) When it is demonstrated to the satisfaction of the Division that strict compliance with the rule would be highly burdensome or impractical due to special conditions or causes; and

(2) When the public or private interest in the granting of the waiver is found by the Division to clearly outweigh the interest of the application of uniform rules; and

(3) When alternate measures are provided which, in the opinion of the Division, will provide adequate protection to the health and safety of the public.

PENALTIES

Under the Oregon Indoor Clean Air Act of 1981, there are penalty provisions for failure to post appropriate signs and failure to designate a no smoking area in a public place. The proprietor or person in charge of a public place is responsible for posting and maintaining the signs.

Failure to post the proper signs is a violation punishable by a fine or fines totaling not more than $100 in any thirty (30) day period.

If you should want more information, please contact the Oregon State Health Division, Indoor Clean Air Act Coordinator, phone 229-5272.

OREGON STATE HEALTH DIVISION
1400 S.W. 5th Avenue
Portland, Oregon 97201

OREGON ADMINISTRATIVE RULES

CHAPTER 333

DEPARTMENT OF HUMAN RESOURCES
OREGON HEALTH DIVISION

DIVISION 15

IMPLEMENTATION OF THE OREGON CLEAN AIR ACT — PROHIBITION OF TOBACCO SMOKING IN PUBLIC PLACES EXCEPT FOR DESIGNATED SMOKING AREAS

333-15-025 Authority and Purpose

(1) These rules are adopted pursuant to the authority granted the Oregon State Health Division, Department of Human Resources, in ORS 433.835 through 433.875 pertaining to the prohibition of tobacco smoking in public places except for designated smoking areas.

(2) The purpose of the Oregon Indoor Clean Air Act is to reduce the health hazard of persons in confined public places caused by inhaling smoke from tobacco products.

333-15-030 Definitions

(1) "Act" means the Oregon Indoor Clean Air Act as it appears in ORS 433.835 through 433.875.

(2) "Cocktail Lounge" means any establishment or portion of an establishment licensed by the Oregon Liquor Control Commission to operate under a Class "A" or "B" dispen-

sers license, excluding any establishment or portion of an establishment whose primary function is the serving of meals to be consumed on the premises, and which serves alcoholic beverages incidental to the serving of a meal. And, excluding those establishments or portions of establishments licensed by the Oregon Liquor Control Commission to operate under a Class "C" dispensers license.

(3) "Designated smoking area" means any area set aside by a proprietor or person in charge of a public place where tobacco smoking is permitted and where signs indicate same.

(4) "Division" means the Oregon State Health Division, Department of Human Resources.

(5) "Meal" means any food made available to be consumed on the premises except foods that are pre-packaged or are served as snacks or appetizers.

(6) "Open to and frequented by the public" means any area where the public can freely enter or move without specific invitation. Sale of tickets for entry is not considered specific invitation.

(7) "Public place" means any enclosed indoor area open to and frequented by the public, except those subject to ORS 441.815, including but not limited to restaurants as defined in ORS 624.010, bowling centers, retail stores, banks, commercial establishments, educational facilities, nursing homes, auditoriums, arenas, meeting rooms and grocery stores.

(8) "Smoking device" means any cigar, cigarette, pipe or other smoking equipment.

(9) "Tavern" means any establishment licensed by the Oregon Liquor Control Commission to operate under an RMB license, or those restaurant licenses having separate areas where the primary purpose is the serving of alcoholic beverages and excluding any establishment or portion of an establishment whose primary function is the serving of meals and which serves alcoholic beverages incidental to the serving of a meal.

333-15-034 Jury Rooms

(1) Smoking is prohibited in a room during the time that jurors are required to use the room.

(2) All jury rooms shall be posted prominently with "No Smoking" signs having letters no less than one (1) inch in height.

333-15-035 General Provisions

(1) No person shall smoke or carry any lighted smoking device in a public place except in designated smoking areas.

(2) No public place may be designated in its entirety as a smoking area except:

(a) Cocktail lounges and taverns;

(b) Enclosed offices or rooms occupied exclusively by a smoker even though the offices or rooms may be visited by nonsmokers;

(c) Rooms or halls being used for private social functions where seating arrangements are under the control of the sponsor of the function;

(d) Retail business primarily engaged in the sale of tobacco or tobacco products;

(e) Restaurants with seating capacity for thirty (30) or fewer patrons;

(f) Restaurants with mechanical air filtration systems meeting the standards and conditions set forth in rule 333-15-050.

(3) Owners or proprietors of restaurants or bowling centers may expand or contract the size of designated smoking areas to meet the requirements of their patrons. Restaurants must provide nonsmoking areas which are reasonably proportionate to the preference of the users and so located as to obtain the maximum effect of existing physical barriers and ventilation systems, and seating arrangements, to minimize the toxic effect of smoke in adjacent nonsmoking areas.

(4) Nothing in these rules shall prevent a proprietor or person in charge of a facility from designating the entire area as a nonsmoking area.

(5) In a public place which contains two or more rooms which are used for the same activity, the responsible person may designate one entire room as smoking permitted as long as at least a portion of one other comparable room has been designated as a nonsmoking area.

(6) In the case of a public place consisting of a single room in which a smoking permitted area is designated, the responsible person shall be responsible for reserving and clearly designating a no smoking area on one side of the room.

333-15-040 Signs

(1) A public place shall post signs designating smoking and nonsmoking areas. Such signs shall be either the international symbols for smoking and no smoking or shall be legibly printed.

(2) All signs used to identify a facility which is exempted from these rules in rule 333-15-035 (2) (a), (e) and (f) that has been designated entirely as a smoking area shall use the statement, "This entire establishment is a SMOKING area", or a similar statement. The sign shall be posted conspicuously on all entrances normally used by the public.

(3) All facilities where the entire public place is identified as a no smoking area will be so identified by a sign conspicuously posted on all entrances normally used by the public.

(4) All signs used to identify a designated smoking area in a public place shall use either the words "SMOKING AREA" or "SMOKING PERMITTED", and all signs used to identify a no smoking area shall use the words "NO SMOKING" or equivalent language. Additional words or symbols may be used, but the additional printing shall not obscure the basic required words.

(5) Portable tent signs or the equivalent may be used on individual tables, desks, counters, etc. to designate smoking or no smoking areas in lieu of the posting requirements of section (1) of this rule.

(6) All signs used to identify smoking or no smoking areas in a public place shall be placed at a height and location easily seen by a person in the establishment and not

United States
Environmental Protection
Agency

Office of
Air and Radiation

U.S. Department
Of Health and
Human Services

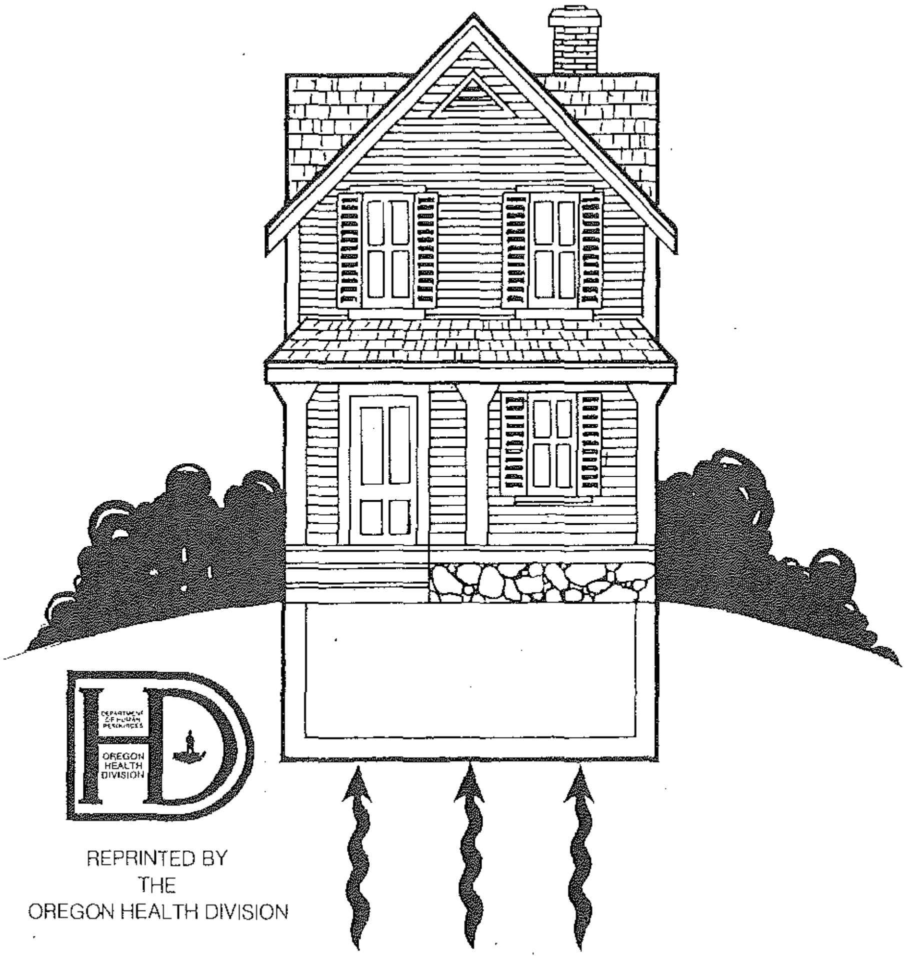
Centers for
Disease Control

August 1986

OPA-86-004

A Citizen's Guide To Radon

What It Is And What To Do About It



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Research and Development

EPA

Radon Reduction Methods

A Homeowner's Guide

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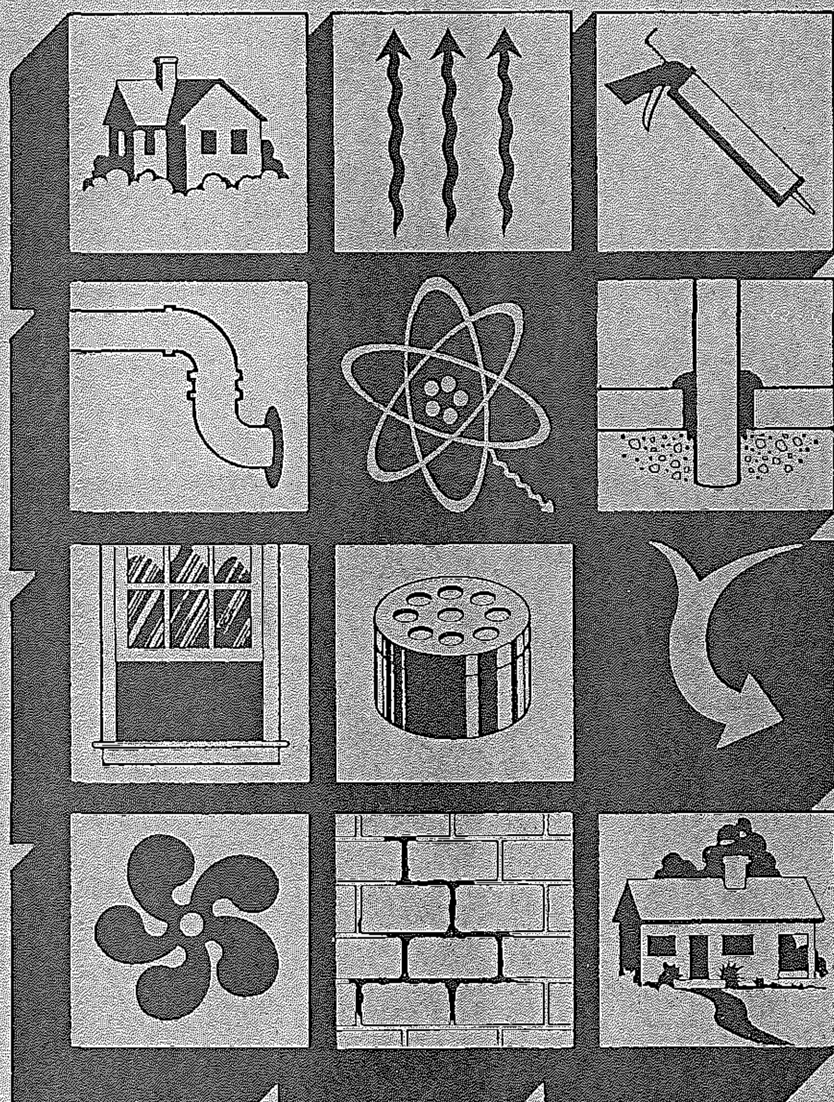

INDOOR AIR POLLUTION

THE ISSUES IN OREGON

HEALTH DIVISION
OREGON DEPARTMENT OF HUMAN RESOURCES
1400 S.W. 5th Avenue
Portland, OR 97201

INDOOR AIR POLLUTION: THE ISSUES IN OREGON

OREGON DEPARTMENT OF HUMAN RESOURCES
HEALTH DIVISION
OFFICE OF HEALTH STATUS MONITORING

Kristine M. Gebbie, Administrator
Oregon State Health Division

December 1986

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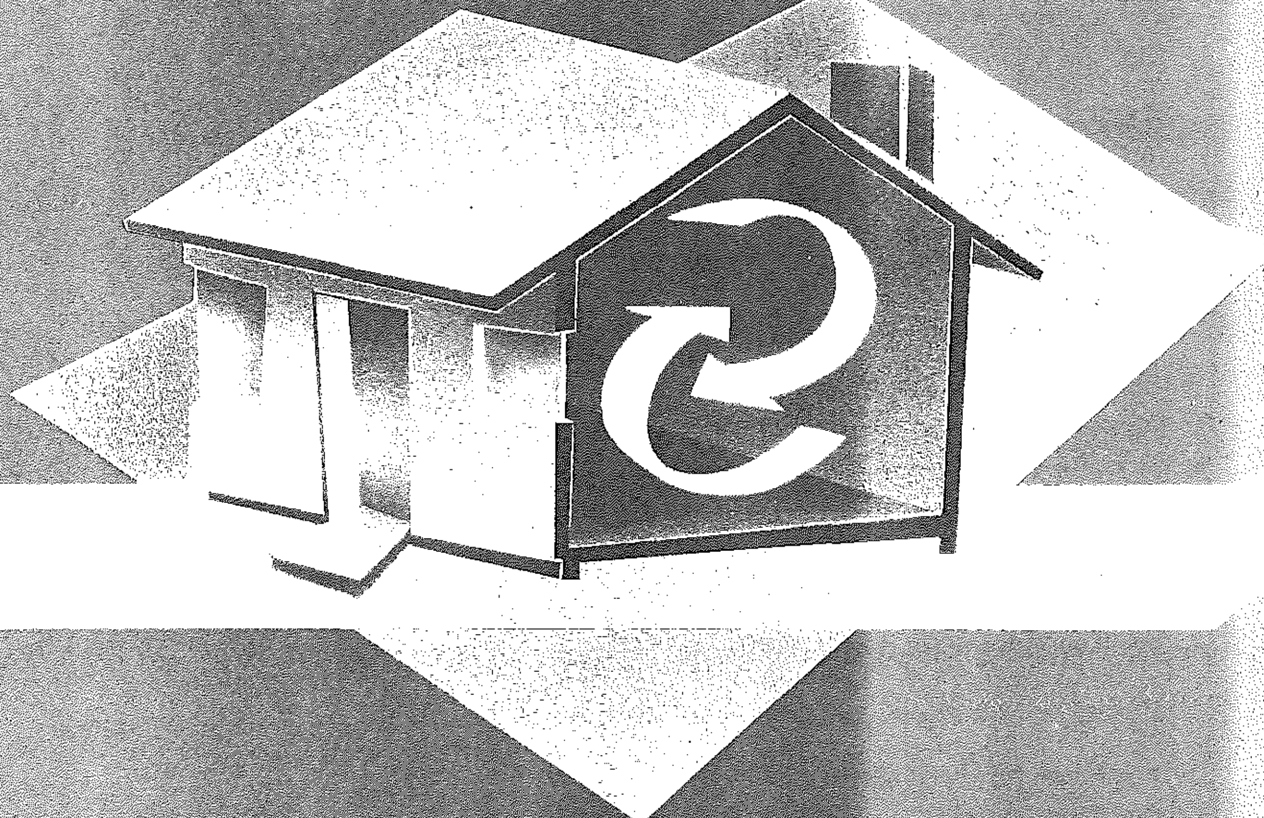

INDOOR AIR QUALITY and YOUR HEALTH

OREGON
DEPARTMENT OF ENERGY

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We make a difference...

OREGON DEPARTMENT OF ENERGY

This booklet was funded by the Oregon Department of Energy and the Oregon State Health Division. The booklet was adapted from Bonneville Power Administration's publication "Environment and Power: Home Weatherization and Indoor Air Pollution," principal author, Georgiana Johnsrud, Fifth Printing, February 1986. Thanks to the Oregon State Health Division and the Department of Environmental Quality for technical review of the material.

deletion

Environmental Quality Commission

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

MEMORANDUM

To: Environmental Quality Commission

From: Director

Subject: Agenda Item I, July 17, 1987 EQC Meeting

Proposed Adoption of Revisions to "Oil and Hazardous Materials Spills and Releases" Rules OAR 340-108-002; OAR 340-108-010; OAR 340-108-020 and Repeal in its Entirety Appendix I of OAR 340 - Division 108.

Background

At the January 23, 1987 EQC meeting, the Commission adopted a temporary rule amending the reportable quantity levels for reporting spills of hazardous materials in Oregon. The temporary rule made the state reportable quantity levels the same as the federal levels adopted pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund).

The Commission action on January 23rd came as a result of a study the Commission directed the Department to make on the need for and effect of different state reportable quantity levels than those adopted by the Environmental Protection Agency (EPA). The Commission requested the study on September 12, 1986, the same date it adopted Department recommended revisions to OAR Chapter 340 - Division 108 which were proposed to implement the provisions of HB 2146 (now ORS 466.605-466.690). One of the recommended changes was to revise the level at which spills and releases of hazardous wastes need to be reported.

In addition to revising the levels for hazardous wastes, approximately 300 additional hazardous materials were added so that the state's list would be comparable to the federal hazardous substances list under the Federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund).

In determining an appropriate state reporting level, the staff spent considerable effort researching EPA's basis for their reportable quantity levels which range from 1 pound to 5,000 pounds. Staff reviewed the preamble discussions to the following Federal Register Notices, as well as, three technical background documents:

1. Notification Requirements; Reportable Quantity Adjustments; Final Rule and Proposed Rule - April 4, 1985

2. Notification Requirements; Reportable Quantity Adjustments; Proposed Rule and Designation of Additional Hazardous Substances; Advanced Notice of Proposed Rulemaking - May 25, 1983.

3. Definitions, Designations, Revocation of Regulations, Proposed Expansion of Criteria of Designation and Proposed Determination of Reportable Quantities - February 16, 1979

4. Hazardous Substance - March 13, 1978

5. Technical Background Document to Support Rulemaking Pursuant to CERCLA Section 102: Volumes 1, 2 and 3 - March, 1985.

In the staff's opinion, EPA selected their numbers to distinguish between the relative hazards that substances present, to recognize their limited ability to respond with staff from distant locations and on the potential threat to public health and the environment if a spill or release of that quantity occurred. They caution repeatedly in the preambles, however, that "the reportable quantities do not themselves represent any determination that releases of a particular quantity are actually harmful to public health or welfare or the environment" (F.R. April 4, 1985 - Page 13459). One pound was picked to represent small containers normally used in commerce. 5,000 pounds was picked to represent bulk shipments of hazardous materials. Three intermediate categories of 10, 100 and 1,000 pounds are also used.

Substances at the 1 pound level tend to present primarily acute or chronic toxicity problems (certain pesticide products, industrial solvents and other manufacturing chemicals) while substances at the 5,000 pound level present primarily handling problems (combustible or flammable products, strong acids, strong bases). EPA also expected that local and state agencies would be responding to smaller spills that are less likely to need federal involvement or assistance.

After evaluating EPA's rationale for levels at which they require reporting, interviewing EPA's author of the reportable quantity rule and discussing levels with DEQ field responders, the Department concluded that the federal program had merit as to determining the relative hazards between substance but that the values of 10, 100, 1,000 and 5,000 pounds were too high for a state response program. Staff recommended a level of one-tenth the federal values or 1, 10, 100 and 500 pounds. No change to the federal 1 pound level was recommended.

The principal criteria the staff used in selecting lower values were:

1. When people report, we have the opportunity to review and determine that appropriate cleanup methods and levels will be used. From experience we knew some companies interpret the rules to mean that spills below the reportable quantity level do not have to be cleaned up because EPA has already determined (by setting the RQ level) that no hazard exists.

2. For many companies, including many transporters, spills are a rare enough occurrence that DEQ's technical assistance and involvement is needed to arrive at cleanup methods and levels.

3. Other state agencies and local government look to DEQ to provide timely response and oversight of spill cleanup activities.

4. With our regional and branch offices, we are in a substantially better position than EPA in arranging technical assistance and response in time for it to make a difference.

5. A toll-free call was not a major economic burden on the regulated community yet allowed us to be involved early in spill containment and cleanup decisions.

Of all the rules proposed on September 12, 1986, the reportable quantity levels prompted the greatest concern. The expressed concerns were and remain:

1. The federal levels are fully protective of public health and the environment.

2. The confusion to be created by two different levels far outweigh the benefits to public health and environment by lower levels.

3. DEQ had shown no basis in public health or environmental protection to support the lower levels, particularly at the 10 pound level which includes such substances as PCB and chlorine.

4. DEQ staff would not be able to respond to all the additional reports that would be called in.

5. It is not the call that is difficult to comply with, rather it's the burden of preparing clear enough instructions for the production employee, utility lineman or truck driver that is burdensome. Each difference between federal and state rules requires additional instructions to employees.

6. Companies that normally will comply will continue to try and comply even given the added complexity. Companies who don't currently comply with the federal program are unlikely to comply with the state's more stringent requirement.

Although the Commission adopted the staff recommendation, the Commission requested a report on the impact of the reportable quantity rules within 90 days.

The requested report was submitted to the Environmental Quality Commission at their January 23, 1987 meeting. A significant conclusion in that report read:

"6. Adopting existing federal reportable quantity values for reporting spills or releases to the Department will have little, if any, adverse impact on public health or the environment."

As a result of that conclusion, the Department recommended adoption of a temporary rule repealing the lower reportable quantity values in Appendix I of OAR 340 - Division 108 and adoption of 40 CFR - Table 302.4 as amended in its place. The Commission adopted the Director's recommendation and authorized a public hearing on a similar permanent rule revision.

On May 8, 1987 the Department held an informal meeting on its intent to adopt permanent rule revisions. At this same meeting the Department stated its intent to add a reportable quantity value for nerve agents, pesticide residues and incorporate new federal reportable quantity values as published by EPA on April 22, 1987 in 40 CFR Part 355 - Appendix A. Seven industry representatives attended that meeting and generally were supportive of the Department's plans.

At 10:00 a.m. on June 4, 1987, the Department held a public hearing at 811 S. W. Sixth Avenue, Portland on proposed permanent revisions to OAR 340 - Division 108. Ten industry representatives attended, five persons testified orally and four letters were received.

Discussion

The Department's January 23, 1987 report analyzed in detail 88 product spills that occurred between October 1, 1986 and December 19, 1986. Attachment I contains that detailed analysis.

In preparing this report we have updated the most pertinent data through March 31, 1987. Tables I and II demonstrate that the earlier limited data is representative of longer term reporting of spills and releases:

Table 1

	October 1, 1986 through December 19, 1986		October 1, 1986 through March 31, 1987	
	Number of Spills	Percent of Spills	Number of Spills	Percent of Spills
Greater than federal/ state reportable quantity	20	23%	66	30%
Less than federal reportable quantity but greater than state reportable quantity	3	4%	6	3%
Less than both federal/ state reportable quantity	14	16%	41	18%
No federal reportable quantity but greater than state reportable quantity (oil on land)	17	19%	44	20%
Unknown quantity at time of spill	25	28%	49	22%
Spilled material not regulated	9	10%	16	7%
Totals	88	100%	222	100%

Table 2

	Number Reported	Percent Reported	Number Reported	Percent Reported
Reported by Responsible Party	30	34%	75	34%
Reported by Other Party	58	66%	147	66%
Total	88	100%	222	100%

Based on the longer term information, the Department believes our recommended action in January (adoption by reference of federal reportable quantity values) was an appropriate recommendation. Testimony at the June 4, 1987 meeting concurred with the Department's proposal to adopt 40 CFR Table 302.4 by reference.

On the other hand, objections were raised to incorporating new federal reportable quantity values in 40 CFR Part 355 - Appendix A. The major objections as we understand them are:

1. If the Commission adopts the two lists, industry will have to comply with four lists (i.e. 40 CFR Table 302.4, 40 CFR Part 355 - Appendix A, OAR 340-Division 108 (40 CFR Table 302.4 and 40 CFR Part 355-Appendix A)

2. Many of the reportable quantity levels adopted by EPA in Appendix A are the statutory levels set in the Superfund Amendments and Reauthorization Act of 1986 (SARA) and as such are temporary levels that will be revised by EPA when they have better information. Rather than adopt these reportable quantities now, the Department should wait until EPA adopts the revised levels. This will avoid the potential conflict between state and federal reportable quantity levels during the few months it would take DEQ to revise its rules after EPA has promulgated its revised list of reportable quantities.

3. EPA has purposefully adopted separate lists because two different, but related, federal laws are involved (Comprehensive, Environmental, Response, Compensation and Liability Act of 1980 and Superfund Amendments and Reauthorization Act of 1986).

4. DEQ staff should concentrate its scarce resources on other programs of greater importance than "fine tuning" the reportable quantities in 40 CFR Part 355.

On April 22, 1987, in response to requirements in the Superfund Amendments and Reauthorization Act of 1986, EPA adopted reportable quantity values for 406 extremely hazardous substances. (40 CFR Part 355-Appendix A). The apparent confusion arises, because 150 of the extremely hazardous substances also appear as hazardous substances in 40 CFR Table 302.4. What is important to understand, however, is that for these common substances the reportable quantity value is exactly the same on the two lists. (See illustration below:)

40 CFR Table 302.4 (698 Chemicals)

548 Hazardous Substances Unique to Table 302.4

150 Substances Common to Table 302.4 and Appendix A

40 CFR Part 355 Appendix A (406 Chemicals)

256 Extremely Hazardous Substances Unique to 40 CFR-Part 355 Appendix A

Other important factors to consider:

1. We are creating no new lists - we are incorporating into the state program exact duplicates of federal regulations.

2. We agree there will be future changes to Appendix A. There will also be changes to Table 302.4 as when EPA proposed on March 16, 1987 to adjust 273 substances that were not adjusted on April 4, 1985 or September 29, 1986.

3. We agree that at some future unspecified date EPA states it will merge Table 302.4 and Appendix A.

4. To address the issue of the short-term inconsistency that would exist between state reportable quantities (RQs) and federal RQs each time EPA revises its list, we have added language to OAR 340-108-010(1)(d) that would, in effect, automatically update the state RQ levels to the new federal RQs as soon as they are adopted by EPA. Additionally, the Department will update this rule to incorporate the new federal RQ levels by reference as quickly as possible to limit any potential confusion over what the state RQ levels are.

5. Whether or not we adopt Appendix A, industry must use it and must report to the State of Oregon. Specifically 40 CFR 355.40(b)(1) reads as follows:

"(b) Notice Requirements (1) The owner or operator of a facility subject to this section shall immediately notify the community emergency coordinator for the local emergency planning committee of any area likely to be affected by the release and the State Emergency Response Commission of any state likely to be affected by the release."

6. The State Emergency Response Commission has concluded that this emergency notification should be made to the Oregon Emergency Management Division at 1-800-452-0311 consistent with our Rule 340-108-020(4).

We also received comments from the Umatilla Army Depot on our proposal to adopt a reportable quantity value of "any quantity of nerve agent". Based on their comments, we have modified the rule to read:

(e) (1). One (1) pound of nerve agents (such as GB(Sarin) or VX) if spilled or released on-site;

(2). Any quantity of nerve agents such as GB (Sarin) or VX if spilled or released off-site;

(3). An ambient air concentration for nerve agents monitored at the chemical storage perimeter or depot perimeter which is equal to or greater than 3×10^{-6} mg/m^3 for GB and VX; or

(4) An ambient air concentration for nerve agents monitored at or near a point of release equal to or greater than 2×10^{-2} mg/m^3 GB or 4×10^{-2} mg/m^3 VX. (i.e. igloo monitoring).

Alternatives and Evaluation

On September 12, 1986, revised rules requiring the reporting of oil and hazardous material spills and releases were adopted. Based on staff recommendations, the Commission adopted reportable quantity values that were 1/10 of comparable federal values. Since rule adoption, the Department has examined 222 spills and releases that occurred between October 1, 1986 and March 31, 1987. Of those 222 spills only six (6) fell between the state's lower reportable quantity value and EPA's higher value. Furthermore, two-thirds of these spills were initially reported by persons other than the responsible party (i.e. government emergency responders or private citizens). Under the circumstances, the Department has now concluded that the higher federal values are protective of public health and the environment. Rather than retain the state's existing lower values, staff now recommends consistency with federal values.

The Department has also concluded that the new reportable quantity values adopted by EPA on April 22, 1987 and contained within 40 CFR Part 355-Appendix A should be adopted by reference into OAR 340 Division-108. 40

CFR Part 355 mandates reporting to state emergency response commissions. Oregon's Emergency Response Commission has concluded that reporting to the Oregon Emergency Management Division at 1-800-452-0311 as would be required by OAR 340-108-020(4) is the most practical way for industry to comply with this new federal requirement. Whether or not Appendix A is adopted by reference at this time, the federal requirement will remain in effect in Oregon (it became effective May 22, 1987).

We have examined the U. S. Army's comments, on our proposed nerve agent reportable quantity value, and conclude their proposals for reportable quantity values are protective of public health and the environment.

Summary

1. Almost half of all spills reported fall below mandated reportable quantity levels (106 of 222 or 48%). Another thirty percent (66 of 222 or 30%) exceed the current federal levels. Only three percent (60 of 222 or 3% fall between the lower state reportable quantity values adopted September 12, 1986 and the higher federal values.

2. Persons other than the responsible party initially report nearly two-thirds of all spills and releases. Most often these are local government agencies looking to DEQ for technical assistance/advice on proper containment, control and cleanup methods.

3. EPA adjusted 68 federal RQ values on December 29, 1986. EPA proposed plans for further changes to up to 275 additional substances in early 1987. Continuous review of the federal list is planned as EPA receives additional technical data. Each change at the federal level will affect the accuracy of DEQ's Appendix I listing of federal reportable quantities.

4. On April 22, 1987 EPA adopted reportable quantities values for 256 extremely hazardous substances that are not currently on its hazardous substance list contained in 40 CFR Table 302.4. The Department has concluded that the extremely hazardous substances listed in 40 CFR Part 355-Appendix A because of their quantity, concentration or physical or chemical characteristics may pose a present or future hazard to human health, safety, welfare or the environment when spilled or released. This conclusion is based upon available scientific information, including the documents listed in the Statement of Need-Attachment III.

5. Dual RQ values do make it significantly more difficult for industry to give accurate instructions/procedures to its employees. Confusing instructions make it less likely that employees will take the proper actions that are required when a spill or release occurs.

6. Adopting existing federal RQ values for reporting spills or releases to the Department will have little, if any, adverse impact on public health or the environment.

Director's Recommendation

Based on the above report, it is recommended that the Commission find that the extremely hazardous substances listed in 40 CFR Part 355-Appendix A, because of their quantity, concentration or physical or chemical characteristics may pose a present or future hazard to human health, safety, welfare or the environment when spilled or released. It is also recommended that the Commission adopt proposed revisions to "Oil and Hazardous Materials Spills and Releases" rules OAR 340-108-002; OAR 340-108-010; OAR 340-108-020 and repeal in its entirety Appendix I of OAR 340-Division 108.

Lydia Taylor
Fred Hansen

Attachment I: Selected pages from January 23, 1987 EQC staff report
II: Proposed revisions to OAR 340-Division 108
III: Statement of Need and Fiscal and Economic Statement
IV: Land Use Consistency Statement
V: June 4, 1987 Hearings Officer's Report
VI: Responsiveness Summary to June 4, 1987 Hearing Officer's Report
VII: Public Notice of Proposed Rulemaking

Richard P. Reiter:m
SM710.C
229-5774
July 1, 1987

ATTACHMENT II
Agenda Item I
7/17/87 EQC Meeting

Definitions.

340-108-002 As used in this Division unless otherwise specified:

(1) "Barrel" means 42 U.S. gallons of oil at 60 degrees Fahrenheit.

(2) "Cleanup" includes, but is not limited to, the containment, collection, removal, treatment or disposal of oil or hazardous material; site restoration; and any investigations, monitoring, surveys, testing and other information gathering required or conducted by the department.

(3) "Cleanup costs" means all costs associated with the cleanup of a spill or release or threatened spill or release incurred by the state, its political subdivision or any person with written approval from the department when implementing ORS 466.205, 466.605 to 466.690, 466.880 (3) and (4) and 466.995 (3) or 468.800.

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

(5) "Contingency plan" means a document setting out an organized, planned and coordinated course of action to be followed in case of a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment and is prepared pursuant to 40 CFR Part 264- Subpart D or Part 265- Subpart D.

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

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

(8) "Having control over any oil or hazardous material" includes, but is not limited to, persons using, handling, processing, manufacturing, storing, treating, disposing or transporting oil or hazardous material.

(9) "Hazardous material" means:

(a) Radioactive waste and material as defined in ORS 469.300 and 469.530;

(b) Substances and wastes listed in [Appendix I of this Division.] <u>40 CFR Part 302 - Table 302.4 (List of Hazardous Substances and Reportable Quantities) and amendments, adopted prior to May 1, 1987 or in 40 CFR Part 355-Appendix A (The List of Extremely Hazardous Substances and Reportable Quantities), adopted on April 22, 1987.</u>

(10) "Modified Spill Prevention Control and Countermeasure (SPCC) Plan" means the plan to prevent the spill of oil from a non-transportation-related facility that has been modified to include those hazardous substances and hazardous wastes handled at the facility.

(11) "Oil" includes gasoline, crude oil, fuel oil, diesel oil, lubricating oil, sludge, oil refuse and any other petroleum related product.

(12) "Person" includes, but is not limited to, an individual, trust, firm, joint stock company, corporation, partnership, association, municipal corporation, political subdivision, interstate body, the state and any agency or commission thereof and the Federal Government and any agency thereof.

(13) "Reportable quantity" is an amount of oil or hazardous material which if spilled or released, or threatens to spill or release, in quantities equal to or greater than those specified in OAR 340-108-010 must be reported pursuant to OAR 340-108-020.

(14) "SPCC" means Spill Prevention, Control and Countermeasures Plan prepared in accordance with Title 40 Code of Federal Regulations - Part 112 or Part 1510.

(15) "Spill or release" means the discharge, deposit, injection, dumping, spilling, emitting, releasing, leaking or placing of any oil or hazardous material into the air or into or on any land or waters of the state, as defined in ORS 468.700, except as authorized by a permit issued under ORS chapter 454, 459, 468 or 469, ORS 466.005 to 466.385, 466.880(1) and (2), 466.890 and 466.995 (1) and (2) or federal law or while being stored or used for its intended purpose.

(16) "Threatened spill or release" means circumstances or events exist that indicate a spill or release of oil or hazardous material is likely and imminent.

(17) "Waters of the state" means 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.

Subdivision B: Reportable Quantities

340-108-010 (1) Reportable quantity means:

(a) Any quantity of radioactive material, or radioactive waste;

(b) If spilled into waters of the state, or escape into waters of the state is likely, any quantity of oil that would produce a visible oily slick, oily solids, or coat aquatic life, habitat or property with oil, but excluding normal discharges from properly operating marine engines;

(c) If spilled on the surface of the land, any quantity of oil over one barrel (42 gallons); and

(d) An amount equal to or greater than the quantity listed [under the state reportable quantity column in Appendix I of this Division for substances and wastes.] in 40 CFR Part 302 - Table 302.4 (List of Hazardous Substances and Reportable Quantities) and amendments adopted prior to May 1, 1987 or in 40 CFR Part 355-Appendix A (The List of Extremely Hazardous Substances and Reportable Quantities), adopted on April 22, 1987. If the federal Environmental Protection Agency adopts revised reportable quantity levels in Table 302.4 or Appendix A, these levels will apply in lieu of the levels adopted in this rule.

(e) (A) One (1) pound of nerve agents (such as GB(Sarin) or VX) if spilled or released on-site;

(B) Any quantity of nerve agents such as GB (Sarin) or VX if spilled or released off-site;

(C) An ambient air concentration for nerve agents monitored at the chemical storage perimeter or depot perimeter which is equal to or greater than 3×10^{-6} mg/m^3 for GB and VX; or

(D) An ambient air concentration for nerve agents monitored at or near a point of release equal to or greater than 2×10^{-2} mg/m^3 GB or 4×10^{-2} mg/m^3 VX. (i.e. igloo monitoring).

(f) One (1) pound (0.454 kg) of pesticide residue as defined by 340-101-033(5)(a).

(2) Spills or releases of mixtures or solutions containing any of the hazardous materials listed in [Appendix I of this Division] 40 CFR Part 302 - Table 302.4 (List of Hazardous Substances and Reportable Quantities) and amendments adopted prior to May 1, 1987 or in 40 CFR Part 355-Appendix A (The List of Extremely Hazardous Substances and Reportable Quantities) adopted on April 22, 1987 are subject to the reporting requirements of

this rule if the total quantity of all the hazardous materials in the mixture or solution (in pounds) exceeds the lowest reportable quantity [listed] <u>referenced</u> in [Appendix I] <u>OAR 340-108-010(1)(d)</u> for any one of the hazardous materials in the mixture or solution. A person may rely upon actual knowledge and readily available information such as material safety data sheets, shipping papers, hazardous waste manifests and container labels, to determine the presence and concentration of hazardous materials in a mixture or solution.

(3) The quantity determination required by Section 1 of this rule shall be the quantity of oil or hazardous material spilled or released prior to contact or mixing with any other material or substance (i.e., with soil, water, sawdust, etc.). In the case of a threatened spill or release, it shall be the amount of oil or hazardous material in the container or tank from which a spill or release is likely and imminent.

Subdivision C: Required Action

Emergency action, reporting.

340-108-020 In the event of a spill or release or threatened spill or release, the person owning or having control over oil or hazardous material shall take the following actions, as appropriate.

(1) Immediately implement the site's SPCC plan, modified SPCC plan or other applicable contingency plan if such a plan is required.

(Comment: Generators accumulating hazardous waste for less than 90 days are required to have a contingency plan prepared in accordance with 40 CFR 262.34.)

(2) If an SPCC plan, modified SPCC plan or contingency plan is not otherwise required, immediately take the following actions in the order listed:

(a) Activate alarms or otherwise warn persons in the immediate area; and

(b) Undertake every reasonable method to contain the oil or hazardous material.

(3) If a medical emergency or public safety hazard (i.e., potential fire or explosion) is determined by the responsible person to exist that requires the services of local emergency responders (fire, police, emergency medical technicians), call 911, where available, or local fire and/or police where 911 does not exist.

(4) If the amount of oil or hazardous material exceeds the reportable quantity listed in OAR 340-108-010 in any 24-hour period, report the spill or release or threatened spill or release to the Oregon Emergency Management Division.

Comment: The Oregon Emergency Management Division can be reached anytime by calling in-state 800-452-0311 or if calling from out-of-state (503) 378-4124.

(5) If the amount of hazardous material exceeds the [federal reportable] quantity [listed] <u>referenced</u> in [Appendix I of this Division,]
<u>OAR 340-108-010(1)(d)</u> report the spill or release to the National Response Center.

Comment: The National Response Center currently can be reached by calling 800-424-8802.

[APPENDIX I
LIST OF HAZARDOUS MATERIALS AND REPORTABLE QUANTITIES]

Repeal in its entirety Appendix I of OAR 340 - Division 108.

"RCRA Waste Number" column provides the waste identification numbers assigned to various substances by RCRA regulations. The column headed "Category" lists the code letters "X," "A," "B," "C," and "D," which are associated with reportable quantities of 1, 10, 100, 1000, and 5000 pounds, respectively. The "Pounds (kg)" column provides the reportable quantity for each hazardous substance in pounds and kilograms.

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES

Hazardous Substance	CASRN	Regulatory Synonyms -	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Acenaphthene	83329		1*	2		X	1## (0.454)
Acenaphthylene	208968		1*	2		X	1## (0.454)
Acetaldehyde	75070	Ethanal	1000	1,4	U001	C	1000 (454)
Acetaldehyde, chloro-	107200	Chloroacetaldehyde	1*	4	P023	C	1000 (454)
Acetaldehyde, trichloro-	75876	Chloral	1*	4	U034	X	1#(0.454)
Acetamide, N-(aminothioxomethyl)-	591082	1-Acetyl-2-thiourea	1*	4	P002	C	1000 (454)
Acetamide, N-(4-ethoxyphenyl)-	62442	Phenacetin	1*	4	U187	X	1# (0.454)
Acetamide, N-9H-fluoren-2-yl-	53963	2-Acetylaminofluorene	1*	4	U005	X	1# (0.454)
Acetamide, 2-fluoro-	640197	Fluoroacetamide	1*	4	P057	B	100(45.4)
Acetic acid	64197		1000	1		D	5000 (2270)
Acetic acid, ethyl ester	141786	Ethyl acetate	1*	4	U112	D	5000 (2270)
Acetic acid, fluoro-, sodium salt	62748	Fluoroacetic acid, sodium salt	1*	4	P058	A	10 (4.54)
Acetic acid, lead salt	301042	Lead acetate	5000	1,4	U144	D	5000# (2270)
Acetic acid, thallium(I) salt	563688	Thallium(I) acetate	1*	4	U214	X	1## (0.454)
Acetic anhydride	108247		1000	1		D	5000 (2270)
Acetimidic acid,N-[(methylcarbamoyl) oxy]thio-, methyl ester.	16752775	Methomyl	1*	4	P066	B	100 (45.4)
Acetone	67641	2-Propanone	1*	4	U002	D	5000 (2270)
Acetone cyanohydrin	75865	2-Methyllactonitrile Propanenitrile, 2-hydroxy-2-methyl-	10	1,4	P069	A	10 (4.54)
Acetonitrile	75058	Ethanenitrile	1*	4	U003	D	5000 (2270)
3-(alpha-Acetonylbenzyl)- 4-hydroxycoumarin and salts	81812	Warfarin	1*	4	P001	B	100 (45.4)
Acetophenone	98862	Ethanone, 1-phenyl-	1*	4	U004	D	5000 (2270)
2-Acetylaminofluorene	53963	Acetamide, N-9H-fluoren-2-yl-	1*	4	U005	X	1# (0.454)
Acetyl bromide	506967		5000	1		D	5000 (2270)
Acetyl chloride	75365	Ethanoyl chloride	5000	1,4	U006	D	5000 (2270)
1-Acetyl-2-thiourea	591082	Acetamide, N-(aminothioxomethyl)-	1*	4	P002	C	1000 (454)
Acrolein	107028	2-Propenal	1	1,2,4	P003	X	1 (0.454)
Acrylamide	79061	2-Propenamide	1*	4	U007	D	5000 (2270)
Acrylic acid	79107	2-Propenoic acid	1*	4	U008	D	5000 (2270)
Acrylonitrile	107131	2-Propenenitrile	100	1,2,4	U009	B	100# (45.4)
Adipic acid	124049		5000	1		D	5000 (2270)
Alanine, 3-[p-bis(2-chloroethyl)amino]phenyl-,L-	148823	Melphalan	1*	4	U150	X	1# (0.454)
Aldicarb	116063	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino) carbonyl]oxime.	1*	4	P070	X	1 (0.454)
Aldrin	309002	1,2,3,4,10-10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-endo, exo- dimethanonaphthalene.	1	1,2,4	P004	X	1# (0.454)
Allyl alcohol	107186	2-Propen-1-ol	100	1,4	P005	B	100 (45.4)
Allyl chloride	107051		1000	1		C	1000 (454)
Aluminum phosphide	20859738		1*	4	P006	B	100 (45.4)
Aluminum sulfate	10043013		5000	1		D	5000 (2270)
5-(Aminomethyl)-3-isoxazolol	2763964	3(2H)-Isoxazolone, 5-(aminomethyl)-	1*	4	P007	C	1000 (454)
4-Aminopyridine	504245	4-Pyridinamine	1*	4	P008	C	1000 (454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Amitrole	61825	1H-1,2,4-Triazol-3-amine	1*	4	U011	X	1# (0.454)
Ammonia	7664417		100	1		B	100## (45.4)
Ammonium acetate	631618		5000	1		D	5000 (2270)
Ammonium benzoate	1863634		5000	1		D	5000 (2270)
Ammonium bicarbonate	1066337		5000	1		D	5000 (2270)
Ammonium bichromate	7789095		1000	1		C	1000# (454)
Ammonium bifluoride	1341497		5000	1		D	5000## (2270)
Ammonium bisulfite	10192300		5000	1		D	5000 (2270)
Ammonium carbamate	1111780		5000	1		D	5000 (2270)
Ammonium carbonate	506876		5000	1		D	5000 (2270)
Ammonium chloride	12125029		5000	1		D	5000 (2270)
Ammonium chromate	7788989		1000	1		C	1000# (454)
Ammonium citrate, dibasic	3012655		5000	1		D	5000 (2270)
Ammonium fluoborate	13826830		5000	1		D	5000 (2270)
Ammonium fluoride	12125018		5000	1		B	100 (45.4)
Ammonium hydroxide	1336216		1000	1		C	1000 (454)
Ammonium oxalate	6009707 5972736 14258492		5000	1		D	5000 (2270)
Ammonium picrate	131748	Phenol, 2,4,6-trinitro-, ammonium salt	1*	4	P009	A	10 (4.54)
Ammonium silicofluoride	16919190		1000	1		C	1000 (454)
Ammonium sulfamate	7773060		5000	1		D	5000 (2270)
Ammonium sulfide	12135761		5000	1		B	100 (45.4)
Ammonium sulfite	10196040		5000	1		D	5000 (2270)
Ammonium tartrate	14307438 3164292		5000	1		D	5000 (2270)
Ammonium thiocyanate	1762954		5000	1		D	5000 (2270)
Ammonium thiosulfate	7783188		5000	1		D	5000 (2270)
Ammonium vanadate	7803556	Vanadic acid, ammonium salt	1*	4	P119	C	1000 (454)
Amyl acetate iso- sec- tert-	628637 123922 626380 625161		1000	1		D	5000 (2270)
Aniline	62533	Benzenamine	1000	1,4	U012	D	5000 (2270)
Anthracene	120127		1*	2		X	1## (0.454)
Antimony ††	7440360		1*	2		X	1## (0.454)
ANTIMONY AND COMPOUNDS			1*	2			**
Antimony pentachloride	7647189		1000	1		C	1000 (454)
Antimony potassium tartrate	28300745		1000	1		B	100 (45.4)
Antimony tribromide	7789619		1000	1		C	1000 (454)
Antimony trichloride	10025919		1000	1		C	1000(454)
Antimony trifluoride	7783564		1000	1		C	1000 (454)
Antimony trioxide	1309644		5000	1		C	1000 (454)
Aroclor 1016	12674112	Polychlorinated Biphenyls (PCBs)	10	1,2		A	10# (4.54)
Aroclor 1221	11104282	Polychlorinated Biphenyls (PCBs)	10	1,2		A	10# (4.54)
Aroclor 1232	11141165	Polychlorinated Biphenyls (PCBs)	10	1,2		A	10# (4.54)
Aroclor 1242	53469219	PolychlorinatedBiphenyls (PCBs)	10	1,2		A	10# (4.54)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Aroclor 1248	12672296	Polychlorinated Biphenyls (PCBs)	10	1,2		A	10# (4.54)
Aroclor 1254	11097691	Polychlorinated Biphenyls (PCBs)	10	1,2		A	10# (4.54)
Aroclor 1260	11096825	Polychlorinated Biphenyls (PCBs)	10	1,2		A	10# (4.54)
Arsenic ††	7440382		1*	2,3		X	1#(0.454)
Arsenic acid	1327522 7778394		1*	4	P010	X	1# (0.454)
ARSENIC AND COMPOUNDS			1*	2			**
Arsenic disulfide	1303328		5000	1		D	5000# (2270)
Arsenic(III) oxide	1327533	Arsenic trioxide	5000	1,4	P012	D	5000# (2270)
Arsenic(V) oxide	1303282	Arsenic pentoxide	5000	1,4	P011	D	5000#(2270)
Arsenic pentoxide	1303282	Arsenic(V) oxide	5000	1,4	P011	D	5000# (2270)
Arsenic trichloride	7784341		5000	1		D	5000# (2270)
Arsenic trioxide	1327533	Arsenic(III) oxide	5000	1,4	P012	D	5000# (2270)
Arsenic trisulfide	1303339		5000	1		D	5000# (2270)
Arsine, diethyl-	692422	Diethylarsine	1*	4	P038	X	1# (0.454)
Asbestos †††	1332214		1*	2,3		X	1# (0.454)
Auramine	492808	Benzenamine, 4,4'-carbonimidoylbis(N,N-dimethyl-	1*	4	U014	X	1# (0.454)
Azaserine	115026	L-Serine, diazoacetate (ester)	1*	4	U015	X	1# (0.454)
Aziridine	151564	Ethylenimine	1*	4	P054	X	1# (0.454)
Azirino(2',3':3,4)pyrrolo(1,2-a)indole-4,7-dione,6-amino-8-[((aminocarbonyl)oxy)methyl]- 1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-.	50077	Mitomycin C	1*	4	U010	X	1# (0.454)
Barium cyanide	542621		10	1,4	P013	A	10 (4.54)
Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-	56495	3-Methylcholanthrene	1*	4	U157	X	1# (0.454)
Benz[c]acridine	225514	3,4-Benzacridine	1*	4	U016	X	1# (0.454)
3,4-Benzacridine	225514	Benz[c]acridine	1*	4	U016	X	1# (0.454)
Benzal chloride	98873	Benzene, dichloromethyl-	1*	4	U017	D	5000 (2270)
Benz[a]anthracene	56553	1,2-Benzanthracene Benzo[a]anthracene	1*	2,4	U018	X	1# (0.454)
1,2-Benzanthracene	56553	Benz[a]anthracene Benzo[a]anthracene	1*	2,4	U018	X	1# (0.454)
1,2-Benzanthracene, 7,12-dimethyl-	57976	7,12-Dimethylbenz[a]anthracene	1*	4	U094	X	1# (0.454)
Benzenamine	62533	Aniline	1000	1,4	U012	D	5000 (2270)
Benzenamine, 4,4'-carbonimidoylbis(N,N-dimethyl-	492808	Auramine	1*	4	U014	X	1# (0.454)
Benzenamine, 4-chloro-	106478	p-Chloroaniline	1*	4	P024	C	1000 (454)
Benzenamine, 4-chloro-2-methyl-,hydrochloride	3165933	4-Chloro-o-toluidine, hydrochloride	1*	4	U049	X	1# (0.454)
Benzenamine, N,N-dimethyl-4-phenylazo-	60117	Dimethylaminoazobenzene	1*	4	U093	X	1# (0.454)
Benzenamine, 4,4'-methylenebis(2-chloro-	101144	4,4'-Methylenebis(2-chloroaniline)	1*	4	U158	X	1# (0.454)
Benzenamine, 2-methyl-, hydrochloride	636215	o-Toluidine hydrochloride	1*	4	U222	X	1# (0.454)
Benzenamine, 2-methyl-5-nitro-	99558	5-Nitro-o-toluidine	1*	4	U181	X	1# (0.454)
Benzenamine, 4-nitro-	100016	p-Nitroaniline	1*	4	P077	D	5000 (2270)
Benzene	71432		1000	1,2,3,4	U019	C	1000# (454)
Benzene, 1-bromo-4-phenoxy-	101553	4-Bromophenyl phenyl ether	1*	2,4	U030	B	100 (45.4)
Benzene, chloro-	108907	Chlorobenzene	100	1,2,4	U037	B	100 (45.4)
Benzene, chloromethyl-	100447	Benzyl chloride	100	1,4	P028	B	100# (45.4)
Benzene, 1,2-dichloro-	95501	1,2-Dichlorobenzene o-Dichlorobenzene	100	1,2,4	U070	B	100 (45.4)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Benzene, 1,3-dichloro-	541731	1,3-Dichlorobenzene m-Dichlorobenzene	1*	2,4	U071	B	100 (45.4)
Benzene, 1,4-dichloro-	106467	1,4-Dichlorobenzene p-Dichlorobenzene	100	1,2,4	U072	B	100 (45.4)
Benzene, dichloromethyl-	98873	Benzal chloride	1*	4	U017	D	5000 (2270)
Benzene, 2,4-diisocyanatomethyl-	584849 91087 26471625	Toluene diisocyanate	1*	4	U223	B	100 (45.4)
Benzene, dimethyl m- o- p-	1330207 108383 95476 106423	Xylene m- o- p-	1000	1,4	U239	C	1000 (454)
Benzene, hexachloro-	118741	Hexachlorobenzene	1*	2,4	U127	X	1# (0.454)
Benzene, hexahydro-	110827	Cyclohexane	1000	1,4	U056	C	1000 (454)
Benzene, hydroxy-	108952	Phenol	1000	1,2,4	U188	C	1000## (454)
Benzene, methyl-	108883	Toluene	1000	1,2,4	U220	C	1000 (454)
Benzene, 1-methyl-2,4-dinitro-	121142	2,4-Dinitrotoluene	1000	1,2,4	U105	C	1000# (454)
Benzene, 1-methyl-2,6-dinitro-	606202	2,6-Dinitrotoluene	1000	1,2,4	U106	C	1000# (454)
Benzene, 1,2-methylenedioxy-4-allyl-	94597	Safrole	1*	4	U203	X	1# (0.454)
Benzene, 1,2-methylenedioxy-4-propenyl-	120581	Isosafrole	1*	4	U141	X	1# (0.454)
Benzene, 1,2-methylenedioxy-4-propyl-	94586	Dihydrosafrole	1*	4	U090	X	1# (0.454)
Benzene, 1-methylethyl-	98828	Cumene	1*	4	U055	D	5000 (2270)
Benzene, nitro-	98953	Nitrobenzene	1000	1,2,4	U169	C	1000 (454)
Benzene, pentachloro-	608935	Pentachlorobenzene	1*	4	U183	X	1## (0.454)
Benzene, pentachloronitro-	82688	Pentachloronitrobenzene	1*	4	U185	X	1# (0.454)
Benzene, 1,2,4,5-tetrachloro-	95943	1,2,4,5-Tetrachlorobenzene	1*	4	U207	D	5000 (2270)
Benzene, trichloromethyl-	98077	Benzotrichloride	1*	4	U023	X	1# (0.454)
Benzene, 1,3,5-trinitro-	99354	sym-Trinitrobenzene	1*	4	U234	X	1## (0.454)
Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester.	510156	Ethyl 4,4'-dichlorobenzilate	1*	4	U038	X	1# (0.454)
1,2-Benzenedicarboxylic acid anhydride	85449	Phthalic anhydride	1*	4	U190	D	5000 (2270)
1,2-Benzenedicarboxylic acid,[bis(2-ethylhexyl)] ester	117817	Bis(2-ethylhexyl)phthalate	1*	2,4	U028	X	1# (0.454)
1,2-Benzenedicarboxylic acid,dibutyl ester	84742	n-Butyl phthalate Dibutyl phthalate Di-n-butyl phthalate	100	1,2,4	U069	A	10 (4.54)
1,2-Benzenedicarboxylic acid,diethyl ester	84662	Diethyl phthalate	1*	2,4	U088	C	1000 (454)
1,2-Benzenedicarboxylic acid,dimethyl ester	131113	Dimethyl phthalate	1*	2,4	U102	D	5000 (2270)
1,2-Benzenedicarboxylic acid,di-n-octyl ester	117840	Di-n-octyl phthalate	1*	2,4	U107	D	5000 (2270)
1,3-Benzenediol	108463	Resorcinol	1000	1,4	U201	D	5000 (2270)
1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-	51434	Epinephrine	1*	4	P042	C	1000 (454)
Benzenesulfonic acid chloride	98099	Benzenesulfonyl chloride	1*	4	U020	B	100 (45.4)
Benzenesulfonyl chloride	98099	Benzenesulfonic acid chloride	1*	4	U020	B	100 (45.4)
Benzenethiol	108985	Thiophenol	1*	4	P014	B	100 (45.4)
Benzidine	92875	(1,1'-Biphenyl)-4,4'diamine	1*	2,4	U021	X	1# (0.454)
1,2-Benzisothiazolin-3-one,1,1-dioxide, and salts.	81072	Saccharin and salts	1*	4	U202	X	1# (0.454)
Benzo[a]anthracene	56553	Benz[a]anthracene 1,2-Benzanthracene	1*	2,4	U018	X	1# (0.454)
Benzo[b]fluoranthene	205992		1*	2		X	1# (0.454)
Benzo(k)fluoranthene	207089		1*	2		X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Benzo[j,k]fluorene	206440	Fluoranthene	1*	2,4	U120	X	1## (0.454)
Benzoic acid	65850		5000	1		D	5000 (2270)
Benzonitrile	100470		1000	1		D	5000 (2270)
Benzo[ghi]perylene	191242		1*	2		X	1## (0.454)
Benzo[a]pyrene	50328	3,4-Benzopyrene	1*	2,4	U022	X	1# (0.454)
3,4-Benzopyrene	50328	Benzo[a]pyrene	1*	2,4	U022	X	1# (0.454)
p-Benzoquinone	106514	1,4-Cyclohexadienedione	1*	4	U197	X	1## (0.454)
Benzotrichloride	98077	Benzene, trichloromethyl-	1*	4	U023	X	1# (0.454)
Benzoyl chloride	98884		1000	1		C	1000 (454)
1,2-Benzphenanthrene	218019	Chrysene	1*	2,4	U050	X	1# (0.454)
Benzyl chloride	100447	Benzene, chloromethyl-	100	1,4	P028	B	100# (45.4)
Beryllium ††	7440417	Beryllium dust	1*	2,3,4	P015	X	1# (0.454)
BERYLLIUM AND COMPOUNDS			1*	2			**
Beryllium chloride	7787475		5000	1		D	5000# (2270)
Beryllium dust	7440417	Beryllium	1*	2,3,4	P015	X	1# (0.454)
Beryllium fluoride	7787497		5000	1		D	5000# (2270)
Beryllium nitrate	13597994 7787555		5000	1		D	5000# (2270)
alpha - BHC	319846		1*	2		X	1# (0.454)
beta - BHC	319857		1*	2		X	1# (0.454)
gamma - BHC	58899	Hexachlorocyclohexane (gamma isomer) Lindane	1	1,2,4	U129	X	1# (0.454)
delta - BHC	319868		1*	2		X	1## (0.454)
2,2'-Bioxirane	1464535	1,2:3,4-Diepoxybutane	1*	4	U085	X	1# (0.454)
(1,1'-Biphenyl)-4,4'diamine	92875	Benzidine	1*	2,4	U021	X	1# (0.454)
(1,1'-Biphenyl)-4,4'diamine,3,3'dichloro-	91941	3,3'-Dichlorobenzidine	1*	2,4	U073	X	1# (0.454)
(1,1'-Biphenyl)-4,4'diamine,3,3'dimethoxy-	119904	3,3'-Dimethoxybenzidine	1*	4	U091	X	1# (0.454)
(1,1'Biphenyl)-4,4'-diamine,3,3'-dimethyl-	119937	3,3'-Dimethylbenzidine	1*	4	U095	X	1# (0.454)
Bis(2-chloroethoxy) methane	111911	Ethane, 1,1'-[methylenebis(oxy)]bis(2-chloro-	1*	2,4	U024	C	1000 (454)
Bis (2-chloroethyl) ether	111444	Dichloroethyl ether Ethane, 1,1'-oxybis[2-chloro-	1*	2,4	U025	X	1# (0.454)
Bis(2-chloroisopropyl) ether	108601	Propane, 2,2'-oxybis(2-chloro-	1*	2,4	U027	C	1000 (454)
Bis(chloromethyl) ether	542881	Methane, oxybis(chloro-	1*	4	P016	X	1# (0.454)
Bis(dimethylthiocarbamoyl) disulfide	137268	Thiram	1*	4	U244	A	10 (4.54)
Bis(2-ethylhexyl)phthalate	117817	1,2-Benzenedicarboxylic acid, [bis(2-ethylhexyl)] ester	1*	2,4	U028	X	1# (0.454)
Bromine cyanide	506683	Cyanogen bromide	1*	4	U246	C	1000 (454)
Bromoacetone	598312	2-Propanone, 1-bromo-	1*	4	P017	C	1000 (454)
Bromoform	75252	Methane, tribromo-	1*	2,4	U225	B	100 (45.4)
4-Bromophenyl phenyl ether	101553	Benzene, 1-bromo-4-phenoxy-	1*	2,4	U030	B	100 (45.4)
Brucine	357573	Strychnidin-10-one, 2,3-dimethoxy-	1*	4	P018	B	100 (45.4)
1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	87683	Hexachlorobutadiene	1*	2,4	U128	X	1# (0.454)
1-Butanamine, N-butyl-N-nitroso-	924163	N-Nitrosodi-n-butylamine	1*	4	U172	X	1# (0.454)
Butanoic acid, 4-[bis(2-chloroethyl)amino]benzene-	305033	Chlorambucil	1*	4	U035	X	1# (0.454)
1-Butanol	71363	n-Butyl alcohol	1*	4	U031	D	5000 (2270)
2-Butanone	78933	Methyl ethyl ketone	1*	4	U159	D	5000 (2270)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
2-Butanone peroxide	1338234	Methyl ethyl ketone peroxide	1*	4	U160	A	10 (4.54)
2-Butenal	123739 4170303	Crotonaldehyde	100	1,4	U053	B	100 (45.4)
2-Butene, 1,4-dichloro-	764410	1,4-Dichloro-2-butene	1*	4	U074	X	1 (0.454)
Butyl acetate iso- sec- tert-	123864 110190 105464 540885		5000	1		D	5000 (2270)
n-Butyl alcohol	71363	1-Butanol	1*	4	U031	D	5000 (2270)
Butylamine iso- sec- sec- tert-	109739 78819 513495 13952846 75649		1000	1		C	1000 (454)
Butyl benzyl phthalate	85687		1*	2		B	100 (45.4)
n-Butyl phthalate	84742	1,2-Benzenedicarboxylic acid,dibutyl ester Dibutyl phthalate Di-n-butyl phthalate	100	1,2,4	U069	A	10 (4.54)
Butyric acid iso-	107926 79312		5000	1		D	5000 (2270)
Cacodylic acid	75605	Hydroxydimethylarsine oxide	1*	4	U136	X	1# (0.454)
Cadmium ††	7440439		1*	2		X	1# (0.454)
Cadmium acetate	543908		100	1		B	100# (45.4)
CADMIUM AND COMPOUNDS			1*	2			**
Cadmium bromide	7789426		100	1		B	100# (45.4)
Cadmium chloride	10108642		100	1		B	100# (45.4)
Calcium arsenate	7778441		1000	1		C	1000# (454)
Calcium arsenite	52740166		1000	1		C	1000# (454)
Calcium carbide	75207		5000	1		A	10 (4.54)
Calcium chromate	13765190	Chromic acid, calcium salt	1000	1,4	U032	C	1000# (454)
Calcium cyanide	592018		10	1,4	P021	A	10 (4.54)
Calcium dodecylbenzene sulfonate	26264062		1000	1		C	1000 (454)
Calcium hypochlorite	7778543		100	1		A	10(4.54)
Camphene, octachloro-,	8001352	Toxaphene	1	1,2,4	P123	X	1# (0.454)
Captan	133062		10	1		A	10## (4.54)
Carbamic acid, ethyl ester	51796	Ethyl carbamate (Urethan)	1*	4	U238	X	1# (0.454)
Carbamic acid, methylnitroso-,ethyl ester	615532	N-Nitroso-N-methylurethane	1*	4	U178	X	1# (0.454)
Carbamide, N-ethyl-N-nitroso-	759739	N-Nitroso-N-ethylurea	1*	4	U176	X	1# (0.454)
Carbamide, N-methyl-N-nitroso-	684935	N-Nitroso-N-methylurea	1*	4	U177	X	1# (0.454)
Carbamide, thio-	62566	Thiourea	1*	4	U219	X	1# (0.454)
Carbamimidoselenoic acid	630104	Selenourea	1*	4	P103	X	1## (0.454)
Carbamoyl chloride, dimethyl-	79447	Dimethylcarbamoyl chloride	1*	4	U097	X	1# (0.454)
Carbaryl	63252		100	1		B	100 (45.4)
Carbofuran	1563662		10	1		A	10 (4.54)
Carbon bisulfide	75150	Carbon disulfide	5000	1,4	P022	D	5000## (2270)
Carbon disulfide	75150	Carbon bisulfide	5000	1,4	P022	D	5000## (2270)
Carbonic acid, dithallium (I) salt	6533739	Thallium(I) carbonate	1*	4	U215	X	1## (0.454)
Carbonochloridic acid, methyl ester	79221	Methyl chlorocarbonate	1*	4	U156	C	1000 (454)
Carbon oxyfluoride	353504	Carbonyl fluoride	1*	4	U033	C	1000 (454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Carbon tetrachloride	56235	Methane, tetrachloro-	5000	1,2,4	U211	D	5000# (2270)
Carbonyl chloride	75445	Phosgene	5000	1,4	P095	A	10 (4.54)
Carbonyl fluoride	353504	Carbon oxyfluoride	1*	4	U033	C	1000 (454)
Chloral	75876	Acetaldehyde, trichloro-	1*	4	U034	X	1#(0.454)
Chlorambucil	305033	Butanoic acid, 4-[bis(2-chloroethyl)amino]benzene-	1*	4	U035	X	1# (0.454)
CHLORDANE (TECHNICAL MIXTURE AND METABOLITES).			1*	2			**
Chlordane	57749	Chlordane, technical 4,7-Methanoindan, 1,2,4,5,6,7,8,8-octachloro- 3a,4,7,7a-tetrahydro-	1	1,2,4	U036	X	1# (0.454)
Chlordane, technical	57749	Chlordane 4,7-Methanoindan, 1,2,4,5,6,7,8,8-octachloro- 3a,4,7,7a-tetrahydro-	1	1,2,4	U036	X	1# (0.454)
CHLORINATED BENZENES			1*	2			**
CHLORINATED ETHANES			1*	2			**
CHLORINATED NAPHTHALENE			1*	2			**
CHLORINATED PHENOLS			1*	2			**
Chlorine	7782505		10	1		A	10 (4.54)
Chlorine cyanide	506774	Cyanogen chloride	10	1,4	P033	A	10 (4.54)
Chlornaphazine	494031	2-Naphthylamine, N,N-bis(2-chloroethyl)-	1*	4	U026	X	1# (0.454)
Chloroacetaldehyde	107200	Acetaldehyde, chloro-	1*	4	P023	C	1000 (454)
CHLOROALKYL ETHERS			1*	2			**
p-Chloroaniline	106478	Benzenamine, 4-chloro-	1*	4	P024	C	1000 (454)
Chlorobenzene	108907	Benzene, chloro-	100	1,2,4	U037	B	100 (45.4)
4-Chloro-m-cresol	59507	p-Chloro-m-cresol Phenol, 4-chloro-3-methyl-	1*	2,4	U039	D	5000 (2270)
p-Chloro-m-cresol	59507	4-Chloro-m-cresol Phenol, 4-chloro-3-methyl-	1*	2,4	U039	D	5000 (2270)
Chlorodibromomethane	124481		1*	2		B	100 (45.4)
1-Chloro-2,3-epoxypropane	106898	Epichlorohydrin Oxirane, 2-(chloromethyl)-	1000	1,4	U041	C	1000# (454)
Chloroethane	75003		1*	2		X	1## (0.454)
2-Chloroethyl vinyl ether	110758	Ethene, 2-chloroethoxy-	1*	2,4	U042	C	1000 (454)
Chloroform	67663	Methane, trichloro-	5000	1,2,4	U044	D	5000# (2270)
Chloromethyl methyl ether	107302	Methane, chloromethoxy-	1*	4	U046	X	1# (0.454)
beta-Chloronaphthalene	91587	2-Chloronaphthalene Naphthalene, 2-chloro-	1*	2,4	U047	D	5000 (2270)
2-Chloronaphthalene	91587	beta-Chloronaphthalene Naphthalene, 2-chloro-	1*	2,4	U047	D	5000 (2270)
2-Chlorophenol	95578	o-Chlorophenol Phenol, 2-chloro-	1*	2,4	U048	B	100 (45.4)
o-Chlorophenol	95578	2-Chlorophenol Phenol, 2-chloro-	1*	2,4	U048	B	100 (45.4)
4-Chlorophenyl phenyl ether	7005723		1*	2		D	5000 (2270)
1-(o-Chlorophenyl)thiourea	5344821	Thiourea, (2-chlorophenyl)-	1*	4	P026	B	100 (45.4)
3-Chloropropionitrile	542767	Propanenitrile, 3-chloro-	1*	4	P027	C	1000 (454)
Chlorosulfonic acid	7790945		1000	1		C	1000 (454)
4-Chloro-o-toluidine, hydrochloride	3165933	Benzenamine, 4-chloro-2-methyl-,hydrochloride	1*	4	U049	X	1# (0.454)
Chlorpyrifos	2921882		1	1		X	1 (0.454)
Chromic acetate	1066304		1000	1		C	1000## (454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Chromic acid	11115745 7738945		1000	1		C	1000# (454)
Chromic acid, calcium salt	13765190	Calcium chromate	1000	1,4	U032	C	1000# (454)
Chromic sulfate	10101538		1000	1		C	1000## (454)
Chromium ††	7440473		1*	2		X	1# (0.454)
CHROMIUM AND COMPOUNDS			1*	2			**
Chromous chloride	10049055		1000	1		C	1000## (454)
Chrysene	218019	1,2-Benzphenanthrene	1*	2,4	U050	X	1# (0.454)
Cobaltous bromide	7789437		1000	1		C	1000(454)
Cobaltous formate	544183		1000	1		C	1000 (454)
Cobaltous sulfamate	14017415		1000	1		C	1000 (454)
Coke Oven Emissions	N.A.		1*	3		X	1# (0.454)
Copper ††	7440508		1*	2		X	1## (0.454)
COPPER AND COMPOUNDS			1*	2			**
Copper cyanide	544923		1*	4	P029	A	10 (4.54)
Coumaphos	56724		10	1		A	10 (4.54)
Creosote	8001589		1*	4	U051	X	1# (0.454)
Cresol(s) m- o- p-	1319773 108394 95487 106445	Cresylic acid	1000	1,4	U052	C	1000## (454)
Cresylic acid m- o- p-	1319773 108394 95487 106445	Cresol(s)	1000	1,4	U052	C	1000## (454)
Crotonaldehyde	123739 4170303	2-Butenal	100	1,4	U053	B	100 (45.4)
Cumene	98828	Benzene, 1-methylethyl-	1*	4	U055	D	5000 (2270)
Cupric acetate	142712		100	1		B	100 (45.4)
Cupric acetoarsenite	12002038		100	1		B	100# (45.4)
Cupric chloride	7447394		10	1		A	10## (4.54)
Cupric nitrate	3251238		100	1		B	100 (45.4)
Cupric oxalate	5893663		100	1		B	100 (45.4)
Cupric sulfate	7758987		10	1		A	10## (4.54)
Cupric sulfate ammoniated	10380297		100	1		B	100 (45.4)
Cupric tartrate	815827		100	1		B	100## (45.4)
CYANIDES			1*	2			**
Cyanides (soluble cyanide salts), not elsewhere specified.	57125		1*	4	P030	A	10 (4.54)
Cyanogen	460195		1*	4	P031	B	100 (45.4)
Cyanogen bromide	506683	Bromine cyanide	1*	4	U246	C	1000 (454)
Cyanogen chloride	506774	Chlorine cyanide	10	1,4	P033	A	10 (4.54)
1,4-Cyclohexadienedione	106514	p-Benzoquinone	1*	4	U197	X	1## (0.454)
Cyclohexane	110827	Benzene, hexahydro-	1000	1,4	U056	C	1000(454)
Cyclohexanone	108941		1*	4	U057	D	5000 (2270)
1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	77474	Hexachlorocyclopentadiene	1	1,2,4	U130	X	1# (0.454)
Cyclophosphamide	50180	2H-1,3,2-Oxazaphosphorine,2-[bis(2-chloroethyl)amino] tetrahydro-2-oxide.	1*	4	U058	X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
2,4-D Acid	94757	2,4-D, salts and esters 2,4-Dichlorophenoxyacetic acid, salts and esters	100	1,4	U240	B	100 (45.4)
2,4-D Esters	94111 94791 94804 1320189 1928387 1928616 1929733 2971382 25168267 53467111		100	1		B	100 (45.4)
2,4-D, salts and esters	94757	2,4-D Acid 2,4-Dichlorophenoxyacetic acid, salts and esters	100	1,4	U240	B	100 (45.4)
Daunomycin	20830813	5,12-Naphthacenedione, (8S-cis)-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-.	1*	4	U059	X	1# (0.454)
DDD	72548	4,4' DDD Dichlorodiphenyl dichloroethane TDE	1	1,2,4	U060	X	1# (0.454)
4,4' DDD	72548	DDD Dichlorodiphenyl dichloroethane TDE	1	1,2,4	U060	X	1# (0.454)
DDE	72559	4,4' DDE	1*	2		X	1# (0.454)
4,4' DDE	72559	DDE	1*	2		X	1# (0.454)
DDT	50293	4,4' DDT Dichlorodiphenyl trichloroethane	1	1,2,4	U061	X	1# (0.454)
4,4'DDT	50293	DDT Dichlorodiphenyl trichloroethane	1	1,2,4	U061	X	1# (0.454)
DDT AND METABOLITES			1*	2			**
Decachlorooctahydro-1,3,4-metheno-2H-cyclobuta[c,d]-pentalen-2-one.	143500	Kepone	1	1,4	U142	X	1# (0.454)
Diallate	2303164	S-(2,3-Dichloroallyl) diisopropylthiocarbamate	1*	4	U062	X	1# (0.454)
Diamine	302012	Hydrazine	1*	4	U133	X	1# (0.454)
Diaminotoluene	95807 25376458 496720 823405	Toluenediamine	1*	4	U221	X	1# (0.454)
Diazinon	5333415		1	1		X	1 (0.454)
Dibenz[a,h]anthracene	53703	1,2:5,6-Dibenzanthracene Dibenzo[a,h]anthracene	1*	2,4	U063	X	1# (0.454)
1,2:5,6-Dibenzanthracene	53703	Dibenz[a,h]anthracene Dibenzo[a,h]anthracene	1*	2,4	U063	X	1# (0.454)
Dibenzo[a,h]anthracene	53703	Dibenz[a,h]anthracene 1,2:5,6-Dibenzanthracene	1*	2,4	U063	X	1# (0.454)
1,2:7,8-Dibenzopyrene	189559	Dibenz[a,i]pyrene	1*	4	U064	X	1# (0.454)
Dibenz[a,i]pyrene	189559	1,2:7,8-Dibenzopyrene	1*	4	U064	X	1#(0.454)
1,2-Dibromo-3-chloropropane	96128	Propane, 1,2-dibromo-3-chloro-	1*	4	U066	X	1# (0.454)
Dibutyl phthalate	84742	1,2-Benzenedicarboxylic acid,dibutyl ester Di-n-butyl phthalate n-Butyl phthalate	100	1,2,4	U069	A	10 (4.54)
Di-n-butyl phthalate	84742	1,2-Benzenedicarboxylic acid,dibutyl ester n-Butyl phthalate Dibutyl phthalate	100	1,2,4	U069	A	10 (4.54)
Dicamba	1918009		1000	1		C	1000 (454)
Dichlobenil	1194656		1000	1		B	100 (45.4)
Dichlone	117806		1	1		X	1 (0.454)
S-(2,3-Dichloroallyl) diisopropylthiocarbamate	2303164	Diallate	1*	4	U062	X	1# (0.454)
3,5-Dichloro-N-(1,1-dimethyl-2-propynyl)benzamide	23950585	Pronamide	1*	4	U192	D	5000 (2270)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Dichlorobenzene (mixed)	25321226		100	1		B	100 (45.4)
1,2-Dichlorobenzene	95501	Benzene, 1,2-dichloro- o-Dichlorobenzene	100	1,2,4	U070	B	100 (45.4)
1,3-Dichlorobenzene	541731	Benzene, 1,3-dichloro- m-Dichlorobenzene	1*	2,4	U071	B	100 (45.4)
1,4-Dichlorobenzene	106467	Benzene, 1,4-dichloro- p-Dichlorobenzene	100	1,2,4	U072	B	100 (45.4)
m-Dichlorobenzene	541731	Benzene, 1,3-dichloro- 1,3-Dichlorobenzene	1*	2,4	U071	B	100 (45.4)
o-Dichlorobenzene	95501	Benzene, 1,2-dichloro- 1,2-Dichlorobenzene	100	1,2,4	U070	B	100 (45.4)
p-Dichlorobenzene	106467	Benzene, 1,4-dichloro- 1,4-Dichlorobenzene	100	1,2,4	U072	B	100 (45.4)
DICHLOROBENZIDINE			1*	2			**
3,3'-Dichlorobenzidine	91941	(1,1'-Biphenyl)-4,4'diamine,3,3'dichloro-	1*	2,4	U073	X	1# (0.454)
Dichlorobromomethane	75274		1*	2		D	5000 (2270)
1,4-Dichloro 2-butene	764410	2-Butene, 1,4-dichloro-	1*	4	U074	X	1 (0.454)
Dichlorodifluoromethane	75718	Methane, dichlorodifluoro-	1*	4	U075	D	5000 (2270)
Dichlorodiphenyl dichloroethane	72548	DDD 4,4' DDD TDE	1	1,2,4	U060	X	1# (0.454)
Dichlorodiphenyl trichloroethane	50293	DDT 4,4'DDT	1	1,2,4	U061	X	1# (0.454)
1,1-Dichloroethane	75343	Ethane, 1,1-dichloro- Ethylidene dichloride	1*	2,4	U076	C	1000 (454)
1,2-Dichloroethane	107062	Ethane, 1,2-dichloro- Ethylene dichloride	5000	1,2,4	U077	D	5000# (2270)
1,1-Dichloroethylene	75354	Ethene, 1,1-dichloro- Vinylidene chloride	5000	1,2,4	U078	D	5000# (2270)
1,2-trans-Dichloroethylene	156605	Ethene, trans-1,2-dichloro-	1*	2,4	U079	C	1000 (454)
Dichloroethyl ether	111444	Bis (2-chloroethyl) ether Ethane, 1,1'-oxybis(2-chloro-	1*	2,4	U025	X	1# (0.454)
2,4-Dichlorophenol	120832	Phenol, 2,4-dichloro-	1*	2,4	U081	B	100 (45.4)
2,6-Dichlorophenol	87650	Phenol, 2,6-dichloro-	1*	4	U082	B	100 (45.4)
2,4-Dichlorophenoxyacetic acid, salts and esters	94757	2,4-D Acid 2,4-D, salts and esters	100	1,4	U240	B	100 (45.4)
Dichlorophenylarsine	696286	Phenyl dichloroarsine	1*	4	P036	X	1# (0.454)
Dichloropropane 1,1-Dichloropropane 1,3-Dichloropropane	26638197 78999 142289		5000	1		C	1000 (454)
1,2-Dichloropropane	78875	Propylene dichloride	5000	1,2,4	U083	C	1000 (454)
Dichloropropane - Dichloropropene (mixture)	8003198		5000	1		D	5000## (2270)
Dichloropropene 2,3-Dichloropropene	26952238 78886		5000	1		D	5000## (2270)
1,3-Dichloropropene	542756	Propene, 1,3-dichloro-	5000	1,2,4	U084	D	5000## (2270)
2,2-Dichloropropionic acid	75990		5000	1		D	5000 (2270)
Dichlorvos	62737		10	1		A	10 (4.54)
Dieldrin	60571	1,2,3,4,10,10-Hexachloro-6,7-epoxy- 1,4,4a,5,6,7,8,8a-octahydro-endo,exo- 1,4:5,8- dimethanonaphthalene.	1	1,2,4	P037	X	1# (0.454)
1,2:3,4-Diepoxybutane	1464535	2,2'-Bioxirane	1*	4	U085	X	1# (0.454)
Diethylamine	109897		1000	1		C	1000## (454)
Diethylarsine	692422	Arsine, diethyl-	1*	4	P038	X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
1,4-Diethylene dioxide	123911	1,4-Dioxane	1*	4	U108	X	1# (0.454)
N,N'-Diethylhydrazine	1615801	Hydrazine, 1,2-diethyl-	1*	4	U086	X	1# (0.454)
O,O-Diethyl S-[2-(ethylthio)ethyl]phosphorodithioate	298044	*Disulfoton*	1	1,4	P039	X	1 (0.454)
O,O-Diethyl S-methyl dithiophosphate	3288582	Phosphorodithioic acid, O,O-diethyl S-methylester	1*	4	U087	D	5000 (2270)
Diethyl-p-nitrophenyl phosphate	311455	Phosphoric acid,diethyl p-nitrophenyl ester	1*	4	P041	B	100 (45.4)
Diethyl phthalate	84662	1,2-Benzenedicarboxylic acid,diethyl ester	1*	2,4	U088	C	1000 (454)
O,O-Diethyl O-pyrazinyl phosphorothioate	297972	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester	1*	4	P040	B	100 (45.4)
Diethylstilbestrol	56531	4,4'-Stilbenediol, alpha,alpha'-diethyl-	1*	4	U089	X	1# (0.454)
1,2-Dihydro-3,6-pyridazinedione	123331	Maleic hydrazide	1*	4	U148	D	5000 (2270)
Dihydrosafrole	94586	Benzene, 1,2-methylenedioxy-4-propyl-	1*	4	U090	X	1# (0.454)
Diisopropyl fluorophosphate	55914	*Phosphorofluoridic acid,bis(1-methylethyl) ester*	1*	4	P043	B	100 (45.4)
Dimethoate	60515	Phosphorodithioic acid,O,*O-dimethyl* S-[2(methylamino)-2-oxoethyl] ester.	1*	4	P044	A	10 (4.54)
3,3'-Dimethoxybenzidine	119904	(1,1'-Biphenyl)-4,4'diamine,3,3'dimethoxy-	1*	4	U091	X	1# (0.454)
Dimethylamine	124403	Methanamine, N-methyl-	1000	1,4	U092	C	1000## (454)
Dimethylaminoazobenzene	60117	Benzenamine, N,N-dimethyl-4-phenylazo-	1*	4	U093	X	1# (0.454)
7,12-Dimethylbenz[a]anthracene	57976	1,2-Benzanthracene, 7,12-dimethyl-	1*	4	U094	X	1# (0.454)
3,3'-Dimethylbenzidine	119937	(1,1'Biphenyl)-4,4'-diamine,3,3'-dimethyl-	1*	4	U095	X	1# (0.454)
alpha,alpha-Dimethylbenzylhydroperoxide	80159	Hydroperoxide, 1-methyl-1-phenylethyl-	1*	4	U096	A	10 (4.54)
3,3-Dimethyl-1-(*methylthio*)-2-butanone, O-[(methylamino)carbonyl] oxime.	39196184	Thiofanox	1*	4	P045	B	100 (45.4)
Dimethylcarbamoyl chloride	79447	Carbamoyl chloride, dimethyl-	1*	4	U097	X	1# (0.454)
1,1-Dimethylhydrazine	57147	Hydrazine, 1,1-dimethyl-	1*	4	U098	X	1# (0.454)
1,2-*Dimethylhydrazine*	540738	Hydrazine, 1,2-dimethyl-	1*	4	U099	X	1# (0.454)
O,O-*Dimethyl O-p-nitrophenyl phosphorothioate*	298000	Methyl parathion	100	1,4	P071	B	100## (45.4)
Dimethylnitrosamine	62759	N-Nitrosodimethylamine	1*	2,4	P082	X	1# (0.454)
alpha,alpha-Dimethylphenethylamine	122098	Ethanamine, 1,1-dimethyl-2-phenyl-	1*	4	P046	D	5000 (2270)
2,4-Dimethylphenol	105679	Phenol, 2,4-dimethyl-	1*	2,4	U101	B	100 (45.4)
Dimethyl phthalate	131113	1,2-Benzenedicarboxylic acid,dimethyl ester	1*	2,4	U102	D	5000 (2270)
Dimethyl sulfate	77781	Sulfuric acid, dimethyl ester	1*	4	U103	X	1# (0.454)
Dinitrobenzene (mixed)	25154545		1000	1		B	100 (45.4)
m-	99650						
o-	528290						
p-	100254						
4,6-Dinitro-o-cresol and salts	534521	Phenol, 2,4-dinitro-6-methyl-, and salts	1*	2,4	P047	A	10 (4.54)
4,6-Dinitro-o-cyclohexylphenol	131895	Phenol, 2-cyclohexyl-4,6-dinitro-	1*	4	P034	B	100 (45.4)
Dinitrophenol	25550587		1000	1		A	10 (4.54)
2,5-	329715						
2,6-	573568						
2,4-Dinitrophenol	51285	Phenol, 2,4-dinitro-	1000	1,2,4	P048	A	10 (4.54)
Dinitrotoluene	25321146		1000	1,2		C	1000# (454)
3,4-Dinitrotoluene	610399						
2,4-Dinitrotoluene	121142	Benzene, 1-methyl-2,4-dinitro-	1000	1,2,4	U105	C	1000# (454)
Dinoseb	88857	Phenol, 2,4-dinitro-6-(1-methylpropyl)-	1*	4	P020	C	1000 (454)
Di-n-octyl phthalate	117840	1,2-Benzenedicarboxylic acid,di-n-octyl ester	1*	2,4	U107	D	5000 (2270)
1,4-Dioxane	123911	1,4-Diethylene dioxide	1*	4	U108	X	1# (0.454)
DIPHENYLHYDRAZINE			1*	2			**
1,2-Diphenylhydrazine	122667	Hydrazine, 1,2-diphenyl-	1*	2,4	U109	X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Diphosphoramide, octamethyl-	152169	Octamethylpyrophosphoramide	1*	4	P085	B	100 (45.4)
Dipropylamine	142847	1-Propanamine, N-propyl-	1*	4	U110	D	5000 (2270)
Di-n-propylnitrosamine	621647	N-Nitrosodi-n-propylamine	1*	2,4	U111	X	1# (0.454)
Diquat	85007 2764729		1000	1		C	1000 (454)
Disulfoton	298044	O,O-Diethyl S-[2-(ethylthio)ethyl] phosphorodithioate	1	1,4	P039	X	1 (0.454)
2,4-Dithiobiuret	541537	Thioimidodicarbonic diamide	1*	4	P049	B	100 (45.4)
Dithiopyrophosphoric acid, tetraethyl ester	3689245	Tetraethyldithiopyrophosphate	1*	4	P109	B	100 (45.4)
Diuron	330541		100	1		B	100 (45.4)
Dodecylbenzenesulfonic acid	27176870		1000	1		C	1000 (454)
Endosulfan	115297	5-Norbornene-2,3-dimethanol,1,4,5,6,7,7-hexachloro, cyclic sulfite.	1	1,2,4	P050	X	1 (0.454)
alpha - Endosulfan	959988		1*	2		X	1 (0.454)
beta - Endosulfan	33213659		1*	2		X	1 (0.454)
ENDOSULFAN AND METABOLITES			1*	2			**
Endosulfan sulfate	1031078		1*	2		X	1 (0.454)
Endothall	145733	7-Oxabicyclo[2,2,1]heptane-2,3-dicarboxylic acid	1*	4	P088	C	1000 (454)
Endrin	72208	1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo,endo- 1,4:5,8-dimethanonaphthalene.	1	1,2,4	P051	X	1 (0.454)
Endrin aldehyde	7421934		1*	2		X	1 (0.454)
ENDRIN AND METABOLITES			1*	2			**
Epichlorohydrin	106898	1-Chloro-2,3-epoxypropane Oxirane, 2-(chloromethyl)-	1000	1,4	U041	C	1000# (454)
Epinephrine	51434	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-	1*	4	P042	C	1000 (454)
Ethanal	75070	Acetaldehyde	1000	1,4	U001	C	1000 (454)
Ethanamine, 1,1-dimethyl-2-phenyl-	122098	alpha,alpha-Dimethylphenethylamine	1*	4	P046	D	5000 (2270)
Ethanamine, N-ethyl-N-nitroso-	55185	N-Nitrosodiethylamine	1*	4	U174	X	1# (0.454)
Ethane, 1,2-dibromo-	106934	Ethylene dibromide	1000	1,4	U067	C	1000# (454)
Ethane, 1,1-dichloro-	75343	1,1-Dichloroethane Ethylidene dichloride	1*	2,4	U076	C	1000 (454)
Ethane, 1,2-dichloro-	107062	1,2-Dichloroethane Ethylene dichloride	5000	1,2,4	U077	D	5000# (2270)
Ethane, 1,1,1,2,2,2-hexachloro-	67721	Hexachloroethane	1*	2,4	U131	X	1# (0.454)
Ethane, 1,1'-[methylenebis(oxy)]bis(2-chloro-	111911	Bis(2-chloroethoxy) methane	1*	2,4	U024	C	1000 (454)
Ethane, 1,1'-oxybis-	60297	Ethyl ether	1*	4	U117	B	100 (45.4)
Ethane, 1,1'-oxybis(2-chloro-	111444	Bis (2-chloroethyl) ether Dichloroethyl ether	1*	2,4	U025	X	1# (0.454)
Ethane, pentachloro-	76017	Pentachloroethane	1*	4	U184	X	1## (0.454)
Ethane, 1,1,1,2-tetrachloro-	630206	1,1,1,2-Tetrachloroethane	1*	4	U208	X	1# (0.454)
Ethane, 1,1,2,2-tetrachloro-	79345	1,1,2,2-Tetrachloroethane	1*	2,4	U209	X	1# (0.454)
Ethane, 1,1,2-trichloro-	79005	1,1,2-Trichloroethane	1*	2,4	U227	X	1# (0.454)
Ethane, 1,1,1-trichloro-2,2-bis(p-methoxyphenyl)-	72435	Methoxychlor	1	1,4	U247	X	1 (0.454)
1,2-Ethanediylbiscarbamodithioic acid	111546	Ethylenebis(dithiocarbamic acid)	1*	4	U114	D	5000 (2270)
Ethanenitrile	75058	Acetonitrile	1*	4	U003	D	5000 (2270)
Ethanethioamide	62555	Thioacetamide	1*	4	U218	X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Ethanol, 2,2'-(nitrosoimino)bis-	1116547	N-Nitrosodiethanolamine	1*	4	U173	X	1# (0.454)
Ethanone, 1-phenyl-	98862	Acetophenone	1*	4	U004	D	5000 (2270)
Ethanoyl chloride	75365	Acetyl chloride	5000	1,4	U006	D	5000 (2270)
Ethenamine, N-methyl-N-nitroso-	4549400	N-Nitrosomethylvinylamine	1*	4	P084	X	1# (0.454)
Ethene, chloro-	75014	Vinyl chloride	1*	2,3,4	U043	X	1# (0.454)
Ethene, 2-chloroethoxy-	110758	2-Chloroethyl vinyl ether	1*	2,4	U042	C	1000 (454)
Ethene, 1,1-dichloro-	75354	1,1-Dichloroethylene Vinylidene chloride	5000	1,2,4	U078	D	5000# (2270)
Ethene, 1,1,2,2-tetrachloro-	127184	Tetrachloroethylene	1*	2,4	U210	X	1# (0.454)
Ethene, trans-1,2-dichloro-	156605	1,2-trans-Dichloroethylene	1*	2,4	U079	C	1000 (454)
Ethion	563122		10	1		A	10## (4.54)
Ethyl acetate	141786	Acetic acid, ethyl ester	1*	4	U112	D	5000 (2270)
Ethyl acrylate	140885	2-Propenoic acid, ethyl ester	1*	4	U113	C	1000 (454)
Ethylbenzene	100414		1000	1,2		C	1000 (454)
Ethyl carbamate (Urethan)	51796	Carbamic acid, ethyl ester	1*	4	U238	X	1# (0.454)
Ethyl cyanide	107120	Propanenitrile	1*	4	P101	A	10 (4.54)
Ethyl 4,4'-dichlorobenzilate	510156	Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester.	1*	4	U038	X	1# (0.454)
Ethylene dibromide	106934	Ethane, 1,2-dibromo-	1000	1,4	U067	C	1000# (454)
Ethylene dichloride	107062	1,2-Dichloroethane Ethane, 1,2-dichloro-	5000	1,2,4	U077	D	5000# (2270)
Ethylene oxide	75218	Oxirane	1*	4	U115	X	1# (0.454)
Ethylenebis(dithiocarbamic acid)	111546	1,2-Ethanediylbiscarbamodithioic acid	1*	4	U114	D	5000 (2270)
Ethylenediamine	107153		1000	1		D	5000 (2270)
Ethylenediamine tetraacetic acid (EDTA)	60004		5000	1		D	5000 (2270)
Ethylenethiourea	96457	2-Imidazolidinethione	1*	4	U116	X	1# (0.454)
Ethylenimine	151564	Aziridine	1*	4	P054	X	1# (0.454)
Ethyl ether	60297	Ethane, 1,1'-oxybis-	1*	4	U117	B	100 (45.4)
Ethylidene dichloride	75343	1,1-Dichloroethane Ethane, 1,1-dichloro-	1*	2,4	U076	C	1000 (454)
Ethyl methacrylate	97632	2-Propenoic acid, 2-methyl-, ethyl ester	1*	4	U118	C	1000 (454)
Ethyl methanesulfonate	62500	Methanesulfonic acid, ethyl ester	1*	4	U119	X	1# (0.454)
Famphur	52857	Phosphorothioic acid, O,O-dimethyl-O-[p-[(dimethylamino)-sulfonyl]phenyl] ester.	1*	4	P097	C	1000 (454)
Ferric ammonium citrate	1185575		1000	1		C	1000 (454)
Ferric ammonium oxalate	2944674 55488874		1000	1		C	1000 (454)
Ferric chloride	7705080		1000	1		C	1000 (454)
Ferric dextran	9004664	Iron dextran	1*	4	U139	X	1## (0.454)
Ferric fluoride	7783508		100	1		B	100 (45.4)
Ferric nitrate	10421484		1000	1		C	1000 (454)
Ferric sulfate	10028225		1000	1		C	1000 (454)
Ferrous ammonium sulfate	10045893		1000	1		C	1000 (454)
Ferrous chloride	7758943		100	1		B	100 (45.4)
Ferrous sulfate	7720787 7782630		1000	1		C	1000 (454)
Fluoroacetic acid, sodium salt	62748	Acetic acid, fluoro-, sodium salt	1*	4	P058	A	10 (4.54)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Fluoranthene	206440	Benzo[j,k]fluorene	1*	2,4	U120	X	1## (0.454)
Fluorene	86737		1*	2		X	1## (0.454)
Fluorine	7782414		1*	4	P056	A	10 (4.54)
Fluoroacetamide	640197	Acetamide, 2-fluoro-	1*	4	P057	B	100 (45.4)
Formaldehyde	50000	Methylene oxide	1000	1,4	U122	C	1000# (454)
Formic acid	64186	Methanoic acid	5000	1,4	U123	D	5000 (2270)
Fulminic acid, mercury(II)salt	628864	Mercury fulminate	1*	4	P065	X	1## (0.454)
Fumaric acid	110178		5000	1		D	5000 (2270)
Furan	110009	Furfuran	1*	4	U124	B	100 (45.4)
Furan, tetrahydro-	109999	Tetrahydrofuran	1*	4	U213	C	1000 (454)
2-Furancarboxaldehyde	98011	Furfural	1000	1,4	U125	D	5000 (2270)
2,5-Furandione	108316	Maleic anhydride	5000	1,4	U147	D	5000 (2270)
Furfural	98011	2-Furancarboxaldehyde	000	1,4	U125	D	5000 (2270)
Furfuran	110009	Furan	1*	4	U124	B	100 (45.4)
D-Glucopyranose, 2-deoxy-2-(3-methyl-3-nitrosoureido)-	18883664	Streptozotocin	1*	4	U206	X	1# (0.454)
Glycidylaldehyde	765344	1-Propanal, 2,3-epoxy-	1*	4	U126	X	1# (0.454)
Guanidine, N-nitroso-N-methyl-N'-nitro-	70257	N-Methyl-N'-nitro-N-nitrosoguanidine	1*	4	U163	X	1# (0.454)
Guthion	86500		1	1		X	1 (0.454)
HALOETHERS			1*	2			**
HALOMETHANES			1*	2			**
Heptachlor	76448	4,7-Methano-1H-indene,1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-.	1	1,2,4	P059	X	1#(0.454)
HEPTACHLOR AND METABOLITES			1*	2			**
Heptachlor epoxide	1024573		1*	2		X	1# (0.454)
Hexachlorobenzene	118741	Benzene, hexachloro-	1*	2,4	U127	X	1# (0.454)
Hexachlorobutadiene	87683	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	1*	2,4	U128	X	1# (0.454)
HEXACHLOROCYCLOHEXANE (all isomers)	608731		1*	2			**
Hexachlorocyclohexane (gamma isomer)	58899	gamma - BHC Lindane	1	1,2,4	U129	X	1# (0.454)
Hexachlorocyclopentadiene	77474	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	1	1,2,4	U130	X	1# (0.454)
1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo,endo- 1,4:5,8-dimethanonaphthalene.	72208	Endrin	1	1,2,4	P051	X	1 (0.454)
1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo,exo- 1,4:5,8-dimethanonaphthalene.	60571	Dieldrin	1	1,2,4	P037	X	1# (0.454)
Hexachloroethane	67721	Ethane, 1,1,1,2,2,2-hexachloro-	1*	2,4	U131	X	1# (0.454)
Hexachlorohexahydro-endo,endo-dimethanonaphthalene	465736	1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4,5,8-endo,endo- dimethanonaphthalene.	1*	4	P060	X	1 (0.454)
1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4,5,8-endo,endo- dimethanonaphthalene.	465736	Hexachlorohexahydro-endo,endo-dimethanonaphthalene	1*	4	P060	X	1 (0.454)
1,2,3,4,10-10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8- endo, exo-dimethanonaphthalene.	309002	Aldrin	1	1,2,4	P004	X	1# (0.454)
Hexachlorophene	70304	2,2'-Methylenebis(3,4,6-trichlorophenol)	1*	4	U132	X	1## (0.454)
Hexachloropropene	1888717	1-Propene, 1,1,2,3,3,3-hexachloro-	1*	4	U243	C	1000 (454)
Hexaethyl tetraphosphate	757584	Tetraphosphoric acid, hexaethyl ester	1*	4	P062	B	100 (45.4)
Hydrazine	302012	Diamine	1*	4	U133	X	1# (0.454)
Hydrazine, 1,2-diethyl-	1615801	N,N'-Diethylhydrazine	1*	4	U086	X	1# (0.454)
Hydrazine, 1,1-dimethyl-	57147	1,1-Dimethylhydrazine	1*	4	U098	X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Hydrazine, 1,2-dimethyl-	540738	1,2-Dimethylhydrazine	1*	4	U099	X	1# (0.454)
Hydrazine, 1,2-diphenyl-	122667	1,2-Diphenylhydrazine	1*	2,4	U109	X	1# (0.454)
Hydrazine, methyl-	60344	Methyl hydrazine	1*	4	P068	A	10 (4.54)
Hydrazinecarbothioamide	79196	Thiosemicarbazide	1*	4	P116	B	100 (45.4)
Hydrochloric acid	7647010		5000	1		D	5000 (2270)
Hydrocyanic acid	74908	Hydrogen cyanide	10	1,4	P063	A	10 (4.54)
Hydrofluoric acid	7664393	Hydrogen fluoride	5000	1,4	U134	B	100 (45.4)
Hydrogen cyanide	74908	Hydrocyanic acid	10	1,4	P063	A	10 (4.54)
Hydrogen fluoride	7664393	Hydrofluoric acid	5000	1,4	U134	B	100 (45.4)
Hydrogen phosphide	7803512	Phosphine	1*	4	P096	B	100 (45.4)
Hydrogen sulfide	7783064	Hydrosulfuric acid Sulfur hydride	100	1,4	U135	B	100## (45.4)
Hydroperoxide, 1-methyl-1-phenylethyl-	80159	alpha,alpha-Dimethylbenzylhydroperoxide	1*	4	U096	A	10 (4.54)
Hydrosulfuric acid	7783064	Hydrogen sulfide Sulfur hydride	100	1,4	U135	B	100## (45.4)
Hydroxydimethylarsine oxide	75605	Cacodylic acid	1*	4	U136	X	1# (0.454)
2-Imidazolidinethione	96457	Ethylenethiourea	1*	4	U116	X	1# (0.454)
Indeno(1,2,3-cd)pyrene	193395	1,10-(1,2-Phenylene)pyrene	1*	2,4	U137	X	1# (0.454)
Iron dextran	9004664	Ferric dextran	1*	4	U139	X	1## (0.454)
Isobutyl alcohol	78831	1-Propanol, 2-methyl-	1*	4	U140	D	5000 (2270)
Isocyanic acid, methyl ester	624839	Methyl isocyanate	1*	4	P064	X	1###(0.454)
Isophorone	78591		1*	2		D	5000 (2270)
Isoprene	78795		1000	1		C	1000## (454)
Isopropanolamine dodecylbenzenesulfonate	42504461		1000	1		C	1000 (454)
Isosafrole	120581	Benzene, 1,2-methylenedioxy-4-propenyl-	1*	4	U141	X	1# (0.454)
3(2H)-Isoxazolone, 5-(aminomethyl)-	2763964	5-(Aminomethyl)-3-isoxazolol	1*	4	P007	C	1000 (454)
Kelthane	115322		5000	1		A	10 (4.54)
Kepone	143500	Decachlorooctahydro-1,3,4-metheno-2H-cyclobuta[c,d]-pentalen-2-one.	1	1,4	U142	X	1# (0.454)
Lasiocarpine	303344		1*	4	U143	X	1# (0.454)
Lead ††	7439921		1*	2		X	1## (0.454)
Lead acetate	301042	Acetic acid, lead salt	5000	1,4	U144	D	5000# (2270)
LEAD AND COMPOUNDS			1*	2			**
Lead arsenate	7784409 7645252 10102484		5000	1		D	5000# (2270)
Lead chloride	7758954		5000	1		D	5000## (2270)
Lead fluoborate	13814965		5000	1		D	5000## (2270)
Lead fluoride	7783462		1000	1		C	1000## (454)
Lead iodide	10101630		5000	1		D	5000## (2270)
Lead nitrate	10099748		5000	1		D	5000## (2270)
Lead phosphate	7446277	Phosphoric acid, lead salt	1*	4	U145	X	1# (0.454)
Lead stearate	7428480 1072351 56189094 52652592		5000	1		D	5000## (2270)
Lead subacetate	1335326		1*	4	U146	X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory RQ	Statutory Code †	Statutory RCRA Waste Number	Final RQ Category	Final RQ Pounds(Kg)
Lead sulfate	15739807 7446142		5000	1		D	5000## (2270)
Lead sulfide	1314870		5000	1		D	5000## (2270)
Lead thiocyanate	592870		5000	1		D	5000## (2270)
Lindane	58899	gamma - BHC Hexachlorocyclohexane (gamma isomer)	1	1,2,4	U129	X	1# (0.454)
Lithium chromate	14307358		1000	1		C	1000# (454)
Malathion	121755		10	1		B	100 (45.4)
Maleic acid	110167		5000	1		D	5000 (2270)
Maleic anhydride	108316	2,5-Furandione	5000	1,4	U147	D	5000 (2270)
Maleic hydrazide	123331	1,2-Dihydro-3,6-pyridazinedione	1*	4	U148	D	5000 (2270)
Malononitrile	109773	Propanedinitrile	1*	4	U149	C	1000 (454)
Melphalan	148823	Alanine, 3-[p-bis(2-chloroethyl)amino]phenyl-,L-	1*	4	U150	X	1# (0.454)
Mercaptodimethur	2032657		100	1		A	10 (4.54)
Mercuric cyanide	592041		1	1		X	1 (0.454)
Mercuric nitrate	10045940		10	1		A	10## (4.54)
Mercuric sulfate	7783359		10	1		A	10## (4.54)
Mercuric thiocyanate	592858		10	1		A	10## (4.54)
Mercurous nitrate	10415755 7782867		10	1		A	10## (4.54)
Mercury	7439976		1*	2,3,4	U151	X	1 (0.454)
MERCURY AND COMPOUNDS			1*	2			**
Mercury, (acetato-O)phenyl-	62384	Phenylmercuric acetate	1*	4	P092	X	1##(0.454)
Mercury fulminate	628864	Fulminic acid, mercury(II)salt	1*	4	P065	X	1## (0.454)
Methacrylonitrile	126987	2-Propenenitrile, 2-methyl-	1*	4	U152	C	1000 (454)
Methanamine, N-methyl-	124403	Dimethylamine	1000	1,4	U092	C	1000## (454)
Methane, bromo-	74839	Methyl bromide	1*	2,4	U029	C	1000 (454)
Methane, chloro-	74873	Methyl chloride	1*	2,4	U045	X	1## (0.454)
Methane, chloromethoxy-	107302	Chloromethyl methyl ether	1*	4	U046	X	1# (0.454)
Methane, dibromo-	74953	Methylene bromide	1*	4	U068	C	1000 (454)
Methane, dichloro-	75092	Methylene chloride	1*	2,4	U080	C	1000 (454)
Methane, dichlorodifluoro-	75718	Dichlorodifluoromethane	1*	4	U075	D	5000 (2270)
Methane, iodo-	74884	Methyl iodide	1*	4	U138	X	1# (0.454)
Methane, oxybis(chloro-	542881	Bis(chloromethyl) ether	1*	4	P016	X	1# (0.454)
Methane, tetrachloro-	56235	Carbon tetrachloride	5000	1,2,4	U211	D	5000# (2270)
Methane, tetranitro-	509148	Tetranitromethane	1*	4	P112	A	10 (4.54)
Methane, tribromo-	75252	Bromoform	1*	2,4	U225	B	100 (45.4)
Methane, trichloro-	67663	Chloroform	5000	1,2,4	U044	D	5000# (2270)
Methane, trichlorofluoro-	75694	Trichloromonofluoromethane	1*	4	U121	D	5000 (2270)
Methanesulfonic acid, ethyl ester	62500	Ethyl methanesulfonate	1*	4	U119	X	1# (0.454)
Methanethiol	74931	Methylmercaptan Thiomethanol	100	1,4	U153	B	100 (45.4)
Methanesulfenyl chloride, trichloro-	594423	Trichloromethanesulfenyl chloride	1*	4	P118	B	100 (45.4)
4,7-Methano-1H-indene,1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-.	76448	Heptachlor	1	1,2,4	P059	X	1# (0.454)
Methanoic acid	64186	Formic acid	5000	1,4	U123	D	5000 (2270)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
4,7-Methanoindan, 1,2,4,5,6,7,8,8-octachloro-3a,4,7,7a-tetrahydro-.	57749	Chlordane Chlordane, technical	1	1,2,4	U036	X	1# (0.454)
Methanol	67561	Methyl alcohol	1*	4	U154	D	5000 (2270)
Methapyrilene	91805	Pyridine, 2-[(2-(dimethylamino)ethyl)-2-thenylamino]-	1*	4	U155	D	5000 (2270)
Methomyl	16752775	Acetimidic acid, N-[(methylcarbamoyl)oxy]thio-, methyl ester.	1*	4	P066	B	100 (45.4)
Methoxychlor	72435	Ethane, 1,1,1-trichloro-2,2-bis(p-methoxyphenyl)-	1	1,4	U247	X	1 (0.454)
Methyl alcohol	67561	Methanol	1*	4	U154	D	5000 (2270)
2-Methylaziridine	75558	1,2-Propylenimine	1*	4	P067	X	1# (0.454)
Methyl bromide	74839	Methane, bromo-	1*	2,4	U029	C	1000 (454)
1-Methylbutadiene	504609	1,3-Pentadiene	1*	4	U186	B	100 (45.4)
Methyl chloride	74873	Methane, chloro-	1*	2,4	U045	X	1## (0.454)
Methyl chlorocarbonate	79221	Carbonochloridic acid, methyl ester	1*	4	U156	C	1000 (454)
Methyl chloroform	71556	1,1,1-Trichloroethane	1*	2,4	U226	C	1000 (454)
4,4'-Methylenebis(2-chloroaniline)	101144	Benzenamine, 4,4'-methylenebis(2-chloro-	1*	4	U158	X	1# (0.454)
2,2'-Methylenebis(3,4,6-trichlorophenol)	70304	Hexachlorophene	1*	4	U132	X	1## (0.454)
3-Methylcholanthrene	56495	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-	1*	4	U157	X	1# (0.454)
Methylene bromide	74953	Methane, dibromo-	1*	4	U068	C	1000 (454)
Methylene chloride	75092	Methane, dichloro-	1*	2,4	U080	C	1000 (454)
Methylene oxide	50000	Formaldehyde	1000	1,4	U122	C	1000# (454)
Methyl ethyl ketone	78933	2-Butanone	1*	4	U159	D	5000 (2270)
Methyl ethyl ketone peroxide	1338234	2-Butanone peroxide	1*	4	U160	A	10 (4.54)
Methyl hydrazine	60344	Hydrazine, methyl-	1*	4	P068	A	10 (4.54)
Methyl iodide	74884	Methane, iodo-	1*	4	U138	X	1# (0.454)
Methyl isobutyl ketone	108101	4-Methyl-2-pentanone	1*	4	U161	D	5000 (2270)
Methyl isocyanate	624839	Isocyanic acid, methyl ester	1*	4	P064	X	1###(0.454)
2-Methyllactonitrile	75865	Acetone cyanohydrin Propanenitrile, 2-hydroxy-2-methyl-	10	1,4	P069	A	10 (4.54)
Methylmercaptan	74931	Methanethiol Thiomethanol	100	1,4	U153	B	100 (45.4)
Methyl methacrylate	80626	2-Propenoic acid, 2-methyl-, methyl ester	5000	1,4	U162	C	1000 (454)
N-Methyl-N'-nitro-N-nitrosoguanidine	70257	Guanidine, N-nitroso-N-methyl-N'-nitro-	1*	4	U163	X	1# (0.454)
Methyl parathion	298000	O,O-Dimethyl O-p-nitrophenyl phosphorothioate	100	1,4	P071	B	100## (45.4)
4-Methyl-2-pentanone	108101	Methyl isobutyl ketone	1*	4	U161	D	5000 (2270)
Methylthiouracil	56042	4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-	1*	4	U164	X	1# (0.454)
Mevinphos	7786347		1	†		A	10 (4.54)
Mexacarbate	315184		1000	†		C	1000 (454)
Mitomycin C	50077	Azirino(2',3':3,4)pyrrolo(1,2-a)indole-4,7-dione,6-amino-8-[((aminocarbonyl)oxy)methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-.	1*	4	U010	X	1# (0.454)
Monoethylamine	75047		1000	†		C	1000## (454)
Monomethylamine	74895		1000	†		B	100 (45.4)
Naled	300765		10	1		A	10 (4.54)
5,12-Naphthacenedione, (8S-cis)-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-.	20830813	Daunomycin	1*	4	U059	X	1# (0.454)
Naphthalene	91203		5000	1,2,4	U165	B	100 (45.4)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Naphthalene, 2-chloro-	91587	beta-Chloronaphthalene 2-Chloronaphthalene	1*	2,4	U047	D	5000 (2270)
1,4-Naphthalenedione	130154	1,4-Naphthoquinone	1*	4	U166	D	5000 (2270)
2,7-Naphthalenedisulfonic acid,3,3'-[(3,3'-dimethyl- (1,1'-biphenyl)-4,4'-diyl)- bis(azo)]bis(5-amino- 4-hydroxy)-tetrasodium salt.	72571	Trypan blue	1*	4	U236	X	1# (0.454)
Naphthenic acid	1338245		100	1		B	100 (45.4)
1,4-Naphthoquinone	130154	1,4-Naphthalenedione	1*	4	U166	D	5000 (2270)
1-Naphthylamine	134327	alpha-Naphthylamine	1*	4	U167	X	1# (0.454)
2-Naphthylamine	91598	beta-Naphthylamine	1*	4	U168	X	1# (0.454)
alpha-Naphthylamine	134327	1-Naphthylamine	1*	4	U167	X	1# (0.454)
beta-Naphthylamine	91598	2-Naphthylamine	1*	4	U168	X	1# (0.454)
2-Naphthylamine, N,N-bis(2-chloroethyl)-	494031	Chlornaphazine	1*	4	U026	X	1# (0.454)
alpha-Naphthylthiourea	86884	Thiourea, 1-naphthalenyl-	1*	4	P072	B	100 (45.4)
Nickel ††	7440020		1*	2		X	1# (0.454)
NICKEL AND COMPOUNDS			1*	2			**
Nickel ammonium sulfate	15699180		5000	1		D	5000# (2270)
Nickel carbonyl	13463393	Nickel tetracarbonyl	1*	4	P073	X	1# (0.454)
Nickel chloride	7718549 37211055		5000	1		D	5000# (2270)
Nickel cyanide	557197	Nickel(II) cyanide	1*	4	P074	X	1# (0.454)
Nickel(II) cyanide	557197	Nickel cyanide	1*	4	P074	X	1# (0.454)
Nickel hydroxide	12054487		1000	1		C	1000# (454)
Nickel nitrate	14216752		5000	1		D	5000# (2270)
Nickel sulfate	7786814		5000	1		D	5000# (2270)
Nickel tetracarbonyl	13463393	Nickel carbonyl	1*	4	P073	X	1# (0.454)
Nicotine and salts	54115	Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-, and salts	1*	4	P075	B	100 (45.4)
Nitric acid	7697372		1000	1		C	1000 (454)
Nitric oxide	10102439	Nitrogen(II) oxide	1*	4	P076	A	10 (4.54)
p-Nitroaniline	100016	Benzenamine, 4-nitro-	1*	4	P077	D	5000 (2270)
Nitrobenzene	98953	Benzene, nitro-	1000	1,2,4	U169	C	1000 (454)
Nitrogen dioxide	10102440 10544726	Nitrogen(IV) oxide	1000	1,4	P078	A	10 (4.54)
Nitrogen(II) oxide	10102439	Nitric oxide	1*	4	P076	A	10 (4.54)
Nitrogen(IV) oxide	10102440 10544726	Nitrogen dioxide	1000	1,4	P078	A	10 (4.54)
Nitroglycerine	55630	1,2,3-Propanetriol, trinitrate-	1*	4	P081	A	10 (4.54)
Nitrophenol (mixed) m- o- p-	25154556 554847 88755 100027	 2-Nitrophenol 4-Nitrophenol Phenol, 4-nitro-	1000	1		B	100 (45.4)
p-Nitrophenol	100027	4-Nitrophenol Phenol, 4-nitro-	1000	1,2,4	U170	B	100 (45.4)
2-Nitrophenol	88755	o-Nitrophenol	1000	1,2		B	100 (45.4)
4-Nitrophenol	100027	p-Nitrophenol Phenol, 4-nitro-	1000	1,2,4	U170	B	100 (45.4)
NITROPHENOLS			1*	2			**
2-Nitropropane	79469	Propane, 2-nitro-	1*	4	U171	X	1# (0.454)
NITROSAMINES			1*	2			**

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
N-Nitrosodi-n-butylamine	924163	1-Butanamine, N-butyl-N-nitroso-	1*	4	U172	X	1# (0.454)
N-Nitrosodiethanolamine	1116547	Ethanol, 2,2'-(nitrosoimino)bis-	1*	4	U173	X	1# (0.454)
N-Nitrosodiethylamine	55185	Ethanamine, N-ethyl-N-nitroso-	1*	4	U174	X	1# (0.454)
N-Nitrosodimethylamine	62759	Dimethylnitrosamine	1*	2,4	P082	X	1# (0.454)
N-Nitrosodiphenylamine	86306		1*	2		B	100 (45.4)
N-Nitrosodi-n-propylamine	621647	Di-n-propylnitrosamine	1*	2,4	U111	X	1# (0.454)
N-Nitroso-N-ethylurea	759739	Carbamide, N-ethyl-N-nitroso-	1*	4	U176	X	1# (0.454)
N-Nitroso-N-methylurea	684935	Carbamide, N-methyl-N-nitroso-	1*	4	U177	X	1# (0.454)
N-Nitroso-N-methylurethane	615532	Carbamic acid, methylnitroso-,ethyl ester	1*	4	U178	X	1# (0.454)
N-Nitrosomethylvinylamine	4549400	Ethenamine, N-methyl-N-nitroso-	1*	4	P084	X	1# (0.454)
N-Nitrosopiperidine	100754	Pyridine, hexahydro-N-nitroso-	1*	4	U179	X	1# (0.454)
N-Nitrosopyrrolidine	930552	Pyrrole, tetrahydro-N-nitroso-	1*	4	U180	X	1# (0.454)
Nitrotoluene m- o- p-	1321126 99081 88722 99990		1000	1		C	1000 (454)
5-Nitro-o-toluidine	99558	Benzenamine, 2-methyl-5-nitro-	1*	4	U181	X	1# (0.454)
5-Norbornene-2,3-dimethanol,1,4,5,6,7,7-hexachloro, cyclic sulfite.	115297	Endosulfan	1	1,2,4	P050	X	1 (0.454)
Octamethylpyrophosphoramide	152169	Diphosphoramide, octamethyl-	1*	4	P085	B	100 (45.4)
Osmium oxide	20816120	Osmium tetroxide	1*	4	P087	C	1000 (454)
Osmium tetroxide	20816120	Osmium oxide	1*	4	P087	C	1000 (454)
7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid	145733	Endothall	1*	4	P088	C	1000 (454)
1,2-Oxathiolane, 2,2-dioxide	1120714	1,3-Propane sultone	1*	4	U193	X	1# (0.454)
2H-1,3,2-Oxazaphosphorine,2-[bis(2-chloroethyl)amino] tetrahydro-2-oxide.	50180	Cyclophosphamide	1*	4	U058	X	1# (0.454)
Oxirane	75218	Ethyleneoxide	1*	4	U115	X	1# (0.454)
Oxirane, 2-(chloromethyl)-	106898	1-Chloro-2,3-epoxypropane Epichlorohydrin	1000	1,4	U041	C	1000# (454)
Paraformaldehyde	30525894		1000	1		C	1000 (454)
Paraldehyde	123637	1,3,5-Trioxane, 2,4,6-trimethyl-	1*	4	U182	C	1000 (454)
Parathion	56382	Phosphorothioic acid,O,O-diethyl O-(p-nitrophenyl) ester	1	1,4	P089	X	1# (0.454)
Pentachlorobenzene	608935	Benzene, pentachloro-	1*	4	U183	X	1## (0.454)
Pentachloroethane	76017	Ethane, pentachloro-	1*	4	U184	X	1## (0.454)
Pentachloronitrobenzene	82688	Benzene, pentachloronitro-	1*	4	U185	X	1# (0.454)
Pentachlorophenol	87865	Phenol, pentachloro-	10	1,2,4	U242	A	10# (4.54)
1,3-Pentadiene	504609	1-Methylbutadiene	1*	4	U186	B	100 (45.4)
Phenacetin	62442	Acetamide, N-(4-ethoxyphenyl)-	1*	4	U187	X	1# (0.454)
Phenanthrene	85018		1*	2		X	1## (0.454)
Phenol	108952	Benzene, hydroxy-	1000	1,2,4	U188	C	1000## (454)
Phenol, 2-chloro-	95578	2-Chlorophenol o-Chlorophenol	1*	2,4	U048	B	100 (45.4)
Phenol, 4-chloro-3-methyl-	59507	4-Chloro-m-cresol p-Chloro-m-cresol	1*	2,4	U039	D	5000 (2270)
Phenol, 2-cyclohexyl-4,6-dinitro-	131895	4,6-Dinitro-o-cyclohexylphenol	1*	4	P034	B	100 (45.4)
Phenol, 2,4-dichloro-	120832	2,4-Dichlorophenol	1*	2,4	U081	B	100 (45.4)
Phenol, 2,6-dichloro-	87650	2,6-Dichlorophenol	1*	4	U082	B	100 (45.4)
Phenol, 2,4-dimethyl-	105679	2,4-Dimethylphenol	1*	2,4	U101	B	100 (45.4)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Phenol, 2,4-dinitro-	51285	2,4-Dinitrophenol	1000	1,2,4	P048	A	10 (4.54)
Phenol, 2,4-dinitro-6-(1-methylpropyl)-	88857	Dinoseb	1*	4	P020	C	1000 (454)
Phenol, 2,4-dinitro-6-methyl- and salts	534521	4,6-Dinitro-o-cresol and salts	1*	2,4	P047	A	10 (4.54)
Phenol, 4-nitro-	100027	p-Nitrophenol 4-Nitrophenol	1000	1,2,4	U170	B	100 (45.4)
Phenol, pentachloro-	87865	Pentachlorophenol	10	1,2,4	U242	A	10# (4.54)
Phenol, 2,3,4,6-tetrachloro-	58902	2,3,4,6-Tetrachlorophenol	1*	4	U212	A	10 (4.54)
Phenol, 2,4,5-trichloro-	95954	2,4,5-Trichlorophenol	10	1,4	U230	A	10# (4.54)
Phenol, 2,4,6-trichloro-	88062	2,4,6-Trichlorophenol	10	1,2,4	U231	A	10# (4.54)
Phenol, 2,4,6-trinitro- ammonium salt	131748	Ammonium picrate	1*	4	P009	A	10 (4.54)
Phenyl dichloroarsine	696286	Dichlorophenylarsine	1*	4	P036	X	1# (0.454)
1,10-(1,2-Phenylene)pyrene	193395	Indeno(1,2,3-cd)pyrene	1*	2,4	U137	X	1# (0.454)
Phenylmercuric acetate	62384	Mercury, (acetato-O)phenyl-	1*	4	P092	X	1## (0.454)
N-Phenylthiourea	103855	Thiourea, phenyl-	1*	4	P093	B	100 (45.4)
Phorate	298022	Phosphorodithioic acid, O,O-diethyl S-(ethylthio), methyl ester	1*	4	P094	X	1## (0.454)
Phosgene	75445	Carbonyl chloride	5000	1,4	P095	A	10 (4.54)
Phosphine	7803512	Hydrogen phosphide	1*	4	P096	B	100 (45.4)
Phosphoric acid	7664382		5000	1		D	5000 (2270)
Phosphoric acid,diethyl p-nitrophenyl ester	311455	Diethyl-p-nitrophenyl phosphate	1*	4	P041	B	100 (45.4)
Phosphoric acid, lead salt	7446277	Lead phosphate	1*	4	U145	X	1# (0.454)
Phosphorodithioic acid, O,O-diethyl S-methylester	3288582	O,O-Diethyl S-methyl dithiophosphate	1*	4	U087	D	5000 (2270)
Phosphorodithioic acid, O,O-diethyl S-(ethylthio), methyl ester	298022	Phorate	1*	4	P094	X	1## (0.454)
Phosphorodithioic acid,O,O-dimethyl S-[2(methylamino)-2-oxoethyl] ester	60515	Dimethoate	1*	4	P044	A	10 (4.54)
Phosphorofluoridic acid,bis(1-methylethyl) ester	55914	Diisopropyl fluorophosphate	1*	4	P043	B	100 (45.4)
Phosphorothioic acid,O,O-diethyl O (p-nitrophenyl) ester	56382	Parathion	1	1,4	P089	X	1# (0.454)
Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester	297972	O,O-Diethyl O-pyrazinyl phosphorothioate	1*	4	P040	B	100 (45.4)
Phosphorothioic acid, O,O-dimethyl O-[p-[(dimethylamino)-sulfonyl]phenyl] ester	52857	Famphur	1*	4	P097	C	1000 (454)
Phosphorus	7723140		1	1		X	1 (0.454)
Phosphorus oxychloride	10025873		5000	1		C	1000 (454)
Phosphorus pentasulfide	1314803	Phosphorus sulfide Sulfur phosphide	100	1,4	U189	B	100 (45.4)
Phosphorus sulfide	1314803	Phosphorus pentasulfide Sulfur phosphide	100	1,4	U189	B	100 (45.4)
Phosphorus trichloride	7719122		5000	1		C	1000 (454)
PHTHALATE ESTERS			1*	2			**
Phthalic anhydride	85449	1,2-Benzenedicarboxylic acid anhydride	1*	4	U190	D	5000 (2270)
2-Picoline	109068	Pyridine,2-methyl-	1*	4	U191	D	5000 (2270)
Plumbane, tetraethyl-	78002	Tetraethyl lead	00	1,4	P110	B	100## (45.4)
POLYCHLORINATED BIPHENYLS (PCBs)	1336363 12674112 11104282 11141165 53469219 12672296 11097691 11096825	Aroclors Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260	10	1,2		A	10# (4.54)
POLYNUCLEAR AROMATIC HYDROCARBONS			1*				

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Potassium arsenate	7784410		1000	1		C	1000# (454)
Potassium arsenite	10124502		1000	1		C	1000# (454)
Potassium bichromate	7778509		1000	1		C	1000# (454)
Potassium chromate	7789006		1000	1		C	1000# (454)
Potassium cyanide	151508		10	1,4	P098	A	10 (4.54)
Potassium hydroxide	1310583		1000	1		C	1000 (454)
Potassium permanganate	7722647		100	1		B	100 (45.4)
Potassium silver cyanide	506616		1*	4	P099	X	1 (0.454)
Pronamide	23950585	3,5-Dichloro-N-(1,1-dimethyl-2-propynyl)benzamide	1*	4	U192	D	5000 (2270)
1-Propanal, 2,3-epoxy-	765344	Glycidylaldehyde	1*	4	U126	X	1# (0.454)
Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino) carbonyl]oxime.	116063	Aldicarb	1*	4	P070	X	1 (0.454)
1-Propanamine	107108	n-Propylamine	1*	4	U194	D	5000 (2270)
1-Propanamine, N-propyl-	142847	Dipropylamine	1*	4	U110	D	5000 (2270)
Propane, 1,2-dibromo-3-chloro-	96128	1,2-Dibromo-3-chloropropane	1*	4	U066	X	1# (0.454)
Propane, 2-nitro-	79469	2-Nitropropane	1*	4	U171	X	1# (0.454)
Propane, 2,2'-oxybis(2-chloro-	108601	Bis(2-chloroisopropyl) ether	1*	2,4	U027	C	1000 (454)
1,3-Propane sultone	1120714	1,2-Oxathiolane, 2,2-dioxide	1*	4	U193	X	1# (0.454)
Propanedinitrile	109773	Malononitrile	1*	4	U149	C	1000 (4.54)
Propanenitrile	107120	Ethyl cyanide	1*	4	P101	A	10 (4.54)
Propanenitrile, 3-chloro-	542767	3-Chloropropionitrile	1*	4	P027	C	1000 (454)
Propanenitrile, 2-hydroxy-2-methyl-	75865	Acetone cyanohydrin 2-Methyllactonitrile	10	1,4	P069	A	10 (4.54)
1,2,3-Propanetriol, trinitrate-	55630	Nitroglycerine	1*	4	P081	A	10 (4.54)
1-Propanol, 2,3-dibromo-, phosphate (3:1)	126727	Tris(2,3-dibromopropyl) phosphate	1*	4	U235	X	1# (0.454)
1-Propanol, 2-methyl-	78831	Isobutyl alcohol	1*	4	U140	D	5000 (2270)
2-Propanone	67641	Acetone	1*	4	U002	D	5000 (2270)
2-Propanone, 1-bromo-	598312	Bromoacetone	1*	4	P017	C	1000 (454)
Propargite	2312358		10	1		A	10 (4.54)
Propargyl alcohol	107197	2-Propyn-1-ol	1*	4	P102	C	1000 (454)
2-Propenal	107028	Acrolein	1	1,2,4	P003	X	1 (0.454)
2-Propenamide	79061	Acrylamide	1*	4	U007	D	5000 (2270)
Propene, 1,3-dichloro-	542756	1,3-Dichloropropene	5000	1,2,4	U084	D	5000## (2270)
1-Propene, 1,1,2,3,3,3-hexachloro-	1888717	Hexachloropropene	1*	4	U243	C	1000 (454)
2-Propenenitrile	107131	Acrylonitrile	100	1,2,4	U009	B	100# (45.4)
2-Propenenitrile, 2-methyl-	126987	Methacrylonitrile	1*	4	U152	C	1000 (454)
2-Propenoic acid	79107	Acrylic acid	1*	4	U008	D	5000 (2270)
2-Propenoic acid, ethyl ester	140885	Ethyl acrylate	1*	4	U113	C	1000 (454)
2-Propenoic acid, 2-methyl-, ethyl ester	97632	Ethyl methacrylate	1*	4	U118	C	1000 (454)
2-Propenoic acid, 2-methyl-, methyl ester	80626	Methyl methacrylate	5000	1,4	U162	C	1000 (454)
2-Propen-1-ol	107186	Allyl alcohol	100	1,4	P005	B	100 (45.4)
Propionic acid	79094		5000	1		D	5000 (2270)
Propionic acid, 2-(2,4,5-trichlorophenoxy)-	93721	Silvex 2,4,5-TP acid	100	1,4	U233	B	100 (45.4)
Propionic anhydride	123626		5000	1		D	5000 (2270)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
n-Propylamine	107108	1-Propanamine	1*	4	U194	D	5000 (2270)
Propylene dichloride	78875	1,2-Dichloropropane	5000	1,2,4	U083	C	1000 (454)
Propylene oxide	75569		5000	1		B	100 (45.4)
1,2-Propylenimine	75558	2-Methylaziridine	1*	4	P067	X	1# (0.454)
2-Propyn-1-ol	107197	Propargyl alcohol	1*	4	P102	C	1000 (454)
Pyrene	129000		1*	2		X	1##. (0.454)
Pyrethrins	121299 121211 8003347		1000	1		X	1 (0.454)
4-Pyridinamine	504245	4-Aminopyridine	1*	4	P008	C	1000 (454)
Pyridine	110861		1*	4	U196	X	1## (0.454)
Pyridine, 2-[(2-(dimethylamino)ethyl)-2-thenylamino]-	91805	Methapyrilene	1*	4	U155	D	5000 (2270)
Pyridine, hexahydro-N-nitroso-	100754	N-Nitrosopiperidine	1*	4	U179	X	1# (0.454)
Pyridine,2-methyl-	109068	2-Picoline	1*	4	U191	D	5000 (2270)
Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-, and salts	54115	Nicotine and salts	1*	4	P075	B	100 (45.4)
4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-	56042	Methylthiouracil	1*	4	U164	X	1# (0.454)
Pyrophosphoric acid, tetraethyl ester	107493	Tetraethyl pyrophosphate	100	1,4	P111	B	100## (45.4)
Pyrrole, tetrahydro-N-nitroso-	930552	N-Nitrosopyrrolidine	1*	4	U180	X	1§ (0.454)
Quinoline	91225		1000	1		D	5000 (2270)
RADIONUCLIDES			1*	3		X	1§ (0.454)
Reserpine	50555	Yohimban-16-carboxylic acid,11,17-dimethoxy-18-[(3,4,5- trimethoxybenzoyl)oxy]-, methyl ester.	1*	4	U200	D	5000 (2270)
Resorcinol	108463	1,3-Benzenediol	1000	1,4	U201	D	5000 (2270)
Saccharin and salts	81072	1,2-Benzisothiazolin-3-one,1,1-dioxide, and salts	1*	4	U202	X	1# (0.454)
Safrole	94597	Benzene, 1,2-methylenedioxy-4-allyl-	1*	4	U203	X	1# (0.454)
Selenious acid	7783008		1*	4	U204	X	1## (0.454)
Selenium ††	7782492		1*	2		X	1## (0.454)
SELENIUM AND COMPOUNDS			1*	2			**
Selenium dioxide	7446084	Selenium oxide	1000	1,4	U204	C	1000## (454)
Selenium disulfide	7488564	Sulfur selenide	1*	4	U205	X	1# (0.454)
Selenium oxide	7446084	Selenium dioxide	1000	1,4	U204	C	1000## (454)
Selenourea	630104	Carbamimidoselenoic acid	1*	4	P103	X	1## (0.454)
L-Serine, diazoacetate (ester)	115026	Azaserine	1*	4	U015	X	1# (0.454)
Silver ††	7440224		1*	2		C	1000 (454)
SILVER AND COMPOUNDS			1*	2			**
Silver cyanide	506649		1*	4	P104	X	1 (0.454)
Silver nitrate	7761888		1	1		X	1 (0.454)
Silvex	93721	Propionic acid, 2-(2,4,5-trichlorophenoxy)- 2,4,5-TP acid	100	1,4	U233	B	100 (45.4)
Sodium	7440235		1000	1		A	10 (4.54)
Sodium arsenate	7631892		1000	1		C	1000# (454)
Sodium arsenite	7784465		1000	1		C	1000# (454)
Sodium azide	26628228		1*	4	P105	C	1000 (454)
Sodium bichromate	10588019		1000	1		C	1000# (454)
Sodium bifluoride	1333831		5000	1		D	5000## (2270)
Sodium bisulfite	7631905		5000	1		D	5000 (2270)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Sodium chromate	7775113		1000	1		C	1000# (454)
Sodium cyanide	143339		10	1,4	P106	A	10 (4.54)
Sodium dodecylbenzene sulfonate	25155300		1000	1		C	1000 (454)
Sodium fluoride	7681494		5000	1		C	1000 (454)
Sodium hydrosulfide	16721805		5000	1		D	5000 (2270)
Sodium hydroxide	1310732		1000	1		C	1000 (454)
Sodium hypochlorite	7681529 10022705		100	1		B	100 (45.4)
Sodium methylate	124414		1000	1		C	1000 (454)
Sodium nitrite	7632000		100	1		B	100## (45.4)
Sodium phosphate, dibasic	7558794 10039324 10140655		5000	1		D	5000 (2270)
Sodium phosphate, tribasic	7601549 7785844 10101890 10361894 7758294 10124568		5000	1		D	5000 (2270)
Sodium selenite	10102188 7782823		1000	1		C	1000## (454)
4,4'-Stilbenediol, alpha,alpha'-diethyl-	56531	Diethylstilbestrol	1*	4	U089	X	1# (0.454)
Streptozotocin	18883664	D-Glucopyranose, 2-deoxy-2-(3-methyl-3-nitrosoureido)-	1*	4	U206	X	1# (0.454)
Strontium chromate	7789062		1000	1		C	1000# (454)
Strontium sulfide	1314961		1*	4	P107	B	100 (45.4)
Strychnidin-10-one, and salts	57249	Strychnine and salts	10	1,4	P108	A	10 (4.54)
Strychnidin-10-one, 2,3-dimethoxy-	357573	Brucine	1*	4	P018	A	10 (4.54)
Strychnine and salts	57249	Strychnidin-10-one, and salts	10	1,4	P108	A	10 (4.54)
Styrene	100425		1000	1		C	1000 (454)
Sulfur hydride	7783064	Hydrogen sulfide Hydrosulfuric acid	100	1,4	U135	B	100## (45.4)
Sulfur monochloride	12771083		1000	1		C	1000 (454)
Sulfur phosphide	1314803	Phosphorus pentasulfide Phosphorus sulfide	100	1,4	U189	B	100 (45.4)
Sulfur selenide	7488564	Selenium disulfide	1*	4	U205	X	1# (0.454)
Sulfuric acid	7664939 8014957		1000	1		C	1000 (454)
Sulfuric acid, dimethyl ester	77781	Dimethyl sulfate	1*	4	U103	X	1# (0.454)
Sulfuric acid, thallium(I) salt	7446186 10031591	Thallium(I) sulfate	1000	1,4	P115	C	1000## (454)
2,4,5-T	93765	2,4,5-T acid 2,4,5-Trichlorophenoxyacetic acid	100	1,4	U232	C	1000 (454)
2,4,5-T acid	93765	2,4,5-T 2,4,5-Trichlorophenoxyacetic acid	100	1,4	U232	C	1000 (454)
2,4,5-T amines	2008460 6369966 6369977 1319728 3813147		100	1		D	5000 (2270)
2,4,5-T esters	93798 2545597 61792072 1928478 25168154		100	1		C	1000 (454)
2,4,5-T salts	13560991		100	1		C	1000 (454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
TDE	72548	DDD 4,4' DDD Dichlorodiphenyl dichloroethane	1	1,2,4	U060	X	1# (0.454)
1,2,4,5-Tetrachlorobenzene	95943	Benzene, 1,2,4,5-tetrachloro-	1*	4	U207	D	5000 (2270)
2,3,7,8-Tetrachlorodibenzo-p-dioxin(TCDD)	1746016		1*	2		X	1# (0.454)
1,1,1,2-Tetrachloroethane	630206	Ethane,1,1,1,2-tetrachloro-	1*	4	U208	X	1# (0.454)
1,1,2,2-Tetrachloroethane	79345	Ethane, 1,1,2,2-tetrachloro-	1*	2,4	U209	X	1# (0.454)
Tetrachloroethylene	127184	Ethene, 1,1,2,2-tetrachloro-	1*	2,4	U210	X	1# (0.454)
2,3,4,6-Tetrachlorophenol	58902	Phenol, 2,3,4,6-tetrachloro-	1*	4	U212	A	10 (4.54)
Tetraethyldithiopyrophosphate	3689245	Dithiopyrophosphoric acid,tetraethyl ester	1*	4	P109	B	100 (45.4)
Tetraethyl lead	78002	Plumbane, tetraethyl-	100	1,4	P110	B	100## (45.4)
Tetraethyl pyrophosphate	107493	Pyrophosphoric acid, tetraethyl ester	100	1,4	P111	B	100## (45.4)
Tetrahydrofuran	109999	Furan, tetrahydro-	1*	4	U213	C	1000 (454)
Tetranitromethane	509148	Methane, tetranitro-	1*	4	P112	A	10 (4.54)
Tetraphosphoric acid, hexaethyl ester	757584	Hexaethyl tetraphosphate	1*	4	P062	B	100 (45.4)
Thallic oxide	1314325	Thallium(III) oxide	1*	4	P113	X	1## (0.454)
Thallium ††	7440280		1*	2		X	1## (0.454)
THALLIUM AND COMPOUNDS			1*	2			**
Thallium(I) acetate	563688	Acetic acid, thallium(I) salt	1*	4	U214	X	1## (0.454)
Thallium(I) carbonate	6533739	Carbonic acid, dithallium (I) salt	1*	4	U215	X	1## (0.454)
Thallium(I) chloride	7791120		1*	4	U216	X	1## (0.454)
Thallium(I) nitrate	10102451		1*	4	U217	X	1## (0.454)
Thallium(III) oxide	1314325	Thallic oxide	1*	4	P113	X	1## (0.454)
Thallium(I) selenide	12039520		1*	4	P114	X	1## (0.454)
Thallium(I) sulfate	7446186 10031591	Sulfuric acid, thallium(I) salt	1000	1,4	P115	C	1000## (454)
Thioacetamide	62555	Ethanethioamide	1*	4	U218	X	1# (0.454)
Thiofanox	39196184	3,3-Dimethyl-1-(methylthio)-2-butanone,O-[(methylamino) carbonyl] oxime.	1*	4	P045	B	100 (45.4)
Thioimidodicarbonic diamide	541537	2,4-Dithiobiuret	1*	4	P049	B	100 (45.4)
Thiomethanol	74931	Methanethiol Methylmercaptan	100	1,4	U153	B	100 (45.4)
Thiophenol	108985	Benzenethiol	1*	4	P014	B	100 (45.4)
Thiosemicarbazide	79196	Hydrazinecarbothioamide	1*	4	P116	B	100 (45.4)
Thiourea	62566	Carbamide, thio-	1*	4	U219	X	1# (0.454)
Thiourea, (2-chlorophenyl)-	5344821	1-(o-Chlorophenyl)thiourea	1*	4	P026	B	100 (45.4)
Thiourea, 1-naphthalenyl-	86884	alpha-Naphthylthiourea	1*	4	P072	B	100 (45.4)
Thiourea, phenyl-	103855	N-Phenylthiourea	1*	4	P093	B	100 (45.4)
Thiram	137268	Bis(dimethylthiocarbamoyl) disulfide	1*	4	U244	A	10 (4.54)
Toluene	108883	Benzene, methyl-	1000	1,2,4	U220	C	1000 (454)
Toluenediamine	95807 25376458 496720 823405	Diaminotoluene	1*	4	U221	X	1# (0.454)
Toluene diisocyanate	584849 91087 26471625	Benzene, 2,4-diisocyanatomethyl-	1*	4	U223	B	100 (45.4)
o-Toluidine hydrochloride	636215	Benzenamine, 2-methyl-, hydrochloride	1*	4	U222	X	1# (0.454)
Toxaphene	8001352	Camphene, octachloro-	1	1,2,4	P123	X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
2,4,5-TP acid	93721	Propionic acid, 2-(2,4,5-trichlorophenoxy)- Silvex	100	1,4	U233	B	100 (45.4)
2,4,5-TP acid esters	32534955		100	1		B	100 (45.4)
1H-1,2,4-Triazol-3-amine	61825	Amitrole	1*	4	U011	X	1# (0.454)
Trichlorfon	52686		1000	1		C	1000## (454)
1,2,4-Trichlorobenzene	120821		1*	2		B	100 (45.4)
1,1,1-Trichloroethane	71556	Methyl chloroform	1*	2,4	U226	C	1000 (454)
1,1,2-Trichloroethane	79005	Ethane, 1,1,2-trichloro-	1*	2,4	U227	X	1# (0.454)
Trichloroethene	79016	Trichloroethylene	1000	1,2,4	U228	C	1000# (454)
Trichloroethylene	79016	Trichloroethene	1000	1,2,4	U228	C	1000# (454)
Trichloromethanesulfenyl chloride	594423	Methanesulfenyl chloride, trichloro-	1*	4	P118	B	100 (45.4)
Trichloromonofluoromethane	75694	Methane, trichlorofluoro-	1*	4	U121	D	5000 (2270)
Trichlorophenol	25167822		10	1		A	10# (4.54)
2,3,4-Trichlorophenol	15950660						
2,3,5-Trichlorophenol	933788						
2,3,6-Trichlorophenol	933755						
2,4,5-Trichlorophenol	95954	*Phenol, 2,4,5-trichloro-*					
2,4,6-Trichlorophenol	88062	Phenol, 2,4,6-trichloro-					
3,4,5-Trichlorophenol	609198						
2,4,5-Trichlorophenol	95954	Phenol, 2,4,5-trichloro-	10	1,4	U230	A	10# (4.54)
2,4,6-Trichlorophenol	88062	Phenol, 2,4,6-trichloro-	10	1,2,4	U231	A	10# (4.54)
2,4,5-Trichlorophenoxyacetic acid	93765	2,4,5-T 2,4,5-T acid	100	1,4	U232	C	1000 (454)
Triethanolamine dodecylbenzenesulfonate	27323417		1000	1		C	1000 (454)
Triethylamine	121448		5000	1		D	5000 (2270)
Trimethylamine	75503		1000	1		C	1000## (454)
sym-Trinitrobenzene	99354	Benzene, 1,3,5-trinitro-	1*	4	U234	X	1## (0.454)
1,3,5-Trioxane, 2,4,6-trimethyl-	123637	Paraldehyde	1*	4	U182	C	1000 (454)
Tris(2,3-dibromopropyl) phosphate	126727	1-Propanol, 2,3-dibromo-, *phosphate* (3:1)	1*	4	U235	X	1# (0.454)
Trypan blue	72571	2,7-Naphthalenedisulfonic acid,3,3'-[(3,3'-dimethyl- (1,1'-biphenyl)-4,4'-diyl)- bis(azo)]bis(5-amino-4- hydroxy)-tetrasodium salt.	1*	4	U236	X	1# (0.454)
Unlisted Hazardous Wastes			1*	4			
Characteristic of Ignitability			1*	4	D001	B	100 (45.4)
Characteristic of Corrosivity			1*	4	D002	B	100 (45.4)
Characteristic of Reactivity			1*	4	D003	B	100 (45.4)
Characteristic of EP Toxicity			1*	4			
Arsenic			1*	4	D004	X	1# (0.454)
Barium			1*	4	D005	C	1000 (454)
Cadmium			1*	4	D006	X	1# (0.454)
Chromium			1*	4	D007	X	1# (0.454)
Lead			1*	4	D008	X	1## (0.454)
Mercury			1*	4	D009	X	1 (0.454)
Selenium			1*	4	D010	X	1## (0.454)
Silver			1*	4	D011	X	1 (0.454)
Endrin			1	1,4	D012	X	1 (0.454)
Lindane			1	1,4	D013	X	1# (0.454)
Methoxychlor			1	1,4	D014	X	1 (0.454)
Toxaphene			1	1,4	D015	X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory RQ	Statutory Code †	Statutory RCRA Waste Number	Final RQ Category	Final RQ Pounds(Kg)
2,4-D			100	1,4	D016	B	100 (45.4)
2,4,5-TP			100	1,4	D017	B	100 (45.4)
Uracil, 5-[bis(2-chloroethyl)amino]-	66751	Uracil mustard	1*	4	U237	X	1# (0.454)
Uracil mustard	66751	Uracil, 5-[bis(2-chloroethyl)amino]-	1*	4	U237	X	1# (0.454)
Uranyl acetate	541093		5000	1		D	5000## (2270)
Uranyl nitrate	10102064 36478769		5000	1		D	5000## (2270)
Vanadic acid, ammonium salt	7803556	Ammonium vanadate	1*	4	P119	C	1000 (454)
Vanadium(V) oxide	1314621	Vanadium pentoxide	1000	1,4	P120	C	1000## (454)
Vanadium pentoxide	1314621	Vanadium(V) oxide	1000	1,4	P120	C	1000## (454)
Vanadyl sulfate	27774136		1000	1		C	1000## (454)
Vinyl acetate	108054		1000	1		D	5000 (2270)
Vinyl chloride	75014	Ethene, chloro-	1*	2,3,4	U043	X	1# (0.454)
Vinylidene chloride	75354	1,1-Dichloroethylene Ethene, 1,1-dichloro-	5000	1,2,4	U078	D	5000# (2270)
Warfarin	81812	3-(alpha-Acetonylbenzyl)-4-hydroxycoumarin and salts	1*	4	P001	B	100 (45.4)
Xylene (mixed) m- o- p-	1330207 108383 95476 106423	Benzene, dimethyl m- o- p-	1000	1,4	U239	C	1000 (454)
Xylenol	1300716		1000	1		C	1000 (454)
Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-, methylester.	50555	Reserpine	1*	4	U200	D	5000 (2270)
Zinc ††	7440666		1*	2		X	1## (0.454)
ZINC AND COMPOUNDS			1*	2			**
Zinc acetate	557346		1000	1		C	1000## (454)
Zinc ammonium chloride	52628258 14639975 14639986		5000	1		D	5000## (2270)
Zinc borate	1332076		1000	1		C	1000## (454)
Zinc bromide	7699458		5000	1		D	5000## (2270)
Zinc carbonate	3486359		1000	1		C	1000## (454)
Zinc chloride	7646857		5000	1		D	5000## (2270)
Zinc cyanide	557211		10	1,4	P121	A	10## (4.54)
Zinc fluoride	7783495		1000	1		C	1000## (454)
Zinc formate	557415		1000	1		C	1000## (454)
Zinc hydrosulfite	7779864		1000	1		C	1000## (454)
Zinc nitrate	7779886		5000	1		D	5000## (2270)
Zinc phenolsulfonate	127822		5000	1		D	5000## (2270)
Zinc phosphide	1314847		1000	1,4	P122	C	1000## (454)
Zinc silicofluoride	16871719		5000	1		D	5000## (2270)
Zinc sulfate	7733020		1000	1		C	1000## (454)
Zirconium nitrate	13746899		5000	1		D	5000 (2270)
Zirconium potassium fluoride	16923958		5000	1		C	1000 (454)
Zirconium sulfate	14644612		5000	1		D	5000 (2270)
Zirconium tetrachloride	10026116		5000	1		D	5000 (2270)
F001			1*	4	F001	X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
The following spent halogenated solvents used in degreasing and sludges from the recovery of these solvents in degreasing operations:							
(a) Tetrachloroethylene	127184					X	1# (0.454)
(b) Trichloroethylene	79016					C	1000# (454)
(c) Methylene chloride	75092					C	1000 (454)
(d) 1,1,1-Trichloroethane	71556					C	1000 (454)
(e) Carbon tetrachloride	56235					D	5000# (2270)
(f) Chlorinated fluorocarbons	(N.A.)					D	5000 (2270)
F002			1*	4	F002	X	1# (0.454)
The following spent halogenated solvents and the still bottoms from the recovery of these solvents:							
(a) Tetrachloroethylene	127184					X	1# (0.454)
(b) Methylene Chloride	75092					C	1000 (454)
(c) Trichloroethylene	79016					C	1000# (454)
(d) 1,1,1-Trichloroethane	71556					C	1000 (454)
(e) Chlorobenzene	108907					B	100 (45.4)
(f) 1,1,2-Trichloro-1,2,2-trifluoroethane	76131					D	5000 (2270)
(g) o-Dichlorobenzene	106467					B	100 (45.4)
(h) Trichlorofluoromethane	75694					D	5000 (2270)
F003			1*	4	F003	B	100 (45.4)
The following spent non-halogenated solvents and the still bottoms from the recovery of these solvents:							
(a) Xylene	1330207					C	1000 (454)
(b) Acetone	67641					D	5000 (2270)
(c) Ethyl acetate	141786					D	5000 (2270)
(d) Ethylbenzene	100414					C	1000 (454)
(e) Ethyl ether	60297					B	100 (45.4)
(f) Methyl isobutyl ketone	108101					D	5000 (2270)
(g) n-Butyl alcohol	71363					D	5000 (2270)
(h) Cyclohexanone	108941					D	5000 (2270)
(i) Methanol	67561					D	5000 (2270)
F004			1*	4	F004	X	1## (0.454)
The following spent non-halogenated solvents and the still bottoms from the recovery of these solvents:							
(a) Cresols/Cresylic acid	1319773					C	1000# (454)
(b) Nitrobenzene	98953					C	1000 (454)
F005			1*	4	F005	X	1## (0.454)
The following spent non-halogenated solvents and the still bottoms from the recovery of these solvents:							
(a) Toluene	108883					C	1000 (454)
(b) Methyl ethyl ketone	78933					D	5000 (2270)
(c) Carbon disulfide	75150					D	5000# (2270)
(d) Isobutanol	78831					D	5000 (2270)
(e) Pyridine	110861					X	1## (0.454)
F006			1*	4	F006	X	1# (0.454)
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							
F007			1*	4	F007	A	10 (4.54)
Spent cyanide plating bath solutions from electroplating operations (except for precious metals electroplating spent cyanide plating bath solutions)							
F008			1*	4	F008	A	10 (4.54)
Plating bath sludges from the bottom of plating baths from electroplating operations where cyanides are used in the process (except for precious metals electroplating plating bath sludges)							
F009			1*	4	F009	A	10 (4.54)
Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process (except for precious metals electroplating spent stripping and cleaning bath solutions)							
F010			1*	4	F010	A	10 (4.54)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Quenching bath sludge from oil baths from metal heat treating operations where cyanides are used in the process (except for precious metals heat-treating quenching bath sludges)							
F011 Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations (except for precious metals heat treating spent cyanide solutions from salt bath pot cleaning)			1*	4	F011	A	10 (4.54)
F012 Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process (except for precious metals heat treating quenching wastewater treatment sludges)			1*	4	F012	A	10 (4.54)
F019 Wastewater treatment sludges from the chemical conversion coating of aluminum			1*	4	F019	X	1# (0.454)
F024 Wastes, including but not limited to distillation residues, heavy ends, tars, and reactor cleanout 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(sic), wastewater, wastewater treatment sludges, spent catalysts,and wastes listed in Section 261.32.)			1*	4	F024	X	1# (0.454)
K001 Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol			1*	4	K001	X	1# (0.454)
K002 Wastewater treatment sludge from the production of chrome yellow and orange pigments			1*	4	K002	X	1# (0.454)
K003 Wastewater treatment sludge from the production of molybdate orange pigments			1*	4	K003	X	1# (0.454)
K004 Wastewater treatment sludge from the production of zinc yellow pigments			1*	4	K004	X	1# (0.454)
K005 Wastewater treatment sludge from the production of chrome green pigments			1*	4	K005	X	1# (0.454)
K006 Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated)			1*	4	K006	X	1# (0.454)
K007 Wastewater treatment sludge from the production of iron blue pigments			1*	4	K007	X	1# (0.454)
K008 Oven residue from the production of chrome oxide green pigments			1*	4	K008	X	1# (0.454)
K009 Distillation bottoms from the production of acetaldehyde from ethylene			1*	4	K009	X	1# (0.454)
K010 Distillation side cuts from the production of acetaldehyde from ethylene			1*	4	K010	X	1# (0.454)
K011 Bottom stream from the wastewater stripper in the production of acrylonitrile			1*	4	K011	X	1# (0.454)
K013 Bottom stream from the acetonitrile column in the production of acrylonitrile			1*	4	K013	X	1# (0.454)
K014 Bottoms from the acetonitrile purification column in the production of acrylonitrile			1*	4	K014	D	5000 (2270)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory RQ	Statutory Code †	Statutory RCRA Waste Number	Final RQ Category	Final RQ Pounds(Kg)
K015 Still bottoms from thedistillation of benzyl chloride			1*	4	K015	X	1# (0.454)
K016 Heavy ends or distillation residues from the productionof carbon tetrachloride			1*	4	K016	X	1# (0.454)
K017 Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin			1*	4	K017	X	1# (0.454)
K018 Heavy ends from the fractionation column in ethyl chloride production			1*	4	K018	X	1# (0.454)
K019 Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production			1*	4	K019	X	1# (0.454)
K020 Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production			1*	4	K020	X	1# (0.454)
K021 Aqueous spent antimony catalyst waste from fluoromethanes production			1*	4	K021	X	1# (0.454)
K022 Distillation bottom tars from the production of phenol/acetone from cumene			1*	4	K022	X	1# (0.454)
K023 Distillation light ends from the production of phthalic anhydride from naphthalene			1*	4	K023	D	5000 (2[illegible]
K024 Distillation bottoms from the production of phthalic anhydride from naphthalene			1*	4	K024	D	5000 (2270)
K025 Distillation bottoms from the production of nitrobenzene by the nitration of benzene			1*	4	K025	X	1# (0.454)
K026 Stripping still tails from the production of methyl ethyl pyridines			1*	4	K026	X	1## (0.454)
K027 Centrifuge and distillation residues from toluene diisocyanate production			1*	4	K027	X	1# (0.454)
K028 Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane			1*	4	K028	X	1# (0.454)
K029 Waste from the product steam stripper in the production of 1,1,1-trichloroethane			1*	4	K029	X	1# (0.454)
K030 Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene			1*	4	K030	X	1# (0.454)
K031 By-product salts generated in the production of MSMA and cacodylic acid			1*	4	K031	X	1# (0.454)
K032 Wastewater treatment sludge from the production of chlordane			1*	4	K032	X	1# (0.454)
K033 Wastewater and scrub water from the chlorination of cyclopentadiane in the production of chlordane			1*	4	K033	X	1# (0.454)
K034 Filter solids from the filtration of hexachlorocyclopentadiene in the production of chlordane			1*	4	K034	X	1# (0.454)
K035 Wastewater treatment sludges generated in the production of creosote			1*	4	K035	X	1# (0.454)
K036			1*	4	K036	X	1 (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Still bottoms from toluene reclamation distillation in the production of disulfoton							
K037 Wastewater treatment sludges from the production of disulfoton			1*	4	K037	X	1 (0.454)
K038 Wastewater from the washing and stripping of phorate production			1*	4	K038	X	1# (0.454)
K039 Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate			1*	4	K039	X	1## (0.454)
K040 Wastewater treatment sludge from the production of phorate			1*	4	K040	X	1# (0.454)
K041 Wastewater treatment sludge from the production of toxaphene			1*	4	K041	X	1# (0.454)
K042 Heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2,4,5-T			1*	4	K042	X	1# (0.454)
K043 2,6-Dichlorophenol waste from the production of 2,4-D			1*	4	K043	X	1# (0.454)
K044 Wastewater treatment sludges from the manufacturing and processing of explosives			1*	4	K044	A	10 (4.54)
K045 Spent carbon from the treatment of wastewater containing explosives			1*	4	K045	A	10 (4.54)
K046 Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds			1*	4	K046	X	1## (0.454)
K047 Pink/red water from TNT operations			1*	4	K047	A	10 (4.54)
K048 Dissolved air flotation (DAF) float from the petroleum refining industry			1*	4	K048	X	1# (0.454)
K049 Slop oil emulsion solids from the petroleum refining industry			1*	4	K049	X	1# (0.454)
K050 Heat exchanger bundle cleaning sludge from the petroleum refining industry			1*	4	K050	X	1# (0.454)
K051 API separator sludge from the petroleum refining industry			1*	4	K051	X	1# (0.454)
K052 Tank bottoms (leaded) from the petroleum refining industry			1*	4	K052	X	1## (0.454)
K060 Ammonia still lime sludge from coking operations			1*	4	K060	X	1# (0.454)
K061 Emission control dust/sludge from the primary production of steel in electric furnaces			1*	4	K061	X	1# (0.454)
K062 Spent pickle liquor from steel finishing operations			1*	4	K062	X	1# (0.454)
K069 Emission control dust/sludge from secondary lead smelting			1*	4	K069	X	1# (0.454)
K071 Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used			1*	4	K071	X	1 (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory RQ	Statutory Code †	Statutory RCRA Waste Number	Final RQ Category	Final RQ Pounds(Kg)
K073 Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production			1*	4	K073	X	1# (0.454)
K083 Distillation bottoms from aniline extraction			1*	4	K083	B	100 (45.4)
K084 Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds			1*	4	K084	X	1# (0.454)
K085 Distillation or fractionation column bottoms from the production of chlorobenzenes			1*	4	K085	X	1# (0.454)
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			1*	4	K086	X	1# (0.454)
K087 Decanter tank tar sludge from coking operations			1*	4	K087	X	1## (0.454)
K093 Distillation light ends from the production of phthalic anhydride from ortho-xylene			1*	4	K093	D	5000 (2270)
K094 Distillation bottoms from the production of phthalic anhydride from ortho-xylene			1*	4	K094	D	5000 (2270)
K095 Distillation bottoms from the production of 1,1,1-trichloroethane			1*	4	K095	X	1# (0.454)
K096 Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane			1*	4	K096	X	1# (0.454)
K097 Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane			1*	4	K097	X	1# (0.454)
K098 Untreated process wastewater from the production of toxaphene			1*	4	K098	X	1# (0.454)
K099 Untreated wastewater from the production of 2,4-D			1*	4	K099	X	1# (0.454)
K100 Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting (Components of this waste are identical with those of K069).			1*	4	K100	X	1# (0.454)
K101 Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds			1*	4	K101	X	1# (0.454)
K102 Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds			1*	4	K102	X	1# (0.454)
K103 Process residues from aniline extraction from the production of aniline			1*	4	K103	B	100 (45.4)
K104 Combined wastewater streams generated from nitrobenzene/aniline chlorobenzenes			1*	4	K104	X	1# (0.454)
K105 Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes			1*	4	K105	X	1# (0.454)
K106 Wastewater treatment sludge from the mercury cell process in chlorine production			1*	4	K106	X	1 (0.454)

See footnotes on following page.

† - indicates the statutory source as defined by 1, 2, 3, or 4 below
1 - indicates that the statutory source for designation of this hazardous substance under CERCLA is CWA Section 311(b)(4)
2 - indicates that the statutory source for designation of this hazardous substance under CERCLA is CWA Section 307(a)
3 - indicates that the statutory source for designation of this hazardous substance under CERCLA is CAA Section 112
4 - indicates that the statutory source for designation of this hazardous substance under CERCLA is RCRA Section 3001
†† - no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 100 micrometers (0.004 inches)
††† - the RQ for asbestos is limited to friable forms only
§ - the Agency may adjust the RQ for radionuclides in a future rulemaking; until then the statutory 1-pound RQ applies
1* - indicates that the 1-pound RQ is a CERCLA statutory RQ
** - indicates that no RQ is being assigned to the generic or broad class
# - indicates that the RQ is subject to change when the assessment of potential carcinogenicity and/or chronic toxicity is completed
- indicates that an adjusted RQ is proposed in a separate NPRM in today's Federal Register
- the Agency may adjust the RQ for methyl isocyanate in a future rulemaking; until then the statutory 1-pound RQ applies

APPENDIX A - SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES

CASRN	Hazardous Substance
50000	Formaldehyde Methylene oxide
50077	Azirino(2',3':3,4)pyrrolo(1,2-a)indole-4,7-dione,6-amino-8-[((aminocarbonyl)oxy)methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl- Mitomycin C
50180	Cyclophosphamide 2H-1,3,2-Oxazaphosphorine,2-[bis(2-chloroethyl)amino]tetrahydro-2-oxide
50293	DDT 4,4' DDT Dichlorodiphenyl trichloroethane
50328	Benzo[a]pyrene 3,4-Benzopyrene
50555	Reserpine Yohimban-16-carboxylic acid,11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-,methyl ester
51285	2,4-Dinitrophenol Phenol, 2,4-dinitro-
51434	1,2-Benzenediol,4-[1-hydroxy-2-(methylamino)ethyl]- Epinephrine
51796	Carbamic acid, ethyl ester Ethyl carbamate (Urethan)
52686	Trichlorfon
52857	Famphur Phosphorothioic acid, O,O-dimethyl-O-[p-[(dimethylamino)-sulfonyl]phenyl] ester
53703	Dibenz[a,h]anthracene 1,2:5,6-Dibenzanthracene Dibenzo[a,h]anthracene
53963	Acetamide, N-9H-fluoren-2-yl- 2-Acetylaminofluorene
54115	Nicotine and salts Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-,and salts
55185	Ethanamine, N-ethyl-N-nitroso- N-Nitrosodiethylamine
55630	Nitroglycerine 1,2,3-Propanetriol, trinitrate-
55914	Diisopropyl fluorophosphate Phosphorofluoridic acid,bis(1-methylethyl) ester
56042	Methylthiouracil 4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-
56235	Carbon tetrachloride Methane, tetrachloro-
56382	Parathion Phosphorothioic acid,O,O-diethyl O-(p-nitrophenyl)ester
56495	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl- 3-Methylcholanthrene
56531	Diethylstilbestrol 4,4'-Stilbenediol, alpha,alpha'-diethyl-

APPENDIX A - SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES—Continued

CASRN	Hazardous Substance
56553	Benz[a]anthracene 1,2-Benzanthracene Benzo[a]anthracene
56724	Coumaphos
57125	Cyanides (soluble cyanide salts), not elsewhere-specified
57147	1,1-Dimethylhydrazine Hydrazine, 1,1-dimethyl-
57249	Strychnidin-10-one, and salts Strychnine and salts
57749	Chlordane Chlordane, technical 4,7-Methanoindan, 1,2,4,5,6,7,8,8-octachloro-3a,4,7,7a-tetrahydro-
57976	1,2-Benzanthracene, 7,12-dimethyl- 7,12-Dimethylbenz[a]anthracene
58899	gamma - BHC Hexachlorocyclohexane (gamma isomer) Lindane
58902	Phenol, 2,3,4,6-tetrachloro- 2,3,4,6-Tetrachlorophenol
59507	4-Chloro-m-cresol p-Chloro-m-cresol Phenol, 4-chloro-3-methyl-
60004	Ethylenediamine tetraacetic acid (EDTA)
60117	Benzenamine, N,N-dimethyl-4-phenylazo- Dimethylaminoazobenzene
60297	Ethane, 1,1'-oxybis- Ethyl ether
60344	Hydrazine, methyl- Methyl hydrazine
60515	Dimethoate Phosphorodithioic acid,O,O-dimethyl S-[2(methylamino)-2-oxoethyl] ester
60571	Dieldrin 1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo,exo-1,4:5,8-dimethanonaphthalene
61825	Amitrole 1H-1,2,4-Triazol-3-amine
62384	Mercury, (acetato-O)phenyl- Phenylmercuric acetate
62442	Acetamide, N-(4-ethoxyphenyl)- Phenacetin
62500	Ethyl methanesulfonate Methanesulfonic acid, ethyl ester
62533	Aniline Benzenamine
62555	Ethanethioamide Thioacetamide
62566	Carbamide, thio- Thiourea

APPENDIX A - SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES—Continued

CASRN	Hazardous Substance
62737	Dichlorvos
62748	Acetic acid, fluoro-, sodium salt Fluoroacetic acid, sodium salt
62759	Dimethylnitrosamine N-Nitrosodimethylamine
63252	Carbaryl
64186	Formic acid Methanoic acid
64197	Acetic acid
65850	Benzoic acid
66751	Uracil, 5-[bis(2-chloroethyl)amino]- Uracil mustard
67561	Methanol Methyl alcohol
67641	Acetone 2-Propanone
67663	Chloroform Methane, trichloro-
67721	Ethane, 1,1,1,2,2,2-hexachloro- Hexachloroethane
70257	Guanidine, N-nitroso-N-methyl-N'-nitro- N-Methyl-N'-nitro-N-nitrosoguanidine
70304	Hexachlorophene 2,2'-Methylenebis(3,4,6-trichlorophenol)
71363	1-Butanol n-Butyl alcohol
71432	Benzene
71556	Methyl chloroform 1,1,1-Trichloroethane
72208	Endrin 1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo,endo-1,4:5,8-dimethanonaphthalene
72435	Ethane, 1,1,1-trichloro-2,2-bis(p-methoxyphenyl) Methoxychlor
72548	DDD 4,4' DDD Dichlorodiphenyl dichloroethane TDE
72559	DDE 4,4' DDE
72571	2,7-Naphthalenedisulfonic acid,3,3'-[(3,3'-dimethyl-(1,1'-biphenyl)-4,4'-diyl)-bis(azo)]bis(5-amino-4-hydroxy)-tetrasodium salt Trypan blue
74839	Methane, bromo- Methyl bromide
74873	Methane, chloro- Methyl chloride
74884	Methane, iodo- Methyl iodide

APPENDIX A - SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES—Continued

CASRN	Hazardous Substance
74895	Monomethylamine
74908	Hydrocyanic acid Hydrogen cyanide
74931	Methanethiol Methylmercaptan Thiomethanol
74953	Methane, dibromo- Methylene bromide
75003	Chloroethane
75014	Ethene, chloro- Vinyl chloride
75047	Monoethylamine
75058	Acetonitrile Ethanenitrile
75070	Acetaldehyde Ethanal
75092	Methane, dichloro- Methylene chloride
75150	Carbon bisulfide Carbon disulfide
75207	Calcium carbide
75218	Ethylene oxide Oxirane
75252	Bromoform Methane, tribromo-
75274	Dichlorobromomethane
75343	1,1-Dichloroethane Ethane, 1,1-dichloro- Ethylidene dichloride
75354	1,1-Dichloroethylene Ethene, 1,1-dichloro- Vinylidene chloride
75365	Acetyl chloride Ethanoyl chloride
75445	Carbonyl chloride Phosgene
75503	Trimethylamine
75558	2-Methylaziridine 1,2-Propylenimine
75569	Propylene oxide
75605	Cacodylic acid Hydroxydimethylarsine oxide
75649	tert-Butylamine
75694	Methane, trichlorofluoro- Trichloromonofluoromethane
75718	Dichlorodifluoromethane Methane, dichlorodifluoro-
75865	Acetone cyanohydrin 2-Methyllactonitrile Propanenitrile, 2-hydroxy-2-methyl-
75876	Acetaldehyde, trichloro- Chloral
75990	2,2-Dichloropropionic acid
76017	Ethane, pentachloro- Pentachloroethane
76448	Heptachlor 4,7-Methano-1H-indene,1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-
77474	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro- Hexachlorocyclopentadiene
77781	Dimethyl sulfate Sulfuric acid, dimethyl ester
78002	Plumbane, tetraethyl- Tetraethyl lead
78591	Isophorone
78795	Isoprene
78819	iso-Butylamine
78831	Isobutyl alcohol 1-Propanol, 2-methyl-
78875	1,2-Dichloropropane Propylene dichloride
78886	2,3-Dichloropropene
78933	2-Butanone Methyl ethyl ketone
78999	1,1-Dichloropropane
79005	Ethane, 1,1,2-trichloro- 1,1,2-Trichloroethane
79016	Trichloroethene Trichloroethylene
79061	Acrylamide 2-Propenamide
79094	Propionic acid
79107	Acrylic acid 2-Propenoic acid
79196	Hydrazinecarbothioamide Thiosemicarbazide
79221	Carbonochloridic acid, methyl ester Methyl chlorocarbonate
79312	iso-Butyric acid
79345	Ethane, 1,1,2,2-tetrachloro- 1,1,2,2-Tetrachloroethane
79447	Carbamoyl chloride, dimethyl- Dimethylcarbamoyl chloride
79469	2-Nitropropane Propane, 2-nitro-
80159	alpha,alpha-Dimethylbenzylhydroperoxide Hydroperoxide, 1-methyl-1-phenylethyl-
80626	Methyl methacrylate 2-Propenoic acid, 2-methyl-, methyl ester
81072	1,2-Benzisothiazolin-3-one,1,1-dioxide, and salts Saccharin and salts
81812	3-(alpha-Acetonylbenzyl)-4-hydroxycoumarin and salts Warfarin
82688	Benzene, pentachloronitro- Pentachloronitrobenzene
83329	Acenaphthene
84662	1,2-Benzenedicarboxylic acid,diethyl ester Diethyl phthalate
84742	1,2-Benzenedicarboxylic acid,dibutyl ester n-Butyl phthalate Dibutyl phthalate Di-n-butyl phthalate
85007	Diquat
85018	Phenanthrene
85449	1,2-Benzenedicarboxylic acid anhydride Phthalic anhydride
85687	Butyl benzyl phthalate
86306	N-Nitrosodiphenylamine
86500	Guthion
86737	Fluorene
86884	alpha-Naphthylthiourea Thiourea, 1-naphthalenyl-
87650	2,6-Dichlorophenol Phenol, 2,6-dichloro-
87683	1,3-Butadiene, 1,1,2,3,4,4-hexachloro- Hexachlorobutadiene
87865	Pentachlorophenol Phenol, pentachloro-
88062	Phenol, 2,4,6-trichloro 2,4,6-Trichlorophenol
88722	o-Nitrotoluene
88755	o-Nitrophenol 2-Nitrophenol
88857	Dinoseb Phenol, 2,4-dinitro-6-(1-methylpropyl)-
91087	Benzene, 2,4-diisocyanatomethyl- Toluene diisocyanate
91203	Naphthalene
91225	Quinoline
91587	beta-Chloronaphthalene 2-Chloronaphthalene Naphthalene, 2-chloro-
91598	2-Naphthylamine beta-Naphthylamine
91805	Methapyrilene Pyridine, 2-[(2-(dimethylamino)ethyl)-2-thenylamino]-
91941	(1,1'-Biphenyl)-4,4'diamine,3,3'dichloro- 3,3'-Dichlorobenzidine
92875	Benzidine (1,1'-Biphenyl)-4,4'diamine
93721	Propionic acid, 2-(2,4,5-trichlorophenoxy)- Silvex 2,4,5-TP acid
93765	2,4,5-T 2,4,5-T acid 2,4,5-Trichlorophenoxyacetic acid
93798	2,4,5-T esters
94111	2,4-D Esters
94586	Benzene, 1,2-methylenedioxy-4-propyl- Dihydrosafrole
94597	Benzene, 1,2-methylenedioxy-4-allyl- Safrole
94757	2,4-D Acid 2,4-D, salts and esters 2,4-Dichlorophenoxyacetic acid, salts and esters

APPENDIX A - SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES—Continued

CASRN	Hazardous Substance
94791	2,4-D Esters
94804	2,4-D Esters
95476	Benzene, o-dimethyl- o-Xylene
95487	o-Cresol o-Cresylic acid
95501	Benzene, 1,2-dichloro- 1,2-Dichlorobenzene o-Dichlorobenzene
95578	2-Chlorophenol o-Chlorophenol Phenol, 2-chloro-
95807	Diaminotoluene Toluenediamine
95943	Benzene, 1,2,4,5-tetrachloro- 1,2,4,5-Tetrachlorobenzene
95954	Phenol, 2,4,5-trichloro- 2,4,5-Trichlorophenol
96128	1,2-Dibromo-3-chloropropane Propane, 1,2-dibromo-3-chloro-
96457	Ethylenethiourea 2-Imidazolidinethione
97632	Ethyl methacrylate 2-Propenoic acid, 2-methyl-, ethyl ester
98011	2-Furancarboxaldehyde Furfural
98077	Benzene, trichloromethyl- Benzotrichloride
98099	Benzenesulfonic acid chloride Benzenesulfonyl chloride
98828	Benzene, 1-methylethyl- Cumene
98862	Acetophenone Ethanone, 1-phenyl-
98873	Benzal chloride Benzene, dichloromethyl-
98884	Benzoyl chloride
98953	Benzene, nitro- Nitrobenzene
99081	m-Nitrotoluene
99354	Benzene, 1,3,5-trinitro- sym-Trinitrobenzene
99558	Benzenamine, 2-methyl-5-nitro- 5-Nitro-o-toluidine
99650	m-Dinitrobenzene
99990	p-Nitrotoluene
100016	Benzenamine, 4-nitro- p-Nitroaniline
100027	p-Nitrophenol 4-Nitrophenol Phenol, 4-nitro-
100254	p-Dinitrobenzene
100414	Ethylbenzene
100425	Styrene
100447	Benzene, chloromethyl- Benzyl chloride
100470	Benzonitrile
100754	N-Nitrosopiperidine Pyridine, hexahydro-N-nitroso-
101144	Benzenamine, 4,4'-methylenebis(2-chloro- 4,4'-Methylenebis(2-chloroaniline)
101553	Benzene, 1-bromo-4-phenoxy- 4-Bromophenyl phenyl ether
103855	N-Phenylthiourea Thiourea, phenyl-
105464	sec-Butyl acetate
105679	2,4-Dimethylphenol Phenol, 2,4-dimethyl-
106423	Benzene, p-dimethyl- p-Xylene
106445	p-Cresol p-Cresylic acid
106467	Benzene, 1,4-dichloro- 1,4-Dichlorobenzene p-Dichlorobenzene
106478	Benzenamine, 4-chloro- p-Chloroaniline
106514	p-Benzoquinone 1,4-Cyclohexadienedione
106898	1-Chloro-2,3-epoxypropane Epichlorohydrin Oxirane, 2-(chloromethyl)-
106934	Ethane, 1,2-dibromo- Ethylene dibromide
107028	Acrolein 2-Propenal
107051	Allyl chloride
107062	1,2-Dichloroethane Ethane, 1,2-dichloro- Ethylene dichloride
107108	1-Propanamine n-Propylamine
107120	Ethyl cyanide Propanenitrile
107131	Acrylonitrile 2-Propenenitrile
107153	Ethylenediamine
107186	Allyl alcohol 2-Propen-1-ol
107197	Propargyl alcohol 2-Propyn-1-ol
107200	Acetaldehyde, chloro- Chloroacetaldehyde
107302	Chloromethyl methyl ether Methane, chloromethoxy-
107493	Pyrophosphoric acid, tetraethyl ester Tetraethyl pyrophosphate
107926	Butyric acid
108054	Vinyl acetate
108101	Methyl isobutyl ketone 4-Methyl-2-pentanone
108247	Acetic anhydride
108316	2,5-Furandione Maleic anhydride
108383	Benzene, m-dimethyl- m-Xylene
108394	m-Cresol m-Cresylic acid
108463	1,3-Benzenediol Resorcinol
108601	Bis(2-chloroisopropyl) ether Propane, 2,2'-oxybis(2-chloro-
108883	Benzene, methyl- Toluene
108907	Benzene, chloro- Chlorobenzene
108941	Cyclohexanone
108952	Benzene, hydroxy- Phenol
108985	Benzenethiol Thiophenol
109068	2-Picoline Pyridine, 2-methyl-
109739	Butylamine
109773	Malononitrile Propanedinitrile
109897	Diethylamine
109999	Furan, tetrahydro- Tetrahydrofuran
110009	Furan Furfuran
110167	Maleic acid
110178	Fumaric acid
110190	iso-Butyl acetate
110758	2-Chloroethyl vinyl ether Ethene, 2-chloroethoxy-
110827	Benzene, hexahydro- Cyclohexane
110861	Pyridine
111444	Bis (2-chloroethyl) ether Dichloroethyl ether Ethane, 1,1'-oxybis(2-chloro-
111546	1,2-Ethanediylbiscarbamodithioic acid Ethylenebis(dithiocarbamic acid)
111911	Bis(2-chloroethoxy) methane Ethane, 1,1'-[methylenebis(oxy)]bis(2-chloro-
115026	Azaserine L-Serine, diazoacetate (ester)
115297	Endosulfan 5-Norbornene-2,3-dimethanol,1,4,5,6,7,7-hexachloro,cyclic sulfite
115322	Kelthane
116063	Aldicarb Propanal, 2-methyl-2-(methylthio)-,O-[(methylamino)carbonyl]oxime
117806	Dichlone
117817	1,2-Benzenedicarboxylic acid,[bis(2-ethylhexyl)] ester Bis(2-ethylhexyl)phthalate
117840	1,2-Benzenedicarboxylic acid,di-n-octyl ester Di-n-octyl phthalate

treatment and disposal, Water pollution control.

40 CFR Part 117

Hazardous substances, Penalties, Reporting and recordkeeping requirements, Water pollution control.

Dated: August 20, 1986.

Lee M. Thomas,
Administrator.

40 CFR Part 302 is amended as follows:

PART 302—DESIGNATION, REPORTABLE QUANTITIES, AND NOTIFICATION

1. The authority citation for Part 302 continues to read as follows:

Authority: Sec. 102 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. 9602; secs. 311 and 501(a) of the Federal Water Pollution Control Act, 33 U.S.C. 1321 and 1361.

2. Section 302.4 is amended by revising Table 302.4 to read as follows:

§ 302.4 Designation of hazardous substances.

* * * * *

Table 302.4—List of Hazardous Substances and Reportable Quantities

Note—The numbers under the column headed "CASRN" are the Chemical Abstracts Service Registry Numbers for each hazardous substance. Other names by which each hazardous substance is identified in other statutes and their implementing regulations are provided in the "Regulatory Synonyms" column. The "Statutory RQ" column lists the RQs for hazardous substances established by section 102 of CERCLA. The "Statutory Code" column indicates the statutory source for designating each substance as a CERCLA hazardous substance: "1" indicates that the statutory source is section 311(b)(4) of the Clean Water Act, "2" indicates that the source is section 307(a) of the Clean Water Act, "3" indicates that the source is section 112 of the Clean Air Act, and "4" indicates that the source is RCRA section 3001. The "RCRA Waste Number" column provides the waste identification numbers assigned to various substances by RCRA regulations. The column headed "Category" lists the code letters "X", "A", "B", "C", and "D", which are associated with reportable quantities of 1, 10, 100, 1000, and 5000 pounds, respectively. The "Pounds (kg)" column provides the reportable quantity for each hazardous substance in pounds and kilograms.

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Acenaphthene	83329		1*	2		B	100 (45.4)
Acenaphthylene	208968		1*	2		D	5000 (2270)
Acetic acid, thallium(I) salt	563688	Thallium(I) acetate	1*	4	U214	B	100 (45.4)
2-Amino-1-methyl benzene	95534	o-Toluidine	1*	4	U328	X	1 # (0.454)
4-Amino-1-methyl benzene	106490	p-Toluidine	1*	4	U353	X	1 # (0.454)
Ammonia	7664417		100	1		B	100 (45.4)
Ammonium bifluoride	1341497		5000	1		B	100 (45.4)
Anthracene	120127		1*	2		D	5000 (2270)
Antimony ††	7440360		1*	2		D	5000 (2270)
Benzene, hydroxy-	108952	Phenol	1000	1,2,4	U188	C	1000 (454)
Benzene, pentachloro-	608935	Pentachlorobenzene	1*	4	U183	A	10 (4.54)
Benzene, 1,3,5-trinitro-	99354	sym-Trinitrobenzene	1*	4	U234	A	10 (4.54)
Benzo[j,k]fluorene	206440	Fluoranthene	1*	2,4	U120	B	100 (45.4)
Benzo[ghi]perylene	191242		1*	2		D	5000 (2270)
p-Benzoquinone	106514	1,4-Cyclohexadienedione	1*	4	U197	A	10 (4.54)
delta - BHC	319868		1*	2		X	1 (0.454)
Captan	133062		10	1		A	10 # (4.54)
Carbamimidoselenoic acid	630104	Selenourea	1*	4	P103	C	1000 (454)
Carbon bisulfide	75150	Carbon disulfide	5000	1,4	P022	B	100 (45.4)
Carbon disulfide	75150	Carbon bisulfide	5000	1,4	P022	B	100 (45.4)
Carbonic acid, dithallium(I) salt	6533739	Thallium(I) carbonate	1*	4	U215	B	100 (45.4)
Chloroethane	75003		1*	2		B	100 (45.4)
Chromic acetate	1066304		1000	1		C	1000 (454)
Chromic sulfate	10101538		1000	1		C	1000 (454)
Chromous chloride	10049055		1000	1		C	1000 (454)
Copper ††	7440508		1*	2		D	5000 (2270)
Cresol(s)	1319773	Cresylic acid	1000	1,4	U052	C	1000 # (454)
m-	108394						
o-	95487						

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
p-	106445						
Cresylic acid	1319773	Cresol(s)	1000	1,4	U052	C	1000 ≠ (454)
m-	108394						
o-	95487						
p-	106445						
Cupric chloride	7447394		10	1		A	10 (4.54)
Cupric sulfate	7758987		10	1		A	10 (4.54)
Cupric tartrate	815827		100	1		B	100 (45.4)
1,4-Cyclohexadienedione	106514	p-Benzoquinone	1*	4	U197	A	10 (4.54)
Dichloropropane - Dichloropropene (mixture)	8003198		5000	1		B	100 ≠ (45.4)
Dichloropropene(s)	26952238		5000	1		B	100 (45.4)
2,3-Dichloropropene (isomer)	78886						
1,3-Dichloropropene	542756	Propene, 1,3-dichloro-	5000	1,2,4	U084	B	100 ≠ (45.4)
Diethylamine	109897		1000	1		B	100 (45.4)
Dimethylamine	124403	Methanamine, N-methyl-	1000	1,4	U092	C	1000 (454)
O,O-Dimethyl O-p-nitrophenyl phosphorothioate	298000	Methyl parathion	100	1,4	P071	B	100 (45.4)
Ethane, pentachloro-	76017	Pentachloroethane	1*	4	U184	X	1 ≠ (0.454)
Ethion	563122		10	1		A	10 (4.54)
2-Ethoxyethanol	110805	Ethylene glycol monoethyl ether	1*	4	U359	X	1 ≠ (0.454)
Ethylene glycol monoethyl ether	110805	2-Ethoxyethanol	1*	4	U359	X	1 ≠ (0.454)
Ferric dextran ***	9004664	Iron dextran ***	1*	4	U139	D	5000 (2270)
Fluoranthene	206440	Benzo[j,k]fluorene	1*	2,4	U120	B	100 (45.4)
Fluorene	86737		1*	2		D	5000 (2270)
Fulminic acid, mercury(II) salt	628864	Mercury fulminate	1*	4	P065	A	10 (4.54)
Hexachlorophene	70304	2,2'-Methylenebis(3,4,6-trichlorophenol)	1*	4	U132	B	100 (45.4)
Hydrogen sulfide	7783064	Hydrosulfuric acid Sulfur hydride	100	1,4	U135	B	100 (45.4)
Hydrosulfuric acid	7783064	Hydrogen sulfide Sulfur hydride	100	1,4	U135	B	100 (45.4)
Iron dextran ***	9004664	Ferric dextran ***	1*	4	U139	D	5000 (2270)
Isoprene	78795		1000	1		B	100 (45.4)
Lead ††	7439921		1*	2		X	1 ≠ (0.454)
Lead chloride	7758954		5000	1		B	100 ≠ (45.4)
Lead fluoborate	13814965		5000	1		B	100 (45.4)
Lead fluoride	7783462		1000	1		B	100 (45.4)
Lead iodide	10101630		5000	1		B	100 (45.4)
Lead nitrate	10099748		5000	1		B	100 ≠ (45.4)
Lead stearate	7428480 1072351 52652592 56189094		5000	1		D	5000 (2270)
Lead sulfate	15739807 7446142		5000	1		B	100 (45.4)
Lead sulfide	1314870		5000	1		D	5000 (2270)
Lead thiocyanate	592870		5000	1		B	100 (45.4)
Mercuric nitrate	10045940		10	1		A	10 (4.54)
Mercuric sulfate	7783359		10	1		A	10 (4.54)
Mercuric thiocyanate	592858		10	1		A	10 (4.54)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
Mercurous nitrate	10415755		10	1		A	10 (4.54)
Mercury fulminate	628864	Fulminic acid, mercury(II) salt	1*	4	P065	A	10 (4.54)
Mercury, (acetato-O)phenyl-	62384	Phenylmercuric acetate	1*	4	P092	B	100 (45.4)
Methanamine, N-methyl-	124403	Dimethylamine	1000	1,4	U092	C	1000 (454)
Methane, chloro-	74873	Methyl chloride	1*	2,4	U045	X	1 # (0.454)
Methyl chloride	74873	Methane, chloro-	1*	2,4	U045	X	1 # (0.454)
Methyl parathion	298000	O,O-Dimethyl O-p-nitrophenyl phosphorothioate	100	1,4	P071	B	100 (45.4)
2,2'-Methylenebis(3,4,6-trichlorophenol)	70304	Hexachlorophene	1*	4	U132	B	100 (45.4)
Monoethylamine	75047		1000	1		B	100 (45.4)
Pentachlorobenzene	608935	Benzene, pentachloro-	1*	4	U183	A	10 (4.54)
Pentachloroethane	76017	Ethane, pentachloro-	1*	4	U184	X	1 # (0.454)
Phenanthrene	85018		1*	2		D	5000 (2270)
Phenol	108952	Benzene, hydroxy-	1000	1,2,4	U188	C	1000 (454)
Phenylmercuric acetate	62384	Mercury, (acetato-O)phenyl-	1*	4	P092	B	100 (45.4)
Phorate	298022	Phosphorodithioic acid, O,O-diethyl S-(ethylthio) methyl ester	1*	4	P094	A	10 (4.54)
Phosphorodithioic acid, O,O-diethyl S-(ethylthio) methyl ester.	298022	Phorate	1*	4	P094	A	10 (4.54)
Plumbane, tetraethyl-	78002	Tetraethyl lead	100	1,4	P110	A	10 # (4.54)
Propene, 1,3-dichloro-	542756	1,3-Dichloropropene	5000	1,2,4	U084	B	100 # (45.4)
Pyrene	129000		1*	2		D	5000 (2270)
Pyridine	110861		1*	4	U196	C	1000 (454)
Pyrophosphoric acid, tetraethyl ester	107493	Tetraethyl pyrophosphate	100	1,4	P111	A	10 (4.54)
Selenious acid	7783008		1*	4	U204	A	10 (4.54)
Selenium ††	7782492		1*	2		B	100 (45.4)
Selenium dioxide	7446084	Selenium oxide	1000	1,4	U204	A	10 (4.54)
Selenium oxide	7446084	Selenium dioxide	1000	1,4	U204	A	10 (4.54)
Selenourea	630104	Carbamimidoselenoic acid	1*	4	P103	C	1000 (454)
Sodium bifluoride	1333831		5000	1		B	100 (45.4)
Sodium nitrite	7632000		100	1		B	100 (45.4)
Sodium selenite	10102188		1000	1		B	100 (45.4)
Sulfur hydride	7783064	Hydrogen sulfide Hydrosulfuric acid	100	1,4	U135	B	100 (45.4)
Sulfuric acid, thallium(I) salt	7446186 10031591	Thallium(I) sulfate	1000	1,4	P115	B	100 (45.4)
Tetraethyl lead	78002	Plumbane, tetraethyl-	100	1,4	P110	A	10 # (4.54)
Tetraethyl pyrophosphate	107493	Pyrophosphoric acid, tetraethyl ester	100	1,4	P111	A	10 (4.54)
Thallic oxide	1314325	Thallium(III) oxide	1*	4	P113	B	100 (45.4)
Thallium ††	7440280		1*	2		C	1000 (454)
Thallium(I) acetate	563688	Acetic acid, thallium(I) salt	1*	4	U214	B	100 (45.4)
Thallium(I) carbonate	6533739	Carbonic acid, dithallium(I) salt	1*	4	U215	B	100 (45.4)
Thallium(I) chloride	7791120		1*	4	U216	B	100 (45.4)
Thallium(I) nitrate	10102451		1*	4	U217	B	100 (45.4)
Thallium(III) oxide	1314325	Thallic oxide	1*	4	P113	B	100 (45.4)
Thallium(I) selenide	12039520		1*	4	P114	C	1000 (454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds (Kg)
Thallium(I) sulfate	7446186 10031591	Sulfuric acid, thallium(I) salt	1000	1,4	P115	B	100 (45.4)
o-Toluidine	95534	2-Amino-1-methyl benzene	1*	4	U328	X	1 # (0.454)
p-Toluidine	106490	4-Amino-1-methyl benzene	1*	4	U353	X	1 # (0.454)
Trichlorfon	52686		1000	1		B	100 (45.4)
Trimethylamine	75503		1000	1		B	100 (45.4)
sym-Trinitrobenzene	99354	Benzene, 1,3,5-trinitro-	1*	4	U234	A	10 (4.54)
Unlisted Hazardous Wastes Characteristic of EP Toxicity	N.A.						
Selenium D010	N.A.		1*	4	D010	A	10 (4.54)
Uranyl acetate ****	541093		5000	1		B	100 (45.4)
Uranyl nitrate ****	10102064		5000	1		B	100 (45.4)
Vanadium(V) oxide	1314621	Vanadium pentoxide	1000	1,4	P120	C	1000 (454)
Vanadium pentoxide	1314621	Vanadium(V) oxide	1000	1,4	P120	C	1000 (454)
Vanadyl sulfate	27774136		1000	1		C	1000 (454)
Zinc ††	7440666		1*	2		C	1000 (454)
Zinc acetate	557346		1000	1		C	1000 (454)
Zinc ammonium chloride	52628258		5000	1		C	1000 (454)
Zinc borate	1332076		1000	1		C	1000 (454)
Zinc bromide	7699458		5000	1		C	1000 (454)
Zinc carbonate	3486359		1000	1		C	1000 (454)
Zinc chloride	7646857		5000	1		C	1000 (454)
Zinc cyanide	557211		10	1,4	P121	A	10 (4.54)
Zinc fluoride	7783495		1000	1		C	1000 (454)
Zinc formate	557415		1000	1		C	1000 (454)
Zinc hydrosulfite	7779864		1000	1		C	1000 (454)
Zinc nitrate	7779886		5000	1		C	1000 (454)
Zinc phenolsulfonate	127822		5000	1		D	5000 (2270)
Zinc phosphide	1314847		1000	1,4	P122	B	100 (45.4)
Zinc silicofluoride	16871719		5000	1		D	5000 (2270)
Zinc sulfate	7733020		1000	1		C	1000 (454)
F004 The following spent non-halogenated solvents and the still bottoms from the recovery of these solvents: (a) Cresols/Cresylic acid (b) Nitrobenzene			1*	4	F004	C	1000 # (454)
F005 The following spent non-halogenated solvents and the still bottoms from the recovery of these solvents: (a) Toluene (b) Methyl ethyl ketone (c) Carbon disulfide (d) Isobutanol (e) Pyridine			1*	4	F005	B	100 (45.4)
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.)			1*	4	F020	X	1 # (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code †	RCRA Waste Number	Category	Pounds(Kg)
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			1*	4	F021	X	1# (0.454)
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.			1*	4	F022	X	1# (0.454)
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.)			1*	4	F023	X	1# (0.454)
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.			1*	4	F026	X	1# (0.454)
F027 ... Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols. (This listing does not include formulations containing hexachlorophene synthesized from prepurified 2,4,5-trichlorophenol as the sole component.)			1*	4	F027	X	1# (0.454)
F028 ... Residues resulting from the incineration or thermal treatment of soil contaminated with EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027.			1*	4	F028	X	1# (0.454)
K026 ... Stripping still tails from the production of methyl ethyl pyridines			1*	4	K026	C	1000 (454)
K039 ... Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate			1*	4	K039	A	10 (4.54)
K046 ... Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds			1*	4	K046	B	100 (45.4)
K052 ... Tank bottoms (leaded) from the petroleum refining industry			1*	4	K052	A	10# (4.54)
K087 ... Decanter tank tar sludge from coking operations			1*	4	K087	B	100 (45.4)
K111 ... Product washwaters from the production of dinitrotoluene via nitration of toluene.			1*	4	K111	X	1# (0.454)
K112 ... Reaction by-product water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene.			1*	4	K112	X	1# (0.454)
K113 ... Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene			1*	4	K113	X	1# (0.454)

TABLE 302.4 - LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory RQ	Statutory Code †	Statutory RCRA Waste Number	Final RQ Category	Final RQ Pounds(Kg)
K114 Vicinals from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.			1*	4	K114	X	1 # (0.454)
K115 Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.			1*	4	K115	X	1 # (0.454)
K116 Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine.			1*	4	K116	X	1 # (0.454)
K117 Wastewater from the reaction vent gas scrubber in the production of ethylene bromide via bromination of ethene.			1*	4	K117	X	1 # (0.454)
K118 Spent absorbent solids from purification of ethylene dibromide in the production of ethylene dibromide.			1*	4	K118	X	1 # (0.454)
K136 Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.			1*	4	K136	X	1 # (0.454)

† - indicates the statutory source as defined by 1, 2, 3, or 4 below

†† - no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 100 micrometers (0.004 inches)

1 - indicates that the statutory source for designation of this hazardous substance under CERCLA is CWA Section 311(b)(4)

2 - indicates that the statutory source for designation of this hazardous substance under CERCLA is CWA Section 307(a)

3 - indicates that the statutory source for designation of this hazardous substance under CERCLA is CAA Section 112

4 - indicates that the statutory source for designation of this hazardous substance under CERCLA is RCRA Section 3001

1* - indicates that the 1-pound RQ is a CERCLA statutory RQ

*** - Iron dextran was designated as a hazardous substance under CERCLA solely because of its listing as a hazardous waste under Section 3001 of RCRA. The Agency recently proposed to delist iron dextran under RCRA(50 FR 46468-46470, November 8,1985) The Agency has also proposed to delist iron dextran from Table 302.4 of 40 CFR 302.4 and thereby remove its designation as a CERCLA hazardous substance.

**** - Uranyl acetate and uranyl nitrate currently are being evaluated for their radioactive properties. Their RQs may be further adjusted in a future rulemaking adjusting the RQ of radionuclides.

- indicates that the RQ is subject to change when the assessment of potential carcinogenicity and/or chronic toxicity is completed

APPENDIX A - SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES

CASRN	Hazardous Substance
52686	Trichlorfon
62384	Mercury, (acetato-O)phenyl- Phenylmercuric acetate
70304	Hexachlorophene 2,2'-Methylenebis(3,4,6-trichlorophenol)
74873	Methane, chloro- Methyl chloride
75003	Chloroethane
75047	Monoethylamine
75150	Carbon bisulfide Carbon disulfide
75503	Trimethylamine
76017	Ethane, pentachloro- Pentachloroethane
78002	Plumbane, tetraethyl- Tetraethyl lead
78795	Isoprene
78886	2,3-Dichloropropene (isomer)

APPENDIX A - SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES—Continued

CASRN	Hazardous Substance
83329	Acenaphthene
85018	Phenanthrene
86737	Fluorene
95487	o-Cresol o-Cresylic acid
95534	o-Toluidine 2-Amino-1-methyl benzene
99354	Benzene, 1,3,5-trinitro- sym-Trinitrobenzene
106445	p-Cresol p-Cresylic acid
106490	p-Toluidine 4-Amino-1-methyl benzene
106514	p-Benzoquinone 1,4-Cyclohexadienedione
107493	Pyrophosphoric acid, tetraethyl ester Tetraethyl pyrophosphate
108394	m-Cresol m-Cresylic acid

APPENDIX A - SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES—Continued

CASRN	Hazardous Substance
108952	Benzene, hydroxy- Phenol
109897	Diethylamine
110805	Ethylene glycol monoethyl ether 2-Ethoxyethanol
110861	Pyridine
120127	Anthracene
124403	Dimethylamine Methanamine, N-methyl-
127822	Zinc phenolsulfonate
129000	Pyrene
133062	Captan
191242	Benzo[ghi]perylene
206440	Benzo[j,k]fluorene Fluoranthene
208968	Acenaphthylene
298000	Methyl parathion O,O-Dimethyl O-p-nitrophenyl phosphorothioate

(ii) Any known or anticipated acute or chronic health risks associated with the release, and,

(iii) Where appropriate, advice regarding medical attention necessary for exposed individuals.

(4) Exceptions. (i) Until April 30, 1988, in lieu of the notice specified in paragraph (b)(2) of this section, any owner or operator of a facility subject to this section from which there is a release of a CERCLA hazardous substance which is not an extremely hazardous substance and has a statutory reportable quantity may provide the same notice required under CERCLA section 103(a) to the local emergency planning committee.

(ii) An owner or operator of a facility from which there is a transportation-related release may meet the requirements of this section by providing the information indicated in paragraph (b)(2) to the 911 operator, or in the absence of a 911 emergency telephone number, to the operator. For purposes of this paragraph, a "transportation-related release" means a release during transportation, or storage incident to transportation if the stored substance is moving under active shipping papers and has not reached the ultimate consignee.

(Approved by the Office of Management and Budget under the control number 2050–0046)

§ 355.50 Penalties.

(a) *Civil penalties.* Any person who fails to comply with the requirements of § 355.40 shall be subject to civil penalties of up to $25,000 for each violation in accordance with section 325(b)(1) of the Act.

(b) *Civil penalties for continuing violations.* Any person who fails to comply with the requirements of § 355.40 shall be subject to civil penalties of up to $25,000 for each day during which the violation continues, in accordance with section 325(b)(2) of the Act. In the case of a second or subsequent violation, any such person may be subject to civil penalties of up to $75,000 for each day the violation continues, in accordance with section 325(b)(2) of the Act.

(c) *Criminal penalties.* Any person who knowingly and willfully fails to provide notice in accordance with § 355.40 shall, upon conviction, be fined not more than $25,000 or imprisoned for not more than two (2) years, or both (or, in the case of a second or subsequent conviction, shall be fined not more than $50,000 or imprisoned for not more than five (5) years, or both) in accordance with section 325(b)(4) of the Act.

APPENDIX A.—THE LIST OF EXTREMELY HAZARDOUS SUBSTANCES AND THEIR THRESHOLD PLANNING QUANTITIES

[Alphabetical Order]

CAS No.	Chemical name	Notes	Reportable quantity* (pounds)	Threshold planning quantity (pounds)
75-86-5	Acetone Cyanohydrin		10	1,000
1752-30-3	Acetone Thiosemicarbazide	e	1	1,000/10,000
107-02-8	Acrolein		1	500
79-06-1	Acrylamide	d, l	5,000	1,000/10,000
107-13-1	Acrylonitrile	d, l	100	10,000
814-68-6	Acrylyl Chloride	e, h	1	100
111-69-3	Adiponitrile	e, l	1	1,000
116-06-3	Aldicarb	c	1	100/10,000
309-00-2	Aldrin	d	1	500/10,000
107-18-6	Allyl Alcohol		100	1,000
107-11-9	Allylamine	e	1	500
20859-73-8	Aluminum Phosphide	b	100	500
54-62-6	Aminopterin	e	1	500/10,000
78-53-5	Amiton	e	1	500
3734-97-2	Amiton Oxalate	e	1	100/10,000
7664-41-7	Ammonia	l	100	500
16919-58-7	Ammonium Chloroplatinate	a, e	1	10,000
300-62-9	Amphetamine	e	1	1,000
62-53-3	Aniline	d, l	5,000	1,000
88-05-1	Aniline, 2,4,6-Trimethyl-	e	1	500
7783-70-2	Antimony Pentafluoride	e	1	500
1397-94-0	Antimycin A	c, e	1	1,000/10,000
86-88-4	ANTU		100	500/10,000
1303-28-2	Arsenic Pentoxide	d	5,000	100/10,000
1327-53-3	Arsenous Oxide	d, h	5,000	100/10,000
7784-34-1	Arsenous Trichloride	d	5,000	500
7784-42-1	Arsine	e	1	100
2642-71-9	Azinphos-Ethyl	e	1	100/10,000
86-50-0	Azinphos-Methyl		1	10/10,000
1405-87-4	Bacitracin	a, e	1	10,000
98-87-3	Benzal Chloride	d	5,000	500
98-16-8	Benzenamine, 3-(Trifluoromethyl)-	e	1	500
100-14-1	Benzene, 1-(Chloromethyl)-4-Nitro-	e	1	500/10,000
98-05-5	Benzenearsonic Acid	e	1	10/10,000
98-09-9	Benzenesulfonyl Chloride	a	100	10,000
3615-21-2	Benzimidazole, 4,5-Dichloro-2-(Trifluoromethyl)-	e, g	1	500/10,000
98-07-7	Benzotrichloride	d	1	100
100-44-7	Benzyl Chloride	d	100	500
140-29-4	Benzyl Cyanide	e, h	1	500

APPENDIX A.—THE LIST OF EXTREMELY HAZARDOUS SUBSTANCES AND THEIR THRESHOLD PLANNING QUANTITIES—Continued

[Alphabetical Order]

CAS No.	Chemical name	Notes	Reportable quantity* (pounds)	Threshold planning quantity (pounds)
15271-41-7	Bicyclo[2.2.1]Heptane-2-Carbonitrile, 5-Chloro-6-((((Methylamino)Carbonyl)Oxy)Imino)-, (1s-(1-alpha, 2-beta, 4-alpha, 5-alpha, 6E))-.	e	1	500/10,000
534-07-6	Bis(Chloromethyl) Ketone	e	1	10/10,000
4044-65-9	Bitoscanate	e	1	500/10,000
10294-34-5	Boron Trichloride	e	1	500
7637-07-2	Boron Trifluoride	e	1	500
353-42-4	Boron Trifluoride Compound With Methyl Ether (1:1)	e	1	1,000
28772-56-7	Bromadiolone	e	1	100/10,000
7726-95-6	Bromine	e, l	1	500
106-99-0	Butadiene	a, e	1	10,000
109-19-3	Butyl Isovalerate	a, e	1	10,000
111-34-2	Butyl Vinyl Ether	a, e	1	10,000
1306-19-0	Cadmium Oxide	e	1	100/10,000
2223-93-0	Cadmium Stearate	c, e	1	1,000/10,000
7778-44-1	Calcium Arsenate	d	1,000	500/10,000
8001-35-2	Camphechlor	d	1	500/10,000
56-25-7	Cantharidin	e	1	100/10,000
51-83-2	Carbachol Chloride	e	1	500/10,000
26419-73-8	Carbamic Acid, Methyl-, 0-(((2,4-Dimethyl-1, 3-Dithiolan-2-yl)Methylene)Amino)-	e	1	100/10,000
1563-66-2	Carbofuran		10	10/10,000
75-15-0	Carbon Disulfide	l	100	10,000
786-19-6	Carbophenothion	e	1	500
2244-16-8	Carvone	a, e	1	10,000
57-74-9	Chlordane	d	1	1,000
470-90-6	Chlorfenvinfos	e	1	500
7782-50-5	Chlorine		10	100
24934-91-6	Chlormephos	e	1	500
999-81-5	Chlormequat Chloride	e, h	1	100/10,000
107-20-0	Chloroacetaldehyde	a	1,000	10,000
79-11-8	Chloroacetic Acid	e	1	100/10,000
107-07-3	Chloroethanol	e	1	500
627-11-2	Chloroethyl Chloroformate	e	1	1,000
67-66-3	Chloroform	d, l	5,000	10,000
542-88-1	Chloromethyl Ether	d, h	1	100
107-30-2	Chloromethyl Methyl Ether	c, d	1	100
3691-35-8	Chlorophacinone	e	1	100/10,000
1982-47-4	Chloroxuron	e	1	500/10,000
21923-23-9	Chlorthiophos	e, h	1	500
10025-73-7	Chromic Chloride	e	1	1/10,000
7440-48-4	Cobalt	a, e	1	10,000
62207-76-5	Cobalt, ((2,2'-(1,2-Ethanediylbis (Nitrilomethylidyne))Bis(6-Fluorophenolato))(2-)-N,N',O,O')-.	e	1	100/10,000
10210-68-1	Cobalt Carbonyl	e, h	1	10/10,000
64-86-8	Colchicine	e, h	1	10/10,000
117-52-2	Coumafuryl	a, e	1	10,000
56-72-4	Coumaphos		10	100/10,000
5836-29-3	Coumatetralyl	e	1	500/10,000
95-48-7	Cresol, o-	d	1,000	1,000/10,000
535-89-7	Crimidine	e	1	100/10,000
4170-30-3	Crotonaldehyde		100	1,000
123-73-9	Crotonaldehyde, (E)-		100	1,000
506-68-3	Cyanogen Bromide		1,000	500/10,000
506-78-5	Cyanogen Iodide	e	1	1,000/10,000
2636-26-2	Cyanophos	e	1	1,000
675-14-9	Cyanuric Fluoride	e	1	100
66-81-9	Cycloheximide	e	1	100/10,000
108-91-8	Cyclohexylamine	e, l	1	10,000
287-92-3	Cyclopentane	a, e	1	10,000
633-03-4	C. I. Basic Green 1	a, e	1	10,000
17702-41-9	Decaborane(14)	e	1	500/10,000
8065-48-3	Demeton	e	1	500
919-86-8	Demeton-S-Methyl	e	1	500
10311-84-9	Dialifor	e	1	100/10,000
19287-45-7	Diborane	e	1	100
84-74-2	Dibutyl Phthalate	a	10	10,000
8023-53-8	Dichlorobenzalkonium Chloride	a, e	1	10,000
111-44-4	Dichloroethyl Ether	d	1	10,000

APPENDIX A.—THE LIST OF EXTREMELY HAZARDOUS SUBSTANCES AND THEIR THRESHOLD PLANNING QUANTITIES—Continued

[Alphabetical Order]

CAS No.	Chemical name	Notes	Reportable quantity* (pounds)	Threshold planning quantity (pounds)
149-74-6	Dichloromethylphenylsilane	e	1	1,000
62-73-7	Dichlorvos		10	1,000
141-66-2	Dicrotophos	e	1	100
1464-53-5	Diepoxybutane	d	1	500
814-49-3	Diethyl Chlorophospate	e, h	1	500
1642-54-2	Diethylcarbamazine Citrate	e	1	100/10,000
93-05-0	Diethyl-p-Phenylenediamine	a,e	1	10,000
71-63-6	Digitoxin	c, e	1	100/10,000
2238-07-5	Diglycidyl Ether	e	1	1,000
20830-75-5	Digoxin	e, h	1	10/10,000
115-26-4	Dimefox	e	1	500
60-51-5	Dimethoate		10	500/10,000
2524-03-0	Dimethyl Phosphorochloridothioate	e	1	500
131-11-3	Dimethyl Phthalate	a	5,000	10,000
77-78-1	Dimethyl Sulfate	d	1	500
75-18-3	Dimethyl Sulfide	e	1	100
75-78-5	Dimethyldichlorosilane	e, h	1	500
57-14-7	Dimethylhydrazine	d	1	1,000
99-98-9	Dimethyl-p-Phenylenediamine	e	1	10/10,000
644-64-4	Dimetilan	e	1	500/10,000
534-52-1	Dinitrocresol		10	10/10,000
88-85-7	Dinoseb		1,000	100/10,000
1420-07-1	Dinoterb	e	1	500/10,000
117-84-0	Dioctyl Phthalate	a	5,000	10,000
78-34-2	Dioxathion	e	1	500
646-06-0	Dioxolane	a, e	1	10,000
82-66-6	Diphacinone	e	1	10/10,000
152-16-9	Diphosphoramide, Octamethyl-		100	100
298-04-4	Disulfoton		1	500
514-73-8	Dithiazanine Iodide	e	1	500/10,000
541-53-7	Dithiobiuret		100	100/10,000
316-42-7	Emetine, Dihydrochloride	e, h	1	1/10,000
115-29-7	Endosulfan		1	10/10,000
2778-04-3	Endothion	e	1	500/10,000
72-20-8	Endrin		1	500/10,000
106-89-8	Epichlorohydrin	d, l	1,000	1,000
2104-64-5	EPN	e	1	100/10,000
50-14-6	Ergocalciferol	c, e	1	1,000/10,000
379-79-3	Ergotamine Tartrate	e	1	500/10,000
1622-32-8	Ethanesulfonyl Chloride, 2-Chloro-	e	1	500
10140-87-1	Ethanol, 1,2-Dichloro-, Acetate	e	1	1,000
563-12-2	Ethion		10	1,000
13194-48-4	Ethoprophos	e	1	1,000
538-07-8	Ethylbis(2-Chloroethyl)Amine	e, h	1	500
371-62-0	Ethylene Fluorohydrin	c, e, h	1	10
75-21-8	Ethylene Oxide	d, l	1	1,000
107-15-3	Ethylenediamine		5,000	10,000
151-56-4	Ethyleneimine	d	1	500
2235-25-8	Ethylmercuric Phosphate	a, e	1	10,000
542-90-5	Ethylthiocyanate	e	1	10,000
22224-92-6	Fenamiphos	e	1	10/10,000
122-14-5	Fenitrothion	e	1	500
115-90-2	Fensulfothion	e, h	1	500
4301-50-2	Fluenetil	e	1	100/10,000
7782-41-4	Fluorine	k	10	500
640-19-7	Fluoroacetamide	j	100	100/10,000
144-49-0	Fluoroacetic Acid	e	1	10/10,000
359-06-8	Fluoroacetyl Chloride	c, e	1	10
51-21-8	Fluorouracil	e	1	500/10,000
944-22-9	Fonofos	e	1	500
50-00-0	Formaldehyde	d,l	1,000	500
107-16-4	Formaldehyde Cyanohydrin	e, h	1	1,000
23422-53-9	Formetanate Hydrochloride	e,h	1	500/10,000
2540-82-1	Formothion	e	1	100
17702-57-7	Formparanate	e	1	100/10,000
21548-32-3	Fosthietan	e	1	500

APPENDIX A.—THE LIST OF EXTREMELY HAZARDOUS SUBSTANCES AND THEIR THRESHOLD PLANNING QUANTITIES—Continued

[Alphabetical Order]

CAS No.	Chemical name	Notes	Reportable quantity* (pounds)	Threshold planning quantity (pounds)
3878-19-1	Fuberidazole	e	1	100/10,000
110-00-9	Furan		100	500
13450-90-3	Gallium Trichloride	e	1	500/10,000
77-47-4	Hexachlorocyclopentadiene	d, h	1	100
1335-87-1	Hexachloronaphthalene	a, e	1	10,000
4835-11-4	Hexamethylenediamine, N,N'-Dibutyl-	e	1	500
302-01-2	Hydrazine	d	1	1,000
74-90-8	Hydrocyanic Acid		10	100
7647-01-0	Hydrogen Chloride (Gas Only)	e, l	1	500
7664-39-3	Hydrogen Fluoride		100	100
7722-84-1	Hydrogen Peroxide (Conc >52%)	e, l	1	1,000
7783-07-5	Hydrogen Selenide	e	1	10
7783-06-4	Hydrogen Sulfide	l	100	500
123-31-9	Hydroquinone	l	1	500/10,000
53-86-1	Indomethacin	a, e	1	10,000
10025-97-5	Iridium Tetrachloride	a, e	1	10,000
13463-40-6	Iron, Pentacarbonyl-	e	1	100
297-78-9	Isobenzan	e	1	100/10,000
78-82-0	Isobutyronitrile	e, h	1	1,000
102-36-3	Isocyanic Acid, 3,4-Dichlorophenyl Ester	e	1	500/10,000
465-73-6	Isodrin		1	100/10,000
55-91-4	Isofluorphate	c	100	100
4098-71-9	Isophorone Diisocyanate	b, e	1	100
108-23-6	Isopropyl Chloroformate	e	1	1,000
625-55-8	Isopropyl Formate	e	1	500
119-38-0	Isopropylmethylpyrazolyl Dimethylcarbamate	e	1	500
78-97-7	Lactonitrile	e	1	1,000
21609-90-5	Leptophos	e	1	500/10,000
541-25-3	Lewisite	c, e, h	1	10
58-89-9	Lindane	d	1	1,000/10,000
7580-67-8	Lithium Hydride	b, e	1	100
109-77-3	Malononitrile		1,000	500/10,000
12108-13-3	Manganese, Tricarbonyl Methylcyclopentadienyl	e, h	1	100
51-75-2	Mechlorethamine	c, e	1	10
950-10-7	Mephosfolan	e	1	500
1600-27-7	Mercuric Acetate	e	1	500/10,000
7487-94-7	Mercuric Chloride	e	1	500/10,000
21908-53-2	Mercuric Oxide	e	1	500/10,000
108-67-8	Mesitylene	a, e	1	10,000
10476-95-6	Methacrolein Diacetate	e	1	1,000
760-93-0	Methacrylic Anhydride	e	1	500
126-98-7	Methacrylonitrile	h	1	500
920-46-7	Methacryloyl Chloride	e	1	100
30674-80-7	Methacryloyloxyethyl Isocyanate	e, h	1	100
10265-92-6	Methamidophos	e	1	100/10,000
558-25-8	Methanesulfonyl Fluoride	e	1	1,000
950-37-8	Methidathion	e	1	500/10,000
2032-65-7	Methiocarb		10	500/10,000
16752-77-5	Methomyl	h	100	500/10,000
151-38-2	Methoxyethylmercuric Acetate	e	1	500/10,000
80-63-7	Methyl 2-Chloroacrylate	e	1	500
74-83-9	Methyl Bromide	l	1,000	1,000
79-22-1	Methyl Chloroformate	d, h	1,000	500
624-92-0	Methyl Disulfide	e	1	100
60-34-4	Methyl Hydrazine		10	500
624-83-9	Methyl Isocyanate	f	1	500
556-61-6	Methyl Isothiocyanate	b, e	1	500
74-93-1	Methyl Mercaptan		100	500
3735-23-7	Methyl Phenkapton	e	1	500
676-97-1	Methyl Phosphonic Dichloride	b, e	1	100
556-64-9	Methyl Thiocyanate	e	1	10,000
78-94-4	Methyl Vinyl Ketone	e	1	10
502-39-6	Methylmercuric Dicyanamide	e	1	500/10,000
75-79-6	Methyltrichlorosilane	e, h	1	500
1129-41-5	Metolcarb	e	1	100/10,000
7786-34-7	Mevinphos		10	500

APPENDIX A.—THE LIST OF EXTREMELY HAZARDOUS SUBSTANCES AND THEIR THRESHOLD PLANNING QUANTITIES—Continued

[Alphabetical Order]

CAS No.	Chemical name	Notes	Reportable quantity* (pounds)	Threshold planning quantity (pounds)
315-18-4	Mexacarbate		1,000	500/10,000
50-07-7	Mitomycin C	d	1	500/10,000
6923-22-4	Monocrotophos	e	1	10/10,000
2763-96-4	Muscimol	a, h	1,000	10,000
505-60-2	Mustard Gas	e, h	1	500
7440-02-0	Nickel	a, d	1	10,000
13463-39-3	Nickel Carbonyl	d	1	1
54-11-5	Nicotine	c	100	100
65-30-5	Nicotine Sulfate	e	1	100/10,000
7697-37-2	Nitric Acid		1,000	1,000
10102-43-9	Nitric Oxide	c	10	100
98-95-3	Nitrobenzene	l	1,000	10,000
1122-60-7	Nitrocyclohexane	e	1	500
10102-44-0	Nitrogen Dioxide		10	100
62-75-9	Nitrosodimethylamine	d, h	1	1,000
991-42-4	Norbormide	e	1	100/10,000
0	Organorhodium Complex (PMN-82-147)	e	1	10/10,000
65-86-1	Orotic Acid	a, e	1	10,000
20816-12-0	Osmium Tetroxide	a	1,000	10,000
630-60-4	Ouabain	c, e	1	100/10,000
23135-22-0	Oxamyl	e	1	100/10,000
78-71-7	Oxetane, 3,3-Bis(Chloromethyl)-	1	e	500
2497-07-6	Oxydisulfoton	e, h	1	500
10028-15-6	Ozone	e	1	100
1910-42-5	Paraquat	e	1	10/10,000
2074-50-2	Paraquat Methosulfate	e	1	10/10,000
56-38-2	Parathion	c, d	1	100
298-00-0	Parathion-Methyl	c	100	100/10,000
12002-03-8	Paris Green	d	100	500/10,000
19624-22-7	Pentaborane	e	1	500
76-01-7	Pentachloroethane	a, d	1	10,000
87-86-5	Pentachlorophenol	a, d	10	10,000
2570-26-5	Pentadecylamine	e	1	100/10,000
79-21-0	Peracetic Acid	e	1	500
594-42-3	Perchloromethylmercaptan		100	500
108-95-2	Phenol		1,000	500/10,000
97-18-7	Phenol, 2,2'-Thiobis(4,6-Dichloro-	e	1	100/10,000
4418-66-0	Phenol, 2,2'-Thiobis(4-Chloro-6-Methyl-Phenol, 2,2'-Thiobis (4-Chloro-6-Methyl)-	e	1	100/10,000
64-00-6	Phenol, 3-(1-Methylethyl)-, Methylcarbamate	e	1	500/10,000
58-36-6	Phenoxarsine, 10,10'-Oxydi-	e	1	500/10,000
696-28-6	Phenyl Dichloroarsine	d, h	1	500
59-88-1	Phenylhydrazine Hydrochloride	e	1	1,000/10,000
62-38-4	Phenylmercury Acetate		100	500/10,000
2097-19-0	Phenylsilatrane	e, h	1	100/10,000
103-85-5	Phenylthiourea		100	100/10,000
298-02-2	Phorate		10	10
4104-14-7	Phosacetim	e	1	100/10,000
947-02-4	Phosfolan	e	1	100/10,000
75-44-5	Phosgene	l	10	10
732-11-6	Phosmet	e	1	10/10,000
13171-21-6	Phosphamidon	e	1	100
7803-51-2	Phosphine		100	500
2703-13-1	Phosphonothioic Acid, Methyl-, O-Ethyl O-(4-(Methylthio)Phenyl) Ester	e	1	500
50782-69-9	Phosphonothioic Acid, Methyl-, S-(2-(Bis(1-Methylethyl)Amino)Ethyl O-Ethyl Ester	e	1	100
2665-30-7	Phosphonothioic Acid, Methyl-, O-(4-Nitrophenyl) O-Phenyl Ester	e	1	500
3254-63-5	Phosphoric Acid, Dimethyl 4-(Methylthio) Phenyl Ester	e	1	500
2587-90-8	Phosphorothioic Acid, O,O-Dimethyl-S-(2-Methylthio) Ethyl Ester	c, e, g	1	500
7723-14-0	Phosphorus	b, h	1	100
10025-87-3	Phosphorus Oxychloride	d	1,000	500
10026-13-8	Phosphorus Pentachloride	b, e	1	500
1314-56-3	Phosphorus Pentoxide	b, e	1	10
7719-12-2	Phosphorus Trichloride		1,000	1,000
84-80-0	Phylloquinone	a, e	1	10,000
57-47-6	Physostigmine	e	1	100/10,000
57-64-7	Physostigmine, Salicylate (1:1)	e	1	100/10,000
124-87-8	Picrotoxin	e	1	500/10,000

APPENDIX A.—THE LIST OF EXTREMELY HAZARDOUS SUBSTANCES AND THEIR THRESHOLD PLANNING QUANTITIES—Continued

[Alphabetical Order]

CAS No.	Chemical name	Notes	Reportable quantity* (pounds)	Threshold planning quantity (pounds)
110-89-4	Piperidine	e	1	1,000
5281-13-0	Piprotal	e	1	100/10,000
23505-41-1	Pirimifos-Ethyl	e	1	1,000
10025-65-7	Platinous Chloride	a, e	1	10,000
13454-96-1	Platinum Tetrachloride	a, e	1	10,000
10124-50-2	Potassium Arsenite	d	1,000	500/10,000
151-50-8	Potassium Cyanide	b	10	100
506-61-6	Potassium Silver Cyanide	b	1	500
2631-37-0	Promecarb	e, h	1	500/10,000
106-96-7	Propargyl Bromide	e	1	10
57-57-8	Propiolactone, Beta-	e	1	500
107-12-0	Propionitrile		10	500
542-76-7	Propionitrile, 3-Chloro-		1,000	1,000
70-69-9	Propiophenone, 4-Amino-	e, g	1	100/10,000
109-61-5	Propyl Chloroformate	e	1	500
1331-17-5	Propylene Glycol, Allyl Ether	a, e	1	10,000
75-56-9	Propylene Oxide	l	100	10,000
75-55-8	Propyleneimine	d	1	10,000
2275-18-5	Prothoate	e	1	100/10,000
95-63-6	Pseudocumene	a, e	1	10,000
129-00-0	Pyrene	c	5,000	1,000/10,000
140-76-1	Pyridine, 2-Methyl-5-Vinyl-	e	1	500
504-24-5	Pyridine, 4-Amino-	h	1,000	500/10,000
1124-33-0	Pyridine, 4-Nitro-, 1-Oxide	e	1	500/10,000
53558-25-1	Pyriminil	e, h	1	100/10,000
10049-07-7	Rhodium Trichloride	a, e	1	10,000
14167-18-1	Salcomine	e	1	500/10,000
107-44-8	Sarin	e, h	1	10
7783-00-8	Selenious Acid		10	1,000/10,000
7791-23-3	Selenium Oxychloride	e	1	500
563-41-7	Semicarbazide Hydrochloride	e	1	1,000/10,000
3037-72-7	Silane, (4-Aminobutyl)Diethoxymethyl-	e	1	1,000
128-56-3	Sodium Anthraquinone-1-Sulfonate	a, e	1	10,000
7631-89-2	Sodium Arsenate	d	1,000	1,000/10,000
7784-46-5	Sodium Arsenite	d	1,000	500/10,000
26628-22-8	Sodium Azide (Na(N3))	b	1,000	500
124-65-2	Sodium Cacodylate	e	1	100/10,000
143-33-9	Sodium Cyanide (Na(CN))	b	10	100
62-74-8	Sodium Fluoroacetate		10	10/10,000
131-52-2	Sodium Pentachlorophenate	e	1	100/10,000
13410-01-0	Sodium Selenate	e	1	100/10,000
10102-18-8	Sodium Selenite	h	100	100/10,000
10102-20-2	Sodium Tellurite	e	1	500/10,000
900-95-8	Stannane, Acetoxytriphenyl-	e, g	1	500/10,000
57-24-9	Strychnine	c	10	100/10,000
60-41-3	Strychnine, Sulfate	e	1	100/10,000
3689-24-5	Sulfotep		100	500
3569-57-1	Sulfoxide, 3-Chloropropyl Octyl	e	1	500
7446-09-5	Sulfur Dioxide	e, l	1	500
7783-60-0	Sulfur Tetrafluoride	e	1	100
7446-11-9	Sulfur Trioxide	b, e	1	100
7664-93-9	Sulfur Acid		1,000	1,000
77-81-6	Tabun	c, e, h	1	10
13494-80-9	Tellurium	e	1	500/10,000
7783-80-4	Tellurium Hexafluoride	e, k	1	100
107-49-3	TEPP		10	100
13071-79-9	Terbufos	e, h	1	100
78-00-2	Tetraethyllead	c, d	10	100
597-64-8	Tetraethyltin	c, e	1	100
75-74-1	Tetramethyllead	c, e, l	1	100
509-14-8	Tetranitromethane		10	500
1314-32-5	Thallic Oxide	a	100	10,000
10031-59-1	Thallium Sulfate	h	100	100/10,000
6533-73-9	Thallous Carbonate	c, h	100	100/10,000
7791-12-0	Thallous Chloride	c, h	100	100/10,000

APPENDIX A.—THE LIST OF EXTREMELY HAZARDOUS SUBSTANCES AND THEIR THRESHOLD PLANNING QUANTITIES—Continued

[Alphabetical Order]

CAS No.	Chemical name	Notes	Reportable quantity* (pounds)	Threshold planning quantity (pounds)
2757-18-8	Thallous Malonate	c, e, h	1	100/10,000
7446-18-6	Thallous Sulfate		100	100/10,000
2231-57-4	Thiocarbazide	e	1	1,000/10,000
21564-17-0	Thiocyanic Acid, 2-(Benzothiazolylthio)Methyl Ester	a, e	1	10,000
39196-18-4	Thiofanox		100	100/10,000
640-15-3	Thiometon	a, e	1	10,000
297-97-2	Thionazin		100	500
108-98-5	Thiophenol		100	500
79-19-6	Thiosemicarbazide		100	100/10,000
5344-82-1	Thiourea, (2-Chlorophenyl)-		100	100/10,000
614-78-8	Thiourea, (2-Methylphenyl)-	e	1	500/10,000
7550-45-0	Titanium Tetrachloride	e	1	100
584-84-9	Toluene 2,4-Diisocyanate		100	500
91-08-7	Toluene 2,6-Diisocyanate		100	100
110-57-6	Trans-1,4-Dichlorobutene	e	1	500
1031-47-6	Triamiphos	e	1	500/10,000
24017-47-8	Triazofos	e	1	500
76-02-8	Trichloroacety Chloride	e	1	500
115-21-9	Trichloroethylsilane	e, h	1	500
327-98-0	Trichloronate	e, k	1	500
98-13-5	Trichlorophenylsilane	e, h	1	500
52-68-6	Trichlorophon	a	100	10,000
1558-25-4	Trichloro(Chloromethyl)Silane	e	1	100
27137-85-5	Trichloro(Dichlorophenyl)Silane	e	1	500
998-30-1	Triethoxysilane	e	1	500
75-77-4	Trimethylchlorosilane	e	1	1,000
824-11-3	Trimethylolpropane Phosphite	e, h	1	100/10,000
1066-45-1	Trimethyltin Chloride	e	1	500/10,000
639-58-7	Triphenyltin Chloride	e	1	500/10,000
555-77-1	Tris(2-Chloroethyl)Amine	e, h	1	100
2001-95-8	Valinomycin	c, e	1	1,000/10,000
1314-62-1	Vanadium Pentoxide		1,000	100/10,000
108-05-4	Vinyl Acetate Monomer	d, l	5,000	1,000
3048-64-4	Vinylnorbornene	a, e	1	10,000
81-81-2	Warfarin		100	500/10,000
129-06-6	Warfarin Sodium	e, h	1	100/10,000
28347-13-9	Xylylene Dichloride	e	1	100/10,000
58270-08-9	Zinc, Dichloro(4,4-Dimethyl-5((((Methylamino) Carbonyl)Oxy)Imino)Pentanenitrile)-,(T-4)-	e	1	100/10,000
1314-84-7	Zinc Phosphide	b	100	500

*Only the statutory or final RQ is shown. For more information, see 40 CFR Table 302.4

Notes:

a This chemical does not meet acute toxicity criteria. Its TPQ is set at 10,000 pounds.
b This material is a reactive solid. The TPQ does not default to 10,000 pounds for non-powder, non-molten, non-solution form.
c The calculated TPQ changed after technical review as described in the technical support document.
d Indicates that the RQ is subject to change when the assessment of potential carcinogenicity and/or other toxicity is completed.
e Statutory reportable quantity for purposes of notification under SARA sect 304(a)(2).
f The statutory 1 pound reportable quantity for methyl isocyanate may be adjusted in a future rulemaking action.
g New chemicals added that were not part of the original list of 402 substances.
h Revised TPQ based on new or re-evaluated toxicity data.
j TPQ is revised to its calculated value and does not change due to technical review as in proposed rule.
k The TPQ was revised after proposal due to calculation error.
l Chemicals on the original list that do not meet toxicity criteria but because of their high production volume and recognized toxicity are considered chemicals of concern ("Other chemicals").

APPENDIX B.—THE LIST OF EXTREMELY HAZARDOUS SUBSTANCES AND THEIR THRESHOLD PLANNING QUANTITIES

[CAS Number Order]

CAS No.	Chemical name	Notes	Reportable quantity* (pounds)	Threshold planning quantity (pounds)
0	Organorhodium Complex (PMN-82-147)	e	1	10/10,000
50-00-0	Formaldehyde	d, l	1,000	500
50-07-7	Mitomycin C	d	1	500/10,000
50-14-6	Ergocalciferol	c, e	1	1,000/10,000

APPENDIX B.—THE LIST OF EXTREMELY HAZARDOUS SUBSTANCES AND THEIR THRESHOLD PLANNING QUANTITIES—Continued

[CAS Number Order]

CAS No.	Chemical name	Notes	Reportable quantity* (pounds)	Threshold planning quantity (pounds)
51-21-8	Fluorouracil	e	1	500/10,000
51-75-2	Mechlorethamine	c, e	1	10
51-83-2	Carbachol Chloride	e	1	500/10,000
52-68-6	Trichlorophon	a	100	10,000
53-86-1	Indomethacin	a, e	1	10,000
54-11-5	Nicotine	c	100	100
54-62-6	Aminopterin	e	1	500/10,000
55-91-4	Isofluorphate	c	100	100
56-25-7	Cantharidin	e	1	100/10,000
56-38-2	Parathion	c, d	1	100
56-72-4	Coumaphos		10	100/10,000
57-14-7	Dimethylhydrazine	d	1	1,000
57-24-9	Strychnine	c	10	100/10,000
57-47-6	Physostigmine	e	1	100/10,000
57-57-8	Propiolactone, Beta-	e	1	500
57-64-7	Physostigmine, Salicylate (1:1)	e	1	100/10,000
57-74-9	Chlordane	d	1	1,000
58-36-6	Phenoxarsine, 10,10'-Oxydi-	e	1	500/10,000
58-89-9	Lindane	d	1	1,000/10,000
59-88-1	Phenylhydrazine Hydrochloride	e	1	1,000/10,000
60-34-4	Methyl Hydrazine		10	500
60-41-3	Strychnine, Sulfate	e	1	100/10,000
60-51-5	Dimethoate		10	500/10,000
62-38-4	Phenylmercury Acetate		100	500/10,000
62-53-3	Aniline	d, l	5,000	1,000
62-73-7	Dichlorvos		10	1,000
62-74-8	Sodium Fluoroacetate		10	10/10,000
62-75-9	Nitrosodimethylamine	d, h	1	1,000
64-00-6	Phenol, 3-(1-Methylethyl)-, Methylcarbamate	e	1	500/10,000
64-86-8	Colchicine	e, h	1	10/10,000
65-30-5	Nicotine Sulfate	e	1	100/10,000
65-86-1	Orotic Acid	a, e	1	10,000
66-81-9	Cycloheximide	e	1	100/10,000
67-66-3	Chloroform	d, l	5,000	10,000
70-69-9	Propiophenone, 4-Amino-	e, g	1	100/10,000
71-63-6	Digitoxin	c, e	1	100/10,000
72-20-8	Endrin		1	500/10,000
74-83-9	Methyl bromide	l	1,000	1,000
74-90-8	Hydrocyanic Acid		10	100
74-93-1	Methyl Mercaptan		100	500
75-15-0	Carbon Disulfide	l	100	10,000
75-18-3	Dimethyl Sulfide	e	1	100
75-21-8	Ethylene Oxide	d, l	1	1,000
75-44-5	Phosgene	l	10	10
75-55-8	Propyleneimine	d	1	10,000
75-56-9	Propylene Oxide	l	100	10,000
75-74-1	Tetramethyllead	c, e, l	1	100
75-77-4	Trimethylchlorosilane	e	1	1,000
75-78-5	Dimethyldichlorosilane	e, h	1	500
75-79-6	Methyltrichlorosilane	e, h	1	500
75-86-5	Acetone Cyanohydrin		10	1,000
76-01-7	Pentachloroethane	a, d	1	10,000
76-02-8	Trichloroacetyl Chloride	e	1	500
77-47-4	Hexachlorocyclopentadiene	d, h	1	100
77-78-1	Dimethyl Sulfate	d	1	500
77-81-6	Tabun	c, e, h	1	10
78-00-2	Tetraethyllead	c, d	10	100
78-34-2	Dioxathion	e	1	500
78-53-5	Amiton	e	1	500
78-71-7	Oxetane, 3,3-Bis(Chloromethyl)-	e	1	500
78-82-0	Isobutyronitrile	e, h	1	1,000
78-94-4	Methyl Vinyl Ketone	e	1	10
78-97-7	Lactonitrile	e	1	1,000
79-06-1	Acrylamide	d, l	5,000	1,000/10,000
79-11-8	Chloroacetic Acid	e	1	100/10,000
79-19-6	Thiosemicarbazide		100	100/10,000