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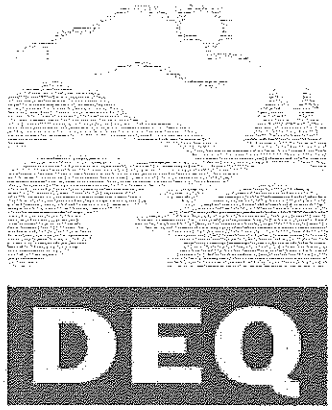
OREGON
ENVIRONMENTAL QUALITY
COMMISSION MEETING
MATERIALS



State of Oregon
Department of Environmental Quality

AQC

AGENDA

Environmental Quality Commission Meeting

9:00 a.m., November 21, 1969

City Council Chambers, City Hall, Seventh & Pearl Streets, Eugene, Oregon

PUBLIC HEARING

A. 9:00 a.m. Proposed Water Quality and Waste Treatment Standards for McKenzie and Santiam River Basins

OTHER ITEMS

B. Minutes of October 24, 1969 meeting

C. Project plans for October

D. Water Quality and Waste Treatment Standards for Deschutes River Basin

E. Waste Discharge Permits

(1) City of Huntington
(2) City of St. Helens
(3) Willamette Industries - Foster Division
(4) Willamette Industries - Sweet Home Division
(5) Weyerhaeuser Co. - Cottage Grove
(6) Eugene F. Burrill Lumber Co.
(7) Harry & David Bear Creek Orchards
(8) Southern Oregon Sales, Inc.

F. Tax Credit Application

(1) Page Paving Co.

G. Beaverton sewer connections

HMP

MINUTES OF SIXTH MEETING

of the

Oregon Environmental Quality Commission

November 21, 1969

The sixth regular meeting of the Oregon Environmental Quality Commission was called to order by the Chairman at 9:00 a.m., Friday, November 21, 1969, in the City Council Chambers, City Hall, Seventh and Pearl Streets, Eugene, Oregon. Members present were B.A. McPhillips, Chairman, Edward C. Harms, Jr., George A. McMath, Herman P. Meierjurgen and Storrs S. Waterman.

Participating staff members were Kenneth H. Spies, Director; E.J. Weathersbee, Deputy Director; Arnold B. Silver, Legal Counsel; J.A. Jensen, Municipal Sewerage Chief Engineer; Glen D. Carter, Water Quality Analyst; Harold L. Sawyer, Supervising Engineer; Harold W. Merryman and C. Kent Ashbaker, District Engineers, and Paul H. Rath, Associate Engineer.

WATER QUALITY STANDARDS PUBLIC HEARING

Proper notice having been given as required by statute and copies of the proposed standards having been sent to the interested parties, a public hearing was held for the purpose of considering the adoption of special water quality and waste treatment standards for the McKenzie and Santiam River Basins.

Mr. Carter of the Department's staff presented a prepared statement which reviewed the proposed standards and the plan or program for implementing them. As a part of his statement he read from the proposed standards all of Table A (the list of beneficial uses to be protected) shown on page 9, all of Section I - Special Water Quality Standards and all of Section II - Minimum Standards for Treatment and Control of Wastes, pages 10 to 14, inclusive, plus all of the Department's Proposed Program of Implementation, pages 23 to 25, inclusive. He pointed out that the latter included Tables B-2, C-1 and C-2.

He stated that unless designated otherwise the data contained in Tables B-3 and C-3 are expressed as mg./liter.

In concluding his statement Mr. Carter recommended that at the appropriate time Table A and Sections I and II of the proposed standards for the McKenzie and Santiam River Basins be adopted by the Commission as administrative rules. He recommended further that at the same time the proposed Program of Implementation including Tables B-2, C-1 and C-2 be adopted as administrative policy.

Mr. A.G. Heizenrader of the Oregon Concrete & Aggregate Producers Association then presented a statement objecting to the requirement set forth in item No. 3 of the Implementation Program (page 23) pertaining to the separation of sand and gravel removal operations from active stream flow by use of water-tight berms.

Mr. George W. Svoboda, Lane County Sanitary Engineer, presented a short statement for Mr. John C. Stoner, Chief Sanitarian for the Lane County Health Department. He said subsurface sewage disposal practices in the McKenzie River Basin are being thoroughly investigated by the county and upon completion of the study they will collaborate with the Department of Environmental Quality to establish mutually acceptable septic tank standards and remedial measures. He said further that Lane County has adopted minimum land area requirements for properties using individual septic tank systems.

Mr. Devin Duncan of the McKenzie Flyfishers mentioned the increase in urbanization and industrial development that is taking place in the McKenzie Basin and urged that the sewage treatment requirement of 10 mg./liter be changed to 5 mg./liter. Mr. Harms said he also supports a reduction to 5 mg./liter for BOD and also for suspended solids.

Mr. Bernt A. Hansen, a second year law student, discussed the need for specific standards pertaining to allowable levels of pesticides. The Chairman informed Mr. Hansen that the Department is well aware of the pesticide problem.

Mr. Ronald Hasselman, Assistant Water Resources Analyst of the Oregon Fish Commission, then read a prepared statement on behalf of both the Fish Commission and the Oregon State Game Commission. He also recommended stricter sewage and waste treatment standards.

Mrs. John Bascom, President of the League of Women Voters of Central Lane County, read a prepared statement for that organization. She expressed concern about the use of septic tanks, about bank erosion and about pollution caused by gravel mining, logging and roadbuilding.

Mrs. John R. Axtell presented a prepared statement on behalf of the American Association of University Women.

Mr. William Puustinen of the Columbia River Fishermen's Protective Union and resident of the McKenzie Basin complimented the Department for proposing such high standards for the McKenzie. He expressed concern about pesticides and also suggested that the 10-10 standard for sewage plant effluents be changed to 5-5.

Mr. John R. Donaldson of the Oregon Environmental Council stated that he thought that the standards should include limits for nitrogen and phosphorus.

It was MOVED by Mr. McPhillips and seconded by Mr. McMath that the adoption of the proposed standards for the McKenzie and Santiam River Basins be deferred until the December 19 meeting in Portland and that in the meantime the record be kept open. It was then MOVED by Mr. Harms that the motion be amended to include the request that the staff give particular consideration to the specifics on dissolved chemical substances and on sewage and waste treatment requirements mentioned in the statement of the Oregon Fish and Game Commissions pertaining particularly to the McKenzie River. The amended motion was passed unanimously.

The Director and Deputy Director in response to a question by Mr. Harms explained the staff's reasons for proposing the 10-10 standard for the McKenzie River.

The Chairman then stated that letters or statements regarding the proposed standards had also been received from Mr. O.P. Morgan of the Weyerhaeuser Company, Mr. James L. Agee, Regional Director, Federal Water Pollution Control Administration, and Mr. Fred Cleaver, Program Director for the Bureau of Commercial Fisheries, U.S. Department of Interior and that copies of such letters or statements would be a part of the record of this hearing.

Copies of the statements presented by Glen Carter, G.W. Svoboda (for John Stoner), Ron Hasselman (for Fish and Game Commissions), Mrs. John Bascom and Mrs. John R. Axtell have been made a part of the Department's permanent files in this matter.

The hearing was recessed at 10:35 a.m. by the Chairman and the regular business meeting of the Commission was convened at 11:00 a.m.

MINUTES OF OCTOBER 24, 1969 MEETING

It was MOVED by Mr. Waterman, seconded by Mr. Harms and carried that the minutes of the fifth regular meeting held on October 24, 1969 be approved as prepared by the Director.

PROJECT PLANS

It was MOVED by Mr. Harms, seconded by Mr. Waterman and carried that the actions taken by the staff during the month of October on the following 29 water pollution control projects be approved: (Note: There were no air quality control project plans processed during October.)

Water Pollution Control

Date	Location	Project	Action
10/1/69	Albany	Change Order #3 (sewage treatment plant)	Prov. app.
10/2/69	East Salem	Lancaster Village sewers	Prov. app.
10/2/69	Gresham	Palmquist Road sewers	Prov. app.
10/2/69	Salem	Fir Rest Way sewer	Prov. app.
10/2/69	Tualatin	Indian Bluff Subdivision	Prov. app.
10/3/69	Oak Hill	Oak Hill #9	Prov. app.
10/3/69	Sunset Valley S.D.	Belvidere Subdivision	Prov. app.
10/6/69	Diamond Lake	Project #1016-A-68	Prov. app.
10/7/69	McMinnville	Fourth Street, storm-sanitary system	Prov. app.
10/7/69	McMinnville	Mobile West Trailer Park	Prov. app.
10/8/69	Eugene	System rehabilitation, Project R13	Prov. app.
10/8/69	Sunriver Properties	Meadow Village North	Prov. app.
10/8/69	Tualatin	Toke-Ti-Terrace	Prov. app.
10/13/69	Amity	Amity Estates	Prov. app.
10/13/69	Jackson County	Callahan's Lodge sewage treatment plant	Prov. app.
10/13/69	Oakridge	Change Order #1 (sewage treatment plant)	Approved
10/15/69	Milwaukie	Sanitary sewers	Prov. app.
10/15/69	Mt. Angel	Lincoln Street sewer	Prov. app.
10/15/69	Portland	S.E. 113th Avenue	Prov. app.

Date	Location	Project	Action
10/15/69	Washington County	Fanno interceptor	Prov. app.
10/17/69	Nyssa	Preliminary report	Comments
10/17/69	Parkdale San. Dist.	Sewage treatment plant	Prov. app.
10/20/69	Aloha San. Dist.	Butternut Park	Prov. app.
10/21/69	Dundee	Change Orders A-1 and A-2	Approved
10/22/69	Brookings	Harris Beach State Park	Prov. app.
10/22/69	Jacksonville	Stage Coach Hills Unit #3	Prov. app.
10/27/69	Albany	Eastgate Lateral "C"	Prov. app.
10/27/69	Oakland	Addenda #1 and #2	Approved
10/27/69	West Slope San. Dist.	Lateral A-31-2	Prov. app.

WASTE DISCHARGE PERMITS

The provisions of the waste discharge permits which had been prepared by the staff for consideration at this meeting were reviewed briefly by Messrs. Sawyer, Rath and Weathersbee.

It was MOVED by Mr. Waterman, seconded by Mr. Harms and carried that the waste discharge permits as proposed by the staff be approved for (1) city of Huntington, (2) city of St. Helens, (3) Willamette Industries - Foster Division, (4) Willamette Industries - Sweet Home Division, (5) Weyerhaeuser Co. - Cottage Grove, (6) Eugene F. Burrill Lumber Co. - Medford, (7) Harry and David Bear Creek Orchards - Medford, and (8) Southern Oregon Sales, Inc. - Medford.

TAX CREDIT APPLICATION

Mr. Sawyer reviewed the staff's evaluation of the application No. T-96 submitted by the Page Paving Company of Salem for a tax credit for air pollution control facilities installed by said company on a portable hot mix asphalt plant. He said there was a question regarding the eligibility of a portion of the costs of the project because they involved leased equipment. There was discussion as to whether this was a legal or a policy question. Mr. Sawyer said he should be able to get an answer before the December 19 meeting. Mr. Silver indicated he thought such costs would be eligible.

It was MOVED by Mr. Waterman, seconded by Mr. McMath and carried that a tax credit certificate in the amount of $10,890 be approved for the Page Paving Company pursuant to application No. T-96 with the understanding that this action does not constitute final rejection of the leased portion and that, dependent upon the advice of legal counsel

regarding its eligibility, further consideration would be given an application for that portion.

EXTENSION OF TEMPORARY PERMITS

Mr. Sawyer reported that as of December 31, 1969, some 300 temporary permits which the staff has not had the time to process will expire. He recommended that in order to allow adequate time for proper evaluation, these temporary permits be extended until December 31, 1970 or until the staff has had the opportunity to act on them.

It was MOVED by Mr. Waterman, seconded by Mr. Harms and carried that all the existing temporary permits scheduled to expire December 31, 1969 be extended to December 31, 1970, or until the staff acts on them, whichever is the earliest.

CITY OF BURNS

Mr. Ashbaker presented a report on the present status of the plans of the city of Burns to install chlorination facilities as directed at the June 27, 1969 meeting of the State Sanitary Authority. A copy of his report has been made a part of the Department's files in this matter.

After considerable discussion, it was MOVED by Mr. Waterman, seconded by Mr. Harms and carried that a letter be sent to the city council of Burns requesting that they appear at the next meeting of the Environmental Quality Commission and at that time submit an acceptable time schedule for correcting their lagoon system of sewage disposal.

Mr. Harms suggested further that possible alternate legal actions be investigated.

The meeting was then recessed at 11:45 a.m. and was later reconvened at 1:30 p.m.

WATER QUALITY AND WASTE TREATMENT STANDARDS FOR THE DESCHUTES RIVER BASIN

The public hearing held in Bend on October 24, 1969, regarding water quality and waste treatment standards for the Deschutes River Basin was continued.

The Honorable D.L. Penhollow, Deschutes County Judge, was present and asked to be heard further regarding this matter. He complimented the Department and Commission for the standards as proposed and indicated they would serve adequately only as long as they are not compromised. He said

the county will expend every possible effort to maintain the standards that are set and also will do everything possible to see to it that they are not compromised.

He reported on a sanitary survey which he had made recently with Mr. Ashbaker and with Mr. Ron Anderson, Deschutes County Sanitarian, of the upper Deschutes which indicated that present conditions are satisfactory with only one or two minor exceptions.

Judge Penhollow admitted that it is the county's responsibility to conduct an area-wide study and to develop a master sewer plan. He indicated the county had entered into a contract for the necessary engineering services.

Mrs. Joyce Johnson, President of the League of Women Voters of Bend, was also present and indicated their appreciation of the delay in taking final action on the proposed standards. She said they are continuing to support the position that no effluents should be discharged into the Deschutes. She presented petitions to that effect signed by some 575 persons.

Mr. George Ward, Consulting Engineer, stated that he had recently been in conference with representatives of the Deschutes County Court regarding the proposed standards and also regarding a proposed county-wide survey for determining sewerage needs. He said they plan to submit an application to FWPCA for a planning grant under Section 3(c) of the federal water pollution control act.

Mr. Ashbaker mentioned that since the October hearing representatives of the Department had attended a public meeting in Bend and had attempted to explain further the reasons for and significance of the standards as proposed by the Department. He also referred to the staff report dated November 21, 1969 which had been prepared pursuant to the instructions of the Commission given to the staff on October 24. He suggested that consideration be given to the adoption of recommendation No. 2 contained in said report.

After further comments by the Chairman and Commission members, it was MOVED by Mr. Waterman, seconded by Mr. McMath and carried that the water quality and waste treatment standards including Table A as proposed

by the staff at the October 24, 1969 hearing for the Deschutes River Basin be amended with the following requirement being added as item II.C. "General - All persons proposing developments within the Deschutes River Basin shall fully explore, with the aid of competent engineering assistance, all feasible alternative methods of waste disposal. First consideration shall be given to systems which have no direct discharges to surface waters, and in every case installation of a system shall be required which will provide not only adequate protection but the best possible protection of the overall environmental quality of the area," that the same be adopted by the Commission as administrative rules and further that the program of implementation including Tables B and C be adopted by the Commission as administrative policy.

The hearing regarding the Deschutes River standards was then adjourned by the Chairman.

BEAVERTON SEWER CONNECTIONS

Mr. Larry Sprecher, Beaverton City Manager, then reviewed the problem of sewer connections as outlined in his letter of November 14, 1969 addressed to the Commission.

It was MOVED by Mr. Harms and seconded by Mr. Meierjurgen that the additional 35 connections referred to by Mr. Sprecher be authorized. The motion was defeated with Messrs. Waterman, McMath and McPhillips voting "no" and Messrs. Harms and Meierjurgen voting "yes".

There being no further business the meeting was adjourned at 2:10 p.m.

Respectfully submitted,

Kenneth H. Spies

Kenneth H. Spies
Director

MINUTES OF PUBLIC HEARINGS

Held By

Oregon Environmental Quality Commission

November 20, 1969

PROPOSED AMBIENT AIR QUALITY STANDARDS FOR CARBON MONOXIDE

Proper notice having been given as required by statute and copies of the proposed standards having been sent to interested parties, the public hearing in the matter of adoption of proposed ambient air quality standards for carbon monoxide was called to order by the Chairman at 10:05 a.m. on Thursday, November 20, 1969, in the Second Floor Auditorium of the Public Service Building, 920 S.W. 6th Avenue, Portland, Oregon.

Commission members present were B.A. McPhillips, Chairman, George A. McMath, Herman P. Meierjurgen and Storrs S. Waterman. Mr. E.C. Harms, Jr. was unable to attend because of other business.

Mr. Harold M. Patterson of the Department's staff briefly reviewed the scope and purpose of the proposed standards.

Mr. F. Glen Odell, Department engineer, presented a prepared report dated September 24, 1969, regarding the measured levels of carbon monoxide in urban areas of Oregon. He reported that during the 35 months from October 1966 through August 1969 the CO levels as measured by the Department's Continuous Air Monitoring Station at 718 W. Burnside Street in Portland exceeded the proposed standard of 20 ppm for 8 consecutive hours on 11 days, all occurring during fall and winter months. He reported further that during the year 1968 at this same sampling station the 10 ppm objective was exceeded on more than 35% of the days. He said the maximum level measured thus far in Eugene was 8.3 ppm compared with 29 ppm in Portland, the latter being on January 6, 1969.

Mr. Odell explained that occupational health standards set the limit at 50 ppm for workers, that the 20 ppm limit proposed by the Department is designed to protect the most sensitive individual and that to provide a maximum of protection the proposed objective for the future is set at 10 ppm.

In response to a question by Mr. McMath, Mr. Odell pointed out that any hazard to health is a function of both time and concentration and therefore the proposed standard is for an 8-hour period. Mr. Patterson stated that practically all research has been done on the basis of an 8-hour period.

Mr. Ronald C. Householder, also of the Department's staff, presented a report dated September 26, 1969, regarding alternative programs for reduction of motor vehicle emissions. Mr. Odell had previously stated that automobiles on an average are responsible for about 90% of the CO emissions. Mr. Householder discussed 5 alternative programs for reducing emissions by controlling individual vehicles and 3 programs for reducing emissions by controlling the number of vehicles in a given area.

Mr. George Van Hoomissen, Multnomah County District Attorney, presented a statement primarily concerning motor vehicles. He said he believes that Oregon's auto emission standards should be at least equal to those in California and preferably more strict. He was later reminded that federal law prohibits Oregon from establishing such standards for new automobiles. He claimed that the auto industry has been derelict in the past for not providing proper controls which he said could have been done 5 years ago. He submitted copies of correspondence between Los Angeles County and the auto industry and also a copy of a civil complaint filed by the federal government in January of this year against the industry. He said that although a consent decree had been signed in this case, other similar lawsuits were being filed by the states of California, Illinois and New York.

Mr. Van Hoomissen said further that because the automobile is the major remaining source of air pollution that is not controlled the Department of Environmental Quality should now require controls on both new and used cars. In reply to a question by Mr. Waterman, he said he understands that control devices for used cars are available. He was unable to answer a question as to whether or not such devices are now required in California on older cars.

Mr. Householder then pointed out that control devices for used cars are not available and are not required in California except for crankcase

devices. He pointed out further that the federal government in 1966 adopted regulations limiting the emissions from 1968 model cars and in 1968 adopted further regulations for 1970 model cars which are sold nation-wide. In addition, he said, the 1970 cars sold in California have evaporation controls which will be required on all 1971 models sold in the United States.

Mr. William Fuller read a letter dated November 19, 1969 signed by R.E. Hatchard, Program Director, Columbia-Willamette Air Pollution Authority, recommending that Section II of the proposed standards be revised to include the underlined words as follows:

"Carbon monoxide in the ambient air measured at either a Primary Air Mass, Primary Ground Level, or a Special Station with a probe inlet located at least 5 ft. above ground elevation shall not exceed an average concentration of twenty (20) parts per million by volume for any consecutive eight (8) hours."

Mr. Mel Gordon, Multnomah County Commissioner, then appeared and recommended that Oregon join in the lawsuits against the automobile manufacturers referred to by Mr. Van Hoomissen.

Mr. Waterman commented that he hopes that Multnomah County will be a leader in trying to reduce the automobile emissions and will purchase only cars that have maximum controls.

Mr. Paul Willhite read a letter dated November 19, 1969 from Verner J. Adkison, Director, Lane Regional Air Pollution Authority supporting the proposed regulations with the amendment recommended by the Columbia-Willamette Authority.

Mrs. Betty R. Merten, housewife and mother, appeared and testified that in order to reduce air pollution she thinks the people of Portland are or should be willing to make sacrifices such as using car pools and having their automobile motors tuned regularly. She supported Mr. Van Hoomissen's recommendations and suggested that the alternative programs mentioned by Mr. Householder are non-exclusive, that is, at least some of them could be used in combination to obtain maximum benefits. She said she considers the present down town conditions a serious health hazard and therefore urged the Commission to give top priority to solving the motor vehicle problem.

Mrs. Ralph Y. Shuping read a prepared statement for the League of Women Voters of Oregon supporting and urging adoption of the proposed CO standards.

Mr. William L. Hall, Regional Highway Safety Director, U.S. Department of Transportation, Portland, stated that under the Federal Highway Safety Act all automobiles should be inspected once each year. He claimed that RCA Service Company has an inspection station available which can include measurements for CO and hydrocarbons.

Mrs. Rodney Stevens appeared and said she supported the testimony presented by the others.

Mrs. Lucy Hallgren said she is sure the automobile traffic in the city of Portland will increase in the future and therefore something must be done to reduce the emissions from the individual cars.

Mr. Craig Royer of the Oregon Citizens for Clean Air Committee wanted to know why Oregon cannot lead the way in solving the motor vehicle problem, why the size of the automobile engine should not be limited and why the use of natural gas or propane should not be required.

Mr. Van Hoomissen claimed that one way to enforce the standards or requirements would be to prohibit the transfer of title of any motor vehicle that does not comply.

Copies of the prepared statements, reports or letters presented at the hearing by Harold M. Patterson, F. Glen Odell, Ronald C. Householder, William Fuller, Paul Willhite and Mrs. Ralph Y. Shuping have been made a part of the Department's files in this matter.

There being no others present who wished to be heard on the subject, it was MOVED by Mr. McPhillips, seconded by Mr. Meierjurgen and carried that final action on the proposed ambient air standards for carbon monoxide be deferred until the December meeting of the Commission.

The hearing was then recessed at 11:45 a.m. by the Chairman.

ZIDELL CORPORATION REQUEST FOR APPROVAL FOR BURNING BARGED DEBRIS

Mr. R. Bruce Snyder, Department meteorologist, read a staff report dated November 18, 1969 pertaining to the request of the Zidell Corporation for permission or approval to burn another barge load of ship dismantling

debris in the lower Columbia River channel. A similar request had previously been approved by the State Sanitary Authority on July 24, 1969. Mr. Snyder reported that the staff after reviewing the matter recommends that the new request be denied.

Mr. A.H. Neumeister and Mr. Jack Rosenfeld were present to represent the company. They claimed that at the present time there is no economically feasible alternative method available to them for disposing of such wastes.

After considerable discussion it was MOVED by Mr. McMath, seconded by Mr. Waterman and carried that the request be denied and the staff recommendation approved.

The meeting was then recessed at 12:15 p.m.

PROPOSED REGULATIONS FOR MOTOR VEHICLE VISIBLE EMISSIONS

Proper notice having been given as required by statute and copies of the proposed standards having been sent to interested parties, the public hearing in the matter of adoption of proposed regulations for controlling visible emissions from motor vehicles was called to order by the Chairman at 2:00 p.m. on Thursday, November 20, 1969 in the Second Floor Auditorium of the Public Service Building, 920 S.W. 6th Avenue, Portland, Oregon.

Commission members present were B.A. McPhillips, Chairman, George A. McMath, Herman P. Meierjurgen and Storrs S. Waterman.

Mr. Ronald C. Householder, Department Engineer, reviewed the purpose and scope of the proposed regulations as set forth in a staff report dated October 16, 1969. He also submitted certain recommended changes or amendments to the proposed regulations as follows: On page 1, subsection I.8., delete "Smoke" and its definition and add in its place "Visible Emissions - means those gases or particulates, excluding uncombined water, which separately or in combination are visible upon release to the outdoor atmosphere." On page 1, subsection II.1., change the word "smoke" to the word "emission". On page 2, Section III, third line, and subsection III.2., first line, change the word "smoke" to the words "visible emissions." On page 2, subsection III.2., second line, change the word "smoke" to the word "emission". On page 3, subsection VII.2., third line, delete the words "as a standard" and change the word "smoke" to the word "emissions".

Mr. A.B. Silver, Legal Counsel, then submitted further modifications or amendments to the proposed regulations which had been suggested by Attorney General Lee Johnson. These modifications included provisions for enforcement by the State Police.

Mr. Thomas C. Young, Executive Director of the Engine Manufacturer's Assn., stated that he agrees with the opacity approach. He then referred to federal standards which he said pertain only to new engines whereas Oregon's proposed regulations would pertain to both new and used engines. He claimed that turbo charged engines cannot meet the proposed standards.

Mr. Jonathan T. Howe, Legal Counsel for the Engine Manufacturer's Assn., 135 S. LaSalle St., Chicago, Illinois 60603, stated that 58% of the units tested in California would not meet Oregon's proposed standards. He said that fuel additives may reduce visible emissions but increase invisible emissions.

Mr. Paul Willhite of the Lane Regional Air Pollution Authority read a prepared statement signed by Verner J. Adkison, Director. He recommended that the definition of "smoke" be changed. He agreed with the opacity limits as proposed.

Mrs. Beverly G. Curtis, representative of the Portland Junior Womens Club, read a letter and submitted a petition signed by 533 persons which read "We, the undersigned, support strong control of auto exhaust air pollution with a plan for stringent enforcement."

Mrs. Nancy Lachman of 885 S.W. 83rd Ave., Portland, read a statement representing a housewife's viewpoint. She expressed concern about the proposed construction of a new and enlarged parking facility for the down town Meier & Frank store which she claimed would tend to further increase the automobile traffic and air pollution in that portion of the city.

Mr. Robert R. Knipe of the Oregon Trucking Assn. asked that on page 2, subsection III.2., the leeway of 5 consecutive seconds be increased to 10. He commended the Department on the proposed standards.

Mr. Bill Luch of the Oregon Citizens for Clean Air said he was not at all satisfied with the proposed regulations. He insisted the requirements must be the same for both cars and trucks as otherwise the general

public will not support them and without public support they could not be enforced. He suggested going to the State Emergency Board for more money to finance an increase in staff for the Department. He also suggested diverting gasoline tax money for this purpose. He said frankly that he did not think the proposed regulations are any good.

Mr. Richard E. Hatchard, Program Director, Columbia-Willamette Air Pollution Authority, read a prepared statement recommending changes in the definitions for "opacity" and "smoke", deletion of subsection V.3., and certain changes to section VI.

Mrs. Ralph Shuping, Jr. read a prepared statement for the League of Women Voters of Oregon supporting the adoption and strict enforcement of the proposed regulations.

Mr. Mike Roach, Director, Mid-Willamette Air Pollution Authority, read a prepared statement signed by Henry B. Hildebrand, Board Chairman. He recommended changes in subsections II.1. and V.3. He said enforcement should be by state and local police agencies.

Mr. Bill Stevenson, Multnomah County State Representative, said he shared the concern expressed by others that the regulations as proposed could not be properly enforced. He opposed subsection V.3. He indicated enforcement should be at the state level.

Mr. Keith Burns said the problem is urgent but he was concerned about the proposed standards. He thought there should be a ban on the construction of new "car barns" in downtown Portland.

Mr. Patterson of the Department's staff reported that during a recent preliminary survey some 2% of the cars observed were in violation of the proposed regulations.

After further discussion and there being no one else who wished to be heard on the subject, it was MOVED by Mr. McPhillips, seconded by Mr. Meierjurgen and carried that actions on the proposed regulations be deferred until the December 19 meeting of the Commission.

The hearing was recessed by the Chairman at 3:15 p.m.

Respectfully submitted,

Kenneth H. Spies

Kenneth H. Spies

Director

MOTIONS OF THI , 1969

It was MOVED by Mr. d by H P McMath and carried that final passage of the carbon standards be set for the December 19 meeting.

It was MOVED by Mr. McMath, seconded by Waterman and carried that we deny the request by Zidell Corporation for a permit to burn a barge load of debris, as recommended by the staff.

It was MOVED by Mr. McPhillips, seconded by Mr. Waterman and carried that that the adoption of the Motor Vehicle Emissions regulations be delayed until the December 19 meeting.

TO : MEMBERS OF THE ENVIRONMENTAL QUALITY COMMISSION

B. A. McPhillips, Chairman
Herman Meierjurgen, Member
Storrs Waterman, Member
E. C. Harms, Jr., Member
George A. McMath, Member

FROM : AIR QUALITY CONTROL STAFF

DATE : November 18, 1969 for Public Hearings on November 20, 1969.

SUBJECT: CARBON MONOXIDE - AMBIENT AIR QUALITY STANDARD, 10:00 a.m.
MOTOR VEHICLE VISIBLE EMISSION REGULATION, 2:00 p.m.

Enclosed for your information are several summary reports.

1. Proposed Ambient Air Quality Standard for Carbon Monoxide.
   a. Measured Levels of Carbon Monoxide in Urban Areas.
   b. Alternative Programs for Reduction of Motor Vehicle Emissions.

2. Proposed Regulations for Motor Vehicle Visible Emissions.
   a. Staff Discussion of Proposed Regulations for Motor Vehicle Visible Emissions.

It is believed that these reports are very informative.

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY CONTROL DIVISION

Introductory staff comments at the Public Hearing November 20, 1969
Ambient Air Standards for Carbon Monoxide

Mr. Chairman:

With your permission I would like to make a brief introductory statement, outline the proposed ambient air standard, and call upon staff members for brief reports on a) measured levels of carbon monoxide and b) alternative programs for reduction of emissions of motor vehicles.

A criteria document prepared jointly with the State of Washington was distributed to interested persons and agencies in January of this year. The document contained criteria for the carbon monoxide ambient air standard, a draft of the proposed ambient air standard, a recommended method of measurement and reporting, and a discussion section.

Subsequently in February 1969 the state of Washington adopted the ambient air standard we are proposing today. The same standard was more recently adopted by the State of California.

A brief review of the proposed ambient air standard is as follows:

Section I:

This section defines terms used in the regulations relative to measurement and applicability.

Section II:

This section contains the ambient air standard which reads as follows:

"Carbon monoxide in the ambient air measured at either a Primary Air Mass or a Primary Ground Level Monitoring Station shall not exceed an average concentration of twenty (20) parts per million by volume for any consecutive eight (8) hours."

Section III:

This section outlines the approved method of measurement.

Section IV:

This section defines requirements for reporting.

Exhibit "A" is a more detailed explanation of the method of measurement and of reporting.

Because the staff feels there is a minimum of understanding of measured levels of carbon monoxide and of alternative programs for controlling emissions from motor vehicles, the primary source of CO, the staff would like to present two additional brief reports.

DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY CONTROL

PROPOSED AMBIENT AIR QUALITY STANDARD

FOR

CARBON MONOXIDE

I. Definitions

A. Ambient Air - The air that surrounds the earth excluding the general volume of gases contained within any building or structure.

B. Primary Air Mass Station (PAMS) - A station designed to measure contamination in an air mass and represent a relatively broad area. The sampling site shall be representative of the general area concerned and not be contaminated by any special source. The probe inlet shall be a minimum of twenty feet and a maximum of 150 feet above ground level. Actual elevation should vary to prevent adverse exposure conditions caused by surrounding buildings and terrain. The probe inlet shall be placed approximately twenty feet above the roof top and meteorological measurement shall be made at approximately the same level as the probe inlet.

C. Primary Ground Level Monitoring Station (PGLMS) - A station designed to provide information on contaminant concentrations near the ground and provide data valid for the immediate area only. The probe inlet shall be ten to twenty feet above ground level with a desired optimum height of twelve feet. The sampling site shall be representative of the immediate area and not be contaminated by any unique source. The probe inlet shall not be less than two feet from any building or wall.

II. Air Quality Standard

Carbon monoxide in the ambient air measured at either a Primary Air Mass or a Primary Ground Level Monitoring Station shall not exceed an average concentration of twenty (20) parts per million by volume for any consecutive eight (8) hours.

September 22, 1969

III. Method of Measurement

For determining compliance with this regulation, carbon monoxide shall be measured by an infrared carbon monoxide analyzer. The analyzer shall have a full-scale range of one hundred (100) parts per million or less and be calibrated with known zero and span gases. Measurement shall be made according to the infrared method attached herewith as Exhibit "A" and reference incorporated herein. Other continuous and manual methods of measurement may be used after approval by the Department of Environmental Quality provided they can be shown to be comparable to the infrared technique in reproducibility, selectivity, sensitivity, and accuracy.

IV. Reporting of Data

Local and regional air pollution control agencies monitoring carbon monoxide shall notify the Department of Environmental Quality each time concentrations of carbon monoxide exceed the standard. Notification shall be made by telephone immediately after validation of the violation and also by mail on forms provided by the state agency. Data to be reported shall include.

a. Location of sampler.
b. Time span involved.
c. Concentrations recorded.
d. Type of sampler used.
e. Other relevant information requested by the state.

An annual report summarizing all occurrences of concentrations exceeding the standard shall be submitted to the state agency.

EXHIBIT "A" available upon request.

DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY CONTROL

September 24, 1969

MEASURED LEVELS OF CARBON MONOXIDE IN URBAN AREAS

Various sampling programs throughout Western Oregon indicate that significant carbon monoxide levels occur only in metropolitan Portland. Intermittent tests over several years in downtown areas of Medford and Eugene show that a concentration of carbon monoxide of one ppm is seldom exceeded using ½ hour sampling periods. Continuous monitoring equipment placed in the State Office Building in Eugene on August 12, 1969 has rarely shown levels above the objective level of 10 ppm for a consecutive 8 hour period.

The Department of Environmental Quality Continuous Air Monitoring Station at 718 W. Burnside began monitoring carbon monoxide in October, 1966 and provides the only extensive data available on carbon monoxide levels in Portland. During the 35 months from October 1966 through August 1969, the proposed standard of 20 ppm for 8 consecutive hours has been exceeded on 11 days, all occurring during fall and winter. The 10 ppm objective was exceeded on more than 35% of the days in calendar year 1968.

There are indications that high concentrations of carbon monoxide are limited to the central business district and near heavily traveled streets. Continuous sampling with equipment and techniques identical to that used at the Continuous Air Monitoring Station was conducted for approximately 6 months at a site near S. W. 5th and Harrison. Carbon monoxide concentrations were on the average about 60% of CAM Station values. The Columbia-Willamette Air Pollution Authority has used mobile equipment on various major city streets for shorter periods, and has reported levels equal to or less than CAM Station values. Levels have not been measured in residential areas, but are presumed to be much lower than areas within 200 feet of heavily traveled streets.

The concentrations of CO in the downtown area show both hourly and monthly variations of a significant nature. Hourly fluctuations closely follow changes in traffic volume on downtown streets, with the daily maximum usually coinciding with the afternoon rush hour. The period during which the maximum 8-hour average occurs most frequently has a beginning in the morning or early afternoon. Figure I shows the daily variations of traffic and carbon monoxide on a typical day. Mondays and Fridays generally have the highest CO levels in the week, with 90% of all occurrences of 8-hour averages of 18 ppm or greater falling on these two days. A comparison of weekdays, Saturdays, and Sundays during 1968 reveals the following:

	Weekdays	Saturdays	Sundays
Number of days 20 ppm exceeded	6	0	0
Percent of days 10 ppm exceeded	45%	20%	10%
Reduction in downtown traffic below weekday average	0%	30%	60%

Carbon monoxide levels are highest during the fall and winter, and reach a minimum in June and July. Table I shows the monthly averages of each day's maximum 8 hour average, as well as the number of violations of the proposed CO standard. The same data is plotted in Figure II. The seasonal variations are considered to be the result of differences in atmospheric stability. Typical values of mixing depth and CO concentrations are:

	Mean Maximum Mixing Depth	Carbon Monoxide Avg. 8 hr. Maximum
Summer	1400 meters	5 ppm
Winter	400 meters	10-12 ppm

CO emissions from winter space heating cannot be related to the higher values, inasmuch as they are of the order of only 1% of automotive emissions.

One question that has been raised regarding carbon monoxide is whether there is a general increase or decrease in concentrations. The answer to this question is that the data is insufficient to make any conclusive statements. There is evidence that the volume of traffic in the downtown area has not increased during the past three years, so that emissions of carbon monoxide should have remained more or less constant. Thus CO concentrations are determined primarily by meteorological factors which

can vary widely from year to year; with only three years' data to work with no general trends can be defined.

Of major interest at this time are the incidents of exceeded ambient air standards. Eight of the 11 incidents recorded since October 1966 occurred during last fall and winter, 1968-69, but it is not known at this time whether this represents a trend or an anomaly due to peculiar weather conditions: Of the 11 excessive values, 10 were between 20 and 23 ppm. During a comparable period in Los Angeles County, the current California State Standard of 30 ppm for 8 hours was exceeded on 44 occasions, using comparable measuring techniques.

Fig I

TRAFFIC AND CO

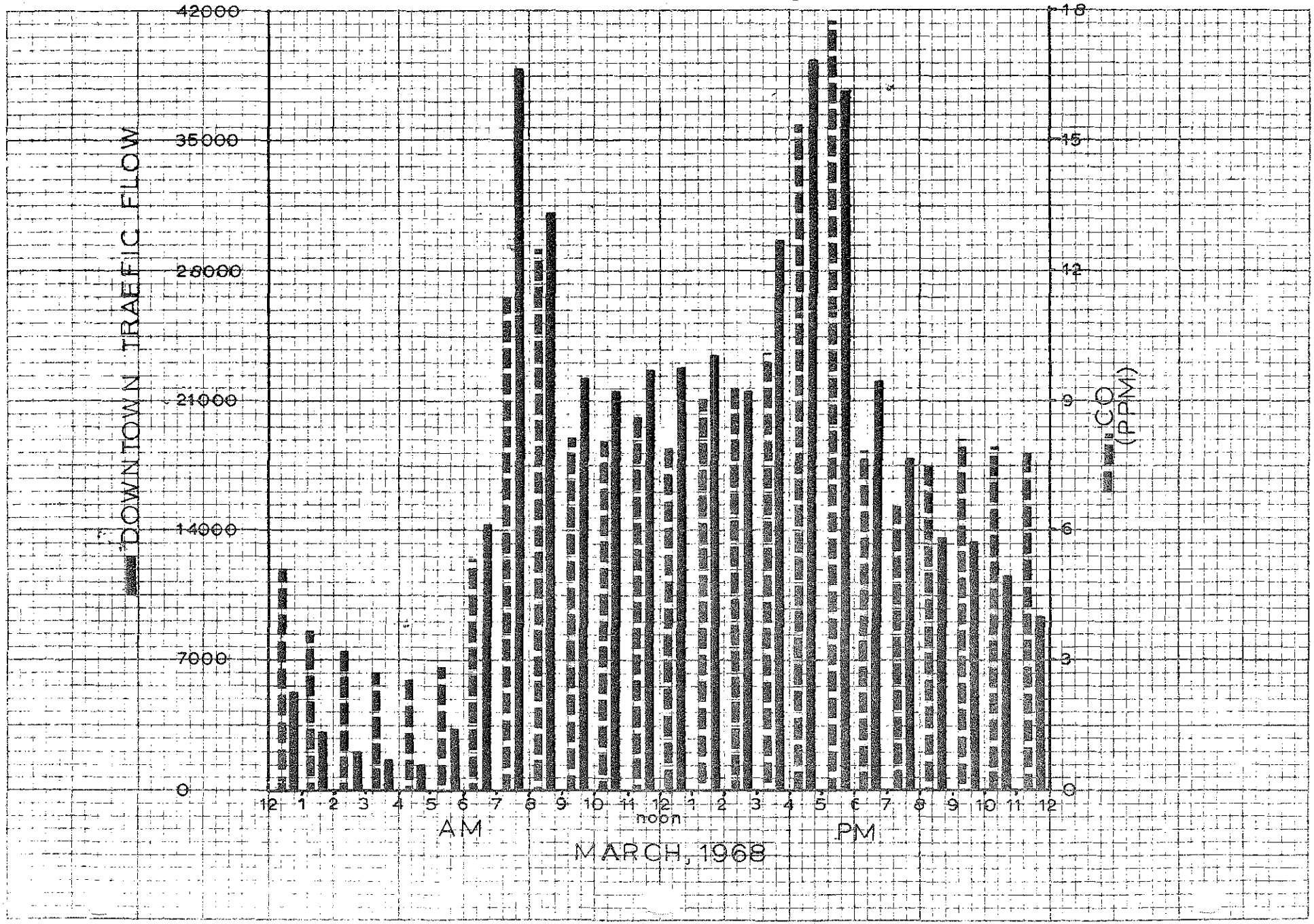


TABLE I

CARBON MONOXIDE LEVELS = CONTINUOUS AIR MONITORING STATION
718 W. Burnside, Portland, Oregon

	Mean Daily Maximum 8-hr. Averages				Number of Days Exceeding Std.			
Month	1966	1967	1968	1969	1966	1967	1968	1969
January		9.6	10.0	11.4		0	0	1
February		7.9	8.4	10.6		0	0	1
March		8.2	10.0	8.2		0	0	0
April		6.2	7.1	7.5		0	0	0
May		4.4	8.3	5.6		0	0	0
June		4.5	5.4	5.6		0	0	0
July		3.9	4.8	4.5		0	0	0
August		4.6	8.3	4.8		0	0	0
September		7.4	8.7	-		0	1	-
October	14.0*	10.3	12.5	-	0	0	1	-
November	13.4*	9.1	13.6	-	0	1	3	-
December	11.9	9.8	10.6	-	2	0	1	-
				TOTAL	2	1	6	2

*Station operating only 15-20 days per month

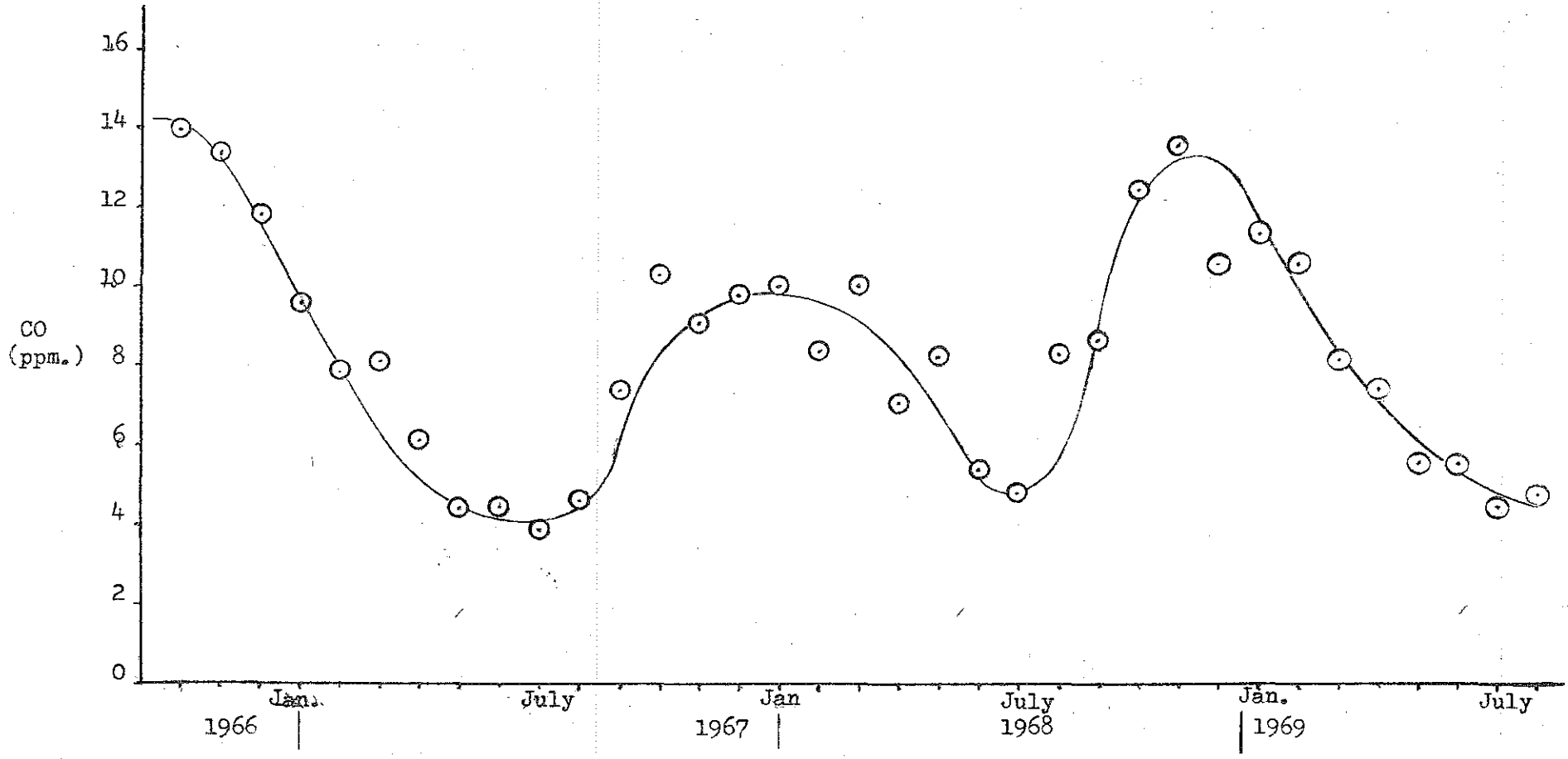


Fig. II - Mean Daily Maximum 8-hour average
Carbon Monoxide Concentration
Continuous Air Monitoring Station - 718 W. Burnside, Portland

FGO 9-12-64

NOTICE OF INTENDED ACTION

DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE OF OREGON

Notice is hereby given that the Department of Environmental Quality intends to adopt certain rules, regulations, and standards relating to Motor Vehicle Visible Emissions and Carbon Monoxide limitations.

A public hearing regarding the adoption of said rules, regulations and standards will be held in the 2nd Floor Auditorium of the Public Service Building, 920 S. W. 6th Avenue, Portland, Oregon, on November 20, 1969; said hearing will consider rules relating to Carbon Monoxide at 10:00 o'clock a.m., and Motor Vehicle Visible Emissions at 2:00 o'clock p.m. of said day.

The Presiding Officer at said meeting will be B. A. McPhillips, Chairman, Environmental Quality Commission, or his authorized representative.

Any person desiring to offer oral or written data, views, or exhibits may do so at the hearing date, during the aforesaid hours, or may submit his written data and exhibits to:

Department of Environmental Quality
State Office Building
1400 S. W. 5th Avenue
Portland, Oregon 97201
Attn: Air Quality Control Division

Copies of the proposed rules, regulations and standards may be obtained by calling 226-2161, Ext. 216, or by writing to the aforesaid Air Quality Control Division.

Dated this 29th day of October, 1969.

Kenneth H. Spies

Kenneth H. Spies, Director
Department of Environmental Quality

DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY CONTROL

PROPOSED AMBIENT AIR QUALITY STANDARD

FOR

CARBON MONOXIDE

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September 22, 1969

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EXHIBIT "A" available upon request.

EXHIBIT "A"

CARBON MONOXIDE

METHOD OF DETERMINATION & REPORTING
FOR CONTINUOUS INFRARED ANALYSIS

General

The infrared absorption of a compound is a characteristic of the type and arrangement of the atoms making up its molecules.

Dual beam infrared analysis is accomplished in the following manner: Two helices of nichrome wire are heated to about 1200°F. at which temperature they emit infrared energy. This energy is passed through two parallel optical paths, one the reference path and the other the sample path, to the sensing element.

In the non-dispersive Luft infrared analyzers (LIRA)[1], the signal is generated in the following manner: An interruptor alternately blocks the sample and reference beams. The sensing element, a capacitance microphone, responds to the arithmetical difference in radiant energies between the two beams, and converts the optical signal to an electrical impulse which is then amplified to a level necessary for operation of a meter, recorder or other readout device.

Infrared analyzers are not sensitive to flow rates. However, they are sensitive to vibration and temperature changes. The long-path instruments have heaters included in the optical benches with thermostats to maintain a constant temperature for the sample stream as it passes through the analyzer.

Apparatus

To monitor atmospheric carbon monoxide with an automatic analyzer, the following equipment and materials are recommended:

1. One LIRA analyzer complete with pump, control devices, and readout unit (i.e. Strip chart recorder).
2. One two-liter Erlenmeyer flask.

3. One two-hole rubber stopper.
4. Two pieces of 8 mm glass tubing, one of sufficient length to reach within ½ inch of the bottom of the Erlenmeyer flask, the other to extend 1 inch beyond the bottom of the stopper into the flask.
5. Sufficient ¼ inch tygon tubing to allow a three-foot condensation loop between the Erlenmeyer flask and the input port of the instrument.

   (Items 3, 4, and 5 are needed when humidity control is maintained by saturation.)

6. One cylinder of span gas made of carbon monoxide and either reconstituted air or nitrogen, of a concentration to be in the upper 25% of the recorder scale (i.e. On a 0 to 100 ppm recorder, 85 ppm would be a good concentration for the span gas.).
7. One cylinder of zero gas of reconstituted air (21% O_2, 79% N_2).
8. One hopcalite tube[2].

   (Items 7 and 8 may be replaced by other zero gas known to be free of CO.)

9. Two 2-stage pressure regulators with attendant valves and restraints for installation of gas cylinders.
10. Sufficient copper tubing, ¼ inch I.D., refrigeration grade, to plumb the cylinders of zero and span gas to the control panel. The attached drawings show the method for plumbing the instrument and the method for constructing the hopcalite tube.

Operation & Calibration

The instrument must be allowed to reach operating temperature before data is recorded. (Allow at least two hours for the instrument to reach equilibrium.) It should then be balanced, zeroed and spanned. Zeroing and spanning shall be repeated at least once per week. The zero and span gases and the sample air shall be passed through a bubbler or other humidity control device to maintain a constant moisture content. It is recommended to flow the reconstituted air (zero gas) through a hopcalite filter to eliminate any measurable concentrations of CO.

The instrument shall be rebalanced whenever there is inadequate zero and span adjustment available on the control panel and whenever maintenance

is performed on the instrument's electrical or optical systems.

Interferences

Water vapor and carbon dioxide have slight overlapping absorption spectra with carbon monoxide in the infrared region. These interferences are removed somewhat in the construction of the filter cell of the instrument.

Carbon dioxide (CO_2) response should be less than 1 ppm indicated CO for 1000 ppm CO_2. As atmospheric concentrations are in the order of 300 ppm CO_2, the interference from CO_2 should always be less than 0.5 ppm CO.

Water vapor concentration varies very widely in the atmosphere, and a rejection ratio of 2500:1 (2500 ppm H_2O may cause a response of not more than 1 ppm CO) is generally accepted. To correct for conditions where wide variations in atmospheric moisture content occur, proper humidity controls must be applied to assure that sample, zero and span gases all have the same relative humidity when passed into the analyzer. Insertion of a water bubbler in the sampling line of the instrument to assure a saturated gas stream at all times is one way of correcting for water vapor interference.

Other contaminants in concentrations commonly found in the atmosphere do not interfere with the infrared carbon monoxide analysis.

Data Recording & Reporting

Data shall be recorded on strip chart recorders, tape units or other devices compatible with the analyzer and data processing system in use.

Results shall be reported in parts per million and data for each day shall include:

1. All hourly averages (A minimum of six instantaneous readings are needed each hour to calculate the average.).
2. Maximum hourly average and time of occurrence.
3. Twenty-four hour average.

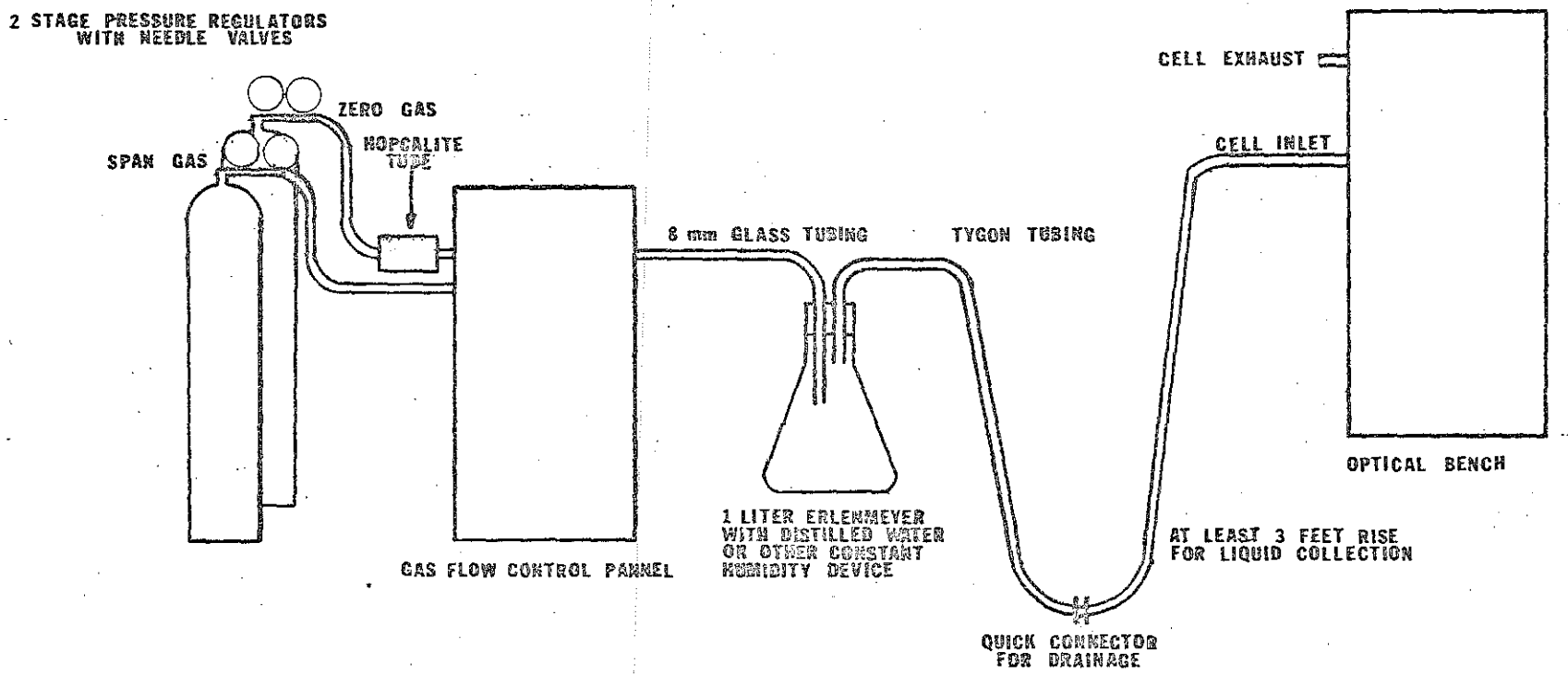
4. Number hours >20 ppm.
5. Maximum eight-hour average and time of occurrence.
6. All eight-hour averages >20 ppm and times of occurrences.

References

[1]Yaffee, C.D., Byers, D.H., and Hosly, A.D., "An Improved Luft Type Infrared Gas and Liquid Analyzer," Encyclopedia of Instrumentation for Industrial Hygiene, pp. 284-285, University of Michigan, Inst. of Industrial Health, 1956.

[2]Gordon, C.L., "Carbon Monoxide Free Gas for Analyzer Calibrations," 9th Conference on Methods in Air Pollution and Industrial Hygiene Studies, Feb. 7-9, 1968.

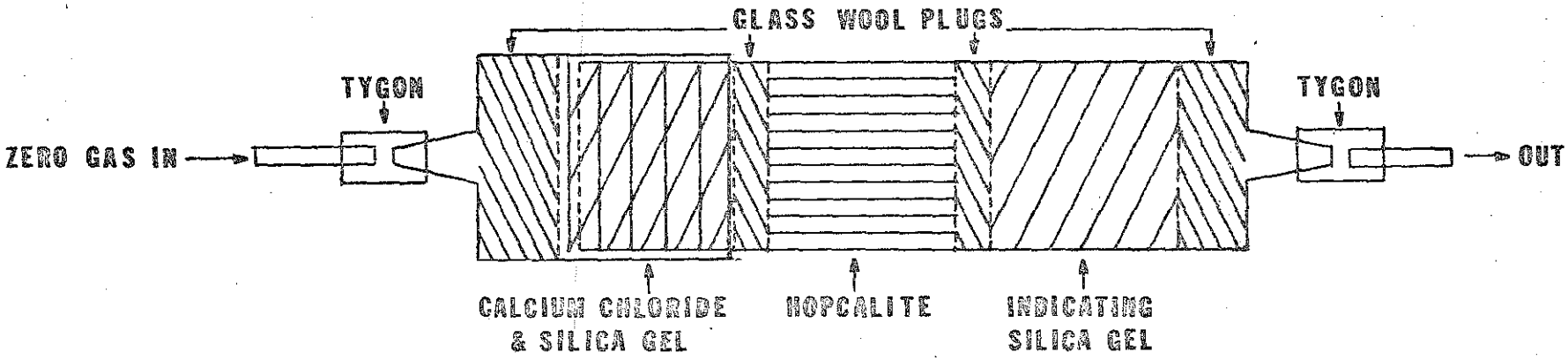
1/8/69



TYPICAL PLUMBING INSTALLATION

NON DISPERSIVE I. R. CARBON MONOXIDE ANALYZER

PLASTIC DRYING TUBE



MATERIALS:
INDICATING SILICA GEL - MATHISON CO.
HOPCALITE - MINE SAFETY APPLIANCE CO.

HOPCALITE ZERO GAS TUBE

INFRA RED CO ANALYSERS

NO SCALE CLG-68

DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY CONTROL

September 26, 1969

ALTERNATIVE PROGRAMS FOR REDUCTION OF MOTOR VEHICLE EMISSIONS

There are two basic approaches that should be considered in any effort to reduce motor vehicle emissions of carbon monoxide and other pollutants. One approach, which has been the basis of most federal and state programs to date, is to try to minimize the emissions from each individual vehicle. The other possibility is to reduce emissions by reducing the number of vehicles operating at one time in a given urban area.

The object of this report is to present and briefly describe a number of alternative control programs or segments of control programs embodying one or the other of the two basic approaches. The report is intended only to supply background information for the use of the Environmental Quality Commission and the public in evaluating the alternatives and selecting an effective public policy. Subjective evaluation will therefore be held to a minimum.

Alternatives to be considered are listed here and discussed in detail below:

PROGRAMS TO REDUCE EMISSIONS BY CONTROLLING INDIVIDUAL VEHICLES

1. Federal Emission Standards
2. State and Local Visible Emission Control Programs
3. Visual Inspection Programs
4. Proposed New Jersey Emission Testing Program
5. Required Annual Tune-Up

PROGRAMS TO REDUCE EMISSIONS BY REDUCING NUMBER OF VEHICLES

1. Emergency Traffic Rerouting
2. Long-term Traffic Planning
3. Mass Transit

PROGRAMS TO REDUCE EMISSIONS BY CONTROLLING INDIVIDUAL VEHICLES:

1. Federal Emission Standards

Control of motor vehicle emissions in Oregon up to the present has been limited to that accomplished by federal requirements for new cars. Present and proposed standards include the following:

Controls	Description
1963 Blowby	Positive crankcase ventilation valves to control crankcase hydrocarbon emissions on new cars since 1963.
1968 Exhaust	The 1968 Federal exhaust emission standards of 275 ppm of hydrocarbon and 1.5 percent carbon monoxide, which were met by modifying the engine by one manufacturer and by installing an exhaust manifold air injection system by others.
1970 Exhaust	The 1970 Federal exhaust emission standards of 180 ppm hydrocarbon and 1 percent carbon monoxide; standards assumed to be met by engine modifications alone.
1971 Evaporation	1971 Federal evaporative emission controls to be met by the installation of vapor collection devices on new cars.
1973 Reactor	A hypothetical 1973 exhaust standard which can only be met by the installation of a thermal reactor or afterburner.

The effect of these Federal standards on automotive emissions of hydrocarbons and carbon monoxide was reported to the National Air Pollution Control Administration by the consultants, Ernst and Ernst, in a report entitled "A Study of Selected Hydrocarbon Emission Controls". The various controls are projected to provide a cumulative reduction in emissions as follows:

	REDUCTIONS 1969 to 1974			
Controls	Carbon Monoxide	Hydro-Carbons	Incremental Capital Cost per New Car	Additional Annual Operating Cost
1968 Exhaust	13.5%	-6.4% (increase)	$18	$0
1970 Exhaust	27%	8.7%	$18	$0
1971 Evaporation	27%	19.6%	$12	$1
1973 Reactor	*	26%	$80	$15

*unknown

It should be pointed out that the hypothetical 1973 reactor presently under development is projected to reduce hydrocarbon emissions considerably beyond 1974, to a total reduction of 55% of 1969 emissions by 1980.

Projected reduction of carbon monoxide emissions due to the exhaust standards is shown in Figure 1, taken from the above-mentioned Ernst and Ernst report. Figure 2 is a similar projection for the Portland-Vancouver Metropolitan Transportation Study Area, prepared by the staff and using slightly different assumptions.

2. State and Local Visible Emissions Programs

This program, designed to reduce visible emissions from diesel and poorly maintained gasoline-powered engines, will actually have a very small effect on total automotive emissions. Reductions on the order of 1% to 4% might be expected. The value of visible emission standards and enforcement programs lies almost exclusively in eliminating an unsightly public nuisance.

3. Visual Inspection of Controls:

The simplest conceivable vehicle inspection program would consist of a glance under the hood of each car to ascertain that all pollution control devices are connected. The previously noted study by Ernst and Ernst examined this alternative and concluded that "its effectiveness would be negligible". Reasons for this conclusion include the following: 1968 Federal standards in some cases and 1970 standards in most cases are being met by internal engine modifications that cannot be seen; the incidence of malfunctioning of air injection devices (by which many 1968 and 1969 models meet standards) is "negligible"; and an inspection which eliminated malfunctioning PCV valves (1963 Blowby control) would reduce hydrocarbon emissions by about 1% and have no effect on emissions of carbon monoxide.

4. Proposed New Jersey Emission Testing Program:

The program being developed in New Jersey is designed to become part of the state-operated annual safety inspection program. The instrumentation required is currently estimated to cost $10,000 per inspection lane and will require less than 90 seconds for inspection. A prototype inspection lane is currently operating. Current data indicates that carbon monoxide emissions could be lowered by about 10% if approximately 30% of the vehicles inspected were rejected and required to have maintenance performed. The average cost of repair for a rejected vehicle is currently estimated at $18. In addition to the cost for inspection stations, a mandatory inspection

program in Oregon would cost the motorist less than 7 million dollars a year for the required repairs to achieve a 10% reduction in carbon monoxide emissions. Assuming tune-ups currently accomplished by the average motorist would not be done in addition to this program, the cost would be significantly lower. As previously stated, this program is still in the development state. The major handicap to the New Jersey program is that the responsibility of determining why the car failed and how it can pass a reinspection rests with the car owner.

5. Required Annual Tune-up:

One frequently proposed control program would require all cars to undergo a minor tune-up once a year. Various degrees of emission reduction and costs have been reported. General Motors Corp. recently reported on a test of 478 vehicles in which they achieved a 16% initial reduction in carbon monoxide at an average cost of $3 per car. An Ethyl Corp. study achieved a 10% reduction in CO by tune-up, but did not report on the cost.

The Ernst and Ernst report analyzed data from a study by Scott Research Laboratory in which a 29% initial reduction in carbon monoxide was achieved at a cost of about $7 per vehicle. The tune-up, similar to one proposed by the Automobile Manufacturers Association, covered the following items:

Idle speed within limits
Ignition timing within limits
Idle fuel mixture within limits

This system has an advantage in that it is not an inspection and has no rejection associated with it. Its economic impact might be quite nominal if projected savings in unnecessary maintenance and improved gasoline mileage are realized. Implementation of any tune-up program, however, would require standards or licensing of tune-up certification stations.

Ernst and Ernst evaluated several tune-up maintenance programs, taking into account expected deterioration between tune-ups, and concluded that an average carbon monoxide reduction of about 11% could realistically be expected. Curve #4 of Figure I represents the benefits obtained from an annual maintenance program. Combined with Federal 1968 and 1970 exhaust standards it would give a projected 35% reduction of CO by 1974, compared with 27% for the exhaust standards alone on a national basis.

It should be noted that no mandatory tune-up program has been enacted, and therefore no actual cost-effectiveness information based on experience is available.

The current Federal program does not have a firm policy which advises or directs the states on motor vehicle control. It does not encourage states to undertake inspection programs and would not provide grant support for the institution of such programs; and in fact no money has been appropriated for this purpose.

PROGRAMS TO REDUCE EMISSIONS BY REDUCING NUMBERS OF VEHICLES

1. Emergency Traffic Control

This approach to preventing pollution episodes from motor vehicle emissions is discussed in some detail in the Oregon-Washington Air Quality Committee document "Criteria for Carbon Monoxide Objectives and Standards". Two types of programs are suggested here for the sake of example:

(a) On all week days with high forecast pollution potential, private vehicles would be barred from designated sections of the city during specified hours.

(b) A combination of forecast pollution potential and actual mid-day pollution concentrations could be used to dictate similar emergency measures.

Any such emergency traffic control plan would require the closest degree of coordination and cooperation among state and local air quality authorities, city police, and communications media. Public support would be paramount.

While emergency traffic control would involve severe demands upon both the public and the government bodies involved, it is the only short-term alternative that can give any degree of assurance that air quality standards will not be violated in the near future.

2. Long Term Traffic Planning

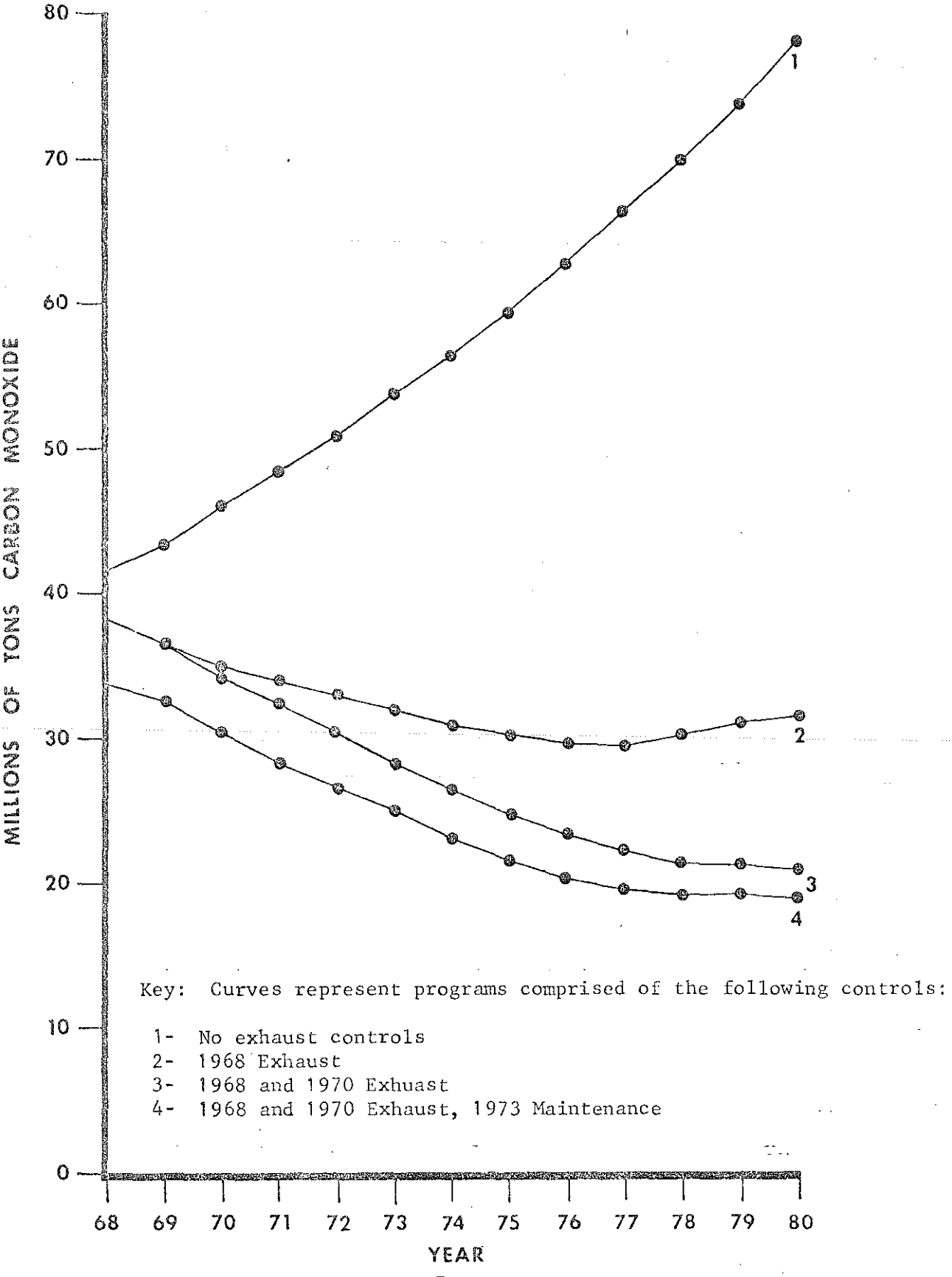
The major flaw in emergency traffic control measures such as described above is inherent in their "emergency" nature - they upset the normal routine and pattern of the city. The same effect could be achieved with no trauma by a comprehensive and well coordinated redesign of city center transport. This would involve a number of concepts well known to planners - peripheral parking, pedestrian malls replacing core streets, etc. The initiation of this solution to the downtown pollution problem would necessarily be the responsibility of local government and business.

3. Mass Transit

The development of an effective and popular mass transit system goes hand in hand with other long term planning efforts to decrease the number of vehicles downtown. Mass transit goes a step beyond the peripheral parking concept in that it reduces pollution not only in the city center but also on residential arterials and freeways. If it would achieve a significant reduction in the number of vehicles in the core area, mass transit might be the most effective solution to the downtown pollution problem.

FIGURE 1

PROJECTIONS OF NATIONAL URBAN CO EMISSIONS
FROM AUTOMOTIVE SOURCES UNDER VARIOUS PROGRAMS



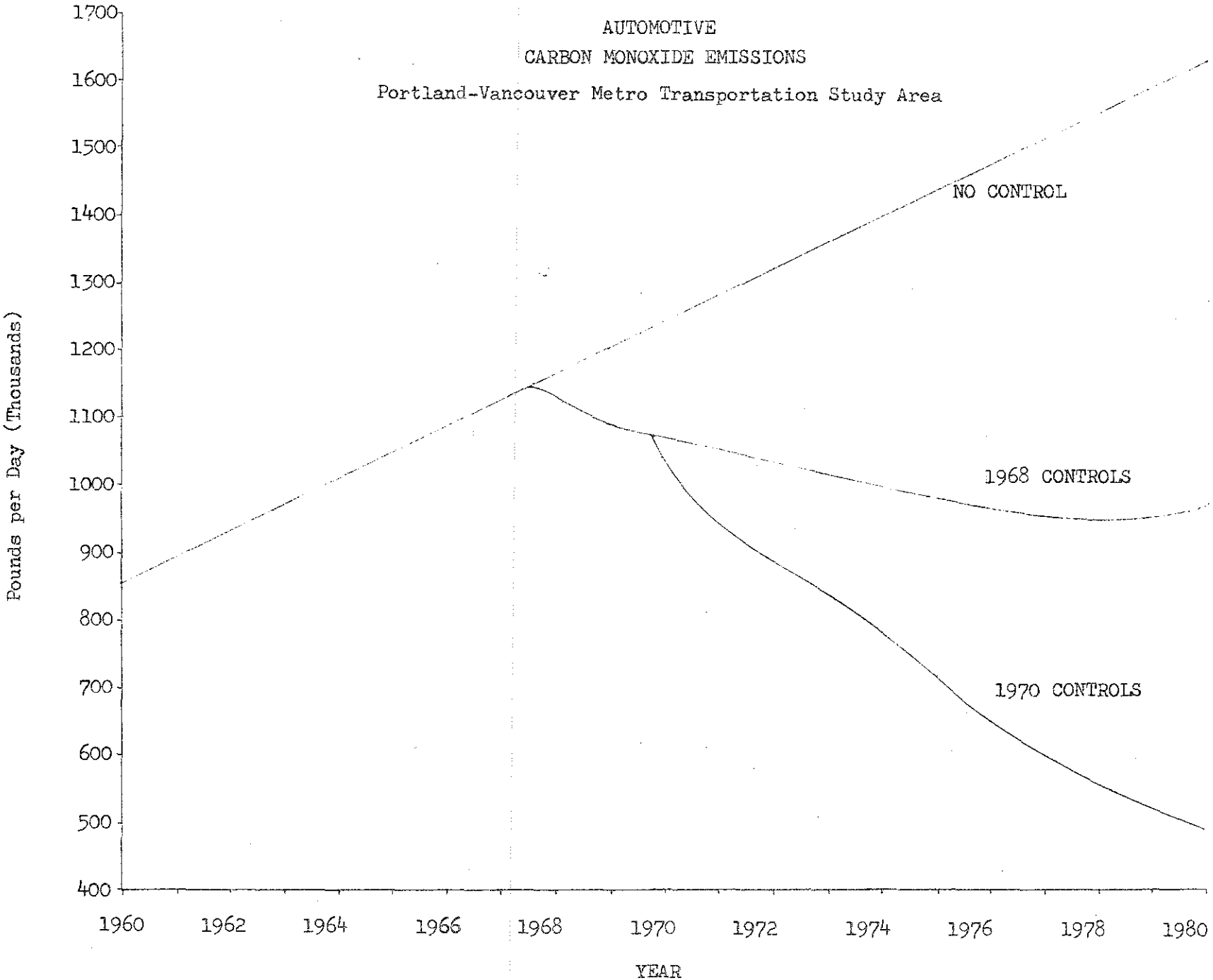


FIGURE 2

DEQ 9/2/69

DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY CONTROL

PROPOSED

REGULATIONS FOR MOTOR VEHICLE VISIBLE EMISSIONS

I. DEFINITIONS - As used in these regulations unless otherwise required by context:

1. Dealer - means any person who is engaged wholly or in part in the business of buying, selling, or exchanging, either outright or on conditional sale, bailment lease, chattel mortgage or otherwise, motor vehicles.
2. Department - means Department of Environmental Quality.
3. Motor Vehicle - means any self-propelled vehicle designed and used for transporting persons or property on a public street or highway.
4. Motor Vehicle Fleet Operation - means ownership, control, or management or any combination thereof by any person of 5 or more motor vehicles.
5. Opacity - means the degree to which transmitted light is obscured, expressed in percent.
6. Person - means the same as ORS 449.760 and also includes registered owners, lessees and lessors of motor vehicles.
7. Regional Authority - means a regional air quality control authority established under the provisions of ORS 449.760 to 449.330 and 449.850 to 449.920.
8. Smoke - means small gas borne particles resulting from incomplete combustion consisting predominantly of carbon and other combustible material.

II. VISIBLE EMISSIONS - GENERAL REQUIREMENTS, EXCLUSIONS

1. No person shall operate, drive, or cause or permit to be driven or operated any motor vehicle upon a public street or highway which emits into the atmosphere any visible smoke.
2. Excluded from this section are those motor vehicles:
   a) Powered by compression ignition or diesel cycle engines,
   b) Excluded by written order of the Department by ORS 449.810.

III. VISIBLE EMISSIONS - SPECIAL REQUIREMENTS FOR EXCLUDED MOTOR VEHICLES

No person shall operate, drive, or cause or permit to be driven or operated upon a public street or highway, any motor vehicle excluded from Section II, which emits smoke into the atmosphere:

1. Of such opacity as to obscure an observer's view to a degree of 10% or greater; provided however,
2. Smoke may be emitted into the atmosphere for a period aggregating not more than 5 consecutive seconds, if said smoke does not equal or exceed an opacity of 40%.

IV. UNCOMBINED WATER - WATER VAPOR

Where the presence of uncombined water is the only reason for failure of an emission to meet the requirements of Section II or III, such sections shall not apply.

V. MOTOR VEHICLE FLEET OPERATION

1. The Department may, by written notice, require any motor vehicle fleet operation to certify annually that their motor vehicles are maintained in good working order and, if applicable, in accordance with the motor vehicle manufacturers' specifications and maintenance schedule as may or tend to affect visible emissions. Records pertaining to observations, tests, maintenance and repairs performed to control or reduce visible emissions from individual motor vehicles shall be available for review and inspection by the Department.
2. The Department, by written notice, may require any motor vehicle of a motor vehicle fleet operation to be tested for compliance with Sections II or III of these regulations.
3. A regional authority, within its territory, may perform the functions of the Department as set forth in Items I and 2, upon written directive of the Department, expressly permitting such action.

VI. DEALER COMPLIANCE

No dealer shall sell, exchange or lease or offer for sale, exchange or lease, any motor vehicle which operates in violation of Sections II or III of these regulations, except as permitted by Federal regulations.

VII. METHOD OF MEASUREMENT

1. The opacity observation for purposes of these regulations shall be made by a person trained as an observer, provided however that,
2. The opacity Chart, marked "Exhibit A", with instructions for use, attached hereto and by reference incorporated into these regulations as a standard, may be used in grading the opacity of smoke for purposes of these regulations.

VIII. ALTERNATIVE METHODS OF MEASUREMENT OF VISIBLE EMISSIONS

1. Alternative methods of measurement to determine compliance with the visible emission standards in Section II and III or to determine violations thereof are acceptable for utilization provided that they can be demonstrated to be reproducible, selective, sensitive, accurate and applicable to a specific program.
2. A person desiring to utilize alternative methods of measurement must submit the following:
   a) Specifications.
   b) Test data.
   c) A detailed specific program for the use of the required instrument (demonstration of the effectiveness and suitability of the program shall be required).
3. A program using an alternative method of measurement shall only be undertaken after written approval by the Department.

TO : MEMBERS OF THE ENVIRONMENTAL QUALITY COMMISSION

B. A. McPhillips, Chairman
Herman Meierjurgen, Member
Storrs Waterman, Member
E. C. Harms, Jr., Member
George A. McMath, Member

FROM : AIR QUALITY CONTROL STAFF

SUBJECT: ZIDELL CORPORATION: REQUEST FOR APPROVAL FOR BURNING BARGED DEBRIS

DATE : November 18, 1969 for Meeting of November 21, 1969

Zidell Corporation, a Portland ship dismantling and salvage operation, has applied for permission to burn another barge load of salvage debris in the Clifton Channel, West of Bradwood on the Columbia River. As background, a brief review of Zidell's waste disposal activities relating to burning barges is presented.

In late September of 1966, Zidell Corporation took Air Quality Control staff members on a brief tour of their facilities, and at that time proposed an interim project of towing hulks loaded with demolition debris, primarily decking and cork insulation, to locations remote from the Portland urban area for burning. In a letter to Zidell Corporation dated September 23, 1966, the AQC staff made specific note of the following points:

1. The practice was temporary.
2. Statutory and regulatory restrictions of distance from urban areas, nuisance, and smoke density pertaining to the burning were outlined.
3. Staff comments were restricted to AQC considerations exclusive of other agency jurisdictions.

In early October of 1966, a small hulk loaded with ship dismantling debris was towed down the Columbia from Portland to a point near the Hawk disposal site and burned. Staff members observed the burning. In early March 1967 Zidell Corporation requested permission to tow another hulk loaded with debris to the same area and burn it. In a letter dated March 10, 1967, the AQC Division stated the staff could not give any approval or recommendation regarding continuing the practice.

In early October, 1968, George D. Ward & Associates, consulting engineers, contacted the AQC Div. regarding burning another hulk loaded with debris from Zidell Corporation. Mr. Ward stated in a letter dated October 4 that his group had been retained by Zidell to investigate both their immediate and long range solid waste disposal problems, and that he was hopeful of a solution that would satisfy the needs of industry and yet be acceptable to the state-wide AQC program. He further stated that the request to burn the

hulk load of debris was made as an interim measure only. The hulk used as a container was much larger than that used in the October 1966 operation. The proposed site for burning was in the Clifton Channel of the Columbia River, West of Bradwood in Clatsop County, in order to be outside the jurisdiction of Columbia-Willamette APA, which would not approve such an operation. In a letter dated October 29, 1968 AQC set conditions on any burning which would be conducted in the area, including notice to the Division so that an observer could be at the scene during the burning, and meteorological criteria for initiating the burning. The letter also stated that approval was for that one time only. Personnel from the District Engineer's office were in the area, but were unable to see any plume from the burning operation.

On October 27, 1969, Mr. Newmeister of Zidell conferred with Mr. Spies and Mr. Patterson regarding a request for burning another barge load of material. It is the staff's understanding that Geo. Ward & Associates are no longer working with Zidell Corporation on solving their waste disposal problem.

In summary, the "burning barge" method of waste disposal was proposed by Zidell as an interim measure in September 1966, and since that time three burnings have been approved on an individual basis, each time on the assumption that the method was an interim solution while a planned waste disposal system was being worked out.

A complicating factor is that while Zidell's local operations are under jurisdiction of CWAPA, their barge burning operations are now conducted outside CWAPA's jurisdiction, and so fall under DEQ requirements.

The staff recognizes that Zidell's barge burning operations have been infrequent and have caused no demonstrable problems in the Clifton Channel area. In addition, under the conditions set by the Department for initiating burning, no contribution is made to any existing pollution load in Portland area. However, the staff cannot help but feel that what was originally proposed as an interim measure has developed into a standard practice, and that Zidell Corp. has not acted in good faith in diligently pursuing a permanent, acceptable solution to their waste disposal problem.

The staff therefore recommends that this request be denied, and that Zidell Corp. be asked to submit an outline and time schedule of their planned activities regarding disposal of their ship dismantling waste.

To: HMP

KHS

ZIDELL EXPLORATIONS, INC.

3121 S.W. MOODY AVENUE
PORTLAND, OREGON · 97201
228-8691 · AREA CODE 503

November 17, 1969

Oregon State Sanitary Authority
Division of Oregon State Board of Health
1400 S. W. 5th Avenue
Portland, Oregon 97201

Attention: Kenneth H. Spies, Director
Department of Environmental Quality

Dear Sir:

This will confirm my telephone conversation of today with Mr. Patterson wherein we are requesting a burning permit in which you stated that this would be have to be taken up by the Department of Environmental Control and we request a permit to burn this barge load of wood.

Very truly yours,

ZIDELL EXPLORATIONS, INC.

A. H. Neumeister

A. H. Neumeister
Coordinator

AN: sh

It was MOVED by Mr. Harms, seconded by Mr. Waterman and carried that the Commission under SB 168 passed by the 1969 Legislature designate as restricted areas the Willamette Valley, Roseburg, Ashland, Medford, Grants Pass, Coos Bay and Tillamook vicinities.

ZIDELL EXPLORATIONS INC. OPEN BURNING REQUEST

Mr. George Ward, Consulting Engineer, was present and requested permission for the Zidell Explorations Inc. to open burn in the lower Columbia River one barge load of combustible material resulting from ship dismantling operations. He estimated there would be about 200 tons of material composed primarily of heavy, untreated, dry timber and scrap with no waste oil. He said the city and county solid waste disposal facilities are not adequate to handle this material because it is too bulky and at the present time facilities are not available to grind or cut it up into smaller pieces. He estimated that suitable grinders would cost from 60 to 80 thousand dollars to install. He said this open burning operation would be similar to the one conducted last October.

Mr. Patterson said that operation was not observed by our staff but no complaints were received regarding it.

After considerable discussion it was MOVED by Mr. Harms, seconded by Mr. Meierjurgen and carried that a variance be granted for open burning of this one load subject to limitations of time, manner, place and control of burning to be established by the Department's staff.

Mr. Waterman pointed out that the operations and controls should be coordinated with the Southwest Washington and Columbia-Willamette Regional Air Pollution Authorities.

CEDAR HILLS HOMES ASSOCIATION PERFORMANCE BOND

Mr. Silver presented a request received from Roger L. Meyer, Attorney, that the performance bond posted several years ago with the State Sanitary Authority by the Cedar Hills Company and covering the Cedar Hills sewerage system be released and replaced by an agreement for performance guarantee by the Cedar Hills Homes Association, present owners of the Cedar Hills sewerage system. Mr. Silver pointed out that the Homes Association is not a public body and therefore the performance bond should not be released.

DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY CONTROL DIVISION

RECOMMENDED AMENDMENTS TO

PROPOSED

REGULATIONS FOR MOTOR VEHICLE VISIBLE EMISSIONS

Page 1

I. 8. Delete "Smoke" from the definition, and add:

8. Visible Emissions - means those gases or particulates, excluding uncombined water, which separately or in combination are visible upon release to the outdoor atmosphere.

II. 1. Change "Smoke" to emission.

Page 2

III - third line

Change "Smoke" to visible emissions.

III 2. - first line

Change "Smoke" to visible emissions.

III 2. - second line

Change "Smoke" to emission.

Page 3

VII 2. - third line

Delete "as-a-standard".

VII 2. - third line

Change "Smoke" to emissions.

DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY CONTROL

PROPOSED

REGULATIONS FOR MOTOR VEHICLE VISIBLE EMISSIONS

I. DEFINITIONS - As used in these regulations unless otherwise required by context:

1. Dealer - means any person who is engaged wholly or in part in the business of buying, selling, or exchanging, either outright or on conditional sale, bailment lease, chattel mortgage or otherwise, motor vehicles.
2. Department - means Department of Environmental Quality.
3. Motor Vehicle - means any self-propelled vehicle designed and used for transporting persons or property on a public street or highway.
4. Motor Vehicle Fleet Operation - means ownership, control, or management or any combination thereof by any person of 5 or more motor vehicles.
5. Opacity - means the degree to which transmitted light is obscured, expressed in percent.
6. Person - means the same as ORS 449.760 and also includes registered owners, lessees and lessors of motor vehicles.
7. Regional Authority - means a regional air quality control authority established under the provisions of ORS 449.760 to 449.330 and 449.850 to 449.920.
8. Smoke - means small gas borne particles resulting from incomplete combustion consisting predominantly of carbon and other combustible material.

II. VISIBLE EMISSIONS - GENERAL REQUIREMENTS, EXCLUSIONS

1. No person shall operate, drive, or cause or permit to be driven or operated any motor vehicle upon a public street or highway which emits into the atmosphere any visible smoke.
2. Excluded from this section are those motor vehicles:
   a) Powered by compression ignition or diesel cycle engines,
   b) Excluded by written order of the Department by ORS 449.810.

III. VISIBLE EMISSIONS - SPECIAL REQUIREMENTS FOR EXCLUDED MOTOR VEHICLES

No person shall operate, drive, or cause or permit to be driven or operated upon a public street or highway, any motor vehicle excluded from Section II, which emits smoke into the atmosphere:

1. Of such opacity as to obscure an observer's view to a degree of 10% or greater; provided however,
2. Smoke may be emitted into the atmosphere for a period aggregating not more than 5 consecutive seconds, if said smoke does not equal or exceed an opacity of 40%.

IV. UNCOMBINED WATER - WATER VAPOR

Where the presence of uncombined water is the only reason for failure of an emission to meet the requirements of Section II or III, such sections shall not apply.

V. MOTOR VEHICLE FLEET OPERATION

1. The Department may, by written notice, require any motor vehicle fleet operation to certify annually that their motor vehicles are maintained in good working order and, if applicable, in accordance with the motor vehicle manufacturers' specifications and maintenance schedule as may or tend to affect visible emissions. Records pertaining to observations, tests, maintenance and repairs performed to control or reduce visible emissions from individual motor vehicles shall be available for review and inspection by the Department.
2. The Department, by written notice, may require any motor vehicle of a motor vehicle fleet operation to be tested for compliance with Sections II or III of these regulations.
3. A regional authority, within its territory, may perform the functions of the Department as set forth in Items I and 2, upon written directive of the Department, expressly permitting such action.

VI. DEALER COMPLIANCE

No dealer shall sell, exchange or lease or offer for sale, exchange or lease, any motor vehicle which operates in violation of Sections II or III of these regulations, except as permitted by Federal regulations.

VII. METHOD OF MEASUREMENT

1. The opacity observation for purposes of these regulations shall be made by a person trained as an observer, provided however that,
2. The opacity Chart, marked "Exhibit A", with instructions for use, attached hereto and by reference incorporated into these regulations as a standard, may be used in grading the opacity of smoke for purposes of these regulations.

VIII. ALTERNATIVE METHODS OF MEASUREMENT OF VISIBLE EMISSIONS

1. Alternative methods of measurement to determine compliance with the visible emission standards in Section II and III or to determine violations thereof are acceptable for utilization provided that they can be demonstrated to be reproducible, selective, sensitive, accurate and applicable to a specific program.
2. A person desiring to utilize alternative methods of measurement must submit the following:
   a) Specifications.
   b) Test data.
   c) A detailed specific program for the use of the required instrument (demonstration of the effectiveness and suitability of the program shall be required).
3. A program using an alternative method of measurement shall only be undertaken after written approval by the Department.

STAFF DISCUSSION
of
PROPOSED REGULATIONS
for
MOTOR VEHICLE VISIBLE EMISSIONS

October 16, 1969

INTRODUCTION

The purpose of the proposed regulation is to reduce visible emissions from motor vehicles, primarily by enforcing a visible emission standard for vehicles operating on public roads.

The proposed regulation can be briefly outlined as follows:

Section I: The terms used in the regulation are defined, including the definition of motor vehicle.

Section II: This section pertains primarily to automobiles and gasoline engine powered trucks, and in essence prohibits the emission of any visible smoke from these vehicles.

Section III: Allowable limits for smoke opacity from diesel engine powered vehicles are established.

Section IV: Provision to exclude opacity of water vapor condensation.

Section V: This section requires that fleet maintenance records, as applicable to control of visible emissions, shall be available to air pollution control authorities, and further, that these vehicles shall be subject to testing for compliance with the standard.

Section VI: Dealers are prohibited from selling a motor vehicle which operates in violation of the standard, except as permitted by Federal regulations.

Section VII: Procedures for smoke measurement are specified.

Section VIII: Procedures for authorizing alternative smoke measurement methods are established.

APPLICABILITY - GENERAL:

Specifically, it should be noted that the definition of motor vehicle used in this regulation restricts the standard so that it is applicable only to those vehicles used on public roads. In general, the standard does not apply to earth-moving equipment, off-highway trucks, tractors, or farm equipment.

APPLICABILITY - GASOLINE ENGINE POWERED VEHICLES:

The standard prohibits any visible smoke emissions from any gasoline engine powered automobile, truck, or motorcycle; unless specifically authorized in writing by the Department. It is the conclusion of the staff that any gasoline engine powered vehicle (with the possible exception of those using a two-cycle engine in which oil and gasoline are mixed together) which emits visible smoke, is doing so because of excessive wear or deterioration resulting from improper maintenance and repair. There appears to be no technical reason for these vehicles to smoke when properly maintained.

If it is found that there are sound technical reasons why a certain vehicle or class of vehicles is unable to comply with this standard, then the Department may by authorization exclude that vehicle or class of vehicles from this standard of the regulation.

APPLICABILITY - DIESEL ENGINE POWERED VEHICLES:

Discussion of Standard:

The standard allows diesel engine powered vehicles, and other vehicles specifically authorized by the Department, to emit visible emissions up to a specific opacity limit. The standard allows these vehicles to operate continuously with smoke being emitted of an opacity up to, but not including 10%. An opacity of 10% may be considered as equivalent to a Ringelmann #½. Furthermore, the standard does allow the smoke opacity to exceed 10% for a period not exceeding five consecutive seconds as long as the opacity of the smoke being emitted does not equal or exceed 40% during this period. If at any time the opacity of the smoke being emitted equals or exceeds 40%, the vehicle is in violation of the standard. An opacity of 40% may be considered as equivalent to a Ringelmann #2.

General:

Current technology does not allow diesel engines to operate without some discharge of smoke during certain operating modes and as such, regulations which have been adopted elsewhere do allow specific degrees of smoke. The Federal government has enacted regulations pertaining to new diesel powered trucks, beginning with the 1970 models, which allow a smoke opacity of 20% and 40% under their specified testing and sampling conditions. California, which has an active visible emission control program, allows a smoke density of Ringelmann #1 continuously and up to Ringelmann #2 for 5 seconds. Various municipalities and states have regulations to restrict smoke emissions from the vehicles to various density, length of time or distance. Some, such as Oregon's own Motor Vehicle Law (ORS 483.443) simply prohibits the emission of "annoying smoke". In Europe, Belgium, Finland, France, Norway, Sweden and West Germany - all have legal maximum limits for diesel smoke. Lebanon, it has been reported, has banned diesel vehicles from the road completely.

A 1966 paper on diesel smoke in California by Miles Brubacher, then with the staff of the California Motor Vehicle Pollution Control Board, contains the following conclusions:

"2. Diesels do not contribute substantially to total community air pollution problems.

3. Diesel smoke does constitute a local nuisance with a bad appearance, about which the public complains. The public probably will not be satisfied until the smoke is essentially invisible.

4. There are many fruitful approaches for fleet operators to reduce diesel smoke, including more strict maintenance, fuel additives, driver indoctrination, and engine de-rating."

In a 1969 report to the New Jersey Clean Air Council Public Hearing - Part I, Mr. Elston, Supervisor of the Motor Vehicle Project Section of the New Jersey Air Pollution Control Program stated the following:

"There are two types of basic power plant--the diesel and the gasoline engine. As can be expected, the relative population distribution is quite different. The emissions from these two engines also vary radically.

With respect to the relative distribution factor, it is only necessary to note that there are less than 10,000 diesels registered in New Jersey and over 3,000,000 gasoline motor vehicles. (Note: Oregon has less than 22,000 diesels operating on its roads, and over 1,200,000 registered gasoline motor vehicles.)

However, it is the difference in the types of emissions from the two power plants that is significant. The diesel engine produces relatively little carbon monoxide and hydrocarbons, but quite a bit more particulate matter or smoke. On the other hand, the gasoline engine is low in particulate emissions and high in hydrocarbons and carbon monoxide. Consequently, the concept of inspection for the two types of engines must be different.

It was decided that the diesel, because of its low population, did not present a potential health hazard and did not add significantly to the pollutant's inventory, but that its smoke or particulate emissions were a nuisance in certain localities and should therefore be controlled. The New Jersey concept of testing diesels is to concentrate on smoke control and to concentrate on enforcement where the problem exists--on the road. Consequently, the importance of a good on-the-road enforcement procedure becomes apparent for the control of diesel smoke."

In a recent 1967 report, Mr. A. W. Carey, Jr., of Cummins Engine Co., stated "For legal and regulatory purposes, the objective is to evaluate the darkness of the smoke column issuing from the vehicle stack for comparison with an aesthetically acceptable limit". "In the United States, for regulatory purposes, it appears certain that the optical opacity of a smoke column will be the basis for legal smoke limits."

A general desire among the public to regulate visible emissions from motor vehicles, diesel vehicles in particular, has been recognized by industry as well as regulating agencies. The question is not whether such regulations are needed, but rather what smoke levels are acceptable and what smoke levels are obtainable.

Public Acceptance:

In the development of the British smoke standard, several juries of ordinary citizens were asked to assess the acceptability or otherwise of the exhaust smoke emitted by a representative range of British vehicles while driven at a steady speed and under load. From these tests, curves relating carbon content of the exhaust gas and the exhaust gas flow rate to acceptability of the smoke were developed. Among other facts, the curves relate that a higher density or opacity of smoke will be considered unobjectionable by observers if the discharge rate is low than if it is high.

For the size of diesel vehicles normally being operated on Oregon roads, it would appear from these British curves that if the carbon content of exhaust gas exceeds 0.000014 pounds per cubic foot or 0.1 grain per cubic foot, under steady conditions, then over 75% of the general public would find the smoke objectionable. This carbon content can result in a smoke opacity of around 10% to 11%. The curves for 50% acceptability indicate that an opacity of under 8% is required. For 75% acceptability, an opacity of under 4% appears to be necessary.

The staff is not aware of any other published information relating the opacity of diesel truck exhaust to the degree of public acceptance. Informal discussions at technical meetings have indicated that the industry is generally surprised at the low level of smoke opacity required to satisfy panels of observers that they have used in their own tests.

Based upon the British information, it would appear that a standard which set a maximum smoke density of 5% under continuous operation conditions may obtain general public acceptance as being satisfactory; whereas a standard of 10% maximum opacity for continuous operation may not obtain general public acceptance as being satisfactory.

Technical Capability:

Having briefly looked at what smoke opacity levels would be acceptable, the question becomes - what levels are obtainable. In January 1966 a visual survey was made in Los Angeles on 3690 diesel trucks operation on various freeway grades in the country. Of these trucks, 81% were operating at an opacity of 40% or less; 71% were operating at 30% or less; 61% were operating at 20% or less; and 42% were operating at 10% or less. A test conducted in New Jersey on 1038 diesel trucks obtained similar results.

The tests in New Jersey also included testing a smaller number of trucks which had recently received a tune-up. Of these trucks, over 98% operated under 40% opacity, over 80% operated under 20% opacity, and approximately 65% operated under 10% opacity. In these tests, New Jersey also produced a hypothetical curve based upon resetting all engines to manufacturer's specifications during a tune-up. In this situation they projected that over 90% of the trucks currently on the road could operate with an opacity under 20% and over 80% could operate under 10% opacity.

Technical papers presented by the Diesel Engine Division of General Motors Corporation have shown that their newer design engines can, in city bus operation, comply with this standard when properly maintained and equipped.

Since many older trucks which may have inherent smoke levels that are excessive by current standards are still on the road, in fact over one out of every eight trucks on the road nationally is 16 years old or older, the percentage of trucks able to operate within low opacity limits should increase as older trucks are replaced by newer trucks which are built with low emissions as a design parameter. In view of the California and New Jersey observations and test date, in view of the low emission opacity produced by well maintained trucks, in view of the availability of fuel additives known to be effective in reducing smoke, and in view of the continuous replacement of older trucks by newer trucks, an opacity standard of 10% for continuous operation appears to be reasonably obtainable.

MOTOR VEHICLE FLEET OPERATIONS

Provisions of the regulation require that motor vehicle fleet operations provide records pertaining to observations, tests, maintenance and repair performed to control or reduce visible emissions, upon request of the Department or Regional Authority. Any motor vehicle in a fleet operation is subject to testing for compliance with the visible emission standard upon written notice by the Department or Regional Authority.

In Europe, the general tendency has been to make the licensing of commercial vehicles subject to passing a smoke test at the same time as a periodic inspection for mechanical condition. This procedure is being developed in this country by states with vehicle inspection programs. The limited regulations proposed here are an initial step toward the development of such a program.

DEALER COMPLIANCE

Section V, prohibiting a dealer from selling a motor vehicle which operates in violation of this standard, is included in the regulation as it does not appear reasonable to allow the sale of vehicles for general use which cannot legally be operated on public roads. The prohibition of sale is restricted to dealer transactions simply because effective enforcement of a general prohibition could not be achieved in the immediate future.

Federal law prohibits a state or political subdivision thereof from adopting or attempting to enforce any standard relating to the control of emissions from new motor vehicles; therefore, this section of the regulation pertains only to used vehicles. As a practical matter, all new automobiles and trucks can comply with the provisions of this regulation.

ENFORCEMENT

Compliance with the visible emission standard will be determined by observation. Determination of compliance with Section II of the regulation is quite straightforward since any visible emission, regardless of degree, is a violation of the standard. To ascertain compliance with Section III does require a determination of the degree of opacity and of the smoke being discharged.

Unless a trained observer makes the observation, the opacity smoke chart noted as "Exhibit A" shall be used to determine smoke opacity. The smoke under observation is sighted through the chart center, and the opacity is recorded using the film shades as standards of 10%, 20%, 40%, and 60% opacity.

The smoke chart should be held at reading distance from the eye and preferably with any bright sunlight directed from behind the observer. Care should be taken to prevent interfering reflections on the chart. The reading should be made against the same type background for both the smoke and the opacity chart.

The observer's line of observation should be at right angles to the direction of smoke travel. The observer should position himself so that he can observe the exhaust stack through a 60° arc while making the observation. Observations made from behind or ahead of the vehicle are useful only to the extent that they can be used to gauge which vehicles are probably in violation, and thus one could be more selective in making official observations.

Since the proposed standard is primarily based upon on-the-road operation of motor vehicles, it is essential to have good on-the-road enforcement to achieve compliance. It is the intent of the staff that the on-the-road enforcement programs be enforced by the state, county, and city police. As an example of police activity in this area, it has been reported that the California Highway Patrol has issued approximately 8000 citations per year for excessive smoke since 1960.

It is anticipated that the Department of Environmental Quality will, at least initially, operate training sessions to instruct police officers in the use of the opacity chart. Training sessions to obtain trained observers will also be required. Beyond the cost of staff time, there should be little direct expense to the Department in running these sessions. The regional authorities should also be involved in these programs and carry out training sessions for police officers in their area if this is found to be necessary.

CONCLUSION

In conclusion, the purpose of the proposed regulation is to reduce visible emissions from motor vehicles to levels more acceptable to the general public. With regard to gasoline engine powered vehicles, the degree of public acceptance will depend upon the strictness of enforcement, since the standard prohibits any visible emissions from these vehicles. To be fully effective, the enforcement program must be such that those vehicles which operate in violation are either repaired or removed from use on public roads.

The standard for diesel engine powered vehicles does allow specified levels of smoke emission and thus may not be fully acceptable to all people. The standard, although realistic in terms of current technology is quite restrictive and with strict enforcement will result in a substantial reduction in levels of smoke which may currently be seen on Oregon roads. To comply with the standard many operators may find it necessary to improve their repair and maintenance procedures, to more thoroughly indoctrinate their drivers as to the importance of not producing unnecessary smoke, to de-rate their engine power, to change their fuel specifications or to use fuel additives. There may, however, still be a few diesel vehicles which are not capable of complying with the standard and as such they will have to be removed from use on public roads.

The effect of a visible emission standard upon gaseous emission, such as carbon monoxide, will be negligible in terms of airshed loading. The effect upon diesel odor is unclear.

To be effective, enforcement of the standard upon the road must be the responsibility of state, county, and city police. The Department staff and Regional Authorities will be available to establish smoke observation training sessions for police officers. The Department and Regional Authorities will be responsible for maintaining contact with fleet operations and for surveillance of dealer operations.

OFFICE OF THE ATTORNEY GENERAL
STATE OF OREGON

STATEMENT RELATIVE TO PROPOSED REGULATIONS FOR MOTOR VEHICLE VISIBLE EMISSIONS

The control of motor vehicle emissions in Oregon, as in other states, at the present time has been limited to that accomplished by Federal requirements for new cars. The Federal requirements are generally designed to limit invisible emissions such as carbon monoxide and hydrocarbons. Some attention has been given to visible emissions from diesel-powered engines by the Federal Government control program but almost none for gasoline-powered autos. The problems of smoke, as a visible emission, has been left almost entirely to the states for control.

The proposed regulatory program of the Department of Environmental Quality is designed to reduce visible emissions from diesel and gasoline-powered engines. The value of such a program is two-fold: one is the reduction of air pollutants discharged into the atmosphere, and the other is eliminating an unsightly public nuisance.

A poorly maintained gasoline-powered engine may ultimately discharge large amounts of smoke. The remedy to the problem is to properly keep the engine in tune and seek proper maintenance at reasonable intervals. When a severe smoke problem does result the only remedy is an engine overhaul. In other words, both the cause of the problem and the remedy are within the province of the motor vehicle owner. A small investment in preventive maintenance and a small expenditure in time and money will almost always insure complete reduction of smoke emissions.

Because of the nature of the diesel-powered engine, more leeway for possible smoke discharges must be extended in the regulatory program. As a result, smoke discharge is permitted within control limits.

It must be stressed that the ultimate purpose of the regulations is to control those flagrant cases of noxious and unnecessary smoke discharge. Proper allowance is provided for in the regulations for "start up" on cold mornings, where the only emission is water vapor. In fact, water vapor discharge is expressly excluded from the application of the rules.

As further research and investigation is made by the Federal Government and the state of Oregon additional controls for motor vehicle emissions may be requested. In the meantime, the proposed program by the Department of Environmental Quality will complement the Federal regulatory program.