

Manufacturing Chemists Association

MINUTES OF MEETING

Air Quality Committee

Logan International Hotel Boston, Mass.

September 23-24, 1969

MEMBERS PRESENT

M. V. Anthony, Chairman	Stauffer Chemical Company
W. F. Bixby, Vice Chairman	B. F. Goodrich Chemical Company
C. B. Beck	Cabot Corporation
J. P. Butler	Kawecki-Berylco Industries, Inc.
H. R. Gerberich	Celanese Corporation
(for E. W. Kleppinger)	
R. D. Hall	Diamond Shamrock Corporation
C. G. Kramer	The Dow Chemical Company
W. T. Laffey	Hercules Incorporated
R. M. Love	Enjay Chemical Company
R. H. Mansur	Reynolds Metals Company
P. W. McDaniel	Union Carbide Corporation
J. H. Morris	Merck & Co., Inc.
E. G. Opdyke	Kay-Fries Chemicals, Inc.
A. H. Phelps, Jr.	The Procter & Gamble Company
J. H. Rook	American Cyanamid Company
L. W. Roznoy	Olin Corporation
E. F. Spencer, Jr.	FMC Corporation
M. B. Tohline	Mobil Oil Corporation
C. R. Walbridge	Allied Chemical Corporation
E. P. Wheeler	Monsanto Company
Jerome Wilkenfeld	Hooker Chemical Corporation
J. H. Yeager	Mallinckrodt Chemical Works
K. D. Johnson, Secretary	MCA Staff

GUESTS PRESENT

W. L. Mann	National Lead Company
K. R. Murphy	General Electric Company
J. P. Turner	MCA Staff

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MEMBERS ABSENT

W. R. Chalker
B. R. Edwards
J. H. Huguet
F. G. Krikau
R. L. Maycock
S. S. Paist
D. C. Winson

E. I. du Pont de Nemours & Company
Aluminum Company of Canada
Ethyl Corporation
Interlake Steel Corporation
Shell Chemical Company
Rohm and Haas Company
Eckert, Seamans & Cherin

ASSOCIATE MEMBER ABSENT

C. C. Garvin

Standard Oil Company of New Jersey

Special Luncheon Guests

Our guests from the Massachusetts Division of Air Pollution and Radiological Health were Messrs. Thomas McLoughlin and Stephen Joyce. Mr. McLoughlin described the organization of the Division and the philosophy under which it operates. Our meeting coincided with the occurrence of a subsidence inversion over the area and a strong ground-based radiation inversion the preceding night, and a first-stage alert based on sulfur oxide values had been called. He outlined their criteria for calling such alerts and the reactions that would be required of industry and the public, stressing their goal of providing adequate protection to the public health with minimal disruptions to public and business activities.

Mr. Joyce, District Director of the Lower Pioneer Valley (Springfield, Mass. area) Control District, elaborated on the operation of the regional programs in Massachusetts. He described the contaminant sources and meteorological characteristics of his area, and how they affect his program.

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I. COMMITTEE MEETING

1. Minutes of the Meeting of April 22-23, 1969

The following corrections to the minutes distributed to the Committee were offered and accepted:

Page 5, Section 5: Add "The Committee voted to authorize the Chairman, on the basis of responses received from the Committee, to prepare a letter in response to General Decker's suggestion, presenting the views of the Committee to EHAC and MCA staff."

Page 14, Section 2.5: Add "W. F. Bixby" to list of those that attended the Regulations Workbook session.

Page 15, Section 3: Delete the last line of this section identifying Mr. Hall as subcommittee vice chairman.

The purported omissions of state legislation liaison reports listed in Appendix No. 1 of these minutes results from failure of the Secretary to receive the noted reports in time to include them in the Appendix which was prepared for distribution to the Committee prior to the meeting. As is noted on page 11, Section 2.2 of the subject minutes, the Supplement contains reports received too late for inclusion in the Appendix.

2. Membership

Mr. James H. Rook of American Cyanamid Company, was appointed to the Committee by Board action of May 13, 1969.

Mr. William L. Mann, of National Lead Company has been nominated for Committee membership and his name will be submitted for Board action at its next meeting.

3. Rules of Organization and Procedure of the Air Quality Committee

The Secretary distributed copies of a draft (dated 9/19/69) of the subject document that had been developed by MCA staff to eliminate discrepancies that exist between the present Rules and the "General Principles Applicable to the Structure and Operations of Committees."

The only provisions of this draft that provoked extensive discussion was that which limited Committee and Subcommittee membership to full-time employees of member companies. It was pointed out that this requirement would preclude membership for outside counsels of member companies, some of whom had in the past carried heavy burdens of responsibility for the Committee. The Secretary stressed that this was a policy matter already being considered and decided on by the Board, and that it was not within the authority of the Committee to adopt any rules inconsistent therewith.

It was then moved and adopted that the Committee recommend this draft to the Board for approval as the "Rules of Organization and Procedure of the Air Quality Committee."

4. Liaison with Board of Directors

No message was received from Mr. Garvin.

5. Medical Aspects of Air Pollution - Anticholinesterase Agents - Dr. C. G. Kramer

As Mr. Sebree had indicated his inability to attend the meeting, Dr. Kramer volunteered to provide the informal discussion of topics of interest in air pollution programs. He discussed the neuro-physiology of nerve conduction and its interference by anticholinesterase agents. These are widely used as insecticides and are among the most important of the lethal chemical warfare agents. Their implication as air contaminants is almost always associated with the former use, although CW testing and transportation of CW munitions also offer a potential threat of large-area contamination.

6. Joint Subcommittee on Air and Water Pollution Legislation and Regulations - Secretary

The Secretary reported to the Committee that MCA had approved the formation of such a body, and distributed copies of the terms of reference governing its formation and operation.

The Committee again expressed its displeasure with the membership provisions that would exclude outside counsel from the subcommittee and asked the Chairman to appoint a task group to draft a resolution to the Board requesting a revision of its policy in this matter. The Chairman named A. H. Phelps chairman of the task group, and asked J. P. Butler, E. P. Wheeler and

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Jerome Wilkenfeld to serve with him.

The Secretary asked members of the Committee to develop nominations for joint subcommittee membership, identifying the requirement that, among the six Air Quality Committee representatives on the Subcommittee, there are to be two technical and one lawyer member who are also members of the parent Committee. He urged that consideration be given to finding qualified legal members from companies not now represented on the Air Quality Committee.

7. Proposed Solid Wastes Committee - Mr. Bixby

Mr. Bixby reported on the conference convened in the MCA Conference Room to consider this topic on Friday, September 12. Nine representatives of member companies met there with three MCA staff representatives as a follow-up to the interest developed at a symposium previously held on July 23. At that time forty-one representatives of thirty-five member companies attended.

The Conference on the 12th agreed that an independent technical committee should be formed to deal with the problems. Considerable discussion of the scope and function of the proposed committee ensued. Copies of the draft of the terms of reference developed as a result of these discussions will be distributed to the Committee. Members of the AQC are requested to review these to determine whether or not their companies would be interested in representation on the Solid Wastes Committee. Expressions of interest and nominations of prospective members should be submitted by executive contacts directly to Mr. J. R. Carnes, Secretary-Treasurer of MCA.

8. MCA Environmental Health Advisory Committee - Mr. Bixby

The comments of Chairman Anthony on the EHAC White Paper had been forwarded to Jerome Wilkenfeld for consideration by EHAC in a letter of August 12, 1969, incorporating the statement thereon prepared by Jim Huguet. No additional or contrary opinions were expressed by the Committee.

Mr. Bixby summarized the discussions that took place at the September 11th meeting of EHAC concerning a proposed reorganization of the structure of MCA technical committees under EHAC surveillance. This would place the activities of the Labels and Precautionary

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Information and the Food, Drug, and Cosmetic Chemicals Committee with a Consumer and Public Protection Committee, those of Occupational Health and Safety and Fire Protection Committees with an Employee Protection Committee and those of the Air Quality, Water Resources and proposed Solid Wastes Committees with an Environmental Resources and Ecology Protection Committee. He reported that EHAC had rejected this proposed reorganization as impracticable, but that it had strongly urged close liaison, particularly among those committees that would have been grouped together under the proposed reorganization.

9. Report of the Steering Committee for the MCA-NAPCA Cooperative Study of Atmospheric Emissions from Selected Chemical Processes - Mr. Spencer

9.1 Status Report on Current Studies

Mr. Spencer reported on the proceedings of the last meeting held in Durham, N. C. on September 16. He informed the Committee that Mr. William Megonnell, Assistant Commissioner for Standards and Compliance has replaced Assistant Commissioner for Program Development Raymond Smith on the Steering Committee, and that Mr. Dario Monti would be succeeded by an as yet undesignated replacement.

The Committee was informed that the Hydrochloric Acid and Wet Phosphoric Acid reports were in the process of reproduction, with an estimated publication date of some time before the end of the year.

Mr. Spencer reported that the review of the latest draft of the Chlor-Alkali report had developed no major editorial revisions, but that the following items were noted as requiring attention:

(1) A section on emission guidelines is to be drafted by the study team.

(2) Statistical data on the industry and the list of chlor-alkali producers are to be updated with the assistance of the chlorine institute.

(3) The discussion of the economics of chlorine recovery from blow gas by water scrubbing is to be recast to conform with MCA guidelines for the handling of such cost data. Mr. Bixby has agreed to perform this task.

The phosphate fertilizer study was reported to be nearing the end of the final sampling program, with twenty of the scheduled thirty operations already completed. The remaining tests are expected to be finished during the spring production campaign.

He offered an estimate that the first draft of the study report should be available early next year, providing that close cooperation and expeditious performance are achieved by both MCA and NAPCA participants.

9.2 Reactive Metals Study

The Secretary reported that MCA management had asked that the Committee make a definite recommendation to the Board in regard to the proposed study of the reactive metals industry. He submitted a draft of a proposed Memorandum of Understanding that specified the administrative procedures to be followed to minimize the kinds of problems foreseen by some Committee members as a result of the proposed inclusion of cost data within the scope of the study.

After a discussion of both the merits of the proposed study and its scope, and of the position to be taken by the Committee, the following motion was offered, seconded, and adopted:

Moved: That the Air Quality Committee recommend to the MCA Board that it grant the request of the Reactive Metals Group to approve the Scope and Objectives of the proposed MCA-NAPCA joint study of the reactive metals industry, and to authorize the Memorandum of Understanding drafted to implement the study. Be it further moved that the Committee clearly state that its recommendations in regard to both these documents (1) are made in recognition of the status and problems peculiar to the reactive metals industry, and (2) are restricted specifically to the study of that industry, and (3) are not consistent with the policies which have governed previous studies of chemical industries and which the Committee would wish to have govern any new studies other than the reactive metals study here at issue.

The Secretary was asked to inform the Committee when Board action is taken on this proposal.

10. Activities to implement P. L. 90-148

10.1 Status Report of RRI Sulfur Oxides Particulate Project

The Secretary reported that no major substantive comments had been received from the Committee on the most recent (July 22, 1969) draft of their review of the evidence on the synergistic action of oxides of sulfur and particulates, and its implications with regard to ambient air quality standards. He indicated that an early review conference with RRI was being scheduled, and that he anticipated prompt release of the final report.

The consensus of the Committee was that this report should not further be delayed, and that any improvement in the report that might be achieved by additional rewriting would be more than outweighed by the urgent need for the report in current standard hearings.

10.2 Status Report on Dr. McCabe's Paper of LACAPCD Rule 54

The Secretary reported final editorial approval of this paper, and that it was being submitted to McGraw-Hill for possible publication in Chemical Engineering. The Committee expressed a preference for the Journal of the APCA as a vehicle for this paper, but agreed that promptness of publication should be the controlling consideration.

10.3 Status Report on Mr. Coons's Paper on Plume Opacity

The Secretary reported that Mr. Coons was awaiting his suggested amplifications of the sections on physical optics and the physiology of revision. He indicated that he expected to complete these sections in October.

10.4 Status Report on Mr. Robinson's Review of Statistical Models for the Representation of Spatial and Temporal Variations in Pollution Concentrations

The Secretary distributed copies of the draft of this document to the task group supervising this project. Comments

are to be submitted promptly so that a finished document can be produced as soon as possible.

10.5 Status Report on the RRI Project to Develop Alternatives to Process Weight Regulations

Copies of the subject report have been distributed to the steering committee for this project and approval of a final draft is expected within the next month.

11. Reactive Metals Subcommittee Report

In the absence of Mr. Krikau, the Secretary commented briefly on the present programs of the subcommittee. He identified the proposed reactive metals study, described in section 9.2 of these minutes, as the major subcommittee activity at this time.

12. Ad Hoc Task Group on the Photoreactivity of Trichloroethylene

The Secretary reported that with the completion and distribution of the project reports on September 10, 1969, the responsibilities of the Task Group were ended, and that the Board had discharged them at its meeting on September 9th.

13. Response to Pollution Control Questionnaires

A number of Committee members had expressed concern at the number and content of pollution control questionnaires that were being received at various corporate levels from a variety of governmental, contract research, and civic interest agencies. They asked if MCA could provide some assistance in identifying those that ought to receive full cooperation from top management as contrasted to those that were of questionable value to the industry or to the nation.

The Secretary pointed out that properly authorized questionnaires from federal, or federally-sponsored sources, should bear a Bureau of the Budget approval number. He shared their fears that incomplete or overlapping coverage among questionnaires, inconsistent definitions and improper sampling might lead to the compilation of aggregate statistics, or the extrapolation of sample data into national estimates that unfairly and inaccurately represent the industry's share of the air pollution problem. He offered to discuss this point with other trade association representatives to determine how the trade associations could best serve their members in this matter.

14. Public Relations - Mr. Turner

Mr. Turner described the broadened scope of coverage and widened distribution of "Currents" since it had been brought in-house. One new feature he presented was the pollution control primer series that is now being inserted into those copies of Currents going to media editors. A glossary of terms used in pollution control was shown as the first such insert.

Committee members again asked that they all be put on the "Current" mailing list. Mr. Turner agreed to have the lists reviewed to detect the unintentional omission of any Committee members therefrom.

15. Nominating Committee

Chairman Anthony appointed Elmer P. Wheeler (Chairman) and Jerome Wilkenfeld as a nominating committee to develop nominations for Committee officers for the 1970-71 term. They were asked to be prepared to submit a report at the January meeting.

16. Future Meetings

January 28-29, 1970 Sheraton Palace Hotel
San Francisco, Calif.

Mr. Emmet F. Spencer was asked to arrange for our guest luncheon speaker.

April 15-16, 1970 New Orleans, Louisiana

The Secretary reported that MCA authorization for this site had been secured. The Committee requested that an attempt be made to secure facilities for the meeting at the Royal Orleans.

Mr. James Huguet has been requested to arrange for our guest luncheon speaker.

September 22-23, 1970 Toronto, Ontario, Canada

Mr. B. R. Edwards was asked to assist in the selection of meeting facilities and to arrange for our guest luncheon speaker.

II. SUBCOMMITTEES

1. Planning Subcommittee

In the absence of Mr. Huguet, no report was received from this subcommittee.

The Committee attention was directed to the communication on noise regulations distributed by MCA on behalf of the Planning Subcommittee on September 10. The Secretary identified this problem as of proper concern to the Committee as long as it relates to ambient, as opposed to occupational, noise levels. He indicated that, should this become an area of greater activity, close liaison should be maintained with the Occupational Health Committee to ensure full coverage of all aspects of the problems without confusion or duplication of effort at the interface between their areas of responsibility.

2. Legislation Subcommittee

2.1 Federal Developments - Secretary

2.1.1 MCA Statement on Fuel Additive Registration Regulations

MCA's position on the proposed regulations for motor fuel additives has been submitted to the Secretary of Health, Education, and Welfare in a letter from MCA President-Elect William J. Driver. This statement, which was developed with the Legislation Subcommittee, held that the informational and research requirements proposed as requirements for registration were needlessly onerous and beyond the authorization provided in the Air Quality Act of 1967. The Secretary reported that no response had as yet been received from HEW.

2.1.2 MCA Statement on Federal Certification of Pollution Abatement Facilities

The Secretary reported that Section 704 of H.R. 13270, the Income Tax Reform Bill, provides for a five-year amortization of certified pollution control facilities. Both state and federal certification are required, and federal certification is dependent upon, among other things, conformance of the facility to federally developed and promulgated performance specifications and federal emission standards. He indicated that a letter had been drafted presenting MCA's views and that the statement was now

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being reviewed by MCA's Tax Policy Committee. This statement proposes that the tax treatment of pollution abatement facilities be removed from the Tax Reform Bill for separate consideration by the appropriate committees of the Congress, or that, as an alternative approach, those provisions of the bill that would reverse previously defined national policies in environmental management be deleted from the bill.

The Committee urged that this letter be sent to the Senate, and that the relatively minor nature of tax considerations should not prevent MCA from offering its views on the broader questions of the impact of provisions of this section on resource management policies.

2.1.3 New Federal Legislation

No other bills of major interest to the Committee are now before the Congress.

2.1.4 Air Quality Control Regions

The Secretary reported that he would distribute to the Committee the tabular summary of the state of development of Air Quality Control Regions that Commissioner John T. Middleton had presented during recent hearings before the House Committee on Interstate and Foreign Commerce.

2.2 Developments in the States

Reports from Committee members with responsibilities for legislative liaison in the states are included in these Minutes as Appendix No. 1.

2.3 Regulations Notebook

In the absence of Mr. Winson, no formal progress report was presented on the status of this project. Chairman Anthony urged all those with uncompleted contributions to the notebook to give this matter a high priority.

3. Criteria and Standards Subcommittee - Mr. Phelps

In the absence of Mr. Paist, Mr. Phelps presided over the meeting of the subcommittee and presented its report. The drafts of the papers on "Equivalent Opacity" and on "Antidegradation" that it recommended for consideration by the Committee as bases for the

development as position papers are reproduced in Appendices Nos. 2 and 3 to these minutes.

The report submitted by Mr. Phelps follows:

The forthcoming report by NAPCA on the need for and desirability of national emission standards was discussed. It was recommended that the Executive Secretary of the Air Quality Committee should write NAPCA requesting a copy of the document in its study form for review. It was also requested that, at the next meeting of the combined Chamber of Commerce and trade association meeting, the Secretary discussed possible actions to be taken when the report has been submitted.

Budget items for the fiscal year beginning June 1970 were discussed. The NAPCA report on effects and control technology for hydrocarbons and solvent emissions will be coming out in early 1970. It is proposed that a position paper be written on the application of Rule 66 (LA) and Regulations 3 (San Francisco Bay Area) to other communities. It will be required for all air quality control regions to set air quality standards and a plan for implementation for these emissions when the documents are published. There is the possibility that many communities will be tempted to adopt one of the two California regulations without any consideration as to the need for them in other areas of the country. The purpose of the position paper is to review when such a regulation would be applicable. The work would include references to NAPCA control documents. Funds requested, \$5,000.

The issue of degradation on air quality standards has arisen from time to time. Statements have been made by NAPCA that when existing air quality measurements showed the air in better quality than the ambient air standards adopted by a region, there shall be no degradation of existing quality of air. That is, even if the standards are higher than existing levels, no allowance is to be made for emissions which will permit ambient air to approach these standards. The question is whether or not this antidegradation issue can be applied to the control regions. The particular project suggested is a legal review of NAPCA's power to enforce an antidegradation standard similar to that done by Covington and Burling for the same issue on the water quality criteria. It is anticipated that a legal review might be made in cooperation with the U. S. Chamber of Commerce and other trade association, and it is estimated that our share of the funds would be \$6,000; and this budget item was requested.

The SRI report on the analysis of mathematical models for applying ambient air standards to emission standards has been written but is mainly a review of Larson's assumptions (he is referenced four times) and a discussion of dispersion equations. It is possible that Larson's assumptions, that is a log normal distribution on ambient air statistics, may be invalid and that the mathematical approaches recommended in Larson's papers may also be invalid. It is requested that a further study be continued by SRI on the validity of the assumptions inherent in Larson's models. Funds requested, \$9,000.

Other items could be proposed for the budget but experience has shown that lower priority items, such as B and C priorities, rarely get included in the annual budget. Consequently, only these items were proposed by the Subcommittee and all were classified as A priority.

The Committee moved to adopt the report and its recommendations for projects, and the motion was carried.

Mr. Wilkenfeld reported on developments at the New York hearings on ambient air quality standards for the Metropolitan New York Air Quality Control Region. The Committee asked the Secretary to distribute copies of the proposed standards and the NAPCA and New York correspondence in regard thereto, to the full Committee.

4. Technology and Engineering Subcommittee

4.1 Report of the Subcommittee - Mr. Walbridge

Mr. Walbridge requested the Chairman to appoint Dr. E. W. Kleppinger and Messrs. E. G. Opdyke and W. L. Mann to his subcommittee, and submitted the following report:

1. Subcommittee agreed that the Report entitled "Preliminary Report, Air Pollution Emergencies," dated September 1969 (submitted to the members of subject Committee by Mr. R. D. Hall with his 9/2/69 letter) be presented to the parent Committee for approval as a position paper and as a guideline to be used by the Committee members in their individual activities on state and other local committees when regional control regulations are being developed. Also, information contained in the Preliminary Report could be disseminated in "Currents" and "Pilot".

The MCA-AQC Secretary was asked to send copies of the Preliminary Report to members of the parent Committee for approval to be used as outlined above.

2. The Subcommittee paper on Ambient Air and Stack Monitoring is being prepared by Dr. Maycock, with first draft expected before the next MCA-AQC meeting.

3. Mr. Spencer's Report on Research on Chemical Odors, separately included in these minutes, was approved by the subcommittee.

4. Proposed research projects for 1970:

Odor Threshold - A. D. Little \$40,000 (A Priority)

Fate of Chemicals in the Atmos- \$20,000 (B Priority)
phere

(To develop information concerning oxidation rates of various chemicals, such as H₂S, chlorine, ammonia and HF in controlled atmospheres. Smog chamber facilities would probably be required.)

5. Subcommittee agreed that the air pollution film project should again be discussed by the parent Committee with a view toward the Committee's expressing continued emphatic support for such a project.

The Committee accepted the report and asked MCA to approve the requested funds. The subcommittee called the attention of the Committee to the impending need for a position paper against federal nationwide emission standards. It was the consensus of the Committee that it would be more efficient to wait until the NAPCA report to the Congress was issued before attempting to rebut it.

4.2 Report on A. D. Little, Inc. Research Project on Chemical Odors

Mr. Spencer described the present state of the design of a prototype dynamic test facility in which a panelist can be exposed to controlled concentrations and durations of oxidants in rapid succession, and in which he may be monitored for physiological and psychological responses that might be related to the nature and intensity of his emotional response to the odor stimulus.

Concurrently, other members of the study team are investigating the responses, and instrumentation for measuring them, referred to

in the preceding paragraph. The battery of tests would in all probability include TV camera monitoring for facial expressions.

A conference was held with Dr. Donald Gillette, of NAPCA on September 15, and Mr. Spencer reported this as having confirmed NAPCA's interest in the development of hedonistic value scales for chemical odors, and particularly the use of non-verbalized responses in the construction of the scales. Dr. Gillette made a "good faith" but unofficial offer to support next year's program with up to \$20,000 of federal money on a ratio of 1:2 with MCA funding. As this is fiscal 1970 federal money which must be committed before June 30, 1970, and MCA's fiscal '71 money will not be available until June 1970, careful scheduling will be required to assure completion of the contract negotiation during the indicated 30-day interval.

Mr. Spencer also described the present NAPCA research activities in the social and economic impacts of odor problems. Copley International using Dr. Amos Turk as a consultant, was identified as the contractor for the first phase of the study, which sought to identify cities with the worst odor problems. In phase two, Engineering Science, of Oakland, California, working with 3-man teams and scentometers, is surveying odor problems in Portland, Oregon; Los Angeles, Calif., Philadelphia-Camden, Pa., Kansas City, Mo., Cincinnati, Ohio, and Buffalo, N. Y.

5. Technical Training and Information Subcommittee - Mr. Phelps

5.1 Workshops

Mr. Phelps reported on the favorable reception that the team of speakers* from the Air Quality Committee had been given at Durham, and urged that future requests for such participation be honored whenever feasible.

He had no proposals for workshops, but suggested that either in Pilot or in the General Bulletin an open invitation be extended to local chemical industry to take the initiative in inviting the Committee to hold a workshop where local need and interest justify such effort.

* E. W. Kleppinger
A. H. Phelps
E. F. Spencer
M. B. Tohline

The question of a public affairs workshop was considered at some length, but no specific proposals as to time, place and co-sponsors developed from the discussion. The Committee expressed a continued interest should an appropriate opportunity appear.

5.2 Seminars

The Secretary reported that the Canadian Chemical Producers' Association was cosponsoring a three day symposium on air pollution with the University of Western Ontario on November 12-14, 1969. Although MCA is cooperating with CCPA in this venture, for which Dr. Rossano is technical director, and is making its lecture notebook available to registrants, it has elected not to be listed as a cosponsor.

The Committee voted not to recommend the renewal of the Memorandum of Understanding between MCA and Dr. Rossano, and the Chairman appointed a task group composed of A. H. Phelps, J. H. Yeager, and K. D. Johnson to seek a new director for the seminar series. Mr. Phelps is to serve as task group leader. The task group was instructed to develop a detailed course outline and written guidance for the new seminar program so that candidate directors would have a clear idea of the nature of the seminar they will be expected to conduct.

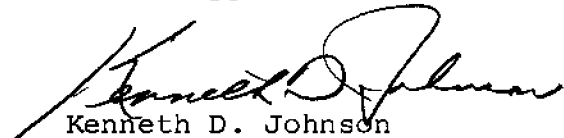
5.3 Other Meetings

The Secretary called to the attention of the Committee the renewed request from the Houston Junior Chamber of Commerce Exposition for MCA endorsement, and the revised format of the exposition. The Committee concurred with staff recommendations that no change be made in MCA policy in regard to this venture.

Dr. Myrick's Solid Wastes Seminar at the University of Houston, planned for next year, was mentioned to the Committee.

5.4 Liaison with Other Organizations - Mr. Bixby

Oral reports on activities in the Air Pollution Control Association, American Institute of Chemical Engineers and the American Petroleum Institute were presented to the Committee. Liaison reports submitted to the Secretary are reproduced in Appendix No. 4 to these minutes.


Kenneth D. Johnson
Secretary

KDJ:gr
Minutes subject to approval
October 16, 1969

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LIAISON REPORTS ON ACTIVITIES IN THE STATES

Reports of "no significant new activity" were received from Committee members with responsibilities for liaison in the following states:

Alaska	Montana
Indiana	Nevada
Michigan	Utah

No reports were received concerning states shown in the following list:

Arizona	Missouri
Arkansas	New Hampshire
Colorado	New Mexico
Connecticut	North & South Carolinas
Delaware	North & South Dakotas
Hawaii	Oklahoma
Idaho	Oregon
Illinois	Rhode Island
Kentucky	Texas
Louisiana	Vermont
Maine	Virginia
Massachusetts	Washington
Minnesota	West Virginia

Substantive reports received on the remaining states follow:

Alabama - M. V. Anthony

State Regulations: Torbet bill - sponsored by industry passed by both houses. the bill met with Governor's approval before passage, but no word as to whether he has signed.

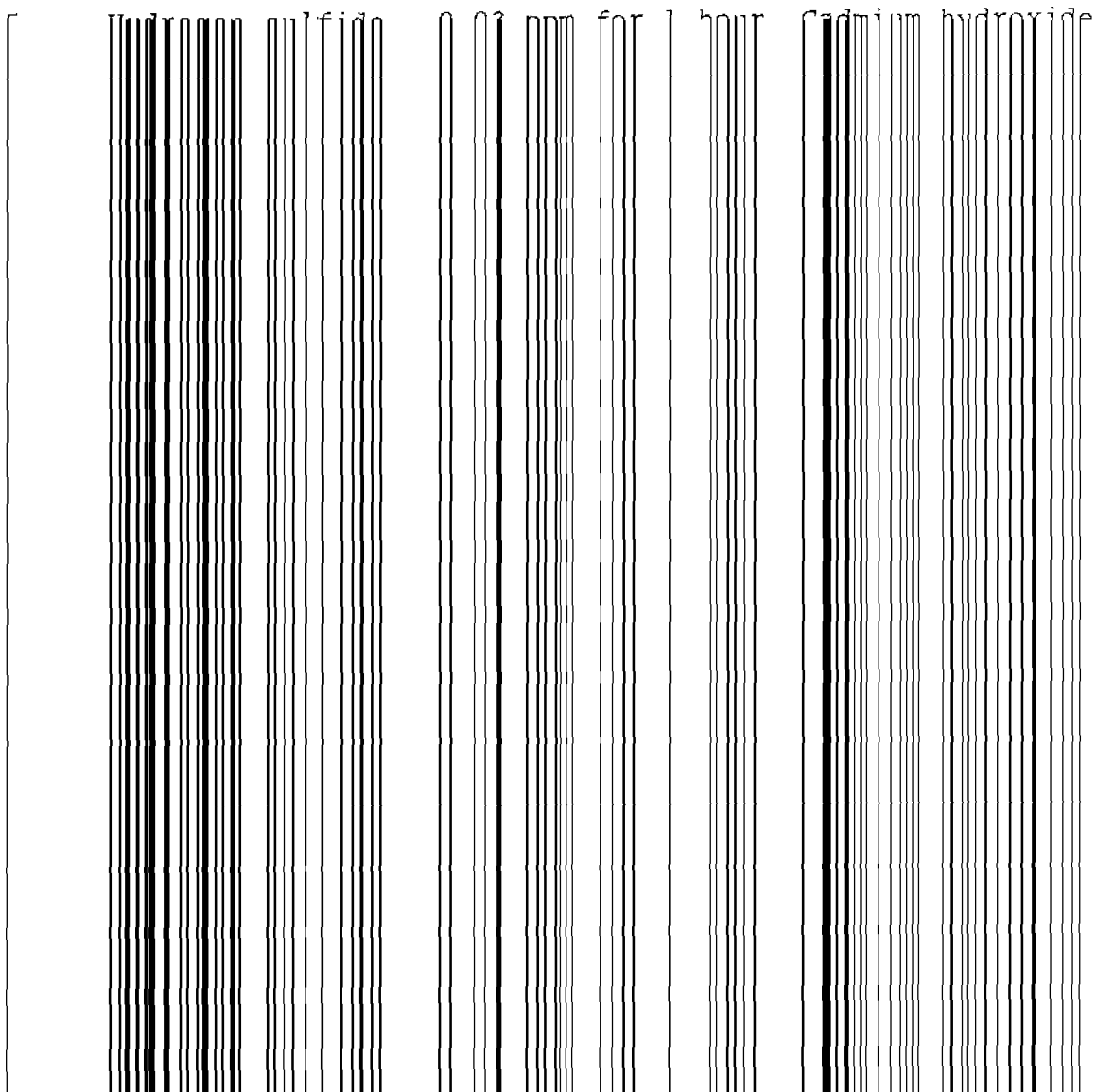
California - E. F. Spencer

After a number of statewide hearings, the State Air Resources Board met 9/17/69 to consider adoption of statewide ambient air quality standards. These are in response to the State Mulford Act

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and are independent of Federal requirements. The proposed standards are:

1. Oxidant, including ozone. 0.1 ppm for 1 hour, neutral KI corrected for NO₂, not to be exceeded 7 or more days in any 90 consecutive days or 3 more consecutive days.
2. Carbon monoxide. 20 ppm for 8 hours, NDIR method.
3. SO₂. 0.1 ppm for 24 hours, conductivity, applicable only in locations at which the standard for particulate is exceeded. AND 0.5 ppm for 1 hour, conductivity, applicable regardless of particulate level.
4. Particulate matter. 100 µg/M³, 24 hour samples by hi-vol, arithmetic means for any 30 consecutive days (does not apply to specifically toxic lead, asbestos or beryllium) and in sufficient amount to reduce the prevailing visibility to 7.5 miles when R.H. is less than 70% (2 successive observations, one hour apart.) Said to be exceeded when occurring 7 or more days in 90 consecutive days, or 3 or more consecutive days.



6. Revise breakdown reporting procedure.

LAAPCD

Nothing specific but it is reported that they are working on a new rule for the control of particulates.

Other

Roger Diamond, the attorney who lost the recent \$500 billion anti-smog lawsuit, has organized a new group, called "Peoples' Lobby, Inc." The group has filed a pair of initiatives making drastic and impossible changes in California's pollution control law. Details available for those interested.

Proposed Values are:

Sulfur oxides (West-Gaeke)

- (a) 0.015-0.030 ppm annual arithmetic average.
- (b) 0.05-0.10 ppm, 24 hour average, not to be exceeded more than once per calendar year.
- (c) 0.10-0.20 ppm, 1 hour average, not to be exceeded more than once per calendar month.
- (d) 0.26-0.52 ppm, 5 minute average, not to be exceeded more than twice a week.

Particulate Matter

- (a) 65-80 $\mu\text{g}/\text{M}^3$, annual arithmetic average.
- (b) 140-160 $\mu\text{g}/\text{M}^3$, 24 hour average, not to be exceeded more than once per calendar year.
- (c) 0.35-0.50 $\text{mg}/\text{cm}^2/\text{mo.}$, annual arithmetic average.
- (d) 0.70-1.0 $\text{mg}/\text{cm}^2/\text{mo.}$, during any month.

Florida - M. B. Tohline

Proposed Legislation: Working session of legislature adjourned 6/6/69. A brief session will be held in November to set the date of the session in 1970.

CMA 085806

Section 26 of the Conference Committee Report adopted by the Legislature created the Department of Air and Water Pollution Control directly under the governor. Article (5) of this section stipulates that the department shall have no jurisdiction over local acts of a stricter or more stringent nature. This provision is of serious concern to many industries. Some of the attorneys believe that the article is not valid and will be tested by court action as soon as the state sets a less severe regulation than an existing county regulation.

Personnel and Policy Changes: Vincent Patton has been named Director of the new Department of Air and Water Pollution Control. Those pollution control functions handled formerly by the State Department of Health are now handled by the new department. Development of new regulations has been delayed due to problems related to reorganization.

Georgia - A. H. Phelps

Personnel and Policy Changes: Certification of devices for tax relief as air pollution control devices is liberally interpreted by Health Department, but tax must be paid, the device installed, operated, and inspected before Department will certify it for a rebate.

Indiana - P. W. McDaniel

Proposed Legislation: No recent change other than the proposals of the Metropolitan Indianapolis Intrastate Air Quality Control Region by NAPCA. This region would include the Indiana counties of Boone, Hamilton, Hancock, Hendricks, Johnson, Morgan, Marion, and Shelby.

Iowa - R. D. Hall

State Regulations: An automobile junker got an injunction against the State Air Pollution Control Board's regulation on a Ban Against Open Burning. It seems the junker stated he could not operate without burning the cars. The court believed him and found for his cause.

Personnel and Policy Changes: On July 3, 1969, Governor Robert D. Ray announced the following appointments to the Air Pollution Control Commission, four-year terms:

Carl D. Smith, Marion (reappointed);
Robert G. Anderson, Des Moines (reappointed);
Dr. Arthur W. Shafer, Davenport (reappointed);
John H. Jebens, Davenport

Kansas - A. H. Phelps

State Regulations: Letter of intent on Kansas City Air Quality Control Region is due about October 19 and has not gone out yet. Douglas County was deleted from the region at its request.

Personnel and Policy Changes: J. Lee Mayes, Service Director for Environmental Services for the state died and has not been replaced.

Maryland - E. F. Spencer

In response to the metropolitan Washington, D. C., AQCR, hearings will be held October 1 for SO₂ and particulate air quality standards.

Mississippi - M. B. Tohline

Proposed Legislation: Legislature now in brief session in which no air pollution matters are involved.

State Regulations: Robert S. Wright, Executive Secretary of Mississippi's Air and Water Pollution Control Commission has advised recently that the "Rules and Regulations Governing the Prevention, Abatement and Control of Air Contaminants from Fuel-Burning Plants, Incinerators, Open Burning, and Manufacturing and Commercial Activities" will be published within the next few weeks. Public hearings on the Rules and Regulations will be scheduled for latter part of year.

Nebraska - M. V. Anthony

State Regulations: Legislative Bill 546 has passed into law. I consider it one of the better state laws, MCA's AQC members had a decisive influence on this bill.

Local Regulations: Proposed city ordinance for Omaha very onerous, presently up before council.

New Jersey - P. W. McDaniel

Proposed Legislation: The New Jersey State Department of Health has released (in August) proposed "Ambient Air Quality Standards" for the several Air Quality Regions established in the state by NAPCA. These presumably would eventually be proposed for NAPCA approval. They appear to be substantially more restrictive than the standards proposed in adjoining states that are also included in the same two Air Quality Regions. Considerable objection to the standards is expected from New Jersey industry.

State Regulations: On August 25, 1969, the New Jersey Department of Health promulgated a new air pollution control regulation entitled "Air Pollution Emergency Control Act," (Chap. XII of the Air Pollution Control Code). It becomes effective October 24, 1969. Among other things it provides for a warning system based on evaluating the levels of three air contaminants - sulfur dioxide, carbon monoxide, and soiling index (particulates).

New York - E. F. Spencer

In response to AQCR requirements, hearings have been held in both metropolitan New York and Buffalo areas to adopt ambient air quality standards. The New York State Region IV goals for SO₂ and particulate were proposed.

Ohio - A. H. Phelps

State Regulations: Tall stacks are eligible for tax relief as an air pollution control device.

Local Regulations: Cincinnati adopted air quality standards, (not as activity related to the Region under Clean Air Act). SO₂ to be no more than 0-25 ppm for one hour in any week; 0.1 ppm 24 hr. avg. not exceeded more than 4 times per year; 0.02 ppm maximum annual average. Particulate not more than 200 µgm/m³ not to be exceeded more than 4 times/year; 100 µgm/m³ maximum annual average. (Present annual average is 120).

Personnel and Policy Changes: Ross Austin, Technical Secretary of the Ohio Air Quality Control Board, left for industry and has not yet been replaced.

CMA 085809

Cleveland, Ohio Air Quality Control Region - R. D. Hall

Proposed Legislation: Governor Rhodes filed the letter of intent with the Secretary of the U. S. Department of H.E.W. on August 16, 1969, with respect to adopting Standards and a plan of implementation for SO₂ and Particulates. The target dates are now: February 17, 1970, for Standards -- August 16, 1970 for Plans of Implementations. No hearings have been scheduled as of this date. Mr. Ross Austin, Engineer Secretary of the Ohio Air Pollution Control Board intends to develop an inventory of the pollutants emitted in the area as the next step. Resources Research, Inc. and P. E. Development Co., consulting engineers from Cincinnati, Ohio, will conduct the inventory under a \$20,000 grant. The survey will cover between 450 and 600 problem industries (there are some 15,000 industries in this area). Additional on-site review will be conducted on 100 to 125 of them. The inventory is to be correlated with weather conditions to give an indication of pollution levels in various areas and pinpoint where the greatest problem exists.

As a collateral item, the City of Cleveland's Air and Water Pollution Committee, of the City Council has been conducting hearings on a new air pollution ordinance. The Mayor of Cleveland, Mayor Carl B. Stokes, had asked NAPCA, U.S. Dept. of H.E.W. to review the existing Ordinance and offer their recommendations for improvement. The result was that the NAPCA offered the City of Cleveland those portions of the Code, Ordinance, Rules, Regulations, Laws, etc., adopted by other States, Counties, Cities, etc. that they felt desirable. NAPCA also left out the modifying paragraphs, sentences and phrases were they so chose. Mr. Don C. Winson consolidated and presented the industries' views on behalf of the Greater Cleveland Growth Association (Chamber of Commerce). He did an admirable job.

Our concern about the proposed Ordinance of the City of Cleveland centers around its possible effect upon any Rules and Regulations that may be adopted by the new Federal Air Control Region.

Pennsylvania - S. S. Paist

Proposed Legislation: The ambient air standards attached to my letters of August 15 and August 20, 1969, to Dr. K. D. Johnson have been subjected to public hearing. Of the 39 who gave oral testimony, only 2 back the standards. The remaining 37 were largely made up of

CMA 085810

health associations who were so emotionally involved they could only reiterate their demand that HEW standards for SO₂ and particulates be used.

Tennessee - Jerome Wilkenfeld

State Regulations: Ambient air quality standards became effective on 6/25/69, permits must be applied for not later than 6/25/70, and plans submitted by 12-30-70. All air pollution control systems must be operable and effective by 6/25/73.

Local Regulations: Nashville is having problems. The City Council amended their weight emission standards to permit higher quantities of particulate discharge. They will no longer meet the state regulations.

Personnel and Policy Changes: Don Roberts formerly heading Industrial Hygiene, will be heading up the air pollution controls for Tennessee.

Wisconsin - W. T. Laffey

State Regulations: The Division of Environmental Protection now formulating regulations. A public hearing is expected to be held late in October.

Wyoming - E. F. Spencer

Following a public hearing July 1, Wyoming adopted the St. Louis - Montana ambient air quality standards, hook, line, and sinker. It also adopted most of the Los Angeles - San Francisco emission regulations, verbatim. Regulations adopted include:

1. Process Weight (BAAPCD version).
2. Equivalent Opacity.
3. Open Burning.
4. Indirect Fired Combustion Units.
5. Rendering Plant Control.

6. Odor.
7. H₂S.
8. Automobile.
9. Circumvention.
10. Breakdown reports.

District of Columbia - K. D. Johnson

Mr. Charles Couchman, Chief of the Air Pollution Division of the District of Columbia Department of Public Health reports that they will soon announce schedules for public hearings on ambient air quality standards for the D.C. portion of the Washington Air Quality Control Region. They have not yet released any official positions on the standards they will propose at that time.

No new developments in their abatement programs are anticipated before these hearings are completed.

Puerto Rico - P. W. McDaniel

A proposed act, Senate Bill 258, (April 1, 1969), that would create a Pollution Control Commission dealing with both air and water has been referred to committee. It is doubted if it will be again brought out until next year.

Proposed Regulations for Control of Atmospheric Contamination in the Commonwealth of Puerto Rico are still under consideration. First draft seemed to be less restrictive than regulations in many of the United States.

Canada - B. R. Edwards

Proposed Legislation: Quebec - The second draft of the government's proposed legislation to control air pollution was issued in April 1969 for comments from various associations and municipalities.

CMA 085812

A. H. Phelps, Jr.

October 30, 1968

PROPOSED POSITION PAPER ON EQUIVALENT OPACITY REGULATIONS

Equivalent opacity regulations set limits on the appearance of plume exhausting from a stack. The limits are based on an estimate of the amount of light transmitted through the plume. Generally, the limits are set at 40% opacity, which means that 60% of the light is transmitted through a plume.

The equivalent opacity regulations are relatively new. An older form of opacity regulations is the use of Ringelmann numbers to estimate the appearance of combustion units fired by oil or coal, and primarily coal. The Ringelmann scale is in degrees of blackness, ranging from 0 to 5. The Ringelmann charts are made up of grids with black lines superimposed on a white chart, with the percentage of area covered by the black lines being 20%, 40%, 60% and 80%. These correspond to Ringelmann numbers of 1 through 4 respectively. The equivalent opacity regulations are so called because in some forms they are written as "or an opacity equivalent to #2 Ringelmann."

The MCA is not opposed to regulations controlling combustion by the use of Ringelmann numbers, but it is opposed in principal to the equivalent opacity regulations as they are commonly applied to all

exhausts. The reasoning for this position follows:

The Ringelmann number regulations control the degree of blackness of smoke from fuel fired combustion units. The degree of blackness is an indication of the efficiency of combustion. Inadequate air results in unburned carbon particles being emitted in the form of black smoke. This black smoke does cause haze in a community and the soiling of clothes. The degree of blackness cannot be measured by sampling in the stack, since the weight fraction of smoke particles is so small that normal sampling techniques could not find a weight difference in emissions between Ringelmann 1 and Ringelmann 4. Therefore, the estimate of the blackness of the smoke is one of the best measures available for this emission. Further, this black smoke may contribute to air pollution, as air pollution is usually defined. An still further, black smoke is an indication of inefficient combustion and its elimination is to the advantage of the operator as well as to the community. If cost/benefit ratios are considered, the control of black smoke is one having the least cost and the highest benefit, since the only requirement is efficient combustion to eliminate material which could contribute to haze and soiling.

The only stipulation that MCA would make on regulations involving Ringelmann numbers is that the inspectors who use it be regularly trained. Some jurisdictions, such as the City of Chicago and the County of Los Angeles, have periodic test programs required

for all inspectors to qualify them for making this judgment. When this is done, the control of combustion units by the use of Ringelmann numbers as judged by competent inspectors can be reasonably considered an appropriate control technique.

The equivalent opacity regulation is an entirely different matter. It is assumed - incorrectly - that there is a direct relationship between the opacity of a plume and its contribution to air pollution in the community. That is, it is assumed that this is an adequate measure of the particulate emission from a stack. Since particulate emissions are being controlled, the appropriate ambient air criteria is particulate as measured in micrograms per cubic meter. There is no direct relationship in all cases between plume opacity and ambient air quality as measured in micrograms per cubic meter of particulate.

Most regulations define air pollution as the presence in the atmosphere of contaminants which may be reasonably expected to interfere with health, property or the reasonable use and enjoyment of property. The particulate concentration in the air at some levels, can be related to these matters. The mere fact that a plume is visible or that it has an equivalent opacity of any particular level does not relate to health, welfare, property, or the reasonable enjoyment of same. Plume visibility, per se, is not air pollution by any definition.

Again, if cost/benefit ratios are to be considered, the equivalent opacity regulation is one where an extremely costly burden can be imposed without any proportionate increase in benefit to the community. This becomes more acute the lower the equivalent opacity regulation requirement, since in some processes it is not economically practical to control plume opacity.

The equivalent opacity of a plume or its reciprocal, the transmittance of light through a plume, is given by the following equation:

$$T = e^{-naQt}$$

Where T is the transmittance, e is the natural logarithm, n is the number of particles, a is the area of a particle, Q is the extinction coefficient specific for different materials and different particle sizes, and t is the thickness of the plume.

As the quantity (naQt) gets large, the transmittance gets small; that is the apparent opacity increases. While the equation does state that there is a relationship between the number of particles and the opacity, there are several other important factors. As the plume diameter increases even though the number of particles per cubic foot does not increase the parenthetical factor increases and transmittance goes down. This means that a 6 foot diameter plume with an identical particulate concentration will appear to be more opaque than a 3 foot diameter plume. Both might well be meeting particulate emissions as required to obtain community desired ambient

air quality goals. However the large diameter plume, with its more opaque appearance would be judged illegal under equivalent opacity regulations, even though the operator is controlling to meet desired air quality.

Another important factor is Q - the extinction coefficient. This is specific for a particle size and refractive index of the particulate being emitted. (Anyone wishing to go into more detail on this subject should refer to Optical Properties and Visual Effects of Smokestack Plumes; 99-AO-30; U. S. Department of Health, Education, and Welfare.) Without going too far into physics, there is one particle size which will block light more efficiently than particles either larger or smaller. For example, and based on calculations in the reference material, a particle which is white and has a diameter of .04 microns, cannot be permitted in an exhaust in any greater concentration than about .04 grains per cubic foot if the exhaust must meet an equivalent opacity of 2. On the other hand, a particle which is white and is 6.4 microns or larger in the same diameter stack, can be emitted at a rate of 0.15 grains per cubic foot, and still meet the same equivalent opacity. Larger particles of the size fraction which settle as visible grit, can be emitted in even greater concentrations and higher mass rates and have a clear plume, while contributing to a community air pollution problem. Since particle number is only one of several factors

effecting plume opacity, it is obvious that to use opacity as a control measure to obtain air quality is not technically sound.

An operator might elect to control the opacity of his plume by emitting it from a number of small diameter stacks, instead of one large one, in order that each of the plumes with smaller diameter have a lower appearing opacity. Also, there are techniques for agglomerating particles so as to increase their size and reduce their extinction coefficient. The difficulty with these options is that funds would be used to meet a regulation but without reducing emissions. This would be the natural route to take to a solution if it were cheaper to reduce the opacity than to reduce the particulate, which may often be the case. But if the particulate level is acceptable, then the MCA position is that it would be much better for the operator to spend his funds in other areas directly related to community interest than to spend them on this artificial criterion.

Another problem with equivalent opacity regulations is where there is water vapor present. This will occur in drying operations and also where wet scrubbers are used for particulate control. Because of the humidity of such exhausts, the plume will condense immediately to a dense white cloud containing perhaps some dust, of which the opacity is primarily due to the water vapor. Some jurisdictions have tried to get around this problem by including in their regulations the phrase "except where opacity is due to uncombined

CMA 085818

water vapor." The definition of uncombined water vapor is subject to varying interpretations by both the officials and the courts. Some courts have interpreted combined water vapor as, "water vapor with anything else present," and not in the chemical sense of water of combination. The only plumes which might possibly fall within this exclusion clause would be those of steam ejectors and cooling towers, although even here, a minute fraction of atmospheric dust might qualify it as combined water vapor.

Another method of getting around the water vapor plume is to estimate where the water vapor has re-evaporated in the atmosphere, judge the opacity of whatever residual plume may be, and estimate how much more opaque it might have been back at the mouth of the stack while it was obscured by the water vapor. Ability of inspectors to make such a judgement is open to question. A solution for eliminating opacity due to plumes with water vapor is for the operator to heat them. It has been done in some cases, but as far as air pollution goes, to burn fuel and add the products of combustion to the atmosphere simply to make water vapor disappear, hardly seems like an expenditure in the public interest.

The main reason for adopting equivalent opacity regulations is that they make it easy for an official to write citations. Estimating the equivalent opacity merely requires riding around looking at stacks and writing tickets. Attempting to determine the amount of

particulate actually being emitted and affecting ambient air quality, requires sampling. The MCA does recognize the official needs some method of control of emissions which is practical. It is unreasonable to expect an inspector to note an apparent violation of control regulations, return to the office, pick up a crew and sampling equipment, notify the violator, get back into the plant, and make a stack analysis requiring several days. This is absurd. Source sampling is not easy and it takes time and money, nor can any department be so heavily staffed as to be prepared at a moments notice to analyze emissions from all stacks.

Since the number of particles in a plume is one factor in plume opacity, we recognize that it could be an indicator of possible violations. We believe that the proper use of equivalent opacity is to alert the official to those emissions which require further investigation. The MCA could support equivalent opacity regulations when the following additional clause is added: "When analysis of the emissions in the stack show that the exhaust is within other pertinent regulations on particulate emissions then the equivalent opacity regulation shall not be applied." Such a clause allows the department to single out the likely sources of pollution and make a technically sound judgment as to whether or not that exhaust does contribute to air pollution and impairs the quality of the community's air supply. It avoids control simply for aesthetics.

CMA 085820

MCA recognizes the public relations problems for officials. To the lay citizen there is an impression of pollution when something is visible. It can be tedious for a department to have to describe the physics, the optical properties of plumes, factors effecting transmittance, every time an irate citizen calls up. The extent to which a pollution control department will insist on controlling visibility in order to get along with the public is a judgment that the department has to make. The primary concern of the department should be to reduce emissions and to control the quality of the air. There must be a point where the department insists that funds be spent for controlling real emissions rather than apparent ones. The additional clause proposed above, can accomplish this. While the physics of plume appearance need not be explained to citizens, those whose opacities are high but whose particulate emissions are low and which have been sampled give a reasonable answer to the public. "The contents of that stack have been analyzed and the particulate emissions are less than those required by the law."

CMA 085821

PROPOSED MCA POSITION
ON
THE ANTIDEGRADATION POLICY
FOR
AIR POLLUTION ABATEMENT

The Director of the National Air Pollution Control Administration (NAPCA) has enunciated an antidegradation policy (give reference) and at least two states (California and Pennsylvania) have held public hearings on regulations which incorporate an antidegradation policy.

The MCA opposed an antidegradation policy.

The basis for the NAPCA positions seems to be contained in Section 1.51, Air Quality Standards of the U.S. Department of Health, Education and Welfare publication GUIDELINES FOR THE DEVELOPMENT OF AIR QUALITY STANDARDS AND IMPLEMENTATION PLANS dated May, 1969.

"In addition, as indicated earlier in this chapter, an explicit purpose of the Act is 'to protect and enhance the quality of the Nation's air resources' (emphasis added). Air quality standards which, even if fully implemented, would result in significant deterioration of air quality in any substantial portion of an air quality control region clearly would conflict with this expressed purpose of the law."

CMA 085822

The section of the Act quoted in Section 1.51 is incomplete. The complete statement is found in Title I, Section 101(b)(1) of P.L. 90-148, 90th Congress, S-780, November 21, 1967:

"The purposes of this title are -- (1) to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population." (emphasis added) ...

In a rationale, which begins with ambient air criteria, sets ambient air standards based on the criteria and, finally, establishes emission limits based directly on the adopted ambient air standards, there is no room for an antidegradation policy. If really needed, an ambient air standard could be adopted which would not permit the atmosphere to be degraded below its existing quality. To say that an ambient air quality, better than an adopted standard may not be degraded to the standard unless it can be proved to a Commission or other authority that the degrading will not cause problems to a community, is to say that the standard was not valid in the first place.

To be effective, any local authority must treat all discharges within its jurisdiction in as specific, noncontroversial and absolutely uniform manner as possible. This can be done best by writing clear rules and regulations setting well reasoned ambient air standards and directly relating emissions control to the standards. Working under

CMA 085823

a catch-all non-degradation policy opens even the most circumspect commission to charges of non-uniformity and of serving special interests. Where required, ambient air can be preserved at its existing quality by better methods.

The framers of P.L. 90-148 intended this rational approach to control air pollution. There is no legal justification for stifling this approach by submerging it with an antidegradation policy.

(The MCA should urge and joint with the U.S. Chamber of Commerce to obtain a ruling to ascertain if control officials can legally adopt an antidegradation policy which is incompatible with the rational approach to air pollution control implied by the language of P.L. 90-148.

CMA 085824

REPORTS OF LIAISON WITH OTHER ORGANIZATIONS1. Air Pollution Control Association - Mr. Phelps

Jerome Wilkenfeld will arrange for and chair a session on the chemical industry in the June 70 annual meeting in St. Louis. He would appreciate any help Committee members can give. Elmer Wheeler is chairman of the technical session and would likewise appreciate help.

2. American Chemical Society - Secretary

The ACS Committee on Chemistry and Public Affairs has issued its report "Cleaning Our Environment - the Chemical Basis for Action" in which it makes 33 specific recommendations with respect to air pollution control. Of these, three relate directly to industrial emissions and their control.

3. American Iron and Steel Institute - Secretary

No new developments to report

4. American Paper Institute - Mr. Phelps

No new developments to report

5. American Petroleum Institute - Mr. Love

A new committee has just been set up to deal with oil spills. This was formerly the plan under the present committee.

API is sponsoring a symposium September 16-17, 1969, in New York at the Americana Hotel entitled "Prevention and Cost of Oil Spills."

A jointly sponsored project with FWPCA is under contract with Hydrosience of New Jersey to study the effect of used crank-case oil on sanitary sewer plants. This has become more of a problem since they lost the tax advantage and service stations are now dumping the oil in the sewer.

API's proposed 1970 budget for air and water pollution is slightly less than \$4,000,000.

6. ASTM Committee D-22 - Secretary

The committee is now seeking trade association support for a major (\$2,000,000 plus) program to conduct inter laboratory methods evaluations for the ambient air. As they have been unable to get effective cooperation from industrial laboratories to get this work done on a voluntary basis, they now propose to have this done by contract research laboratories. Trade association responses have so far been very restrained.

7. American Society of Mechanical Engineers - Mr. Phelps

APS-2, on sulfur dioxide from combustion, is proceeding through approval process and will probably make it. The Air Pollution Control Committee became a Division of ASME. It is considering publishing a series of guides for each of several industries, similar to the German VDI Guides.

8. National Coal Association - Secretary

No new developments to report

9. National Air Pollution Control Administration - Secretary

The move of NAPCA staff to North Carolina is continuing, with fewer services remaining in the Washington area. No major changes in policy or emphasis are apparent in NAPCA's administration of P. L. 90-148.

10. National Paint, Varnish, and Lacquer Association - Secretary

The experimental work on photoreactivity of solvents at Battelle is complete, and final reports are anticipated soon. The series Community Service Bulletin the Association has been issuing, presents an excellent discussion of the science and politics of solvent control efforts.

No liaison reports were received on other organizations.

CMA 085826

PRINCIPLES FOR AIR POLLUTION CONTROL

Air pollution occurs when the atmosphere is burdened with contaminants to the extent that undesirable effects are produced. While natural phenomena can and do contribute to air pollution, that which gives greatest concern arises as a by-product of man's activities in fulfillment of growing biological, economic, and esthetic needs without adequate environmental controls.

The chemical industry, like other industries, frequently encounters air pollution control problems in the course of manufacturing its many products essential to man's health, welfare and physical comforts. The early and effective solution of such problems is a goal to which the industry has shown a long and growing dedication. Through constant research not only does it seek new and better ways to control its own emissions, but it also provides an expanding source of control technology for application in other industries.

In the conduct of its operations and the management of its air conservation programs, the following principles govern.

1. Prevention is better than treatment. Minimizing the generation of pollutants should be an explicit goal at all stages of process development, from the earliest phases of research through the design of production facilities. Process control that eliminates or reduces emissions is generally more desirable than treatment of potential pollutants after they are formed.

2. Waste disposal practices should protect the total environment. Control techniques that merely shift wastes from one medium, the air, to another such as the soil or water, are acceptable only when the alternate medium has the appropriate capacity to accept and assimilate the discharges.

3. Conservation of process materials minimizes pollution. Collection and salvage of recoverable materials from plant discharges conserves natural resources and protects the environment. Prevention of process losses is good management as well as good industrial citizenship.

4. Good air management practices are dictated by responsibility to the community as well as to stockholders. A good corporate neighbor respects the attitudes and desires of the community; in contributions to community dialogue, it presents the facts required for the growth of informed public opinion.

5. Technical and scientific information on air pollution control, generated within the chemical industry, should be shared. Such information exchange should be fostered by encouraging qualified employees to participate in activities of professional societies, trade associations, and governmental agencies serving this field.

6. Good industrial citizenship involves active participation in the political decision-making processes. The technical expertise and economic competence of the chemical industry should be applied constructively to the development of ambient air quality standards, emission control regulations, and administrative and enforcement procedures that will provide the community with the best environment at the least total cost to society.

7. Responsible industry seeks to be law-abiding. Monitoring programs and established lines of supervision assure management of positive knowledge that applicable standards are being met. In the event of excessive emissions resulting from accident or process upset, control agencies are promptly furnished information that is as frank, factual, and as complete as possible. The objective is full compliance with both the spirit and the letter of pollution control regulations.

CMA 085827

Adopted by the Board of Directors, Manufacturing Chemists Association, October 21, 1969.

Founded in 1872, the Manufacturing Chemists Association, is the oldest chemical trade organization in the Western Hemisphere. Its more than 180 United States and Canadian member companies represent over 90 per cent of the production capacity of basic industrial chemicals within these countries.

PRINCIPLES FOR AIR POLLUTION CONTROL



MANUFACTURING
CHEMISTS
ASSOCIATION

1825 CONNECTICUT AVENUE, N. W. WASHINGTON, D. C. 20009

The Chemical Industry
and
Environmental Health

CMA 085828



MANUFACTURING CHEMISTS ASSOCIATION

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FOR RELEASE

CONTACT:

BACKGROUND ON AIR POLLUTION CONTROL

Provided By

The Manufacturing Chemists Association

CMA 085829

BACKGROUND ON AIR POLLUTION

The chemical industry's total responsibilities in environmental health begin within its own manufacturing facilities. The industry's expertise in control of emissions has developed from its historic ability to control in-plant hazards of toxic materials. This expertise and concern has, over the years, been translated into effective control of emissions to the general atmosphere.

Not all chemical manufacturing involves atmospheric discharges; a Manufacturing Chemists Association survey shows that more than 33 per cent of chemical manufacturing processes produce no discharge of gases, mists or dusts to the atmosphere through stacks or vents.

For those processes with pollution potential, controls are incorporated in the process itself wherever possible; treatment methods are utilized in other cases. While not every plant has yet achieved pollution-free operation, the chemical industry is committed to an aggressive program to achieve that goal. The industry has no air pollution control problems unique to it. Its diversity of processes and products result in the need for a correspondingly wide selection of control techniques. The chemical reactivities and odors of many of its airborne wastes require a degree of control that may be greater than that needed by many other segments of industry; but the physical nature of its emissions and the control techniques required for their collection do not differ in kind from those representative of industry in general.

CMA 085830

When we raise questions of technical and economic feasibility, it is not in a spirit of opposition, procrastination and delay, but in recognition of the scope and size of the total problem and the need to assign priorities commensurate with the degree of hazard to our environment and the prospects for achieving the maximum benefits to the community for the available funds.

Basically, environmental management is a community problem, and its costs ultimately fall upon all of society. Social needs are so great and resources relatively so limited that society cannot afford inefficient or extravagant controls not based upon demonstrated needs.

Air pollution is the presence in the ambient air of contaminants in concentrations and for durations that result in unwanted effects. It is not the mere presence of foreign material in the atmosphere, nor even the production of observable effects by that presence. The determining factor is whether the effects so produced are desired or not.

The definition of pollution thus involves value judgments, and what is pollution to one man may not be to another. The soft blue autumn haze that overlies the Great Smokies of eastern Tennessee may be highly prized by the artist; to the surveyor who has difficulty in seeing his targets, that haze is pollution. To the date grower, faced with increasing atmospheric humidity from the encroachment of irrigated fields about his desert groves, even water vapor is pollution, for the effects it produces on his crops are unfavorable.

With many other air contaminants, the level at which the effects they produce are unwanted and hence constitute air pollution will depend upon the uses of which that air is being made.

The activities of man and the processes of nature have been pouring dusts, fumes, gases and vapors into our atmosphere for uncounted millenia. The purity of the air today in wilderness areas is dramatic evidence of its self-purifying power not just its ability to dilute and disperse these pollutants, but to destroy them, to convert them into harmless end products or to transport them to acceptors that can perform this function.

The amount of contaminants that can be so processed by the air increases as the concentrations in the air increase. When we increase the rate of discharge of pollutants into the atmosphere to the point that the contaminant level produces unwanted effects, we have pollution.

In spite of the impressive statistics often cited about the quantities of aerial garbage being thrown into our air, there is little evidence that on a global basis, any air contaminant other than carbon dioxide is showing a progressive accumulation in the air. Problems arise not so much from the total quantities as from the concentration of emission sources.

One of the more significant changes in pollution patterns that has resulted from our affluent, urban society is the increase in the impact upon the environment of sources related to our personal activities.

Today's city dweller, both by his total number and his residential concentrations, contributes to a vast outpouring of wastes that merge into a sea of contamination that can no longer be identified with a single source, but rather constitutes an effluvium arising from the entire metropolitan area.

The principal personal pollution sources are the burning of fossil fuels for the production of heat and energy, and the disposal of the growing avalanche of solid wastes -- garbage, paper, disposable containers and single-use devices characteristic of today's economy.

Air contaminants can be classified according to their physical properties; that is, whether they are gaseous or particulate, and if they are the latter, whether the particles are solid or liquid, fine or coarse, heavy or light. Techniques and equipment suitable for the removal of contaminants from any exhaust stream are determined by such a classification.

Solid particulates, both in theory and in practice, are usually the easiest to control. To use an analogy that we owe to Dr. John Middleton, Director of the National Center for Air Pollution Control -- it's much easier to get the olive than the vermouth out of a martini. The filtration of gases for the removal of suspended solids is not always quite that easy. Not only must the filter medium be close-textured enough to strain out the dusts or fumes, but it must be able to resist the temperatures and chemical reactivities of the gas stream. It must also have the physical strength and surface properties to permit ready cleaning and removal of the collected dusts so that the filter does not become clogged.

Although many dusts are not suitable for collection by filtration because of their tendencies to cake and thereby clog the filter, the principal problems are economic. It is necessary to provide up to one square foot of filter area for every cubic foot per minute of gas flow to be treated. The costs of the massive installations, the space they occupy and the problems of maintenance and bag replacement, make this technique practical chiefly where gas volumes are small, and recovery of the dusts in clean and uncontaminated form has economic value. Otherwise, it is employed only when more economical equipment is unable to do the job.

A technique that has attracted a substantial amount of public interest is electrostatic precipitation. It has merited this attention because of its outstanding ability to collect with high efficiencies many fine dusts and fumes that are otherwise difficult to control. This device places a strong electrical charge upon the suspended particulates which are then attracted to and collected on surfaces bearing an electrical charge of opposite sign -- in the same manner that the static charge on some synthetic fabrics will attract and hold lint.

The dramatic success of properly designed electrostatic precipitators in suitably selected applications should not obscure the fact that there are many kinds of dusts, fumes or mists that are not suitable for this technique. Some emissions create electrically conductive films that short-circuit the high voltages required. Others are so electrically insulating that the first thin layer deposited on the collector plates effectively shields them from further dust loading.

Costs, too, may be high; in fact, there are no cheap ways of collecting fine particulates with high efficiency.

Many collector designs are based on the inert properties of the particulates suspended in the gas stream. When the gas flow changes direction, the motion of the particle in following that change tends to lag behind so that gas molecules and particulates follow divergent paths. By suitable devices, these path divergencies may be made great enough that the gas may be discharged through one outlet and most of the particles through another. The simplest such device is the cyclone, a conic shaped chamber. The dust laden gas enters the chamber tangentially at its widest section and travels spirally downward toward the apex. The dust is removed from the cyclone at the bottom, but the relatively clean gas then spirals centrally upward in a counter direction and vertically out the top of the cyclone. The spiral path of the gas flow creates a continuous and gradually increasing centrifugal force that tends to carry the particles to the wall of the chamber where they impinge and fall into a collection hopper. The larger and heavier the particle the more easily it is removed from the gas stream. In general, however, it becomes prohibitively difficult to achieve high collection efficiencies with dry inertial collectors on dusts of less than a few microns particle diameter.

When particles are too small to permit ready direct collection by inertial techniques, it is sometimes feasible to impinge them into liquid droplets that are large enough for easy collection. A variety of wet cyclones, venturi scrubbers and spray chambers have been designed with this goal in mind.

They are all characterized by the need to put a lot of mechanical work into the process of generating the large liquid surfaces and the high relative velocities of dust particle and droplet required to achieve capture of the particulate matter by the droplets. Their efficiencies as collectors are all closely related to this energy input, and, therefore, the operating costs of high efficiency devices of this type are substantial.

Wet collectors all result in the production of contaminated scrubber liquors that may present disposal problems. They can be used with liquid mists or sticky dusts that would clog dry collectors, and by the introduction of appropriate chemicals into the scrubber liquid, corrosive, toxic and fire or explosion hazards can be controlled.

The removal of contaminants that exist as gases or vapors presents a different set of problems. Since ordinary inertial processes cannot separate these molecules from the bulk of the air flow and since molecular diffusion is far too slow a process to transport them to the solid or liquid surface at which they may be adsorbed, absorbed or chemically reacted, it is necessary to provide for intimate contact between gas stream and absorbent by mechanical means. The wet collectors discussed in the previous paragraph do this; but where gases only are involved, less energy-demanding devices may be adequate. Spray chambers, packed towers and bubble-plate towers are but a few of the devices employed.

Scrubbers for the absorption of gases and vapors are particularly sensitive to the law of diminishing returns. Assume for example that for a unit cost we can achieve a 90 per cent collection efficiency from our hypothetical gas stream.

To again remove 90 per cent of the remaining contaminant it is not adequate simply to pass the gas stream through a similar purification unit of like kind. The lower tolerances for emission require larger volumes of scrubber liquid, more transfer surface and longer residence time, resulting typically in a multiplied -- rather than merely doubled -- collection cost. Still higher collection efficiencies entail exponentially increasing equipment and operating costs.

The selection of the proper design point, to maximize benefit-cost ratio, is of critical importance. Overly stringent standards involve greatly excessive costs with minimal benefits in return. These excess costs would be much more usefully expended were they devoted to other phases of the environmental management problem.

With the devotion of increased funds and scientific and engineering talents to this problem, improved techniques, with greater efficiencies and lowered costs, will surely be developed. As the industry continues to grow and diversify, new economic patterns will develop in recognition of the full costs of environmental protection. As we move in that direction, the chemical industry offers its best efforts to achieve an orderly development of rational standards and enforcement policies that will achieve a maximum improvement of the environment with a minimum disruption to the economic health and growth of American industry.

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GLOSSARY

Ambient Air: The outdoor atmosphere as it exists around people, plants and structures -- as contrasted to that in immediate proximity to emission sources.

Ambient Air Quality Criteria: A description of the effects of specified concentrations and durations of specified air contaminants on persons, animals, plants or materials. The term "criteria" in this sense has acquired a specific connotation quite distinct from that of "standard," and although the dictionary lists the two terms as synonymous care must be exercised not to confuse these terms in any discussion of air pollution control.

Ambient Air Quality Standards: Legal statements of ambient air quality that are subject to enforcement by law. The standards may specify the maximum peak concentrations of contaminant allowable, the maximum average concentration and/or the frequency and duration of excursions above a given concentration. The criteria inform the decision-making body what effects can be avoided by the adoption and enforcement of a given standard. The standard represents the decision made by the governmental agency as to the quality of air to be maintained.

Emission Standards: Legally enforceable limits on the quantities and/or kinds of air contaminants that may be emitted into the atmosphere. For example: Limits expressed in maximum concentration of contaminant in the discharged gases; maximum weight of such discharge, either as an hourly rate or in relation to the quantity of material being processed; or in terms of the appearance of the discharge.

Ringelmann Number: A scale of values, ranging from zero through five variously used to quantitate roughly the color or density of a stack plume. Originally proposed to evaluate the darkness of coal smoke plumes as a shade of grey. Its application to other types or colors of plumes involves an assumed "equivalence" of some related optical property, such as its opacity or its ability to obscure a target behind the plume.

Aerosol: A suspension of particles (either liquid or solid) in a body of gas, of such particle size that they tend to remain suspended for an indefinite period.

Micron: A unit of length in the metric system, equal to about 0.0004", and frequently used as the unit in which to express the dimensions of aerosol particles. A particle of about 100 microns in diameter is the smallest that can be resolved by the human eye without optical aids.

Absorption: The process by which one substance is dissolved by and distributed throughout the body of a second material, as a soluble gas, such as ammonia, is collected in water droplets.

Adsorption: The process by which gases or vapors are collected on the surface of a solid phase, by reason of the attraction between that surface and the adsorbed material. The collection of organic vapors on activated charcoal is a familiar example.

Air Contaminant:

Any "foreign" material in the air, that is, material other than oxygen, nitrogen, the noble gases, water vapor and carbon dioxide. Air contaminants include, but are not limited to the following examples:

Smoke: Solid and/or liquid particles formed by the incomplete combustion of fuels, and discharged suspended in the gaseous combustion products.

Soot: Solid particles containing carbon formed by the incomplete combustion of carbonaceous fuels.

Fly ash: Mineral residues from the combustion of fuels that become suspended in the combustion gases.

Fume: Fine particles formed by the condensation of materials that were gaseous at higher temperatures.

Dust: Solid particles small enough to become airborne, formed by attrition of larger particles.

Mist: Suspended liquid droplets.

Vapor: Gaseous material which results from delution with fixed gases, but which, if pure, would occur as a solid or liquid at the ambient temperature (such as water vapor).

Gases: Materials that can be condensed to liquids only by pressure, or at temperatures below ambient (such as oxygen, methane, hydrogen).

Oxides of Sulfur: Products of the oxidation of sulfur; they include both sulfur dioxide, (SO_2) and sulfur trioxide, (SO_3), and the acids formed by their combination with water. Of these, sulfuric acid, H_2SO_4 , is of principal interest.

Oxides of Nitrogen: Compounds formed by the fixation of nitrogen in the high-temperature zones of furnaces and internal combustion engines. The primary product formed is nitric oxide, (NO), which is slowly oxidized by the air, and much more rapidly oxidized

in the presence of sunlight and organic vapors, to nitrogen dioxide, (NO₂). Smaller quantities of other nitrogen oxides may also have brief existence as intermediates in the atmospheric reactions involved.

Ozone: A form of oxygen, O₃, that is produced in the reactions of photochemical smog, and in electrical discharges. It is a powerful oxidizing agent and toxic to both plants and animals at relatively low concentrations.

Pan: Peroxyacylnitrates - a family of reactive compounds formed in photochemical smog, and which are highly toxic to many species of plants and to which at least a portion of the eye-irritating properties of photochemical smog have been ascribed.