April 3, 197[illegible]

VCM Mailing List

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6) ~~Steve Pokard~~
7) ~~John Hoosh~~
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The attached indicates the U. S. Environmental Protection Agency's intention of 1) classifying VCM as a "hazardous pollutant" under provisions of our current Clean Air Act (other chemicals in this category to date are beryllium, asbestos and mercury); and 2) limiting emissions of VCM from exhaust systems, leaks, etc. to 10 parts per million in the discharged air.

E P W

~~E.~~ P. Wheeler

Chemicals

EPA DRAFT VINYL CHLORIDE STANDARDS DISCUSSED BY INDUSTRY, ADVISORY GROUP

Draft standards for vinyl chloride (VC) and polyvinyl chloride (PVC) plants under Section 112 of the Clean Air Act were the subject of a March 25 meeting of the Environmental Protection Agency's National Air Pollution Control Techniques Advisory Committee (NAPCTAC).

The purpose of the meeting was to allow the committee and members of the plastics industry to discuss the draft prior to formal proposal of the standards in mid-June. Hearings on proposed standards probably will be held in the summer, and promulgation is expected in December, according to Don R. Goodwin, director of emissions standards and engineering, EPA office of air quality planning and standards, Research Triangle Park, N.C. Goodwin, NAPCTAC chairman, cautioned that changes may be made in the draft before it is proposed.

A summary of the draft standards appears in the Full Text section of this week's report.

In drafting the proposed standards, EPA primarily considered Section 111, Standards of Performance for New Stationary Sources, which also provides for existing sources, and Section 112, National Emission Standards for Hazardous Pollutants. EPA said that Section 112 was selected as the preferred regulatory route because VC can be considered a hazardous pollutant, and therefore should be regulated under the section of the Act intended for such pollutants.

The primary reason for considering Section 111 was that there is insufficient evidence to determine a numerical threshold emissions level in using Section 112 to regulate vinyl chloride, EPA said, and setting standards under Section 111 based on best control technology, considering cost, would achieve substantial emission reduction.

However, EPA noted that Section 112 includes several provisions which make it more appropriate than Section 111. For example, EPA said, Section 112 does not require consideration of costs in setting the standard. In addition, Section 112 would permit establishment of uniform national standards for both new and existing sources. Under Section 111, existing sources are regulated by states under Section 111(d), and EPA said there would be no assurance of application of best control technology at all plants, since states could grant variances for noncompliance. Because Section 112 standards apply to both new and existing sources, regulations for existing sources can be promulgated a year earlier than under Section 111(d), EPA added.

Steps Toward Regulation

Under authority of Section 112, EPA's first step is to list VC as a "hazardous air pollutant," and this can be done based on information now known, the agency said.

The second step is to set an emission standard based on a level which will "provide an ample margin of safety to protect the public health." EPA said that since a numerical threshold emission level for VC cannot be designated, the strategy for regulating the chemical will consist of two or more phases.

The first phase is to minimize risk to public health by establishing emission standards for VC and PVC plants to reduce emissions to the lowest level practicable with available controls, EPA said. Emission standards based on best available control technology will result in different total emission levels and different ambient air concentrations at different plants, due to variations in plant sizes, ages, and process types employed, the agency said.

The second phase, which was initiated at the same time standards were being developed, involves a program to gather additional data on health effects at the lower end of the dose-response curve, EPA said, adding that the data can be used to calculate more precisely the health risk associated with the proposed standards. EPA also is collecting data on ambient air concentrations in the vicinity of the sources, emission levels from source categories not covered in these particular standards, and control technology. EPA said that as more precise data and improved control technology become available, further control actions will be initiated as necessary. The agency said these actions may include expanding Section 112 standards to include more sources, revising the standards based on achieving and maintaining a precise ambient air concentration, or setting standards of performance for new sources under the authority of either Section 111 or 112 to control tightly the expected growth in the VC industries.

There are 15 VC plants, 47 PVC plants, and approximately 8,000 PVC fabrication plants, EPA said. At the time of development of the initial draft standards, more data were available for VC and PVC plants than for fabrication plants. PVC plants are responsible for approximately 90 percent of the total VC emissions, and VC plants are responsible for less than 10 percent of the total VC emissions. EPA now is studying fabrications plants to determine if regulations are needed for them.

Environmental Impact

According to EPA's preliminary environmental impact study, the "primary impact" of the draft standards would be 95 or greater percent reduction of VC emissions from VC and PVC plants, and consequently, corresponding reductions in ambient air concentrations of vinyl chloride in the vicinity of these sources.

EPA said the potential secondary impacts include increased atmospheric emissions of hydrogen chloride, lowered pH of plant effluent due to hydrogen chloride, increased water consumption, small increases in the quantity of vinyl chloride in the plant effluent, increased solid waste disposal due to carbon used for adsorption, increased energy consumption, possible closure of some small VC plants, and increased costs of PVC consumer products. EPA said the adverse impacts will vary from plant to plant, but the agency believes that methods are "readily available" for minimizing most of the potential adverse impacts.

EPA said there were only two impacts which it does not consider to be either "insignificant" or the type that could be minimized without additional action. These are the increased energy consumption which could result in the "rare situation" of a PVC plant using incineration, or to a lesser extent, carbon adsorption rather than improved stripping to control dryers, storage, and transfer operations. The other adverse impact is the probable price increase in PVC consumer products.

Industry Comments

During the NAPCTAC meeting, members of the vinyl chloride monomer (VCM) and PVC producers group of the Society of the Plastics Industry, Inc., (SPI) New York, presented their views on the technological feasibility of meeting the draft standards.

John Lawrence, SPI technical director, said that the industry "is anxious to do whatever may be required to provide for public safety." However, he told NAPCTAC that while industry has treated the costs of changing its facilities as secondary, it believes "it is important . . . to point out

where tremendous expenditures are required to achieve marginal and maybe unnecessary refinements."

He said also that as a result of Occupational Safety and Health Administration regulations for VC, which are effective April 1, substantial steps have been taken to control emissions. Lack of coordination between EPA and OSHA "could result in extensive duplication and possibly mutually inconsistent standards," he said.

Addressing the standards for fugitive emissions and reactor relief discharges, R.N. Wheeler, Jr., assistant production manager of vinyl resins for Union Carbide Corporation, South Charleston, W.Va., said that the industry concurs with EPA that fugitive losses will be controlled adequately through monitoring and maintenance programs. He said approximately 75 percent of the industry has ordered or installed fixed multipoint VC monitors.

EPA "in its laudable desire to provide a simple easily enforced regulation on relief valves in imposing on the VC-PVC industry unnecessary investment without materially reducing vinyl chloride emissions," according to Wheeler. In some cases, he said, the potential for catastrophic hazard to workers, to the plants, and to the public actually are increased, he said. The industry, he said, recommends that items related to relief devices be restructured and clarified. He suggested that a requirement for routine testing and maintenance of relief devices would be appropriate.

John T. Barr, of Air Products and Chemicals Company, told NAPCTAC that the industry recommends that the section relating to VC in the effluent water be removed from the standard. He said the degree of abatement which is achieved is small, and this section makes compliance with other sections more difficult.

He said the proposal to strip slurry to 400 parts per million can be met by a large segment of suspension, bulk, solution, and latex resin producers, although with some sacrifice in both productivity and resin quality. However, it cannot now be met for some low molecular weight resins and copolymers.

The use of highly energy-dependent and unproven add-on devices can be avoided for most of the producers except for some dispersion grades by permitting the averaging of residual monomer content between grades within a plant, Barr said. Therefore, any improvement beyond the 400 ppm concentration on one grade would be credited to those grades for which technology is not now available to produce lower concentrations, he said, adding that this would not permit total emissions to exceed those projected for the model plant, while at the same time, avoiding "these unproven devices."

W.C. Holbrook, manager of environmental control engineering, B.F. Goodrich Chemical Company, Cleveland, said that vinyl dispersion resin producers maintain that the uniqueness of dispersion resin manufacture and end-use products justifies special consideration by EPA when it sets standards. PVC dispersion resins, he said, cannot now be commercially stripped to 400 ppm residual VCM. Achievable levels range from 2,000 to 50,000 ppm residual VCM, Holbrook said.

He told NAPCTAC that "clear evidence" exists supporting a separate standard for dispersion resins. He said the industry requests that EPA set a standard that takes into account the special problems associated with the production of dispersion resins and allows for a research and development program that will achieve a goal that both industry and EPA agrees is "desirable."

Air Pollution

EPA SCIENCE ADVISORY PANEL REPORTS ON SULFATES SCIENTIFIC, TECHNICAL ISSUES

The primary toxic components of "reducing" types of air pollutants are in sulfur oxides/particulate complex (SPC) and not in sulfur dioxide (SO_2) itself, according to an Environmental Protection Agency advisory board panel, which has warned that certain increases in sulfur oxides or particulates "should be viewed with grave concern."

An EPA Science Advisory Board ad hoc panel said in a report on scientific and technical issues related to sulfates that, "Until better information is obtained, which will require years of effort, the probability of adverse health effects from the sulfur oxides/particulate complex is such that increases in exposure to sulfur oxides or particulates in localities where sulfur dioxide and/or total suspended particulates exceed primary standards should be viewed with grave concern."

The report differs sharply from a report done under contract for the Federal Energy Administration (see related story, page 1871).

Study Done at Train's Request

The panel conducted the study following a request from EPA Administrator Russell E. Train on December 17, 1974, that the Science Advisory Board review the issues of sulfate aerosols in the environment.

"It is a matter of extreme technical complexity and I find that many of our regulatory options will have major impact on the nation's economy," Train had written to Emil M. Mrak, chairman of the executive committee of the Science Advisory Board. "Because we are at a critical point in the development of agency policy in this area, I am writing you to ask that the Science Advisory Board give me its counsel."

Train requested an examination of "the scientific and technical basis for current and proposed agency control strategies for sulfates, with the objective of determining the adequacy of scientific data to support conclusions drawn by agency scientists and the appropriateness of the agency's interpretation of these conclusions in developing its regulatory posture."

The March 13 report of the board says it had not been reviewed by EPA and its contents do not represent views and policies of EPA.

A preliminary report on the panel's study was presented to EPA's National Air Quality Criteria Advisory Committee on January 16 (Current Developments, January 24, p. 1481).

Health Effects

Summarizing its findings on health effects, the panel said serious air pollution episodes suggest that sulfur oxides, either by themselves or in interaction with other materials in the air, are "major contributors to adverse health effects involving the cardio-respiratory system."

Limited studies with animals suggest that sulfuric acid particles and some soluble acide sulfates pose greater risks of lung damage than does sulfur dioxide, the panel said. "Recent epidemiologic studies are suggestive, but are not conclusive, that acid sulfates are the primary health hazard among sulfur compounds in the atmosphere," it said.

Better knowledge of the chemical and physical nature of sulfur compounds, improved assessments of human exposure to them, and better analyses of health effects are needed to resolve questions about health effects of acid sulfates, the panel said.

State agency under certain conditions (Cleveland-Wright bill).

As directed by the Subcommittee, the staff plans to continue its inquiry into the administration of PL 92-500, with emphasis on problem areas that have persisted more than two years after passage of the Act.

(Footnote: EPA reports that for the period from October 1972 to December 31, 1974, approximately $3.9 billion in construction grant funds had been obligated, construction had started on about $2 billion worth of projects, and $427 million had been disbursed to the states for completed work.)

SUMMARY OF EPA DRAFT STANDARDS FOR VINYL CHLORIDE BEING CONSIDERED FOR PROPOSAL UNDER CLEAN AIR ACT

MARCH 1975

The standards which are being considered for proposal under the authority of section 112 of the Clean Air Act for vinyl chloride and polyvinyl chloride plants are stated below. The purpose of these standards is to minimize risk to public health by establishing emission standards which will reduce emissions to the lowest level practicable with available control systems.

Polyvinyl Chloride Plants

The standard for polyvinyl chloride plants would apply to the suspension, dispersion, bulk, and solution processes and includes the production of all homopolymers, copolymers, and latexes. The specific emission limits would be as follows:

A. Control fugitive emissions by using the following techniques.

1. Control transfer operations by purging unloading hoses to the controlled monomer recovery device described below in D or other device capable of control to 10 ppm vinyl chloride. This standard can be met by using nitrogen to blow the vinyl chloride remaining in the hoses to a controlled recovery system as described in D or to an incinerator or other control device. Control loss from slip gauges by using magnetic or sonic liquid detectors and by venting the slip gauge to the controlled monomer recovery device described below in D or other device capable of control to 10 ppm vinyl chloride. This procedure is in commercial use.

2. Install canned pumps, double mechanical seals, or equivalent on all pumps in vinyl chloride service. This standard can be met by using canned pumps, pumps with double mechanical seals with a pressurized purge fluid between the seals, or pumps equipped with equivalent no leak seals. Canned pumps and double seal pumps are in common use in the chemical industry.

3. Install rupture disks and pressure gauges on equipment in vinyl chloride service to reduce safety valve leakage. This standard can be met by fitting a rupture disk between the vessel and the safety valve and using a pressure gauge to measure any pressure build-up between the disk and the valve. If the pressure gauge indicates a leak, the disk can be changed before the safety valve unseats.

4. All pressure relief valves in vinyl chloride service should be tied into a flare, recovery system or other control device capable of reducing the vinyl chloride content of the gas that is discharged to the atmosphere to less than 10 ppm.

5. Before maintenance or inspection of equipment displace all vinyl chloride in equipment to the controlled monomer recovery system as described below in D or to a control device capable of maintaining 10 ppm vinyl chloride in the exit stream. This standard can be met by providing a vinyl chloride venting system in the plant designed to vent all equipment before the equipment is opened for maintenance or entered for inspection. The vented gas would be recovered or sent to a control device capable of maintaining 10 ppm vinyl chloride in the exit stream. At least one plant now has a recovery system which controlls purging losses from all major pieces of equipment.

6. Prevent loss during vinyl chloride sampling by purging the sample flask back to the process. This standard can be met by placing sample connections so that the vinyl chloride purge flows from the process back into the process at a second point which is at a lower pressure. This method of sampling is in use in at least one vinyl chloride plant which has sampling conditions similar to polyvinyl chloride plants.

7. Detect fugitive emissions by installing a multipoint vinyl chloride detector and making routine checks of possible leak points by using portable sensing devices. Repair leaks promptly. The plant can meet the above standard by installing the necessary equipment and putting into practice a formal and detailed program of leak detection and reduction. A part of this program would be a record of the vinyl chloride (or hydrocarbon) concentrations measured near all possible leak points and the action taken to correct any leaks found.

8. Vacuum pump and steam jet exhausts are to be vented to an incinerator, carbon adsorber or other control device capable of reducing the vinyl chloride content of the atmospheric discharge to 10 ppm or less.

9. The amount of vinyl chloride in the process water that is to be exposed to the atmosphere is to be reduced to 0.0013 kg VCM/100 kg PVC produced. The vinyl chloride removed from the water shall be transferred to a controlled monomer recovery system or to a control device capable of control to 10 ppm vinyl chloride.

B. Control all emissions from the reactor and stripper by using a purge water system or equivalent. The use of a reactor purge water system reduces emissions to 0.001 kg VCM/100 kg (1b VCM/100 1b) PVC produced. The standard can be met by installing a purge water system or demonstrating that another system is equivalent. The purge water system is in operation at one polyvinyl chloride plant.

C. Eliminate all polymerization reactor relief discharges by injecting chemicals to stop the reaction (short stop), properly instrumenting the reactor to detect upset conditions or by venting the reactor contents to a gasholder.

D. Control emissions from the monomer recovery system to an exit concentration of less than 10 ppm. This standard can be met with a refrigerated vent condenser and an add-on control device such as a carbon adsorber, solvent absorber or incinerator. A carbon adsorber is in use in one plant and solvent absorbers are in use in several locations in the United States.

E. Control emissions from the slurry blend tanks and the centrifuge to an exit concentration of less than 10 ppm. This source can be controlled by carbon adsorption, solvent absorption, or other device. One producer uses a carbon adsorption unit to control this stream.

F. Control the total vinyl chloride emitted from all sources downstream of the stripper to less than 0.04 kg VCM/100 kg (1b VCM/100 1b) PVC produced. The specific sources con-

trolled would include any slurry blend tank, centrifuge vent, filter, dryer, conveyor air discharge or storage silo discharge and from all other in-plant sources. The standard can be met by using add-on control systems, stripping the resin to a residual vinyl chloride content of 400 ppm (dry basis), or stripping the resin to a residual vinyl chloride content such that the difference between the residual vinyl chloride in the resin coming out of the stripper and the resin which is shipped out of the plant is equal to 400 ppm.

Ethylene dichloride — Vinyl chloride plants

The emission standard for vinyl chloride plants would apply to plants that produce vinyl chloride by cracking ethylene dichloride (EDC) or by hydrochlorinating acetylene. Vinyl chloride emissions from ethylene dichloride plants are also regulated. The specific emission limits would be as follows:

A. Control fugitive emissions by using the following techniques.

1. Control transfer operations by purging loading hoses to a controlled monomer recovery device or other device capable of control to 10 ppm vinyl chloride. This standard can be met by using nitrogen to blow the vinyl chloride remaining in the hoses to a controlled recovery system or to an incinerator or other control device. This procedure is in commercial use.

2. Install canned pumps, double mechanical seals, or equivalent on all pumps in vinyl chloride service. This standard can be met by using canned pumps, pumps with double mechanical seals with a pressurized purge fluid between the seals, or pumps equipped with equivalent no leak seals. Canned pumps and double seal pumps are in common use in the chemical industry.

3. Install rupture disks and pressure gauges on equipment in vinyl chloride service to reduce safety valve leakage. This standard can be met by fitting a rupture disk between the vessel and the safety valve and using a pressure gauge to measure any pressure build-up between the disk and the valve. If the pressure gauge indicates a leak the disk can be changed before the safety valve unseats.

4. All pressure relief valves in vinyl chloride service should be tied into a flare, recovery system or other control device capable of reducing the vinyl chloride content of the gas that is discharged to the atmosphere to a concentration of less than 10 ppm.

5. Before maintenance or inspection of equipment displace all vinyl chloride in equipment to the controlled monomer recovery system or to a control device capable of maintaining 10 ppm vinyl chloride in the exit stream. This standard can be met by providing a vinyl chloride venting system in the plant designed to vent all equipment before the equipment is opened for maintenance or entered for inspection. The vented gas would be recovered or sent to a control device capable of maintaining 10 ppm vinyl chloride in the exit stream. A few plants now have recovery systems which control purging losses from all major pieces of equipment.

6. Prevent loss during vinyl chloride sampling by purging the sample flask back to the process. This standard can be met by placing sample connections so that the vinyl chloride purge flows from the process into one end of the sample flask and from the other end of the sample flask back into the process at a second point which is at a lower pressure. This method of sampling is in use at several vinyl chloride plants.

7. Detect fugitive emissions by installing a multipoint vinyl chloride detector and making routine checks of possible leak points by using portable sensing devices. Repair leaks promptly. The plant can meet the above standard by installing the necessary equipment and putting into practice a formal and detailed program of leak detection and reduction. A part of this program would be a record of the vinyl chloride (or hydrocarbon) concentration measured near all possible leak points and the action taken to correct any leaks found.

8. Vacuum pump and steam jet exhausts are to be vented to an incinerator, carbon adsorber or other control device capable of reducing the vinyl chloride content of the atmospheric discharge to 10 ppm or less.

9. The amount of vinyl chloride in the process water that is to be exposed to the atmosphere is to be reduced to 0.00057 kg per 100 kilograms (1b/100 1b) of vinyl chloride produced. The vinyl chloride removed from the water shall be transferred to a controlled monomer recovery system or to a control device capable of control to 10 ppm vinyl chloride.

B. Control all emissions from the ethylene dichloride distillation columns by incineration, carbon adsorption or other method to give the equivalent of 10 ppm vinyl chloride in the stream that is discharged to the atmosphere.

C. Control all emissions from the vinyl chloride distillation columns by incineration, carbon adsorption or other method to give the equivalent of 10 ppm vinyl chloride in the stream that is discharged to the atmosphere.

D. Control all emissions from the oxychlorination vent by incineration or other method to give the equivalent of 10 ppm vinyl chloride in the steam that is discharged to the atmosphere.

PROPOSED ENVIRONMENTAL PROTECTION AGENCY REGULATIONS ON IOWA COMPLIANCE SCHEDULES

40 FR 12813, March 21, 1975

ENVIRONMENTAL PROTECTION AGENCY

[40 CFR Part 52]

[FRL 347-1]

IMPLEMENTATION PLANS

Iowa: Approval of Compliance Schedules

On May 31, 1972 (37 FR 10842), pursuant to section 110 of the Clean Air Act and 40 CFR Part 51, the Administrator approved portions of State plans for implementation of the national ambient air quality standards. The State of Iowa submitted to the Environmental Protection Agency compliance schedules to be considered as proposed revisions to the approved plans pursuant to 40 CFR 51.6. 40 CFR 51.8 requires the Administrator to approve or disapprove compliance schedules submitted by the states. Therefore, the Administrator proposes the approval of the compliance schedules listed below.

The approvable schedules were adopted by the State and submitted to the Environmental Protection Agency after notice and public hearings in accordance with the procedural requirements of 40 CFR 51.4 and 51.6 and the substantive requirementss of 40 CFR 51.15 pertaining to compliance schedules. The compliance schedules have been reviewed and determined to be consistent with the approved control strategies of Iowa. Each approved revision establishes a new date by which the individual source must comply with the applicable emission limitation in the federally-approved State Implementation Plan. This date is indicated in the table below, under the heading "Final Compliance Date." In all cases, the schedules include incremental steps toward compliance with the applicable emission limitations. While the tables below do not include these interim dates, the actual compliance schedules do.

Under Iowa law, the compliance schedule is not enforceable after the date on