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August 10, 1983

To: SPI Vinyl Institute
SPI Vinyl Institute Manufacturing
Practices Committee
SPI Vinyl Institute Legal Committee

Re: EPA Review of the Vinyl Chloride Standard

Ladies and Gentlemen:

Enclosed is a copy of a letter sent to the Environmental Protection Agency (EPA) suggesting changes to the relief valve and manual vent valve discharge provisions of the vinyl chloride standard. A draft of the letter was circulated in July and revised at a meeting of the Manufacturing Practices Committee on August 4, 1983. Portions of the letter were also discussed at the joint meeting of the Manufacturing Practices Committee and the Legal Committee on August 4.

The letter has two alternate suggestions. They are a numerical limit approach and a work practice approach. Under the numerical limit approach, except for emergency discharges, discharges from a relief valve, rupture disc or manual vent valve in polyvinyl chloride (PVC) plants are limited to 50 pounds of vinyl chloride monomer (VCM) per million pounds of PVC production calculated on a 12-month rolling average basis. For ethylene dichloride/VCM plants, the suggested discharge level is 25 pounds VCM per million pounds of VCM production calculated on a 12-month rolling average basis.

Under the work practice approach, each facility would submit a written plan indicating how the source would prevent relief valve, rupture disc and manual vent valve discharges. The plan would indicate the training, maintenance, written procedures and other action the facility would routinely follow to prevent such discharges. Following

TEN 3237

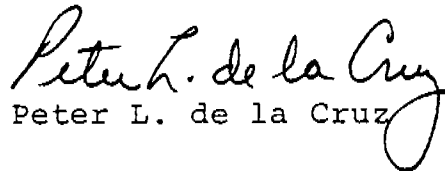
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approval of a plan by EPA, a source would be deemed to violate the discharge provisions only if it fails to comply with its plan. EPA would retain authority to require revisions to the plan if a facility's history of relief valve discharges indicates to the Agency that additional preventive measures are needed.

We will be discussing this with EPA personnel once they have had an opportunity to review our suggestion. The revised letter accommodates the comments submitted in response to the draft but we do wish to note that the letter is a first approach and more details and qualifications can be presented to the Agency subsequently. In addition, we will be pursuing the other administrative changes we have discussed with EPA previously.

If you have any comments or questions, please let us know.

Cordially yours,


Peter L. de la Cruz

Enclosures

Th Society of the
Plastics Industry, Inc.

SP

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New York, New York 10017
(212) 573-9400

August 9, 1983

Sheldon Meyers, Director
Office of Air Quality, Planning and Standards
Environmental Protection Agency
401 M Street, S.W.
Washington, D.C.

Re: Revision of the Vinyl Chloride Standard

Dear Mr. Meyers:

This letter follows your meeting with representatives of the Vinyl Institute on May 26, 1983. The meeting concerned the Environmental Protection Agency's (EPA) review of the vinyl chloride standard. 40 C.F.R. § 61.60 et seq. In particular, the discussion focused on problems presented by the relief valve and manual vent valve discharge provisions of the standard. Id. at 61.65(a) and 61.64(a)(3). You suggested that we provide written comments indicating the basis of our difficulty with this provision and suggestions for improvement.

The current discharge provisions are vague, non-specific, incomplete and have been ruled invalid in U.S. District Court. United States v. Ethyl Corp., Civ. Action No. 83-0120-A (E.D. La. July 1, 1983). They have created untold problems for industry and EPA and have resulted in unnecessary expenditures of public and industry monies. Data now exists upon which to base a technically defensible and statutorily preferred numerical-limitation "best available control technology" provision which, in conjunction with the entire standard, will continue to provide an "ample margin of safety" to the public at large.

EPA shoulders the primary responsibility to promulgate specific and clear rules of conduct for industry. Moreover, Section 112 requires the Administrator, after notice and opportunity for a public hearing, to accept an alternative means of emissions limitation if the reduction in emissions is at least equivalent to the reduction in emissions required by design, equipment or work practices. Also, Section 112 requires the Administrator to promulgate emissions standards whenever it becomes feasible to do so. The time is now appropriate for EPA to consider both of these actions because of existing data. Accordingly, specific industry proposals are contained herein.

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As you know, the current standard prohibits relief valve and manual vent valve discharges except for emergency relief discharges. The Society of the Plastics Industry, Inc. (SPI), through its PVC Safety Group, was deeply involved in the vinyl chloride standard proceedings. As proposed by EPA in 1975, the definition of an emergency relief discharge was "a discharge which could not have been avoided by taking all available measures to prevent the discharge." 40 Fed. Reg. 59,545 (Dec. 24, 1975) (emphasis added). Industry objected to the use of the ambiguous term "all available" in the definition and argued that reasonable practices and procedures to prevent relief valve and manual vent valve discharges should be sufficient. In response to these comments, EPA deleted the term "all available" from the final definition which lists an emergency discharge as one "which could not have been avoided by taking measures to prevent the discharge." 41 Fed. Reg. 46,565 (Oct. 21, 1976).

Involved members of industry, through discussions with the EPA staff at Research Triangle Park, believed that they had a working understanding of how the relief valve and manual vent valve discharge provisions would be interpreted, and this belief continued until long after the standard was promulgated. Quite simply, industry anticipated that if it employed reasonable practices and procedures to eliminate discharges, it would be considered to be in compliance with the standard. This view is reflected in the following portion of EPA's 1976 Guideline for Enforcement of the Vinyl Chloride Regulations (page 16).

Upon examination of these [relief valve and manual vent valve discharge] reports, the regional office should determine the following:

1. Was the discharge unavoidable?
2. If so, were the measures taken to prevent and/or remedy it sufficient?
3. If not, should any additional action be taken?

Beginning on February 23, 1978, the Division of Stationary Source Enforcement (DSSE) began issuing a series of memoranda which appeared to take the opposite tack from EPA's

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1976 guidelines. In fact, one memorandum would have required dischargers to install equipment designed to contain discharges if they continued to occur in spite of all the preventative efforts. Moreover, DSSE took the position that a relief discharge would be considered an emergency only if it occurred as the result of an unpreventable disaster. These interpretations seemed at odds with the statements in EPA's Standard Support and Environmental Impact Statement, Vol. II. EPA's comments in this volume do not suggest that all discharges are violations with the exception of those caused by natural disasters. It simply said "the goal of the standard is to prevent all discharges."

Application of this enforcement guidance varied among the EPA regions. Most regions did not respond in any way to industry relief valve and manual vent valve discharge reports. We are not aware that any regional office made a determination as to whether a discharge was unavoidable. We are aware that one regional office resolved discharge cases through the "Consent Order" process.

We remain today without clear guidance or rulemaking defining preventability. EPA inquiries have greatly increased through Section 114 requests to polyvinyl chloride (PVC) and vinyl chloride monomer (VCM) producers and to date, EPA has initiated eight separate legal actions concerning emergency releases.

These actions have led to unwarranted expenditures of public and private resources, deprived industry of a realistic standard of conduct, and created unwarranted and unfair adverse publicity for industry.

At the same time, actual VCM emissions from relief valve and manual vent valve discharges and other emission sources have decreased drastically. According to our statistics, which we believe to be the best available, the number of pounds of VCM released per million pounds of PVC production has decreased from approximately 125 pounds during 1978-1979, to 100 pounds in 1980, and to 50 pounds in 1981-1982. Similarly, the total amount of VCM from emergency releases (relief valves, rupture discs and manual vent valves) has decreased by 75% from over 400,000 pounds in 1978 to approximately 100,000 pounds in 1982.

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In its Standard Support Document (October 1975), EPA estimated that a typical discharge was approximately 5,000 pounds. By 1978-1979, this was reduced to 2,000 pounds and in 1981-1982, the average release was about 1,500 pounds. This constitutes a 70% reduction in the size of the typical discharge, a 75% reduction in the total amount discharged, and a 60% reduction in the amount released as a function of production.

This change is only part of a very successful industry effort to reduce all VCM emissions. Indeed, the 1982 TRW Report concluded that a typical PVC suspension plant had total emissions, including relief valve discharges, of about 67% less than the total amount that could be emitted under the present standard. TRW Report at 4-6 Table 4-4. Similar emission reductions have been achieved at ethylene dichloride (EDC)/VCM facilities. The TRW Report indicates that VCM emissions from a typical EDC/VCM facility are 56% less than the total amount that could be emitted under the present standard. Id. at 4-5 Table 4-3.

Industry continues to spend its time, money and resources in an on-going effort to limit relief valve and other VCM discharges. According to EPA estimates, the vinyl chloride industry will spend \$235.57 million on environmental compliance investments and \$765.72 million on operating costs during the 1977-1986 period (in 1977 dollars). The Cost of Clean Air and Clean Water, Annual Report of the Administrator of the Environmental Protection Agency, 96th Cong., 1st Sess., Doc. No. 96-38, p. 58 (Dec. 1979). A revision to this 1979 report is being prepared for EPA by Development Planning and Research Associates, Incorporated. Their initial draft estimates total operating costs for the 1981-1990 period to be \$981.46 million. A 1979 survey showed that this billion dollar effort was coupled with a 10-12% average loss in production capacity as a result of compliance requirements. TRW Report at 2-11.

While the industry has made great strides in reducing VCM emissions overall and in reducing relief valve and manual vent valve discharges in particular, the relief valve and manual vent valve discharge provisions of the standard have created major difficulties for industry and have led to disputes and litigation.

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The current state of affairs merits the effort needed to revise the relief valve and manual vent valve discharge provision of the standard. We are aware of EPA's efforts regarding revisions to the standard. In the last two years, SPI has reviewed a draft report by TRW Incorporated, submitted substantial comments and met with EPA and TRW representatives at Research Triangle Park. During the fall of 1981, we anticipated that the Agency would publish an Advanced Notice of Proposed Rulemaking, but this never materialized. Concerned with the Agency's review of the standard, SPI submitted proposed amendments to the vinyl chloride standard in July, 1982.

Our proposal resulted in additional correspondence and consultation with the Agency staff and another meeting at Research Triangle Park in November, 1982. In February, 1983, EPA issued a revised TRW Report and a draft chapter discussing regulatory alternatives but not addressing the relief valve, rupture disc or manual vent valve discharge provisions. In our opinion, these provisions must also be addressed. In the approximate seven to nine years since the development and promulgation of the current standard, industry has developed a much broader data base from which a more definitive and enforceable emergency release provision can now be based.

The PVC/VCM industry has already equipped its plants with release prevention equipment and procedures such as back-up power supplies, back-up equipment, employee training, and refined operating and maintenance procedures. In so doing, the quantity and frequency of VCM release has been greatly reduced. Despite the substantial preventive expenditures and herculean human efforts to avoid them, releases have occurred and will occur occasionally.

It is time to recognize the reality of the situation and to establish a more objective, definable, and justifiable emergency relief provision. We believe it is now appropriate for EPA to set a numerical limit on the allowable amount of VCM that could be discharged. Specifically, we believe the regulation should be amended to provide that relief valve, rupture disc and manual vent valve discharges may not exceed: (1) 50 pounds of VCM per million pounds of PVC production or (2) 25 pounds VCM for million pounds EDC/VCM production as a rolling 12-month average. Such a numerical limit would establish a

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clear requirement for industry and, at the same time, simplify EPA enforcement. As previously noted, the PVC/VCM industry has compiled an extensive historical data base regarding VCM emergency release cause, prevention, frequency and amount. We believe this data will support our proposed numerical limit as "best available control technology," and we believe that any ambient impact is clearly within the "ample margin of safety" requirements of Section 112. Specifying a suitable numerical limit, recognized to represent a de minimis amount, (or level which clearly justifies the government's conserving its resources by taking no action where there is no public health problem), would be consistent with a number of recent EPA actions and the United States Court of Appeals decision in Monsanto Co. v. Kennedy, 613 F.2d 947, 954 (D.C. Cir. 1979).

In the event EPA finds a numerical limit unacceptable, a relief valve, rupture disc and manual vent valve discharge prevention plan could be added to the current regulation as an alternate regulatory approach. Under such an approach, each facility would be required to submit a plan to the Agency detailing the measures the facility would routinely follow to prevent such discharges. Such plans could address training, maintenance, written procedures and other preventive actions. Following approval of the plan by EPA, sources would then be deemed to violate the Act only if a relief valve, rupture disc or manual vent valve occurred while the provisions of the plan were not being followed. EPA would retain authority to require revisions to the plan if a facility's history of discharges indicates to the Agency that additional preventive measures are needed.

By establishing specific work practices and other criteria to be followed, industry would have a specific list of actions that must be followed to comply with the standard. From the Agency's perspective, enforcement proceedings would be simplified because disputes over what constitutes an "emergency" should not arise. Rather, once it is demonstrated that a facility failed to follow its plan, the source would be subject to penalization under the enforcement provisions of the Clean Air Act.

We also believe that there are certain force majeure causes that constitute bona fide emergencies and, as such, should be incorporated into the standard. Specifically, we propose that relief valve, rupture disc and manual vent valve discharges

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resulting from the following causes be deemed not to be violations:

1. an act of God; or
2. an act of war; or
3. an act of sabotage; or
4. an unauthorized act or omission of an employee outside the scope of his employment; or
5. an unauthorized act or omission of a third party who is not an agency or contractor of the owner or operator of the stationary source.

This list is derived from Section 107 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (Superfund), 42 U.S.C.A. 9607. This list is also part of the Louisiana emission standards for hazardous air pollutants recently approved by EPA. See Section 76.2 of Louisiana Hazardous Pollutant Regulations (attached).

On July 1, 1983, United States District Court Judge John V. Parker dismissed an action by EPA against Ethyl Corporation for relief valve and manual vent valve discharges. Judge Parker held that the relief valve and manual vent valve provisions were "work practice" requirements that EPA lacked authority to promulgate in 1976. United States v. Ethyl Corp., Civil Action No. 83-0120-A (E.D. La. July 1, 1983). Should this decision prompt EPA to re-promulgate the vinyl chloride standard under the Agency's later-acquired authority, we most strongly urge that you consider our suggestions herein in so doing.

Providing clear rules of conduct for industry is a hallmark of good administration. Specific draft language for revising Sections 61.65(a) and 61.64(a)(3) is attached. We have also attached examples of the enforcement problems created by the vagueness of the current standard.

We look forward to discussing this matter with you or your staff after you have had an opportunity to consider our

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proposal. We appreciate the time and effort involved and believe that the end result will be in the best interest of not only EPA and the industry but also the public in general.

Cordially yours,

A handwritten signature in dark ink, appearing to read "G. R. Munger", written in a cursive style.

G. R. Munger
President

Enclosures

cc: Jack Farmer
Susan Wyatt

NUMERICAL LIMIT APPROACH

PROPOSED AMENDMENT TO THE VINYL CHLORIDE STANDARD

Delete section 61.64(a)(3); change the reference in section 61.65(b)(5) from 61.64(a)(3) to 61.65(a); and revise 61.65(a) to read as follows:

- (a) Relief Valve, Rupture Disc and Manual Vent Valve Discharges
 - (i) An emergency discharge means a discharge from a relief valve, rupture disc or manual vent valve in vinyl chloride service which could not have been avoided by taking reasonable measures to prevent the discharge. Discharges resulting from the following causes shall be deemed to be emergency discharges:
 - (A) an act of God; or
 - (B) an act of war; or
 - (C) an act of sabotage; or
 - (D) an unauthorized act or omission of an employee outside the scope of his employment; or
 - (E) an unauthorized act or omission of a third party who is not an agent or contractor of the owner or operator of the source.
 - (ii) Discharges, other than emergency discharges, from a relief valve, rupture disc or manual vent valve in polyvinyl chloride plants shall not exceed 50 pounds of vinyl chloride per million pounds of polyvinyl chloride production calculated on a 12-month rolling average basis.
 - (iii) Discharges, other than emergency discharges, from a relief valve, rupture disc or manual vent valve in ethylene dichloride/vinyl chloride plants shall not exceed 25 pounds VCM per million pounds of production calculated on a 12-month rolling average basis.

- (iv) The owner or operator of the source from which the relief valve, rupture disc, or manual vent valve discharge occurs, shall submit to the Administrator a quarterly report in writing containing information on the source, nature and cause of the discharge, the date and time of the discharge, the approximate total vinyl chloride loss during the discharge, the method used for determining the vinyl chloride loss, the action that was taken to prevent the discharge, and any new measures adopted to prevent future discharges.

PROPOSED AMENDMENT TO THE VINYL CHLORIDE STANDARD

Delete section 61.64(a)(3); change the reference in section 61.65(b)(5) from 61.64(a)(3) to 61.65(a); and revise 61.65(a) to read as follows:

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 - (i) An emergency discharge means a discharge from a relief valve, rupture disc or manual vent valve in vinyl chloride service which could not have been avoided by taking reasonable measures to prevent the discharge. Discharges resulting from the following causes shall be deemed to be emergency discharges:
 - (A) an act of God; or
 - (B) an act of war; or
 - (C) an act of sabotage; or
 - (D) an unauthorized act or omission of an employee outside the scope of his employment; or
 - (E) an unauthorized act or omission of a third party who is not an agent or contractor of the owner or operator of the source.
 - (ii) Within 90 days from the effective date of this regulation or 90 days prior to the start-up of new facilities, each owner or operator shall submit a written plan to prevent relief valve, rupture disc, or manual vent valve discharges for each facility subject to this standard.
 - (iii) The relief valve, rupture disc and manual vent valve discharge prevention plan submitted under subsection (ii), above, shall address, at a minimum, the following topics: training, written operating procedures, maintenance and inspection plans and equipment.

- (iv) The plan or an amendment or a revised plan shall be deemed approved 90 days after submission unless disapproved in writing by the Administrator.
- (v) Relief valve, rupture disc, and manual vent valve discharges from facilities complying with an approved plan shall be deemed to be emergency discharges.
- (vi) In light of a facility's history of relief valve, rupture disc or manual vent valve discharges, the Administrator may require that the plan be reviewed or revised in an effort to prevent discharges.
- (vii) The owner or operator of the source from which the relief valve, rupture disc, or manual vent valve discharge occurs shall submit to the Administrator a quarterly report in writing containing information on the source, nature and cause of the discharge, the date and time of the discharge, the approximate total vinyl chloride loss during the discharge, the method used for determining the vinyl chloride loss, the action that was taken to prevent the discharge, and any measures adopted to prevent future discharges.

TYPICAL CASE HISTORIES OF EPA ENFORCEMENT

1. Calvert City, Kentucky

Enforcement activity relating to a Calvert City VCM plant operated by BFGoodrich began with a telephone request for information on November 20, 1978. The information was submitted 10 days later. This was followed by four separate letters issued under Section 114 of the Clean Air Act and dated March 2, 1979, October 16, 1979, April 18, 1980, and August 1, 1980. A response to the last Section 114 letter was submitted on August 18, 1980. In addition to the Section 114 letters, a conference was held in Atlanta in April, 1979.

Two years after the last information was submitted, a complaint was filed in U.S. District Court. In all, approximately four years elapsed between the initial phone request for information and the filing of a complaint. BFGoodrich estimates that the vinyl chloride standard would have permitted the release of approximately 618,000 pounds of vinyl chloride assuming that there were no relief valve discharges. Including the relief valve discharges, the actual total amount of emissions was approximately 292,000 pounds. In other words, the facility emitted 326,000 pounds less than that allowed under the standard.

2. Louisville, Kentucky

BFGoodrich operates a PVC suspension and latex polymerization process facility in Louisville, Kentucky. The Agency sent Section 114 letters on November 2, 1979, March 14, 1980, June 27, 1980, and October 22, 1982. Conferences, inspection and plant visits were held. A complaint was filed in U.S. District Court on April 28, 1983, with 17 counts, all for relief valve discharges. In this instance, four and one-half years elapsed from the initial inspection to the filing of a complaint. Under the regulation, this facility could have emitted 445,000 pounds of VCM. Its actual total emissions were 115,000 pounds or "over-control" of 330,000 pounds.

3. Oklahoma City, Oklahoma

Conoco Chemicals Inc. produces PVC in Region VI and has not had a reportable release of vinyl chloride through a relief valve in over three years. Yet, it received a 114 letter on May 12, 1981. The letter requested information and documents on six relief valve discharges that occurred since the standard became effective. The company's internal review and document gathering effort took approximately 6 man-months. The 114 submittal was made on September 15, 1981.

A second 114 letter was delivered to the plant on July 7, 1983. EPA requested information on releases and incinerator bypasses that occurred between June 1981 and July, 1983. The plant has had no relief valve discharges or incinerator bypasses during that period.

On July 29, 1983, EPA sent a follow-up letter stating that they wanted information on any release of vinyl chloride not just those from relief devices. To the company's knowledge, no other PVC/VCM producer has been asked to submit such information.

EPA has not commented on the adequacy of the initial 114 letter response or notified the company with its determination of preventability.

4. Norco, Louisiana

Shell Chemical Company's Norco Plant has experienced 16 emergency relief valve discharges from its VCM plant since the effective date of the NESHAPs regulation. These releases ranged, in size, from 12 pounds to 14,000 pounds and occurred, by year, as follows:

- 1977 - 7 releases
- 1978 - 2 releases
- 1979 - 2 releases
- 1980 - NONE
- 1981 - 4 releases
- 1982 - 1 release
- 1983 - NONE

In each of these incidents, Shell properly notified EPA, Region VI, within the required 10 days. In 14 of these reports, Shell identified actions that would be taken to reduce the possibility of a future release for the same reasons.

In the five years (1977 to 1982) that covered all these reported releases, Shell never received either a verbal or written response from EPA. Shell's first inquiry from EPA on any of these releases was a Section 114 letter, dated June 7, 1982, similar to letters received by other producers in Louisiana.

In most of the reported incidents, Shell stated to EPA that it would install additional equipment, change a maintenance schedule, retrain and discipline operators, or change operating

procedures to reduce the possibility of future releases. Shell did not receive a response from EPA.

5. Addis, Louisiana

The Occidental Chemical Corporation large reactor, suspension PVC plant in Addis, Louisiana received a Section 114 letter from EPA, Region VI in June, 1982. It concerned emergency relief valve discharges and was answered in August, 1982. State and EPA officials, accompanied by a representative from the contractor hired by EPA for document review, visited the plant in November, 1982. A civil suit was filed in July, 1983 in the U.S. District Court seeking \$225,000 for nine non-reactor discharges in 1981 and 1982 plus \$50,000 for two of the nine discharges which were reported late.

In the same years, 1981 and 1982, the plant actually emitted a total of 36,240 pounds VCM from all emission sources including emergency discharges. On the same basis, the Standard would have allowed total emissions of 132,890 pounds VCM. The plant over-controlled by 96,650 pounds VCM, or 73% less than the Standard allowed even when the emergency discharges are included.

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July 14, 1983

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J. Merwin	✓
C. Tabata	✓

PC

JU Please return to G.

To: SPI Vinyl Institute
SPI Vinyl Institute Manufacturing
Practices Committee
SPI Vinyl Institute Legal Committee

Re: EPA Review of the Vinyl Chloride Standard

Ladies and Gentlemen:

Enclosed is a draft letter to the Environmental Protection Agency (EPA) suggesting changes to the relief valve discharge provisions of the vinyl chloride standard. The letter follows a May 26 meeting with EPA and a June 20 meeting of the Manufacturing Practices Committee. The minutes of that meeting are also attached.

The main feature of the draft letter is the suggestion that facilities be required to submit a relief valve discharge elimination plan to EPA detailing the training, maintenance, written procedures and other action the facility will routinely follow to prevent relief valve discharges. Following approval of a plan by EPA, a source would be deemed to violate the relief valve discharge provisions only if it fails to comply with its plan. EPA would retain authority to require revisions to the plan if a facility's history of relief valve discharges indicates to the Agency that additional preventive measures are needed.

The Manufacturing Practices Committee's current plan is to finalize the letter at its August 4, 1983 meeting. We would appreciate your sending comments through your representative on the Manufacturing Practices Committee. If that is not feasible, please contact us with your comments by August 3. In particular, we are requesting additional case histories like those in the enclosed draft letter (pages 10-12).

The EPA staff at Research Triangle Park indicated that an internal EPA working group meeting is tentatively scheduled for August. We hope to submit the letter in early

KELLER AND HECKMAN

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August so that it may be considered during that meeting. Prompt submission of any suggestions is also desirable in light of the recent District Court decision declaring the relief valve provisions of the standard unenforceable. While EPA has not determined whether it will appeal that decision or repromulgate the standard, it behooves us to act quickly in the event that the Agency decides to proceed with repromulgation.

While working on the draft letter to EPA, one research area was the cost imposed by the standard. In the past we have referred to a 1979 EPA report to Congress (copy enclosed). We recently obtained from EPA an updated draft report being prepared by Development Planning and Research Associates, Inc. A copy is enclosed for your review and comparison. One peculiarity is an assumption of zero investment costs after 1981. EPA is checking with the contractor on this point.

I look forward to seeing you on August 4 and 5. In the interim, if you have any comments or questions, please feel free to contact us.

Cordially yours,


Peter L. de la Cruz

Enclosures

TEN 3255

D R A F T

Sheldon Meyers, Director
Office of Air Quality, Planning and Standards
Environmental Protection Agency
41 M Street, S.W.
Washington, D.C.

Re: Revision of the Vinyl Chloride Standard

Dear Mr. Meyers:

This letter follows your meeting with representatives of the Vinyl Institute on May 26, 1983. The meeting concerned the Environmental Protection Agency's (EPA) review of the vinyl chloride standard. 40 C.F.R. § 61.60 et seq. In particular, discussion focused on problems presented by the relief valve discharge provision of the standard. Id. at § 61.65(a). You suggested that we provide written comments indicating the basis of our difficulty with this provision and suggestions for improvement.

There are a number of administrative provisions of the current standard which we have discussed previously with the Agency and which are being considered in EPA's current review of the vinyl chloride standard. The single major difficulty with the standard is the relief valve discharge provision. Our mutual goal is to establish a standard of performance that is reasonable, adequately protects the public health and provides guidance to the industry while retaining enough flexibility to incorporate improved control technologies.

A. Defining the Problem

The current standard prohibits relief valve discharges except for emergency relief discharges. An emergency relief discharge is defined as a discharge which "could not have been avoided by taking measures to prevent the discharge."

The Society of the Plastics Industry, Inc. (SPI), through its PVC Safety Group and now through The Vinyl Institute, was deeply involved in the vinyl chloride standard proceedings. When the standard was promulgated, we had a clear understanding of the relief valve discharge provisions. Quite simply, industry anticipated that if it made a best effort to eliminate discharges, it would be considered to be in compliance with the standard. This view is reflected in EPA's 1976 Guideline for Enforcement of the Vinyl Chloride Regulations (at 16).

Upon examination of these [relief valve discharge] reports, the regional office should determine the following:

- (1) was the discharge unavoidable
- (2) if so, were the measures taken to prevent and/or remedy it sufficient;
- (3) if not, should any additional action be taken.

This rule of reason was abandoned by the Agency within two years, as reflected in the following passage from a May 18, 1978, memorandum by the Director of EPA's Division of Stationary Source Enforcement.

A relief discharge will be considered an emergency discharge only if it occurs as the result of an unpreventable disaster (i.e., tornado, hurricane, earthquake, flood, riot, sabotage, etc.). Discharges which could have been prevented through the use of backup equipment and/or proper operation and maintenance procedures will be considered violations of § 61.65(a). Some examples of conditions under which discharges will be considered violations include power outages, operator errors, preventable equipment failures and malfunctions, etc. In these instances, vinyl chloride releases could be avoided through use of backup power supplies, backup equipment, employee training, and proper operation and maintenance procedures.

This restrictive approach has been the hallmark of EPA's enforcement efforts. For example, EPA recently represented in civil enforcement proceedings that the relief valve and manual vent valve discharge provisions "are emission standards setting a quantifiable limit of zero emissions but which also allow the violator to assert an affirmative defense of emergency discharge under certain conditions." United States v. Ethyl Corp., Civil Action No. 83-0120-A (M.D. La. July 1, 1983) (slip op. at 8).

EPA's radical change in interpretation since the vinyl chloride standard was initially promulgated has created a serious problem, lead to unwarranted expenditures of public and private resources, deprived industry of any realistic standard of conduct, and robbed a significant regulatory provision of its intended meaning. Such a state of affairs merits the effort needed to

revise the discharge provisions and re-establish a rational framework.

In the last two years SPI has reviewed a draft report by TRW, Inc., submitted substantial comments and met with EPA and TRW representatives in Research Triangle Park. During the fall of 1981, we anticipated that the Agency would publish an Advanced Notice of Proposed Rulemaking but this never materialized. Concerned with the Agency's review of the standard, SPI submitted proposed amendments to the vinyl chloride standard in July, 1982. This proposal resulted in additional correspondence and consultation with the Agency staff and another meeting in Research Triangle Park in November, 1982. In February, 1983 EPA issued a revised TRW Report and a draft chapter discussing regulatory alternatives but not addressing the relief valve discharge question. The letter is a continuation of our efforts to correct deficiencies in the standard.

B. Summary of Suggestions

1. Fixed Quantitative Limit

One solution would be to set a quantitative limit on the allowable amount of vinyl chloride monomer (VCM) that could be discharged. For example, the regulation could be amended to provide that relief valve and manual vent valve discharges may not exceed 50 pounds of VCM for every million pounds of polyvinyl

chloride (PVC) or VCM production during a calendar year. A numerical limit would establish a clear goal for industry and simplify EPA enforcement activity.

2. Relief Valve Discharge Prevention Plan

As an alternative to a finite limit, we suggest that a relief valve discharge prevention plan be added to the current regulation. Each facility would be required to submit a plan to the Agency detailing the training, maintenance, written procedures and other actions the facility will routinely follow to prevent relief valve discharges. Following approval of the plan by EPA, sources would be deemed to violate the Act and the relief valve discharge provisions if they fail to comply with the plan. EPA would retain authority to require revisions to the plan if a facility's history of relief valve discharges indicates to the Agency that additional preventive measures are needed.

By establishing specific work practices and other criteria to be followed, industry would have a clear and specific list of actions that must be followed to comply with the standard. From the Agency's perspective, enforcement proceedings will be simplified because disputes over what constitutes an "emergency" should not arise. Rather, once it is demonstrated that a facility failed to follow its plan, the source would be subject to penalization under the enforcement provisions of the Clean Air

Act. Moreover, the preparation and review of plans will facilitate the exchange of relief valve discharge prevention techniques and information throughout industry and between industry and EPA. These improved communications should assure continuing reduction of discharges throughout industry.

We do not anticipate that review and approval of the plans by EPA will be inordinately time consuming since the plans only address one element of the vinyl chloride standard. Indeed, we suspect that the total amount of Agency resources and funds expended on the vinyl chloride standard will decrease when the relief valve provision is clarified through the facility plans.

Providing clear rules of conduct for industry is a hallmark of good administration. Under the proposal, the Agency's involvement in establishing plans will ensure the minimization of relief valve discharges.

Specific draft language for revising section 61.65(a) is attached to this letter. The remainder of the letter provides examples of the enforcement problems created by the current standard and details the basis for the relief valve discharge elimination plan. In addition, it sets forth a suggestion to incorporate EPA's current interpretation into the standard.

C. Industry Compliance Efforts

Existing safety regulations and insurance company requirements mandate the use of safety relief devices on the pressurized equipment used to produce VCM and PVC. See Vinyl Chloride--A Review of National Emission Standards at pp. 3-35 and 4-17 (EPA) (Feb. 1982) (hereinafter referred to as the TRW Report). The vinyl chloride standard prohibits relief valve discharges except for emergency relief discharges.

As proposed by EPA in 1975, the definition of an emergency relief discharge was "a discharge which could not have been avoided by taking all available measures to prevent the discharge," 40 Fed. Reg. 59,545 (Dec. 24, 1975) (emphasis added). Industry objected to the use of the term "all available" in the definition and argued that reasonable practices and procedures to prevent relief valve discharges should be sufficient. In response to these comments, EPA deleted the term "all available" from the final definition which lists an emergency relief discharge as one "which could not have been avoided by taking measures to prevent the discharge." 41 Fed. Reg. 46,565 (Oct. 21, 1976).

Involved members of industry, through discussions with the EPA staff at Research Triangle Park, believed that they had a working understanding of how the relief valve discharge provisions would be interpreted. Quite simply, industry anticipated that if it made a best effort to eliminate discharges, it would be considered to be in compliance by the Agency.

According to our statistics, the number of pounds of VCM released per million pounds of PVC production has decreased from approximately 125 pounds during 1978-1979, to 100 pounds in 1980, and to 50 pounds in 1981-1982. Similarly, the total amount of VCM from emergency releases (relief valves, rupture disks, and manual vent valves) has decreased by one-fourth from over 400,000 pounds in 1978 to approximately 100,000 pounds in 1982. In its Standard Support Document (Oct. 1975), EPA estimated that a typical discharge was approximately 5,000 pounds (2,260 kg). By 1978-1979, this was reduced to 2,000 pounds and in 1981-1982, the average release was about 1,500 pounds. This constitutes a 70% reduction in the size of the typical discharge, a 75% reduction in the total amount discharged, and a 60% reduction in the amount released as a function of production.

This change is only part of a very successful industry effort to reduce all VCM emissions. Indeed, the 1982 TRW report concluded that a typical PVC suspension plant had total emissions, including relief valve discharges, of about 67% less than the total amount that could be emitted under the present standard. TRW Report at 4-6 Table 4-4.

In spite of these efforts, EPA enforcement activity has increased, as witnessed by the filing of two new civil enforcement actions in July, 1983. Nonetheless, in the face of the Agency's "punishment for progress" policy, the industry con-

tinues to spend its time, money, and resources in an on-going effort to limit relief valve and other discharges. According to EPA estimates, the vinyl chloride industry will spend \$235.57 million on investments and \$765.72 million on annual costs during the 1977-1986 period (in 1977 dollars). The Cost of Clean Air and Clean Water, Annual Report of the Administrator of the Environmental Protection Agency, 96th Cong., 1st Sess., Doc. No. 96-38, p. 58 (Dec. 1979). A revision to this 1979 report is being prepared for EPA by Development Planning and Research Associates, Inc. Their initial draft estimates total annual costs for the 1981-1990 period to be \$981.46 million. A 1979 survey also showed that this billion dollar effort was coupled with a 10-to-12% average loss in production capacity as a result of compliance requirements. TRW Report at 2-11.

While the industry has made great strides in reducing VCM emissions overall and in reducing relief valve discharges in particular, the relief valve discharge provisions of the standard have created a major difficulty for industry and led to disputes and litigation. We view this provision as the major substantive difficulty with the standard.

Past EPA action has obscured the meaning of the relief valve discharge provisions. The lack of a clear standard has placed a drain on Agency resources. For example, EPA has had a continuing review of the vinyl chloride standard for several

years. TRW provided an initial review of the standard, and it is our understanding that Radian Corporation has now been hired to assist in the ongoing Agency review. In addition, both regional and enforcement personnel have expended a considerable amount of time on these matters. Indeed, since there are no clear guidelines, we have witnessed variations in enforcement practices among the different EPA regions. At present, there are at least five active court cases and a number of Agency inquiries.

D. Case Histories of EPA Enforcement

A main complaint of industry is that without objective standards for compliance, there is no certainty that EPA will consider a particular relief valve discharge to be an emergency discharge. The following are some brief case histories of enforcement activity designed to provide concrete examples of the delay and uncertainty generated by the relief valve discharge provision.

1. Calvert City, Kentucky

Enforcement activity relating to a Calvert City VCM plant operated by BF Goodrich began with a telephone request for information on November 20, 1978. The information was submitted 10 days later. This was followed by four separate letters issued under Section 114 of the Clean Air Act and dated March 2, 1979, October 16, 1979, April 18, 1980, and August 1, 1980. A response to the last Section 114 letter was submitted on August

18, 1980. In addition to the Section 114 letters, a conference was held in Atlanta in April, 1979.

Two years after the last information was submitted, a complaint was filed in U.S. District Court. In all, approximately four years elapsed between the initial phone request for information and the filing of a complaint. BF Goodrich estimates that the vinyl chloride standard would have permitted the release of approximately 618,000 pounds of vinyl chloride assuming that there were no relief valve discharges. Including the relief valve discharges, the actual total amount of emissions was approximately 292,000 pounds. In other words, the facility emitted 326,000 pounds less than that allowed under the standard.

2. Louisville, Kentucky

BF Goodrich operates a PVC suspension and latex polymerization process facility in Louisville, Kentucky. The Agency sent Section 114 letters on November 2, 1979, March 14, 1980, June 27, 1980, and October 22, 1982. Conferences, inspection and plant visits were held. A complaint was filed in U.S. District Court on April 28, 1983, with 17 counts, all for relief valve discharges. In this instance, four and one-half years elapsed from the initial inspection to the filing of a complaint. Under the regulation, this facility could have emitted 445,000 pounds of VCM. Its actual total emissions were 115,000 pounds or "over-control" of 330,000 pounds.

3. Region VI PVC Facility

Another SPI member company producing PVC in Region VI has not had a reportable release of vinyl chloride through a relief valve in over three years. Yet, it received a 114 letter on May 12, 1981. The letter requested information and documents on six relief valve discharges that occurred since the standard became effective. The company's internal review and document gathering effort took approximately 6 man-months. The 114 submittal was made on September 15, 1981.

EPA has not commented on the adequacy of the response or notified the company with its determination of preventability. The company is assuming that EPA considers the 114 response adequate and that the releases were considered emergencies.

E. Force Majeure Causes

Given the difficulties presented by the relief valve provision of the standard, some change is needed. It is not possible to develop a comprehensive list of all the events or effects that can be reasonably anticipated or controlled. There are a number of events, which we will refer to as force majeure, that constitute bona fide emergencies. We propose that relief valve discharges resulting from the following causes be deemed emergencies:

- (1) an act of God; or

- (2) an act of war; or
- (3) an act of sabotage; or
- (4) an unauthorized act or omission of an employee outside the scope of his employment;
or
- (5) an unauthorized act or omission of a third party who is not an agent or contractor of the owner or operator of the stationary source.

This list is derived from Section 107 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Superfund), 42 U.S.C.A. § 9607. This list is also part of the Louisiana emission standards for hazardous air pollutants recently approved by EPA. See Section 76.2 of Louisiana Hazardous Pollutant Regulations.

**F. Relief Valve Discharge
Elimination Plan**

We also suggest that each facility be required to develop a specific plan to prevent relief valve discharges. At a minimum, the plan should address training, written standard operating procedures to be followed during the production process, preventive maintenance/inspection plans and equipment. Facilities could add additional topics as warranted. Plans would be subject to mandatory periodic review every three to five years.

Under our proposal, facilities would be required to submit the plans to EPA within 90 days after the amended standard becomes final. EPA would review the plans for completeness and sufficiency. We suggest that EPA approve or disapprove a plan within 90 days after receipt. When the plan is approved, the source would be obligated to strictly comply with its relief valve discharge elimination plan. If, releases occur at a frequency and level EPA deems inappropriate, it may require revision of the plan to further reduce relief valve discharges.

When a facility is operating in compliance with an approved plan, it would be considered in compliance with the relief valve discharge provision of the standard. Failure to adhere to the plan would be punishable as a violation of the standard. Discharges occurring when there is an approved plan are not subject to enforcement actions.

G. Benefits

We anticipate that the specific nature of the plan will facilitate EPA enforcement if a source violates its plan. Proof that the plan had not been observed would constitute a demonstration that the standard had been violated. This should eliminate or greatly reduce any question concerning whether a particular discharge constituted an "emergency" within the meaning of the

vinyl chloride standard. Similarly, if the Agency feels that the work practices, procedures or other techniques employed to prevent relief valve discharges are inadequate, the ability to require revision of the plan permits the Agency to force changes without court action. If a facility is operating without an approved plan, relief valve discharges would be subject to Agency enforcement action as under the current standard.

The major benefit for industry will be the development of specific obligations that will constitute compliance with the standard. It also will provide an administrative mechanism short of litigation for resolving concerns relating to relief valve discharges.

The plan concept was derived from EPA's regulations for a Spill Prevention Control and Countermeasure Plans (SPCC Plans) under the Clean Water Act. 40 C.F.R. § 112.2. Our proposal is more demanding than the SPCC Plan regulations and would involve somewhat increased Agency supervision at the outset. However, given the small number of facilities that would file relief valve discharge elimination plans, we do not believe that the amount of Agency resources involved is unjustified. Although we disagree with EPA's enforcement activity, if the Agency deems this issue important enough to litigate, it must be important enough to merit a prospective solution as opposed to retrospective litigation.

The plan proposal is consistent with current EPA enforcement goals. A recently-filed complaint sought, among other things, that the facility "submit for EPA approval a continuing program . . . to prevent future discharges" United States v. Borden, Inc., (D. Mass.) (Complaint, p. 7).

On July 1, 1983, United States District Court Judge John V. Parker dismissed an action by EPA against Ethyl Corporation for relief valve discharges. Judge Parker held that the relief valve provisions were "work practice" requirements that EPA lacked authority to promulgate in 1976. United States v. Ethyl Corp., Civil Action No. 83-0120-A (July 1, 1983). That decision may prompt EPA to re-promulgate a vinyl chloride standard under the Agency's later-acquired authority. We most strongly urge that you consider our suggestion for a relief valve discharge elimination plan. We have attached draft language that might serve as a starting point for amending the regulation.

We look forward to discussing this matter with you or your staff after you have had an opportunity to consider our proposal. We appreciate the time and effort involved and believe that the end result will be in the best interest of the public, EPA and industry.

Cordially yours,

G. R. Munger
President

Enclosures

Draft - July 13, 1983

MANUFACTURING PRACTICES COMMITTEE
VINYL INSTITUTE
THE SOCIETY OF THE PLASTICS INDUSTRY, INC.

SUGGESTED AMENDMENTS TO
THE VINYL CHLORIDE STANDARD

40 C.F.R. § 61.65.

An owner or operator of an ethylene dichloride, vinyl chloride, and/or polyvinyl chloride plant shall comply with the requirements of this Section.

(a) Relief Valve and Rupture Discharge.

(i) Except for an emergency discharge, there is to be no discharge to the atmosphere from any relief valve or rupture disk on any equipment in vinyl chloride service. An emergency discharge means a discharge which could not have been avoided by taking measures to prevent the discharge.

(ii) Discharges resulting from the following causes shall be deemed to be emergency discharges:

(A) an act of God; or

(B) an act of war; or

(C) an act of sabotage; or

(D) an unauthorized act or omission of an employee outside the scope of his employment; or

(E) an unauthorized act or omission of a third party who is not an agent or contractor of the owner or operator of the stationery source; or

(F) any one or a combination of the above circumstances.

(iii) Within 90 days from the effective date of this regulation or 90 days prior to the start-up of new facilities, each owner or operator shall submit a written plan to eliminate relief valve discharges for each facility subject to this standard.

(iv) The relief valve discharge elimination plan submitted under subsection (iii) above shall address, at a minimum, the following topics: training, written operating procedures, maintenance and inspection plans, and equipment.

(v) The Administrator shall approve or disapprove a plan within 90 days after submission.

(vi) Relief valve discharges from facilities with an approved plan shall be deemed to be emergency releases.

(vii) In light of a facility's history of relief valve discharges, the Administrator may require that a plan be reviewed or revised in an effort to reduce relief valve discharges. Plans shall be reviewed at least once every five years.

(viii) The owner or operator of the source from which the relief valve or rupture disk discharge occurs shall submit to the Administrator a quarterly report in writing containing information on the source, nature and cause of the discharge, the date and time of the discharge, the approximate total vinyl chloride loss during the discharge, the method used for determining the vinyl chloride loss, the action that was taken to prevent the discharge, and measures adopted to prevent future discharges.

The Society of the Plastics Industry, Inc.
Vinyl Institute
Manufacturing Practices Committee

Borden Dairy Division
Columbus, Ohio

Monday, June 20, 1983
9:30 a.m.

MINUTES

Attendees:

W.C. Holbrook, Chairman, B.F. Goodrich Co.
6100 Oak Tree Boulevard, Cleveland, Ohio 44131

Joseph C. Ledvina, Conoco Chemicals Co.
P.O. Box 19029, Houston, Texas 77224

J.A. Mullins, Shell Oil Co.
1 Shell Plaza, Houston, Texas 77001

W. Bailey Barton, Borden, Inc.
180 East Broad Street, Columbus, Ohio 43215

Peter L. de la Cruz, Keller & Heckman
1150 17th Street, N.W., Washington, D.C. 20036

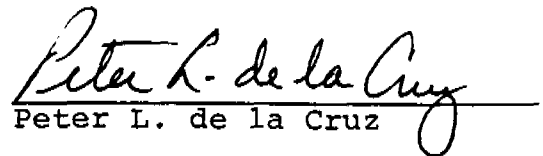
1. Chairman Holbrook called the meeting to order at 9:30 a.m.
2. The attendees discussed the current status of the Environmental Protection Agency's (EPA) review of the vinyl chloride standard and related enforcement activity. The EPA staff at Research Triangle Park is continuing to review the standard, but their progress seemed slow and uncertain. Based on this, representatives from the Committee met with Sheldon Meyers, Director of EPA's Office of Air Quality, Planning and Standards. Mr. Meyers recommended that the Committee communicate its concerns with the vinyl chloride standard in a letter to him.
3. A substantial discussion ensued concerning the various ways to approach the letter to Meyers and what suggestions the Committee should present. The central problem is defining the term "emergency release." Mr. Mullins suggested using a concept derived from EPA's Spill Prevention Control and Counter-Measure Plan (SPCC Plan) under the Clean Water Act. The plans would cover emergency discharges and be submitted to EPA for approval. Mr. Holbrook reviewed various criteria or procedures that might be specified as satisfactory work practices for EPA.

Minutes
The Society of the Plastics
Industry, Inc.
Manufacturing Practices Committee
June 20, 1983
Page 2

These would include programmed preventative maintenance, formal operator training, written operating procedures and other factors. Mr. Barton suggested using a flat numerical criteria setting some permissible pound limit for discharges. Discharges above that level would be subjected to a penalty based on a fixed dollar figure excess emissions. Other alternatives discussed included the definition of emergency used in the Louisiana vinyl chloride standard, and a de minimis discharge provision.

4. Following this discussion of alternatives, the Committee outlined a draft letter to Sheldon Meyers suggesting the use of an emergency discharge prevention plan for each facility. (A copy of the draft letter, which will be discussed at the August 4, 1983 meeting, is enclosed.)
5. Mr. Ledvina discussed materials released by the National Clean Air Act Coalition in conjunction with congressional reauthorization proceedings. Among other things, the Coalition materials stated that the vinyl chloride standard adopted by EPA in 1976 provided for less controls than were present at existing facilities and that the standard made "no perceptible change in the price of the products." After some discussion, Mr. Ledvina agreed to draft a short letter of rebuttal that would be submitted for approval by the Institute.
6. The Committee made tentative plans to meet in early August.
7. The meeting was adjourned at 2:30 p.m.

Respectfully submitted,


Peter L. de la Cruz

100TH CONGRESS }
1st Session }

SENATE

{ DOCUMENT
No. 100-314

THE COST OF CLEAN AIR AND CLEAN WATER

ANNUAL REPORT

OF THE

ADMINISTRATOR OF THE ENVIRONMENTAL
PROTECTION AGENCY

TO THE

CONGRESS OF THE UNITED STATES

IN COMPLIANCE WITH

SECTION 312(c) OF THE CLEAN AIR ACT, AS AMENDED

AND

SECTION 516(b) OF THE FEDERAL WATER POLLUTION
CONTROL ACT AMENDMENTS OF 1972



DECEMBER 1979

U.S. GOVERNMENT PRINTING OFFICE

WASHINGTON : 1979

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5.2 VINYL CHLORIDE

Description of Sector

This sector of the chemical industry is delineated by processes from which vinyl chloride is emitted to the atmosphere. The products of such processes include:

- Ethylene dichloride (EDC) manufactured by oxychlorination
- Vinyl chloride monomer (VCM)
- Polyvinyl chloride (PVC)
- Copolymers of PVC.

Vinyl chloride is produced in the United States by two methods: the addition of hydrogen chloride to acetylene and the dehydrochlorination of ethylene dichloride. Only two plants in the United States use the first method.

Ethylene dichloride is also produced by two methods: the catalytic chlorination of ethylene with chlorine and the oxychlorination of ethylene with hydrogen chloride and oxygen.

The major use for ethylene dichloride in the United States is in the production of vinyl chloride. It is usually convenient and economical to manufacture both products in the same plant in a balanced operation in which part of the ethylene dichloride requirement for the plant is produced by the chlorination of ethylene with chlorine. After purification, the ethylene dichloride is converted to vinyl chloride and hydrogen chloride in a cracking furnace operating at about 510 C (950 F) (dehydrochlorination of ethylene dichloride). Hydrogen chloride is recovered and recycled to an oxychlorination process for the conversion of additional ethylene to additional ethylene dichloride (oxychlorination of ethylene). In this manner, essentially all of the chlorine that is used eventually winds up in vinyl chloride.

Polyvinyl chloride (and copolymers) is produced by the catalyzed polymerization of vinyl chloride (and comonomers).

Four types of processes are used in the United States to effect this polymerization. These processes and the percentage of total U.S. capacity

each represented in 1973 are as follows: suspension polymerization (78 percent), dispersion or emulsion polymerization (13 percent), bulk polymerization (6 percent), and solution polymerization (3 percent).

The production of ethylene dichloride, vinyl chloride, and polyvinyl chloride was 1.15, 0.91, and 0.83 million metric tons (1.27, 1.0 and 0.91 million short tons), respectively, in 1965. By 1974 these had grown to 4.2, 2.60, and 2.15 million metric tons (4.6, 2.9, and 2.4 million short tons). Growth of the production of these chemicals is projected to continue at an average annual rate of approximately 3.5 percent. This report and its estimations of air-pollution control costs are based on the current regulations for controlling vinyl chloride emissions. It is not believed that meeting these regulations will have a particularly adverse impact on the production of polyvinyl chloride and its precursors. However, if certain contemplated control regulations are promulgated, such as zero discharge of vinyl chloride emissions from all establishments, the costs may be higher.

Description of Pollution and Controls

The primary air pollutant of concern in the manufacture of ethylene dichloride (by oxychlorination), vinyl chloride, and polyvinyl chloride is vinyl chloride monomer (VCM). When VCM is incinerated as a means of control, hydrogen chloride becomes a by-product air pollutant.

Regulations

Emissions of vinyl chloride have been recently regulated as a hazardous air pollutant under Section 112 of the Clean Air Act, as amended. The standard, as promulgated and published in the Federal Register (41FR46560-46573, October 21, 1976), is designed to minimize vinyl chloride emissions to the level attainable with best available control technology. The limitations are summarized in Table 5.2-1.

The contributions of vinyl chloride emissions from the uncontrolled sources in an EDC-VCM plant are shown in Table 5.2-2.

Table 5.2-1.
Vinyl Chloride Emission Limitations

Ethylene dichloride-vinyl chloride plants	Vinyl Chloride Emissions
EDC formation and purification	10 ppm
VCM formation and purification	0.01 g/kg (0.02 lb/ton)
Oxychlorination process	0.2 g/kg (0.4 lb/ton) EDC
Relief valve discharges	prohibited*
Manual venting of gases	prohibited*
Polyvinyl chloride plants	
Equipment through stripper	10 ppm
Equipment following stripper	2000 ppm (dispersion resins) 400 ppm (all other resins)
Reactor openings	0.02 g/kg (0.04 lb/ton) PVC
Relief valve discharge	prohibited*
Manual venting of gases	prohibited*

* Except under emergency conditions.

Table 5.2-2.
Uncontrolled Sources of Vinyl Chloride
Emissions in VCM Production

Emission Source	Percent of Uncontrolled Emissions at Average Plant
Vinyl chloride formation and purification	54
Fugitive emission sources	27
Ethylene dichloride purification	11
Oxychlorination reactor	8
Total	100

The best available control technology for balanced EDC-VCM plants involves the collection and incineration of all emissions from the formation and purification of vinyl chloride and ethylene dichloride (by oxychlorination) and the control of fugitive emission sources. Fugitive emissions can be controlled by the use of:

- multipoint and portable detectors,
- control systems on sampling and transfer operations,
- collection header systems to connect equipment undergoing maintenance or inspection to either the monomer recovery system or to an add-on control device,
- rupture discs and pressure gauges prior to safety discharge valves on pressure vessels, and
- dual mechanical seals on pumps and compressors.

It is anticipated that fugitive emissions can be reduced by 90 percent by applying these above measures in the typical plant. Incineration should reduce emissions from the other sources by at least 95 percent.

Polyvinyl chloride is produced by suspension (78 percent), dispersion or emulsion (13 percent), bulk

(6 percent), and solution (3 percent) polymerization processes. The percentages refer to 1973 capacity. The contributions of various emission sources to total emissions of vinyl chloride differ somewhat from process to process, but the breakdown shown in Table 5.2-3 for the dispersion process is generally typical for other processes:

Table 5.2-3.
Uncontrolled Sources of Vinyl Chloride
Emissions in PVC Production (dispersion process)

Emission Source	Total Uncontrolled Emissions at Average Plant, Percent
Sources following stripper*	33
Stripper	8
Fugitive emissions sources	38
Monomer recovery system	12
Relief valve discharge	5
Reactor opening	4
Total	100

* Slurry blend tanks, concentration, dryers, bulk storage, etc.

The best available control technology for PVC plants varies somewhat with the type of process. For all processes, fugitive emissions can generally be controlled through containment, capture, and ducting of emissions to a control system, and early leak detection and repair. Losses on opening equipment can be reduced by using water to displace VCM to a control system before opening the equipment. Reactor relief valve discharges can generally be eliminated by chemically short-stopping the polymerization reaction or manually venting gases to a recovery system. Strippers are used to remove vinyl chloride from the polymer, and carbon adsorption systems can be used to recover the monomer from the stripper.

Improved stripper effectiveness solves most of the emissions problems in operations that follow the stripper, including emissions of VCM in PVC fabrication operations, although incineration with scrubbing to remove HCl is an alternative control strategy. Emission control effected by the stripper, however, is not uniformly applicable to all processes. Current technology is available to strip the majority of resins except dispersion resins to 400 ppm or lower. Dispersion resins, however, are sensitive to the high temperatures used in stripping other resins, but they can be stripped effectively to 2,000 ppm. Most of the remaining VCM is removed from dispersion resins in the drying process.

Suspension resins and dispersion resins are polymerized in water and are ultimately blended in water slurry. This water contains some vinyl chloride, which can be removed by steam distillation. No water is involved in the bulk polymerization

process, so this emission source does not exist for the bulk process. However, this process accounts for only about 6 percent of U.S. PVC production. No consideration is given here to the solution process, which is practiced by only one company

and accounts for only about 3 percent of production.

Industry costs for air-pollution abatement in the period 1970-1986 are provided in Table 5.2-4.

TABLE 5.2-4. VINYL CHLORIDE INDUSTRY AIR POLLUTION CONTROL COSTS
(IN MILLIONS OF 1977 DOLLARS)

	1977	CUMULATIVE PERIODS		
		1970-77	1977-81	1977-86
INVESTMENT				
EXISTING PLANTS.....	71.00	71.00	144.14	144.14
NEW PLANTS.....	8.39	16.48	36.88	91.43
TOTAL.....	79.39	87.47	181.02	235.57
ANNUALIZED COSTS				
ANNUAL CAPITAL				
EXISTING PLANTS.....	11.55	11.55	128.15	303.21
NEW PLANTS.....	2.68	4.00	25.45	93.53
TOTAL.....	14.24	15.55	153.60	396.74
O&M				
EXISTING PLANTS.....	10.73	10.73	118.98	281.52
NEW PLANTS.....	2.47	3.69	23.47	87.45
TOTAL.....	13.20	14.41	142.45	368.98
ALL ANNUAL COSTS.....	27.44	29.97	296.05	765.72

NOTE: COSTS SHOWN FOR YEAR SPANS ARE FROM JULY 1ST OF THE FIRST YEAR TO JUNE 30TH OF THE SECOND YEAR LISTED.
NOTE: ANNUAL CAPITAL COSTS ARE THE COMBINATION OF: (1) STRAIGHT-LINE DEPRECIATION AND (2) INTEREST.

Development Planning and Research Associates, Inc.
P.O. Box 727, Manhattan, Kansas 66502

Issued by DPRA _____
Date Initials

EPA Review _____
Date Initials

Received by DPRA _____
Date Initials

1981 COST OF CLEAN

INITIAL DRAFT

CHAPTER REVIEW PACKAGE

✓ A5.2 VINYL CHLORIDE

Contract No. 68-01-6103
EPA Program Officer: Anne Cassin
Office of Policy Analysis
Office of Policy and Resource Management
Washington, D.C.

Prepared by:

Development Planning and Research Associates, Inc.
in association with
TCS Management Group, Inc.
and
Pope-Reid Associates, Inc.

P. 359
January 1983

TEN 3280

Chapter A5.2 Vinyl Chloride

This chapter discusses the vinyl chloride industry and other chemical industries whose processes emit vinyl chloride to the atmosphere. The end products of such processes include vinyl chloride monomer (VCM), ethylene dichloride (ED) manufactured by oxychlorination in a balanced EDC-VCM plant, and polyvinyl chloride (PVC) and copolymers of PVC. Revision of this chapter included adjusting the costs to 1981 dollars and updating the discussion of applicable regulations.

Regulations

A NESHAPS for vinyl chloride, a hazardous pollutant (40 CFR 61.60), was promulgated on October 21, 1976. The vinyl chloride limitations, which are summarized in Table A5.2-1, cover processes in vinyl chloride plants, ethylene dichloride plants, and polyvinyl chloride plants.

These plants would also be subject to two NSPS currently under development to regulate volatile organic compounds (VOC), including vinyl chloride. One NSPS will govern VOC emissions from volatile organic liquid storage containers. The other will regulate fugitive VOC emissions in the synthetic organic chemical manufacture industry, which includes these plants.

The vinyl chloride standard is being reviewed to evaluate its adequacy and appropriateness in light of new information on health effects, technology, and compliance and enforcement experience with the standard.

Industry Characteristics

Vinyl chloride is produced in the United States by two methods: the addition of hydrogen chloride to acetylene and the dehydrochlorination of ethylene dichloride. Only two plants in the United States use the first method.

Ethylene dichloride is also produced by two methods: the catalytic chlorination of ethylene with chlorine and the oxychlorination of ethylene with hydrogen chloride and oxygen.

The major use for ethylene dichloride in the United States is in the production of vinyl chloride. It is usually convenient and economical to manufacture both products in the same plant in a balanced operation in which part of the ethylene dichloride requirement for the plant is produced by the chlorination of ethylene with chlorine. After purification, the ethylene dichloride is converted to vinyl chloride and hydrogen chloride in a cracking furnace operating at about 510 C (950 F) (dehydrochlorination of ethylene dichloride). Hydrogen chloride is recovered and recycled to an oxychlorination process for the conversion of additional ethylene to additional ethylene dichloride (oxychlorination of ethylene). In this manner, essentially all of the chlorine that is used eventually winds up in vinyl chloride.

Polyvinyl chloride (and copolymers) is produced by the catalyzed polymerization of vinyl chloride (and comonomers).

Four types of processes are used in the United States to effect this polymerization. These processes and the percentage of total U.S. capacity each represented in 1973 are as follows: suspension polymerization (78 percent), dispersion or emulsion polymerization (13 percent), bulk polymerization (6 percent), and solution polymerization (3 percent).

The production of ethylene dichloride, vinyl chloride, and polyvinyl chloride was 1.15, 0.91, and 0.82 million metric tons (1.27, 1.0 and 0.91 million short tons), respectively, in 1965. By 1974 these had grown to 4.2, 2.60, and 2.15 million metric tons (4.6, 2.9, and 2.4 million short tons). Growth of the production of these chemicals is projected to continue at an average annual rate of approximately 4 percent. This report and its estimations of air-pollution control costs are based on the current regulations for controlling vinyl chloride emissions. It is not believed

that meeting these regulations will have a particularly adverse impact on the production of polyvinyl chloride and its precursors. However, if certain contemplated control regulations are promulgated, such as zero discharge of vinyl chloride emissions from all establishments, the costs may be higher.

Pollutants and Sources

The primary air pollutant of concern in the manufacture of ethylene dichloride (by oxychlorination), vinyl chloride, and polyvinyl chloride is vinyl chloride monomer (VCM). When VCM is incinerated as a means of control, hydrogen chloride becomes a by-product air pollutant.

The contributions of vinyl chloride emissions from the uncontrolled sources in an EDC-VCM plant are shown in Table A5.2-2.

The contributions of various emission sources to total emissions of vinyl chloride differ somewhat from process to process, but the breakdown shown in Table A5.2-3 for the dispersion process is generally typical for other processes.

Control Technology

The best available control technology for balanced EDC-VCM plants involves the collection and incineration of all emissions from the formation and purification of vinyl chloride and ethylene dichloride (by oxychlorination) and the control of fugitive emission sources. Fugitive emissions can be controlled by the use of:

- o Multipoint and portable detectors
- o Control systems on sampling and transfer operations
- o Collection header systems to connect equipment undergoing maintenance or inspection to either the monomer recovery system or to an add-on control device

- o Rupture discs and pressure gauges prior to safety discharge valves on pressure vessels and
- o Dual mechanical seals on pumps and compressors.

It is anticipated that fugitive emissions can be reduced by 90 percent by applying these above measures in the typical plant. Incineration should reduce emissions from the other sources by at least 95 percent.

The best available control technology for PVC plants varies somewhat with the type of process. For all processes, fugitive emissions can generally be controlled through containment, capture, and ducting of emissions to a control system, and early leak detection and repair. Losses on opening equipment can be reduced by using water to displace VCM to a control system before opening the equipment. Reactor relief valve discharges can generally be eliminated by chemically short-stopping the polymerization reaction or manually venting gases to a recovery system. Strippers are used to remove vinyl chloride from the polymer, and carbon adsorption systems can be used to recover the monomer from the stripper.

Improved stripper effectiveness solves most of the emissions problems in operations that follow the stripper, including emissions of VCM in PVC fabrication operations, although incineration with scrubbing to remove HCl is an alternative control strategy. Emission control effected by the stripper, however, is not uniformly applicable to all processes. Current technology is available to strip the majority of resins except dispersion resins to 400 ppm or lower. Dispersion resins, however, are sensitive to the high temperatures used in stripping other resins, but they can be stripped effectively to 2,000 ppm. Most of the remaining VCM is removed from dispersion resins in the drying process.

Suspension resins and dispersion resins are polymerized in water and are ultimately blended in water slurry. This water contains some vinyl chloride, which can be removed by steam distillation. No water is involved

in the bulk polymerization process, so this emission source does not exist for the bulk process. However, this process accounts for only about 6 percent of U.S. PVC production. No consideration is given here to the solution process, which is practiced by only one company and accounts for only about 3 percent of production.

Costing Methodology

Capital costs and annual operating and maintenance costs were estimated for model plants using factors derived from the EPA Support Document. It is assumed that very few plants were in compliance before the regulations were promulgated in 1976. Full compliance for most existing plants should have been completed by 1978, although it may be 1980 before all dispersion PVC plants can be brought into compliance.

The costs developed on this basis are listed in Table A5.2-4. The industry sectors and regulations costed include the following:

<u>Sector</u>	<u>Regulation</u>
EDC-VCM Balanced-small plants	NESHAPS
EDC-VCM Balanced-large plants	NESHAPS
PVC-Dispersion	NESHAPS
PVC-Suspension	NESHAPS
PVC-Bulk	NESHAPS

Table A5.2-1. Vinyl chloride emissions limitations

Emission source/process	Limitation
<u>Balanced ethylene dichloride - vinyl chloride plants</u>	
EDC formation and purification	10 ppm
VCM formation and purification	10 ppm
Oxychlorination process	0.2 g/kg (0.4 lb/ton) EDC
Relief valve discharges	prohibited*
Manual venting of gases	prohibited*
<u>Polyvinyl chloride plants</u>	
Equipment through stripper	10 ppm
Equipment following stripper	2000 ppm (dispersion resins) 400 ppm (all other resins)
Reactor openings	0.02 g/kg (0.04 lb/ton) PVC
Relief valve discharges	prohibited*
Manual venting of gases	prohibited*

*Except under emergency conditions

Table A5.2-2. Uncontrolled sources of vinyl chloride emissions in VCM production

Emission source	Uncontrolled emissions at average plant, percent
Vinyl chloride formation and purification	54
Fugitive emission sources	27
Ethylene dichloride purification	11
Oxychlorination reactor	<u>8</u>
Total	100

Table A5.2-3. Uncontrolled sources of vinyl chloride emissions in PVC production (dispersion process)

Emission source	Uncontrolled emissions at average plant, percent
Sources following stripper*	33
Stripper	8
Fugitive emissions sources	38
Monomer recovery system	12
Relief valve discharge	5
Reactor valve discharge	<u>4</u>
Total	100

*Slurry blend tanks, concentrators, dryers, bulk storage, etc.

CHAPTER: 5. 2 VINYL CHLORIDE
 AIR POLLUTION CONTROL COSTS
 (IN MILLIONS OF DOLLARS)
 CAPITAL IN PLACE (KIP): .138E+08

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 06/16/82

	1981	1970-78	1979-81	1979-84	1981-90
INVESTMENT					
EXISTING PLANTS					
SIP	0.0	0.0	0.0	0.0	0.0
REVISED SIP	0.0	0.0	0.0	0.0	0.0
NEW PLANTS					
NSPS	0.0	0.0	0.0	0.0	0.0
LAER/DAC	0.0	0.0	0.0	0.0	0.0
NESHAPS	0.0	99.61	204.15	204.15	0.0
TOTAL	0.0	99.61	204.15	204.15	0.0
ANNUAL COSTS					
ANNUAL CAPITAL COSTS					
EXISTING PLANTS					
SIP	0.0	0.0	0.0	0.0	0.0
REVISED SIP	0.0	0.0	0.0	0.0	0.0
NEW PLANTS					
NSPS	0.0	0.0	0.0	0.0	0.0
LAER/DAC	0.0	0.0	0.0	0.0	0.0
NESHAPS	39.94	15.97	116.59	236.40	399.37
TOTAL	39.94	15.97	116.59	236.40	399.37
ANNUAL O & M COSTS					
EXISTING PLANTS					
SIP	0.0	0.0	0.0	0.0	0.0
REVISED SIP	0.0	0.0	0.0	0.0	0.0
NEW PLANTS					
NSPS	0.0	0.0	0.0	0.0	0.0
LAER/DAC	0.0	0.0	0.0	0.0	0.0
NESHAPS	49.15	29.32	139.23	302.08	582.09
TOTAL	49.15	29.32	139.23	302.08	582.09
TOTAL ANNUAL COSTS	89.08	45.29	255.82	538.48	981.46

TEN 3288

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February 13, 1984

M E M O R A N D U M

TO: Vinyl Institute Executive Board
FROM: Peter L. de la Cruz
RE: Summary of Keller and Heckman Activities

A. TRANSPORTATION

On January 25, 1984, the Department of Transportation (DOT) published a Federal Register notice commencing preemption proceedings initiated by Framingham, Massachusetts. Framingham seeks to impose special transportation and storage requirements on vinyl chloride monomer (VCM) tank cars. The town bylaw requires that any VCM tank cars remaining in the town for more than 24 hours be placed in a special storage area that has:

- (1) an 8-foot high chain link fence with barbed wire;
- (2) lights illuminating the entire area;
- (3) a paved road around the inside of the storage area;
- (4) water for fire fighting at ground level and at two-elevated, stationary water nozzles;
- (5) an emergency signalling system;
- (6) 24-hour guards; and
- (7) other miscellaneous requirements.

The Hazardous Materials Transportation Act (HMTA) expressly preempts any inconsistent state or local regulations but authorizes DOT to waive preemption if the local requirement does not unreasonably burden commerce and provides an equal or greater level of protection than federal regulation.

The present DOT proceeding can be traced back to 1979, when Framingham enacted a local ordinance prohibiting temporary

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storage of VCM tank cars on tracks within the town. The Consolidated Rail Corporation (Conrail) successfully pursued litigation which held that the town bylaw was preempted by federal regulation.

Massachusetts, on behalf of Framingham, filed a petition with DOT requesting that DOT waive preemption in June, 1980. That petition led to a DOT hearing in December, 1981 at which SPI testified. The Department determined that Framingham's application was legally insufficient. Meanwhile, in October 1981 SPI action defused potential legislative action by Congressman Barney Frank.

During January, 1983, Massachusetts submitted an amended application for non-preemption which is the basis for the January, 1984 notice. The lapse of time between the filing of the Massachusetts petitions and DOT action reflects attempts by DOT to dissuade Framingham from pursuing the petition and for clarification of the town's position.

The current proceedings will be divided into two phases. The first phase invites comments on whether the Framingham bylaw is inconsistent with federal regulation. Comments on this issue will be filed by March 5, 1984. After deciding the inconsistency issue, the second phase of the DOT proceedings will address whether the bylaw represent an unreasonable burden on commerce and whether preemption should be waived. We expect to be supported by Conrail who also opposes the limitations. The bifurcated proceedings could take about 1-1/2 years.

Besides the potential effect on VCM shipments through Framingham, if Framingham is successful, it could lead to similar petitions in other parts of the country. Such restrictions also could be applied to materials other than VCM.

B. FOOD AND DRUG ADMINISTRATION

The Food and Drug Administration's (FDA) continuing review of the regulatory status of polyvinyl chloride (PVC) food packaging is expected to be another major focal point.

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FDA is in the process of drafting a regulation for internal review. It is usually difficult to accurately predict the timing of FDA action, and this is no exception. Nonetheless, a proposed regulation should be made public and proposed within the next year. In the interim, we remain in close contact with FDA, encourage and monitor their activities, and provide any needed assistance. Besides clarifying the regulatory status of rigid PVC, positive FDA action will enable the Bureau of Alcohol, Tobacco and Firearms (ATF) to authorize the use of PVC liquor bottles.

C. ENVIRONMENTAL PROTECTION AGENCY

1. EPA Review of the Vinyl Chloride Standard

The Environmental Protection Agency's (EPA) review of the vinyl chloride standard should lead to a written proposal within six months. At present, EPA and its contractor, Radian Corporation, have been collecting information on discharges and their correlation with operating parameters. The Manufacturing Practices Committee has been providing the EPA technical staff with information and will be meeting with EPA on February 15, 1984.

The prime Institute objective is to have EPA replace the disputed emergency discharge provision with a numerical limitation. Based on recent discussions with the EPA staff, we expect that a proposal will be drafted by this summer for review within the Agency and by the National Air Pollution Control Technique Advisory Committee (NAPTAC), a peer review group EPA uses to evaluate draft regulations before formal proposal. The Vinyl Institute membership is expected to be represented on the NAPTAC.

Obviously, the nature of EPA's proposal will significantly control the time and effort that will be required during the rulemaking. However, even if the proposal is favorable to the Vinyl Institute, we will be obligated to file solid supporting comments so that the rulemaking record will support Agency action if adverse comments are filed by environmentalist groups.

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2. EPA Enforcement

On January 23, 1983, the United States District Court for the Western District of Oklahoma issued a decision in United States v. Conoco, Inc. holding that the vinyl chloride standard is a valid emission standard under the Clean Air Act and not a work practice standard which EPA lacked authority to promulgate in 1976 when the vinyl chloride standard was finalized. The court characterized the relief valve discharge provisions as an emission standard because, in its view, the provision prohibits all emissions from relief valves, except for emergencies, and leaves the choice of controls to the plant operator.

In the face of a challenge from EPA, the court did agree with Conoco that a litigant in a civil enforcement action could raise the emission standard/work practice question. The court also held that the five-year statute of limitations on government enforcement actions relating to discharges does not begin to run until the discharge is reported to EPA. Since the Conoco decision was issued in response to a motion to dismiss, it is an interlocutory order which probably cannot be appealed pending final disposition on the merits in the district court.

During January, the government filed its brief with the United States Court of Appeals in the Ethyl case. That case, which includes consolidated appeals from the Occidental Chemical Company and Firestone Tire and Rubber Company case, also raises the jurisdictional and work practice issues. As expected, EPA argued that a company can challenge a regulation as an unauthorized work practice standard rather than an emission standard only by a petition for review filed within 60 days after promulgation of the standard or as a defense in a criminal prosecution. The government argues that no jurisdiction exists to entertain this issue in civil proceedings such as the Ethyl case. Similarly, the government maintains that the relief valve discharge provision is a zero emission limitation with an exception for emergency discharges.

Briefs by Ethyl, Occidental and Firestone should be filed shortly, with the government's reply brief due two weeks later. A date for oral argument has not been set. Based on

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the court's current calendar, argument is likely to be held later this spring with a decision expected by early fall.

3. Toxic Substances Control Act

EPA is considering whether testing should be required of several substances of potential interest to Vinyl Institute members. If EPA concludes that existing health and safety information is inadequate, it can require testing by the industry which utilizes the substance. The testing costs will be borne by industry.

EPA issued an advance notice on aryl phosphate, about 90% of which is used as a flame retardant plasticizer in PVC. 48 Fed. Reg. 57,452 (Dec. 29, 1983). A similar notice was issued for glycidol, which is used as a stabilizer during the production of certain vinyl polymers. 48 Fed. Reg. 57,562 (Dec. 30, 1983).

4. United States v. Stauffer

On January 10, 1984, the United States Supreme Court issued its decision in United States v. Stauffer Chemical Co. One of the issues in that case was whether EPA may employ private contractors to conduct or assist with plant inspections under the Clean Air Act. More precisely, it is a question of whether such private contractors are "authorized representatives" under section 114(a)(2) of the Act.

At present, the United States Courts of Appeals have issued conflicting decisions. We had hoped that the Supreme Court's decision would resolve this question, but the Court's decision was based solely on the doctrine of mutual defensive collateral estoppel. In other words, when the government has litigated an issue with a party, it cannot relitigate the same issue against the same party in another case involving virtually identical facts. The holding in this case is not limited to environmental concerns and is applicable to other areas, such as taxation. It will limit the government's ability to continually litigate the same issue in various parts of the country against the same company.

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D. MISCELLANEOUS

Since our last report, Jerry Heckman participated in a strategy session with Communications Committee members and addressed the legal ramifications of an advertising campaign. We also reviewed a contract between the Vinyl Institute and the Southwest Research Institute.

M E M O R A N D U M

TO: Vinyl Institute Executive Board

FROM: Jerome H. Heckman and Peter L. de la Cruz

DATE: December 2, 1983

RE: Summary of Keller and Heckman Activities

A summary of Keller and Heckman activities for the Vinyl Institute not addressed elsewhere in the briefing book or other committee reports follows.

A. Food and Drug Administration

Much of Keller and Heckman's work for the Vinyl Institute since the last Executive Board meeting in September has involved the Food and Drug Administration's (FDA) review of polyvinyl chloride (PVC) for food-contact applications. As reported previously, we provided FDA with the results of a survey on the food-contact uses of PVC in August, 1983. Since that time, we have provided some additional information on PVC plastisols. We are presently soliciting information on the weight of the plastisol compound in a typical cap liner and gasket in response to a supplemental FDA request for information. (For additional information on the PVC survey, see our September 20, 1983 report under Tab A.)

Besides efforts by The Society of the Plastics Industry, Inc. (SPI) to clarify FDA's regulatory position on PVC, the Institute for Shortening and Edible Oils (ISEO) has been actively involved in this area. ISEO is represented by William Goodrich, who was FDA General Counsel for some 20 years. ISEO represents large users or potential users of PVC bottling, including Proctor and Gamble which currently markets its Crisco® vegetable oil in PVC bottles.

In late October, ISEO invited us to a meeting it had scheduled with FDA for November 22, 1983. ISEO's motive was to obtain an update on the PVC situation and request FDA action clarifying the regulatory status of PVC bottles for edible oil. One of our prime concerns was that no suggestions be made at the meeting which would have an adverse affect on any portion of the vinyl industry by focusing on PVC oil bottles alone.

With this in mind, we circulated a draft PVC regulation under a cover letter dated November 4, 1983. We received a substantial amount of comment on the draft from members of the Vinyl Institute and SPI's Food, Drug and Cosmetic Packaging Materials Committee. A revised draft was presented to FDA at the November 22 meeting and circulated with our letter of November 23, 1983. The revised draft reflects the general view that the only limitation in a PVC regulation should be a requirement that, under extraction test conditions simulating intended conditions of use, PVC not yield to the food-simulating solvent any vinyl chloride monomer detectable with a method sensitive to one part per billion (ppb).

At the meeting, Mr. Goodrich, on behalf of ISEO, urged that FDA issue a policy statement indicating there is no problem with the use of PVC containers as they are now employed in the marketplace. FDA assured us that no regulatory actions were planned and it was our distinct impression that no one at FDA believed that there was any public health or safety issue raised by current PVC food packaging.

Our contacts at FDA have informed us that staff activity has included the preparation of a draft PVC regulation which is undergoing preliminary review. At this time, we have been unable to obtain a copy of the draft or learn its contents. We have no basis for determining when we might expect to see a draft PVC rule. While FDA has indicated their intention to issue a proposal within the next six months, we do not consider these informal statements to be a reliable indicator.

The projection of FDA action is further complicated by a potential problem with an Italian PVC feeding study. Although poorly designed, this animal study indicates that PVC polymer, when ingested in large quantities, may be a carcinogen. We first learned of this study when FDA asked that we have the article translated. This was only accomplished within the last few weeks and it is too early to obtain an indication of FDA's reaction to the study. In any event, the existence of such a study and the complications raised by the Delaney Clause makes this a matter of some concern.

FDA previously requested any PVC feeding studies of which we might be aware. In response to this we provided them with existing studies which indicate no difficulty with PVC.

We were also informed of a study by Vittel, a French mineral water bottler. We were informed by another company that Vittel had conducted a 1-1/2 to 2 year feeding study using ground PVC bottles and had observed no negative effects. Unfortunately, Vittel has not reported on its findings and has declined to speak by telephone or mail on the subject. It may, however, consent to a visit by an SPI representative who would be free to review the study results and discuss this with them. FDA has indicated that it would appreciate whatever information we could provide on the Vittel study given the paucity of information on animal feeding studies involving the polymer.

The Vittel study was brought to our attention by Alain Paul at Dorlyl in France. Given FDA's interest in this subject and the problem posed by the Italian feeding study, we are attempting to confirm Vittel's willingness to share their findings in some mutually agreeable fashion.

B. Environmental Protection Agency

1. Review of the Vinyl Chloride Standard

As reported in more detail under Tab C, representatives of the Vinyl Institute recently met with the Environmental Protection Agency (EPA) staff at Research Triangle Park to discuss the Agency's review of the vinyl chloride standard. The Agency has continued to indicate its receptiveness to the substitution of a numerical limit over the "emergency" relief valve discharge provisions of the current standard. Since EPA expects to have a draft proposal ready for outside review in February or March, 1984, we expect an increase in both Vinyl Institute and Keller and Heckman activity.

Radian Corporation is assisting EPA on this project. Among other things, Radian is visiting a number of plants with exemplary discharge histories to catalog the practices and procedures followed by those facilities to reduce discharges. In addition to the facilities listed in the report under Tab C, Radian has contacted both Air Products and CertainTeed to arrange for plant visits.

2. EPA Enforcement

We expect that the government will file its opening brief on December 7, 1983, in United States v. Ethyl Corp.,