

MEMORANDUM

To: SPI Manufacturing Technology Committee
From: Peter L. de la Cruz *PLC*
Date: March 23, 1983
Re: Revised TRW Report

Attached are the comments we filed with the Environmental Protection Agency (EPA) on a draft report by TRW, Inc. dated March, 1981. A revised report dated February, 1982 was officially released by EPA in February, 1983.

The marginal notations on the comments indicate whether the Committee's comments are reflected in the revised report. The following abbreviations are used:

✓ Comment incorporated in revised report
NC No change in revised report
PC Partially responsive change in revised report

THE SOCIETY OF THE PLASTICS INDUSTRY, INC.

COMMENTS ON
"PHASE I REVIEW STUDY OF
VINYL CHLORIDE NATIONAL
EMISSIONS STANDARD"

The Society of the Plastics Industry, Inc. (SPI) */ submits these comments on the TRW, Inc. draft report dated March 16, 1981, entitled "Phase I Review Study of Vinyl Chloride National Emissions Standard."

I

GENERAL COMMENTS

1. Need for Health Effects Analysis

The Environmental Protection Agency (EPA) is presently reviewing the National Emission Standard for Vinyl Chloride. 40 C.F.R. §§ 61.60-61.71. According to the TRW draft report and the EPA staff, this review was prompted by EPA's proposed airborne carcinogen policy. 44 Fed. Reg. 58642 (1979). While we do not disagree with the concept of periodic review of existing standards, which may be required by section 3(i) of Executive Order 12291 [46 Fed. Reg. 13195 (1981)], we seriously question the propriety of basing a review of the vinyl chloride (VC) standard on a proposed policy.

*/ The Society of the Plastics Industry, Inc. (SPI) is a corporation organized under the Not-for-Profit Corporation Law of the State of New York. Its 1400 member companies and individuals and 49 operating units include those who supply raw materials, process or manufacture plastics or plastics products, engineer or construct molds or similar accessory equipment for the plastics industry, and engage in the manufacture of machinery used to make plastics products or materials of all types. SPI is the major national trade association of the plastics industry. The majority of its members are the processors and converters of the plastic resins into end products which represent 75% of the dollar volume sales of plastics in this country. SPI's membership also represents 95% of all plastics materials and machinery manufactured in the United States.

These comments were prepared by the Manufacturing Technology Committee of SPI's PVC Safety Group.

The proposed airborne carcinogen policy was published in October 1979, and was the subject of extensive public comments that cast serious doubt on many of its provisions. Indeed, EPA's then-Acting Administrator has been quoted as recently having testified before Congress that "[i]t is uncertain whether or not this proposed policy would survive challenge in the courts." Inside EPA, May 3, 1981 at 3. EPA has not yet responded to the comments but reportedly is in the process of changing the proposed policy. Inside EPA, May 3, 1981 at 12. It is not appropriate to base a review of the Vinyl Chloride Standard on a proposed policy that has not been finalized, that is being changed, and that EPA believes may be illegal.

We also object to the application of the discredited philosophy of the proposed carcinogen policy to this review. The proposal, for example, endorses efforts to reduce emissions to a zero level without regard for the resulting costs or benefits. As a result, the present review study has been deliberately restricted to engineering feasibility. It has ignored all other aspects of the situation based on adherence to a proposed guideline that will not be adopted in its current form.

The proper approach to the review of the VC standard is dictated by statutory, executive and judicial guidance. Section 112 of the Clean Air Act, 42 U.S.C. § 7412, provides for national emission standards for hazardous air pollutants (NESEAP) that present a threat of increased mortality or serious irreversible illness. Emission standards are to be set to provide an "ample margin of safety." These statutory criteria must be satisfied through data showing the health effects on the general population of vinyl chloride in the atmosphere at existing levels and through data showing that a reduction in emissions would remedy significant adverse health effects.

Under section 2(a) of Executive Order 12291, a review of existing regulations must be based on "adequate information concerning the need for and consequences of the proposed government action." Adequate information, as the order plainly states, includes the potential benefits and costs of regulatory action. Indeed, regulatory action shall not be taken unless the potential benefits outweigh the potential costs. Id. § 2(b).

The benefits, if any, from further reductions in VC emissions must be reflected in monitoring and health effects data. Any review of technology or engineering feasibility must be based on studies that demonstrate the health effects on the general population of current levels of vinyl chloride in the atmosphere. It is only by such inquiry that potential benefits can be estimated.

In a somewhat similar situation, the Supreme Court has vacated an agency rule that was not supported by evidence that tightening of the standard would result in the required health benefits. Industrial Union Department, AFL-CIO v. American Petroleum Institute, ___ U. S. ___, 100 S. Ct. 2844 (1980) (Benzene case). There, the Occupational Safety and Health Administration (OSHA) based its reduction of the permissible exposure limit for benzene from ten parts per million (ppm) to one ppm on a series of assumptions that the number of leukemia cases might be reduced. The court noted that OSHA did not base the stricter limit on the basis that exposure to ten ppm would cause leukemia while exposure to one ppm would not. Id. at 2860.

The series of assumptions on which OSHA acted in the Benzene case parallel EPA's proposed carcinogen policy. EPA's proposed policy, which was formulated without the benefit of the Supreme Court's guidance, can no longer be considered a valid basis for reducing emission levels in the absence of defensible health effects data.

2. Inadequacy of Currently Planned Risk Assessment

Based on the TRW draft and our meeting of April 9, 1981, there does not appear to be any EPA effort to develop the necessary monitoring and health effects data. This destroys any value which an engineering study alone might have.

The Agency will be unable to evaluate the potential benefits of any proposal unless it is able to compare those changes to resulting health improvements for the nation relative to present conditions. Present conditions must be determined by actual measurements. We understand that there are no monitoring programs underway as a part of the vinyl chloride review, and, although we understand some such efforts were previously made there has been no attempt to obtain or interpret this data.

We do not believe that another risk assessment by EPA's Carcinogen Advisory Group (CAG) will be useful unless, as a minimum, it is based on a thorough review of the literature. To be adequate, this review should include a new effort to obtain epidemiological data for the population surrounding facilities that handle or produce vinyl chloride. Moreover, such a risk estimate, if made, can only be interpreted in light of actual measurements. Without these efforts, any estimates will be sheer speculation.

The absence of any effort to develop new monitoring data or health effects studies, coupled with a disregard of existing studies, presents serious questions concerning the Agency's regulatory intent.

3. Lack of Data and Citations in the Draft Report

As noted in the specific comments in section II, the data base of the TRW report is incomplete. It does not reflect adequately the large amount of information available through the regional EPA offices or other branches of the agency. Several pertinent reports and studies are omitted.

This study generally has failed to avail itself of resources within EPA, other agencies and industry. Much of the data presented are not referenced properly. In addition, the draft report ignores the comments submitted by SPI on the development of the original standard and the 1977 proposed amendments. If EPA is serious about performing a comprehensive review, these faults must be remedied.

4. The Existing Vinyl Chloride Standard

In response to the requests by the Presidential Task Force on Regulatory Relief, SPI has suggested that the vinyl chloride standard be withdrawn. This proposal is based on our belief that withdrawal of the standard would not result in any adverse health effects. Our belief, in turn, is based on current industry practice, the operation of the OSHA vinyl chloride standard and other regulatory constraints. A copy of that submission is attached to these comments as Appendix "A".

Absent withdrawal of the vinyl chloride standard, the Agency's current review should be redirected towards improving the administrative provisions of the standard, monitoring of vinyl chloride in the atmosphere, and development of health effects studies.

We do not believe that the Agency can justify further expenditure of government or industry resources based on current vinyl chloride emissions and the absence of new health data or technology. Given its current regulatory status, we cannot believe that EPA considers vinyl chloride to present a hazard warranting significant attention. The Agency has itself prepared a list of presently unregulated substances that merit review. Moreover, the specific impetus of the proposed carcinogen policy has been removed.

In particular, section 2(e) of Executive Order 12291 directs that agencies set their regulatory priorities with the aim of 'maximizing the aggregate net benefits to society.' Given the number of substances which warrant review by EPA under its own programs, the expenditure of agency resources on vinyl chloride appears plainly disproportionate to maximizing the public health.

As distinguished from any potential health or engineering programs, there are several administrative changes in the reporting, record keeping and definitional sections of the vinyl chloride standard that merit prompt attention. Potential areas for review might include frequency of reporting, averaging of reactor opening losses and stripping levels, and clarification of such terms as "emergency" releases. Improvement in the administrative provisions would reduce the burden to both industry and the Agency. We stand ready to discuss these administrative areas with the Agency at any time.

II

SPECIFIC COMMENTSChapter 1

<u>Page</u>	<u>Line</u>	<u>Comment</u>
✓ 1-1	9	TRW states that the impetus for this review is EPA's proposed airborne carcinogen policy. That policy was proposed in October 1979, public hearings were held in a number of sites, and extensive comments were filed on the proposal. A number of comments specifically criticized the proposed provisions for periodic review of regulations. EPA has not yet responded to the comments in the record and has not taken final action on the proposal. Moreover, recent press reports quote the then-Acting Administrator as having testified before Congress that "[i]t is uncertain whether or not this proposed policy would survive challenge in the courts." <u>Inside EPA</u>, May 8, 1981 at 8. Press reports also indicate that the EPA staff is in the process of changing the proposal. <u>Inside EPA</u>, May 8, 1981 at 12. In light of EPA's plans for the proposal, existing executive orders and policies, and relevant case law, it would be inappropriate at this time to proceed to the more-detailed Phase II study. In any event, any review of emissions control technology must be based on a need for additional regulation to protect the public health. Our understanding is that the Agency has not conducted a review to determine whether or not such a need exists and does not now have plans to conduct an adequate review. Therefore, it would not be appropriate to proceed to the Phase II study at this time.
✓ 1-1	23	This sentence should be qualified. The VC standard does not apply to production of ethylene dichloride (EDC) by the direct chlorination process. 40 C.F.R. § 61.60(a)(1).

- ✓ 1-2 5 The report claims that changing from air to pure oxygen as a feedstock in the oxychlorination process results in reduced emissions from the oxychlorination vent. Section 3.2.2. is cited, but it contains no data substantiating this claim. For such a claim to be made, specific data on the amount of vinyl chloride monomer (VCM) contained in the oxychlorination vent from the air process should be compared with the amount of VCM from the pure oxygen process.
- NC 1-3 23 The draft report states that the efficiency of VC reduction in flares has not been determined. We understand that the Agency has sponsored a flare efficiency study by John Zink Company that has measured the efficiency of flares and found it to be greater than 99.9%. This study and other Agency data should be referenced here and in Chapter 4.
- NC 1-4 2 Relief valve discharges that could not have been avoided are permitted by the VC Standard. Examples of some of the causes of such discharges have been provided previously to the Agency. See letter from SPI's counsel (G. Baise) to EPA (D. Goodwin), dated Feb. 15, 1979. (A copy is attached as Appendix "B".) Nevertheless, because of the enforcement staff's subsequent interpretations, we agree with the need for a more realistic definition of what constitutes an "emergency" relief valve discharge.
- ✓ 1-5 4 The draft states that continuous stripping technology for dispersion resins is not as advanced as for suspension resins "probably because the demand for dispersion resins is not as great as for suspension resins." This statement should be modified to avoid any possible implication that the industry has not attempted to develop stripping systems for dispersion resins to the same extent as for suspension resins. Such an implication would be incorrect.

Industry has devoted great efforts toward the development of dispersion resin stripping technology. The fact that great advances have been made is demonstrated by industry's ability to meet the existing stripping requirements. Dispersion resins are simply more difficult to strip than suspension resins. The draft does not present any evidence that the demand for dispersion resin has adversely effected the development of stripping technology.

✓ 1-5

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The sentence noting that two bulk resin processors reported 6-month average stripping levels below 40 ppm should be deleted. This statement could be very misleading to the uninformed reader. The existing standard is based on a 24-hour average, not a 6-month average. If bulk resin stripping performance is to be included, it should be done on a 24-hour basis. At the moment, a 6-month average is not relevant.

NC 1-5

26

The statement that fugitive emissions represent "one of the larger contributions to VC emissions" is not substantiated by data and should be deleted or modified. See the discussion in section 4.4, pages 4-58 and 4-59, and our comments below on that section.

Because EPA's original section 114 letters requesting data were unclear, the industry responses may have been based on a misunderstanding of the letters. In addition, the Agency arbitrarily doubled the fugitive emissions figure calculated by EPA's contractor. Moreover, the emissions figures were based on material balance calculations, and EPA considered all VC that was not accounted for to be fugitive emissions. This, as industry has previously noted, is an error.

1-5

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See our comments below on page 4-59 of the draft.

NC 1-5

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The premise of the leak detection section of the current standard is site specificity. EPA recognized that each plant is unique and that leak detection programs need to be tailored to the individual site. This conclusion still is valid.

A major reason for variability among the leak patrol programs was the lack of response by EPA regional offices to the proposals submitted by the operators. Individual companies were left to their own resources under a short time frame for developing these programs.

✓ 1-6

21

The draft notes that control (reactor purging) selection is based on the polymerization process used. This statement should be deleted. No evidence in this document substantiates that control selection for reactor opening loss is based on the polymerization process used. There is evidence that several different control techniques are employed. The selection is based primarily on operating preferences and economics.

✓ 1-7

18

The draft states that "new unregulated sources" include solid waste drying facilities and disposal sites (landfills). This statement is misleading and incorrect and should be deleted. Polyvinyl chloride (PVC) solid waste is not a new source. Solid waste was present during the initial development of the standard, and is regulated by the existing VC standard through the allowable residual vinyl chloride monomer (RVCM) levels.

EPA considered further regulation of PVC wastes in the development of the hazardous waste regulations under the Resource Conservation and Recovery Act (RCRA). EPA proposed that PVC solid waste be listed as a hazardous waste, but in their final promulgation--after taking into account comments submitted--chose not to designate PVC sludge as a hazardous waste.

A Battelle Report on VCM emissions from a landfill was a major factor in EPA's August 1979 proposal to list PVC sludge and other related wastes as hazardous waste. SPI submitted comments to EPA's Office of Solid Waste that the Battelle information was out of date and was considered when EPA prepared

its NESRAP regulation for VCM. Subsequent industry testing shows the existence of substantially lower concentrations of VCM at landfills, and the NESRAP stripping requirements have resulted in lower RVCM levels in PVC waste. A copy of these comments are attached as Appendix "C".

The data on emissions from the unidentified landfills should be presented here or in Chapter 6.

1-7

Section
1.11

The draft summary should be modified to emphasize the impact of other regulatory requirements. New and modified VC emission sources undergo new and detailed reviews to obtain permits that frequently result in best available control technology (BACT) or lowest achievable emission rate (LAER) controls more stringent than those in the standard. The summary also should discuss the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Superfund), the Occupational Safety and Health Administration (OSHA), the Consumer Product Safety Commission (CPSC), the Food and Drug Administration (FDA), and state activities. The implication that delegation of NESRAP authority to states will reduce VC emissions is unsubstantiated.

Chapter 2

<u>Page</u>	<u>Line</u>	<u>Comment</u>
NC 2-1	5	Again, the proposed policy for airborne carcinogens is cited as the impetus for reviewing the existing VC regulation. See our comments above on page 1-1, line 9 of the draft.
✓ 2-1	17	The draft states that industry was allowed two years to incorporate the necessary controls required by the existing standard. This statement is incorrect and misleading, and should be deleted or revised. First, new or modified sources were subject to the standard immediately. Second, existing sources were subject to the standard except insofar as they obtained specific waivers.- Waivers and waiver terms varied. Only a portion of industry was allowed 2 years for compliance and only for a portion of the standard.
NC 2-2	Section 2.2.1	The draft indicates that TRW reviewed EPA's October 1975 standard support document and information submitted to EPA under Section 114 of the Clean Air Act. Before issuing the draft report, TRW also should have reviewed the written comments and the hearing transcripts on the existing standard, the proposed amendments to the existing standard (42 Fed. Reg. 28154(1977)), and other pertinent documents.
✓ 2-10	Table 2-3	Seven PVC plants are listed in New Jersey; the correct number is six. The error is from Table C on page C-2. There is no Piscataway plant.
NC 2-11	34	The reasons for lost production capacity include (1) the time to purge equipment prior to opening and (2) the time to open equipment for maintenance and all other purposes. Lost capacity is not solely attributable to reactor cleaning and purging time, as the draft states.
✓ 2-12	11	The report states that changing from an air process to an oxygen process in the EIC process makes control by combustion "much easier." No specifics are provided to support this statement. We believe this statement to be inaccurate and misleading.

While it is true that the oxygen process produces a lower volume emission to be combusted, there is no evidence that this makes the combustion process easier. It merely makes the required combustor smaller, and that is not necessarily an advantage. Total plant configuration and steam needs must be considered in choosing between oxygen and air processes.

NC 2-12

21

Data are not shown for the statement in the draft correlating compliance levels with automation and computerization. See also the letter from SPI's counsel (G. Baise) to EPA (D. Goodwin), dated February 15, 1979, (Appendix B), on the subject of some causes of relief valve discharges.

Chapter 3

- NC 3-1 Section 3.1 The draft should state that the process descriptions in this Chapter are extremely simplified. They do not adequately reflect the complexity of the processes or of the difficulties of compliance.
- ✓ 3-10 30 The draft states that no new emission data have been obtained from EDC/PVC plants since the regulation was promulgated. This is incorrect. Data have been presented to the EPA regional offices for permits and new plants.
- ✓ 3-17 24 No reference is provided to support the statement. So far as we are aware, the practice of inhibiting VC polymerization with phenol was halted several years ago. A level of 100 ppm of phenol was never used. Normal levels were between 5 and 15 ppm.
- ✓ 3-18 16
(Section 3.4.3.) The sentence "Many of the vessels were open to the atmosphere prior to promulgation of the VC regulations . . .," is incorrect and misleading. "Many" were neither open nor opened to the atmosphere. Certainly storage spheres, storage tanks, weigh tanks, gas holders, and knockout pots were not open or opened to the atmosphere. Wastewater storage tanks may have been opened, if they even existed at that time, and surge tanks were if this term refers to blend tanks. The cited statement should be modified.
- ✓ 3-20 34 The agglomerates referred to are more usually formed in the reactor, not the dryer. Generally, the larger agglomerates must be removed before the stripper, but some smaller ones make their way to the dryer.
- ✓ 3-22 15 Strong agitation is not possible in latex production; it must be much milder than in suspension to avoid coagulation. This may be a reference to the homogenization step used in mixing monomer and dispersion agents in some processes, but this occurs before the reactor.

- ✓ 3-28 2 The statement that "VC concentrations that are emitted when the Po-Po reactor is opened must be measured in order to meet the ROL standard" is incorrect. These emissions may be calculated rather than measured, and the standard so provides.
- ✓ 3-28 25 The sentence stating that "The copolymer formed is not soluble in the solvent but forms a homogeneous solution" should, of course, read "The copolymer is soluble and forms" If it were not soluble, how could the solution be formed?
- ✓ 3-32 1 The recovery process for solution resin is more properly termed precipitation, not coagulation.
- PC 3-32 29 Contrary to the draft, the VC standard does not require that relief valves be connected to a control device.
- ✓ 3-34 24 Liquid VC is very resistant to reaction with water to form HCl. Some HCl is formed by thermal decomposition of the PVC and other chemical reactions that occur in the reactor, but no significant amount comes from VC and water directly.
- ✓ 3-34 28 Change "compounding resins" to "compounding ingredients." The "flakes" fail to absorb plasticizers, stabilizers and other compounding ingredients, not "compounding resins."
- NC 3-35 12 Use of chemical treatment has been successful in preventing polymer build-up, but only in certain equipment. While the subject is mentioned, the significant costs associated with chemical treatment are not given adequate consideration.

Chapter 4

The text of this chapter and tables 4-3 and 4-4 incorrectly state that the standard requires zero discharge for relief valves. The standard expressly permits discharges that are not avoidable. See 40 C.F.R. §§ 61.65(a) and (b)(4). In developing and promulgating the standard, EPA expressly recognized that there will be discharges both from the relief valve when it operates as designed and from manual venting that attempts to prevent relief valve actuation. See 40 C.F.R. § 61.64(a)(3). This is a fundamental error throughout the report and it must be corrected.

We agree that the industry is performing better than required by the standard, and we believe that actual emissions are drastically less than reflected in this chapter. For example, the "estimated actual emissions" column in table 4.4 (for a typical PVC suspension plant) should be revised, for the reasons discussed below, to include at most the following amounts.

<u>Source</u>	<u>Estimated Current Emissions (kg/yr)</u>
Primary control	68
Relief valve discharges	4,780
Combined sources after stripping	13,600
Fugitive emissions	23,500
Reactor opening loss	<u>450</u>
Total	44,403

Incinerators normally perform at emission levels of well below 1 ppm, so a figure of 10% of the allowable emission is taken for primary control emissions.

The estimated fugitive emissions are based on a recent study by B.F. Goodrich. That study is cited in the report on page 4-59, lines 7-16, but incorrect figures are given. The correct figures are set forth below in these comments for page 4-59.

The reactor opening loss in Table 4-4 was calculated on an average of 3.5 batches between openings at 8,800 ppm residual VC based on EPA's 1975 Standard Support document. Various improvements in purging methods and decreases in opening frequencies lead us to believe that average actual losses are less than a quarter of that model. For purposes of estimating reactor opening loss emissions, we suggest assuming that reactors are opened after every 10 or 12 batches.

The net improvement over the "regulated emissions" column in Table 4-4 is approximately 245 megagrams per year, or about an 84% reduction below the level of emissions permitted under the present standard.

<u>Page</u>	<u>Line</u>	<u>Comment</u>
✓ 4-1	7	The draft states that the level of emissions from relief valve discharges is not lower than required by the current VC standard. No data are provided to support this statement, and it should be deleted. Moreover, it also should be deleted because the uninformed reader mistakenly might read it as implying that the level of emissions from relief valve discharges is higher than permitted by the standard. Such an implication is unsupported and unfounded.

NC 4-1

9

The draft states that EDC/VCM plants using pure oxygen as a feedstock have reduced emissions below those set by the standard. While this may be correct (although Table 4-3 on page 4-3 does not indicate such), it is unfair not to mention air-based EDC plants which also control emissions to levels below the standard. Table 4-3 on page 4-3 presents data showing that actual emissions from air-based plants are substantially lower than regulated emissions. To prevent misleading implications, both types of plants should be addressed.

NC 4-2

Table 4-1

"Containment" is listed as a control technology for reactor relief valve discharges. This is not further discussed. However, several other comments in section 4.2.3.3 lead us to believe that this may reflect a misunderstanding of the process.

4-5

Table 4-3

✓ The current standard for relief valve discharges is not zero, and the "regulated emissions" are not zero, as listed in the table. This should be modified.

NC

The estimated actual emissions from the primary control are shown as being equivalent to the regulated emissions. This must be incorrect, particularly in light of the statement on page 4-1, lines 8-9, that actual emissions are "well below the 10 ppm level." A more appropriate figure for actual emissions is 316 kg/yr, not 3160 kg/yr.

NC

Total emissions should be changed from 40,110 kg/yr to 37,266 kg/yr. Therefore, estimated actual emissions are approximately 74% below those permitted by the standard.

✓ 4-5

footnote "c"

Should refer to Table 4-7 on page 4-22. In addition, the data in Table 4-7 does not readily convert to the figure given in Table 4-3.

4-6

Table 4-4

NC

As mentioned above, it is unfair to list the estimated actual emissions for the primary control and the reactor opening loss to be equivalent to the regulated emissions. As can be easily determined from review of industry's semiannual reports, both primary

control and reactor opening loss emissions are substantially less than the regulated levels. These numbers should be revised to 68 kg/yr for the primary control and 460 kg/yr for reactor opening loss.

✓ The figure for estimated actual fugitive emissions should be changed from 104,000 kg/yr to 25,500 kg/yr. See comments on page 4-39, of the draft below.

Total emission figures should be changed to 44,408 kg/yr and [105,608 kg/yr], respectively.

✓ The current standard for relief valve discharges is not zero, and the "regulated emissions" are not zero. This should be modified.

✓ 4-6 footnote "c" Should refer to Table 4-6 on page 4-21. The data in Table 4-6 does not readily convert to the figure given in Table 4-4.

NC 4-6 footnote "d" Estimate of emissions after stripping is based on incomplete data. The semiannual reports should be reviewed and incorporated.

PC 4-6 footnote "f" The last line should be corrected to read "EPA 1975 estimates after control as required by current NESHAPS regulation."

✓ 4-7 16 The statement that "the current standard requires zero emission levels during periods of control equipment shut down. . . ." is incorrect. The current standard does not require zero emissions during times of control equipment shutdown. It does not expressly allow exceptions for loss of control equipment but does allow for hourly averaging in the test method. There is no zero requirement in the standard.

NC 4-12 4 The use of flares should not be discouraged simply because they cannot be tested or monitored reliably during operation.

- NC 4-12 7 As noted above, we believe that EPA may have information on flare efficiency.
- ✓ 4-12 13 The capital cost for the flare stack is grossly understated.
- PC 4-12 20 The reference to "Neveril, 1980" either is incorrect or the full citation has not been provided on page 4-90.
- ✓ 4-12 28-35 The draft states that one company has a flare installed specifically for PVC process emissions that was originally designed to accommodate emergency releases from two simultaneously-discharging reactors. We understand that this statement is a misquotation of the information given to TRW.
- NC 4-13 Section 4.1.5 We know of very few plants which are using carbon adsorption successfully now. Problems with impurities and comonomers, especially vinyl acetate, are serious.
- In any event, the buildup of methyl chloride requires a purge to an incinerator, which, if present, may as well be used for the entire waste stream. Here again, a reference to a source for this statement should have been supplied.
- ✓ 4-16 10 The \$45,000 capital cost and \$1,000 operating cost is only for the heat exchanger and chiller, not the entire monomer recovery system.
- ✓ 4-13 9 The discussion in the draft of the relief valve discharge provision in the existing standard is inappropriate. The draft should be modified to reflect a neutral approach on this issue. It certainly is not appropriate, for example, for TRW to claim to identify (categorically and without any cited support) just what "[t]he intention of Section

61.65(a) was." Moreover, the abbreviated discussion of the history of the relief valve discharge provisions coupled with the unsupported conclusions creates a serious misimpression of current requirements.

As noted previously, the draft report erroneously states that no emergency relief valve discharges are permitted under the present standard. The history of the development of the standard makes clear that EPA realized that "emergency relief discharges" would continue to occur and expressly provided that such discharges would not violate the standard. EPA further recognized and provided that a source need not take "all available measures" to prevent discharges. The proposal defined an emergency relief discharge as "a discharge which could not have been avoided by taking all available measures to prevent the discharge." '40 Fed. Reg. 59545, col. 3 (Dec. 24, 1975). The final rule promulgated by EPA deleted the "all available" language contained in the proposal. 41 Fed. Reg. 46565, col. 3 (Oct. 21, 1976).

This change in language demonstrates that some relief valve discharges were anticipated and considered permissible by EPA under the standard. There simply is no basis for the statement in the draft report that "[t]he intention of Section 61.65(a) was to eliminate relief valve discharges

." EPA recognized the important safety functions of pressure relief valves, and the standard clearly permits some relief valve discharges.

In the interest of presenting a balanced report, the comments filed by SFI criticizing some of EPA's conclusions in the original standard support document should be noted. This is particularly true of the passages dealing with gasholders and related topics.

The discussion in section 4.2.2 appears to be opinion. A citation to the source should be given, along with data to support the opinion.

PC

4-13

23

✓ 4-18

33

Section 4.2.2. claims that EPA regional enforcement personnel indicate that the majority of relief valve discharges are preventable. No data are provided and no statements or documents are cited to support this statement.

We believe that the majority of discharges are not preventable. They are caused by instrumentation failures such as controllers, transmitters and automatic switches, other mechanical failures, or unpreventable operator error. Even with the best operator training there will be an occasional, unpreventable error that results in a discharge.

It is unreasonable to assume that such discharges are preventable. Such a position could eventually require capital investment far in excess of any marginal emission reduction.

NC 4-19

5

The statement that "with the change to larger reactor systems, the potential quantity of emissions from the relief valve is increased" is incorrect. No data are provided to support this statement. Indeed, page 4-23, section 4.2.3.1 indicates that "newer reactor systems provide . . . fewer emissions to the atmosphere" and that larger reactors result "in a lessened probability of relief valve discharges." In addition, the first paragraph on page 4-42 states that one firm had "no reactor relief valve releases for 31,000 charges at their large reactor facilities". These citations refute the statement made on page 4-19.

In addition, the word "potential" describes the possibility of an event. It may be that the amount of a potential release from a large reactor could be greater than that of a small one, but the probability of such an event is likely to be less. Most large reactors are in newer plants with more modern safeguards so that the potential is lessened.

NC 4-20

Table
4-3

More complete data could be assembled from existing reports submitted to EPA.

- ✓ 4-26 2 The thermal expansion of vinyl chloride between 50 and 150°F is about 11%. That of water in the same range is about 2%. Thus, the statement that "hydroful" conditions may result from a 20% expansion of the "VC liquid charge" appears to be in error. No reference is given for this statement.
- PC 4-27 23 The autoacceleration of the polymerization rate begins when the liquid phase is absorbed in the precipitated polymer, which occurs at 25-30% conversion. It continues until 78-80% conversion, then ceases. "Flashing" will not increase the internal pressure. It only occurs because of the equalization of pressure due to the hydraulic head in the liquid charge, and any vapor generated is balanced by condensation or absorption in other parts of the vessel. Further, flashing is a consumer of energy and thus tends to cool the system. No reference is given for the statements in this section.
- NC 4-28 1 An increase in temperature to 72°C may or may not result in a relief valve discharge. This depends on the rupture disk/relief valve settings, which are a function of the design pressure of the reactor. Some polymerizations are run at temperatures in excess of 72°C.
- PC 4-28 9 The volume of the space charged has no bearing on the amount of discharge if a relief valve opens. The amount depends on the propelling force, which is a function of the unreacted monomer present, and many other factors.
- NC 4-28 17 The draft incorrectly implies that a gasholder is the solution to a multitude of problems but does not "conclude" that gasholders are economically feasible.
- NC 4-30 33 The TRW report tends to overstate the value of an auxiliary venting system by failing to adequately consider plugging problems that create concerns for safety.
- NC 4-33 30 A major problem with water-sealed gas holders is the position taken by EPA that the seal water was a source of VC and that the open channel had to be controlled.

- ✓ 4-34 16 Should be corrected to read: "One plant manually relieves pressure to the monomer recovery system when a batch is out of control." It is not vented to a gasholder.
- The disadvantages of gasholders are generally understated.
- NC 4-36 Table 4-10 The table should indicate that the figures are in December 1979 dollars.
- ✓ 4-37 13 In evaluating the \$5 million cost of the 10,000 gallon gasholder, reference should be made to the statement on page 34 that many gasholders would be required. We consider the \$5 million estimate to be reasonably accurate.
- 4-39 1 We support TRW's conclusion that a safety relief device vented directly to the atmosphere will always be required, no matter what system or combination of systems is required. We concur with the statement on page 4-17 that safety regulations and insurance companies require and strictly enforce the use of safety relief devices on pressurized equipment to avoid any explosion hazard. We would, however, object to the report's presumption that gasholders will stop and contain emergency discharges.
- ✓ 4-39 30 Hydraulic testing of a rupture disk before a batch will not prove that it will not fail prematurely, only that it did not fail on that test cycle. Besides being difficult to do accurately and requiring several hours, this test merely adds one more cycle to the disk history and brings its ultimate failure that much closer.
- Pressure testing of all reactors prior to charging to detect premature rupture disc failure is unreasonable. Rupture disc failure does not always result in a discharge since there may be a relief valve behind it. The operational procedure of evacuating the reactor after the high pressure testing would reduce productivity even further. Premature failures do happen, but with improved disc technology, proper selection of materials and regular maintenance, the possibility of disc failure has been reduced.

The statement that pressure tests can be run on the reactor prior to charging a new batch so as to prevent premature rupture disc failure is followed by procedures used by one plant to insure safe operation during the polymerization reaction. The juxtaposition of these two sentences implies that this one plant pressure tests the reactor prior to charging a new batch. This is incorrect. The paragraph should be rewritten to make it very clear that the reactors and rupture discs are not pressure tested prior to charging each new batch. Pressure testing each reactor prior to charging a new batch is infeasible, and any such requirement would have a devastating impact on the industry.

✓ 4-40

33

Equipment failure is not "prevented" by an emergency generator. An emergency source of power, from whatever origin, can keep some equipment in service if the normal power supply is lost, but equipment failures are not avoided.

We find this entire section 4.2 to be confusing and containing many minor errors. In particular, "hydroful" conditions are not a primary cause of relief valve discharges. They are, as Conoco reported, caused primarily by high temperature excursions which are not controlled by the short-stop system or emergency cooling.

NC 4-47

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The sole purpose of a gasholder in any recovery system is to provide surge capacity before the compressors. It is not, as so broadly stated, for venting compressor relief valves, pumps, weigh scales, condensers and knockout tanks.

NC 4-48

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General Tire and Rubber Company does not deliberately vent relief valves to the atmosphere. They may deliberately vent manually operated valves to the atmosphere, as permitted by the standard, but not through relief valves.

NC 4-51

34

The draft states that stripping to lower RVCM levels is prompted primarily by the VC standard. This statement makes no sense because if it were true manufacturers would not be stripping some resins to levels below the current requirements. Actually, other marketing reasons prompt producers to strip some resins below the levels set by the regulation. See the stripping levels given in Table 4-11 on page 4-53.

PC 4-52

23

Other factors which affect the rate of stripping are the molecular weight (degree of polymerization) and porosity of the resins. As these factors decrease, the rate of stripping also decreases. Customers often have requirements for resin classes that strip with much more difficulty than do other classes.

NC 4-53 &
4-54
(4-55)Table
4-11

This table is only partially complete. Since industry has submitted this data to EPA, the data should be included for all plants to represent 100% of production.

✓ 4-59

10-13

The draft misstates the results of the B. F. Goodrich study. A corrected statement should indicate that fugitive emissions from small reactors were "0.034 kg/100 kg (0.034 lb/100lb) of PVC produced or approximately 20 percent of the EPA estimated controlled rate (the EPA predicted rate after implementation of the existing standard). Fugitive emissions from new large reactor suspension processes were determined to be 0.0085 kg/100 kg (0.0085 lb/100 lb) of PVC or only 5 percent of the EPA estimated controlled rate."

✓ 4-63

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As stated before, the standard exempts emergency manual venting from the emission limit of 10 ppm.

- ✓ 4-65 34 The statement is incorrect. The plant has modified the unloading lines from railcars, not the transfer lines. Thus, after purging the lines to recovery, the volume is less than the allowed volume under the standard.
- ✓ 4-67 7 There was no general two-year waiver period for compliance, as the sentence implies.
- The review of leak programs referred to here was held only for Regions III and IV. Region VI held a different study. Instead of "the EPA Regions", the statement should read "a few of the EPA Regions."
- NC 4-78 11 VCM calibration gases are certified by the manufacturer. As a check, the plant can run a comparison test with their calibration gas. Analysis by Method 106 is unnecessary.

Chapter 3

- NC 5-3 11 Inprocess wastewater stripper effluent does not need continuous monitoring or daily sampling when it can be historically shown that the effluent is well below the 10 ppm level.
- NC 5-3 15 It is stated that "compliance with the regulations has drastically increased the quantity of in-process wastewater discharged from many plants". A reference is given for this statement; however, no details supporting the claim are given. Supporting details should be provided, or the statement should be deleted.
- NC 5-4 8 The report suggests that monthly or semiannual averaging of reactor opening loss would apply mainly to bulk processors and other plants stripping in the reactor. There is no reason for limiting this concept to bulk processors and other plants stripping in the reactor. It can and should be applied to all reactor openings.
- NC 5-6 20 New source performance standards (NSPS) should not be applied to existing sources unless they become new sources through plant modification or expansion.
- NC 5-7 Section 5.9 The discussion concerning dryer emissions is somewhat misleading. The example given is based on dryer emissions for a new plant being equivalent to the current standard RVCM level of 400 ppm. The example given is based on one application for a prevention of significant deterioration (PSD) permit. Many recently issued PSD permits (not applications) specify RVCM levels substantially less than those currently allowed by the existing standard. It would be interesting to know the permit RVCM level for the referenced application.
- This discussion implies that indirect drying reduces emissions. This is incorrect and misleading. Not all RVC is emitted from the dryer exhaust as stated. Some also emanate

from the blend tanks and silos, while some remain in the resins. The figures also improperly assume that the resins will be at the 400 ppm RVCM level, as opposed to actual, current levels.

EPA considered regulating sources after the stripper during initial development of the standard. The required stripping levels were selected, in part, to assure that subsequent emissions would not exceed the 10 ppm level. In addition, SPI comments on the original standard reflected an industry preference to control emissions through stripping rather than through control of post-stripping emission sources. However, the draft report fails to note that the present standard gives an operator a choice between stripping and other control methods. See 40 C.F.R. § 61.64(e).

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|----|-----|--------------|---|
| NC | 5-7 | 5 | The prevention of significant deterioration (PSD) application should be identified. |
| ✓ | 5-7 | 6 | The stated figure for the production of an average plant should be 90 gigagrams, not 90 megagrams. |
| NC | 5-7 | 8 | Indirect drying would have little effect on emissions here. It is obsolete technology and does not apply to PSD situations. |
| NC | 5-7 | 13 | The draft should be factual and not judgmental. The suggested regulation of blend tanks and centrifuges is subjective and unsupported by referenced data. |
| NC | 5-9 | Section 3.11 | The premise of the existing leak detection section of the VC standard is site specificity. EPA, however, did not provide guidance for the basic elements of a leak detection program. |
| NC | 5-9 | 34 | Back-up devices and emergency vents are typically operated less than 200 hours per year. This does not justify the expense for the continuous monitoring equipment suggested. |

Chapter 6

	<u>Page</u>	<u>Line</u>	<u>Comment</u>
NC	6-6	7	OSHA regulations apply to the transportation of vinyl chloride. 29 C.F.R. § 1910.1017(a)(3). This, in turn, limits the amount of VCM in rail and tank cars sent to cleaning and repair facilities. We understand that cars are purged to control devices.
PC	6-7	Section 6.3.4	The draft report states that PVC disposal sites (landfills) are unregulated, represent a potential VCM emission source, and are an area of concern for regional EPA personnel. Such statements increase the likelihood of unnecessary regulation of PVC related wastes and landfills accepting such wastes under RCRA or the Clean Air Act. This concern is increased by TRW's plans to include landfills as an area of focus in their Phase II study. An earlier Battelle Report on VCM emissions from a landfill was a major factor in EPA's August 1979 proposal to list as hazardous waste PVC sludge and other related wastes. SPI submitted comments to EPA's Office of Solid Waste, pointing out that (1) the Battelle information was out of date, (2) the Battelle Report was considered when EPA prepared its NESHA? regulation for VCM, (3) subsequent industry testing shows the existence of substantially lower concentrations of VCM at landfills, and (4) the NESHA? stripping requirements have resulted in lower RVCM levels in PVC waste. Further consideration of this issue is unwarranted.

Chapter 7

NC 7-1

Section In general, the impact of other regulations
7.1 is understated in this chapter.

The Interagency Regulatory Liaison Group's (IRLG) "Regulatory Report," Vol. II, Issue II (December, 1980) provides a review of the status of pending regulatory actions. This can be updated through more recently published regulatory agendas. EPA's agenda appears at 46 Fed. Reg. 23692 (April 27, 1981).

NC 7-3

Section The viability of EPA's airborne carcinogen
7.2.1 policy is highly questionable, as noted
previously.

NC 7-7

25 Implementation of the California South Coast
Air Quality Management District (SCAQMD)
requirements would present a great hardship
to industry. This standard is not based on
verified scientific evidence and should,
therefore, not be implemented in any new
areas.

✓ 7-9

4

The draft report errs when it states that California Rule 1005.1 on VCM requires reactors and other equipment upstream of stripping to be equipped with automatic pressure reduction systems (APRS). Such a requirement, by the terms of Rule 1005.1, is contingent upon there being two violations per month of the ambient air concentration requirement in two consecutive months caused by emergency relief valve discharges.

NC 7-10

Section The discussion ignores the status of PVC
7.3 sludge under RCRA and its relationship to
TRW's suggested review of solid waste
disposal under the Clean Air Act.

NC 7-11

16

Ambient water quality criteria for vinyl chloride were published by EPA in October 1980. See 45 Fed. Reg. 5883 (Oct. 1, 1980).

✓ 7-14

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The statement concerning FDA "permits" is incorrect. There is no such system. No reference is cited for the statement. FDA does have regulations governing good laboratory practice (GLP), good manufacturing practice (GMP), and best manufacturing practice (BMP).

IIICONCLUSION

Should the Agency conclude that further activity is needed, SPI recommends that the following steps be taken.

1. EPA should proceed to develop the needed administrative changes in the current standard on an expeditious basis. We are available immediately to assist the Agency with this work.

2. Any substantive revision of the VC standard must be preceded by the development of health effects data that would demonstrate a public health benefit from reduced emissions. Any revision of the standard not supported by new health effects data would violate the "ample margin of safety" test of Section 112 of the Clean Air Act, the provisions of Executive Order 12291, and the guidance given by the Supreme Court in the Benzene case.

Enormous strides have been made since 1975 in the epidemiology and pharmacokinetics of vinyl chloride. We do not believe that a simple calculation of risk by EPA's Carcinogen Assessment Group (CAG) can be adequate unless all available data are evaluated. We will assist CAG in the gathering and evaluation steps if we will be permitted to do so. At a minimum, we request permission to comment on the draft CAG report, now due in July, before it is issued in final form.

3. The Agency should address the admittedly incomplete data base in the TRW draft with emissions and compliance records from the Regional offices. If these reports are so difficult to acquire and utilize, the Agency should reevaluate the need for requiring them to be submitted.

4. The Agency should assemble all of the presently available data within the Agency relative to compliance technology and emissions. Specifically, we understand that the regions have conducted some monitoring studies near plants, that they have sponsored a study by Radian Corporation on gasholders, and that the Agency has a report by John Zink Company on flare efficiency. Extensive data on landfills were submitted to EPA as part of the RCRA proceedings in 1979, and health data were submitted to OSHA in 1980. There may well be other sources of information. These available resources should be utilized in any review of the standard.

5. More effort should be applied toward estimating the cost effectiveness of the current standard, especially in the reporting and work practices areas. Alternative procedures

which may produce equal results at a lesser burden to EPA and the industry should be considered. This effort will be necessary, if review is continued, to meet the requirements of Executive Order 12291.

6. EPA should consider the need for additional field monitoring after available data are evaluated. Certainly, decisions to bring further activities under regulation cannot be supported without actual measurements. A health effects study will also be required.

SPI appreciates this opportunity to comment on the TRW draft and the vinyl chloride review study and is willing to discuss these points with EPA in greater detail at any time.

May 13, 1981