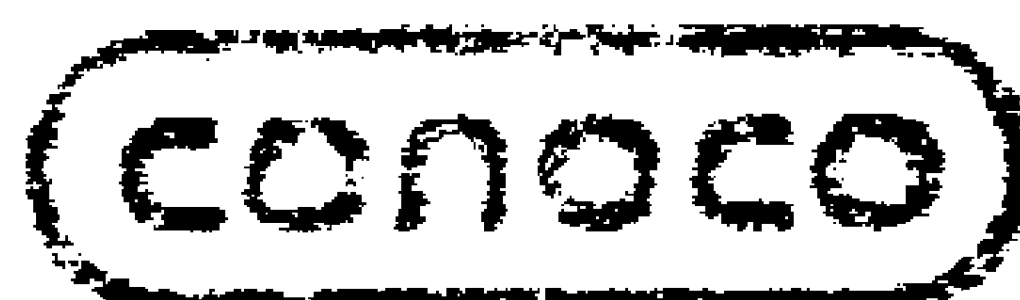




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Conoco Chemicals Division

Continental Oil Company
P. O. Box 2197
Houston, Texas 77001

February 12, 1976

Emissions Standards and Engineering Division
Environmental Protection Agency
Research Triangle Park, North Carolina 27711

Attention Mr. Don R. Goodwin

Dear Mr. Goodwin:

Conoco Chemicals wish^{to} participate in the rule making for the proposed standard for vinyl chloride (VC) by submitting these comments:

As we have indicated previously (see attachment), Conoco Chemicals believes it is in the public interest to reduce the emissions and thus reduce exposure of the surroundings to VC. The strict Occupational Safety and Health Administration (OSHA) standard has already significantly reduced this exposure in the work place. Although concentrations measured in environments surrounding plant sites have always been low compared to the work place, further reduction will benefit the public and the environment by reducing further the possibility of harm from VC. The object of our comment is to help develop the best standard possible which provides ample and significant protection with efficient use of society's resources to do this.

Consider first the establishment of the safe ambient concentration. In all our review of the standard as well as the background and source information, we have been unable to find where VC has caused harmful health effects in the environment outside our plants at past and present levels of control. Indeed from the Environmental Protection Agency (EPA)¹ study, we learned that a study was made of mortality from liver angiosarcoma in the United States, and it found that "the number of cases in our study, 286, is close to the expected 10-year total of 260, and the three possible angiosarcoma cases within five miles of vinyl chloride plants would probably match well with the 5.9 cases expected..." "...If the presence of the vinyl chloride plant contributed no risk factor pre-disposing people to the disease." We also learned that "This survey has produced no evidence that living around vinyl chloride plants is a risk factor in the occurrence of liver angiosarcoma." The EPA ^{has} ~~have~~ attempted to determine the human liver angiosarcoma mortality expectation by statistical treatment of a model that uses data determined on rats. The proof of the pudding of any such study is whether the conclusions of the model are borne out by the experimental evidence. They were not. As the study said, "No conclusion can be drawn from our

1. A. H. Kuzmack and R. E. McCaughy, "Quantitative Risk Assessment for Community Exposure to Vinyl Chloride," EPA, December 5, 1975.

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Building On The Past ... For The Future

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believe the OSHA standard is sufficient and this measure of safety should be provided to all people. Consequently, we recommend adjusting the OSHA eight-hour standard for workers so the maximum safe 24-hour environmental exposure is no greater than 167 ppb (8 hours + 24 hours x 500 ppb = 167 ppb). Controls to assure attainment of this concentration should be installed by the Industry.

The impact of this level on any control strategy cannot be fully assessed because EPA's monitoring studies are incomplete. Keeping in mind, however, EPA's published monitoring data³ and using the EPA model,¹ we propose this analysis: Monitoring data justified the model's assumption that in the 0 - 1/2 mile annulus around a PVC plant the average concentration of vinyl chloride would be 323 ppb. Accordingly, the maximum concentration "allowed,"

2. Occupational Safety and Health Act of 1970, P.L. 91-596.

3. "Scientific and Technical Assessment Report on Vinyl Chloride and Polyvinyl Chloride," U.S. Environmental Protection Agency, Office of Research and Development, Washington, D.C. 20460. VAB0001205215

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survey at its present stage of completion." Therefore, this study cannot properly be used to set the stringency of control because the assumptions, possibility for errors, and lack of correlation with experimental evidence may cause it to dictate control much too strictly. This would grossly escalate the cost to provide an unneeded increment of risk reduction.

Because no health effects have been found outside of VC or PVC plants, we conclude that control could occur anywhere on the continuum between no detectable emissions and current emissions, which result from pre-regulation controls now in place (no additional control). Experience in industry, plus inconclusive but disturbing reports of adverse health effects at low concentrations in animal studies, however, cause us to endorse additional controls significantly more stringent than those practiced by industry today.

redundant
The EPA ^{has} have chosen the same course. We interpret their reasoning to say that nondetectable emissions represent a control point whose cost to industry and society would be unjustifiably ^{high} excessive. Thus, the EPA balanced their cost-risk-benefit by choosing a control point represented by "best available technology."

Conoco Chemicals agrees with the EPA in their determination that some control point between the extremes be chosen. However, we believe that there is ^{another} ~~another~~ control point ^{other} than the one chosen by the EPA ^{that would} ~~to~~ better balance the benefit, risk, and cost involved in this proposed regulation. Our suggested control point is based on the OSHA standard, whose "action level" is an eight-hour time-weighted average exposure of no more than 500 ppb. The OSHA limit was chosen after copious expert comment about where the level should be set to "assure so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources."² For EPA to set a more stringent level would imply that the OSHA standard was insufficient to protect workers' safety and health. We believe the OSHA standard is sufficient and this measure of safety should be provided to all people. Consequently, we recommend adjusting the OSHA eight-hour standard for workers so the maximum safe 24-hour environmental exposure is no greater than 167 ppb ($8 \text{ hours} \div 24 \text{ hours} \times 500 \text{ ppb} = 167 \text{ ppb}$). Controls to assure attainment of this concentration should be installed by the industry.

The impact of this level on any control strategy cannot be fully assessed because EPA's monitoring studies are incomplete. Keeping in mind, however, EPA's published monitoring data³ and using the EPA model,¹ we propose this analysis: Monitoring data justified the model's assumption that in the 0 - 1/2 mile annulus around a PVC plant the average concentration of vinyl chloride would be 323 ppb. Accordingly, the maximum concentration "allowed,"

2. Occupational Safety and Health Act of 1970, P.L. 91-596.

3. "Scientific and Technical Assessment Report on Vinyl Chloride and Polyvinyl Chloride," U.S. Environmental Protection Agency, Office of Research and Development, Washington, D.C. 20460. VAB 0001205216

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considering the OSHA standard, would be 167 ppb. To reach a level where everyone outside the plant is provided the same protection or better than workers inside the plant, additional controls requiring 52%, not 90+%, will be required ($100 \times 167 \div 323 = 52$). ~~In addition,~~ ^{Furthermore,} no additional controls are needed around vinyl chloride plants to give populations outside the plant equivalent or better protection.

Next, consider the effect of the Section 112 approach on trying to responsibly run a plant. Federal enforcement under the Clean Air Act singles out for specially strict and heavy penalties those who violate Section 112(c). In Section 113(c)(1) "any person who knowingly--(1) violates...Section 112(c) shall be punished by a fine of not more than \$25,000 per day of violation or by imprisonment for not more than one year or by both." Harsher penalties are exacted for subsequent violations. Because of this, there is the potential for punishment for every notification in the semiannual report of emissions in excess of the proposed standard provided the plant management did not immediately shut down the plant. In the preamble of the proposed EPA standard, casual comment about the expectation of these violations implies that EPA fully expects them as part of the normal conduct of operators as even the best of them struggle with the requirements of these proposed regulations. The reduction in the stringency of control we recommend, though still giving sufficient protection to people and the environment, allows a control strategy under Section 112 that is sensible and does not put responsible companies in the position of "breaking the law" no matter how hard they try. *how about self incrimination?*

Consider further that EPA, in their supporting information,⁴ indicate their assessment of the control capabilities of "best available technology" is based on sketchy data. Phrases like "...recently been experimenting with," "theoretically possible," "at least one polyvinyl chloride manufacturer is currently operating a carbon adsorption unit," and many other comments of this nature show that the technology being required has not been adequately tested in general use long enough at enough different conditions in different kinds of plants to assess its reliability. It is, therefore, arbitrary for EPA to base a standard on the operation of experimental or infrequently used control devices required by the standard to operate at their best efficiency 100% of the time.

All plant processes break down and require maintenance. So do control devices. Since the proposed regulation requires operators to run control devices at peak efficiency 100% of the time, either we must put in duplicate backup equipment or shut down the plant during control device malfunctions. The additional cost will be grossly excessive to obtain only a small additional control of VC.

EPA imply^{ies} that although some of the control technology is still in its infancy, by the time the regulations go into effect, this technology will be well proven and the control levels easily met. They even indicate that

4. Standard Support and Environmental Statement: Emission Standard for Vinyl Chloride, U.S. Environmental Protection Agency, Office of Air and Waste Management, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina 27711, October 1975. VAB.0001205217

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~~additional technology may come along during the period before the standard is effective which will allow tightening of the control.~~ Conoco believes it important to point out to EPA that the control equipment required is complex and extensive and will take the full time available under Section 112 to plan, design, construct, install, and prove to be in compliance. Designs must be "frozen" immediately upon promulgation of the standard to be able to do this. Constant modification cannot be made during the time between now and compliance. Long delivery times are expected from suppliers, especially if many plants opt for the same type of control equipment, for instance, incinerators. We believe at Conoco that we have insufficient data to create a design that we are sure will work when it is in place. Our engineers never design on the basis of such sketchy data and guarantee a result.

This previous discussion causes us to believe that operators will be put into the impossible position of spending large sums on extra control devices or constantly starting up and shutting down their plants if they do not meet the ~~unproven levels of control~~ that they hope to obtain by installing the "best available technology." Watching over all this will be EPA through the vehicle of the semiannual report to determine if the shutdown response was insufficiently rapid to charge the operator with a knowing violation. The EPA can merely add up the number of these notices of violations reported semiannually and send the company a bill. If he wishes to stay in business, even the best-intentioned operator will likely become a perpetual criminal if EPA's assessment of the capability of "best available technology" is incorrect.

Conoco believe there is ample protection of people and the environment without obtaining the 90+% emission control using the restrictive and unproven limits proposed by EPA. To put this in perspective, consider Table 1 of the proposed standard.⁵ In each section the ~~current standard~~ would require the sum of the emissions to equal 10 or less. With Conoco's proposal the sum of the emissions can equal 50 and still provide adequate safety. With this increment to work with, we propose the following changes.

In 61.61(n) we understand EPA to mean using some of the common hydrocarbon detectors currently commonly found in chemical plants for monitoring. It is our experience that these instruments will meet EPA's sensitivity requirement over part of their operating range but not when there are interferences or they are beyond the sensitive portion of their scale. We recommend, therefore, that the required sensitivity be changed from 5 to 10 ppm and that this sensitivity be required only over the 0 - 50 ppm range. Proof of this sensitivity should be the responsibility of the manufacturer or a unit should require EPA approval similar to the system maintained by the National Institute of Occupational Safety and Health (NIOSH).

5. "National Emission Standards for Hazardous Air Pollutants, Proposed Standard for Vinyl Chloride," Federal Register, Volume 40, No. 248, p. 39535 (December 24, 1975).

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good in 10-100
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In 61.62(a), 61.63(a), and 61.64(a)(1), (b), (c), (d) and all other sections in the standard that require venting VC containing streams through a control device that reduces the VC content to less than 10 ppm, we strongly encourage EPA to build a "stream factor" in the regulation to accommodate the inability of process and control equipment to run perfectly all the time by

(Alternate 1) Imposing a 30 ppm 24-hour time-weighted average exposure limitation requirement.

(Alternate 2) Requiring the control device to operate at 20 ppm 65% of the time, 40 ppm 30% of the time, and 100 ppm for 5% of the time.

(Alternate 3) Venting all streams containing more than 10 ppm VC through one or more control devices whose cumulative emissions of VC do not exceed 0.04 lbs./100 lbs. of VC or PVC produced with the requirement that these control devices be maintained in good operating order with a minimum stream factor of 0.9.

Our engineers estimate the additional emissions from our two PVC plants would be only 22 lbs./yr./plant from EPA's proposed standard to either Alternate 1 or 2.

In 61.64(a)(2) there is an error in the calculation used to arrive at the standard of 0.001 lbs. of VC/100 lbs. of VC produced. It occurs in the calculation on page 4.71 of the standard support document³ where a reported result of 8,000 ppm of VC is used as 0.008 lbs./lb. The reported analysis is in mole percent or volume percent, not in weight percent. In order to convert to weight percent, it is necessary to multiply by the ratio of the molecular weights of VC and air ($62.5/28.8 = 2.17$). Performing the calculation correctly gives a figure of 0.002 lbs./100 lbs. of VC, and 61.64(a)(2) and the remainder of the standard should be corrected to this figure. The paragraph should read, "(2) the reactor opening loss from each reactor is not to exceed 0.002 kilograms VC/100 kilograms (0.002 lbs. VC/100 lbs.) of PVC product, etc...."

In 61.65(b)(5) we recommend a provision be made to allow manual venting to the atmosphere if it is apparent that an emergency leading to a massive release will occur.

Operators may face extreme emergencies where primary control systems, such as short stops or auxiliary power, fail and a truly massive, disastrous release is imminent. At this point manual venting is almost the last resort to bring the reaction under control again. Because of the danger of the unstable situation, it would be unsafe to vent the manual releases into a gas holder. If manual venting occurred, there would be release of VC; but manual venting would likely prevent a much larger, perhaps explosive, release of a runaway reaction. If it is apparent to the operator that a much greater emergency, leading to a much more massive release, will occur without the manual venting, a provision permitting this would allow him to take prudent action without breaking the law.

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In 61.65(b)(7) this part should be changed to allow the plant the flexibility to empty VC sample vessels any way they choose so long as there are no VC emissions or any possible VC emissions have been scrubbed in a proper control device.

In 61.65(b)(8)(vi) the standard has a provision for each operator to develop a definition for a leak using some measure of VC concentration above background levels in the fixed point monitoring system. We believe this interesting approach is rendered inoperable because 1) changes in wind direction and other weather conditions will cause the background levels at some monitoring points to fluctuate widely and 2) the intermittent batch nature of normal PVC operations will cause wide variation of vinyl chloride concentrations depending on what operations are occurring. We believe this will cause the background variation to be similar to the vinyl chloride increment measured when a leak occurred, so it would be difficult to separate a leak from fluctuation of the normal background.

We recommend that EPA delete this section and let each plant handle how leaks shall be detected subject to the approval required in 61.65(b)(8).

In 61.65(b)(9)(i) we recommend that the concentration of VC in each in-process waste water stream before control is required be returned to the 100 ppm level specified in a previous draft of the standard. This adjustment will cut down the volume of in-process waste water that must be treated while not significantly increasing the amount of VC emissions to the atmosphere. Plants will not be required to spend the large extra cost to obtain this small additional reduction of risk.

good luck
As operators apply their ingenuity to comply with this very specific proposed standard, it will be apparent to many where alternate control methods not specified in the standard will do an equivalent job. Thus, under 61.66 both EPA and operators may find the requirements of handling so many of these petitions for alternate procedures burdensome and very time-consuming. With the restrictive time limit of Section 112 of the Clean Air Act governing compliance, opinions on equivalent equipment and procedures must be quickly dispatched or the operator's ability to comply in time will be compromised. We, therefore, recommend that a paragraph be added to 61.66 indicating that If the EPA does not act upon a request for use of equivalent equipment or procedures within 90 days of the request, the requesting operator be allowed to proceed with his alternates.

Conoco encourage EPA to reconsider their control point and accept the one specified by us. Further, we encourage EPA to consider with us how the industry, diversified as they are, will actually carry out each of the steps the restrictive proposed standard requires. EPA should accept all our proposed modifications because each is designed to implement sufficient control with the least disruption. In our judgment, the additional emissions from all the modifications recommended move the control point only

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slightly from the "best available technology" used by EPA and keep it well within the control point we recommend based on the OSHA standard.

Sincerely,

David A. Kuhn
Director of Biomedical
and Environmental Affairs

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