

Attachment: EPA letter July 28, 1977

Union Carbide Corporation's Specific Comments

on

ENVIRONMENTAL PROTECTION AGENCY

40 CFR PART 61

NATIONAL EMISSION STANDARDS FOR

HAZARDOUS AIR POLLUTANTS

PROPOSED AMENDMENTS, dated June 2, 1977 to the
STANDARD FOR VINYL CHLORIDE

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COLORITE 018766

42 FR 28154

"Zero Emission Goal"

In order to insure that the standard continues to approach the only level of emissions which is known absolutely protective of health, namely zero emissions, EPA is proposing amendments which require more efficient use of existing control technology at existing plants and which encourage technology to reach this goal without banning vinyl chloride

The preamble statement which implies that a "Zero Emission Goal" is possible is misleading and reflects on the technical integrity of the Agency. The following reasons for this statement are pertinent:

1. A "zero emission" plant would have to be hermetically sealed from the point where vinyl chloride is formed to the point where semi-finished products are discharged.
2. The largest source of emissions in an uncontrolled PVC plant, fugitive emissions, has been overestimated by EPA.
3. EPA has underestimated the effectiveness of the controls it imposed on PVC plants in the existing standard.

A "zero emission" plant would presumably be a large plant complex consisting of a vinyl chloride monomer facility, a polyvinyl chloride resin facility and a polyvinyl chloride resin fabricating facility for semi-finished products such as film, extrusions and moldings. This complex would be totally enclosed with personnel, raw materials, supplies and products entering and leaving through air locks and with all vent gases recycled or freed of vinyl chloride monomer before discharge to the ambient air. If EPA truly wants a "zero emission" PVC resin plant then all small plants requiring transport of vinyl chloride monomer or resin must be eliminated and complexes producing possibly one or

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two billion pounds of PVC annually should be planned. This kind of complex is conceivable and would require years of development work, but EPA in its proposed offset rule (§61.73) has essentially forbidden the concentration of facilities which could lead to an economic "zero emission" facility.

The estimate of the largest source of emissions in an uncontrolled EPA typical PVC suspension plant, fugitive emissions, was based on questionable data and arbitrarily overestimated by EPA in its Standard Support document. Table 4-1 in the Standard Support document states fugitive emissions for a typical suspension PVC plant are 124.5 kg/hr or 1.53 kg/100 kg product. On page 3-43 of that document EPA states that these figures were calculated by a material balance and that since particulate is considered a small part of fugitive emissions all estimates of particulate loss were assumed to be vinyl chloride. The conclusion that particulate loss is a small part of fugitive emissions is not supported by the Standard Support document (4-56) where the collection efficiencies of centrifugal separators is said to range from ~~60 to~~ greater than 99 percent. Most suspension PVC plants make use of centrifugal collectors (cyclone separators) in the resin drying system. A centrifugal separator operating at 99.5% collection efficiency would generate 0.5 kg/100 kg fugitive emissions very easily. In 1974 EPA engaged the services of Houdry Division of Air Products and Chemicals to compile and correlate the mass of data made available by the polyvinyl chloride industry. This Houdry Division of Air Products did and issued a report entitled Engineering and Cost Study

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of Air Pollution Control for the Petrochemical Industry, Volume 9, Polyvinyl Manufacture (EPA - 450 3 - 73-006-1). In that report Tables PV-1, PV-2, PV-3 and PV-4 show net material balances for each process. These are as follows:

Resin Process	Unaccounted for PVC % of Material Proc- essed	Unaccounted for VCM % of Material Proc- essed
Suspension	0.76	0.76
Dispersion	0	0.96
Bulk	0.45	0.45
Solvent	0	0.03
Latex	Not defined	Not defined

Eliminating the suspension plant data where EPA assumed that particulate emissions were vinyl chloride emissions in the Standard Support document (Table 3-10) and averaging the remaining data yields a value of 0.8 kg/100 kg of product for fugitive emissions. The use of material balance data from a large resin plant to define a fugitive emission which is approximately 1% of the material through put at the plant is poor engineering practice. In simply measuring 68 MM kg of material in and out of a tank an error of this magnitude may occur. Union Carbide in its comments on the present standard dated February 23, 1976 stressed that material balance data even across a simple storage system was an imprecise tool for emission evaluation, i.e., 1.5% of the material passing through a closed storage system simply disappeared through measurement errors. We do not deny the existence of leaks, losses from equipment purging, unloading hose losses and so forth. We do think, however, that the basis for EPA's estimate of fugitive vinyl chloride monomer emissions

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in the uncontrolled plant is poor and that the actual fugitive emissions of monomer is much lower than EPA has estimated.

As further evidence that EPA's estimates of "fugitive emissions" in uncontrolled PVC resin the Standard Support document on pages 3-38 through 3-41 lists estimates of "fugitive emissions" by resin process less process water which is stated separately:

Process	Fugitive Emissions kg/100 kg product
Suspension	1.50
Dispersion	1.13
Bulk	0.48
Solvent	0.03

This estimate of kg emissions per 100 kg of product covers a range of 0.03 to 1.50 or 5000%, yet the emissions itemized below from the existing standard are common to all the resin processes when process water is omitted. There is some slight change in fugitive emissions with production capacity if the larger plant is a multiline facility, but this cannot account for the range shown.

EPA has underestimated the effectiveness of the controls it has imposed on fugitive emissions in a typical (EPA) suspension PVC plant. In the Standard Support document it arbitrarily states that the controls it proposes on fugitive emissions will reduce them by 90% without any effort at analysis. A summation of various estimates for a typical (EPA) controlled suspension resin plant shows the following:

1. Tank car unloading hoses	0.00289 kg/hr
2. Slip gauges (mostly discontinued)	Negligible
3. Leakage from pumps, compressors and agitators	0.0

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4. Relief valve leakage	0.0
5. Manual Venting of gases	Negligible
6. Opening equipment	0.00215
7. Sampling	0.0
8. Leaks from equipment in vinyl chloride service except where noted *	12.79106
9. In process washwater	0.0739
Total	12.87 kg/hr

* Leaks from equipment determined by difference between total and material accounted for elsewhere.

Tank car unloading hoses are based on three hoses per 25000 gallon tank car unloaded venting 0.13 ft^3 per hose.

Slip gauges and manual vents must be made to a control device and reduced to 10 ppm concentration. These are negligible.

Leakage from pumps, compressors, agitators, relief valves and sample systems is essentially zero due to the mechanical systems required by the standard.

Opening equipment emissions are taken from Table 4-9 of the Standard Support document.

In process waste water is based on discharge of reactor purge water estimated from the reactor opening emission calculations in the Standard Support document (4-71). No reuse of purge water was assumed.

By difference over 99% of EPA's estimated "fugitive emissions" of 12.87 kg/hr must come from equipment leaks, piping flange leaks and valves. A typical vinyl chloride reactor, stripping, monomer recovery and monomer storage area for EPA's typical 68 mm kg/yr suspension PVC plant could be 200 feet long, 100 feet wide and 50 feet high, thus encompassing a volume of $1,000,000 \text{ ft}^3$. A leakage

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rate of 0.454 kg/hr of vinyl chloride monomer into that volume would require its displacement by fresh air six times each hour for the owner-operator to maintain the work space air at the 1 ppm vinyl chloride concentration required by the Occupational Safety and Health Standard for Vinyl Chloride. The EPA estimate for equipment leaks in that work space would entail ventilation at a rate of 169 air changes per hour for the owner-operator to stay within the OSHA prescribed permissible exposure limit. Thirty air changes per hour has been considered emergency ventilation by the PVC industry in the past. It is difficult to conceive that a PVC suspension plant equipped with continuous vinyl chloride monitors and using a well organized leak detection and repair program would have even half the equipment leakage rate estimated by EPA in the Standard Support document.

EPA's "zero emission goal" and its proposed offset of emissions rule are in conflict indicating a lack of careful technical review that characterized the preparation of the existing Standard. The implementation of either the zero emission goal or the offset of emissions rule will be seriously hampered by EPA's over estimation of uncontrolled fugitive emissions and by EPA's underestimation of the effect the existing Standard has on fugitive emissions.

Since fugitive emissions are a major factor in the controlled and the uncontrolled suspension PVC plants EPA's diffusion modeling results and projected health effects are also distorted.

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EPA should not make hasty piecemeal changes to regulations, goals or policy without a careful analysis of the effect on the whole regulation. Fugitive emissions estimates once considered simply a way of justifying EPA's Standard have, through the proposed amendments, become a major factor in regulation. We favor a complete review of the existing Standard when appropriate.

§61.64 Emission Standard for Polyvinyl
Chloride Plants

(a) Reactor

(1)(i) Each source for which construction had commenced on or before June 2, 1977 - 10 ppm until (date three years after promulgation of these amendments) and 5 ppm after (date three years after promulgation of these amendments).

(ii) Each source for which construction commenced after June 2, 1977 - 5 ppm.

Union Carbide Corporation believes these and subsequent regulations for (b) Stripper; (c) Mixing, weighing and holding containers and (d) Monomer recovery system are confusing, unjustified technically and economically, and are burdensome. The following items are worthy of note:

1. EPA states in its preamble (42 FR 28154) that it does not intend for an owner or operator to have to replace an installed control system which meets the 10 ppm limit with one capable of meeting the 5 ppm limit or to add an additional control system to an installed system. The purpose of the proposed amendment is to force owners and operators to maximize the effectiveness of existing control systems. An EPA Emission Standard and Engineering representative (SPI-EPA Meeting in Durham June 2, 1977) stated that in EPA's engineering judgment equipment installed to meet a 10 ppm maximum could be "fine tuned" to a point that the emission level of 5 ppm could be met. He also conceded we don't have a lot of emission data in this particular area.

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Union Carbide's experience with plants is that they have to be "fine tuned" to make them yield the design rating and very few installations perform over twice as well as the design rating (EPA is asking for more than twice the rating of the control equipment in that as one approaches a zero limit in design the amount of effort and equipment becomes infinite). Union Carbide's engineering judgment is that EPA is engaging in wishful thinking with regard to control equipment performance.

2. EPA in the proposed regulations makes no clarifying statements concerning the owner/operator's ongoing compliance program required under the standard promulgated October 21, 1976. The preamble notes that no installed control device is to be replaced or changed (42 FR 28154), but there appears to be no provision for control devices undergoing design, fabrication or construction.
3. The term "commenced construction", as ~~defined~~ by EPA (40 CFR Subpart A), means that the owner/operator has undertaken a continuous program of fabrication, erection, or installation, or has entered into a contractual obligation to undertake and complete such a program within a reasonable time. EPA Standards and Engineering representatives (SPI-EPA Meeting June 2, 1977) appeared surprised when told that the Internal Revenue Service regards engineering costs as an investment, i.e., a capital cost.

Does this indicate that EPA does not regard engineering design, bid preparation and solicitation of vendor data as construction? Engineering work is a major cost factor in any construction project and usually varies between 10 to 20% of the total project cost. The owner-operator who has entered into a contract for design and construction of control equipment is apparently complying with the regulation, irrespective of whether work is in progress, while an owner-operator who is actively carrying out an in-house design and construction project may not be. The owner-operator with the active in-house program is entitled to equal protection.

- . 4. The term "new source" as applied to these regulations by EPA is not logical or reasonable. In the preamble (42 FR 28155) EPA states that according to 40 CFR 61.02 a "new source" is a stationary source, the construction or modification of which commenced after proposal of a standard. It then proceeds to state that the proposed amendment would apply to replacement equipment installed in an existing plant, such as new polyvinyl chloride reactors replacing a worn out reactor. This is roughly equivalent to requiring the owner of a 1972 Ford to install a catalytic converter on the exhaust system when he replaces a tire. EPA Engineering Standards and Development representatives (SPI-EPA Meeting June 2, 1977) observed that one could replace an existing reactor with a used reactor and not create a "new source", but if the replacement reactor was new then it was a "new

source." A used plant if relocated was not a "new source." This kind of thinking originally appeared in Alice in Wonderland and is out of place in an EPA standard.

Enforcement of the regulation also becomes problematical when a plant consists of nine old reactors and one new reactor venting to a common control system. Does the vent concentration maximum now become 9.5 ppm? How can we assign a 5 ppm limit to the new reactor and a 10 ppm limit to an old reactor under the parameters of a control system?

5. The whole complicated proposed amendment reducing vent concentrations from 10 ppm to 5 ppm VCM represents an insignificant change in total emissions to the air. EPA's Standard Support document shows vents from the typical suspension plant monomer recovery system as 51 cubic meters per hour (1800 cubic feet per hour), with other vent flows not available. The monomer recovery system vent is by far the largest emission in such a plant; thus for calculation the total plant vent flow can be assumed to be 142 cubic meters per hour (5000 cubic feet per hour). At a vent flow of 142 cubic meters controlled to 10 ppm VCM concentration the total vinyl chloride emission via these routes would be 0.003952 kg/hr. The rule change proposed will reduce that flow to 0.001976 kg/hr, a reduction of 0.012% of the estimated 16 kg/hr permitted under the current Standard. Even if the plant vent flow were 2800 cubic meters per hour (100,000 cubic feet per hour) the reduction in vinyl chloride emissions by the

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move from 10 ppm maximum concentration to 5 ppm would reduce emissions only 0.0395 kg/hour. The concern over such a minute reduction is absurd.

Union Carbide Corporation recommends that this proposed rule be withdrawn because it is confusing, unnecessary and directs control efforts into an unproductive area.

§61.64 Emission Standard for Polyvinyl
Chloride Plants

(e) Sources following the stripper(s):

(1)ii For a grade or grades of polyvinyl chloride resin which have not been produced by the plant on or before June 2, 1977, the weighted average residual vinyl chloride concentration in all grades processed through the stripping operation on each calendar day, measured immediately after the stripping operation is completed, may not exceed the appropriate emission limit as follows:

(A) 500 ppm for polyvinyl chloride dispersion resins excluding latex resins

(B) 100 ppm for all other polyvinyl chloride resins including latex resins, averaged separately for each type of resin or

(2)ii For sources being used to process

(A) 0.5 g/kg

(B) 0.1 g/kg

The proposed amendment requires that residual vinyl chloride in the resin product from the stripper, or from other sources used to process the resin if the plant does not use a stripper for control, be reduced to 25% of the level permitted by the Standard promulgated October 21, 1976 if that resin grade was not produced in that plant prior to June 3, 1977. This ruling applies irrespective of whether the resin grade was a common commercial product, a grade normally produced in another plant by the same company or by another company, a very slightly modified grade or a completely new resin grade. When asked to explain this requirement at EPA's meeting with Society of Plastics Industry

representatives on June 2, 1977, an EPA Standards and Development representative stated that EPA had no new information other than that in its Standard Support document and it had no information on products industry had in research and development, but that EPA had demands and those demands are that you'll (industry) be able to strip the vinyl chloride monomer down to these levels which we have selected. This attitude on the part of EPA highlights the arbitrary nature of this proposal.

In its Standard Support and Environmental Impact Statement: Emission Standard for Vinyl Chloride (5-8), EPA noted that it appears that a majority of resins (grades) except dispersion resins can be stripped to 400 ppm or lower. In its Standard promulgated October 21, 1976, EPA provided (§61.64 (c)(1)) for averaging each type (not grade) of resin on a weighted average basis each calendar day, because it recognized that all grades of resin (except dispersion resin) could not be stripped to 400 ppm or less residual vinyl chloride. Similar provision was made for dispersion resin, except for the higher residual vinyl chloride limit (2000 ppm). These provisions were inserted by EPA because it recognized that all grades of resin could not be stripped to the levels specified by the existing standard. In its preamble to the proposed amendments EPA cites an article in American Paint and Coatings Journal (Vol.60, No.31 January 12, 1976 p.21) on B. F. Goodrich stripping technology, to support its claim that for some resins companies have already developed

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stripping technology which would meet the proposed amendment (42 FR 28155). This technology for improved stripping of suspension PVC homopolymers was known by EPA prior to promulgation of the existing standard. EPA was also aware that producers of some homopolymer grades and of copolymer grades were having difficulty meeting the 400 ppm limit (Standard Support document 4-57 to 4-61). EPA is correct in stating that it has no new information other than that contained in the Standard Support document; thus it has no basis for the proposed change.

EPA states in the preamble to the proposed amendments (42 FR 28155) that the amendment would apply to resins for which production for the purpose of marketing was commenced after the proposal of the amendment. The amendment would require all "new" resins No mention of "new" resins appears in the proposed amendments. At the EPA-SPI meeting in Durham June 2, 1977, EPA representatives stated that they recognize that the definition of a "new" resin was not clear cut. Having written a regulation making no mention of a "new" resin, they repeatedly stated that they would like to have this "new" resin defined by the industry (PVC). They also noted that this "new" resin was a research and development product, a product on the "drawing board", so to speak, which a manufacturer had the option of producing or not producing. The Society of the Plastics Industry showed in its testimony at its "public meeting" in Washington on July 19, 1977 the difficulties involved in defining a "new" resin. Irrespective of EPA's intentions as portrayed by the preamble to the proposed

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amendments, the amendment proposed clearly doesn't reflect these intentions.

The objective of this proposed rule is presumably stated in the preamble (42 FR 28154), i.e., encourage technology to reach this goal (zero emission) without banning vinyl chloride. The effect of the proposed amendment is to encourage no changes whatsoever in stripping technology. A producer of a resin that strips to 400 ppm residual vinyl chloride now is not likely to make changes to his process or product to achieve a 300 ppm residual vinyl chloride level if this results in its being classified as a "new" resin with a 100 ppm residual vinyl chloride limit. A producer with a research and development resin has a more difficult problem, i.e., the only way to determine stripability of his product and to develop ways to reduce its residual vinyl chloride content to a 100 ppm limit is to produce it in his plant, which he cannot do under the proposed rule. Since his "new" product must be competitive in quality with existing products and must be useful to his customers, the producer of a "new" resin is more likely to expend his research and development effort in showing customers how to better utilize his existing products. It should be obvious from these examples that the proposed amendment will not accomplish EPA's stated objective to reduce vinyl chloride emissions.

Union Carbide believes EPA is acting arbitrarily without due regard for the impact on competition when it writes regulations on no new knowledge and in effect rewards one owner-operator and

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penalizes another. Producers of relatively low molecular weight high vinyl acetate copolymers, including Union Carbide, who were having difficulty meeting the 400 ppm limit in the existing standard are to be penalized if they change their product even slightly to reduce vinyl chloride emissions or to improve product marketability. They do, however, have permission to emit the same amount of vinyl chloride indefinitely, so long as they make the same grades of resin.

As it is EPA's stated intention to avoid a ban of vinyl chloride and polyvinyl chloride (41 FR 46561) and to encourage a reduction of emissions (42 FR 28154), EPA should withdraw this proposed amendment or revise it to accomplish its intentions and objectives.

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§61.68 Emission Monitoring

(c) A daily span check is to be conducted for each vinyl chloride monitoring system used. For all of the sources listed in paragraph(a) of this section except for the one for which an emission limit is prescribed in §62.62(b) the daily span check is to be conducted with a concentration emission limit applicable to it

The calibration is to be done with either:

- (1) A calibration gas mixture
- (2) A calibration gas cylinder

This part of the proposed amendment is confusing and unduly burdensome. The interpretation of "a daily span check" is that the monitor is simply checked to insure its proper operation and that the sensor is functioning over its required range. Such a test requires only a few minutes or, in the case of Union Carbide's monitors, it is done every forty minutes automatically and an alarm is actuated if there is a significant deviation from expected norms. Inclusion of a discussion of calibration gases in this paragraph appears to imply that the monitor be calibrated daily with a precision standard gas sample. Calibration requires several hours work by a skilled person and involves taking the instrument out of service for that time. The standard (40 CFR Part 61 Subpart F) already promulgated requires that emission points be continuously monitored. Obviously, monitoring emissions less than 24 hours per day does not constitute continuous monitoring. An EPA Standards Development and Engineering representative stated (SPI-EPA Meeting June 2, 1977) that the purpose of the daily calibrations was really to force you (owner-operator) to inspect the machine every day to

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make sure it is working. She further stated that as long as the machine is working there is no expectation that it would change calibration. If this is the case then EPA should clearly state that the owner-operator must inspect emission monitors daily to insure proper operation and that daily calibration is not required.

The amendment goes further to require separate calibration gases for each limit, i.e., a 5 ppm calibration gas for a 5 ppm limit, a 10 ppm calibration gas for a 10 ppm limit, and so on. At Union Carbide the emission monitors are a part of a multi-purpose automatic chromatograph system which provides OSHA data, EPA leak data and EPA emission data. Requiring multiple calibration gases for such a system adds nothing to the system accuracy so long as the largest range (10 ppm) is tested regularly.

In view of Ms. Wyatt's statement (noted earlier) concerning EPA's intent to require daily inspection of emission monitors, we suggest that this is also the intent in EPA Methods 106 and 107 (40 CFR Part 61 Appendix B) and daily calibration is unnecessary. Method 106 requires:

7.3 Preparation of chromatograph calibration curve. . . .
Perform calibration daily or before and after each set
of bag samples, whichever is more frequent. . . .

Method 107 requires:

8. Calibration is to be performed each eight hour
period when the instrument is used. . . .

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Union Carbide Corporation's experience with chromatographs is that once a good quality chromatograph is set up, calibrated and kept in operating condition, i.e., oven on and carrier gases on, the calibration is stable almost indefinitely. We normally calibrate on a monthly basis or when any change is made in the chromatographic equipment such as installation of a new column. On a daily basis our chromatographs are tested for stability by inclusion of a sample of known vinyl chloride concentration in the group of samples to be analyzed for that day. If the daily standard sample does not cause the appropriate response then the chromatograph is repaired and recalibrated. It should be fully understood that Union Carbide is referring to a chromatographic analyzer which is dedicated to vinyl chloride analysis, not a multi-purpose unit. We believe that EPA should review its intent on the requirement for instrument calibration in Methods 106 and 107, and reduce the frequency of required calibration to normal good laboratory practice levels as well as ~~reducing~~ the frequency of calibration and number of precision gas samples required for vinyl chloride monitoring systems.

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§61.72 Request for interim emission limit

(a) If in the opinion of the owner or operator of an existing source, that source will be unable to comply with the 5 ppm emission limit in §§61.62(a)(1); 61.63(a)(1); 61.64(a)(1), (b)(1), (d)(1) and/or 61.65(c)(1) on or before (date - three years after promulgation of these amendments), the owner or operator of that source may request . . . an interim emission limit. . . The request . . . is to be submitted to the Administrator within six months prior to (date two years after promulgation of the amendments). The request is to include:

- (1) The reasons the source is incapable of being in compliance with the 5 ppm emission limit and data to support those reasons, and
- (2) A suggested interim emission limit and description of the methodology for attaining that limit.

(b) Any owner or operator. . . shall meet with the Administrator concerning information contained in the request. The meeting is to be open to interested persons . . .

The proposed amendment is at variance with the preamble (42 FR 28154) which states the request for an interim emission limit must be made one year before the compliance date. ~~The regulation requires~~ such requests eighteen months before the compliance date.

The proposed regulation is also at variance with EPA's stated purpose to force owners and operators to "fine tune" control equipment from a 10 ppm design limit to a 5 ppm emission limit. (SPI-EPA meeting June 2, 1977). "Fine tuning" a manufacturing operation is a tedious time-consuming task, most of which is trial and error work with no guarantee of success, yet EPA in its regulation is asking

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the owner/operator to forecast where he expects to be 12 to 18 months in advance of the compliance date. The net result is that the owner/operator studies results 18 months before the compliance date, requests an interim limit and ceases to work at "fine tuning." If the Administrator must approve a request 120 days after it is made, why must a request for an interim emission limit be made 18 months prior to the compliance date?

The proposed amendment requires that the owner/operator present supporting data and describe his control methodology in a meeting open to interested persons. There is no apparent protection for the owner or operator who has to lay bare his proprietary technology to his interested competitors, as well as other members of the public. Mr. Ron Naveen of EPA (SPI-EPA meeting June 2, 1977) stated that confidential information could be submitted in writing to the Administrator, that the whole idea of the public meeting was unique, and that if somebody in the public (without supporting data) knows more than the source (owner-operator) or has related information, EPA wanted to hear everything. The whole concept of a public meeting - its guidelines, its objectives and the expected results - needs to be studied if the request for an interim emission limit is to be considered on a technical basis.

Union Carbide Corporation does, however, endorse the principles contained in this section as evidenced by our letter to Mr. Don R. Goodwin, dated September 7, 1976, in which Mr. R. N. Wheeler stated "I am sure that we all recognize the impossibility of writing a perfect detailed standard covering vinyl chloride emissions; therefore,

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some consideration should be given to a clause (in the standard) that would permit the Administrator to waive or modify portions of the proposed standard for situations where full application of the standard would create a hazardous situation, or where it is manifestly impossible to comply."

As can be seen from the foregoing quotation, we do not feel this section is as broad as it should be. For a beginning, since the proposed amendments are of questionable feasibility, provision should be made for interim emission limits on sources following the stripper (§61.64(3)), for the offset of emissions due to new construction (§61.73), as well as for emission limits for reactors, strippers, monomer recovery systems, and mixing weighting and holding containers (§61.64 (a),(b),(c),(d)). Broadening the scope of this section would of course mean more work for EPA enforcement, but more importantly it would achieve the three EPA objectives somewhat less painfully. These objectives are to minimize vinyl chloride emissions, to not force the industry to suspend operation, and to keep pressure on the industry to develop technology to further reduce emissions.

Ultimately, Union Carbide Corporation would like a general clause or section in all standards that would provide relief from the regulation when it is justifiable to the Administrator. On occasion EPA does provide regulatory relief via various procedures, most of which is done informally. We believe it is time to admit there are and can be no perfect regulations and to provide a mechanism for the exceptions, especially where safety is involved.

§61.73 Offset of emissions due to new construction

(a) No owner or operator is to construct a new source which alone or in combination with other sources being constructed at the same time results in an increased production rate unless he demonstrates to the Administrator's satisfaction that such construction will not cause an increase in vinyl chloride emissions within 8 km of any other source which is subject to this subpart.

(b)

(c) The base line emission rate is to be determined on the level of emissions allowable by the standard.

(d)

(e)

(f) The emission limits applicable to both the new source(s) and the sources at which emissions are being reduced to balance the new construction are to be established by the Administrator.

The proposed regulation is unnecessary to protect the public health, effectively bans the expansion of any existing resin plant to achieve economies in control and cost, penalizes speciality resin processes which have the lowest emissions, imposes an economic burden on the consumer, rewards the owner-operator who maintains the status quo and is unclear in its definition and application.

EPA in the preamble of the existing standard (40 CFR Part 61 Subpart F) for vinyl chloride stated that the average exposure to persons within (5 miles) 8 kilometers of the uncontrolled vinyl chloride and polyvinyl chloride plants was 17 ppb. It further states that with the existing Standard this exposure will be reduced to 5% of the uncontrolled levels. Calculation shows that EPA's diffusion modeling forecasts an average exposure of 0.85 ppm. Considering the fact that for the typical (EPA) suspension PVC plant

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the controlled "fugitive emissions" estimate is at least 100% higher than can be possible/ and this is 80% of the total emission, the average exposure is probably less than 0.5 ppb. This level of exposure should adequately protect the public health since no clear connection between health and environmental exposure to vinyl chloride was established at the old uncontrolled level of 17 ppb.

EPA in its preamble to the proposed amendments (42 FR 28156) states that this (offset) provision may result in few existing plants being expanded or few new plants being constructed in the vicinity of existing plants. This is wishful thinking on EPA's part; there will be no plants expanded or constructed. EPA's typical suspension plant, according to the proposed amendments, would emit:

Fugitive Emissions	12.87 kg/hr
Reactor Opening	0.155
Relief Valve Discharge	0.0
Stripper, Monomer Recovery, etc. vents	Negligible
Emissions after Stripper	0.775
Total	13.800 kg/hr

If the owner-operator eliminated all controllable discharges this still leaves a total of 12.79 kg/hr emissions (0.08 kg/hr fugitive emissions are controllable). Thus, since the larger plant might be judged to have higher fugitive emissions, the ultimate expansion would be $\frac{(13.8-12.79)}{13.8} (100) = 7\%$. Complete elimination of controllable emissions is not possible; therefore, one could expand 2-3%, an uneconomic increment to say the least.

The proposed amendment on offset penalizes the owner-operator of specialty resin processes that emit much lower amounts of vinyl

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chloride per kilogram of polymer produced and much lower amounts of VCM per hour than the typical suspension resin plant. For example:

1. Union Carbide Corporation is the sole domestic operator of the solution PVC process. Process emissions from a 45.4 MM kg/yr plant are as follows:

Fugitive emissions*	2.326 kg/hr
Reactor opening	0.0373 kg/hr
Relief Valve Discharge	0
Stripper, Monomer Rec., etc., vents	Negligible
Emissions after the stripper	0.0170
Total	<u>2.380 kg/hr</u>

*Union Carbide Corporation estimate. Extrapolation of the Houdry data based on a solution process not used by Union Carbide Corporation yielded 0.17 kg/hr EPA used the Houdry data in its SSEIS.

The EPA estimated emissions for a typical controlled suspension resin plant are 4.5 times the 0.0419 kg/100 kg produced rate for the solvent process. Emissions per hour assuming a straight line capacity correction are $(2.38 \times 1.5 = 3.57 \text{ kg/hr})$ 22% of those for a typical controlled suspension process resin plant.

2. Union Carbide Corporation operates a number of small latex production plants in the United States, three of which produce latexes containing vinyl chloride as a comonomer. The largest use of vinyl chloride is at one plant which has the following estimated emissions:

Fugitive Emissions*	0.49 kg/hr
Reactor Opening	0
Relief Valve Discharge	0
Stripper, monomer recovery, etc., vents	Negligible
Emissions after stripper	0.0116 kg/hr
Total	<u>0.5016 kg/hr</u>

* Union Carbide Corporation estimate

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The EPA estimated emissions for a typical controlled suspension resin plant are 2.5 times the estimated 0.00077 kg/kg for this latex plant. Emissions per hour scaled up by a capacity factor of 13 are 6.5 kg/hr or 40% of an equivalent size controlled suspension PVC plant.

The proposed offset rule is very specific in forbidding any expansion of any vinyl chloride facility by construction which would increase emissions. This poses an impossible situation for speciality resin plants such as those in the examples given, in that their emissions are already very low, their process operating costs are higher than other processes and the markets they serve grow very slowly, requiring optimization and incremental expansion of existing facilities. EPA states in the preamble (42 FR 28154) that it wishes to encourage technology to reach a zero emission goal, yet in these cases it penalizes processes which are nearer this goal than others. The regulation clearly forbids any expansion by construction unless it will not cause an increase in vinyl chloride emissions.

With regard to the consumer economic impact of the offset policy the following are estimates of various Union Carbide Corporation facility expansions:

Suspension PVC Resin Manufacture

Existing plant expansion of 100,000,000 pounds per year is \$15,000,000 cheaper than building a new plant at a new location and operating costs

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would be \$6,200,000 higher per year at a new location. Consumer cost for this new increment of capacity would rise 6.2 cents per pound or over 20%.

Solution PVC Resin Manufacture

Expansion of existing plant by 60,000,000 pounds per year would be \$47,000,000 cheaper than building a new plant at a new location. Operating costs at the new location would be \$4,450,600 per year higher. Such an addition would not be an economic unit of expansion for a relatively slow growth business; thus there would be an additional cost for non productive facilities of \$1,360,000 per year until the plant was fully utilized. Consumer cost for these speciality resins would rise at least 16 cents per pound.

PVC Latex Manufacture

Incremental expansion of one of UCC's three latex plants by a nominal 8,000,000 pounds of latex solids per year would be \$1,650,000 less costly than installation of a PVC latex system at another plant. Operating costs would be the same for either situation, but distribution cost would rise by \$240,000 per year. In total the consumer would pay an additional 7 cents per pound of latex solids.

The foregoing expansions of existing facilities are additions leading to an optimum plant size which yields additional cost reductions.

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The proposed offset of emissions due to new construction provides a "windfall" profit to the owner-operator who maintains the status quo. The PVC resin business is extremely competitive in many areas, thus the resin selling price reacts rapidly to supply and cost. The resin selling price rises to the level of the selling price of the last new increment the market needs; therefore, the owner-operator of a large existing facility can simply raise his product selling price, not worry about the costs and difficulties of expansion, and maximize his profits. He is in effect rewarded for not expanding to supply the market.

The discussion of Emission Offset in the preamble (42 FR 28156) is very confusing. The significance and the definition of such terms as "baseline emission rate," "allowable emission rate," "construction," "modification," "new source," and "existing source" is very confusing. EPA appears to use "source" for both a plant and an equipment item without clarification. These terms must be clearly defined.

The "offset" amendment proposal is not clear too as to whether an owner-operator would be permitted to maximize production capacity if construction were not involved if the plant were not presently fully utilized. It also fails to make clear whether an owner-operator can change his product mix in an existing plant.

In general EPA's inclusion of an offset amendment in its proposed amendments is a hasty, ill advised application of a policy that has not been workable even when keyed to a measurable value such as ambient air concentration. If EPA feels the need for a rule

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of this type a study of German regulations on vinyl chloride ~~emission~~ would show an alternate procedure. The German regulation requires that vinyl chloride concentrations at the nearest dwelling not exceed 117 ppb in 99% of the measurements made. This gives the German owner-operator the option of controlling his ~~immissions~~ to an average level of less than 50 ppb at the dwelling ~~or~~ buying the dwelling. In the German situation everyone understands the regulation and it is based on a measurable quantity (Federal Republic of Germany, Limitation of Emission and Immission of VCM, Minister of Work, Health and Social Matters, March 6, 1975). EPA should reconsider its proposal of this amendment.

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REVIEW OF STANDARD

EPA plans to undertake a full scale review of Subpart F of 40 CFR Part 61, beginning three years from the promulgation of any amendments

Union Carbide Corporation endorses the idea of a full scale review of the already promulgated Standard (40 CFR Part 61 Subpart F). A full scale review conducted on a sound technical basis would permit the use of new health data, new technology and experience in working under the current Standard. Such a review would lead to a sounder, more workable standard than the current one, if done after the current Standard has been in effect for two or more years after its effective date. Consideration of amendments should await such a review and not be done hastily as in the case of the proposed amendments.

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