

The Society of the
Plastics Industry, Inc.

SP

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MINUTES

SPI/EPA Conference

VCM and PVC Producers Group
Technical Committee

J. A. M. [Signature]
File FC 2.4

EPA Conference Room
Durham, N.C.

8:30 A.M.
September 18, 1975

Attendance
Representing SPI

Gary Baise
G. W. Daigre
R. A. Fine
W. C. Holbrook
J. R. Lawrence
C. P. Loechelt
W. W. Madden
K. L. Spalding

Ruckelshaus, Beveridge, Fairbanks & Diamond
Dow Chemical USA
Hooker Chemicals & Plastics
B. F. Goodrich Chemical Co.
SPI
Ethyl Corporation
Firestone Plastics Co.
Shell Chemical Co.

Representing EPA

L. B. Evans
J. Farmer
D. R. Goodwin
K. W. Grimley, Jr.
S. Wyatt

Representatives from SPI's EPA Technical Subcommittee of the VCM and PVC Producers Group met with representatives of EPA's Engineering and Standards Division on September 18 to review comments on the August 1975 draft of EPA's Proposed Standard for Vinyl Chloride. A copy of the report that was presented to EPA is attached.

At the outset of the meeting the industry representatives stated their appreciation for the opportunity to meet with the EPA staff to review the industry's comment report.

Each of the industry's comments was presented and discussed with the EPA staff to explain the rationale behind the comment. The EPA staff gave careful consideration to each point, asked various questions and generally indicated a willingness to give additional consideration to the industry's point of view.

(OVER)

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Plastics Industry, Inc.



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Industry Comments on
Environmental Protection Agency's
Proposed Standard for Vinyl Chloride

Prepared by
Technical Committee
VCM and PVC Producers Group
The Society of the Plastics Industry, Inc.

September 18, 1975

Industry Comments on
Environmental Protection Agency's
Proposed Standard for Vinyl Chloride

Preface

This document contains the basic substance of the comments on the August 1975 version of the EPA Standard for Vinyl Chloride that were presented by a technical task force from the VCM and PVC Producers Group of The Society of the Plastics Industry, Inc. at a meeting with representatives of EPA's Engineering and Standards Division in Durham, N. C. on September 18, 1975.

The comments represent a consensus critique by the companies and individuals in the VCM and PVC Producers Group that took part in a joint technical review of the Proposed Standard and participated in the meeting with EPA on September 18. Naturally, it should be understood that the industry reserves the right to make additional and/or opposing comments as an industry or by individual companies in the course of this standard being available for public review.

Likewise, the industry's commenting on this Proposed Standard does not preclude the industry's right to challenge the legal and medical basis for such a standard on vinyl chloride if necessary.

Organization of Comments

The comments contained in this document appear in two forms. Section I contains comments on specific statements contained in the preamble to the Standard made by the EPA Administrator. Section II contains pages of the Proposed Standard that have been edited with inserts and deletions to indicate recommended changes. Longer insertions are listed sequentially in an attached Addendum as noted.

SECTION I

COMMENTS ON PREAMBLE

1. On page 6 the Administrator discusses the results of a preliminary ambient monitoring program conducted by EPA in the spring of 1974. This study showed an average concentration of less than one ppm (the threshold of test sensitivity at that time) with excursions of 1 to 3 ppm and one sample of 33 ppm. Much ambient monitoring has since been done by industry and the data made available to EPA which has shown a consistent decrease in ambient air VCM concentrations as the OSHA regulation was put into effect and as industry reduced its emissions. Ambient air monitoring after April 1, 1976, when the OSHA regulation is in full effect, should be the basis of an EPA vinyl chloride regulation.
2. On page 17 the Administrator discusses polymer plants which produce resins that contain less than 50% vinyl chloride and implies that data are lacking in this area. Such data were supplied by several companies. The Administrator apparently has not had time to evaluate the submissions on hand.
3. On page 18 Fugitive Emission Sources are identified as a major emission source. As noted earlier, this data was derived from the 1974 survey and has not been updated despite additional submissions by industry. Fugitive emission sources could be better titled, "Unaccounted for Material" since, by far, the major portion of this "emission" represents judgement and measurement errors on the part of the estimator.

4. On page 21 the Administrator notes that costs were considered when they were grossly disproportionate to the emission reduction achieved. If this were true then laboratory and research facilities should be exempted from the regulation. The regulation imposes a great need on industry for research and study to reduce emissions; yet, laboratory production of one or two grams of PVC is as surely subject to the regulation as a monster production plant. This certainly appears to be a cost disproportionate to the emission reduction achieved.
5. On page 22 the Administrator discusses the limitation of vent vinyl chloride concentration to 10 ppm and notes that this control was based on one emission test and two studies under contract. Yet on page 21 he states that control technology is based on use in one or more plants in the chemical industry. One emission test and two contract studies hardly meet this criteria. Again this vent concentration limit applies to all vents whether it is a test tube or a 1,000,000 pound-per-year resin plant monomer recovery unit.
6. On page 35 the Administrator flatly states that operator error is considered preventable. Human error is the least preventable of all natural disasters.
7. On page 36 the Administrator discusses control of emissions from loading and unloading hoses which he requires be vented through a control system to reduce VCM concentration to 2% by volume. In the case of small equipment items

7. (cont'd)...

(smaller than 50 gallons) he permits evacuation to 375 mmHg before opening. The singling out of unloading hoses which have less than 5-gallon volume for special treatment is burdensome and inconsistent. The special control regulation for loading and unloading hoses should be eliminated.

8. On page 37 the Administrator's plan to require rupture discs under each relief valve and the space between the rupture disc and the relief valve sealed by a pressure guage is disregard for good safety practices in the industry. This item was discussed several times with EPA personnel and the hazards pointed out. This requirement is dangerous as well as being absolutely unnecessary to control emissions. Properly engineered relief valve installations do not contribute any more to atmospheric emissions than any other valve.
9. On page 37 the Administrator, in his discussion of manual process equipment venting, has disregarded industry input on the safety improvement that results when emergency manual venting to the atmosphere is permitted to preempt the actuation of relief valves or other safety devices. This emission could be reported and justified as a safety release. Only those persons who are experienced and knowledgeable in plant operations can eliminate a massive release from a relief valve.

10. On page 38 the Administrator is certainly inconsistent when he discusses the difficulties in setting up a blanket leak detection program for all industry due to variation in facilities and then makes himself the sole judge of their adequacy. It would be better to list the criteria to be used in judging such a program or to define what is considered a leak in the first place. This leak detection program requirement is an example of an EPA and OSHA overlap. In this case, OSHA was more clear by setting concentration limits of 1 ppm and 5 ppm and telling industry to get there the best way they could as soon as they could.
11. On page 48 the Administrator starts a discussion of testing, reporting and record keeping. The record keeping portion is justified by saying most companies already keep these records. This is manifestly untrue. The Administrator notes that these records are not to be used as an indication of compliance, therefore, the record keeping serves no purpose that a well-defined operating procedure would not fulfill for a lot less money and labor.

SECTION II

Comments on Proposed Standard
on Vinyl Chloride

Subpart F - National Emission Standard for Vinyl Chloride

§61.60 Applicability.

(a) The provisions of this subpart are applicable to the following stationary sources/ excluding any such sources which are operated for research and/or development purposes.

(1) Ethylene dichloride plants, where ethylene dichloride is produced by reaction of oxygen and hydrogen chloride with ethylene.

(2) Vinyl chloride plants, where vinyl chloride is made by one or more processes including, but not limited to, the addition of hydrogen chloride to acetylene and the dehydrochlorination of ethylene dichloride.

(3) Polyvinyl chloride plants, where vinyl chloride is polymerized into polyvinyl chloride resin.

§61.61 Definitions.

(a) "Ethylene dichloride purification" means that part of the process after ethylene dichloride formation in which finished ethylene dichloride is produced.

(b) "Vinyl chloride purification" means that part of the process after vinyl chloride formation in which finished vinyl chloride is produced.

(c) "Reactor" means any vessel the purpose of which is to partially or totally polymerize vinyl chloride into polyvinyl chloride, including reactors that are designated as prepolymerization and postpolymerization reactors in the bulk process.

(d) "Stripper" means any vessel the purpose of which is to remove residual vinyl chloride from polyvinyl chloride resin, except bulk resin, in the slurry form by the use of heat and/or vacuum. In the case

of bulk resin, "stripper" means any vessel the purpose of which is to remove residual vinyl chloride from polyvinyl chloride resin immediately following the polymerization step in the plant process flow.

(e) "Monomer recovery system vent condenser" means a system, usually consisting of compressors and condensers, the purpose of which is to separate vinyl chloride from noncondensable gases, condense and recycle the vinyl chloride, and vent the noncondensable gases to the atmosphere.

(f) "Slip gauge" means a gauge which has a probe that moves through the gas/liquid interface in a storage or transfer vessel and indicates the level of vinyl chloride in the vessel by the physical state of the material it discharges.

(g) "Polyvinyl chloride resin" means any resin which is produced by polymerization of vinyl chloride.

(h) "Type of resin" means the broad classification of resin referring to the basic manufacturing process for producing that resin, including, but not limited to, the suspension, dispersion, emulsion, bulk, and solution processes.

(i) "Dispersion Resin"

← (i) SEE ADDENDUM

(j) ~~"Grade 101/1011"~~ means a resin manufactured in such a way as to form fluid dispersions when dispersed in plasticizer or plasticizer/diluent mixtures.

(k) "Latex resin" means a resin which is produced by a polymerization process which initiates from free radical catalyst sites and is sold undried as a latex.

(l) "Bulk resin" means a resin which is produced by a polymerization process in which no water is used.

(m) "Inprocess wastewater" means any water which during manufacturing or processing comes into direct contact with vinyl chloride or polyvinyl chloride or results from the production or use of any raw material, intermediate product, finished product, by-product, or waste product containing vinyl chloride or polyvinyl chloride but which has not been discharged to a wastewater treatment process or discharged untreated as wastewater.

SEE
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(n) "Wastewater treatment process" means a process the purpose of which is to meet effluent guidelines and standards for characteristics such as BOD, COD, TSS, and pH, and does not mean any process the purpose of which is to remove vinyl chloride from water to meet requirements of this subpart.

(o) "In vinyl chloride service" means that a piece of equipment contains either a liquid that is at least 10 percent by weight vinyl chloride or a gas that is at least 10 percent by volume vinyl chloride.

(p) "Reactor opening loss" means the emissions of vinyl chloride occurring when a reactor is vented to the atmosphere for any purpose other than emergency relief.

(q) "Emergency relief discharge" means a discharge which could not have been avoided by taking all available measures to prevent the discharge.

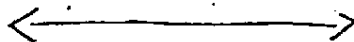
(r) "Multipoint vinyl chloride detector" means a device which obtains air samples from more than one point on a continuous sequential basis and analyzes the samples with gas chromatography, or infrared spectrophotometry, total hydrocarbon analysis using flame ion detection, or equivalent.

(s) "Portable hydrocarbon detector" means a device which measures hydrocarbons with ^{sufficient} a sensitivity ~~of 10/1000/1000/1000~~ and is of such design and size that it can be used to measure emissions from localized points.

(t) "Standard operating procedure" means a formal written procedure officially adopted by the plant owner or operator and available on a routine basis to those persons responsible for carrying out the procedure.

(u) "Run" means the net period of time during which an emission sample is collected.

§61.62 Emission standard.



SEE ADDENDUM

(a) Ethylene dichloride plant. Any owner or operator of an ethylene dichloride plant shall comply with the following requirements.

(1) Ethylene dichloride purification: The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from any equipment used in ethylene dichloride purification shall not exceed 10 ppm (one hour average), except as provided in paragraph (a)(3) of this section. This requirement does not apply to equipment that is open and meets the standard in paragraph (a)(4)(iv)(A) of this section.

(2) Oxychlorination process: Except as provided in paragraph (a)(3) of this section, emissions of vinyl chloride to the atmosphere from all oxychlorination ^{reactor vents} ~~process/equipment~~ shall not exceed 0.02 kg/100 kg (0.02 lb/100 lb) of 100 percent ethylene dichloride product from the oxychlorination process.

(3) Relief valve discharge: There shall be no discharge from any relief valve on any equipment in vinyl chloride service, except that this provision shall not apply to an emergency relief discharge in respect to which the plant owner or operator has met the requirements of §61.64(a).

(4) Fugitive emission sources:

(i) Leakage from pump seals:

(A) Rotating pumps: Vinyl chloride emissions from seals on rotating pumps in vinyl chloride service shall be minimized by installing pumps without seals, pumps with double mechanical seals, or equivalent as provided in paragraph (d) of this section.

(B) Reciprocating pumps: Vinyl chloride emissions from seals on reciprocating pumps in vinyl chloride service shall be minimized by installing double outboard seals, or equivalent as provided in paragraph (d) of this section.

~~(ii) Leakage from relief valves: Vinyl chloride emissions due to leakage from relief valves on equipment in vinyl chloride service shall be minimized by installing a rupture disk between the equipment and the relief valve, or equivalent as provided in paragraph (d) of this section.~~

SEE
ADDENDUM

(iii) Manual venting of gases: All gases which are manually vented from equipment in vinyl chloride service shall be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm (one hour average), or equivalent as provided in paragraph (d) of this section.

(iv) Opening of equipment. Vinyl chloride emissions from opening of equipment which contains greater than 2 percent by volume vinyl chloride after all liquid has been removed shall be minimized as follows:

(A) Before opening the equipment for any reason, including maintenance or inspection,

(1) See Addendum greater than 10 gallons but

(2) (1) If the volume of the equipment is/less than 0.19 m³ (50 gal), the quantity of vinyl chloride in the equipment shall be reduced by vacuum pump, so that the partial of vinyl chloride pressure in the equipment is no greater than 375 mm Hg absolute, or equivalent as provided by paragraph (d) of this section, and

(3)
(2) If the volume of the equipment is equal to or greater than 0.19 m³ (50 gal), the quantity of vinyl chloride in the equipment shall be reduced so that the equipment contains no greater than 2.0 percent by volume vinyl chloride; and

(B) Any vinyl chloride removed from the equipment in accordance with paragraph (a)(4)(iv)(A) of this section shall be vented through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm (one hour average), or equivalent as provided in paragraph (d) of this section.

(v) Leak detection and elimination: Vinyl chloride emissions due to leaks from equipment in vinyl chloride service shall be minimized by instituting a formal leak detection and elimination program. A description of the program shall be submitted to the

Administrator for approval within ⁹⁰~~45~~ days of the effective date of these regulations. The program shall provide for a multipoint vinyl chloride detector (for detection of major leaks and identification of the general area of the plant where the leak is located), a portable hydrocarbon detector (to be used routinely to find small leaks and to pinpoint the major leaks indicated by the multipoint detector), and a Standard Operating Procedure detailing the personnel positions responsible for the program, the procedure for calibration and maintenance of the instruments, and the action to be taken when a leak is detected. The Administrator will approve any program which he finds adequate to detect and eliminate leaks. The decision on whether a program is adequate shall be based on the date when the program will be implemented, the characteristics of the multipoint detector and portable hydrocarbon detector (including the sensitivities of the instruments), the number and location of points to be monitored in comparison with the number of pieces of equipment in vinyl chloride service and the size and physical lay-out of the plant, the proposed frequency of monitoring, and the specifications contained in the Standard Operating Procedure. Once a program for a particular plant is approved by the Administrator, the owner or operator of that plant shall adhere to the specifications of the program.

(vi) Inprocess wastewater: Emissions to the atmosphere from inprocess wastewater shall be reduced as follows:

(A) The concentration of vinyl chloride in each inprocess wastewater stream containing greater than 100 ppm vinyl chloride

immediately as it leaves a piece of equipment before being mixed with any other inprocess wastewater stream shall be reduced to 10 ppm by weight before being exposed to the atmosphere, or before being discharged to a wastewater treatment process, or discharged untreated as a wastewater.

(B) Any vinyl chloride removed from the inprocess wastewater according to paragraph (c)(7)(viii)(A) of this section shall be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm (one hour average), or equivalent as provided by paragraph (d) of this section.

(b) Vinyl chloride plants: Any owner or operator of a vinyl chloride plant shall comply with the following requirements:

(1) Vinyl chloride formation and purification: The concentration of vinyl chloride in all exhaust gases discharged into the atmosphere from any equipment used for vinyl chloride formation or purification shall not exceed 10 ppm (one hour average), except as provided in paragraph (b)(2) of this section. This requirement does not apply to equipment that is open and meets the standard in paragraph (b)(3)(v)(A) of this section.

(2) Relief valve discharge: There shall be no discharge from any relief valve on any equipment in vinyl chloride service, except that this provision shall not apply to an emergency relief discharge in respect to which the plant owner or operator has met the requirement in §61.64(a).

(3) Fugitive emission sources:

(i) Transfer operations:

(A) Loading operation: ~~Immediately~~^A after each loading operation, to be opened the vinyl chloride in all portions of the loading hoses which are ~~open~~ and are greater than 10 gallons in volume to the atmosphere shall be reduced so that the hoses contain no greater than 2.0 percent by volume vinyl chloride. Any vinyl chloride discharged ~~removed~~ ~~from the hoses~~ shall be vented through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm (one hour average), or equivalent as provided in paragraph (d) of this section.

(B) Slip gauges: During loading operations, the vinyl chloride from all slip gauges shall be vented through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm (one hour average), or equivalent as provided in paragraph (d) of this section.

(ii) Leakage from pump seals:

(A) Rotating pumps: Vinyl chloride emissions from seals on rotating pumps in vinyl chloride service shall be minimized by installing pumps without seals, pumps with double mechanical seals, or equivalent, as provided in paragraph (d) of this section.

(B) Reciprocating pumps: Vinyl chloride emissions from seals on reciprocating pumps in vinyl chloride service shall be minimized by installing double outboard seals, or equivalent as provided in paragraph (d) of this section.

(iii) ~~Leakage from relief valves: Vinyl chloride emissions due to leakage from relief valves on equipment in vinyl chloride service shall be minimized by installing a rupture disk between the equipment and the relief valve, or equivalent as provided in paragraph (d) of this section.~~

SEE
ADDENDUM

(iv) Manual venting of gases. All gases which are manually vented from equipment in vinyl chloride service shall be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm (one hour average), or equivalent as provided in paragraph (d) of this section.

(v) Opening of equipment: Vinyl chloride emissions from opening of equipment which contains greater than 2 percent by volume vinyl chloride after all liquid has been removed shall be minimized as follows:

(A) Before opening the equipment for any reason, including maintenance or inspection,

(1) SEE ADDENDUM greater than 10 gallons but
(2) (1) If the volume of the equipment is less than 0.19 m³

(50 gal), the quantity of vinyl chloride in the equipment shall be partial of vinyl chloride reduced by vacuum pump, so that the pressure in the equipment is no greater than 375 mm Hg absolute, or equivalent as provided in paragraph (d) of this section.

(3)
(2) If the volume of the equipment is equal to or greater than 0.19 m³ (50 gal), the quantity of vinyl chloride in the equipment shall be reduced so that the equipment shall contain no greater than 2.0 percent by volume vinyl chloride.

(B) Any vinyl chloride removed from the equipment in accordance with paragraph (b)(3)(v)(A) of this section shall be vented through a

control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm (one hour average), or equivalent as provided in paragraph (d) of this section.

(vi) Sample flask: During vinyl chloride sampling, the vinyl chloride in each sample flask shall be purged back to the process, or equivalent as provided in paragraph (d) of this section.

(vii) Leak detection and elimination: Vinyl chloride emissions due to leaks from equipment in vinyl chloride service shall be minimized by instituting a formal leak detection and elimination program. A description of the program shall be submitted to the Administrator for approval within ⁹⁰~~45~~ days of the effective date of these regulations. The program shall provide for a multipoint vinyl chloride detector (for detection of major leaks and identification of the general area of the plant where the leak is located), a portable hydrocarbon detector (to be used routinely to find small leaks and to pinpoint the major leaks indicated by the multipoint detector), and a Standard Operating Procedure detailing the personnel positions responsible for the program, the procedure for calibration and maintenance of the instruments, and the action to be taken when a leak is detected. The Administrator will approve any program which he finds adequate to detect and eliminate leaks. The decision on whether a program is adequate shall be based on the date when the program will be implemented, the characteristics of the multipoint detector and portable hydrocarbon detector (including the sensitivities of the instruments), the number and location of points to be monitored in comparison with the number of pieces of equipment in vinyl chloride

service and the size and physical lay-out of the plant, the proposed frequency of monitoring, and the specifications contained in the Standard Operating Procedure. Once a program for a particular plant is approved by the Administrator, the owner or operator of that plant shall adhere to the specifications of the program.

(viii) Inprocess wastewater: Emissions to the atmosphere from inprocess wastewater shall be reduced as follows:

(A) The concentration of vinyl chloride in each inprocess wastewater stream containing greater than 100 ppm vinyl chloride immediately as it leaves a piece of equipment before being mixed with any other inprocess wastewater stream shall be reduced to 10 ppm by weight before being exposed to the atmosphere, or before being discharged to a wastewater treatment process, or discharged untreated as a wastewater.

(B) Any vinyl chloride removed from the inprocess wastewater according to paragraph (c)(7)(viii)(A) of this section shall be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm (one hour average), or equivalent as provided by paragraph (d) of this section.

(c) Polyvinyl chloride plants: Any owner or operator of a polyvinyl chloride plant shall comply with the following requirements:

(1) Reactor:

(i) All gases discharged from each reactor shall be vented through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm (one hour average), except as provided in paragraph (c)(1)(ii) and (c)(2) of this section.

(ii) For each reactor, the emissions from reactor opening loss shall not exceed 0.001 kg vinyl chloride/100 kg of polyvinyl chloride product from the reactor, with the product measured on the basis that it is dry and contains no vinyl chloride (0.001 lb vinyl chloride/100 lb of polyvinyl chloride product). This requirement is applicable to any vessel which meets the specifications of the definition of reactor in §61.61(c) and to any vessel which meets the specifications of both the definition for "reactor" in §61.61(c) and the definition of stripper" in §61.61(d). SEE ADDENDUM

(2) Relief valve discharge: There shall be no discharge from any relief valve on any equipment in vinyl chloride service, except that this provision shall not apply to an emergency relief discharge in respect to which the plant owner or operator has met the requirement in §61.64(a).

(3) Stripper: The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere recovery system from each stripper shall not exceed 10 ppm (one hour average), except as provided in paragraph (c)(2) of this section. This requirement does not apply to equipment that is to be opened open and meets the standard in paragraph (c)(7)(v)(A) of this section.

(4) Mixing, weighing, and holding containers: The concentration of vinyl chloride in all exhaust gases discharged from any mixing, weighing, or holding container in vinyl chloride service which precedes the stripper (or the reactor if the plant has no stripper) in the plant process flow shall not exceed 10 ppm (one hour average), except as provided in paragraph (c)(2) of this section. This

requirement does not apply to equipment that is ~~open~~^{to be opened} and meets the standard in paragraph (c)(7)(v)(A) of this section.

(5) Monomer recovery system vent condenser: The concentration of vinyl chloride in exhaust gases discharged from each monomer recovery system vent condenser shall not exceed 10 ppm (one hour average), except as provided in paragraph (c)(2) of this section. This requirement does not apply to equipment that is ~~open~~^{to be opened} and meets the standard in paragraph (c)(7)(v)(A) of this section.

(6) Sources following the stripper(s): Emissions of vinyl chloride to the atmosphere from the combination of all sources following the stripper(s) [or the reactor(s) if the plant has no stripper(s)] in the plant process flow, including but not limited to, centrifuges, concentrators, blend tanks, filters, dryers, conveyor air discharges, baggers, storage containers, and inprocess wastewater shall be considered in compliance with this standard provided:

(i) The weighted average residual vinyl chloride concentration in all grades of polyvinyl chloride resin processed through the stripping operation on each calendar day does not exceed:

(A) 2000 ppm for dispersion polyvinyl chloride resins, excluding latex resins;

(B) 400 ppm for all other polyvinyl chloride resins, including latex resins, averaged separately for each type of resin; or

(ii) Emissions of vinyl chloride to the atmosphere do not exceed:

(A) 0.20 kg/100 kg product from the stripper, (0.20 lb/100 lb) for dispersion polyvinyl chloride resins, excluding latex resins,

with the product measured on the basis that it is dry and contains no vinyl chloride.

(B) 0.04 kg/100 kg product from the stripper (0.04 lb/100 lb) for all other polyvinyl chloride resins, including latex resins, with the product measured on the basis that it is dry and contains no vinyl chloride.

(7) Fugitive emission sources;

(i) Transfer operations:

(A) Unloading operation: ~~Immediately~~^A After each unloading operation, the vinyl chloride in all portions of the unloading hoses which are to be opened and are greater than 10 gallons in volume ~~which are to be opened to the atmosphere~~ shall be reduced so that the hoses contain no greater than 2.0 percent by volume vinyl chloride. Any vinyl chloride ~~removed from the hoses~~^{discharged} shall be vented through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm (one hour average), or equivalent as provided in paragraph (d) of this section.

(B) Slip gauges: During loading operations, the vinyl chloride from all slip gauges in vinyl chloride service shall be vented through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm (one hour average), or equivalent as provided in paragraph (d) of this section.

(ii) Leakage from pump seals:

(A) Rotating pumps: Vinyl chloride emissions from seals on rotating pumps in vinyl chloride service shall be minimized by installing

sealless pumps, pumps with double mechanical seals, or equivalent as provided in paragraph (d) of this section.

(B) Reciprocating pumps: Vinyl chloride emissions from seals on reciprocating pumps in vinyl chloride service shall be minimized by installing double outboard seals, or equivalent as provided in paragraph (d) of this section.

~~(iii) Leakage from relief valves: Vinyl chloride emissions due to leakage from relief valves on equipment in vinyl chloride service shall be minimized by installing a rupture disk between the equipment and the relief valve, or equivalent as provided in paragraph (d) of this section.~~

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ADDENDUM

(iv) Manual venting of gases: All gases which are manually vented from equipment in vinyl chloride service shall be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm (one hour average), or equivalent as provided in paragraph (d) of this section.

(v) Opening of equipment. Vinyl chloride emissions from opening of equipment which contains greater than 2 percent by volume vinyl chloride after all liquid has been removed shall be minimized as follows:

SEE
ADDENDUM

(A) Before opening the equipment for any reason, including maintenance or inspection,

(1) SEE ADDENDUM greater than 10 gallons but
(2) (1) If the volume of the equipment is less than 0.19 m³

(50 gal), the quantity of vinyl chloride in the equipment shall partial of vinyl chloride be reduced by vacuum pump, so that the pressure in the equipment

is no greater than 375 mm Hg absolute, or equivalent as provided in paragraph (d) of this section, and

⁽³⁾
(2) If the volume of the equipment is equal to or greater than 0.19 m³ (50 gal), the quantity of vinyl chloride in the equipment shall be reduced so that the equipment shall contain no greater than 2.0 percent by volume vinyl chloride; and

(B) Any vinyl chloride ~~removed~~ ^{discharged} from the equipment in accordance with paragraph (c)(7)(v)(A) of this section shall be vented through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm (one hour average), or equivalent as provided in paragraph (d) of this section.

(vi) Sample flask: During vinyl chloride sampling, the vinyl chloride in each sample flask shall be purged back to the process, or equivalent as provided in paragraph (d) of this section.

(vii) Leak detection and elimination: Vinyl chloride emissions due to leaks from equipment in vinyl chloride service shall be minimized by instituting a formal leak detection and elimination program. A description of the program shall be submitted to the Administrator for approval within ⁹⁰~~46~~ days of the effective date of these regulations. The program shall provide for a multipoint vinyl chloride detector (for detection of major leaks and identification of the general area of the plant where the leak is located), a portable hydrocarbon detector (to be used routinely to find small leaks and to pinpoint the major leaks indicated by the multipoint detector), and a Standard Operating Procedure detailing the

personnel positions responsible for the program, the procedure for calibration and maintenance of the instruments, and the action to be taken when a leak is detected. The Administrator will approve any program which he finds adequate to detect and eliminate leaks. The decision on whether a program is adequate shall be based on the date when the program will be implemented, the characteristics of the multi-point detector and portable hydrocarbon detector (including the sensitivities of the instruments), the number and location of points to be monitored in comparison with the number of pieces of equipment in vinyl chloride service and the size and physical lay-out of the plant, the proposed frequency of monitoring, and the specifications contained in the Standard Operating Procedure. Once a program for a particular plant has been approved by the Administrator, the owner or operator of that plant shall adhere to the specifications of the program.

(viii) Inprocess wastewater: Emissions to the atmosphere from inprocess wastewater shall be reduced as follows:

(A) The concentration of vinyl chloride in each inprocess wastewater stream containing greater than 100 ppm vinyl chloride immediately as it leaves a piece of equipment before being mixed with any other inprocess wastewater stream shall be reduced to 10 ppm by weight before being exposed to the atmosphere, or before being discharged to a wastewater treatment process, or discharged untreated as a wastewater.

(B) Any vinyl chloride removed from the inprocess wastewater according to paragraph (c)(7)(viii)(A) of this section shall be

ducted through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm (one hour average), or equivalent as provided by paragraph (d) of this section.

(d) Upon written application from an owner or operator, the Administrator may approve use of equipment or procedures which have been demonstrated to his satisfaction to be equivalent in terms of reducing vinyl chloride emissions to the atmosphere to those prescribed for compliance with a specific paragraph of this subpart.

§61.63 Emission tests and procedures.

(a) Information required by paragraphs (b) and (c) of this section shall be submitted to the Administrator within 90 days of the effective date in the case of an existing source or a new source which has an initial startup date preceding the effective date, except as provided in §61.11, or within 90 days of startup in the case of a new source, initial startup of which occurs after the effective date.

(b) The owner or operator of any source to which this subpart is applicable shall submit, according to paragraph (a) of this section, a report in writing quantifying the emissions of vinyl chloride from each of the sources specified in paragraphs (b)(1), (b)(2), and (b)(3) of this section. Emissions shall be determined by the Test Methods in Appendix B to this part, except as provided in §61.13 as follows:

(1) Test Method 106 ^{or equivalent} shall be used to determine the vinyl chloride emissions from the sources for which an emission limit is

prescribed in §61.62(a)(1), (a)(2), (b)(1), (c)(1), (c)(3), (c)(4), and (c)(5), and from the control systems to which fugitive emissions are required to be ducted in §61.62(a)(4)(iii), (a)(4)(iv), (a)(4)(vi), (b)(3)(i), (b)(3)(iv), (b)(3)(v), (b)(3)(viii), (c)(7)(i), (c)(7)(iv), (c)(7)(v), and (c)(7)(viii) as follows:

(i) All emission tests shall be conducted while the equipment being tested is operating at or above the maximum loading rate at which such equipment will be operated and under such other relevant conditions as may be specified by the Administrator based on representative performance of the source. All such data shall be proprietary and held confidential by the Administrator.

(ii) Each emission test shall consist of three runs. For the purpose of determining emissions, the average of results of all runs shall apply.

(iii) For each run, the vinyl chloride concentration shall be determined by using Test Method 106/ or equivalent. The sampling site shall be at least two stack or duct diameters downstream and one half diameter upstream from any flow disturbance such as a bend, expansion, contraction, or visible flame. For a rectangular cross section an equivalent diameter shall be determined from the following equation:

$$\text{equivalent diameter} = 2 \frac{(\text{length})(\text{width})}{\text{length} + \text{width}}$$

The sampling point in the duct shall be at the centroid of the cross section. The sample shall be extracted at a rate proportional to the gas velocity at the sampling point. The sample will be taken over a minimum of one hour, and shall contain a minimum volume of 50 liters corrected to standard conditions.

(except existing sources which were designed to operate at higher excess air levels),

(iv) For those emission sources where combustion is used to reduce vinyl chloride emissions, the concentration of vinyl chloride as determined by Test Method 106 shall be corrected to 3 percent oxygen (wet basis) for determination of emissions by using the following equation:

$$C_b \text{ (corrected)} = C_b \frac{17.9}{20.9 - \% O_2}$$

where:

$C_b \text{ (corrected)}$ = the concentration of vinyl chloride in the exhaust gases, corrected to 3 percent oxygen

C_b = the concentration of vinyl chloride as measured by Test Method 106

20.9 = percent oxygen in the ambient air at standard conditions

17.9 = percent oxygen in the ambient air at standard conditions minus the 3 percent oxygen to which the correction is being made

$\%O_2$ = percent oxygen in the exhaust gas as measured by Reference Method 3 in Appendix A of Part 60.

(v) For those emission sources where the emission limit is prescribed in terms of mass rather than concentration, mass emissions in kg/100 kg product shall be determined by using the following equation, where Reference Method 2 of Appendix A to Part 60 is used to determine volumetric flow rate in m^3/hr (Q) and the sampling site and traverse points are located according to Reference Method 1 of Appendix A to Part 60:

It is unclear what portion of the process this refers to.

$$C_{BX} = \frac{[C_b \left(\frac{2.16}{2760} \right) Q 10^{-6}] [100]}{Z}$$

where:

C_{BX} = kg vinyl chloride/100 kg product

C_b = the concentration of vinyl chloride as measured by
Test Method 106

$\frac{2.16}{2760}$ = density of vinyl chloride at one atmosphere and 20°C
in kg/m³

Q = volumetric flow rate in m³/hr

10^{-6} = conversion factor for ppm

Z = production rate (kg/hr)

(2) Inprocess wastewater: Test Method 107/^{or equivalent} shall be used to determine the concentration of vinyl chloride in each inprocess wastewater stream in accordance with §§61.62 (a)(4)(vi), (b)(3)(viii), and (c)(7)(viii) as follows:

(i) In determining whether the concentration of vinyl chloride in each inprocess wastewater stream exceeds 100 ppm by weight, all tests shall be conducted while the source of the wastewater is operating at or above the maximum production rate at which such equipment will be operated and under such other relevant conditions as may be specified by the Administrator based on representative performance of the source.

(ii) In determining whether the concentration of vinyl chloride in each inprocess wastewater stream found to be subject to the standard exceeds 10 ppm by weight, all tests shall be

conducted while the equipment used to remove vinyl chloride from the water is operating at or above the maximum loading rate at which such equipment will be operated and under such other relevant conditions as may be specified by the Administrator based on representative performance of the equipment.

(iii) Each test shall consist of three samples. For the purpose of determining emissions, the average of all samples shall apply.

(3) For those emission sources following the stripper(s) [or reactor(s) if the plant has no stripper(s)] in polyvinyl chloride plants where control technology other than improved stripping is used to attain the emission limit in §61.62(c)(6)(ii), emissions shall be determined as follows:

(i) Test Method 106 or equivalent shall be used to determine atmospheric emissions from all of the process equipment simultaneously. The requirements of paragraph (b)(1) of this section shall be met.

(ii) Test Method 107 or equivalent shall be used to determine the concentration of vinyl chloride in all inprocess wastewater subject to the standard prescribed in §61.62 (c)(6)(ii).

(A) All tests shall be conducted while the source of the wastewater is operating at or above the maximum production rate at which such equipment will be operated and under such other relevant conditions as may be specified by the Administrator based on representative performance of the source.

(B) Each test shall consist of three samples. For the purpose of determining emissions, the average of all samples shall apply.

(C) The water flow and production rates shall be determined in accordance with methods which have been submitted to and approved by the Administrator. The mass of vinyl chloride in kg/100 kg product shall be determined by using the following equation:

$$C_{BX} = \frac{[C_d \ R \ 10^{-6}] [100]}{Z}$$

where:

C_{BX} = kg vinyl chloride/100 kg product

C_d = the concentration of vinyl chloride as measured by
Test Method 107

R = water flow rate in L/hr

10^{-6} = conversion factor for ppm

Z = production rate (kg/hr)

(iii) Emission rates (kg/100 kg product) from all the sources subject to the emission limit in §61.62 (c)(6)(ii) measured in accordance with (b)(3)(i) and (b)(3)(ii) of this section shall be added together.

(4) The owner or operator shall provide the Administrator at least 30 days prior notice of an emission test to afford the Administrator the opportunity to have an observer present during the test.

(5) Records of emission test results and other data needed to determine emissions shall be retained at the plant and made available, upon request, for inspection by the Administrator, for a minimum of 2 years.

(c) The owner or operator of any source to which this subpart is applicable shall submit, according to paragraph (a) of this section, a statement in writing notifying the Administrator that the equipment and procedural specifications prescribed in §§61.62 (a)(4), (b)(3) and (c)(7) are being implemented, including the following information:

- (1) A list of the equipment installed for compliance,
- (2) A detailed engineering description of the physical and functional characteristics of each piece of equipment,
- (3) A detailed description of each procedure to be used for compliance, and
- (4) A statement that each piece of equipment is installed and that each piece of equipment and each procedure is being used.

§61.64 Reporting.

(a) The owner or operator of any source to which this subpart is applicable shall within 10 days of any relief discharge subject to the standards contained in §§61.62 (a)(3), (b)(2), or (c)(2) submit to the Administrator a report in writing containing information on the nature and cause of the discharge, the date and time of the discharge, the approximate total vinyl chloride loss during the discharge, the action taken to prevent the discharge, and measures adopted to prevent future discharges.

(b) Information required by paragraphs (b)(1), (b)(2), and (b)(3) of this section shall be submitted to the Administrator within 180 days of the effective date and on a continuing basis each 180 days thereafter.

(1) The owner or operator of any source to which this subpart is applicable shall submit, according to paragraph (b) of this section, a record of any emissions in excess of the standards prescribed in §61.62(a)(1), (a)(2), (b)(1), (c)(1)(i), (c)(3), (c)(4), and (c)(5), as measured by the multipoint vinyl chloride detector required by §61.62 (a)(4)(v), (b)(3)(vii), and (c)(7)(vii).

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(2) The owner or operator of any source to which this subpart is applicable shall submit, according to paragraph (b) of this section, a quantification of emissions of vinyl chloride from the sources following the stripper(s) in polyvinyl chloride plants [or the reactor(s) if the plant has no stripper(s)] for which improved stripping technology is used to attain the emission limit prescribed in §61.62(c)(6)(i). The emissions shall be determined by Test Method 107 as follows:

(i) If batch stripping is used, one representative sample of polyvinyl chloride resin shall be taken on a statistical based frequency ~~from each batch lot~~ as approved by the Administrator for each grade of resin immediately following the completion of the stripping operation as the resin is transferred out of the stripper, and identified by resin type and grade and the date and time the batch is completed. The corresponding quantity of material processed in each stripper batch shall be recorded and identified by resin type and grade and the date and time the batch is completed.

(ii) If continuous stripping is used, one representative sample of polyvinyl chloride resin shall be taken for each grade of resin processed or at intervals of 8 hours for each grade of

resin which is being processed, whichever is more frequent. The sample shall be taken as the resin flows out of the stripper and identified by resin type and grade and the date and time the sample was taken. The corresponding quantity of material processed by each stripper over the time period represented by the sample during the eight hour period, shall be recorded and identified by resin and grade and the date and time it represents.

(iii) The quantity of material processed by the stripper shall be determined by a method submitted to and approved by the Administrator on a total solids basis.
~~and shall be measured on the basis of dry weight of the solids.~~

(iv) At the prior request of the Administrator, the owner or operator shall provide duplicates of the samples required in paragraphs (b)(2)(i) and (b)(2)(ii) of this section.

(v) The report to the Administrator by the owner or operator shall include the vinyl chloride content found in all the samples required in paragraphs (b)(2)(i) and (b)(2)(ii) of this section, averaged separately for each type of resin, over each calendar day and weighted according to the quantity of each grade of resin processed by the stripper(s) that calendar day.

(vi) Records of all data needed to furnish the information required by paragraph (b)(2)(v) of this section shall be retained at the source and made available for inspection by the Administrator for a minimum of 2 years, and shall contain the following information:

(A) The vinyl chloride content found in all the samples required in paragraphs (b)(2)(i) and (b)(2)(ii) of this section,

identified by the resin type and grade and the time and date of the sample, and

(B) The corresponding quantity of polyvinyl chloride resin processed by the stripper(s), identified by the resin type and grade and the time and date they represent.

(3) The owner or operator of any source to which this subpart is applicable shall submit according to paragraph (b) of this section a record of the emissions from reactor opening loss for which an emission limit is prescribed in §61.62 (c)(2).

(i) These emissions shall be determined by the following formula:

$$C = W \frac{2.16}{(2160)} \frac{10^{-6}}{(10^6)} \frac{(C_b)}{YZ}$$

where:

C = kg vinyl chloride emissions/kg product

W = capacity of reactor in m³

C_b = ppm by ^{volume} ~~weight~~ vinyl chloride

Y = number of batches since the reactor was last purged and cleaned or by an approved engineering calculations method

Z = average kg of polyvinyl chloride produced per batch in the number of batches since the reactor was last purged and cleaned

(ii) Test Method 106 or a portable hydrocarbon detector shall be used to determine C_b as follows:

~~(A) With a probe of sufficient length to reach the vessel bottom from the manhole, the sample shall be withdrawn at a constant rate. Samples shall be taken for five minutes within six inches of the~~

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vessel bottom, five minutes near the vessel center, and five minutes near the vessel top, for a total sampling time of fifteen minutes.

(B) If a portable hydrocarbon detector is used, the readings at the three locations shall be averaged together to get C_b .

(C) Production shall be determined by a method submitted to and approved by the Administrator.

§61.65 Recordkeeping.

(a) The owner or operator of any source to which this subpart is applicable shall retain all of the information listed below at the source and make it available for inspection by the Administrator for a minimum of two years.

(1) A record of the leaks detected by the multipoint vinyl chloride detector and the action taken to repair the leaks, as required by §§61.62 (a)(4)(v), (b)(3)(vii), and (c)(7)(vii), including the following information:

(i) The concentrations of vinyl chloride as measured, analyzed, and recorded by the multipoint vinyl chloride detector, including the location where the measurement was made and the date and approximate time of the measurement.

(ii) Where the information required by paragraph (a)(1)(i) of this section indicates that the vinyl chloride concentration at any point exceeds ^{10 ppm} ~~two standard deviations from the mean concentration~~, a statement explaining the cause of the increase, and if the cause is a leak, any action taken to eliminate that leak and the amount of time used to take that action.

(2) A record of the leaks detected during routine monitoring with the portable hydrocarbon detector and the action taken to repair the leaks, as required by §§61.62(a)(4)(v), (b)(4)(vii), and (c)(8)(vii), including ~~the following information:~~

~~(i) The concentrations of hydrocarbons as measured, by the portable hydrocarbon detector, including the location where the measurement was made and the date and time of the measurement.~~

→ (ii) a brief statement explaining the cause of any leaks detected with the portable hydrocarbon detector, and any action taken to eliminate that leak.

(3) A log of the actions taken to remove vinyl chloride from equipment and transfer it to a control device, as required by §§61.62(a)(4)(iii), (a)(4)(iv), (b)(3)(iv), (b)(3)(v), (c)(7)(iv), and (c)(7)(v), including the following information:

- (i) Piece of equipment from which the vinyl chloride is removed.
- (ii) Piece of equipment to which the vinyl chloride is transferred.
- (iii) Time and date of the removal.
- (iv) Method used for removal.
- (v) For §§61.62(a)(4)(iv), (b)(3)(v), and (c)(7)(v), the concentration of vinyl chloride in volume percent (as measured by Test Method 106 or a portable hydrocarbon detector) or the pressure in mm Hg absolute in the equipment subsequent to the removal process before the equipment is opened to the atmosphere.

UNNECESSARY

(4) A log listing the procedures to be routinely carried out in attaining the emission limits prescribed for transfer operations

in §§61.62(b)(3)(i) and (c)(7)(i) and documentation that these procedures have been carried out. This documentation shall include the initials of the person responsible for carrying out the procedure and the date and time the procedure was carried out, or equivalent. If purging with water, air or nitrogen is used to attain the emission limits prescribed in §§61.62(b)(3)(i)(A) and (c)(7)(i)(A), Method 106 or a portable hydrocarbon detector shall be used to measure any discharges the concentration of vinyl chloride in ~~the exit stream from the hose~~. If a vacuum pump or another method is used to attain the emission limits prescribed in §§61.62(b)(3)(i)(A) and (c)(7)(i)(A), the equipment concentration of vinyl chloride in the ~~hoses~~ shall be measured by a method submitted to and approved by the Administrator.

(5) For the relief discharges from reactors subject to the provisions of §61.62(c)(2) a daily operating record for each reactor, including pressures, temperatures and discharges. For all relief discharges subject to the provisions of §§61.62(a)(3), (b)(2), and (c)(2), a record of all discharges.

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ADDENDUM

61.60

Page 57

Add as item (i):

"Resin grade" is the subcategory of resin type which describes a resin as a unique resin, i.e. the most exact description of a resin with no further subdivision.

Page 58

Add to (m):

Inprocess wastewater does not include wastewater discharges from sources which have met the requirements of 61.62(a)(4)(iv), 61.62(b)(3)(v), 61.62(c)(1)(ii), and 61.62(c)(7)(v).

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Add as item (v):

"Discharge" means releasing of process streams to the atmosphere without control measures being taken.

Page 60

Replace (4)(ii) with:

Leakage from relief valves shall be minimized by connecting the discharge line to a process or recovery system where practical. Rupture disks may be used before relief valves when it is safe to do so, and such installations shall include a bull check excess flow valve and pressure gauge between the disk and valve. Installations not protected as above shall be checked routinely by the leak patrol of paragraph (v) of this section.

Page 61

Add item (A)(1):

Equipment below 10 gallons shall be depressurized to atmospheric pressure through a control device before opening.

ADDENDUM (cont'd)

and redesignate existing

(A)(1) as (A)(2)
and (A)(2) as (A)(3)

Page 65

Replace item (iii) with:

Leakage from relief valves shall be minimized by connecting the discharge line to a process or recovery system where practical. Rupture disks may be used before relief valves when it is safe to do so, and such installations shall include a bull check excess flow valve and pressure gauge between the disk and valve. Installations not protected as above shall be checked routinely by the leak patrol of paragraph 61.62 (a)(v).

Add item (A)(1):

Equipment below 10 gallons shall be depressurized to atmospheric pressure through a control device before opening.

and redesignate existing

(A)(1) as (A)(2)
and (A)(2) as (A)(3)

Page 68

Add item (c)(1)(iii):

In the bulk process the prepo is subject to .001 kg/100 kg product based on the gross product of a pre-po and po-po batch. The po-po must be subjected to two consecutive vacuum pulls to below 650 MM Hg vacuum with inert gas vacuum break prior to opening.

Page 71

Replace item (iii):

Leakage from relief valves shall be minimized by connecting the discharge line to a process or recovery system where practical. Rupture disks may be used before relief valves when it is safe to do so, and such installations shall include a bull check excess flow valve and pressure gauge between the disk and valve. Installations not protected as above shall be checked routinely by the leak patrol of paragraph (v) of this section.

ADDENDUM (cont'd)

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Add to item (7)(iv):

Emergency manual venting to the atmosphere shall be permitted when all other methods of control have been utilized. These discharges shall be reported within 10 days to the Administrator.

Add to item (A)(1):

Equipment below 10 gallons shall be depressurized to atmospheric pressure through a control device before opening.

and designate existing

(A)(1) as (A)(2)

and (A)(2) as (A)(3)

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Comment on item (1)

This section requires that points on the multipoint VC detector which is being installed to detect fugitive emissions be used to measure the VC concentration in certain continuous emission sources. This can present serious problems in choosing the proper range of the instrument and in sample handling. It would be preferable to insert a new Subpart to the regulation which requires monitoring of these continuous emission streams by an appropriate analyzer. If this is done all the wording in (1) after (c)(5) can be deleted.

Page 83-84

Replace items (A),(B) and (C) with:

Concentration in the reactor and production rates are to be calculated by a standard operating method to be approved by the Administrator.