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**CHAPTER 1200-3-11  
HAZARDOUS AIR CONTAMINANTS**

**NOTE:** This chapter contains regulations for Hazardous Air Pollutants which must meet requirements of title III of the Clean Air Act (CAA). Since the purpose of the SIP is to meet requirements of title I and title II of the CAA, this chapter is not required to be incorporated into the SIP. Even though revisions to this chapter have been incorporated into the SIP in the past, future revisions will not be approved into the SIP. If a review of what has been federally approved in this chapter in the past shows that it does not contain any requirements of title I or title II, Tennessee will be asked to withdraw it from the SIP. This will not relieve them of meeting any applicable requirements of title III.

**CHAPTER 1200-3-11  
HAZARDOUS AIR CONTAMINANTS**

**S1200-3-11-.01 GENERAL**

- (1) Hazardous air contaminants are any air contaminants which may cause, or contribute to, an increase in serious irreversible or incapacitating reversible illness, and has been so designated by the Board. The Board shall, from time to time, after public hearing, designate additional hazardous air contaminants. The following are hereby designated hazardous air contaminants. The following are hereby designated hazardous air contaminants:
  - (a) Asbestos
  - (b) Beryllium
  - (c) Mercury
  - (d) Vinyl Chloride
- (2) The sources covered by emission standards in this chapter are still subject to all provisions in the other chapters of the Tennessee Air Pollution Control Regulations.
- (3) Permit and information requirements.
  - (a) Any person constructing or modifying an air contaminant source that is subject to an emission standard in this Chapter must obtain a construction permit as outlined in Rule 1200-3-9-.01. For these sources, the Technical Secretary cannot grant a waiver under subparagraph (3)(a) of said Rule.
  - (b) Any person planning to construct or modify a source of hazardous air contaminants shall file with the Technical Secretary, following the time frame outlined in Rule 1200-3-9-.01, sufficient information to allow evaluation of the air pollution of the source. This information shall be submitted on forms provided by the Technical Secretary and as a minimum shall include:
    1. Name and address of owner or operator;
    2. Location of the source;
    3. Nature, size, design, operating design capacity and method of operation of the source;
    4. Identification of the hazardous air contaminant;
    5. Total weight of hazardous air contaminant released per day, per month and per year over the last 12 months preceding the date of the report;
    6. Period or periods of operation;
    7. Composition of the hazardous air contaminant;

8. Temperature and moisture content of the air or gas stream in which the hazardous air contaminant is contained;
  9. Characterization of the variability of hazardous air contaminant release with respect to rate, composition and physical characteristics;
  10. Height, velocity, and direction of air or gas stream at the point where released to the atmosphere;
  11. A description of the control equipment for each emission point;
    - (i) Primary control device(s) for each hazardous pollutant.
    - (ii) Secondary control device(s) for each hazardous pollutant.
    - (iii) Estimated control efficiency (percent) for each control device.
  12. Identify each point of emission for each hazardous air contaminant;
  13. Such other information as may be specifically requested by the Technical Secretary.
- (c) The owner or operator of one or more sources of hazardous air contaminants shall, within 90 days after notification by the Technical Secretary the information outlined in parts 1 through 12 of subparagraph (b) above.
- (d) Any owner or operator of a source which has an initial startup after the effective date of a standard prescribed under this chapter shall furnish written notification to the technical Secretary as follows:
1. A notification of the anticipated date of initial startup of the source not more than 60 days nor less than 30 prior to such date.
  2. A notification of the actual date of initial startup of the source within 15 days after such date.
- (e) Ninety (90) days after the effective date of any emission standard in this Chapter, the owner or operator of a source to which the standard applies in existence or under construction on the effective date of the standard shall submit the information outlined in parts 1 through 12 in subparagraph (b) above. Along with this package of information, the owner or operator shall submit a statement as to whether he can comply with the standards prescribed in this chapter within ninety (90) days of the said effective date.
- (f) Changes in the information provided under subparagraphs (b), (c), and/or (e) shall be provided by the source to the Technical Secretary within 30 days after such change, except that if changes will result from modification of the source, as defined in Chapter 1200-3-2, then the provisions in subparagraphs (a) and (b) of this paragraph apply.
- (g) The owner or operator of any air contaminant source not previously required to have a permit (operating and/or construction) by the provisions of Chapter 1200-3-9 must do so within 90 days after one of the sources' emissions has been designated by the Board as a hazardous air contaminant.

- (h) Emission tests and monitoring.
1. Within sixty (60) days after achieving the maximum production rate at which the new or modified hazardous air contaminant source will be operated, but not later than 180 days after initial startup of such source and at such other times as may be required by the Technical Secretary, the owner or operator of such facility shall conduct performance test(s) and furnish the Technical Secretary a written report of the results of such performance test(s).
  2. Performance tests shall be conducted and data reduced in accordance with the reference test methods and procedures contained in each applicable rule unless the Technical Secretary:
    - (i) Specifies or approves the use of a reference method with minor changes in methodology,
    - (ii) Approves the use of an equivalent method,
    - (iii) Approves the use of an alternative method, the results of which are determined to be adequate for indicating whether a specific source is in compliance.
  3. Performance tests shall be conducted under such conditions as the Technical Secretary shall specify to plant operator based on representative performance of the affected facility. The owner or operator shall make available to the Technical Secretary such records as may be necessary to determine the conditions of the performance tests. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions of performance tests unless otherwise specified in the applicable standard.
  4. The owner of an affected facility shall provide the Technical Secretary ten (10) days prior notice of the performance test to afford the Technical Secretary the opportunity to have an observer present.
  5. The owner or operator of an affected facility shall provide, or cause to be provided, performance testing facilities as follows:
    - (i) Sampling ports adequate for test methods applicable to such facility.
    - (ii) Safe sampling platform(s).
    - (iii) Safe access to sampling platform(s).
    - (iv) Utilities for sampling and testing equipment.

Authority: T.C.A. Section 68-25-105. Administrative History.  
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THIS IS THE FEDERALLY APPROVED REGULATION AS OF LAST UPDATE:

	Date Submitted to EPA	Date Approved by EPA	Final Federal Register Notice
Original Reg	#		
1st Revision			
2nd Revision			
3rd Revision			
4th Revision			

**S1200-3-11.-02 ASBESTOS**

- (1) Definitions. Terms used in this rule not defined herein shall have the meaning given to them in Chapter 1200-3-2.
- (a) **"Asbestos"** means actinolite, amosite, anthophyllite, chrysotile, crocidolite, tremolite.
  - (b) **"Asbestos material"** means asbestos or any material containing asbestos.
  - (c) **"Particulate asbestos material"** means finely divided particles of asbestos material.
  - (d) **"Asbestos tailings"** means any solid waste product of asbestos mining or milling operations which contain asbestos.
  - (e) **"Outside air"** means the air outside buildings and structures.
  - (f) **"Visible emissions"** means any emissions which are visually detectable without the aid of instruments and which contain particulate asbestos material.
  - (g) **"Asbestos mill"** means any facility engaged in the conversion or any intermediate step in the conversion of asbestos ore into commercial asbestos. Outside storage of asbestos materials is not considered a part of such facility.
  - (h) **"Commercial asbestos"** means any variety of asbestos which is produced by extracting asbestos from asbestos ore.
  - (i) **"Manufacturing"** means the combining of commercial asbestos, or in the case of woven friction products the combining of textiles containing commercial asbestos, with any other material(s), including commercial asbestos, and the processing of this combination into a product as specified in subparagraph (2)(c) of this Rule.
  - (j) **"Demolition"** means the wrecking or taking out of any load-supporting structural member and any related removing or stripping of friable asbestos materials.
  - (k) **"Friable asbestos material"** means any material that contains more than one percent asbestos by weight and that can be crumbled, pulverized, or reduced to powder, when dry, by hand pressure.
  - (l) **"Control device asbestos waste"** means any asbestos-containing waste material that is collected in a pollution control device.
  - (m) **"Renovation"** means the removing or stripping of friable asbestos material used to insulate or fireproof any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member. Operations in which load-supporting structural members are wrecked or taken out are excluded.
  - (n) **"Planned renovation"** means a renovation operation, or a number of such operations, in which the amount of friable asbestos material that will be removed or stripped within a given period of time can be predicted. Operations that are individually non-scheduled are included, provided a number of such operations can be predicted to occur during a given period of time based on operating experience.

- (o) **"Emergency renovation"** means sufficiently mixed or coated with water or an aqueous solution to prevent dust emissions.
  - (p) **"Adequately wetted"** means sufficiently mixed or coated with water or an aqueous solution to prevent dust emissions.
  - (q) **"Removing"** means taking out friable asbestos materials used for insulation or fireproofing of any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member from any building, structure, facility or installation.
  - (r) **"Stripping"** means taking off of friable asbestos materials used for insulation or fireproofing of any pipe, duct, boiler, tank, reactor, turbine, furnace or structural member.
  - (s) **"Fabricating"** means any processing of a manufactured product containing commercial asbestos, with the exception of processing at temporary sites for the construction or restoration of buildings, structures, facilities or installations.
  - (t) **"Inactive waste disposal site"** means any disposal site or portion thereof where additional asbestos-containing waste material will not be deposited and where the surface is not disturbed by vehicular traffic.
  - (u) **"Active waste disposal site"** means any disposal site other than an inactive site.
  - (v) **"Roadways"** means surfaces on which motor vehicles travel including, but not limited to, highways, roads, streets, parking areas, and driveways.
  - (w) **"Asbestos-containing waste materials"** means any waste which contains commercial asbestos and is generated by a source subject to the provisions of this rule, including asbestos mill tailing, control device asbestos waste, friable asbestos waste material, and bags or containers that previously contained commercial asbestos.
- (2) Emission Standard for Asbestos
- (a) Asbestos mills: There shall be no visible emissions to the outside air from any asbestos mill except as provided in subparagraph (f) of this paragraph.
  - (b) Roadways: The surfacing of roadways with asbestos tailing or with asbestos-containing waste that is generated by any source subject to subparagraphs (c), (d), (e), and (h) of this Rule is prohibited, except for temporary roadways on an area of asbestos ore deposits. The disposition of asbestos tailing or asbestos-containing waste on roadways covered with snow or ice is considered "surfacing."
  - (c) Manufacturing: There shall be no visible emissions to the outside air, except as provided in subparagraph (f) of this commercial asbestos or from any building or structure in which such operations are conducted.
    - 1. The manufacture of cement products.
    - 2. The manufacture of cement products.

3. The manufacture of fireproofing and insulating materials.
  4. The manufacture of friction products.
  5. The manufacture of paper, millboard, and felt.
  6. The manufacture of floor tile.
  7. The manufacture of paints, coatings, caulks, adhesives, sealants.
  8. The manufacture of plastics and rubber materials.
  9. The manufacture of chlorine.
  10. The manufacture of shotgun shells.
  11. The manufacture of asphalt concrete.
- (d) Demolition and renovation: The requirements of this paragraph shall apply to any owner or operator of a demolition or renovation operation who intends to demolish any institutional, commercial, or industrial building (including apartment buildings having more than four dwelling units), structure, facility, installation, or portion thereof which contains any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member that is insulated or fireproofed with friable asbestos material, except s provided in part (d) 1. of this paragraph; or who intends to renovate any institutional, commercial, or industrial building, structure, facility, installation, or portion thereof where more than 80 meters (ca. 260 feet) of pipe insulated or fireproofed with friable asbestos material are stripped or removed, or more than 15 square meters (ca. 260 feet) of friable asbestos material used to insulate or fireproof any duct, boiler, tank, reactor, turbine, furnace, or structural member are stripped or removed.
1. (i) The owner or operator of a demolition operation is exempted from the requirements of this paragraph provided, (1) the amount of friable asbestos material in the building or portion thereof to be demolished is less than 80 meters (ca. 260 feet) used to insulate or fireproof any duct, boiler, tank, reactor, turbine, furnace, or structural member, and (2) the notification requirements of subpart (d) 1. (ii) are met.
  - (ii) Written notification shall be postmarked or delivered to the Technical Secretary at least 20 days prior to commencement of demolition and shall include the information required by part (d) 2. of this paragraph, with the exception of the information required by subparts (d) 2. (iii), (vi), (vii), (viii), and (ix), shall state the measured or estimated amount of friable asbestos material used for insulation and fireproofing which is present. Techniques of estimation shall be explained.
2. Written notice of intent to demolish or renovate shall be provided to the Technical Secretary by the owner or operator of the demolition or renovation operation. Such notice shall be postmarked or delivered to the Technical Secretary at least 10 days prior to commencement of renovation. Such notice shall include the following information.
    - (i) Name of owner or operator.



- (ii) Address of owner or operator.
  - (iii) Description of the building, structure, facility, or installation to be demolished or renovated, including the size, age, and prior use of the structure, and the approximate amount of friable asbestos material used for insulation and fireproofing.
  - (iv) Address or location of the building, structure, facility, or installation.
  - (v) Scheduled starting and completion dates of demolition or renovation.
  - (vi) Nature of planned demolition or renovation and method(s) to be employed.
  - (vii) The name and address or location of the waste disposal site where friable asbestos waste will be deposited.
  - (ix) Name, title and authority of the State or local governmental representative who has ordered a demolition which is subject to part (d) 6. of this paragraph.
3. (i) For purposes of determining whether a planned renovation operation constitutes a renovation within the meaning of this paragraph, the amount of friable asbestos material to be removed or stripped shall be:
- I. For planned renovating operations involving individually nonscheduled operations, the additive amount of friable asbestos material that can be predicted will be removed or stripped at a source over the maximum period of time for which a prediction can be made. The period shall be not less than 30 days and not longer than one year.
  - II. For each planned renovating operation not covered by item (d) 3. (i) (I), the total amount of friable asbestos material that can be predicted will be removed or stripped at a source.
- (ii) For purposes of determining whether an emergency renovating operation constitutes a renovation within the meaning of this subpart, the amount of friable asbestos material that will be removed or stripped as a result of the sudden, unexpected event that necessitated the renovation.
4. The following procedures shall be used to prevent emissions of particulate asbestos material to outside air:
- (i) Friable asbestos materials used to insulate or fireproof any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member, shall be removed from any building, structure, or facility or installation subject to this paragraph. Such removal shall occur before wrecking or dismantling of any other portion of such building, structure, facility, or installation that would break up the friable asbestos materials and before wrecking or dismantling of any portion of such building, structure, facility, or installation that would preclude access to such materials for subsequent removal. Removal of friable asbestos materials used for insulation or fireproofing of any pipe, duct, or structural members which are encased in concrete or other similar structural material is not required prior to demolition, but such material shall be adequately wetted whenever exposed

during demolition.

- (ii) Friable asbestos materials used to insulate or fire-proof pipes, ducts, boilers, tanks, reactors, turbines, furnaces, or structural members shall be adequately wetted during stripping, except as provided in subparts (d) 4. (iv), (vi), or (vii) of this paragraph.
- (iii) Pipes, ducts, boilers, tanks, reactors, turbines, furnaces, or structural members that are insulated or fireproofed with friable asbestos materials may be taken out of any building, structure, facility, or installation subject to this paragraph as units or in sections provided the friable asbestos materials exposed during cutting or disjoining operation. Such units shall not be dropped or thrown to the ground, but shall be carefully lowered to ground level.
- (iv) The stripping of friable asbestos material used to insulate or fireproof any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member that has been removed as a unit or in sections as de i subpart (d) 4. (iii) of this paragraph shall be performed in accordance with subpart (d) 4 (ii) of this paragraph. Rather than comply with the wetting requirements, a local exhaust ventilation and collection system may be used to prevent emissions to the outside air. Such local exhaust ventilation systems shall be designed and operated to capture the asbestos particulate matter produced by the stripping of friable asbestos material. There shall be no visible emissions to the outside air from such local exhaust ventilation and collection systems except as provided in subparagraph (f) of the paragraph.
- (v) All friable asbestos materials that have been removed or stripped shall be adequately wetted to ensure that such materials remain wet during all remaining stages of demolition or renovation and related handling operations. Such materials shall not be dropped or thrown to the ground or a lower floor. Such materials that have been removed or stripped more than 50 feet above ground level, except those material removed as units or in sections, shall be transported to the ground via dust-tight chutes or containers.
- (vi) Except as specified below, the wetting requirements of this subpart are suspended when the temperature at the point of wetting is below 0° C (32° F). When friable asbestos materials are not wetted due to freezing temperatures, such materials on pipes, ducts, boilers, tanks, reactors, turbines furnaces, or structural members shall, to the maximum extent possible, be removed as units or in sections prior to wrecking. In no case shall the requirements of subparts (d)4.(iv) or (d)4.(v) be suspended due to freezing temperatures.
- (vii) For renovation operations, local exhaust ventilation and collection systems may be used, instead of wetting as specified in subpart (d) 4. (ii), to prevent emissions of particulate asbestos material to outside air when damage to equipment resulting from the wetting would be unavoidable. Upon request and supply of adequate information, the Technical Secretary will determine whether damage to equipment resulting from wetting to comply with the provisions of this subpart would be unavoidable. Such local exhaust ventilation systems shall be designed and operated to capture the asbestos particulate matter produced by the stripping and removal of friable asbestos material. There shall be no visible emissions to the outside air from such local exhaust ventilation and collection systems, except as provided in subparagraph (f) of this rule.

- (viii) The owner or operator of an existing source to which this subpart is applied shall provide the pertinent information within 90 days.
- 5. Sources subject to this subparagraph are exempted from the requirements of paragraph (3) under General Provisions of this chapter.
- 6. The demolition of a building, structure, facility, or installation, pursuant to an order of an authorized representative, of a State or local governmental agency, issued because that building is structurally unsound and in danger of imminent collapse is exempt from all but the following requirements of subparagraph 4. (d) of this Rule:
  - (i) The notification requirements specified by part (d) 2. of this paragraph;
  - (ii) The requirements on stripping of friable asbestos materials from previously removed units or section as specified in subpart (d) 4. (vi) of this paragraph;
  - (iii) The wetting, as specified by (d) 4. (v) of this paragraph, of friable asbestos materials that have been removed or stripped;
  - (iv) The portion of the structure being demolished that contains friable asbestos materials shall be adequately wetted during the wrecking operation.
- e. Spraying: There shall be no visible emissions to the outside air from the spray-on application of materials containing more than 1 percent asbestos, on a dry weight basis, used to insulate or fireproof equipment and machinery, except as provided in subparagraph (f) of this paragraph. Spray-on materials used to insulate contain less than 1 percent asbestos on a dry weight basis.
  - 1. Sources subject to this paragraph are exempt from the requirements of paragraph (3), General Provisions, of this chapter.
  - 2. Any owner or operator who intends to spray asbestos materials which contain more than 1 percent asbestos on dry weight basis to insulate or fireproof equipment and machinery shall report such intention to the Technical Secretary at least 20 days prior to the commencement of the spraying operation. Such report shall include the following information:
    - (i) Name of owner or operator.
    - (ii) Address of owner or operator.
    - (iii) Location of spraying operation.
    - (iv) Procedure to be followed to meet the requirements of this rule.
- (f) Rather than meet the no-visible emission requirements as specified by subparagraphs (a), (c), (d), (e), (h), (j), and (k), an owner or operator may elect to use the methods specified by subparagraph 3(b) to clean emissions containing particulate asbestos material before such emission escape to or are vented to the outside air.
- (g) Where the presence of uncombined water is the sole reason for failure to meet the no-visible

emission requirement of subparagraphs (a), (c), (d), (e), (h), (j), or (k) of this paragraph, such failure shall not be a violation of such emission requirements.

- (h) **Fabricating:** There shall be no visible emissions to the outside air, except as provided in subparagraph (f) of this paragraph from any of the following operations if they use commercial asbestos or from any building or structure in which such operations are conducted.
  - 1. The fabrication of cement building products.
  - 2. The fabrication of friction products, except those operations that primarily install asbestos friction materials on motor vehicles.
  - 3. The fabrication of cement or silicate board for ventilation hoods; ovens; electrical panels; laboratory furniture; bulkheads, partitions, arc ceilings for marine construction; and flow control devices for the modern metal industry.
- (i) **Insulating:** Molded insulating materials which are friable after drying, installed after February 9, 1977, shall contain no commercial asbestos. The provisions of this paragraph do not apply to insulating material which is spray applied: such materials are regulated under subparagraph (e).
- (j) **Waste disposal for manufacturing, fabricating, demolition, renovation and spraying operations:** The owner or operator of any source covered under the provisions of subparagraphs (c), (d), (e), or (h) of this paragraph shall meet the following standards:
  - 1. There shall be no visible emissions to the outside air, except as provided in part (j) 3. of this paragraph, during the collection, processing; including incineration, packaging, transporting, or deposition of any asbestos-containing waste material which is generated by such a source.
  - 2. All asbestos-containing waste materials shall be deposited at waste disposal sites which are operated in accordance with the provisions of paragraph (5).
  - 3. Rather than meet the requirement of part (j) 1. of this paragraph, owner or operator may elect to use either of the disposal methods specified in subpart (1) 3. (i) and (ii) of this part or an alternative disposal method which has received prior approval by the Technical Secretary:
    - (i) Treatment of asbestos-containing waste material with water.
      - (I) Control device asbestos waste shall be thoroughly mixed with water into a slurry and other asbestos-containing waste material shall be adequately wetted. There shall be no visible emissions to the outside air from the collection, mixing and wetting operations, except as provided in subparagraph (f) of this paragraph.
      - (II) After wetting, all asbestos-containing waste material shall be sealed into leak-tight containers while wet, and such containers shall be deposited at waste disposal sites which are operated in accordance with the provisions of paragraph (5).

- (III) The containers specified under item (j) 3. (i) (II) of this paragraph shall be labeled with a warning label that states:

CAUTION: Contains asbestos - Avoid opening or breaking container. Breathing asbestos is hazardous to your health.

Alternatively, warning labels specified by Occupational Safety and Health Standards of the Department of Labor, Occupational Safety and Health Administration (OSHA) under 29 CFR 1910-93a(2) (ii) may be used.

- (ii) Processing of asbestos-containing waste material into non-friable forms:
- (I) All asbestos-containing waste material shall be formed into non-friable pellets or other shapes and deposited at waste disposal sites which are operated in accordance with the provisions of paragraph (5).
- (II) There shall be no visible emissions to the outside air from the collection and processing of asbestos containing waste material, except as specified in subparagraph (f) of this paragraph.

4. For the purpose of this subparagraph, the term all asbestos-containing waste materials as applied to demolition and renovation operations covered by subparagraph (d) of this paragraph includes only friable asbestos waste and control device asbestos waste.

- (k) Waste disposal for asbestos mills: The owner or operator of any source covered under the provisions of subparagraph (a) of this paragraph shall meet the following standard:

1. There shall be no visible emission to the outside air, except as provided in part (k) 3. of this paragraph during the collection, processing, packaging, transporting or deposition of any asbestos-containing waste material which is generated by such source.
2. All asbestos-containing waste material shall be deposited at waste disposal sites which are operated in accordance with the provisions paragraph (5).
3. Rather than meet the requirement of part (k) 1. of this paragraph an owner or operator may elect to meet the following requirements in subparts (k)3.(i) and (ii), or use an alternative disposal method which has received prior approval by the Technical Secretary.
  - (i) There shall be no visible emissions to the outside air from the transfer of control device asbestos waste to the tailings conveyor, except as provided in subparagraph (f) of this paragraph. Such waste shall be subsequently processed either as specified in subpart (k) 3. (ii) of this paragraph or as specified in part (j) 3. of this paragraph.
  - (ii) All asbestos-containing waste material shall be adequately mixed with a wetting agent recommended by the manufacturer of the agent to effectively wet dust and tailings, prior to deposition at a waste disposal site. Such agent shall be used as recommended for the particular dust by the manufacturer of the agent. There shall be no discharge of visible

emissions to the outside air from the wetting operation except as specified in subparagraph (f) of this paragraph. Wetting may be suspended when the ambient air temperature at the waste disposal site is less than  $-9.5^{\circ}\text{C}$  (ca.  $15^{\circ}\text{F}$ ). The ambient air temperature shall be determined by an appropriate measurement method with an accuracy of  $+ \text{ or } - 1^{\circ}\text{C}$  ( $+ \text{ or } - 2^{\circ}\text{F}$ ) and recorded at least at hourly intervals during the period that the operation of the wetting system is suspended. Records of such temperature measurements shall be retained at the available for inspection by the Technical Secretary.

- (l) The owner of any inactive waste disposal site, which was operated by source covered under subparagraphs (2) (a), (c), or (h) and where asbestos-containing waste material produced by such sources was deposited, shall meet the following standards:
1. There shall be no visible emissions to the outside air from an inactive waste disposal site subject to this paragraph, except as provided in part (105. of this paragraph.
  2. Warning signs shall be displayed at the entrance, and along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material was deposited, at intervals of 100 m (ca. 330 f.) or less, except as specified in part (1) 4. of this paragraph. Signs shall be posted in such a manner and location that a person may easily read the legend. The warning signs required by this paragraph shall conform to the requirements of 20" x 14" upright format signs and this paragraph. The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to those specified in this part.

LEGEND:           Asbestos Waste Disposal Site  
                      Do Not Create Dust  
                      Breathing Asbestos is Hazardous to your    Health  
                      1" Sans Serif, Gothic or Block  
                                  14 Point Gothic

Spacing between lines shall be at least equal to the height of the upper two lines.

3. The perimeter of the site shall be fenced in a manner adequate to deter access by the general public, except as specified in part (1) 4. of this paragraph.
4. Warning signs and fencing are not required where the requirements of subparts (10 5. (i) or (ii) of this paragraph are met, or where a natural barrier adequately deters access by the general public. Upon request and supply of appropriate information, the Technical Secretary will determine whether a fence or a natural barrier adequately deters access to the general public.
5. Rather than meet the requirement of part (1) 1. of this paragraph, and owner may elect to meet the requirements of this part or may use an alternative control method for emissions from inactive waste disposal sites which has received prior approval by the Technical Secretary.
  - (i) The asbestos-containing waste material shall be covered with at least 15 centimeters (ca. 6 inches) of compacted non-asbestos-containing material and cover of vegetation shall be grown and maintained on the area adequate to prevent exposure of the asbestos-containing waste; or
  - (ii) The asbestos-containing waste material shall be covered with at least 60 centimeters (ca. 2 feet) of

- compacted non-asbestos-containing material and maintained to prevent exposure of the asbestos-containing waste; or
- (iii) For inactive waste disposal sites for asbestos tailings, a resinous petroleum-based dust suppression agent which effectively binds dust and controls wind erosion shall be applied. Such agent shall be used as recommended for the particular asbestos tailings by the dust suppression agent manufacturer. Other equally effective dust suppression agents may be used upon prior approval by the Technical Secretary. For purposes of this subpart, waste crankcase oil is not considered at dust suppression agent.

### 3. Air-Cleaning

- (a) If air cleaning is elected, as permitted by subparagraph (2) (f) and subpart (2) (d) 4. (iv), the requirements of this paragraph must be met.
  - (b) Fabric filter collection devices must be used, except as noted in paragraphs (c) and (d) of this paragraph. Such devices must be operated at a pressure drop of no more than 4 inches water gage, as measured across the filter fabric. The airflow permeability as determined by ASTM method D737-69, must not exceed  $30 \text{ ft}^3/\text{min}/\text{ft}^2$  for woven fabrics or  $35 \text{ ft}^3/\text{min}/\text{ft}^2$  for felted fabrics, except the  $40 \text{ ft}^3/\text{min}/\text{ft}^2$  for woven and  $45 \text{ ft}^3/\text{min}/\text{ft}^2$  for felted fabrics is allowed for filtering air from asbestos ore dryers. Each square yard of felted fabric must weigh at least 14 ounces and be at least one-sixteenth inch thick throughout. Synthetic fabrics must not contain fill yarn other than that which is spun.
  - (c) If the use of fabric filters creates a fire or explosion hazard, the Technical Secretary may authorize the use of wet collectors designed to operate with a unit contacting energy of at least 40 inches water gage pressure.
  - (d) The Technical Secretary may authorize the use of filtering equipment other than that described in subparagraphs (b) and (c) of this paragraph if the owner or operator demonstrates to the satisfaction of the Technical Secretary that the filtering of particulate asbestos material is equivalent to that of the described equipment.
  - (e) All air-cleaning equipment authorized by this paragraph must be properly installed, used, operated, and maintained. Bypass devices may be used only during upset or emergency conditions and then only for so long as it takes to shut down the operation generating the particulate asbestos material.
- (4) Reporting. The owner or operator of an existing source to which this rule is applicable shall before July 22, 1976, provide the following information to the Technical Secretary:
- (a) A description of the emission control equipment used for each process;
  - (b) If a fabric filter device is used to control emissions, the pressure drop across the fabric filter in inch water gage.
    1. If the filter device utilizes a woven fabric, the airflow permeability in  $\text{ft}^3/\text{min}/\text{ft}^2$ ; and if the fabric is synthetic, indicate whether the fill yarn is spun or not spun.
    2. If the fabric filter device utilizes a felted fabric, the density in  $\text{oz}/\text{yd}^2$ , the minimum thickness in inches, and the airflow permeability in  $\text{ft}^3/\text{min}/\text{ft}^2$ .

- (c) For sources subject to subparagraph (2)(j) and (2)(k):
  - 1. A brief description of each process that generates asbestos-containing waste material.
  - 2. The average weight of asbestos-containing waste material disposed of, measured in kg/day.
  - 3. The emission control methods used in all stages of waste disposal.
  - 4. The type of disposal site or incineration site used for ultimate disposal, the name of the site operator, and the name and location of the disposal site.
- (d) For sources subject to subparagraph (2) (1):
  - 1. A brief description of the site.
  - 2. The method or methods used to comply with the standard or alternative to be used.

Such information shall accompany the information required by rule .01 of this Chapter.

- (5) Waste disposal sites.
  - (a) In order to be an acceptable site for disposal of asbestos-containing waste materials under subparagraphs (2) (j) and (k), an active waste disposal site shall meet the requirements of this Rule.
  - (b) There shall be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste material has been deposited, except as provided in subparagraph (f) of this paragraph.
  - (c) Warning signs shall be displayed at all entrances, and along the property at all entrances, and along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material is deposited, at intervals of 100 m (ca. 330 ft.) or less except as specified in subparagraph (e) of this paragraph. Signs shall be posted in such a manner and location that a person may easily read the legend. The warning signs required by this subparagraph shall conform to the requirements of 20" x 14" upright format signs and this subparagraph. The signs shall display the following legend in the lower panel, with the letter sizes and styles of a visibility at least equal to those specified in this subparagraph.

LEGEND: Asbestos Waste Disposal Site  
Do Not Create Dust

Breathing Asbestos is Hazardous to Your Health

Notation  
1" Sans Serif, Gothic or Block  
3/4" Sans Serif, Gothic or Block  
14 Point Gothic



Spacing between lines shall be at least equal to the height of the upper of the two lines.

- (d) The perimeter of the disposal site shall be fenced in order to adequately deter access to the general public except as specified in subparagraph (e) of this paragraph.
- (e) Warning signs and fencing are not required where the requirements of part (f) 1. of this paragraph are met, or where a natural barrier adequately deters access to the general public. Upon request and supply of appropriate information, the Technical Secretary will determine whether a fence or a natural barrier adequately deters access to the general public.
- (f)
  1. Rather than meet the requirement of subparagraph (b) of this paragraph, an owner or operator may elect to meet the requirements of parts (f) 2. or (f) 3. of this paragraph, or may use an alternative control method for emissions from active waste disposal sites which has received prior approval by the Technical Secretary.
  2. At the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos containing waste material which was deposited at the site during the operating day or previous 24-hour period shall be covered with at least 15 centimeters (ca. 6 inches) of compacted non-asbestos-containing material.
  3. At the end of each operating day, or at least once every 24-hour period while the disposal site is in continuous operation, the asbestos-containing waste material which was deposited at the site during the operation day or previous 24-hour period shall be covered with a resinous or petroleum-based dust suppression agent which effectively binds dust and controls wind erosion. Such agent which effectively binds dust and controls wind erosion. Such agent shall be used as recommended for the particular dust by the dust suppression agent manufacturer. Other equally effective dust suppression agents may be used upon prior approval by the Technical Secretary. For purposes of this part, waste crankcase oil is not considered a dust suppression agent.

Authority: T.C.A. Section 68-25-105. Administrative History.  
Original Rule certified June 7, 1974. Amended effective February 9, 1977. Amended June 16, 1978. Amended effective October 5, 1981.

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1st Revision		JUN 24, 1982	47 FR 27270
2nd Revision			

3rd Revision

**S1200-3-11-.03 BERYLLIUM**

- (1) Applicability. The provisions of this Rule are applicable to the following stationary sources.
  - (a) Extraction plants, ceramic plants, foundries, incinerators, and propellant plants which process beryllium ore, beryllium, beryllium oxide, beryllium alloys, or beryllium-containing waste.
  - (b) Machine shops which process beryllium, beryllium oxides, or any alloy when such alloy contains more than five (5) percent beryllium by weight.
- (2) Definitions. Terms used in this Rule not defined herein shall have the meaning given to them in Chapter 1200-3-2.
  - (a) **"Beryllium"** means the element beryllium. Where weights or concentrations are specified, such weights or concentrations apply to beryllium only, excluding the weight or concentration of any associated elements.
  - (b) **"Extraction plant"** means the facility chemically processing beryllium ore to beryllium metal, alloy or oxide, or performing any of the intermediate steps in these processes.
  - (c) **"Beryllium ore"** means any naturally occurring material mined or gathered for its beryllium content.
  - (d) **"Machine shop"** means a facility performing cutting, grinding, turning, honing, milling, debarring, lapping, electrochemical machining, etching, or other similar operations.
  - (e) **"Ceramic Plant"** means a manufacturing plant producing ceramic items.
  - (f) **"Foundry"** means a facility engaged in the melting or casting of beryllium metal or alloy.
  - (g) **"Beryllium-containing waste"** means material contaminated with beryllium and/or beryllium compounds used or generated during any process or operation performed by a source subject to this rule.
  - (h) **"Incinerator"** means any furnace used in the process of burning waste for the primary purpose of reducing the volume of the waste by removing combustible matter.
  - (i) **"Propellant"** means a fuel and oxidizer physically or chemically combined which undergoes combustion to provide rocket propulsion.
  - (j) **"Beryllium alloy"** means any metal to which beryllium has been added in order to increase its beryllium content and which contains more than 0.1 percent beryllium by weight.
  - (k) **"Propellant plant"** means any facility engaged in the mixing, casting, or machining of propellants.
  - (l) **"Rocket motor test site"** means any building, structure facility or installation where the static test firing of a beryllium rocket motor and/or the disposal of beryllium propellant conducted.
  - (m) **"Beryllium propellant"** means any propellant incorporating beryllium.

(3) Emission Standard for Beryllium

- (a) Emissions to the atmosphere from stationary sources subject to the provisions of this Rule shall not exceed the ten (10) grams of beryllium over a twenty-four (24) hour period.
- (b) The burning of beryllium and/or beryllium containing waste, except propellants, is prohibited except in incinerators, emissions from which must comply with the standards.
- (c) Emissions to the atmosphere from rocket-motor test sites shall not cause time-weighted atmospheric concentrations of beryllium to exceed 75 microgram minutes per cubic meter of air within any 2 consecutive weeks, in any area in which an effect adverse to public health could occur.
- (d) If combustion products from the firing of beryllium propellant are collected in a closed tank, emissions from such tank shall not exceed 2 grams per hour and a maximum of 10 grams per day.

(4) Stack Sampling

- (a) Each owner or operator required to comply with subparagraph (3)(a) of this Rule shall test emissions from his source as follows:
  - 1. Within ninety (90) days of February 9, 1977, in the case of an existing source or a new source which has initial startup date preceding February 9, 1977; or
  - 2. Within ninety (90) days of startup in the case of a new source which does not have an initial startup date preceding February 9, 1977.
- (b) The Technical Secretary shall be notified at least thirty (30) days prior to an emission test or air sampling test so that he at his option may observe the test.
- (c) Samples shall be taken over such period or periods as are necessary to accurately determine the maximum emissions which will occur in any twenty-four (24) hour period. Where emissions depend upon the relative frequency of operation of different types of processes, operating hours, operating capacities, or other factors, the calculation of maximum twenty-four hour period emissions will be based on that combination of factors which are likely to occur during the subject period and which results in the maximum emissions. No changes in the operation shall be made, which would potentially increase emissions above that determined by the most recent source test, until a new emission level has been estimated by calculation and the results reported to the Technical Secretary.
- (d) Sources subject to subparagraph (3)(d) of this rule shall be continuously sampled, during release of combustion products from the tank, in such manner that compliance with the standards can be determined.
- (e) Ambient air concentrations shall be measured during and after firing of a rocket motor or propellant disposal and in such manner that the effect of these emissions can be compared with the standard. Such sampling techniques shall be approved by the Technical Secretary.
- (f) All samples shall be analyzed and beryllium emissions and/or other results determined within thirty days after the source test and/or samples are taken. In the case of sampling during a rocket motor

firing or propellant disposal this calculation must occur before any subsequent rocket motor firing or propellant disposal at the given site. All determinations shall be reported to the Technical Secretary by written notification before the close of the next business day following such determination.

- (g) Records of emissions test result, air sampling test results, and other data needed to determine ambient concentrations shall be retained at the source and made available, for inspection by the Technical Secretary, for a minimum of two (2) years.
- (h) Emissions of beryllium shall be determined by the Reference Method, as specified in the Federal Register Volume 38, Number 66, April 6, 1973, or other techniques approved by the Technical Secretary.

Authority: T.C.A. Section 68-25-105. Administrative History. Original Rule certified June 7, 1974. Amended effective February 9, 1977. Amended effective October 25, 1979.

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1st Revision			
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**S1200-3-11-.04 MERCURY**

- (1) Applicability. The provisions of this Rule are applicable to those air contaminant sources which process mercury ore to recover mercury, use mercury chlor-alkali cells to produce chlorine gas and alkali metal hydroxide, and incinerate or dry waste water treatment plant sludge.
- (2) Definitions: Terms used in this Rule not defined herein shall have the meaning given to them in Chapter 1200-3-2.
  - (a) **"Mercury"** means the element mercury, excluding any associated elements, and includes mercury in particulate, vapors, aerosols, and compounds.
  - (b) **"Mercury ore"** means a mineral specifically for its mercury content.
  - (c) **"Mercury ore processing facility"** means a facility processing mercury ore to obtain mercury.
  - (d) **"Condenser stack gases"** means the gaseous effluent evolved from the stack of processes utilizing heat to extract mercury metal from mercury ore.
  - (e) **"Mercury chlor-alkali cell"** means a device which is basically composed of an electrolyzer section and a denuder (decomposer) section and utilizes mercury to produce chlorine gas, hydrogen gas and alkali metal hydroxide.
  - (f) **"Mercury chlor-alkali electrolyzer"** means an electrolytic device which is part of a mercury-chlor-alkali cell and utilizes a flowing mercury cathode to produce chlorine gas and alkali metal amalgam.
  - (g) **"Denuder"** means a horizontal or vertical container which is a part of a mercury chlor-alkali cell in which water and alkali metal amalgam are converted to alkali metal hydroxide, mercury, and hydrogen gas in a short-circuited, electrolytic reaction.
  - (h) **"Hydrogen gas stream"** means a hydrogen stream formed in the chlor-alkali cell denuder.
  - (i) **"End box"** means a container(s) located on one or both ends of a mercury chlor-alkali electrolyzer which serves as a connection between the electrolyzer and denuder for rich and stripped amalgam.
  - (j) **"End box ventilation system"** means a ventilation system which collects mercury emissions from the end-boxes, the mercury pump sumps, and their water collection systems.
  - (k) **"Cell room"** means a structure(s) housing one or more mercury electrolytic chlor-alkali cells.
  - (l) **"Sludge"** means sludge produced by a treatment plant that processes municipal or industrial waste waters.
  - (m) **"Sludge dryer"** means a device used to reduce the moisture content of sludge by heating to temperature above 65°C (ca. 150°F) directly with combustion gases.
- (3) Emission Standards for Mercury
  - (a) Emissions to the atmosphere from mercury ore processing facilities and mercury cell chlor-alkali

plants shall not exceed 2300 grams of mercury per 24-hour period.

(4) Stack Sampling:

- (a) Each owner or operator of a facility subject to an emission standard in paragraph (3) of this rule shall test emissions from his source as follows:
  - 1. Within ninety (90) days of February 9, 1977, an existing source or a new source which has an initial startup date preceding February 9, 1977; or
  - 2. Within ninety (90) days of startup in the case of a new source which did not have an initial startup date preceding February 9, 1977.
- (b) The Technical Secretary shall be notified at least thirty (30) days prior to an emission test, so that he may at his option observe the test.
- (c) Samples shall be taken over such period or periods as are necessary to accurately determine the maximum emissions which will occur in a twenty-four (24) hour period. No change in the operation shall be made, which would potentially increase emissions above that determined by the most recent source test, until the new emission level has been estimated by calculation and the results reported to the Technical Secretary.
- (d) All samples shall be analyzed, and mercury emissions shall be determined within thirty (30) days after the source test. Each determination will be reported to the Technical Secretary by written notification by the close of the next business day following such determination.
- (e) Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available, for inspection by the Technical Secretary for a minimum of two (2) years.
- (f) Sources using mercury chlor-alkali cells may test cell room emissions by passing all cell room air in forced gas streams through a stack suitable for testing in accordance with the above subparagraphs or demonstrate compliance with subparagraph (g) of this paragraph assume ventilation emissions of 1,300 grams/day of mercury.
- (g) An owner or operator may carry out approved design, maintenance and housekeeping practices. A list of approved design, maintenance and housekeeping practices may be obtained from the Technical Secretary.
- (h) Measurement of mercury.

Mercury shall be determined by the Reference Method as specified in Appendix b of the Federal Register, Volume 38, Number 66, April 6, 1973, or Volume 40, Number 199, October 14, 1975, or other techniques approved by the Technical Secretary.
- (i) Emission monitoring.

Wastewater treatment plant sludge incinerator and drying plants. All such sources for which mercury emissions exceed 1600 g/day, demonstrated by either Method 105 of Appendix B, Federal Register, Volume 40, Number 199, October 14, 1975.

Authority: T.C.A. Section 68-25-105. Administrative History. Original Rule certified June 7, 1974, amended effective February 9, 1977.

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**S1200-3-11-.05 VINYL CHLORIDE**

- (1) (a) This rule applies to plants which produce:
1. Ethylene dichloride by reaction of oxygen and hydrogen chloride with ethylene.
  2. Vinyl chloride by any process, and/or
  3. One or more polymers containing any fraction of polymerized vinyl chloride.
- (b) This rule does not apply to equipment used in research and development if the reactor used to polymerize the vinyl chloride processed in the equipment has a capacity of no more than 0.19 m<sup>3</sup> (50 gal).
- (c) Parts of this rule other than paragraph (2), part (5)-(b)- .1, subparagraphs (5)-(c), (5)-(d), and (5)-(e), and paragraphs (8) through (12) do not apply to equipment used in research and development if the reactor used to polymerize the vinyl chloride processed in the equipment has a capacity of greater than 0.19 m<sup>3</sup> (50 gal) and no more than 4.07 m<sup>3</sup> (1100 gal).
- (2) Definitions. Terms used in this rule not defined herein shall have the meaning given to them in Chapter 1200-3-2.
- (a) **"Ethylene dichloride plant"** includes any plant which produces ethylene dichloride by reaction of oxygen and hydrogen chloride with ethylene.
  - (b) **"Vinyl chloride plant"** includes any plant which produces vinyl chloride by any process.
  - (c) **"Polyvinyl chloride plant"** includes any plant where vinyl chloride alone or in combination with other materials is polymerized.
  - (d) **"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 the gauge discharges.
  - (e) **"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, latex, bulk, and solution processes.
  - (f) **"Grade of resin"** means the subdivision of resin classification which describes it as a unique resin, i.e., the most exact description of a resin with no further subdivision.
  - (g) **"Dispersion resin"** means a resin manufactured in such a way as to form fluid dispersions when dispersed in a plasticizer or plasticizer/diluent mixtures.
  - (h) **"Latex resin"** means a resin which is produced by a polymerization process which initiates from free radical catalyst sites and is sold undried.
  - (i) **"Bulk resin"** means a resin which is produced by a polymerization process in which no water is used.

- (j) **"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.
  - (k) **"Wastewater treatment process"** includes any process which modifies characteristics such as BOD, COD, TSS and pH, usually for the purpose of meeting effluent guidelines and standards; it does not include any process the purpose of which is to remove vinyl chloride from water to meet requirements of this rule.
  - (l) **"In vinyl chloride service"** means that a piece of equipment contains or contacts 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.
  - (m) **"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.
  - (n) **"Run"** means the net period of time during which an emission sample is collected.
  - (o) **"Ethylene dichloride purification"** includes any part of the process of ethylene dichloride production which follows ethylene dichloride formation and in which finished ethylene dichloride is produced.
  - (p) **"Vinyl chloride purification"** includes any part of the process of vinyl chloride production which follows vinyl chloride formation and in which finished vinyl chloride is produced.
  - (q) **"Reactor"** includes any vessel in which vinyl chloride is partially or totally polymerized into polyvinyl chloride.
  - (r) **"Reactor opening loss"** means the emissions of vinyl chloride occurring when a reactor is vented to the atmosphere for any purpose other than an emergency relief discharge as defined in subparagraph 6-(a) of this rule.
  - (s) **"Stripper"** includes any vessel in which residual vinyl chloride is removed 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 includes any vessel which is used to remove residual vinyl chloride from polyvinyl chloride resin immediately following the polymerization step in the plant process flow.
  - (t) **"Standard temperature"** means a temperature of 20° C (69°F).
  - (u) **"Standard pressure"** means a pressure of 760 mm of Hg (29.92 in. of Hg).
- (3) Emissions standard for ethylene dichloride plants.
- (a) An owner or operator of an ethylene dichloride plant shall comply with the requirements of this paragraph and paragraph (6) of this rule.
  - (b) Ethylene dichloride purification: The concentration of vinyl chloride in all exhaust gases

discharged to the atmosphere from any equipment used in ethylene dichloride purification is not to exceed 10 ppm, except as provided in subparagraph (6)-(b) of this rule. This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in subparagraph (6)-(c) of this rule before being opened.

- (c) Oxychlorination reactor: Except as provided in subparagraph (6)-(b) of this rule, emissions of vinyl chloride to the atmosphere from each oxychlorination reactor are not to exceed 0.2 g/kg (0.0002 lb/lb) of the 100 percent ethylene dichloride product from the oxychlorination process.
- (4) Emission standard for vinyl chloride plants.
- (a) An owner or operator of a vinyl chloride plant shall comply with the requirements of this paragraph and paragraph (6) of this rule.
  - (b) Vinyl chloride formation and purification: The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from any equipment used in vinyl chloride formation and/or purifications not to exceed 10 ppm, except as provided in subparagraph (6)-(b) of this rule. This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in subpart (6)-(c)-6.-(i) of this rule before being opened.
- (5) Emission standard for vinyl chloride plants.
- (a) An owner or operator of a polyvinyl chloride plant shall comply with the requirements of this paragraph and paragraph (6) of this rule.
  - (b) Reactor: The following requirements apply to reactors:
    - 1. The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from each reactor is not to exceed 10 ppm, except as provided in part 2. of this subparagraph and subparagraph (6)-(b) of this rule.
    - 2. The reactor opening loss from each reactor is not to exceed 0.02 g vinyl chloride/Kg (0.00002 lb vinyl chloride/lb) of polyvinyl chloride product, with the product determined on a dry solids basis. This requirement applies to any vessel which is used as a reactor or as both a reactor and a stripper. In the bulk process, the product means the gross product of prepolymerization and postpolymerization.
    - 3. Manual vent valve discharge: Except for an emergency manual vent valve discharge, there is to be no discharge to the atmosphere from any manual vent valve on a polyvinyl chloride reactor in vinyl chloride service. An emergency manual vent valve discharge means a discharge to the atmosphere which could not have been avoided by taking measures to prevent discharge. Within 10 days of any discharge to the atmosphere from any manual vent valve, the owner or operator of the source shall submit to the Technical Secretary a report in writing containing information on the source, nature and cause of the discharge, the date and time of the discharge, the method used for determining the vinyl chloride loss, the action that was taken to prevent the discharge, and measures adopted to prevent future discharges.
  - (c) Stripper: The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from each stripper is not to exceed 10 ppm, except as provided in subparagraph (6)-(b) of this rule. This requirement does not apply to equipment that has been opened, is out of operation, and met

- the requirement in subpart (6)-(c)-6.-(i) of this rule before being opened.
- (d) **Mixing, weighing, and holding containers:** The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from each 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 is not to exceed 10 ppm, except as provided in subparagraph (6)-(b) of this rule. This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in subpart (6)-(c)-6.-(i) of this rule before being opened.
  - (e) **Monomer recovery system:** The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from each monomer recovery system is not to exceed 10 ppm, except as provided in subparagraph (6)-(b) of this rule. This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in subpart (6)-(c)-6.-(i) of this rule before being opened.
  - (f) **Sources following the stripper(s):** The following requirements apply to 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 in process wastewater:
    - 1. In polyvinyl chloride plants using stripping technology to control vinyl chloride emissions, the weighted average residual vinyl chloride concentration in all grades of polyvinyl chloride resin processed through the stripping operation on each calendar day, measured immediately after the stripping operation is completed, may not exceed:
      - (i) 2000 ppm for polyvinyl chloride dispersion resins, excluding latex resins;
      - (ii) 400 ppm for all other polyvinyl chloride resins, including latex resins, averaged separately for each type of resin; or
    - 2. In polyvinyl chloride plants controlling vinyl chloride emissions with technology other than stripping or in addition to stripping, emissions of vinyl chloride to the atmosphere may not exceed:
      - (i) 2 g/kg (0.002 lb/lb) product from the stripper(s) (or reactor(s) if the plant has no stripper(s)) for all other polyvinyl chloride resins, excluding latex resins, with the product determined on a dry solids basis.
      - (ii) 0.4 g/kg/ (0.004 lb/lb) product from the stripper(s) (or reactor(s) if the plant has no stripper(s)) for all other polyvinyl chloride resins, including latex resins, with the product determined on a dry solids basis.
- (6) **Emission standard for ethylene dichloride, vinyl chloride and polyvinyl chloride plants.**
- (a) An owner or operator of an ethylene dichloride, vinyl chloride, and/or polyvinyl chloride plant shall comply with the requirements of this paragraph.
  - (b) **Relief valve discharge:** Except for an emergency relief discharge, there is to be no discharge to the atmosphere from any relief valve on any equipment in vinyl chloride service. An emergency relief discharge means a discharge which could not have been avoided by taking measures to prevent the discharge. Within 10 days of any relief valve discharge, the owner or operator of the source from

which the relief valve discharge occurs shall submit to the Technical Secretary a report in writing containing information on the source, nature, and cause of the discharge, the date and time of the discharge, the approximate total vinyl chloride loss during discharge, the method used for determining the vinyl chloride loss, the action that was taken to prevent the discharge, and measures adopted to prevent further discharges.

(c) Fugitive emission sources:

1. Loading and unloading lines: Vinyl chloride emissions from loading and unloading lines in vinyl chloride service which are opened to the atmosphere after each loading or unloading operation are to be minimized as follows:
  - (i) After each loading or unloading operation and before opening a loading or unloading line to the atmosphere, the quantity of vinyl chloride in all parts of each loading or unloading line that are to be opened to the atmosphere is to be reduced so that the parts combined contain no greater than 0.0038 m<sup>3</sup> (p.13 ft<sup>3</sup>) of vinyl chloride, at standard temperature and pressure; and
  - (ii) Any vinyl chloride removed from a loading or unloading line in accordance with subpart 1.-(i) of this subparagraph is to be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm, or equivalent as provided in paragraph (7) of this rule.
2. Slip gauges: During loading or unloading operations, the vinyl chloride emissions from each slip gauge in vinyl chloride service are to be minimized by ducting any vinyl chloride discharged from the slip gauge through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm, or equivalent as provided in paragraph (7) of this rule.
3. Leakage from pump, compressor, and agitator seals:
  - (i) Rotating pumps: Vinyl chloride emissions from seals on all rotating pumps in vinyl chloride service are to be minimized by installing sealless pumps, pumps with double mechanical seals, or equivalent as provided in paragraph (7) of this rule. If double mechanical seals are used, vinyl chloride emissions from the seals are to be minimized by maintaining the pressure between the two seals so that any leak that occurs is into the pump; by ducting any vinyl chloride between the two seals through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm; or equivalent as provided in paragraph (7) of this rule.
  - (ii) Reciprocating pumps: Vinyl chloride emissions from seals on all reciprocating pumps in vinyl chloride service are to be minimized by installing double outboard seals, or equivalent as provided in paragraph (7) of this rule. If double outboard seals are used, vinyl chloride emissions from the seals are to be minimized by maintaining the pressure between the two seals so that any leak that occurs is into the pump; by ducting any vinyl chloride between the two seals through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm; or equivalent as provided in paragraph (7) of this rule.

- (iii) Rotating compressor: Vinyl chloride emissions from seals on all rotating compressors in vinyl chloride service are to be minimized by installing compressors with double mechanical seals, or equivalent as provided in paragraph (7) of this rule. If double mechanical seals are used, vinyl chloride emissions from the seals are to be minimized by maintaining the pressure between the two seals through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm; or equivalent as provided in paragraph (7) of this rule.
  - (iv) Reciprocating compressors: Vinyl chloride emissions from seals on all reciprocating compressors in vinyl chloride service are to be minimized by installing double outboard seals, or equivalent as provided in paragraph (7) of this rule. If double outboard seals are used, vinyl chloride emissions from the seals are to be minimized by maintaining the pressure between the two seals so that any leak that occurs is into the compressor; by ducting any vinyl chloride between the two seals through a control system for which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm; or equivalent, as provided in paragraph (7) of this rule.
  - (v) Agitator: Vinyl chloride emissions from seals on all agitators in vinyl chloride service are to be minimized by installing agitators with double mechanical seals, or equivalent as provided in paragraph (7) of this rule. If double mechanical seals are used, vinyl chloride emissions from the seals are to be minimized by maintaining pressure between the two seals so that any leak that occurs is not the agitated vessel; by ducting any vinyl chloride between the two seals through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm; or equivalent as provided in paragraph (7) of this rule.
4. Leakage from relief valve: Vinyl chloride emissions due to leakage from each relief valve on equipment in vinyl chloride service are to be minimized by installing a rupture disk between the equipment and the relief valve, by connecting the relief valve discharge to a process line or recovery system, or equivalent as provided in paragraph (7) of this rule.
5. Manual venting of gases: Except as provided in part (5)-(b)-3. of this rule, all gases which are manually vented from equipment in vinyl chloride service are to be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm; or equivalent, as provided in paragraph (7) of this rule.
6. Opening of equipment: Vinyl chloride emissions from opening of equipment (including loading or unloading lines that are not opened to the atmosphere after each loading or unloading operation) are to be minimized as follows:
- (i) Before opening any equipment for any reason, the quantity of vinyl chloride is to be reduced so that the equipment contains no more than 2.0 percent by volume vinyl chloride or 0.0950 m<sup>3</sup> (25 gal) of vinyl chloride, whichever is larger, at standard temperature and pressure; and
  - (ii) Any vinyl chloride removed from the equipment in accordance with subpart (c)-6.-(i) of this paragraph is to be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm or equivalent as provided in

paragraph (7) of this rule.

7. Samples: Unused portions of samples containing at least 10 percent by weight vinyl chloride are to be returned to the process, and sampling techniques are to be such that sample containers in vinyl chloride service are purged into a closed process system.
8. Leak detection and elimination: Vinyl chloride emissions due to leaks from equipment in vinyl chloride service are to be minimized by instituting and implementing a formal leak detection and elimination program. The owner or operator shall submit a description of the detection and elimination program. The owner or operator shall submit a description of the program to the Technical Secretary for approval. The program is to be submitted within 45 days of the effective date of this rule. Approval of a program will be granted by the Technical Secretary provided he finds:
  - (i) It includes a reliable and accurate vinyl chloride monitoring system for detection of major leaks and identification of the general area of the plant where a leak is located. A vinyl chloride monitoring system means a device which obtains air samples from one or more points on a continuous sequential basis and analyzes the samples with gas chromatography or, if the owner or operator assumes that all hydrocarbons measured are vinyl chloride, with infrared spectrophotometry flame ion detection, or an equivalent or alternative method.
  - (ii) It includes a reliable and accurate portable hydrocarbon detector to be used routinely to find small leaks and to pinpoint the major leaks indicated by the vinyl chloride monitoring system. A portable hydrocarbon detector means a device which measures hydrocarbons with a sensitivity of at least 10 ppm and is of such design and size that it can be used to measure emissions from localized points.
  - (iii) It provides for an acceptable calibration and maintenance schedule for the vinyl chloride monitoring system and portable hydrocarbon detector. For the vinyl chloride monitoring system, a daily span check is to be conducted with a concentration of vinyl chloride equal to the concentration defined as a leak according to subpart (vi) of this subparagraph. The calibration is to be done with either:
    - (I) A calibration gas mixture prepared from the gases specified in sections 5.2.1 and 5.2.2 of Test Method 106 and in accordance with section 7.1 of Test Method 106 as specified in part (8)-(h)-1. of the rule, or
    - (II) A calibration gas cylinder standard containing the appropriate concentration of vinyl chloride. The gas composition of the calibration gas cylinder standard is to have been certified by the manufacturer. The manufacturer must have recommended a maximum shelf life for each cylinder so that the concentration does not change greater than + or - 5 percent from the value. The date of gas cylinder preparation, certified vinyl chloride concentration and recommended maximum shelf life must have been affixed to the cylinder before shipment from the manufacturer to the buyer. If a gas chromatograph is used as the vinyl chloride monitoring system, these gas mixtures may be directly used to prepare a chromatograph calibration curve as described in section 7.3 of Test Method 106. The requirements in section 5.2.3.1 and 5.2.3.2 of Test Method 106 for certification of cylinder standards and for establishment and verification of

calibration standards are to be followed. Method 106 is specified in part (8)-(h)-1. of this rule.

- (iv) The location and number of points to be monitored and the frequency of monitoring provided for in the program are acceptable when they are compared with the number of pieces of equipment in vinyl chloride service and the size and physical layout of the plant.
  - (v) It contains an acceptable plan of action to be taken when a leak is detected.
  - (vi) It contains a definition of leak which is acceptable when compared with the background concentrations of vinyl chloride in the areas of the plant to be monitored by the vinyl chloride monitoring system. Measurements of background concentrations of vinyl chloride in the areas of the plant are to be monitored by the vinyl chloride monitoring system are to be included in with the description of the program. The definition of leak for a given plant may vary among the different areas within the plant and is also to change overtime as background concentrations in the plant are reduced.
9. Inprocess wastewater: Vinyl chloride emissions to the atmosphere from inprocess wastewater are to be reduced as follows:
- (i) The concentration of vinyl chloride in each inprocess wastewater stream containing greater than 10 ppm vinyl chloride measured immediately as it leaves a piece of equipment and before being mixed with any other inprocess wastewater stream is to be reduced to no more than 10 ppm by weight before being mixed with any other inprocess wastewater stream which contains less than 10 ppm vinyl chloride; before being exposed to the atmosphere, before being discharged to a wastewater treatment process; or before being discharged untreated as a wastewater. The paragraph does apply to water which is used to displace vinyl chloride from equipment before it is opened to the atmosphere in accordance with part (5)-(b)-2. or part (c)-6. of this paragraph, but does not apply to water which is used to wash out equipment after the equipment has already been opened to the atmosphere in accordance with part (5)-(b)-2. or (c)-6. of this paragraph.
  - (ii) Any vinyl chloride removed from the inprocess wastewater in accordance with subpart (c)-9-(i) of this paragraph is to be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm, or equivalent as provided in paragraph (7) of this rule.
- (d) The requirements in parts (c)-1., (c)-2., (c)-5., (c)-6., (c)-7., and (c)-8. of this paragraph are to be incorporated into a standard operating procedure and made available upon request for inspection by the Technical Secretary. The standard operating procedure is to include provisions for measuring the vinyl chloride in equipment greater than or equal to 4.75 m<sup>3</sup> (1250 gal) in volume for which an emission limit is prescribed in subpart (6)-(c)-6-(i) prior to opening the equipment and using the reference method in part (8)-(h)-1., a portable hydrocarbon detector, or an equivalent or alternative method. The method of measurement is to meet the requirements in items (g)-5-(i)-(I) or (g)- 5-(i)-(II) of paragraph 8 of this rule.
- (7) Equivalent equipment procedures. Upon written application from an owner or operator, the Technical Secretary 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 sic paragraph of this rule. For an existing source, any request for using an equivalent method as the initial measure of control is to be submitted to the Technical Secretary within 30 days of the effective date of this rule. For a new source, any request for using an equivalent method is to be submitted to the Technical Secretary with the application for approval of construction or modification required by rules 1200-3-9-.01 and 1200-3-11-.01

- (8) Emission tests.
- (a) The owner or operator of a source to which this rule applies shall test emissions from the source.
    - 1. Within 90 days of the effective date of this rule in the case of an existing source or a new source which has an initial startup date preceding the effective date of this rule, or
    - 2. Within 90 days of startup in the case of a new source, initial startup of which occurs after the effective date of this rule.
  - (b) The owner or operator shall provide the Technical Secretary at least 30 days prior notice of an emission test to afford the Technical Secretary the opportunity to have an observer present during the test.
  - (c) Any emission test to be conducted while the equipment being tested is operating at the maximum production rate at which the equipment will be operated and under other relevant conditions as may be specified by the Technical Secretary based on representative performance of the source.
  - (d) (Reserved)
  - (e) When at all possible, each sample is to be analyzed within 24 hours, but in no case in excess of 72 hours of sample collection. vinyl chloride emissions are to be determined within 30 days after the emission test. The owner or operator shall report the determinations to the Technical Secretary by a registered letter dispatched before the close of the next business day following the determination.
  - (f) The owner or operator shall retain at the plant and make available upon request, for inspection by the Technical Secretary, for a minimum of 2 years records of emission test results and other data needed to determine emissions.
  - (g) Unless otherwise specified, the owner or operator shall use the Test Methods in subparagraph (8)-(h) for each test as required by parts (g)-1., (g)-2., (g)-3., (g)-4., and (g)- 5. of this paragraph unless an equivalent method or an alternative method has been approved by the Technical Secretary. If the Technical Secretary finds reasonable grounds to dispute the results obtained by an equivalent or alternative method, he may require the use of a reference method. If the results of the reference and equivalent or alternative methods do not agree, the results obtained by the reference method prevail, and the Technical Secretary may notify the owner or operator that approval of the method previously considered to be equivalent or alternative is withdrawn.
    - 1. The Reference Method in part (8)-(h)-1. is to be used to determine the vinyl chloride emissions from any source for which an emission limit is prescribed in subparagraph (3)-(b) or (3)-(c), subparagraph (4)- (b), or part (5)-(b)-1. or subparagraph (c), (d), or (e) of paragraph 5) or from any control system to which reactor emissions are required to be ducted in part (5)-(b)-2. or to which fugitive emissions are required to be ducted in subparts (c)-1.-(ii), parts (c)-2. and (c)-5., subpart (c)-6.-(ii), or subpart (c)-9.-(ii).

- (i) For each run, one sample is to be collected. The sampling site is to be at least two stack or duct diameters downstream and one half diameters upstream from any flow disturbance such as a bend, expansion, contraction, or visible flame. For a rectangular cross section an equivalent diameter is to be determined from the following equation:

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

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

- (ii) Each emission test is to consist of three runs. For the purpose of determining emissions, the average of results of all runs is to apply. The average is to be computed on a time weighted basis.
- (iii) For gas streams containing more than 10 percent oxygen concentration of vinyl chloride as determined by the Reference Method as specified in part (8)-(h)-1. of this rule is to be corrected to 10 percent oxygen (dry basis) for determination of emissions by using the following equation:

$$C_{b \text{ (corrected)}} = \frac{C_b - 10.9}{20.9 - \text{percent O}_2}$$

where:

- $C_{b \text{ (corrected)}}$  = The concentration of vinyl chloride in the exhaust gases, corrected to 10.0 percent oxygen.
- $C_b$  = The concentration of vinyl chloride as measured by the Reference Method as specified in part (8)-(h)-1. of this rule.
- 20.9 = Percent oxygen in the ambient air at standard conditions.
- 10.9 = Percent oxygen in the ambient air at standard conditions minus the 10.0 percent oxygen to which the correction is being made.
- Percent O<sub>2</sub> = Percent oxygen in the exhaust gas as measured by the Reference Method in part 1200-3-16-.01- (5)-(g)-3.

- (iv) For those emission sources where the emission limit is prescribed in terms of mass rather than concentration, mass emissions in kg/100 kg are to be determined by using the following equation:

$$\frac{C_{Bx}}{Z} = (C_b (2.60) Q 10^6) 100$$

Where:

- $C_{Bx}$  = kg vinyl chloride/100 kg product.
  - $C_b$  = The concentration of vinyl chloride as measured by the reference method in part (8)-(h)-1.
  - 2.60 = Density of vinyl chloride at one atmosphere and 20°C in kg/m<sup>3</sup>.
  - Q = Volumetric flow rate in m<sup>3</sup>/hr as determined by the reference method in part 1200-3-.16-.5)-(g)-2.
  - 10<sup>6</sup> = Conversion factor for ppm.
  - Z = Production rate (kg/hr).
2. The reference method in part (8)-(h)-2. is to be used to determine the concentration of vinyl chloride in each inprocess wastewater stream for which an emission limit is prescribed in subpart (6)-(b)-9.-(i).
  3. Where a stripping operation is used to attain the emission limit in subparagraph (5)-(f) emissions are to be determined using the reference method in part (8)-(h)-2. as follows:
    - (i) The number of strippers and samples and the types and grades of resin to be sampled are to be determined by the Technical Secretary for each individual plant at the time of the test based on the plant's operation.
    - (ii) Each sample is to be taken immediately following the stripping operation.
    - (iii) The corresponding quality of material processed by each stripper is to be determined on a dry solids basis and by a method submitted to and approved by the Technical Secretary.
    - (iv) At the prior request of the Technical Secretary, the owner or operator shall provide duplicates of the samples required in subpart (g)-3.-(i) of this paragraph.
  4. Where control technology other than or in addition to a stripping operation is used to attain the emission limit in subparagraph (5)-(f), emissions are to be determined as follows:
    - (i) The reference method in subparagraphs (8)-(h) is to be used to determine the atmospheric emissions from all of the process equipment simultaneously. The requirements of part (g)-1. of this paragraph are to be met.
    - (ii) The reference method in part (8)-(h)-2. is to be used to determine the concentration of vinyl chloride in each inprocess wastewater stream subject to the emission limit prescribed in subparagraph (5)-(f). The mass of vinyl chloride in kg/100 kg product in

each inprocess wastewater stream is to 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 the reference method in part (8)-(h)-2. of this rule.
- $R$  = water flow rate in 1/hr, determined in accordance with a method which has been submitted to and approved by the Technical Secretary.
- $10^{-6}$  = Conversion factor for ppm.
- $Z$  = Production rate (kg/hr), determined in accordance with a method which has been submitted and approved by the Technical Secretary.

5. The reactor opening loss for which an emission limit is prescribed in part (50-(b)-2. is to be determined. The number of reactors for which the determination is to be made is to be specified by the Technical Secretary for each individual plant at the time of the determination based on the plant's operation. For a reactor that is also used as a stripper, the determination may be made immediately following the stripping operation.

- (i) Except as provided in subpart (g)-5.-(ii) of this paragraph, the reactor opening loss is to be determined using the following equation:

$$C = \frac{W (2.60) (10^6) (Cb)}{YZ}$$

where:

- $C$  = kg vinyl chloride emissions/kg product.
- $W$  = Capacity of the reactor in  $m^3$
- $2.60$  = Density of vinyl chloride at one atmosphere and  $20^\circ C$  in  $kg/m^3$ .
- $Cb$  = ppm by volume vinyl chloride as determined by the Reference Method in part (8)-(h)-1. of this rule or a portable hydrocarbon detector which measures hydrocarbons with a sensitivity of at least 10 ppm.

Y = Number of batches since the reactor was last opened to the atmosphere.

Z = Average kg of polyvinyl chloride produced per batch in the number of batches since the reactor was last opened to the atmosphere.

(I) If the reference method in part (8)-(h)-1. is used to determine the concentrations of vinyl chloride (Cb), the sample is to be withdrawn at a constant rate with a probe of sufficient length to reach the vessel bottom from the manhole. Samples are to be taken for 5 minutes within 6 inches of the vessels bottom, 5 minutes near the vessel center and 5 minutes near the vessel top.

(II) If a portable hydrocarbon detector is used to determine the concentration of vinyl chloride (Cb), a probe of sufficient length to reach the vessel bottom from the manhole is to be used to make the measurements. One measurement will be made within 6 inches of the vessel bottom, one near the vessel center and one near the vessel top. Measurements are to be made at each location until the reading is stabilized. All hydrocarbons measured are to be assumed to be vinyl chloride.

(III) The production rate of polyvinyl chloride (z) is to be determined by a method submitted to and approved by the Technical Secretary.

(ii) A calculation based on the number of evacuations, the vacuum involved, and the volume of gas in the reactor is hereby approved by the Technical Secretary as an alternative method for determining reactor opening loss for postpolymerization reactors in the manufacture of bulk resins.

(h) Measurement of Vinyl Chloride.

1. Vinyl chloride emissions from air contaminant sources shall be determined by the Reference Method as specified in the Federal Register, Volume 41, Number 205, of October 2, 1976, beginning on page 46569 as Method 106, as amended in the Federal Register, Volume 41, Number 234, Friday, December 3, 1976, and the Federal Register, Volume 42, Number 109, of June 7, 1977.
2. Vinyl chloride content of inprocess wastewater samples and vinyl chloride content of polyvinyl chloride resin, slurry, wet cake, and latex samples shall be determined by the Reference Method as specified in the Federal Register, Volume 41, Number 205, of Thursday, October 21, 1976, beginning on page 46571 as Method 107, as amended in the Federal Register, Volume 41, Number 234, Friday, December 3, and the Federal Register, Volume 42, Number 109, of June 7, 1977.

(9) Emission Monitoring.

- (a) A vinyl chloride monitoring system is to be used to monitor on a continuous basis the emissions from the sources for which emission limits are prescribed in subparagraph (3)-(b) and (3)-(c), subparagraph (4)-(b), and part (5)-(b)-1., subparagraphs (5)-(c), (5)-(d), and (5)-(e), and for any control system to which reactor emissions are required due to be ducted in subpart (6)-(c)-6.-(ii) and (6)-(c)-9.-(ii).
- (b) The vinyl chloride monitoring system(s) used to meet the requirement in subparagraph (a) of this paragraph is to be a device which obtains air samples from one or more points on a continuous sequential basis and analyzes the samples with gas chromatography, or, if the owner or operator assumes that all hydrocarbons measured are vinyl chloride with infrared spectrophotometry, flame ion detection, or an equivalent or alternative method. The vinyl chloride monitoring system used to meet the requirements in subpart (6)-(c)-8.-(i) may be used to meet the requirements of this paragraph.
- (c) A daily span check is to be conducted for each vinyl chloride monitoring system used. For all of the emission sources listed in subparagraph (a) of this paragraph, except the one for which an emission limit is prescribed in subparagraph (3)-(c), the daily span check is to be conducted with a concentration of vinyl chloride equal to 10 ppm. For the emission source for which an emission limit is prescribed in subparagraph (3)-(c) the daily span check is to be conducted with a concentration of vinyl chloride which is determined to be equivalent to the emission limit for that source based on the emission test required by paragraph (8) of this rule. The calibration is to be done with either:
  - (1) A calibration gas mixture prepared from the gases specified in sections 5.2.1 and 5.2.3 of Test Method 106 and in accordance with section 7.1 of Test Method 106 is specified in part (8)-(h)-1. of this rule, or
  - (2) A calibration gas cylinder standard containing the appropriate concentration of vinyl chloride. The gas composition of the calibration gas cylinder standard is to have been certified by the manufacturer. The manufacturer must have recommended a maximum shelf life for each cylinder so that the concentration does not change greater than + or - 5 percent from the certified value. The date of gas cylinder preparation, certified vinyl chloride concentration and recommended maximum shelf life must have been affixed to the cylinder before shipment from the manufacturer to the buyer. If a gas chromatograph is used as the vinyl chloride monitoring system, these gas mixtures may be directly used to prepared a chromatograph calibration curve as described in section 7.3 of Test Method 106. The requirements in sections 5.2.43.1 and 5.2.3.2 of Test Method 106 for certification of cylinder standards and for establishment and verification of calibration standards are to be followed. Test Method 106 is as specified in part (8)-(h)-1. of this rule.

(10) Initial Report.

- (a) An owner or operator of any source to which this rule applies shall submit a statement in writing notifying the Technical Secretary that the equipment and procedural specifications in parts 1., 2., 3., 4., 5., 6., 7., and 8. or subparagraph (6)-(c) are being implemented.
- (b) 1. In the case of an existing source or a new source which has an initial startup date preceding the effective date, the statement is to be submitted within 90 days of the effective date of this rule.

2. In the case of a new source which did not have an initial startup date preceding the effective date, the statement is to be submitted within 90 days of the initial startup date.

(c) The statement is to contain the following information:

1. A list of the equipment installed for compliance/
2. A description of the physical and functional characteristics of each piece of equipment.
3. A description of the methods which have been incorporated into the standard operating procedures for measuring or calculating the emissions for which emissions limits are prescribed in subparts (6)-(c)-1.- (i) and (6)-(c)-6.-(i).
4. A statement that each piece of equipment is installed and that each piece of equipment and each procedure is being used.

(11) Semi-annual report.

(a) The owner or operator of any source to which this rule applies shall submit to the Technical Secretary on September 15 and March 15 of each year a report in writing containing the information required by this paragraph. The first semi-annual report is to be submitted following the first full 6 month reporting period after the initial report is submitted.

- (b)
1. In the case of an existing source or a new source which has an initial startup date preceding the effective date, the first report is to be submitted within 180 days of the effective date.
  2. In the case of a new source which did not have an initial startup date preceding the effective date, the first report is to be submitted within 180 days of the initial startup date.

(c) Unless otherwise specified, the owner or operator shall use the test method in subparagraph (8)-(h) to this part to conduct emission tests as required by parts (c)-2. and (c)-3. of this paragraph, unless an equivalent or alternative method has been approved by the Technical Secretary. If the Technical Secretary finds reasonable grounds to dispute the results obtained by an equivalent or alternative method, he may require the use of a reference method. If the results of the reference and equivalent or alternative methods do not agree, the results obtained by the reference method prevail, and the Technical Secretary may notify the owner or operator that approval of the method previously considered to be equivalent or alternative is withdrawn.

1. The owner or operator shall include in the report a record of any emissions which averaged over any hour period (commencing on the hour) are in excess of the emission limits prescribed in subparagraph (3)-(b) or (3)-(c), subparagraph (4)-(b), part (5)-(b)-1., subparagraphs (5)-(c), (5)-(c), (5)-(d), or (5)-(e), or for any control system to which reactor emissions are required to be ducted in part (5)-(b)-2. or to which fugitive emissions are required to be ducted in subpart (5)-(c)-1.- (ii), subparagraphs (5)-(c)- 2., (5)-(c)-5., subparts (5)-(c)-6.- (ii), or (5)- (c)-9.- (ii). The emissions are to be measured in accordance with paragraph (9) of this rule.
2. In polyvinyl chloride plants for which a stripping operation is used to attain the emission

level prescribed in subparagraph (5)-(f), the owner or operator shall include in the report a record of the vinyl chloride content in the polyvinyl chloride resin. The Reference Method in part (8)-(h)-2. is to be used to determine vinyl chloride content as follows:

- (i) If batch stripping is used, one representative sample of polyvinyl chloride resin is to be taken from each batch of each grade of resin immediately following the completion of the stripping operation, 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 is to 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 is to 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 is to 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, is to be recorded and identified by resin type and grade and the date and time it represents.
- (iii) The quantity of material processed by the stripper is to be determined on a dry solids basis and by a method submitted to and approved by the Technical Secretary.
- (iv) At the prior request of the Technical Secretary, the owner or operator shall provide duplicates of the samples required in subparts (c)-2.-(i) and (c)-2.-(ii) of this paragraph.
- (v) The report to the Technical Secretary by the owner or operator is to include the vinyl chloride content found in all the samples required by Subpart (c)-2.-(i) and (c)-2.-(ii) of this paragraph, 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, according to the following equation:

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where:

- A = 24-hour average concentration of type  $T_i$  resin in ppm. (dry weight basis)
- Q = Total production of type  $T_i$  resin over the 24-hour period, in kg.
- $T_i$  = Type of resin;  $i=1,2, \dots, m$  where  $m$  is total number of resin types produced during the 24-hr period
- M = Concentration of vinyl chloride in one sample of grade  $G_i$  resin, in ppm
- P = Production of grade  $G_i$  resin represented by the sample, in kg.
- $G_i$  = Grade of resin, e.g.,  $G_1, G_2,$  and  $G_3$ .



n = Total number of grades of resin produced during the 24-hour period.

- (vi) The owner or operator shall retain at the source and make available for inspection by the Technical Secretary for a minimum of two years records of all data needed to furnish the information required by subpart (c)-2.- (v) of this paragraph. The records are to contain the following information:
  - (I) The vinyl chloride content found in all the samples required in subparts (c)-2.- (i) and (c)-2.- (ii) of this paragraph identified by the resin type and grade and the time and date of the sample, and
  - (II) The corresponding quantity of polyvinyl chloride resin processes by the stripper(s), identified by the resin type and grade and the time and date it represents.
- 3. The owner or operator shall include in the report a record of the emissions from each reactor opening for which an emission limit is prescribed in part (5)-(b)- 2. of this rule. Emissions are to be determined in accordance with part (8)-(g)-5. of this rule, except that emissions for each reactor are to be determined. For a reactor that is also used as a stripper, the determination may be made immediately following the stripping operation.

(12) Recordkeeping.

- (a) The owner or operator of any source to which this rule applies shall retain the following information at the source and make it available for inspection by the Technical Secretary for a minimum of two years:
  - 1. A record of the leaks detected by the vinyl chloride monitoring system as required by part (6)-(c)-8. of this rule, including the concentrations of vinyl chloride as measured, analyzed, and recorded by the vinylchloride detector, the location of each measurement and the date and approximate time of each measurement.
  - 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 part (6)-(c)-8. of this rule, including a brief statement explaining the location and cause of each leak detected with the portable hydrocarbon detector, the date and time of the leak, and any action taken to eliminate that leak.
  - 3. A record of emissions measured in accordance with paragraph (9) of this rule.
  - 4. A daily operating record for each polyvinyl chloride reactor, including pressures and temperatures.

Authority: T.C.A. Section 68-25-105. Administrative History. Original Rule certified April 12, 1978.

THIS IS THE FEDERALLY APPROVED REGULATION AS OF  
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