

City of Memphis Section 16-81. Hazardous Air Contaminants
(Shelby County Section 3-25. Hazardous Air Contaminants)

For the purpose of enforcement of hazardous air contaminants, Chapter 1200-3-11 of the Tennessee Air Pollution Control Regulations, as effective on January 1, 1998, is hereby adopted by reference as a portion of this Code. Such regulations and/or all such additions, deletions, changes and amendments as may subsequently be made shall become a part of this code and shall have the same effect as if set out in full herein.

(City of Memphis Ord. No. 4320, effective 6-7-95; Shelby County Ord. No. 159, effective 5-14-95. Amended by City of Memphis Ord. No. 4636, effective 1-7-99; amended by Shelby County Ord. No. 203, effective 9-18-98. Pursuant to T.C.A. 68-201-115.)

RULES
OF
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
BUREAU OF ENVIRONMENT
DIVISION OF AIR POLLUTION CONTROL
CHAPTER 1200-3-11

HAZARDOUS AIR CONTAMINANTS

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1200-3-11-.01 **GENERAL PROVISIONS**

(1) List of Pollutants and Applicability

- (a) 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:
 - 1. Asbestos
 - 2. Beryllium
 - 3. Mercury
 - 4. Vinyl Chloride
 - 5. Benzene
 - 6. Radionuclides
 - 7. Inorganic Arsenic
- (b) 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.
- (c) Unless otherwise noted, references to paragraph or sub-divisions of paragraphs in rules in this chapter are to paragraphs or sub-divisions of paragraphs in that rule.

(2) 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.
- (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 potential 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. The location or proposed 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. Emission rate(s) of the hazardous air contaminant;
 - 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, submit to the Technical Secretary the information specified in parts 1. through 13. 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) Within 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 specified in parts 1. through 13. 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) of this paragraph 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 1200-3-9, 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.

(3) Definitions

- (a) "Alternative method" means any method of sampling and analyzing for an air pollutant which is not a reference method but which has been demonstrated to the Technical Secretary's satisfaction to produce results adequate for the Technical Secretary's determination of compliance.
- (b) "Capital expenditure" means an expenditure for a physical or operational change to a stationary source which exceeds the product of the applicable "annual asset guideline repair allowance percentage" specified in the latest edition of Internal Revenue Service (IRS) Publication 534 and the stationary source's basis, as defined by section 1012 of the Internal Revenue Code. However, the total expenditure for a physical or operational change to a stationary source must not be reduced by any "excluded additions" as defined for stationary sources constructed after December 31, 1981, in IRS Publication 534, as would be done for tax purposes. In addition, "annual asset guideline repair allowance" may be used even though it is excluded for tax purposes in IRS Publication 534.
- (c) "Commenced" means, with respect to the definition of "new source" in subparagraph (1)(cc) of Rule 1200-3-2-.01, that an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification.
- (d) "Compliance schedule" means the date or dates by which a source or category of sources is required to comply with the standards of this chapter.
- (e) "Construction" means fabrication, erection, or installation of an affected facility.
- (f) "Equivalent method" means any method of sampling and analyzing for an air pollutant which has been demonstrated to the Technical Secretary's satisfaction to have a consistent and quantitatively known relationship to the reference method, under specified conditions.
- (g) "Existing source" means any stationary source which is not a new source.
- (h) "Modification" means any physical change in, or change in the method of operation of, a stationary source which increases the amount of any hazardous air pollutant emitted by such source or which results in the emission of any hazardous air pollutant not previously emitted, except that:
 - 1. Routine maintenance, repair, and replacement shall not be considered physical changes, and
 - 2. The following shall not be considered a change in the method of operation:
 - (i) An increase in the production rate, if such increase does not exceed the operating design capacity of the stationary

source;

- (ii) An increase in hours of operation.
- (i) "Monitoring system" means any system, required under the monitoring paragraphs in applicable rules, used to sample and condition (if applicable), to analyze, and to provide a record of emissions or process parameters.
- (j) "Run" means the net period of time during which an emission sample is collected. Unless otherwise specified, a run may be either intermittent or continuous within the limits of good engineering practice.
- (k) "Standard" means an emission standard including a design, equipment, work practice or operational standard for a hazardous air pollutant promulgated under this chapter.
- (l) "New source" means any stationary source, the construction or modification of which is commenced after the effective date of the rule for hazardous air pollutants which will be applicable to such source.
- (m) "Owner or operator" means any person who owns, leases, operates, controls, or supervises a stationary source.
- (n) "Reference method" means any method of sampling and analyzing for an air pollutant. Any references to reference methods in this chapter shall be to those reference methods set forth in Subparagraph 1200-3-16-.01(5)(g) unless otherwise stated in this chapter.
- (o) "Startup" means the setting in operation of a stationary source for any purpose.
- (p) "Stationary source" means any building, structure, facility, or installation which emits or may emit any air pollutant which has been designated as hazardous by the Technical Secretary.
- (q) "ASTM Method", ASTM in this chapter refers to the American Society for Testing Materials. Copies of methods are available for purchase by writing to ASTM, 1916 Race Street, Philadelphia, PA 19103 or by writing to the Tennessee Division of Air Pollution Control, 701 Broadway, 4th Floor Customs House, Nashville, TN 37219. Be sure to specify which method is desired.
- (r) "In VOC service" means that the piece of equipment contains or contacts a process fluid that is at least 10 percent Volatile Organic Compound (VOC) by weight.
- (s) "Volatile organic compound" (also denoted as VOC) means any compound of carbon that has a vapor pressure greater than 0.1 millimeters of mercury at standard conditions excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. The following compounds shall not be considered volatile organic compounds: methane, ethane, 1,1,1 trichloroethane (methyl chloroform), trichlorotrifluoroethane, trichlorofluoromethane, dichlorodifluoromethane, chlorodifluoromethane, trifluoromethane, dichlorotetrafluoroethane, chloropentafluoroethane, and methylene chloride. In no case shall this definition be construed to be more

restrictive than the results obtained from the use of the applicable test method for a source as specified in Rules 1200-3-18-.44, .45, and .46 and other referenced methods.

(4) Modification

- (a) Except as provided under subparagraph (d) of this paragraph, any physical or operational change to a stationary source which results in an increase in the rate of emission to the atmosphere of a hazardous pollutant to which a standard applies shall be considered a modification.
- (b) Upon modification, an existing source shall become a new source for each hazardous pollutant for which the rate of emission to the atmosphere increases and to which a standard applies.
- (c) Emission rate shall be expressed as kg/hr for any hazardous pollutant discharged into the atmosphere for which a standard is applicable. The Technical Secretary shall use the following to determine the emission rate:
 - 1. Emission factors as specified in the background information document (BID) for the applicable standard, or in the latest issue of "Compilation of Air Pollutant Emission Factors", EPA Publication No. AP-42, or other emission factors determined by the Technical Secretary to be superior to AP-42 emission factors, in cases where use of emission factors demonstrates that the emission rate will clearly increase or clearly not increase as a result of the physical or operational change.
 - 2. Material balances, monitoring data, or manual emission tests in cases where use of emission factors, as referenced in part (c)1. of this paragraph, does not demonstrate to the Technical Secretary's satisfaction that the emission rate will clearly increase or clearly not increase as a result of the physical or operational change, or where it is demonstrated to the Technical Secretary's satisfaction that there are reasonable grounds to dispute the result obtained by the Technical Secretary using emission factors. When the emission rate is based on results from manual emission tests or monitoring data, the procedures specified in the Federal Register, Vol. 40, December 16, 1975, beginning on page 58420, shall be used to determine whether an increase in emission rate has occurred. Tests shall be conducted under such conditions as the Technical Secretary shall specify to the owner or operator. At least three test runs must be conducted before and at least three after the physical or operational change. All operating parameters which may affect emissions must be held constant to the maximum degree feasible for all test runs.
- (d) The following shall not, by themselves, be considered modifications under this chapter:
 - 1. Maintenance, repair, and replacement which the Technical Secretary determines to be routine for a source category.
 - 2. An increase in production rate of a stationary source, if that increase can be accomplished without a capital expenditure on the

stationary source.

3. An increase in the hours of operation.
4. Any conversion to coal by reason of any order under section 2(a) and (b) of the Energy Supply and Environmental Coordination Act of 1974 (or any superseding legislation) or by reason of a natural gas curtailment plan pursuant to an applicable federal statute.
5. The relocation or change in ownership of a stationary source.

(5) Monitoring Requirements

- (a) Unless otherwise specified, this paragraph applies to each monitoring system required under each rule which requires monitoring.
- (b) Each owner or operator shall maintain and operate each monitoring system as specified in the applicable rule and in a manner consistent with good air pollution control practice for minimizing emissions. Any unavoidable breakdown or malfunction of the monitoring system should be repaired or adjusted as soon as practicable after its occurrence. The Technical Secretary's determination of whether acceptable operating and maintenance procedures are being used will be based on information which may include, but not be limited to, review of operating and maintenance procedures, manufacturer recommendations and specifications, and inspection of the monitoring system.
- (c) When required by the applicable rule, and at any other time the Technical Secretary may require, the owner or operator of a source being monitored shall conduct a performance evaluation of the monitoring system and furnish the Technical Secretary with a copy of a written report of the results within 60 days of the evaluation. Such a performance evaluation shall be conducted according to the applicable specifications and procedures described in the applicable rule. The owner or operator of the source shall furnish the Technical Secretary with written notification of the date of the performance evaluation at least 30 days before the evaluation is to begin.
- (d) When the effluent from a single source, or from two or more sources subject to the same emission standards, are combined before being released to the atmosphere, the owner or operator shall install a monitoring system on each effluent or on the combined effluent. If two or more sources are not subject to the same emission standards, the owner or operator shall install a separate monitoring system on each effluent, unless otherwise specified. If the applicable standard is a mass emission standard and the effluent from one source is released to the atmosphere through more than one point, the owner or operator shall install a monitoring system at each emission point unless the installation of fewer systems is approved by the Technical Secretary.
- (e) The owner or operator of each monitoring system shall reduce the monitoring data as specified in each applicable rule. Monitoring data recorded during periods of unavoidable monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in any data average.
- (f) The owner or operator shall maintain records of monitoring data,

monitoring system calibration checks, and the occurrence and duration of any period during which the monitoring system is malfunctioning or inoperative. These records shall be maintained at the source for a minimum of 2 years and made available, upon request, for inspection by the Technical Secretary.

- (g) 1. Monitoring shall be conducted as set forth in this paragraph and the applicable rule unless the Technical Secretary:
 - (i) Specifies or approves the use of the specified monitoring requirements and procedures with minor changes in methodology; or
 - (ii) Approves the use of alternatives to any monitoring requirements or procedures.
- 2. If the Technical Secretary finds reasonable grounds to dispute the results obtained by an alternative monitoring method, the Technical Secretary may require the monitoring requirements and procedures specified in this chapter.

Authority: T.C.A. §§68-201-105 and 4-5-202. Administrative History: Original rule filed January 10, 1977; effective February 9, 1977. Amendment filed May 17, 1978; effective June 16, 1978. Amendment filed September 21, 1988; effective November 6, 1988. Amendment filed May 17, 1990; effective July 1, 1990.

- (1) Definitions. Terms used in this rule not defined herein shall have the meaning given to them in Chapter 1200-3-2, DEFINITIONS.
- (a) "Active waste disposal site" means any disposal site other than an inactive site.
 - (b) "Adequately wet" means sufficiently mix or penetrate with liquid to prevent the release of particulate. If visible emissions are observed coming from asbestos-containing material, then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wet.
 - (c) "Asbestos" means the asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite, anthophyllite, and actinolite-tremolite.
 - (d) "Asbestos-containing material" (ACM) means asbestos or any asbestos containing material, which contains more than 1 percent asbestos as determined using Polarized Light Microscopy according to the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy, as contained in the 7-1-91 Edition of the CFR.
 - (e) "Asbestos-containing waste materials" means mill tailings or any waste that contains commercial asbestos and is generated by a source subject to the provisions of this (subpart). This term includes filters from control devices, friable asbestos waste material, and bags or other similar packaging contaminated with commercial asbestos. As applied to demolition and renovation operations, this term also includes regulated asbestos-containing material waste and materials contaminated with asbestos including disposable equipment and clothing.
 - (f) "Asbestos mill" means any facility engaged in converting, or in any intermediate step in converting, asbestos ore into commercial asbestos. Outside storage of asbestos material is not considered a part of the asbestos mill.
 - (g) "Asbestos tailings" means any solid waste that contains asbestos and is a product of asbestos mining or milling operations.
 - (h) "Asbestos waste from control devices" means any waste material that contains asbestos and is collected by a pollution control device.
 - (i) "Category I nonfriable ACM" means asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products, containing more than 1 percent asbestos as determined using polarized light microscopy according to the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy, as contained in the 7-1-91 Edition of the CFR.
 - (j) "Category II nonfriable ACM" means any material, excluding Category I nonfriable ACM, containing more than 1 percent asbestos, as determined using polarized light microscopy according to the methods specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy, as contained in the 7-1-91 Edition of the CFR, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand

pressure.

- (k) "Commercial asbestos" means any material containing asbestos that is extracted from ore and has value because of its asbestos content.
- (l) "Cutting" means to penetrate with a sharp-edged instrument and includes sawing but does not include shearing, slicing, or punching.
- (m) "Demolition" means the wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of any facility.
- (n) "Emergency renovation operation" means a renovation operation that was not planned but results from a sudden, unexpected event that, if not immediately attended to, presents a safety or public health hazard, is necessary to protect equipment from damage, or is necessary to avoid imposing an unreasonable financial burden. This term includes operations necessitated by nonroutine failures of equipment.
- (o) "Fabricating" means any processing (e.g., cutting, sawing, drilling) of a manufactured product that contains commercial asbestos, with the exception of processing at temporary sites (field fabricating) for the construction or restoration of facilities. In the case of friction products, fabricating includes bonding, debonding, grinding, sawing, drilling, or other similar operations performed as part of fabricating.
- (p) "Facility" means any institutional, commercial, public, industrial, or residential structure, installation, or building (including any structure, installation, or building containing condominiums or individual dwelling units operated as a residential cooperative, but excluding residential buildings having four or fewer dwelling units); any ship; and any active or inactive waste disposal site. For purposes of this definition, any building, structure, or installation that contains a loft used as a dwelling is not considered a residential structure, installation, or building. Any structure, installation or building that was previously subject to this rule is not excluded, regardless of its current use or function.
- (q) "Facility component" means any part of a facility including equipment.
- (r) "Friable asbestos material" means any material containing more than 1 percent asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy, as contained in the 7-1-91 Edition of the CFR, that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. If the asbestos content is less than 10 percent as determined by a method other than point counting by polarized light microscopy (PLM), verify the asbestos content by point counting using PLM.
- (s) "Fugitive source" means any source of emissions not controlled by an air pollution control device.
- (t) "Glove bag" means a sealed compartment with attached inner gloves used for the handling of asbestos-containing materials. Properly installed and used, glove bags provide a small work area enclosure typically used for small-scale asbestos stripping operations. Information on glove-bag installation, equipment and supplies, and work practices is contained in the Occupational Safety and Health Administration's (OSHA's) final

rule on occupational exposure to asbestos (Appendix G to 29 CFR 1926.58, as contained in the 7-1-91 Edition of the CFR).

- (u) "Grinding" means to reduce to powder or small fragments and includes mechanical chipping or drilling.
- (v) "Inactive waste disposal site" means any disposal site or portion of it where additional asbestos-containing waste material has not been deposited within the past year.
- (w) "In poor condition" means the binding of the material is losing its integrity as indicated by peeling, cracking, or crumbling of the material.
- (x) "Installation" means any building or structure or any group of buildings or structures at a single demolition or renovation site that are under the control of the same owner or operator (or owner or operator under common control).
- (y) "Leak-tight" means that solids or liquids cannot escape or spill out. It also means dust-tight.
- (z) "Malfunction" means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner so that emissions of asbestos are increased. Failures of equipment shall not be considered malfunctions if they are caused in any way by poor maintenance, careless operation, or any other preventable upset conditions, equipment breakdown, or process failure.
- (aa) "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. Chlorine production is considered a part of manufacturing.
- (bb) "Natural barrier" means a natural object that effectively precludes or deters access. Natural barriers include physical obstacles such as cliffs, lakes or other large bodies of water, deep and wide ravines, and mountains. Remoteness by itself is not a natural barrier.
- (cc) "Nonfriable asbestos material" means any material containing more than 1 percent asbestos by area as determined by the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy, as contained in the 7-1-91 Edition of the CFR, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.
- (dd) "Nonscheduled renovation operation" means a renovation operation necessitated by the routine failure of equipment, which is expected to occur within a given period based on past operating experience, but for which an exact date cannot be predicted.
- (ee) "Owner or operator of a demolition or renovation activity" means any person who owns, leases, operates, controls, or supervises the facility being demolished or renovated or any person who owns, leases, operates, controls, or supervises the demolition or renovation operation, or both.

- (ff) "Outside air" means the air outside buildings and structures, including, but not limited to, the air under a bridge or in an open air ferry dock.
- (gg) "Particulate asbestos material" means finely divided particles of asbestos or material containing asbestos.
- (hh) "Planned renovation operations" means a renovation operation, or a number of such operations, in which some RACM will be removed or stripped within a given period of time and that can be predicted. Individual nonscheduled operations are included if a number of such operations can be predicted to occur during a given period of time based on operating experience.
- (ii) "Regulated asbestos containing material (RACM)" means
1. Friable asbestos material,
 2. Category I nonfriable ACM that has become friable,
 3. Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or
 4. Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of the demolition or renovation operations regulated by this rule.
- (jj) "Remove" means to take out RACM or facility components that contain or are covered with RACM from any facility.
- (kk) "Renovation" means altering a facility or one or more facility components in any way, including the stripping or removal of RACM from a facility component. Operations in which load-supporting structural members are wrecked or taken out are demolitions.
- (ll) "Resilient floor covering" means asbestos-containing floor tile, including asphalt and vinyl floor tile, and sheet vinyl floor covering containing more than 1 percent asbestos as determined using polarized light microscopy according to the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy, as contained in the 7-1-91 Edition of the CFR.
- (mm) "Roadways" means surfaces on which vehicles travel. This term includes public and private highways, roads, streets, parking areas, and driveways.
- (nn) "Strip" means to take off RACM from any part of a facility or facility components.
- (oo) "Structural member" means any load supporting member of a facility, such as beams and load supporting walls; or any non-load supporting member, such as ceilings and non-load supporting walls.
- (pp) "Visible emissions" means any emissions, which are visually detectable without the aid of instruments, coming from RACM or asbestos-containing waste material, or from any asbestos milling, manufacturing, or fabricating operation. This does not include condensed, uncombined

water vapor.

(qq) "Waste generator" means any owner or operator of a source covered by this rule whose act or process produces asbestos-containing waste material.

(rr) "Waste shipment record" means the shipping document, required to be originated and signed by the waste generator, used to track and substantiate the disposition of asbestos-containing waste material.

(ss) "Working day" means Monday through Friday and includes holidays that fall on any of the days Monday through Friday.

(2) Standard for various sources of asbestos.

(a) Standard for asbestos mills.

1. Each owner or operator of an asbestos mill shall either discharge no visible emissions to the outside air from that asbestos mill, including fugitive sources, or use the methods specified by 1200-3-11-.02(3) to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

2. Each owner or operator of an asbestos mill shall meet the following requirements:

(i) Monitor each potential source of asbestos emissions from any part of the mill facility, including air cleaning devices, process equipment, and buildings that house equipment for material processing and handling, at least once each day, during daylight hours, for visible emissions to the outside air during periods of operation. The monitoring shall be by visual observation of at least 15 seconds duration per source of emissions.

(ii) Inspect each air cleaning device at least once each week for proper operation and for changes that signal the potential for malfunction, including, to the maximum extent possible without dismantling other than opening the device, the presence of tears, holes, and abrasions in filter bags and for dust deposits on the clean side of bags. For air cleaning devices that cannot be inspected on a weekly basis according to this rule, submit to the Technical Secretary, and revise as necessary, a written maintenance plan to include, at a minimum, the following:

(I) Maintenance schedule.

(II) Recordkeeping plan.

(iii) Maintain records of the results of visible emissions monitoring and control device inspections using the forms shown in Figures 1 and 2 and include the following:

(I) Date and time of each inspection.

(II) Presence or absence of visible emissions.

- (III) Condition of fabric filters, including presence of any tears, holes, and abrasions.
 - (IV) Presence of dust deposits on clean side of fabric filters.
 - (V) Brief description of corrective actions taken, including date and time.
 - (VI) Daily hours of operation for each control device.
 - (iv) Furnish upon request, and make available during normal business hours for inspection by the Technical Secretary, all records required under this paragraph.
 - (v) Retain a copy of all monitoring and inspection records for at least 2 years.
 - (vi) Submit quarterly a copy of the visible emission monitoring records to the Technical Secretary if visible emissions occurred during the report period. Quarterly reports shall be postmarked by the 30th day following the end of the calendar quarter.
- (b) Standard for roadways. No person may construct or maintain a roadway with asbestos tailings or asbestos-containing waste material on that roadway, unless, for asbestos tailings,
1. It is a temporary roadway on an area of asbestos ore deposits (asbestos mine); or
 2. It is a temporary roadway at an active asbestos mill site and is encapsulated with a resinous or bituminous binder. The encapsulated road surface must be maintained at a minimum frequency of once per year to prevent dust emissions; or
 3. It is encapsulated in asphalt concrete meeting the specifications contained in Section 401 of Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-85, 1985, or their equivalent.
- (c) Standard for manufacturing.
1. Applicability. This standard applies to the following manufacturing operations using commercial asbestos:
 - (i) The manufacture of cloth, cord, wicks, tubing, tape, twine, rope, thread, yarn, roving lap, or other textile materials.
 - (ii) The manufacture of cement products.
 - (iii) The manufacturing of fireproofing and insulating materials.
 - (iv) The manufacture of friction products.

- (v) The manufacture of paper, millboard, and felt.
 - (vi) The manufacture of floor tile.
 - (vii) The manufacture of paints, coatings, caulks, adhesives, and sealants.
 - (viii) The manufacture of plastics and rubber materials.
 - (ix) The manufacture of chlorine utilizing asbestos diaphragm technology.
 - (x) The manufacture of shotgun shell wads.
 - (xi) The manufacture of asphalt concrete.
2. Standard. Each owner or operator of the manufacturing operations to which this subparagraph (2)(c) applies shall either:
- (i) Discharge no visible emissions to the outside air from these operations or from any building or structure in which they are conducted or from any other fugitive sources; or
 - (ii) Use the methods specified by 1200-3-11-.02(3) to clean emissions from these operations containing particulate asbestos material before they escape to, or are vented to, the outside air.
 - (iii) Monitor each potential source of asbestos emissions from any part of the manufacturing facility, including air cleaning devices, process equipment, and buildings housing material processing and handling equipment, at least once each day during daylight hours for visible emissions to the outside air during periods of operation. The monitoring shall be by visual observation of at least 15 seconds duration per source of emissions.
 - (iv) Inspect each air cleaning device at least once each week for proper operation and for changes that signal the potential for malfunctions, including, to the maximum extent possible without dismantling other than opening the device, the presence of tears, holes, and abrasions in filter bags and for dust deposits on the clean side of bags. For air cleaning devices that cannot be inspected on a weekly basis according to this rule, submit to the Technical Secretary, and revise as necessary, a written maintenance plan to include, at a minimum, the following:
 - (I) Maintenance schedule.
 - (II) Recordkeeping plan
 - (v) Maintain records of the results of visible emission monitoring and air cleaning device inspections using a format similar to that shown in Figures 1 and 2 and include the following:

- (I) Date and time of each inspection.
- (II) Presence or absence of visible emissions.
- (III) Condition of fabric filters, including presence of any tears, holes, and abrasions.
- (IV) Presence of dust deposits on clean side of fabric filters.
- (V) Brief description of corrective actions taken, including date and time.
- (VI) Daily hours of operation for each control device.
- (vi) Furnish upon request, and make available during normal business hours for inspection by the Technical Secretary, all records required under this subparagraph (2)(c).
- (vii) Retain a copy of all monitoring and inspection records for at least 2 years.
- (viii) Submit quarterly a copy of the visible emission monitoring records to the Technical Secretary if visible emissions occurred during the report period. Quarterly reports shall be postmarked by the 30th day following the end of the calendar quarter.

(d) Standard for demolition and renovation.

1. Applicability. To determine which requirements of parts 1., 2., and 3. of this subparagraph apply to the owner or operator of a demolition or renovation activity and prior to the commencement of the demolition or renovation, thoroughly inspect the affected facility or part of the facility where the demolition or renovation operation will occur for the presence of asbestos, including Category I and Category II nonfriable ACM. The requirements of parts 2. and 3. of this subparagraph apply to each owner or operator of a demolition or renovation activity, including the removal of RACM as follows:
 - (i) Requirements of parts 2. and 3. of this subparagraph apply, except as provided in subpart 1.(iii) of this subparagraph, if the amount of RACM is
 - (I) At least 80 linear meters (260 linear feet) on pipes or at least 15 square meters (160 square feet) on other facility components, or
 - (II) At least 1 cubic meter (35 cubic feet) of facility components where the length or area could not be measured previously.
 - (ii) In a facility being demolished, only the notification requirements of subparts 2.(i), (ii), (iii)(I) and (IV), and (iv)(I) through (VII) and (iv)(IX) and (XVI) of this subparagraph apply, if the amount of RACM is

- (I) Less than 80 linear meters (260 linear feet) on pipes and less than 15 square meters (160 square feet) on other facility components, and
 - (II) Less than one cubic meter (35 cubic feet) of facility components where the length or area could not be measured previously, or there is no asbestos.
- (iii) If the facility is being demolished under an order of a State or local government agency, issued because the facility is structurally unsound and in danger of imminent collapse, only the requirements of subparts 2.(i), 2.(ii), 2.(iii)(III), 2.(iv) (except 2.(iv)(VIII)), 2.(v), and 3.(iv) through 3.(ix) of this subparagraph apply.
- (iv) In a facility being renovated, including any individual nonscheduled renovation operation, all the requirements of parts 2. and 3. of this subparagraph apply if the combined amount of RACM stripped, removed, dislodged, cut, drilled, or similarly disturbed is
- (I) At least 80 linear meters (260 linear feet) on pipes or at least 15 square meters (160 square feet) on other facility components, or
 - (II) At least 1 cubic meter (35 cubic feet) of facility components where the length or area could not be measured previously.
 - (III) To determine whether subpart 1.(iv) of this subparagraph applies to planned renovation operations involving individual nonscheduled operations, predict the combined additive amount of RACM to be removed or stripped during a calendar year of January 1 through December 31.
 - (IV) To determine whether subpart 1.(iv) of this subparagraph applies to emergency renovation operations, estimate the combined amount of RACM to be removed or stripped as a result of the sudden, unexpected event that necessitated the renovation.
- (v) Owners or operators of demolition and renovation operations are exempt from the requirements of subparagraph 1200-3-11-.01(2)(a), 1200-3-11-.01(2)(b) and 1200-3-11-.01(2)(d).
2. Notification requirements. Each owner or operator of a demolition or renovation activity to which this subparagraph applies shall:
- (i) Provide the Technical Secretary with written notice of intention to demolish or renovate. Delivery of the notice by U.S. Postal Service, commercial delivery service, or hand delivery is acceptable.
 - (ii) Update notice, as necessary, including when the amount of asbestos affected changes by at least 20 percent.

(iii) Postmark or deliver the notice as follows:

- (I) At least 10 working days before asbestos stripping or removal work or any other activity begins (such as site preparation that would break up, dislodge or similarly disturb asbestos material), if the operation is described in subparts 1.(i) and (iv) (except 1.(iv)(III) and 1.(iv)(IV)) of this subparagraph. If the operation is as described in subpart 1.(ii) of this subparagraph, notification is required 10 working days before demolition begins.
- (II) At least 10 working days before the end of the calendar year preceding the year for which notice is being given for renovations described in item 1.(iv)(III) of this subparagraph.
- (III) As early as possible before, but not later than, the following working day if the operation is a demolition ordered according to subpart 1.(iii) of this subparagraph or, if the operation is a renovation described in item 1.(iv)(IV) of this subparagraph.
- (IV) For asbestos stripping or removal work in a demolition or renovation operation, described in subparts 1.(i) and (iv) (except items 1.(iv)(III) and 1.(iv)(IV)) of this subparagraph, and for a demolition described in subparts 1.(ii) of this subparagraph, that will begin on a date other than the one contained in the original notice, notice of the new start date must be provided to the Technical Secretary as follows:
 - I. When the asbestos stripping or removal operation or demolition operation covered by this rule will begin after the date contained in the notice,
 - A. Notify the Technical Secretary of the new start date by telephone as soon as possible before the original start date, and
 - B. Provide the Technical Secretary a written notice of the new start date as soon as possible before, and no later than, the original start date. Delivery of the updated notice by U.S. Postal Service, commercial delivery service, or hand delivery is acceptable.
 - II. When the asbestos stripping or removal operation or demolition operation covered by this subparagraph will begin on a date earlier than the original start date,

- A. Provide the Technical Secretary a written notice of the new start date at least 10 working days before asbestos stripping or removal work begins.
 - B. For demolitions covered by subpart 1.(ii) of this subparagraph, provide the Technical Secretary with written notice of a new start date at least 10 working days before commencement of demolition. Delivery of updated notice by U.S. Postal Service, commercial delivery service, or hand delivery is acceptable.
- III. In no event shall an operation covered by this subparagraph begin on a date other than the date contained in the written notice of the new start date.
- (iv) Include the following in the notice:
- (I) An indication of whether the notice is the original or a revised notification.
 - (II) Name, address, and telephone number of both the facility owner and operator and the asbestos removal contractor owner or operator.
 - (III) Type of operation: demolition or renovation.
 - (IV) Indicate whether or not asbestos is present in the building.
 - (V) Location and address (including building number or name and floor or room number, if appropriate), street address, city, county, and state, of the facility being demolished or renovated. Description of the facility or affected part of the facility including the size (square meters [square feet] and number of floors), age, and present and prior use of the facility.
 - (VI) Procedure, including analytical methods, employed to detect the presence of RACM and category I and category II nonfriable ACM.
 - (VII) Estimate of the approximate amount of RACM to be removed from the facility in terms of length of pipe in linear meters (linear feet), surface area in square meters (square feet) on other facility components, or volume in cubic meters (cubic feet) if off the facility components. Also, estimate the approximate amount of Category I and Category II nonfriable ACM in the affected part of the facility that will not be removed during renovation or before demolition.
 - (VIII) Scheduled starting and completion dates of asbestos

removal work (or any other activity, such as site preparation that would break up, dislodge, or similarly disturb asbestos material) in a demolition or renovation; planned renovation operations involving individual nonscheduled operations shall only include the beginning and ending dates of the report period as described in item 1.(iv)(III) of this subparagraph. Also report the day(s) of the week and work hours the project will take place.

- (IX) Scheduled starting and completion dates of demolition or renovation.
- (X) Description of planned demolition or renovation work to be performed and method(s) to be employed, including demolition or renovation techniques to be used and description of affected facility components.
- (XI) Description of work practices and engineering controls to be used to comply with the requirements of this rule, including asbestos removal and waste-handling emission control procedures.
- (XII) Name, address, phone number and contact of the firm who will transport the asbestos material to the waste disposal site. If a second transporter is involved, also list this firm.
- (XIII) Name and location of the waste disposal site where the asbestos-containing waste material will be deposited.
- (XIV) For facilities described in subpart 1.(iii) of this subparagraph, the name, title, and authority of the State or local government representative who has ordered the demolition, the date that the order was issued, and the date on which the demolition was ordered to begin. A copy of the order shall be attached to the notification.
- (XV) For emergency renovations described in item 1.(iv)(IV) of this subparagraph, the date and hour that the emergency occurred, a description of the sudden, unexpected event, and an explanation of how the event caused an unsafe condition, or would cause equipment damage or an unreasonable financial burden.
- (XVI) Description of procedures to be followed in the event that unexpected RACM is found or Category II nonfriable ACM becomes crumbled, pulverized, or reduced to powder.
- (XVII) A certification that only a person trained as required by subpart 3.(viii) of this subparagraph will supervise the stripping and removal described by this notification.

- (XVIII) The signature of the Owner/Operator and the date certifying that the notification information is correct.
 - (v) The information required in subpart 2.(iv) of this subparagraph must be reported using the form shown in Figure 3.
3. Procedures for asbestos emission control. Each owner or operator of a demolition or renovation activity to whom this subparagraph applies, according to subpart 1. of this subparagraph, shall comply with the following procedures:
- (i) Remove all RACM from a facility being demolished or renovated before any activity begins that would break up, dislodge, or similarly disturb the material or preclude access to the material for subsequent removal. RACM need not be removed before demolition if:
 - (I) It is Category I nonfriable ACM that is not in poor condition and is not friable.
 - (II) It is on a facility component that is encased in concrete or other similarly hard material and is adequately wet whenever exposed during demolition; or
 - (III) It was not accessible for testing and was, therefore, not discovered until after demolition began and, as a result of the demolition, the material cannot be safely removed. If not removed for safety reasons, the exposed RACM and any asbestos-contaminated debris must be treated as asbestos-containing waste material and must be adequately wet at all times until disposed of.
 - (IV) They are Category II nonfriable ACM and the probability is low that the materials will become crumbled, pulverized, or reduced to powder during demolition.
 - (ii) When a facility component that contains, is covered with, or is coated with RACM is being taken out of the facility as a unit or in sections:
 - (I) Adequately wet all RACM exposed during cutting or disjoining operations; and
 - (II) Carefully lower each unit or section to the floor and to ground level, not dropping, throwing, sliding, or otherwise damaging or disturbing the RACM.
 - (iii) When RACM is stripped from a facility component while it remains in place in the facility, adequately wet the RACM during the stripping operation.

- (I) In renovation operations, wetting is not required if:
 - I. The owner or operator has obtained prior written approval from the Technical Secretary after his consultation with the EPA Regional Administrator, based on a written application that wetting to comply with this subparagraph would unavoidably damage equipment or present a safety hazard; and
 - II. The owner or operator uses one of the following emission control methods:
 - A. A local exhaust ventilation and collection system designed and operated to capture the particulate asbestos material produced by the stripping and removal of the asbestos materials. The system must exhibit no visible emissions to the outside air or be designed and operated in accordance with the requirements in 1200-3-11-.02(3).
 - B. A glove-bag system designed and operated to contain the particulate asbestos material produced by the stripping of the asbestos materials.
 - C. Leak-tight wrapping to contain all RACM prior to dismantlement.
- (II) In renovation operations where wetting would result in equipment damage or a safety hazard, and the methods allowed in item 3.(iii)(I) of this subparagraph cannot be used, another method may be used after obtaining written approval from the Technical Secretary after his consultation with the EPA Regional Administrator, based upon a determination that it is equivalent to wetting in controlling emissions or to the methods allowed in item 3.(iii)(I) of this subparagraph.
- (III) A copy of the Technical Secretary's written approval shall be kept at the worksite and made available for inspection.
- (iv) After a facility component covered, coated, or containing RACM has been taken out of the facility as a unit or in sections pursuant to subpart 3.(ii) of this subparagraph, it shall be stripped or contained in leak-tight wrapping, except as described in subpart 3.(v) of this subparagraph. If stripped, either:
 - (I) Adequately wet the RACM during stripping; or
 - (II) Use a local exhaust ventilation and collection

system designed and operated to capture the particulate asbestos material produced by the stripping. The system must exhibit no visible emissions to the outside air or be designed and operated in accordance with the requirements in 1200-3-11-.02(3).

- (v) For large facility components such as reactor vessels, large tanks, and steam generators, but not beams (which must be handled in accordance with subparts 3.(ii), (iii), and (iv) of this subparagraph), the RACM is not required to be stripped if the following requirements are met:
 - (I) The component is removed, transported, stored, disposed of, or reused without disturbing or damaging the RACM.
 - (II) The component is encased in a leak-tight wrapping.
 - (III) The leak-tight wrapping is labeled according to 1200-3-11-.02(2)(k)4(i)(I), (II), and (III) during all loading and unloading operations and during storage.
- (vi) For all RACM, including material that has been removed or stripped:
 - (I) Adequately wet the material and ensure that it remains wet until collected and contained or treated in preparation for disposal in accordance with 1200-3-11-.02(2)(j); and
 - (II) Carefully lower the material to the ground and floor, not dropping, throwing, sliding, or otherwise damaging or disturbing the material.
 - (III) Transport the material to the ground via leak-tight chutes or containers if it has been removed or stripped more than 50 feet above ground level and was not removed as units or in sections.
 - (IV) RACM contained in leak-tight wrapping that has been removed in accordance with subpart 3.(iv) and section 3.(iii)(I)II.C. of this subparagraph need not be wetted.
- (vii) When the temperature at the point of wetting is below 0°C (32°F):
 - (I) The owner or operator need not comply with item 3.(ii)(I) and the wetting provisions of subpart 3.(iii) of this subparagraph.
 - (II) The owner or operator shall remove facility components containing, coated, or covered with RACM as units or in sections to the maximum extent possible.

- (III) During periods when wetting operations are suspended due to freezing temperatures, the owner or operator must record the temperature in the area containing the facility components at the beginning, middle, and end of each workday and keep daily temperature records available for inspection by the Technical Secretary during normal business hours at the demolition or renovation site. The owner or operator shall retain the temperature records for at least 2 years.

- (viii) No RACM shall be stripped, removed, or otherwise handled or disturbed at a facility regulated by this subparagraph unless at least one on-site representative, such as a foreman or management-level person or other authorized representative, trained in the provisions of this regulation and the means of complying with them is present. Every 2 years, the trained on-site individual shall receive refresher training in the provisions of this regulation. The required training shall include as a minimum: applicability; notifications; material identification; control procedures for removals, including, at least, wetting, local exhaust ventilation, negative pressure enclosures, glove-bag procedures, and High Efficiency Particulate Air (HEPA) filters; waste disposal work practices; reporting and recordkeeping; and asbestos hazards and worker protection. Evidence that the required training has been completed shall be posted and made available for inspection by the Technical Secretary at the demolition or renovation site.

- (ix) For facilities described in subpart 1.(iii) of this subparagraph, adequately wet the portion of the facility that contains RACM during the wrecking operation.

- (x) If a facility is demolished by intentional burning, all RACM including Category I and Category II nonfriable ACM must be removed in accordance with this rule before burning.

- (e) Standard for spraying. The owner or operator of an operation in which asbestos-containing materials are spray applied shall comply with the following requirements:
 - 1. For spray-on application on buildings, structures, pipes, and conduits, do not use material containing more than 1 percent asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy, as contained in the 7-1-91 Edition of the CFR, except as provided in part 3. of this subparagraph.

 - 2. For spray-on application of materials that contain more than 1 percent asbestos as determined using method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy, as contained in the 7-1-91 Edition of the CFR, on equipment and machinery, except as provided in part 3. of this subparagraph:

- (i) Notify the Technical Secretary at least 20 days before beginning the spraying operation. Include the following information in the notice:
 - (I) Name and address of owner or operator.
 - (II) Location of spraying operation.
 - (III) Procedures to be followed to meet the requirements of this subparagraph.
 - (ii) Discharge no visible emissions to the outside air from spray-on application of the asbestos-containing material or use the methods specified by 1200-3-11-.02(3) to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.
3. The requirements of subparts 1. and 2. of this subparagraph do not apply to the spray-on application of materials where the asbestos fibers in the materials are encapsulated with a bituminous or resinous binder during spraying and the materials are not friable after drying.
4. Owners or operators of sources subject to this subparagraph are exempt from the requirements of Subparagraphs 1200-3-11-.01(2)(a) and (d).
- (f) (Reserved)
- (g) (Reserved)
- (h) Standard for fabricating.
1. Applicability. This subparagraph applies to the following fabricating operations using commercial asbestos:
- (i) The fabrication of cement building products.
 - (ii) The fabrication of friction products, except those operations that primarily install asbestos friction materials on motor vehicles.
 - (iii) The fabrication of cement or silicate board for ventilation hoods; ovens; electrical panels; laboratory furniture, bulkheads, partitions, and ceilings for marine construction; and flow control devices for the molten metal industry.
2. Standard. Each owner or operator of any of the fabricating operations to which this subparagraph applies shall either:
- (i) Discharge no visible emissions to the outside air from any of the operations or from any building or structure in which they are conducted or from any other fugitive sources; or
 - (ii) Use the methods specified by 1200-3-11-.02(3) to clean emissions containing particulate asbestos material before

they escape to, or are vented to, the outside air.

- (iii) Monitor each potential source of asbestos emissions from any part of the fabricating facility, including air cleaning devices, process equipment, and buildings that house equipment for material processing and handling, at least once each day, during daylight hours, for visible emissions to the outside air during periods of operation. The monitoring shall be by visual observation of at least 15 seconds duration per source of emissions.
- (iv) Inspect each air cleaning device at least once each week for proper operation and for changes that signal the potential for malfunctions, including, to the maximum extent possible without dismantling other than opening the device, the presence of tears, holes, and abrasions in filter bags and for dust deposits on the clean side of bags. For air cleaning devices that cannot be inspected on a weekly basis according to this rule, submit to the Technical Secretary, and revise as necessary, a written maintenance plan to include, at a minimum, the following:
 - (I) Maintenance schedule.
 - (II) Recordkeeping plan.
- (v) Maintain records of the results of visible emission monitoring and air cleaning device inspections using the form(s) shown in Figures 1 and 2 and include the following:
 - (I) Date and time of each inspection.
 - (II) Presence or absence of visible emissions.
 - (III) Condition of fabric filters, including presence of any tears, holes, and abrasions.
 - (IV) Presence of dust deposits on clean side of fabric filters.
 - (V) Brief description of corrective actions taken, including date and time.
 - (VI) Daily hours of operation for each control device.
- (vi) Furnish upon request and make available during normal business hours for inspection by the Technical Secretary, all records required under this subparagraph.
- (vii) Retain a copy of all monitoring and inspection records for at least 2 years.
- (viii) Submit quarterly a copy of the visible emission monitoring records to the Technical Secretary if visible emissions occurred during the report period. Quarterly reports shall be postmarked by the 30th day following the end of the calendar quarter.

- (i) Standard for insulating materials. No owner or operator of a facility may install or reinstall on a facility component any insulating materials that contain commercial asbestos if the materials are either molded and friable or wet-applied and friable after drying. The provisions of this subparagraph do not apply to spray-applied insulating materials regulated under 1200-3-11-.02(2)(e).

- (j) Standard for waste disposal for manufacturing, fabricating, demolition, renovation, and spraying operations. Each owner or operator of any source covered under the provisions of 1200-3-11-.02(2)(c), 1200-3-11-.02(2)(d), 1200-3-11-.02(2)(e), and 1200-3-11-.02(2)(h) shall comply with the following provisions:
 - 1. Discharge no visible emissions to the outside air during the collection, processing (including incineration), packaging, or transporting of any asbestos-containing waste material generated by the source, or use one of the emission control and waste treatment methods specified in subparts 1.(i) through (iv) of this subparagraph.
 - (i) Adequately wet asbestos-containing waste material as follows:
 - (I) Mix control device asbestos waste to form a slurry; adequately wet other asbestos-containing waste material; and
 - (II) Discharge no visible emissions to the outside air from collection, mixing, wetting, and handling operations, or use the methods specified by 1200-3-11-.02(3) to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air; and
 - (III) After wetting, seal all asbestos-containing waste material in leak-tight containers while wet; or, for materials that will not fit into containers without additional breaking, put materials into leak-tight wrapping; and
 - (IV) Label the containers or wrapped materials specified in item 1.(i)(III) of this subparagraph using warning labels specified by Occupational Safety and Health Standards of the Department of Labor, Occupational Safety and Health Administration (OSHA) under 29 CFR 1910.1001(j)(2) or 1926.58(k)(2)(iii), as contained in the 7-1-91 Edition of the CFR. The labels shall be printed in letters of sufficient size and contrast so as to be readily visible and legible.
 - (V) For asbestos-containing waste material to be transported off the facility site, label containers or wrapped materials with the name of the waste generator and the location at which the waste was generated.

- (ii) Process asbestos-containing waste material into nonfriable forms as follows:
 - (I) Form all asbestos-containing waste material into nonfriable pellets or other shapes;
 - (II) Discharge no visible emissions to the outside air from collection and processing operations, including incineration, or use the method specified by 1200-3-11-.02(3) to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.
 - (iii) For facilities demolished where the RACM is not removed prior to demolition according to 1200-3-11-.02(2)(d)3.(i)(I), (II), (III), and (IV) or for facilities demolished according to 1200-3-11-.02(2)(d)3.(ix), adequately wet asbestos-containing waste material at all times after demolition and keep wet during handling and loading for transport to disposal site. Asbestos-containing waste materials covered by this subparagraph do not have to be sealed in leak-tight containers or wrapping but may be transported and disposed of in bulk.
 - (iv) Use an alternative emission control and waste treatment method that has received prior approval by the Administrator of the EPA and the Technical Secretary according to the procedure described in 1200-3-11-.02(2)(k)3.(ii).
 - (v) As applied to demolition and renovation, the requirements of part 1. of this subparagraph do not apply to Category I nonfriable ACM waste and Category II nonfriable ACM waste that did not become crumbled, pulverized, or reduced to powder.
2. All asbestos-containing waste material shall be deposited as soon as is practical by the waste generator at:
- (i) A waste disposal site operated in accordance with the provisions of 1200-3-11-.02(5), or
 - (ii) An EPA-approved site that converts RACM and asbestos-containing waste material into nonasbestos (asbestos-free) material according to the provisions of 1200-3-11-.02(6).
 - (iii) The requirements of part 2. of this subparagraph do not apply to Category I nonfriable ACM that is not RACM.
3. Mark vehicles used to transport asbestos-containing waste material during the loading and unloading of waste so that the signs are visible. The markings must conform to the requirements of 1200-3-11-.02(2)(k)4(i)(I), (II), and, (III).
4. For all asbestos-containing waste material transported off the facility site:
- (i) Maintain waste shipment records, using the form shown in

Figure 4, and include the following information:

- (I) The name, address, and telephone number of the waste generator.
 - (II) The name and address of the local or State agency responsible for administering the asbestos NESHAP program.
 - (III) The approximate quantity in cubic meters (cubic yards).
 - (IV) The name and telephone number of the disposal site operator.
 - (V) The name and physical site location of the disposal site and the disposal facility permit number.
 - (VI) The date transported.
 - (VII) The name, address, and telephone number of the transporter(s).
 - (VIII) A certification that the contents of this consignment are fully and accurately described by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.
- (ii) Provide a copy of the waste shipment record, described in subpart 4.(i) of this subparagraph, to the disposal site owners or operators at the same time as the asbestos-containing waste material is delivered to the disposal site.
 - (iii) For waste shipments where a copy of the waste shipment record, signed by the owner or operator of the designated treatment or disposal site, is not received by the waste generator within 35 days of the date the waste was accepted by the initial transporter, contact the transporter and/or the owner or operator of the designated treatment or disposal site meeting the requirements of this rule to determine the status of the waste shipment.
 - (iv) Report in writing to the local or State office responsible for administering the asbestos NESHAP program for the waste generator if a copy of the waste shipment record, signed by the owner or operator of the designated waste treatment or disposal site, is not received by the waste generator within 45 days of the date the waste was accepted by the initial transporter. Include in the report the following information.
 - (I) A copy of the waste shipment record for which a confirmation of delivery was not received, and

- (II) A cover letter signed by the waste generator explaining the efforts taken to locate the asbestos waste shipment and the results of those efforts.
 - (v) Retain a copy of all waste shipment records, including a copy of the waste shipment record signed by the owner or operator of the designated waste disposal site, for at least 2 years.
5. Furnish upon request, and make available for inspection by the Technical Secretary, all records required under this subparagraph.
- (k) Standard for waste disposal for asbestos mills. Each owner or operator of any source covered under the provisions of 1200-3-11-.02(2)(a) shall:
- 1. Deposit all asbestos-containing waste material at a waste disposal site operated in accordance with the provisions of 1200-3-11-.02(5); and
 - 2. Discharge no visible emissions to the outside air from the transfer of control device asbestos waste to the tailings conveyor, or use the methods specified by 1200-3-11-.02(3) to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air. Dispose of the asbestos waste from control devices in accordance with 1200-3-11-.02(2)(j)1. or part 3. of this subparagraph; and
 - 3. Discharge no visible emissions to the outside air during the collection, processing, packaging, or on-site transporting of any asbestos-containing waste material, or use one of the disposal methods specified in subparts 3.(i) or (ii) of this subparagraph, as follows:
 - (i) Use a wetting agent as follows:
 - (I) Adequately mix all asbestos-containing waste material with a wetting agent recommended by the manufacturer of the agent to effectively wet dust and tailings, before depositing the material at a waste disposal site. Use the agent as recommended for the particular dust by the manufacturer of the agent.
 - (II) Discharge no visible emissions to the outside air from the wetting operation or use the methods specified by 1200-3-11-.02(3) to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.
 - (III) Wetting may be suspended when the ambient temperature at the waste disposal site is less than -9.5°C (15°F), as determined by an appropriate measurement method with an accuracy of ± 1°C (± 2°F). During periods when wetting operations are suspended, the temperature must be recorded at least at hourly intervals, and records must be retained

for at least 2 years in a form suitable for inspection.

- (ii) Use an alternative emission control and waste treatment method that has received prior written approval by the Administrator of the EPA and the Technical Secretary. To obtain approval for an alternative method, a written application must be submitted to the Technical Secretary demonstrating that the following criteria are met:
 - (I) The alternative method will control asbestos emissions equivalent to currently required methods.
 - (II) The suitability of the alternative method for the intended application.
 - (III) The alternative method will not violate other regulations.
 - (IV) The alternative method will not result in increased water pollution, land pollution, or occupational hazards.

4. When waste is transported by vehicle to a disposal site:

- (i) Mark vehicles used to transport asbestos-containing waste material during the loading and unloading of the waste so that the signs are visible. The markings must:
 - (I) Be displayed in such a manner and location that a person can easily read the legend.
 - (II) Conform to the requirements for 51 cm x 36 cm (20 in x 14 in) upright format signs specified in 29 CFR 1910.145(d)(4), as contained in the 7-1-91 Edition of the CFR, and this subparagraph; and
 - (III) Display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this subparagraph.

Legend

DANGER

ASBESTOS DUST HAZARD

CANCER AND LUNG DISEASE HAZARD

Authorized Personnel Only

Notation

1st Line: 2.5 cm (1 in) Sans Serif, Gothic or Block

2nd and 3rd Lines: 1.9 cm (3/4 in) Sans Serif, Gothic or Block

4th Line: 14 Point Gothic

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

- (ii) For off-site disposal, provide a copy of the waste shipment record, described in part 5(i) of this subparagraph, to the disposal site owner or operator at the same time as the asbestos-containing waste material is delivered to the disposal site.
5. For all asbestos-containing waste material transported off the facility site:
- (i) Maintain asbestos waste shipment records, using the form shown in Figure 4, and include the following information:
 - (I) The name, address, and telephone number of the waste generator.
 - (II) The name and address of the local or State agency responsible for administering the asbestos NESHAP program.
 - (III) The quantity of the asbestos-containing waste material in cubic meters (cubic yards).
 - (IV) The name and telephone number of the disposal site operator.
 - (V) The name and physical site location of the disposal site and the disposal facility permit number.
 - (VI) The date transported.
 - (VII) The name, address, and telephone number of the transporter(s).
 - (VIII) A certification that the contents of this consignment are fully and accurately described by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.
 - (ii) For waste shipments where a copy of the waste shipment record, signed by the owner or operator of the designated disposal site, is not received by the waste generator within 35 days of the date the waste was accepted by the initial transporter, contact the transporter and/or the owner or operator of the designated disposal site to determine the status of the waste shipment.
 - (iii) Report in writing to the Technical Secretary if a copy of the waste shipment record, signed by the owner or operator of the designated waste disposal site is not received by the waste generator within 45 days of the date the waste was accepted by the initial transporter. Include in the

report the following information:

- (I) A copy of the waste shipment record for which a confirmation of delivery was not received, and
 - (II) A cover letter signed by the waste generator explaining the efforts taken to locate the asbestos waste shipment and the results of those efforts.
- (iv) Retain a copy of all waste shipment records, including a copy of the waste shipment record signed by the owner or operator of the designated waste disposal site, for at least 2 years.
6. Furnish upon request, and make available for inspection by the Technical Secretary, all records required under this subparagraph.
- (1) Standard for inactive waste disposal sites for asbestos mills and manufacturing and fabricating operations. Each owner or operator of any inactive waste disposal site that was operated by sources covered under 1200-3-11-.02(2)(a), 1200-3-11-.02(2)(c), or 1200-3-11-.02(2)(h) and received deposits of asbestos-containing waste material generated by the sources, shall:
- 1. Comply with one of the following:
 - (i) Either discharge no visible emissions to the outside air from an inactive waste disposal site subject to this subparagraph; or
 - (ii) Cover the asbestos-containing waste material with at least 15 centimeters (6 inches) of compacted nonasbestos-containing material, and grow and maintain a cover of vegetation on the area adequate to prevent exposure of the asbestos-containing waste material. In desert areas where vegetation would be difficult to maintain, at least 8 additional centimeters (3 inches) of well-graded, nonasbestos crushed rock may be placed on top of the final cover instead of vegetation and maintained to prevent emissions; or
 - (iii) Cover the asbestos containing waste material with at least 60 centimeters (2 feet) of compacted nonasbestos-containing material, and maintain it to prevent exposure of the asbestos-containing waste; or
 - (iv) For inactive waste disposal sites for asbestos tailings, a resinous or petroleum-based dust suppression agent that effectively binds dust to control surface air emissions may be used instead of the methods in subparts 1.(i), (ii), and (iii) of this subparagraph. Use the agent in the manner and frequency recommended (for the particular asbestos tailings) by the manufacturer of the dust suppression agent to achieve and maintain dust control. Obtain prior written approval of the Technical Secretary to use other equally effective dust suppression agents. For purposes of this subparagraph, any used, spent, or

other waste oil is not considered a dust suppression agent.

2. Unless a natural barrier adequately deters access by the general public, install and maintain warning signs and fencing as follows, or comply with subparts 1.(ii) or 1.(iii) of this subparagraph.

(i) Display warning signs at all entrances and at intervals of 100 meters (328 feet) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material was deposited. The warning signs must:

(I) Be posted in such a manner and location that a person can easily read the legend; and

(II) Conform to the requirements for 51 cm x 36 cm (20 in x 14 in) upright format signs specified in 29 CFR 1910.145(d) (as published in (7-1-91 Edition)) and this subparagraph; and

(III) Display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this subparagraph.

<u>Legend</u>	<u>Notation</u>
Asbestos Waste Disposal Station	2.5 cm (1 in) Sans Serif, Gothic or Block
Do Not Create Dust	1.9 cm (3/4 in) Sans Serif, Gothic or Block
Breathing Asbestos is Hazardous to your health	14 Point Gothic

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

- (ii) Fence the perimeter of the site in a manner adequate to deter access by the general public.
 - (iii) When requesting a determination on whether a natural barrier adequately deters public access, supply information enabling the Technical Secretary to determine whether a fence or a natural barrier adequately deters access by the general public.
3. The owner or operator may use an alternative control method that has received prior approval of the Administrator of the EPA and the Technical Secretary rather than comply with the requirements of parts 1. or 2. of this subparagraph.
 4. Notify the Technical Secretary in writing at least 45 days prior to excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at a waste disposal site under this subparagraph, and follow the procedures specified in the notification. If the excavation will begin on a date other than the one contained in the original notice, notice of the new start date must be provided to the Technical Secretary at least 10 working days before the excavation begins and in no event shall excavation begin earlier than the date specified in the original notification. Include the following information in the notice:
 - (i) Scheduled starting and completion dates.
 - (ii) Reason for disturbing the waste.
 - (iii) Procedures to be used to control emissions during the excavation, storage, transport, and ultimate disposal of the excavated asbestos-containing waste material. If deemed necessary, the Technical Secretary may require changes in the emission control procedures to be used.
 - (iv) Location of any temporary storage site and the final disposal site.
 5. Within 60 days of a site becoming inactive and after the effective date of this rule, record, in accordance with State

law, a notation on the deed to the facility property and on any other instrument that would normally be examined during a title search; this notation will in perpetuity notify any potential purchaser of the property that:

- (i) The land has been used for the disposal of asbestos-containing waste material;
- (ii) The survey plot and record of the location and quantity of asbestos-containing waste disposed of within the disposal site required in 1200-3-11-.02(5)(f) have been filed with the Technical Secretary; and
- (iii) The site is subject to 40 CFR 61, Subpart M, as contained in the 7-1-91 Edition of the CFR.

(3) Air Cleaning

- (a) The owner or operator who uses air cleaning, as specified in 1200-3-11-.02(2)(a)1., 1200-3-11-.02(2)(c)2.(ii), 1200-3-11-.02(2)(d)3.(iii)(I)II.A., 1200-3-11-.02(2)(d)3.(iv)(II), 1200-3-11-.02(2)(e)2.(ii), 1200-3-11-.02(2)(h)2.(ii), 1200-3-11-.02(2)(k)2., 1200-3-11-.02(2)(k)3.(i)(II), 1200-3-11-.02(2)(j)1.(i)(II), 1200-3-11-.02(2)(j)1.(ii)(II), and 1200-3-11-.02(6)(e) shall:

1. Use fabric filter collection devices, except as noted in subparagraph (b) of this paragraph, doing all of the following:

- (i) Repealed.
- (ii) Ensuring that the airflow permeability, as determined by ASTM Method D737-75, does not exceed $9 \text{ m}^3/\text{min}/\text{m}^2$ ($30 \text{ ft}^3/\text{min}/\text{ft}^2$) for woven fabrics or $11 \text{ m}^3/\text{min}/\text{m}^2$ ($35 \text{ ft}^3/\text{min}/\text{ft}^2$) for felted fabrics, except that $12 \text{ m}^3/\text{min}/\text{m}^2$ ($40 \text{ ft}^3/\text{min}/\text{ft}^2$) for woven and $14 \text{ m}^3/\text{min}/\text{m}^2$ ($45 \text{ ft}^3/\text{min}/\text{ft}^2$) for felted fabrics is allowed for filtering air from asbestos ore dryers; and
- (iii) Ensuring that felted fabric weighs at least 475 grams per square meter (14 ounces per square yard) and is at least 1.6 millimeters (one-sixteenth inch) thick throughout; and
- (iv) Avoiding the use of synthetic fabrics that contain fill yarn other than that which is spun.

2. Properly install, use, operate, and maintain all air-cleaning equipment authorized by this paragraph. 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.

3. For fabric filter collection devices installed after January 10, 1989, provide for easy inspection for faulty bags.

- (b) There are the following exceptions to part (a)1:

1. After January 10, 1989, if the use of fabric creates a fire or explosion hazard, or the Technical Secretary determines that a

fabric filter is not feasible, the Technical Secretary may authorize as a substitute the use of wet collectors designed to operate with a unit contacting energy of at least 9.95 kilopascals (40 inches water gage pressure).

2. Use a HEPA filter that is certified to be at least 99.97 percent efficient for 0.3 micron particles.
3. The Technical Secretary may authorize the use of filtering equipment other than described in parts (a)1. and (b)1. and 2. of this paragraph if the owner or operator demonstrates to the satisfaction of the Administrator of the EPA and the Technical Secretary that it is equivalent to the described equipment in filtering particulate asbestos material.

(4) Reporting.

(a) Any new source to which this paragraph applies (with the exception of sources subject to 1200-3-11-.02(2)(b), 1200-3-11-.02(2)(e), and 1200-3-11-.02(2)(i)), which has an initial startup date preceding the effective date of this revision, shall provide the following information to the Technical Secretary postmarked or delivered within 90 days of the effective date. In the case of a new source that does not have an initial startup date preceding the effective date, the information shall be provided, postmarked or delivered, within 90 days of the initial startup date. Any owner or operator of an existing source shall provide the following information to the Technical Secretary within 90 days of the effective date of this rule unless the owner or operator of the existing source has previously provided this information to the Technical Secretary. Any changes in the information provided by any existing source shall be provided to the Technical Secretary, postmarked or delivered, within 30 days after the change.

1. A description of the emission control equipment used for each process; and
2. If a fabric filter device is used to control emissions,
 - (i) The airflow permeability in $\text{m}^3/\text{min}/\text{m}^2$ ($\text{ft}^3/\text{min}/\text{ft}^2$) if the fabric filter device uses a woven fabric, and, if the fabric is synthetic, whether the fill yarn is spun or not spun; and
 - (ii) If the fabric filter device uses a felted fabric, the density in g/m^2 (oz/yd^2), the minimum thickness in millimeters (inches), and the airflow permeability in $\text{m}^3/\text{min}/\text{m}^2$ ($\text{ft}^3/\text{min}/\text{ft}^2$).
3. If a HEPA filter is used to control emissions, the certified efficiency.
4. For sources subject to 1200-3-11-.02(2)(k) and 1200-3-11-.02(2)(j):
 - (i) A brief description of each process that generates asbestos-containing waste material; and
 - (ii) The average volume of asbestos-containing waste material

disposed of, measured in m³/day (yd³/day); and

- (iii) The emission control methods used in all stages of waste disposal; and
- (iv) The disposal, the name of the site operator, and the name and location of the disposal site.

5. For sources subject to 1200-3-11-.02(2)(1) and 1200-3-11-.02(5):

- (i) A brief description of the site; and
- (ii) The method or methods used to comply with the standard, or alternate procedures to be used.

(b) The information required by subparagraph (a) of this paragraph must accompany the information required by Appendix A to 40 CFR Chapter 1, (7-1-91 Edition). Active waste disposal sites subject to 1200-3-11-.02(5) shall also comply with this provision. Roadways, demolition and renovation, spraying, and insulating materials are exempted from the requirements of reporting the information required by Appendix A to 40 CFR Chapter 1, (7-1-91 Edition).

(5) Standard for active waste disposal sites. Each owner or operator of an active waste disposal site that receives asbestos-containing waste material from a source covered under 1200-3-11-.02(2)(k), 1200-3-11-.02(2)(j), or 1200-3-11-.02(6) shall meet the requirements of this paragraph:

(a) Either there must be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste material has been deposited, or the requirements of subparagraph (c) or (d) of this paragraph must be met.

(b) Unless a natural barrier adequately deters access by the general public, either warning signs and fencing must be installed and maintained as follows, or the requirements of subparagraph (c), part 1. of this paragraph must be met.

1. Warning signs must be displayed at all entrances and at intervals of 100 meters (328 feet) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material is deposited. The warning signs must:

- (i) Be posted in such a manner and location that a person can easily read the legend; and
- (ii) Conform to the requirements for 51 cm x 36 cm (20 in x 14 in) upright format signs specified in 29 CFR 1910.145(d) (as published in (7-1-91 Edition)) and this subparagraph; and
- (iii) Display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this subparagraph.

Legend

Notation

**Asbestos Waste Disposal
Station**

2.5 cm (1 in)
Sans Serif,
Gothic or Block

Do Not Create Dust

1.9 cm (3/4 in)
Sans Serif,
Gothic or Block

**Breathing Asbestos is
Hazardous to your health**

14 Point Gothic

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

2. The perimeter of the disposal site must be fenced in a manner adequate to deter access by the general public.
 3. Upon request and supply of appropriate information, the Technical Secretary will determine whether a fence or natural barrier adequately deters access by the general public.
- (c) Rather than meet the no visible emission requirement of subparagraph (a) of this paragraph, 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 that has been deposited at the site during the operating day or previous 24-hour period shall:
1. Be covered with at least 15 centimeters (6 inches) of compacted nonasbestos-containing material, or
 2. Be covered with a resinous or petroleum-based dust suppression agent that effectively binds dust and controls wind erosion. Such an agent shall be used in the manner and frequency recommended for the particular dust by the dust suppression agent manufacturer to achieve and maintain dust control. Other equally effective dust suppression agents may be used upon prior approval by the Technical Secretary. For purposes of this paragraph, any used, spent, or other waste oil is not considered a dust suppression agent.
- (d) Rather than meet the no visible emission requirement of subparagraph (a) of this paragraph, use an alternative emissions control method that has received prior written approval by the Administrator of the EPA and the Technical Secretary according to the procedures described in 1200-3-11-.02(2)(k)3.(ii).
- (e) For all asbestos-containing waste material received, the owner or operator of the active waste disposal site shall:
1. Maintain waste shipment records, using the form shown in Figure 4, and include the following information:
 - (i) The name, address, and telephone number of the waste generator.
 - (ii) The name, address, and telephone number of the transporter(s).
 - (iii) The quantity of the asbestos-containing waste material in

cubic meters (cubic yards).

- (iv) The presence of improperly enclosed or uncovered waste, or any asbestos-containing waste material not sealed in leak-tight containers. Report in writing to the Technical Secretary by the following working day, the presence of a significant amount of improperly enclosed or uncovered waste. Submit a copy of the waste shipment record along with the report.
 - (v) The date of receipt.
2. As soon as possible and no longer than 30 days after receipt of the waste, send a copy of the signed waste shipment record to the waste generator.
 3. Upon discovering a discrepancy between the quantity of waste designated on the waste shipment records and the quantity actually received, attempt to reconcile the discrepancy with the waste generator. If the discrepancy is not resolved within 15 days after receiving the waste, immediately report it in writing to the Technical Secretary. Describe the discrepancy and attempts to reconcile it, and submit a copy of the waste shipment record along with the report.
 4. Retain a copy of all records and reports required by this subparagraph for at least 2 years.
- (f) Maintain, until closure, records of the location, depth and area, and quantity in cubic meters (cubic yards) of asbestos-containing waste material within the disposal site on a map or diagram of the disposal area.
 - (g) Upon closure, comply with all the provisions of 1200-3-11-.02(2)(1).
 - (h) Submit to the Technical Secretary, upon closure of the facility, a copy of records of asbestos waste disposal locations and quantities.
 - (i) Furnish upon request, and make available during normal business hours for inspection by the Technical Secretary, all records required under this paragraph.
 - (j) Notify the Technical Secretary in writing at least 45 days prior to excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at a waste disposal site and is covered. If the excavation will begin on a date other than the one contained in the original notice, notice of the new start date must be provided to the Technical Secretary at least 10 working days before excavation begins and in no event shall excavation begin earlier than the date specified in the original notification. Include the following information in the notice:
 1. Scheduled starting and completion dates.
 2. Reason for disturbing the waste.
 3. Procedures to be used to control emissions during the excavation, storage, transport, and ultimate disposal of the excavated

asbestos-containing waste material. If deemed necessary, the Technical Secretary may require changes in the emission control procedure to be used.

4. Location of any temporary storage site and the final disposal site.
- (6) Standard for operations that convert asbestos-containing waste material into nonasbestos (asbestos-free) material. Each owner or operator of an operation that converts RACM and asbestos-containing waste material into nonasbestos (asbestos-free) material shall:
- (a) Obtain the prior written approval of the Administrator of the EPA and the Technical Secretary to construct the facility. To obtain approval, the owner or operator shall provide the Technical Secretary with the following information:
 1. Application to construct pursuant to Paragraph 1200-3-11-.01(2).
 2. In addition to the information requirements of Paragraph 1200-3-11-.01(2).
 - (i) Description of waste feed handling and temporary storage.
 - (ii) Description of process operating conditions.
 - (iii) Description of the handling and temporary storage of the end product.
 - (iv) Description of the protocol to be followed when analyzing output materials by transmission electron microscopy.
 3. Performance test protocol, including provisions for obtaining information required under subparagraph (b) of this paragraph.
 4. The Administrator of the EPA or the Technical Secretary may require that a demonstration of the process be performed prior to approval of the application to construct.
 - (b) Conduct a start-up performance test. Test results shall include:
 1. A detailed description of the types and quantities of nonasbestos material, RACM, and asbestos-containing waste material processed, e.g., asbestos cement products, friable asbestos insulation, plaster, wood, plastic, wire, etc. Test feed is to include the full range of materials that will be encountered in actual operation of the process.
 2. Results of analyses, using polarized light microscopy, that document the asbestos content of the wastes processed.
 3. Results of analyses, using transmission electron microscopy, that document that the output materials are free of asbestos. Samples for analysis are to be collected as 8-hour composite samples (one 200-gram (7-ounce) sample per hour), beginning with the initial introduction of RACM or asbestos-containing waste material and continuing until the end of the performance test.

4. A description of operating parameters, such as temperature and residence time, defining the full range over which the process is expected to operate to produce nonasbestos (asbestos-free) materials. Specify the limits for each operating parameter within which the process will produce nonasbestos (asbestos-free) materials.
 5. The length of the test.
- (c) During the initial 90 days of operation,
1. Continuously monitor and log the operating parameters identified during start-up performance tests that are intended to ensure the production of nonasbestos (asbestos-free) output material.
 2. Monitor input materials to ensure that they are consistent with the test feed materials described during start-up performance tests in part (b)1. of this paragraph.
 3. Collect and analyze samples, taken as 10-day composite samples (one 200-gram (7-ounce) sample collected every 8 hours of operation) of all output material for the presence of asbestos. Composite samples may be for fewer than 10 days. Transmission electron microscopy (TEM) shall be used to analyze the output material for the presence of asbestos. During the initial 90-day period, all output materials must be stored on-site until analysis shows the material to be asbestos-free or disposed of as asbestos-containing waste material according to 1200-3-11-.02(2)(j).
- (d) After the initial 90 days of operation,
1. Continuously monitor and record the operating parameters identified during start-up performance testing and any subsequent performance testing. Any output produced during a period of deviation from the range of operating conditions established to ensure the production of nonasbestos (asbestos-free) output materials shall be:
 - (i) Disposed of as asbestos-containing waste material according to 1200-3-11-.02(2)(j), or
 - (ii) Recycled as waste feed during process operation within the established range of operating conditions, or
 - (iii) Stored temporarily on-site in a leak-tight container until analyzed for asbestos content. Any product material that is not asbestos-free shall be either disposed of as asbestos-containing waste material or recycled as waste feed to the process.
 2. Collect and analyze monthly composite samples (one 200-gram (7-ounce) sample collected every 8 hours of operation) of the output material. Transmission electron microscopy shall be used to analyze the output material for the presence of asbestos.
- (e) Discharge no visible emissions to the outside air from any part of the operation, or use the methods specified by 1200-3-11-.02(3) to clean

emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(f) Maintain records on-site and include the following information:

1. Results of start-up performance testing and all subsequent performance testing, including operating parameters, feed characteristics, and analyses of output materials.
2. Results of the composite analyses required during the initial 90 days of operation under 1200-3-11-.02(6)(c).
3. Results of the monthly composite analyses required under 1200-3-11-.02(6)(d).
4. Results of continuous monitoring and logs of process operating parameters required under 1200-3-11-.02(6)(c) and (d).
5. The information on waste shipments received as required in 1200-3-11-.02(5)(e).
6. For output materials where no analyses were performed to determine the presence of asbestos, record the name and location of the purchaser or disposal site to which the output materials were sold or deposited, and the date of sale or disposal.
7. Retain records required by subparagraph (f) of this paragraph for at least 2 years.

(g) Submit the following reports to the Technical Secretary:

1. A report for each analysis of product composite samples performed during the initial 90 days of operation.
2. A quarterly report, including the following information concerning activities during each consecutive 3-month period:
 - (i) Results of analyses of monthly product composite samples.
 - (ii) A description of any deviation from the operating parameters established during performance testing, the duration of the deviation, and steps taken to correct the deviation.
 - (iii) Disposition of any product produced during a period of deviation, including whether it was recycled, disposed of as asbestos-containing waste material, or stored temporarily on-site until analyzed for asbestos content.
 - (iv) The information on waste disposal activities as required in 1200-3-11-.02(5)(f).

(h) Nonasbestos (asbestos-free) output material is not subject to any of the provisions of this rule. Output materials in which asbestos is detected, or output materials produced when the operating parameters deviated from those established during the start-up performance testing, unless shown by TEM analysis to be asbestos-free, shall be considered to be asbestos-containing waste and shall be handled and

disposed of according to 1200-3-11-.02(2)(j) and 1200-3-11-.02(5) or reprocessed while all of the established operating parameters are being met.

- (7) **THIS PARAGRAPH, REQUIRING FEES TO BE PAID BY OWNERS OR OPERATORS OF ASBESTOS RENOVATION OR DEMOLITION PROJECTS, WAS NOT ADOPTED BY MEMPHIS AND SHELBY COUNTY AS IT IS REQUIRED ELSEWHERE IN THOSE CODES.**

Figure 2

AIR CLEANING DEVICE INSPECTION CHECKLIST

1. Air Cleaning Device designation or number:				
2. Dates of inspection:				
3. Times of inspection				
4. Is air cleaning device operating properly? (Yes / No)				
5. Tears, holes or abrasion in fabric filter? (Yes / No)				
6. Dust on clean side of fabric filter? (Yes / No)				
7. Other signs of malfunctions or potential malfunctions? (Yes / No)				
8. Describe other malfunctions or signs of potential malfunctions.				
9. Describe corrective actions taken.				
10. Date and time corrective action taken.				
11. Inspected by:				
_____	_____	_____	_____	
Print/Type Name	Title	Signature	Date	
_____	_____	_____	_____	
Print/Type Name	Title	Signature	Date	

Figure 3

MEMPHIS AND SHELBY COUNTY HEALTH DEPARTMENT
AIR POLLUTION CONTROL

NOTIFICATION OF ASBESTOS DEMOLITION OR RENOVATION

OPERATOR PROJECT #	POSTMARK	DATE RECEIVED	NOTIFICATION #			
I. Type of Notification (O-Original R-Revised C-Cancelled):						
II. FACILITY INFORMATION (IDENTIFY OWNER, REMOVAL CONTRACTOR, OPERATOR)						
OWNER NAME:						
Address:						
City:		State:	Zip:			
Contact Person:		Telephone:				
REMOVAL CONTRACTOR:						
Address:						
City:		State:	Zip:			
Contact Person:		Telephone:				
OTHER OPERATOR:						
Address:						
City:		State:	Zip:			
Contact Person:		Telephone:				
III. Type of Operation (D-Demolition O-Ordered Demolition R-Renovation E-Emergency Renovation):						
IV. Is Asbestos Present? (Yes / No):						
V. FACILITY DESCRIPTION (INCLUDE BUILDING NAME, NUMBER AND FLOOR OR ROOM NUMBER)						
Building Name:						
Address:						
City:		State:	Zip:			
Site Location:						
Building Size - Total Square Feet:		Number of Floors:	Age in Years:			
Present Use:		Prior Use:				
VI. Procedure and Analytical Method Used to Detect the Presence of Asbestos Material:						
VII. Approximate Amount of Asbestos In Work Area Including 1. Regulated ACM to be Removed 2. Category I ACM Not Removed 3. Category II ACM Not Removed	RACM To Be Removed	Nonfriable Asbestos Material				Units of Measurement
		Not To Be Removed		To Be Removed		
		CAT I	CAT II	CAT I	CAT II	
Pipes						LnFt Ln m
Surface Area						SqFt Sq m
Volume RACM Off Facility Components						CuFt Cu m
VIII. Scheduled Dates of Asbestos Removal - Start:				Complete:		
Scheduled Dates of Preparation						
Days of Week: (Circle) All Sun Mon Tue Wed Thu Fri Sat Hours of Day:						
IX. Scheduled Dates of Demolition/Renovation - Start:				Complete:		
X. Description of Planned Demolition or Renovation Work, Method(s) to be Used:						

Figure 3

NOTIFICATION OF ASBESTOS DEMOLITION OR RENOVATION (Continued)

XI. Description of work practices and engineering controls to be used to prevent emissions of asbestos at the demolition and renovation site:		
XII. WASTE TRANSPORTER #1		
Name:		
Address:		
City:	State:	Zip:
Contact Person:		Telephone:
WASTE TRANSPORTER #2		
Name:		
Address:		
City:	State:	Zip:
Contact Person:		Telephone:
XIII. WASTE DISPOSAL SITE		
Name:		
Location:		
City:	State:	Zip:
Telephone:		
XIV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY, PLEASE IDENTIFY BELOW		
Name:	Title:	
Authority:		
Date of Order (MM/DD/YY):	Date Ordered to begin (MM/DD/YY):	
XV. FOR EMERGENCY RENOVATIONS		
Date and hour of emergency (MM/DD/YY):		
Description of the sudden, unexpected event:		
Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:		
XVI. Description of procedures to be followed in the event asbestos is found or previously Nonfriable asbestos material becomes crumbled, pulverized, or reduced to powder:		
XVII. I certify that an individual trained in the provisions of this regulation (40 CFR Part 61, Subpart H) will be on-site during the demolition or renovation available for inspection during normal business hours. (Required after November 20, 1991)		
_____ Signature of Owner/Operator		_____ Date
XVIII. I certify that the above information is correct.		
_____ Signature of Owner/Operator		_____ Date
Submit completed form by U.S. Postal Service/commercial delivery service or hand deliver to: Memphis/Shelby County Health Department, Pollution Control, 814 Jefferson Ave, Memphis, TN 38105		

INSTRUCTIONS (See Figure 4)

Waste Generator Section (Items 1. through 9.)

1. Enter the name of the facility at which asbestos waste is generated and the address where the facility is located. In the appropriate spaces, also enter the name of the owner of the facility and the owner's phone number.
2. If a demolition or renovation, enter the name and address of the company and authorized agent responsible for performing the asbestos removal. In the appropriate spaces, also enter the phone number of the operator.
3. Enter the name, address, and physical site location of the waste disposal site (WDS) that will be receiving the asbestos materials. In the appropriate spaces, also enter the phone number of the WDS. Enter "on-site" if the waste will be disposed of on the generator's property. Enter disposal facility permit number.
4. Provide the name and address of the local, State, or EPA Regional agency responsible for administering the asbestos NESHAP program.
5. Indicate the types of asbestos waste materials generated. If from a demolition or renovation, indicate the amount of asbestos that is
 - Friable Asbestos Material
 - Nonfriable Asbestos Material
6. Enter the number of containers used to transport the asbestos materials listed in item 4. Also enter one of the following container codes used in transporting each type of asbestos material (specify any other type of container used if not listed below):
 - DM - Metal drums, barrels
 - DP - Plastic drums, barrels
 - BA - 6 mil plastic bags or wrapping
7. Enter the quantities of each type of asbestos material removed in units of cubic meters (cubic yards).
8. Use this space to indicate special transportation, treatment, storage or disposal of Bill of Lading information. If an alternate waste disposal site is designated, note it here. Emergency response telephone numbers or similar information may be included here.
9. The authorized agent of the waste generator must read and then sign and date this certification. The date is the date of receipt by transporter.

NOTE: The waste generator must retain a copy of this form.

Transporter Section (Items 10. and 11.)

10. & 11. Enter name, address, and telephone number of each transporter used, if applicable. Print or type the full name and title of person accepting responsibility and acknowledging receipt of materials as listed on this waste shipment record for transport. Enter date of receipt and

signature.

NOTE: The transporter must retain a copy of this form.

Disposal Site Section (Items 12. and 13.)

12. The authorized representative of the WDS must note in this space any discrepancy between waste described on this manifest and waste actually received as well as any improperly enclosed or contained waste. Any rejected materials should be listed and destination of those materials provided. A site that converts asbestos-containing waste material to nonasbestos material is considered a WDS.
13. The signature (by hand) of the authorized WDS agent indicates acceptance and agreement with statements on this manifest except as noted in Item 12. The date is the date of signature and receipt of shipment.

NOTE: The WDS must retain a completed copy of this form. The WDS must also send a completed copy to the operator listed in item 2.

Figure 4

WASTE SHIPMENT RECORD

GENERATOR		
1. Work site name and mailing address	Owner's name	Owner's telephone
2. Operator's name and address		Operator's telephone number
3. Waste disposal site (WDS) name, mailing address, physical site location and disposal facility permit number		WDS telephone number Permit Number
4. Name and address of responsible agency		
5. Description of materials	6. Containers Number Type	7. Total quantity m ³ (yd ³)
8. Special handling instructions and additional information		
9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations		
_____	_____	_____
Print/type name and title	Signature	Month Day Year

TRANSPORTER		
10. Transporter 1 (Acknowledgement of receipt of materials)		
_____	_____	_____
Print/type name and title	Signature	Month Day Year
Address and telephone number:		
11. Transporter 2(Acknowledgement of receipt of materials)		
_____	_____	_____
Print/type name and title	Signature	Month Day Year

DISPOSAL SITE		
12. Discrepancy indication space		
13. Waste disposal site Owner or operator: Certification of receipt of asbestos materials covered by this manifest except As noted in item 12.		
_____	_____	_____
Print/type name and title	Signature	Month Day Year

Authority: T.C.A. 68-201-105 and 4-5-202. Administrative History: Original rule filed January 10, 1977; effective February 9, 1977. Amendment filed April 17, 1978; effective June 16, 1978. Amendment filed August 21, 1981; effective October 5, 1981. Amendment filed March 5, 1993; effective April 19, 1993. Amendment filed March 10, 1995; effective May 24, 1995. Amendment filed December 22, 1997; effective March 7, 1998.

- (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 a 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, deburring, 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 is 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 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 the limits of 10 to 60 minutes, accumulated during 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 emission 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 (24) 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 a 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 a 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 (30) 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 results, air sampling test results, and other data needed to determine total emissions and/or integrated intermittent 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) Emission 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. §§68-201-105 and 4-5-202. Administrative History: Original rule certified June 7, 1974. Amendment effective February 9, 1977. Amendment effective October 25, 1979.

- (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 wastewater 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 mined 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 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 temperatures 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 2,300 grams of mercury per 24-hour period.
- (b) Emissions to the atmosphere from sludge incineration plants, sludge drying plants, or a combination of these that process waste-water treatment plant sludges shall not exceed 3,200 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 designed, 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 1,600 g/day, demonstrated by either method referenced above, shall monitor mercury emissions at intervals of at least once per year by use of Method 105 of Appendix B, Federal Register, Volume 40, Number 199, October 14, 1975.

(5) Sludge Sampling

- (a) As an alternative to the stack sampling requirements of Paragraph 1200-3-11-.04(4), compliance with paragraph (3) of this rule may be demonstrated by use of Method 105 of Appendix B of the Federal Register, Volume 49, Number 178, September 12, 1984, and the procedures specified in this section.
- (b) The Technical Secretary shall be notified at least 30 days prior to a sludge sampling test, so that he may at his option observe the test.
- (c) The sludge shall be sampled according to Method 105 - Determination of Mercury in Wastewater Treatment Plant Sewage Sludges. A total of three composite samples shall be obtained within an operating period of 24 hours. When the 24-hour operating period is not continuous, the total sampling period shall not exceed 72 hours after the first grab sample is obtained. Samples shall not be exposed to any condition that may result in mercury contamination or loss.
- (d) The maximum 24-hour period sludge incineration or drying rate shall be determined by use of a flow rate measurement device that can measure the mass rate of the sludge charged to the incinerator or dryer with an accuracy of plus or minus 5 percent over its operating range. Other methods of measuring sludge mass charging rates may be used if they have received prior approval by the Technical Secretary.
- (e) The mercury emissions shall be determined by use of the following equation:

$$E_{Hg} = \frac{M Q F_{sm(avg)}}{1000}$$

Where:

- E_{Hg} = Mercury emissions, g/day.
- M = Mercury concentration of sludge on a dry solids basis, $\mu\text{g/g}$.
- Q = Sludge charging rate, kg/day.
- F_{sm} = Weight fraction of solids in the collected sludge after mixing.

- (f) No changes in the operation of a plant shall be made after a sludge test has been conducted which would potentially increase emissions above the level determined by the most recent sludge test until the new

emission level has been estimated by calculation and the results reported to the Technical Secretary.

- (g) All sludge samples shall be analyzed for mercury content within 30 days after the sludge sample is collected. Each determination shall be reported to the Technical Secretary by a registered letter dispatched before the close of the next business day following such determination.
- (h) Records of sludge sampling, charging rates determination, and other data needed to determine mercury content of wastewater treatment plant sludges shall be retained at the source and made available, for inspection by the Technical Secretary, for a minimum of 2 years.

Authority: T.C.A. §§68-201-105 and 4-5-202. Administrative History: Original rule certified June 7, 1974. Amended effective February 9, 1977. Amendment filed September 21, 1988; effective November 6, 1988.

- (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 a 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 m³ (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 m³ (50 gal) and no more than 4.07 m³ (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, by any process, vinyl chloride as an intermediate or final product.
- (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. Gasholder seal water is not inprocess wastewater until it is removed from the gasholder.
- (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 either contains or contacts a liquid that is at least 10 percent vinyl chloride by weight or a gas that is at least 10 percent by volume vinyl chloride as determined according to the provisions of subparagraph (8)(g) of this rule. The provisions of subparagraph (8)(g) of this rule also specify how to determine that a piece of equipment is not in vinyl chloride service. For the purposes of this rule, this definition must be used in place of the definition of "in VHAP service" defined in subparagraph (k) of Paragraph 1200-3-11-.06(2).
- (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, excluding product storage following the final finishing column.
- (p) "Vinyl chloride purification" includes any part of the process of vinyl chloride production which follows vinyl chloride formation.
- (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)(b) 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 Hg (29.92 in Hg).
- (v) "Relief valve" means each pressure relief device including pressure relief valves, rupture disks, and other pressure relief systems used to protect process components from overpressure conditions. "Relief valve" does not include polymerization shortstop systems, refrigerated water systems, or control valves or other devices used to control flow to an incinerator or other air pollution control device.
- (w) "Leak" means any of several events that indicate interruption of confinement of vinyl chloride within process equipment. Leaks include events regulated under Rule 1200-3-11-.06 such as:
1. An instrument reading of 10,000 ppm or greater measured according to Method 21 (as referenced in Subparagraph 1200-3-16-.01(5)(g)).
 2. Indications of liquid dripping;
 3. A sensor detection of failure of a seal system, failure of a barrier fluid system, or both; and
 4. Detectable emissions as indicated by an instrument reading of greater than 500 ppm above background for equipment designated for no detectable emissions measured according to Test Method 21 (part 21 of Subparagraph 1200-3-16-.01(5)(g)). Leaks also include events regulated under subpart (6)(c)8.(i) of this rule for detection of ambient concentrations in excess of background concentration. A relief valve discharge is not a leak.
- (x) "Exhaust gas" means any offgas (the constituents of which may consist of any fluids, either as a liquid and/or gas) discharged directly or ultimately to the atmosphere that was initially contained in or was in direct contact with the equipment for which exhaust gas limits are prescribed in subparagraph (3)(a) and (b); subparagraph (4)(b); parts (5)(b)1., (b)2., subparagraphs (5)(c), (d), and (e); subpart (6)(c)1.(ii), parts (6)(c)2., (c)5., subparts (6)(c)6.(ii), and (c)9.(ii) of Rule 1200-3-11-.05.
- (y) "Relief valve discharge" means any nonleak discharge through a relief valve. "Relief valve discharge" does not include discharges ducted to a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm (average for 3-hour period), or equivalent as provided in paragraph (7) of this rule.
- (z) "3-hour period" means any three consecutive 1-hour periods (each hour commencing on the hour).
- (3) Emission 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 each exhaust gas stream from any equipment used in ethylene dichloride purification is not to exceed 10 ppm (average for 3-hour period), except as provided in subparagraph (6)(b) of this rule. This

requirement does not preclude combining of exhaust gas streams provided the combined stream is 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. This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in subpart (i) of part (6)(c)6. 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) (average for 3-hour period) 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 each exhaust gas stream from any equipment used in vinyl chloride formation and/or purification is not to exceed 10 ppm (average for 3-hour period), except as provided in subparagraph (6)(b) of this rule. This requirement does not preclude combining of exhaust gas streams provided the combined stream is 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. This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in subpart (i) of part (6)(c)6. of this rule before being opened.
- (5) Emission standard for polyvinyl 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 each exhaust gas stream from each reactor is not to exceed 10 ppm (average for 3-hour period), except as provided in part 2. of subparagraph (b) of this paragraph and subparagraph (6)(b) of this rule.
 - 2. The reactor opening loss of vinyl chloride from each reactor is not to exceed 0.02 g/kg (0.00002 lb/lb) of polyvinyl chloride product, except as provided in subparts (i) and (ii) of part (g)1. of this paragraph, with the product determined on a dry solids basis. This requirement does apply to postpolymerization reactors in the bulk process, where 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 (as defined in subparagraph (2)(1) of this rule). An emergency manual vent valve discharge means a discharge to the atmosphere which could not have been avoided by taking measures to prevent the discharge. Within 10 days of any

discharge to the atmosphere from any manual vent valve, the owner or operator of the source from which the 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 the discharge, the method used for determining the vinyl chloride loss (the calculation of 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 each exhaust gas stream from each stripper is not to exceed 10 ppm (average for 3-hour period), 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 (i) of part (6)(c)6. of this rule before being opened.
- (d) Mixing, weighing, and holding containers. The concentration of vinyl chloride in each exhaust gas stream 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 (average for 3-hour period), 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 (i) of part (6)(c)6. of this rule before being opened.
- (e) Monomer recovery system. The concentration of vinyl chloride in each exhaust gas stream from each monomer recovery system is not to exceed 10 ppm (average for 3-hour period), 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 requirements in subpart (i) of part (6)(c)6. 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 inprocess waste water, except as provided in subparagraph (g) of this paragraph:
 - 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 dispersion polyvinyl chloride resins, excluding latex resins, with the product determined on a dry solids basis;
 - (ii) 0.4 g/kg (0.0004 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.
3. The provisions of subparagraph (f) of this paragraph apply at all times including when off specification or other types of resins are made.
- (g) Reactor used as stripper. When a nonbulk resin reactor is used as a stripper this subparagraph may be applied in lieu of part 2. of subparagraph (b) and part 1. of subparagraph (f) of paragraph (5) of this rule:
- 1. The weighted average emissions of vinyl chloride from reactor opening loss and all sources following the reactor used as a stripper from all grades of polyvinyl chloride resin stripped in the reactor on each calendar day may not exceed:
 - (i) 2.02 g/kg (0.00202 lb/lb) of polyvinyl chloride product for dispersion polyvinyl chloride resins, excluding latex resins, with the product determined on a dry solids basis.
 - (ii) 0.42 g/kg (0.00042 lb/lb) of polyvinyl chloride product 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 the discharge, the method used for determining the vinyl chloride loss (the calculation of the vinyl chloride loss), the action that was taken to prevent the discharge, and measures adopted to prevent future 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 m³ (0.13 ft³) of vinyl chloride, at standard temperature and pressure; and
 - (ii) Any vinyl chloride removed from a loading or unloading line in accordance with subpart (i) of part (c)1. 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 (average for 3-hour period), 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 (average for 3-hour period), 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. Compliance with the provisions of Rule 1200-3-11-.06 demonstrates compliance with the provisions of this subparagraph.
 - (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. Compliance with the provisions of Rule 1200-3-11-.06 demonstrates compliance

with the provisions of this subparagraph.

- (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 so that any leak that occurs is into the compressor; 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. Compliance with the provisions of Rule 1200-3-11-.06 demonstrates compliance with the provisions of this subparagraph.
 - (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 from which concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm; or equivalent as provided in paragraph (7) of this rule. Compliance with the provisions of Rule 1200-3-11-.06 demonstrates compliance with the provisions of this subparagraph.
 - (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 the pressure between the two seals so that any leak that occurs is into 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. Leaks from relief valves. Vinyl chloride emissions due to leaks from each relief valve on equipment in vinyl chloride service shall comply with the standards found in Subparagraph 1200-3-11-.06(3)(d).
 - 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 (average for 3-hour period); or equivalent as provided in paragraph (7) of this rule.

6. Opening of equipment. Vinyl chloride emissions from the opening of equipment (including prepolymerization reactors used in the manufacture of bulk resins and 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 which is contained therein is to be reduced to an amount which occupies a volume of no more than 2.0 percent of the equipment's containment volume or 0.0950 cubic meters (25 gallons), whichever is larger, at standard temperature and pressure.
 - (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 (average for 3-hour period); 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 or destroyed in a control device from which concentration of vinyl chloride in the exhaust gas does not exceed 10 ppm (average for 3-hour period) or equivalent as provided in paragraph (7) of this rule. Sampling techniques are to be such that sample containers in vinyl chloride service are purged into a closed process system. Compliance with the provisions of Rule 1200-3-11-.06 demonstrates compliance with the provisions of this paragraph.
8. Leak detection and elimination. Vinyl chloride emissions due to leaks from equipment in vinyl chloride service are to be minimized as follows:
 - (i) A reliable and accurate vinyl chloride monitoring system shall be operated 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. The vinyl chloride monitoring system shall be operated according to a program developed by the plant owner or operator. The owner or operator shall submit a description of the program to the Technical Secretary within 45 days of November 6, 1988.

Approval of a program will be granted by the Technical Secretary provided he finds:

- (I) 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 size and physical layout of the plant.

(II) 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 to be monitored by the vinyl chloride monitoring system are to be included 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 over time as background concentrations in the plant are reduced.

(III) It contains an acceptable plan of action to be taken when a leak is detected

(IV) 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 item (c)8.(i)(II) of this paragraph. 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 the Federal Register, Volume 41, Number 205, of October 21, 1976, beginning on page 16569 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), 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 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 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.

- (ii) For each process unit subject to this rule a formal leak detection and repair program shall be implemented consistent with Rule 1200-3-11-.06, except as provided in subpart (iii) of part (c)8. of this paragraph. This program is to be implemented within 90 days of November 6, 1988. Except as provided in item (V) of subpart (c)8.(ii) of this paragraph, an owner or operator shall be exempt from parts 1200-3-11-.06(3)(a)4., (3)(g)1., 2., and 3., and paragraph (7) and from paragraph (8) of this rule for any process unit in which the percentage of leaking valves is demonstrated to less than 2.0 percent, as determined in accordance with the following:
 - (I) A performance test as specified in item (II) of subpart (c)8.(ii) of this paragraph shall be conducted initially within 90 days of the effective date of these regulations, annually, and at times requested by the Technical Secretary.
 - (II) For each performance test, a minimum of 200 or 90 percent, whichever is less, of the total valves in VOC service (as defined in Subparagraph 1200-3-11-.01(3)(r)) within the process unit shall be randomly selected and monitored within one week by the methods specified in part 1200-3-11-.06(6)(b)1. If an instrument reading of 10,000 ppm or greater is measured, a leak is detected. The leak percentage shall be determined by dividing the number of valves in VOC service for which leaks are detected by the number of tested valves in VOC service.
 - (III) If a leak is detected, it shall be repaired in accordance with 1200-3-11-.06(3)(g)4. and 5.
 - (IV) The results of the performance test shall be submitted in writing to the Technical Secretary in the first quarterly report following the performance test as part of the reporting requirements of Rule 1200-3-11-.05.
 - (V) Any process unit in which the percentage of leaking valves is found to be greater than 2.0 percent according to the performance test prescribed in item (II) of subpart (c)8.(ii) of this rule must comply with all provisions of Rule 1200-3-11-.06 within 90 days.
- (iii) Open-ended valves or lines located on multiple service process lines which operate in vinyl chloride service less than 10 percent of the time are exempt from the requirements of Paragraph 1200-3-11-.06(3), provided the open-ended valves or lines are addressed in the monitoring system required by subpart (i) of part (c)8. of this paragraph. The Technical Secretary may apply this

exemption to other existing open-ended valves or lines that are demonstrated to require significant retrofit cost to comply with the requirements of Subparagraph 1200-3-11-.06(3)(e).

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. This 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 (6)(c)6. of this rule, 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 (6)(c)6.

(ii) Any vinyl chloride removed from the inprocess wastewater in accordance with subpart (i) of part (c)9. 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 (average for 3-hour period); or equivalent as provided in paragraph (7) of this rule.

(d) The requirements in parts 1., 2., 5., 6., 7. and 8. of subparagraph (c) 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 4.75 m³ (1,250 gal) in volume for which an emission limit is prescribed in subpart (i) of part (6)(c)6. of this rule after opening the equipment and using Test Method 106 (as referenced in subitem I. of item (6)(c)8.(IV) of this paragraph), a portable hydrocarbon detector, or an alternative method. The method of measurement is to meet the requirements in item (I) or (II) of 1200-3-11-.05(8)(g)5.(i).

(7) Equivalent equipment and 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 specific subparagraph of this rule.

(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 November 6, 1988, in the case of an existing source or a new source which has an initial startup date

preceding November 6, 1988, or

2. Within 90 days of startup in the case of a new source, initial startup of which occurs after November 6, 1988.
 - (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 is 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 three (3) 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 this subparagraph 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. Test Method 106 (as specified in the Federal Register, Volume 41, Number 205, of October 21, 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), 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 (5)(b)2. or subparagraph (c), (d) or (e) of paragraph (5), 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) of paragraph (6) of this rule.
 - (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 diameter 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 contain a minimum volume of 50 liters corrected to standard conditions and is to be taken over a period as close to one (1) hour as practicable.

- (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 Test Method 106 (as referenced in part (8)(g)1. of this rule) is to be corrected to 10 percent oxygen (dry basis) for determination of emissions by using the following equation:

$$C_b(\text{corrected}) = \frac{C_b \cdot 10.9}{20.9 - \text{percent } O_2}$$

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 Test Method 106 as referenced in part (8)(g)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_2 = 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:

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

Where:

C_{Bx} = kg vinyl chloride/100 kg product.

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

2.60 = Density of vinyl chloride at one atmosphere and 20°C in kg/m³.

Q = Volumetric flow rate in m³/hr as determined by the reference method in part 1200-3-16-.01(5)(g)2.

10⁻⁶ = Conversion factor for ppm.

Z = Production rate (kg/hr).

2. Test Method 107 or Method 106 (as specified in the Federal Register, Volume 41, Number 205, of October 21, 1976, beginning on page 46569, 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) 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)(c)9(i) of this rule.
3. When a stripping operation is used to attain the emission limits in subparagraph (5)(c) and (f) of this rule, emissions are to be determined using Test Method 107 as follows:
 - (i) The number of strippers (or reactors used as 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 quantity of material processed by each stripper (or reactor used as a 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 (8)(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) of this rule, emissions are to be determined as follows:
 - (i) Test Method 106 (as referenced above), is to be used to determine the atmospheric emissions from all of the

process equipment simultaneously. The requirements of part 1. of subparagraph (g) of this paragraph are to be met.

- (ii) Test Method 107 (as referenced above), 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) of this rule. 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 Test Method 107.

R = water flow rate in kg/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 2. of paragraph (5)(b) of this rule 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.

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

$$C = W (2.60) (10^{-6}) (C_b)$$

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°C in kg/m^3 .

C_b = ppm by volume vinyl chloride as determined by Test Method 106 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 Test Method 106 is used to determine the concentrations of vinyl chloride (C_b), 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 vessel 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 (C_b), 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. Calculation methods based on techniques other than repeated evacuation of the reactor may be approved by the Technical Secretary for determining reactor opening loss for postpolymerization reactors in the manufacture of bulk resins.

6. For a reactor that is used as a stripper, the emissions of vinyl chloride from reactor opening loss and all sources following the reactor used as a stripper for which an emission limit is prescribed in subparagraph (5)(g) of this rule are 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 plan at the time of the determination based on the plant's operation.

(i) For each batch stripped in the reactor, the following measurements are to be made:

(I) The concentration (ppm) of vinyl chloride in resin

after stripping, measured according to part (g)3. of this paragraph;

(II) The reactor vacuum (mm Hg) at end of strip from plant instrument; and

(III) The reactor temperature (°C) at end of strip from plant instrument.

(ii) For each batch stripped in the reactor, the following information is to be determined.

(I) The vapor pressure (mm Hg) of water in the reactor at end of strip from the following table:

	H ₂ O		H ₂ O		H ₂ O
Reactor	vapor	Reactor	vapor	Reactor	vapor
temper-	pres-	temper-	pres-	temper-	pres-
ature	sure	ature	sure	ature	sure
(°C)	(mm	(°C)	(mm	(°C)	(mm
	Hg)		Hg)		Hg)
40	55.3	62	163.8	84	416.8
41	58.3	63	171.4	85	433.6
42	61.5	64	179.3	86	450.9
43	64.8	65	187.5	87	468.7
44	68.3	66	196.1	88	487.1
45	71.9	67	205.0	89	506.1
46	75.6	68	214.2	90	525.8
47	79.6	69	223.7	91	546.0
48	83.7	70	233.7	92	567.0
49	88.0	71	243.9	93	588.6
50	92.5	72	254.6	94	610.9
51	97.2	73	265.7	95	633.9
52	102.1	74	277.2	96	657.6
53	107.2	75	289.1	97	682.1
54	112.5	76	301.4	98	707.3
55	118.0	77	314.1	99	733.2
56	123.8	78	327.3	100	760.0
57	129.8	79	341.0		
58	136.1	80	355.1		
59	142.6	81	369.7		
60	149.4	82	381.9		
61	156.4	83	400.6		

(II) The partial pressure (mm Hg) of vinyl chloride in reactor at end of strip from the following equation:

$$PPVC = 760 - RV - VPW$$

Where:

PPVC = partial pressure of vinyl chloride, in mm Hg.

760 = atmospheric pressure at 0°C, in mm Hg.

RV = absolute value of reactor vacuum, in mm Hg.

VPW = vapor pressure of water, in mm Hg.

(III) The reactor vapor space volume (m^3) at end of strip from the following equation:

$$RVSV = RC - WV - \frac{PVCW}{1,400}$$

Where:

RVSV = reactor vapor space volume, in m^3 .

RC = reactor capacity, in m^3 .

WV = volume of water in reactor from recipe, in m^3 .

PVCW = dry weight of polyvinyl chloride in reactor from recipe, in kg.

1,400 = typical density of polyvinyl chloride, in kg/m^3 .

(iii) For each batch stripped in the reactor, the combined reactor opening loss and emissions from all sources following the reactor used as a stripper is to be determined using the following equation:

$$C = \frac{(PPMVC)(10^{-3}) + (PPVC)(RVSV)(1,002)}{(PVCW)(273 + RT)}$$

Where:

C = g vinyl chloride/kg polyvinyl chloride product.

PPMVC = concentration of vinyl chloride in resin after stripping, in ppm.

10^{-3} = conversion factor for ppm.

PPVC = partial pressure of vinyl chloride determined according to item (g)6.(ii)(II) of this paragraph in mm Hg.

RVSV = reactor vapor space volume determined according to item (g)6.(ii)(III) of this paragraph in m^3 .

1,002 = ideal gas constant in $g\text{-}^\circ K/mm\text{ Hg}\text{-}m^3$ for vinyl chloride.

PVCW = dry weight of polyvinyl chloride in reactor from recipe, in kg.

273 = conversion factor for $^\circ C$ to $^\circ K$.

RT = reactor temperature, in °C.

(h) Measurement of Vinyl Chloride

1. Each piece of equipment within a process unit that can responsibly contain equipment in vinyl chloride service is presumed to be in vinyl chloride service unless an owner or operator demonstrates that the piece of equipment is not in vinyl chloride service. For a piece of equipment to be considered not in vinyl chloride service, it must be determined that the percent vinyl chloride content can be reasonably expected not to exceed 10 percent by weight for liquid streams or contained liquid volumes and 10 percent by volume for gas streams or contained gas volumes, which also includes gas volumes above liquid streams or contained liquid volumes. For purposes of determining the percent vinyl chloride content of the process fluid that is contained in or contacts equipment, procedures that conform to the methods described in ASTM Method D-2267 shall be used. (Note: All references to ASTM in this rule refers to the American Society for Testing Materials. Copies of methods are available for purchase by writing to ASTM, 1916 Race Street, Philadelphia, PA 19103, or by writing to the Tennessee Division of Air Pollution Control, 701 Broadway, 4th Floor, Customs House, Nashville, TN 37219. Be sure and specify which method is desired).
2.
 - (i) An owner or operator may use engineering judgment rather than the procedures in part (h)1. of this paragraph to demonstrate that the percent vinyl chloride content does not exceed 10 percent by weight for liquid streams and 10 percent by volume for gas streams, provided that the engineering judgment demonstrates that the vinyl chloride content clearly does not exceed 10 percent. When an owner or operator and the Technical Secretary do not agree on whether a piece of equipment is not in vinyl chloride service, however, the procedures in part (g)1. of this paragraph shall be used to resolve the disagreement.
 - (ii) If an owner or operator determines that a piece of equipment is in vinyl chloride service, the determination can be revised only after following the procedures in part (g)1. of this paragraph.
3. Samples used in determining the percent vinyl chloride content shall be representative of the process fluid that is contained in or contacts the equipment.

(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 subparagraphs (3)(b), (3)(c), and (4)(b), part (5)(b)1., subparagraphs (5)(c), and (5)(d), and (5)(e) of this rule, and for any control system to which reactor emissions are required to be ducted in subpart (6)(c)1.(ii), parts (6)(c)2. and (6)(c)5., and subparts (6)(c)6.(ii) and (6)(c)9.(ii) of this rule.
- (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) of this rule 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) of this rule, 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) of this rule 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 (Method 106 as referenced in part (8)(g)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 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 prepare a chromatograph calibration curve as described in section 7.3 of Test Method 106. The requirements in sections 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. Test Method 106 (as referenced in part (8)(g)1. of this rule).

(d) When exhaust gas(es), having emission limits that are subject to the requirement of subparagraph (a) of this paragraph, are emitted to the atmosphere without passing through the control system and required vinyl chloride monitoring system, the vinyl chloride content of the emission shall be calculated (in units of each applicable emission limit) by best practical engineering judgment based on the discharge duration and known VC concentrations in the affected equipment as determined in accordance with Test Method 106 or other acceptable method.

(e) For each 3-hour period, the vinyl chloride content of emissions subject to the requirements of subparagraphs (a) and (d) of this paragraph shall be averaged (weighted according to the proportion of time that emissions were continuously monitored and that emissions bypassed the

continuous monitor) for purposes of reporting excess emissions under part 1200-3-11-.05(11)(c)1.

- (f) For each vinyl chloride emission to the atmosphere determined in accordance with subparagraph (e) of this paragraph to be in excess of the applicable emission limits, the owner or operator shall record the identify of the source(s), the date, time, and duration of the excess emission, the cause of the excess emission, and the approximate total vinyl chloride loss during the excess emission, and the method used for determining the vinyl chloride loss. This information shall be retained and made available for inspection by the Technical Secretary as required by subparagraph (12)(a) 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. of subparagraph (6)(c) of this rule 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 November 6, 1988.
 - 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 emission limits are prescribed in subparts (6)(c)1.(i) and (6)(c)6.(i) of this rule.
 - 4. A statement that each piece of equipment is installed and that each piece of equipment and each procedure is being used.

(11) Reporting

- (a)
 - 1. The owner or operator of any source to which this rule applies shall submit to the Technical Secretary on March 15, June 15, September 15, and December 15 of each year a report in writing containing the information required by this paragraph. The first report is to be submitted following the first full 3-month reporting period after the initial report is submitted.
 - 2. In the case of an existing source, the approved reporting schedule shall be used. In addition, quarterly reports shall be submitted exactly 3 months following the current reporting dates.
- (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 November 6, 1988.

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)(g) of this rule 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 the vinyl chloride content of emissions for each 3-hour period during which average emissions are in excess of the emission limits in 1200-3-11-.05(3)(a), (b), or (c), 1200-3-11-.05(4)(a) or (b), 1200-3-11-.05(5)(a), (b), (c), (d), or (e), or during which average emissions are in excess of the emission limits specified in part (5)(b)2. of this rule or to which fugitive emissions are required to be ducted in subparts (c)1.(ii), parts (c)2., (c)5., subpart (c)6.(ii), or subpart (c)9.(ii) of paragraph (6) of this rule. The number of 3-hour periods for which average emissions were determined during the reporting period shall be reported. If emissions in excess of the emission limits are not detected, the report shall contain a statement that no excess emissions have been detected. The emissions are to be determined in accordance with subparagraph (9)(e) 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) of this rule, the owner or operator shall include in the report a record of the vinyl chloride content in the polyvinyl chloride resin.

(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 vinyl chloride content in each sample is to be determined by Test Method 107 as prescribed in part (8)(g)3. of this rule.
- (iv) (Reserved)
- (v) The report to the Technical Secretary by the owner or operator is to include a record of any 24-hour average resin vinyl chloride concentration, as determined in this paragraph, in excess of the limits prescribed in subparagraph (5) of this rule. The vinyl chloride content found in each sample required by subparts (i) and (ii) of part (c)2. of this paragraph shall be 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:

$$AT = \frac{\sum_{i=1}^n P_{Gi} M_{Gi}}{QT} = \frac{P_{G1} M_{G1} + P_{G2} M_{G2} + \dots + P_{Gn} M_{Gn}}{QT}$$

Where:

- A = 24-hour average concentration of type T resin in ppm (dry weight basis).
- Q = Total production of type T resin over the 24-hour period, in kg.
- T = Type of resin.
- M = Concentration of vinyl chloride in one sample of grade Gi resin in ppm.
- P = Production of grade Gi resin represented by the sample, in kg.
- Gi = Grade of resin: e.g., G1, G2, G3.
- n = Total number of grades of resin produced during the 24-hour period.

The number of 24-hour average concentrations for each resin type determined during the reporting period shall be reported. If no 24-hour average resin vinyl chloride concentrations in excess of the limits prescribed in subparagraph (5)(f) of this rule are measured, the report shall state that no excess resin vinyl chloride concentrations were measured.

- (vi) The owner or operator shall retain at the source and make available for inspection by the Technical Secretary for a minimum of 3 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 processed 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 any emissions from each reactor opening in excess of the emission limits 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. The number of reactor openings during the reporting period shall be reported. If emissions in excess of the emission limits are not detected, the report shall include a statement that excess emissions have not been detected.
- 4. In polyvinyl chloride plants for which stripping in the reactor is used to attain the emission level prescribed in subparagraph (5)(f) of this rule, the owner or operator shall include in the report a record of the vinyl chloride emissions from reactor opening loss and all sources following the reactor used as a stripper.
 - (i) 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) The vinyl chloride content in each sample is to be determined by Test Method 107 (as specified in the Federal Register, Volume 41, Number 205, of October 21, 1976, beginning on page 46569, 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) as prescribed in part (8)(g)3. of this rule.
 - (iii) The combined emissions from reactor opening loss and all sources following the reactor used as a stripper are to be determined for each batch stripped in a reactor according to the procedure prescribed in part (8)(g)6. of this rule.
 - (iv) The report to the Technical Secretary by the owner or operator is to include a record of any 24-hour average

combined reactor opening loss and emissions from all sources following the reactor used as a stripper as determined in this paragraph, in excess of the limits prescribed in subparagraph (5)(f). The combined reactor opening loss and emissions from all sources following the reactor used as a stripper associated with each batch are to be averaged separately for each type of resin, over each calendar day and weighted according to the quantity of each grade of resin stripped in reactors that calendar day as follows:

For each type of resin (suspension, dispersion, latex, bulk, other), the following calculation is to be performed:

$$AT = \frac{\sum_{i=1}^n P_{Gi} C_{Gi}}{QT} = \frac{P_{G1} C_{G1} + P_{G2} C_{G2} + \dots + P_{Gn} C_{Gn}}{QT}$$

Where:

A = 24-hour average combined reactor opening loss and emissions from all sources following the reactor used as a stripper, in g vinyl chloride/kg product (dry weight basis).

Q = Total production of resin in batches for which stripping is completed during the 24-hour period, in kg.

T = Type of resin.

C = Average combined reactor opening loss and emissions from all sources following the reactor used as a stripper of all batches of grade Gi resin for which stripping is completed during the 24-hour period, in g vinyl chloride/kg product (dry weight basis) (determined according to procedure prescribed in part (8)(g)6. of this rule.

P = Production of grade Gi resin in the batches for which C is determined, in kg.

Gi = Grade of resin, e.g., G1, G2, and G3.

n = Total number of grades of resin in batches for which stripping is completed during the 24-hour period.

The number of 24-hour average emissions determined during the reporting period shall be reported. If no 24-hour average combined reactor opening loss and emissions from all sources following the reactor used a stripper in excess of the limits prescribed in subparagraph (5)(f) are determined, the report shall state that no excess vinyl chloride emissions were determined.

(12) Record Keeping

- (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 to the Technical Secretary for a minimum of three (3) 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 vinyl chloride 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. §§68-201-105 and 4-5-202. Administrative History: Original rule filed March 13, 1978, effective April 12, 1978. Amended: filed September 10, 1979, effective October 25, 1979. Amended: filed September 21, 1988, effective November 6, 1988.

(1) Applicability:

- (a) The provisions of this rule apply to each of the following sources that are intended to operate in volatile hazardous air pollutant (VHAP) service: pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, flanges and other connectors, product accumulator vessels, and control devices or systems required by this rule.
- (b) The provisions of this rule apply to the sources listed in subparagraph (a) of this paragraph after the date of promulgation of a specific rule in this chapter.
- (c) While the provisions of this rule are effective, a source to which this rule applies that is also subject to the provisions of Chapter 16 only will be required to comply with the provisions of this rule.

(2) Definitions: Terms used in this rule not defined herein or in paragraph .01(3) of this chapter shall have the meaning given to them in Chapter 1200-3-2.

- (a) "Closed-vent system" means a system that is not open to atmosphere and that is composed of piping, connections, and, if necessary, flow-inducing devices that transport gas or vapor from a piece or pieces of equipment to a control device.
- (b) "Connector" means, flanged, screwed, welded, or other joined fittings used to connect two pipe lines or a pipe line and a piece of equipment. For the purpose of reporting and recordkeeping, connector means flanged fittings that are not covered by insulation or other materials that prevent location of the fittings.
- (c) "Control device" means an enclosed combustion device, vapor recovery system, or flare.
- (d) "Double block and bleed system" means two block valves connected in series with a bleed valve or line that can vent the line between the two block valves.
- (e) "Equipment" means each pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, valve, flange or other connector, product accumulator vessel in VHAP service, and any control devices or systems required by this rule.
- (f) "First attempt at repair" means to take rapid action for the purpose of stopping or reducing leakage of organic material to atmosphere using best practices.
- (g) "In gas/vapor service" means that a piece of equipment contains process fluid that is in the gaseous state at operating conditions.
- (h) "In liquid service" means that a piece of equipment is not in gas/vapor service.
- (i) "In-situ sampling systems" means nonextractive samplers or in-line samplers.

- (j) "In vacuum service" means that equipment is operating at an internal pressure which is at least 5 kiloPascal (kPa) below ambient pressure.
- (k) "In VHAP service" means that a piece of equipment either contains or contacts a fluid (liquid or gas) that is at least 10 percent by weight a volatile hazardous air pollutant (VHAP) as determined according to the provisions of subparagraph (6)(d) of this rule. The provisions of subparagraph (6)(d) of this rule also specify how to determine that a piece of equipment is not in VHAP service.
- (l) "In VOC service" means, for the purposes of this rule, that (a) the piece of equipment contains or contacts a process fluid that is at least 10 percent VOC by weight and (b) the piece of equipment is not in heavy liquid service (as defined in Paragraph 1200-3-16-.43(2)).
- (m) "Open-ended valve or line" means any valve, except pressure relief valves, having one side of the valve seat in contact with process fluid and one side open to atmosphere, either directly or through open piping.
- (n) "Pressure release" means the emission of materials resulting from the system pressure being greater than the set pressure of the pressure relief device.
- (o) "Process unit" means equipment assembled to produce a VHAP or its derivatives as intermediates or final products, or equipment assembled to use a VHAP in the production of a product. A process unit can operate independently if supplied with sufficient feed or raw materials and sufficient product storage facilities.
- (p) "Process unit shutdown" means a work practice or operational procedure that stops production from a process unit or part of a process unit. An unscheduled work practice or operational procedure that stops production from a process unit or part of a process unit for less than 24 hours is not a process unit shutdown. The use of spare equipment and technically feasible bypassing of equipment without stopping production are not process unit shutdowns.
- (q) "Product accumulator vessel" means any distillate receiver, bottoms receiver, surge control vessel, or product separator in VHAP service that is vented to atmosphere either directly or through a vacuum producing system. A product accumulator vessel is in VHAP service if the liquid or the vapor in the vessel is at least 10 percent by weight VHAP.
- (r) "Repaired" means that equipment is adjusted, or otherwise altered, to eliminate a leak as indicated by one of the following: an instrument reading of 10,000 ppm or greater, indication of liquids dripping, or indication by a sensor that a seal or barrier fluid system has failed.
- (s) "Semiannual" means a 6-month period; the first semiannual period concludes on the last day of the last month during the 180 days following initial startup for new sources; and the first semiannual period concludes on the last day of the last full month during the 180 days after the effective date of a specific rule that references this rule for existing sources.

- (t) "Sensor" means a device that measures a physical quantity or the change in a physical quantity, such as temperature, pressure, flow rate, pH, or liquid level.
- (u) "Volatile hazardous air pollutant" or "VHAP" means a substance regulated under this chapter for which a standard for equipment leaks of the substance has been proposed and promulgated. Benzene is a VHAP. Vinyl chloride is a VHAP.

(3) Standards for Volatile Hazardous Air Pollutants

(a) General

1. Each owner or operator subject to the provisions of this rule shall demonstrate compliance with the requirements of paragraph (3) for each new and existing source, except as provided in paragraphs (4) and (5).
2. Compliance with this rule will be determined by review of records, review of performance test results, and inspection using the methods and procedures specified in paragraph (6).
3. (i) An owner or operator may request a determination of alternative means of emission limitation to the requirements of subparagraphs (3)(b), (3)(c), (3)(e), (3)(f), (3)(g), (3)(h), (3)(i), and (3)(k) as provided in paragraph (5).

(ii) If the Technical Secretary makes a determination that a means of emission limitation is at least a permissible alternative to the requirements of subparagraphs (3)(b), (3)(c), (3)(e), (3)(f), (3)(g), (3)(h), (3)(i), (3)(k), an owner or operator shall comply with the requirements of that determination.
4. Each piece of equipment to which this rule applies shall be marked in such a manner that it can be distinguished readily from other pieces of equipment.
5. Equipment that is in vacuum service is excluded from the requirements of subparagraphs (3)(b) to (3)(k) if it is identified as required in part (7)(e)5.

(b) Pumps

1. (i) Each pump shall be monitored monthly to detect leaks by the methods specified in subparagraph (6)(b), except as provided in part (3)(a)3. and parts 4., 5., and 6. of this subparagraph.

(ii) Each pump shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal.
2. (i) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(ii) If there are indications of liquids dripping from the pump

seal, a leak is detected.

3. (i) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected except as provided in subparagraph (3)(j).
- (ii) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
4. Each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of part 1., provided the following requirements are met:
 - (i) Each dual mechanical seal system is:
 - (I) Operated with the barrier fluid at a pressure that is at all times greater than the pump stuffing box pressure; or
 - (II) Equipped with a barrier fluid degassing reservoir that is connected by a closed-vent system to a control device that complies with the requirements of subparagraph (3)(k) or;
 - (III) Equipped with a system that purges the barrier fluid into a process stream with zero VHAP emissions to atmosphere.
 - (ii) The barrier fluid is not in VHAP service and, if the pump is covered by standards under chapter 16, is not in VOC service.
 - (iii) Each barrier fluid system is equipped with a sensor that will detect failure of the seal system, the barrier fluid system, or both.
 - (iv) Each pump is checked by visual inspection each calendar week for indications of liquids dripping from the pump seal.
 - (v)
 - (I) Each sensor as described in subpart (3)(b)4.(iii) is checked daily or is equipped with an audible alarm, and
 - (II) The owner or operator determines, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.
 - (vi)
 - (I) If there are indications of liquids dripping from the pump seal or the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined in item (3)(b)4.(v)(II), a leak is detected.
 - (II) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in

subparagraph (3)(i).

(III) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

5. Any pump that is designated, as described in part (7)(e)2., for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of parts (3)(b)1., (3)(b)3., and (3)(b)4. if the pump;
 - (i) Has no externally actuated shaft penetrating the pump housing,
 - (ii) Is demonstrated to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in subparagraph (6)(c) and;
 - (iii) Is tested for compliance with subpart (3)(b)5.(ii) initially upon designation, annually, and at other times requested by the Technical Secretary.
6. If any pump is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal or seals to a control device that complies with the requirements of subparagraph (3)(k) it is exempt from the requirements of parts 1. through 5.
7. Any pump that is located within the boundary of an unmanned plant site is exempt from the weekly visual inspection requirement of subparts (3)(b)1.(ii) and (3)(b)4.(iv), and the daily requirements of item (3)(b)4.(v)(I), provided that each pump is visually inspected as often as practicable and at least monthly.

(c) Compressors

1. Each compressor shall be equipped with a seal system that includes a barrier fluid system and that prevents leakage of process fluid to atmosphere, except as provided in part (3)(a)3. and parts 8. and 9. of this subparagraph.
2. Each compressor seal system as required in part 1. shall be:
 - (i) Operated with the barrier fluid at a pressure that is greater than the compressor stuffing box pressure; or
 - (ii) Equipped with a barrier fluid system that is connected by a closed-vent system to a control device that complies with the requirements of subparagraph (3)(k); or
 - (iii) Equipped with a system that purges the barrier fluid into a process stream with zero VHAP emissions to atmosphere.
3. The barrier fluid shall not be in VHAP service and, if the compressor is covered by standards under Chapter 16 shall not be in VOC service.

4. Each barrier fluid system as described in parts 1. through 3. of this subparagraph shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.
 5.
 - (i) Each sensor as required in part 4. of this section shall be checked daily or shall be equipped with an audible alarm unless the compressor is located within the boundary of an unmanned plant site.
 - (ii) The owner or operator shall determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.
 6. If the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined under subpart (3)(c)5.(ii), a leak is detected.
 7.
 - (i) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in subparagraph (3)(j).
 - (ii) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
 8. A compressor is exempt from the requirements of parts 1. and 2. of this subparagraph if it is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal to a control device that complies with the requirements of subparagraph (3)(k), except as provided in part 9. of this subparagraph.
 9. Any compressor that is designated, as described in part (7)(e)2., for no detectable emission as indicated by an instrument reading of less than 500 ppm above background is exempt from the requirements of parts 1. through 8. of this subparagraph if the compressor:
 - (i) Is demonstrated to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in subparagraph (6)(c); and
 - (ii) Is tested for compliance with subpart (3)(c)9.(i) initially upon designation, annually, and at other times requested by the Technical Secretary.
- (d) Pressure relief devices in gas/vapor service
1. Except during pressure releases, each pressure relief device in gas/vapor service shall be operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in subparagraph (6)(c).
 2.
 - (i) After each pressure release, the pressure relief device shall be returned to a condition of no detectable emissions, as indicated by an instrument reading of less

than 500 ppm above background, as soon as practicable, but no later than 5 calendar days after each pressure release except as provided in subparagraph (3)(j).

(ii) No later than 5 calendar days after the pressure release, the pressure relief device shall be monitored to confirm the condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in subparagraph (6)(c).

3. Any pressure relief device that is equipped with a closed-vent system capable of capturing and transporting leakage from the pressure relief device to a control device as described in subparagraph (3)(k) is exempt from the requirements of parts 1. and 2. of this subparagraph.

(e) Sampling connecting systems

1. Each sampling connection system shall be equipped with a closed-purge system or closed vent system except as provided in part (3)(a)3.

2. Each closed-purge system or closed-vent system as required in part 1. of this subparagraph shall;

(i) Return the purged process fluid directly to the process line with zero VHAP emissions to atmosphere; or

(ii) Collect and recycle the purged process fluid with zero VHAP emissions to atmosphere; or

(iii) Be designed and operated to capture and transport all the purged process fluid to a control device that complies with the requirements of subparagraph (3)(k).

3. In-situ sampling systems are exempt from the requirements of parts 1. and 2. of this subparagraph.

(f) Open-ended valves or lines

1. (i) Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve, except as provided in part (3)(a)3.

(ii) The cap, blind flange, plug, or second valve shall seal the open end at all times except during operations requiring process fluid flow through the open-ended valve or line.

2. Each open-ended valve or line equipped with a second valve shall be operated in a manner such that the valve on the process fluid end is closed before the second valve is closed.

3. When a double block and bleed system is being used, the bleed valve or line may remain open during operations that require venting the line between the block valves but shall comply with part 1. of this subparagraph at all other times.

(g) Valves

1. Each valve shall be monitored monthly to detect leaks by the method specified in subparagraph (6)(b) and shall comply with parts 2. through 5. of this subparagraph, except as provided in parts 6., 7., and 8. of this subparagraph, and subparagraphs (4)(a) or (4)(b), and part (3)(a)3.
2. If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.
3.
 - (i) Any valve for which a leak is not detected for 2 successive months may be monitored the first month of every quarter, beginning with the next quarter, until a leak is detected.
 - (ii) If a leak is detected, the valve shall be monitored monthly until a leak is not detected for 2 successive months.
4.
 - (i) When a leak is detected, it shall be repaired as soon as practicable, but no later than 15 calendar days after the leak is detected, except as provided in subparagraph (3)(j).
 - (ii) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
5. First attempts at repair include, but are not limited to, the following best practices where practicable:
 - (i) Tightening of bonnet bolts;
 - (ii) Replacement of bonnet bolts;
 - (iii) Tightening of packing gland nuts; and
 - (iv) Injection of lubricant into lubricated packing.
6. Any valve that is designated, as described in part (7)(e)2., for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of part (3)(g)1. if the valve:
 - (i) Has no external actuating mechanism in contact with the process fluid;
 - (ii) Is operated with emissions less than 500 ppm above background, as measured by the method specified in subparagraph (6)(e) and
 - (iii) Is tested for compliance with subpart (3)(g)6.(ii) initially upon designation, annually, and at other times requested by the Technical Secretary.
7. Any valve that is designated, as described in part (7)(f)1., as an unsafe-to-monitor valve is exempt from the requirements of

part (3)(g)1. if:

- (i) The owner or operator of the valve demonstrates that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with part (3)(g)1.; and
- (ii) The owner or operator of the valve has a written plan that requires monitoring of the valve as frequent as practicable during safe-to-monitor times.

8. Any valve that is designated, as described in part (7)(f)2., as a difficult-to-monitor valve is exempt from the requirements of part (3)(g)1. if:

- (i) The owner or operator of the valve demonstrates that the valve cannot be monitored without elevating the monitoring personnel more than 2 meters above a support surface;
- (ii) The process unit within which the valve is located is an existing process unit; and
- (iii) The owner or operator of the valve follows a written plan that requires monitoring of the valve at least once per calendar year.

(h) Pressure relief devices in liquid service and flanges and other connectors.

1. Pressure relief devices in liquid service and flanges and other connectors shall be monitored within 5 days by the method specified in subparagraph (6)(b) if evidence of a potential leak is found by visual, audible, olfactory, or any other detection method except as provided in part (3)(a)3.

2. If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

3. (i) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in subparagraph (3)(j).

(ii) The first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

4. First attempts at repair include, but are not limited to, the best practices described under part (3)(g)5.

(i) Product accumulator vessels

Each product accumulator vessel shall be equipped with a closed-vent system capable of capturing and transporting any leakage from the vessel to a control device as described in subparagraph (3)(k) except as provided in part (3)(a)3.

(j) Delay of repair

1. Delay of repair of equipment for which leaks have been detected

will be allowed if the repair is technically infeasible without a process unit shutdown. Repair of this equipment shall occur before the end of the next process unit shutdown.

2. Delay of repair of equipment for which leaks have been detected will be allowed for equipment that is isolated from the process and does not remain in VHAP service.
3. Delay of repair for valves will be allowed if:
 - (i) The owner or operator demonstrates that emissions of purged material resulting from immediate repair are greater than the fugitive emissions likely to result from delay of repair, and
 - (ii) When repair procedures are effected, the purged material is collected and destroyed or recovered in a control device complying with subparagraph (3)(k).
4. Delay of repair for pumps will be allowed if:
 - (i) Repair requires the use of a dual mechanical seal system that includes a barrier fluid system, and
 - (ii) Repair is completed as soon as practicable, but not later than 6 months after the leak was detected.
5. Delay of repair beyond a process unit shutdown will be allowed for a valve if valve assembly replacement is necessary during the process unit shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay or repair beyond the next process unit shutdown will not be allowed unless the next process unit shutdown occurs sooner than 6 months after the first process unit shutdown.

(k) Closed-vent systems and control devices

1. Owners or operators of closed-vent systems and control devices used to comply with provisions of this rule shall comply with the provisions of this subparagraph except as provided in part (3)(a)3.
2. Vapor recovery systems (for example, condensers and absorbers) shall be designed and operated to recover the organic vapors vented to them with an efficiency of 95 percent or greater.
3. Enclosed combustion devices shall be designed and operated to reduce the VHAP emissions vented to them with an efficiency of 95 percent or greater or to provide a minimum residence time of 0.50 seconds at a minimum temperature of 760°C.
4.
 - (i) Flares used to comply with this rule shall comply with the requirements of 1200-3-16-.01(11).
 - (ii) Flares shall be operated with a flame present at all times, as determined by the methods specified in subparagraph (6)(e), of this rule.

- (iii) Flares shall be used only with the net heating value of the gas being combusted being 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or with the net heating value of the gas being combusted being 7.45 MJ/scm (200 Btu/scf) or greater if the flare is nonassisted. The net heating value of the gas being combusted shall be determined by the method specified in subparagraph (6)(e), of this rule.
 - (iv) Steam-assisted and nonassisted flares shall be designed for and operated with an exit velocity, as determined by the method specified in part (6)(e)4., of this rule, less than 18.3 m/sec (60 ft/sec).
 - (v) Air-assisted flares shall be designed and operated with an exit velocity less than the velocity, V_{max} , as determined by the method specified in part (6)(e)5., of this rule.
 - (vi) Flares used to comply with this subpart shall be steam-assisted, air-assisted, or nonassisted.
5. Owners or operators of control devices that are used to comply with the provisions of this rule shall monitor these control devices to ensure that they are operated and maintained in conformance with their design.
6. (i) Closed-vent systems shall be designed for and operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background and by visual inspections, as determined by the methods specified in subparagraph (6)(c), of this rule.
- (ii) Closed-vent systems shall be monitored to determine compliance with subparagraph (3)(k) initially, annually, and at other times requested by the Technical Secretary.
- (iii) Leaks, as indicated by an instrument reading greater than 500 ppm and visual inspections, shall be repaired as soon as practicable, but not later than 15 calendar days after the leak is detected
- (iv) A first attempt at repair shall be made no later than 5 calendar days after the leak is detected.
7. Closed-vent systems and control devices used to comply with provisions of this rule shall be operated at all times when emissions may be vented to them.
- (4) Alternative standards for valves in VHAP service
- (a) Allowable percentages of valves leaking
- 1. An owner or operator may elect to have all valves within a process unit comply with an allowable percentage of valves leaking of equal to or less than 2.0 percent.
 - 2. The following requirements shall be met if an owner or operator

decides to comply with an allowable percentage of valves leaking:

- (i) An owner or operator must notify the Technical Secretary that the owner or operator has elected to have all valves within a process unit to comply with the allowable percentage of valves leaking before implementing this alternative standard, as specified in subparagraph (8)(d).
- (ii) A performance test as specified in part (4)(a)3. shall be conducted initially upon designation, annually, and at other times requested by the Technical Secretary.
- (iii) If a valve leak is detected, it shall be repaired in accordance with parts (3)(g)4. and (3)(g)5.

3. Performance tests shall be conducted in the following manner:

- (i) All valves in VHAP service within the process unit shall be monitored within 1 week by the methods specified in subparagraph (6)(b).
- (ii) If an instrument reading of 10,000 ppm or greater is measured a leak is detected.
- (iii) The leak percentage shall be determined by dividing the number of valves in VHAP service for which leaks are detected by the number of valves in VHAP service within the process unit.

4. Owner or operators who elect to have all valves comply with this alternative standard shall not have a process unit with a leak percentage greater than 2.0 percent.

5. If an owner or operator decides no longer to comply with subparagraph (4)(a), the owner or operator must notify the Technical Secretary in writing that the work practice standard described in parts (3)(g)1. through (3)(g)5. will be followed.

(b) Skip period leak detection and repair

- 1. (i) An owner or operator may elect for all valves within a process unit to comply with one of the alternative work practices specified in subparts (4)(b)2.(ii) and (4)(b)2.(iii) of this subparagraph.
- (ii) An owner or operator must notify the Technical Secretary before implementing one of the alternative work practices, as specified in subparagraph (8)(d).
- 2. (i) An owner or operator shall comply initially with the requirements for valves, as described in subparagraph (3)(g).
- (ii) After 2 consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2.0, an owner or operator may begin to skip 1 of the quarterly leak detection periods for the valves in VHAP service.

(iii) After 5 consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2.0, an owner or operator may begin to skip 3 of the quarterly leak detection periods for the valves in VHAP service.

(iv) If the percentage of valves leaking is greater than 2.0, the owner or operator shall comply with the requirements as described in subparagraph (3)(g) but may again elect to use this subparagraph.

(5) Alternative means of emission limitation

(a) Permission to use an alternative means of emission limitation shall be governed by the following procedures:

(b) Where the standard is an equipment, design, or operational requirement:

1. Each owner or operator applying for permission shall be responsible for collecting and verifying test data for an alternative means of emission limitation.
2. The Technical Secretary will compare test data for the means of emission limitation to test data for the equipment, design, and operational requirements.
3. The Technical Secretary may condition the permission on requirements that may be necessary to assure operation and maintenance to achieve the same emission reduction as the equipment, design, and operational requirements.

(c) Where the standard is a work practice:

1. Each owner or operator applying for permission shall be responsible for collecting and verifying test data for an alternative means of emission limitation.
2. For each source for which permission is requested, the emission reduction achieved by the required work practices shall be demonstrated for a minimum period of 12 months.
3. For each source for which permission is requested, the emission reduction achieved by the alternative means of emission limitation shall be demonstrated.
4. Each owner or operator applying for permission shall commit in writing each source to work practices that provide for emission reductions equal to or greater than the emission reductions achieved by the required work practices.
5. The Technical Secretary will compare the demonstrated emission reduction for the alternative means of emission limitation to the demonstrated emission reduction of the required work practices and will consider the commitment in part (5)(c)4.
6. The Technical Secretary may condition the permission on requirements that may be necessary to assure operation and

maintenance to achieve the same emission reduction as the required work practices of this rule.

- (d) An owner or operator may offer a unique approach to demonstrate the alternative means of emission limitation.
- (e)
 - 1. Manufacturers of equipment used to control equipment leaks of a VHAP may apply to the Technical Secretary for permission for an alternative means of emission limitation that achieves a reduction in emissions of the VHAP achieved by the equipment, design, and operational requirements of this rule.
 - 2. The Technical Secretary will grant permission according to the provisions of subparagraphs (5)(b), (5)(c) and (5)(d).
- (6) Test methods and procedures
 - (a) Each owner or operator subject to the provisions of this rule shall comply with the test methods and procedures requirements provided in this paragraph.
 - (b) Monitoring, as required in paragraphs (3), (4), and (5), shall comply with the following requirements:
 - 1. Monitoring shall comply with Reference Method 21 as specified in part 1200-3-16-.01(5)(g)21.
 - 2. The detection instrument shall meet the performance criteria of Reference Method 21 (as referenced in 1200-3-16-.01(5)(g)).
 - 3. The instrument shall be calibrated before use each day of its use by the procedures specified in Reference Method 21.
 - 4. Calibration gases shall be:
 - (i) Zero air (less than 10 ppm of hydrocarbon in air); and
 - (ii) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.
 - 5. The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.
 - (c) When equipment is tested for compliance with no detectable emissions, as required in parts (3)(b)5., (3)(c)9., (3)(g)6., (3)(k)6., and subparagraph (3)(d), the test shall comply with the following requirements:
 - 1. The requirements of parts (6)(b)1. through (6)(b)4. shall apply.
 - 2. The background level shall be determined, as set forth in Reference Method 21.

3. The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.
 4. The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 500 ppm for determining compliance
- (d)
1. Each piece of equipment within a process unit that can conceivably contain equipment in VHAP service is presumed to be in VHAP service unless an owner or operator demonstrates that the piece of equipment is not in VHAP service. For a piece of equipment to be considered not in VHAP service, it must be determined that the percent VHAP content can be reasonably expected never to exceed 10 percent by weight. For purposes of determining the percent VHAP content of the process fluid that is contained in or contacts equipment, procedures that conform to the methods described in ASTM Method D-2267 shall be used. (Note: All references to ASTM in this rule refers to the American Society for Testing Materials. Copies of methods are available for purchase by writing to ASTM, 1916 Race Street, Philadelphia, PA 19103, or by writing to the Tennessee Division of Air Pollution Control, 701 Broadway, 4th Floor Customs House, Nashville, TN 37219. Be sure and specify which method is desired).
 2.
 - (i) An owner or operator may use engineering judgment rather than the procedures in part (6)(d)1. to demonstrate that the percent VHAP content does not exceed 10 percent by weight. When an owner or operator and the Technical Secretary do not agree on whether a piece of equipment is not in VHAP service, however, the procedures in part (6)(d)1. shall be used to resolve the disagreement.
 - (ii) If an owner or operator determines that a piece of equipment is in VHAP service, the determination can be revised only after following the procedures in part (6)(d)1.
 3. Samples used in determining the percent VHAP content shall be representative of the process fluid that is contained in or contacts the equipment or the gas being combusted in the flare.
- (e)
1. Reference Method 22 (as specified in part 1200-3-16-.01(5)(g)22.) shall be used to determine compliance of flares with the visible emission provisions of this rule.
 2. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.
 3. The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

$$H_t = \sum_{i=1}^i K (C_i H_i)$$

Where:

H_T = Net heating value of the sample, MJ/scm: where the net enthalpy per mole of offgas is based on combustion at 25°C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20°C.

K = Constant, 1.74×10^{-7} (l/ppm) (g mole/scm) (MJ/kcal) where standard temperature for (g mole/scm) is 20°C.

C_i = Concentration of sample component i in ppm, as measured by Reference Method 18 as specified in 1200-3-16-.01(5)(g)18. and ASTM D2504-67.

H_i = Net heat of combustion of sample component i, kcal/g mole. The heats of combustion may be determined using ASTM D2382-76 if published values are not available or cannot be calculated.

4. The actual exit velocity of a flare shall be determined by dividing the volumetric flowrate (in units of standard temperature and pressure), as determined by Reference Method 2, or 2A, as specified in part 1200-3-16-.01(5)(g)2., as appropriate, by the unobstructed (free) cross section area of the flare tip.

5. The maximum permitted velocity, V_{max} for air-assisted flares shall be determined by the following equation:

$$V_{max} = 8.76 + 0.7084(H_T)$$

Where:

V_{max} = Maximum permitted velocity, m/sec.

8.76 = Constant.

0.7084 = Constant.

H_T = The net heating value as determined in part (6)(e)3.

(7) Recordkeeping requirements

(a) 1. Each owner or operator subject to the provisions of this rule shall comply with the recordkeeping requirements of this paragraph.

2. An owner or operator of more than one process unit subject to the provisions of this rule may comply with the recordkeeping requirements for these process units in one recordkeeping system if the system identifies each record by each process unit.

(b) When each leak is detected as specified in subparagraphs (3)(b), (3)(c), (3)(g), and (3)(h), the following requirements apply:

1. A weatherproof and readily visible identification, marked with the equipment identification number, shall be attached to the

leaking equipment.

2. The identification on a valve may be removed after it has been monitored for 2 successive months as specified in part (3)(g)3. and no leak has been detected during those 2 months.
3. The identification on equipment, except on a valve, may be removed after it has been repaired.

(c) When each leak is detected as specified in subparagraphs (3)(b), (3)(c), (3)(g), and (3)(h), the following information shall be recorded in a log and shall be kept for 2 years in a readily accessible location:

1. The instrument and operator identification numbers and the equipment identification number.
2. The date the leak was detected and the dates of each attempt to repair the leak.
3. Repair methods applied in each attempt to repair the leak.
4. "Above 10,000" if the maximum instrument reading measured by the methods specified in subparagraph (6)(a) after each repair attempt is equal to or greater than 10,000 ppm.
5. "Repair delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.
6. The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a process shutdown.
7. The expected date of successful repair of the leak if a leak is not repaired within 15 calendar days.
8. Dates of process unit shutdowns that occur while the equipment is unrepaired.
9. The date of successful repair of the leak.

(d) The following information pertaining to the design requirements for closed-vent systems and control devices described in subparagraph (3)(k) shall be recorded and kept in a readily accessible location:

1. Detailed schematics, design specifications, and piping and instrumentation diagrams.
2. The dates and descriptions of any changes in the design specifications.
3. A description of the parameter or parameters monitored, as required in part (3)(k)5., to ensure that control devices are operated and maintained in conformance with their design and an explanation of why that parameter (or parameters) was selected for the monitoring.
4. Periods when the closed-vent systems and control devices required

in subparagraph (3)(b), (3)(c), (3)(d), (3)(e), and (3)(i) are not operated as designed, including periods when a flare pilot light does not have a flame.

5. Dates of startups and shutdowns of the closed-vent systems and control devices required in subparagraphs (3)(b), (3)(c), (3)(d), (3)(e), and (3)(i).

(e) The following information pertaining to all equipment subject to the requirements in paragraph (3) shall be recorded in a log that is kept in a readily accessible location:

1. A list of identification numbers for equipment (except welded fittings) subject to the requirements of this rule.
2. (i) A list of identification numbers for equipment that the owner or operator elects to designate for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, under the provisions of parts (3)(b)5., (3)(c)9., and (3)(g)6.
(ii) The designation of this equipment as subject to the requirements of parts (3)(b)5., (3)(c)9., and (3)(g)6. shall be signed by the owner or operator.
3. A list of equipment identification numbers for pressure relief devices required to comply with part (3)(d)1.
4. (i) The dates of each compliance test required in parts (3)(b)5., (3)(c)9., (3)(g)6., and subparagraph (3)(d).
(ii) The background level measured during each compliance test.
(iii) The maximum instrument reading measured at the equipment during each compliance test.
5. A list of identification numbers for equipment in vacuum service.

(f) The following information pertaining to all valves subject to the requirements of parts (3)(g)7. and (3)(g)8. of this rule, shall be recorded in a log that is kept in a readily accessible location:

1. A list of identification numbers for valves that are designated as unsafe to monitor, an explanation for each valve stating why the valve is unsafe to monitor, and the plan for monitoring each valve.
2. A list of identification numbers for valves that are designated as difficult to monitor, an explanation for each valve stating why the valve is difficult to monitor, and the planned schedule for monitoring each valve.

(g) The following information shall be recorded for valves complying with subparagraph (4)(b):

1. A schedule of monitoring.
2. The percent of valves found leaking during each monitoring

period.

- (h) The following information shall be recorded in a log that is kept in a readily accessible location:
 - 1. Design criterion required in subparts (3)(b)4.(v) and (3)(c)5.(ii) and an explanation of the design criterion: and
 - 2. Any changes to this criterion and the reasons for the changes.
 - (i) The following information shall be recorded in a log that is kept in a readily accessible location for use in determining exemptions as provided in the applicability section of this rule and other specific rules:
 - 1. An analysis demonstrating the design capacity of the process unit, and
 - 2. An analysis demonstrating that equipment is not in VHAP service.
 - (j) Information and data used to demonstrate that a piece of equipment is not in VHAP service shall be recorded in a log that is kept in a readily accessible location.
- (8) Reporting requirements
- (a)
 - 1. An owner or operator of any piece of equipment to which this rule applies shall submit a statement in writing notifying the Technical Secretary that the requirements of paragraphs (3), (6), (7), and (8) are being implemented.
 - 2. In the case of an existing source or a new source which has an initial startup date preceding November 6, 1988, the statement is to be submitted within 90 days of November 6, 1988.
 - 3. In the case of new sources which did not have an initial startup date preceding November 6, 1988, the statement shall be submitted with the application for approval of construction, as described in paragraph (5) of this rule.
 - 4. The statement is to contain the following information for each source:
 - (i) Equipment identification number and process unit identification.
 - (ii) Type of equipment (for example, a pump or pipeline valve).
 - (iii) Percent by weight VHAP in the fluid at the equipment.
 - (iv) Process fluid state at the equipment (gas/vapor or liquid).
 - (v) Method of compliance with the standard (for example, "monthly leak detection and repair" or "equipped with dual mechanical seals").
 - (b) A report shall be submitted to the Technical Secretary semiannually

starting 6 months after the initial report required in subparagraph (8)(a), that includes the following information:

1. Process unit identification.
 2. For each month during the semiannual reporting period.
 - (i) Number of valves for which leaks were detected as described in part (3)(g)2. or subparagraph (4)(b).
 - (ii) Number of valves for which leaks were not repaired as required in part (3)(g)4.
 - (iii) Number of pumps for which leaks were detected as described in part (3)(b)2. and subpart (3)(b)4.(vi).
 - (iv) Number of pumps for which leaks were not repaired as required in part (3)(b)3. and subpart (3)(b)4.(vi).
 - (v) Number of compressors for which leaks were detected as described in part (3)(c)6.
 - (vi) Number of compressors for which leaks were not repaired as required in part (3)(c)7.
 - (vii) The facts that explain any delay of repairs and, where appropriate, why a process unit shutdown was technically infeasible.
 3. Dates of process unit shutdowns which occurred within the semiannual reporting period.
 4. Revisions to items reported according to subparagraph (a) if changes have occurred since the initial report or subsequent revisions to the initial report.
 5. The results of all performance tests to determine compliance with parts (3)(b)5., (3)(c)9., (3)(d)1., (3)(g)6., (3)(k)6. and subparagraphs (4)(a) and (4)(b) conducted within the semiannual reporting period.
- (c) In the first report submitted as required in subparagraph (8)(a), the report shall include a reporting schedule stating the months that semiannual reports shall be submitted. Subsequent reports shall be submitted according to that schedule, unless a revised schedule has been submitted in a previous semiannual report.
- (d) An owner or operator electing to comply with the provisions of subparagraph (4)(a) and (4)(b) shall notify the Technical Secretary of the alternative standard selected 90 days before implementing either of the provisions.
- (e) An application for approval of construction or modification will not be required if:
1. The new source complies with the standard, paragraph (3).
 2. The new source is not part of the construction of a process unit;

and

3. In the next semiannual report required by subparagraph (8)(b) the information in part (8)(a)4. is reported.

Authority: T.C.A. §§68-201-105 and 4-5-202. Administrative History: Original rule filed September 21, 1988; effective November 6, 1988.

(1) Applicability:

- (a) The provisions of this rule apply to each of the following sources that are intended to operate in benzene service: pumps, compressors, pressure relief devices, sampling connections, systems, open-ended valves or lines, valves, flanges and other connectors, product accumulator vessels, and control devices or systems required by this rule.
- (b) The provisions of this rule do not apply to sources located in coke by-product plants.
- (c)
 - 1. If an owner or operator applies for one of the exemptions in this paragraph, then the owner or operator shall maintain records as required in subparagraph 1200-3-11-.06(7)(i).
 - 2. Any equipment in benzene services that is located at a plant site designed to produce or use less than 1,000 megagrams of benzene per year is exempt from the requirements of paragraph (3) of this rule.
 - 3. Any process unit (as defined in 1200-3-11-.06(2)) that has no equipment in benzene service is exempt from the requirements of paragraph (3) of this rule.
- (d) While the provisions of this rule are effective, a source to which this rule applies that is also subject to the provisions of Chapter 16 only will be required to comply with the provisions of this rule.

(2) Definitions:

- (a) "In benzene service" means that a piece of equipment either contains or contacts a fluid (liquid or gas) that is at least 10 percent benzene by weight as determined according to the provisions of 1200-3-11-.06(6)(d). The provisions of 1200-3-11-.06(6)(d) also specify how to determine that a piece of equipment is not in benzene service.
- (b) "Semiannual" means a 6-month period; the first semiannual period concludes on the last day of the last month during the 180 days following initial startup for new sources; and the first semiannual period concludes on the last day of the last full month during the 180 days after this rule becomes effective for existing sources.

(3) Standards for Equipment Leaks (Fugitive Emission Sources) of Benzene

- (a) Each owner or operator subject to the provisions of this rule shall comply with the requirements of Rule 1200-3-11-.06.
- (b) An owner or operator may elect to comply with the requirements of 1200-3-11-.06(4)(a) and 1200-3-11-.06(4)(b).
- (c) An owner or operator may apply to the Technical Secretary for a determination of an alternative means of emission limitation that achieves a reduction in emissions of benzene at least equivalent to the reduction in emissions of benzene achieved by the controls required in this rule. In doing so, the owner or operator shall comply with

requirements of 1200-3-11-.06(5).

Authority: T.C.A. §§68-201-105 and 4-5-202. Administrative History: Original rule filed September 21, 1988; effective November 6, 1988.

**EMISSION STANDARDS FOR EMISSIONS OF RADIONUCLIDES OTHER THAN
RADON FROM DEPARTMENT OF ENERGY FACILITIES**

- (1) Adopted herein by reference are the Federal regulations 40 CFR 61, Subpart H as published in the December 15, 1989 edition of the Federal Register: **(See paragraph (6) of this rule for text).**
- (2) Agreements regarding waivers, compliance reports, testing, and monitoring between the Department of Energy and the Environmental Protection Agency will be recognized by the Tennessee Division of Air Pollution Control providing these agreements are current, valid, and supported by appropriate documentation.
- (3) With respect to certain terms used in the text of Subpart H presented verbatim in Paragraph (6) below, those terms have the meanings as follows:
 - (a) In §61.93(b), §61.93(b)(2)(ii), §61.93(b)(3)(iv), §61.93(b)(4)(i), and §61.93(b)(5)(vi) "EPA" means "the Technical Secretary and EPA."
 - (b) In §61.93(b)(2)(iii) "the Administrator means "the Technical Secretary and the Administrator of EPA", and "EPA" means "the Technical Secretary and EPA."
 - (c) In §61.94(a) "EPA headquarters, and the appropriate regional office" means "the Technical Secretary, EPA headquarters, and the appropriate regional office."
 - (d) In §61.94(b)(8), and §61.94(d) "EPA" means "the Technical Secretary."
 - (e) In §61.94(c) "the Administrator" means "the Technical Secretary."
 - (f) In §61.95 "the Administrator" means "the Technical Secretary."
 - (g) In §61.96(b) "EPA" means "the Technical Secretary and EPA."
- (4) Until such time that EPA grants delegation of authority to the State of Tennessee to implement and enforce the radionuclide NESHAP, the EPA shall be the implementing agency for the radionuclide NESHAP (such a delegation will be published in the Federal Register by EPA.) Copies of requests made to EPA by DOE for an alternative monitoring or sampling method pursuant to §61.93(b), §61.93(b)(2)(ii), §61.93(b)(2)(iii), §61.93(b)(3)(iv), §61.93(b)(4)(i), §61.93(b)(5)(vi), and §61.96(b) shall be provided to the Technical Secretary concurrently with submittal to EPA. Additionally, DOE must immediately submit to the Technical Secretary copies of all EPA's responses to DOE's requests.
- (5) Until such time that EPA grants delegation of authority to the State of Tennessee to implement and enforce the radionuclide NESHAP, the EPA shall be the implementing agency for the radionuclide NESHAP (such a delegation will be published in the Federal Register by EPA). Copies of all applications to construct or modify pursuant to §61.96 shall be submitted to the Technical Secretary concurrently with submittal to EPA. DOE must also submit copies of all EPA's responses to DOE's applications to the Technical Secretary."
- (6) **40 CFR PART 61 - Subpart H - National Emission Standards for Emissions of Radionuclides Other Than Radon From Department of Energy Facilities**

SOURCE: 54 FR 51695, Dec. 15, 1989, unless otherwise noted.

§61.90 Designation of Facilities.

The provisions of this subpart apply to operations at any facility owned or operated by the Department of Energy that emits any radionuclide other than radon-222 and radon-220 into the air, except that this subpart does not apply to disposal at facilities subject to 40 CFR Part 191, Subpart B or 40 CFR Part 192.

§61.91 Definitions.

As used in this subpart, all terms not defined here have the meaning given them in the Clean Air Act or 40 CFR Part 61, Subpart A. The following terms shall have the following specific meanings:

- (a) Effective dose equivalent means the sum of the products of absorbed dose and appropriate factors to account for differences in biological effectiveness due to the quality of radiation and its distribution in the body of reference man. The unit of effective dose equivalent is the rem. For purposes of this subpart, doses caused by radon-222 and its respective decay products formed after the radon is released from the facility are not included. The method for calculating effective dose equivalent and the definition of reference man are outlined in the International Commission on Radiological Protection's Publication No. 26.
- (b) Facility means all buildings, structures and operations on one contiguous site.
- (c) Radionuclide means a type of atom which spontaneously undergoes radioactive decay.
- (d) Residence means any home, house, apartment building, or other place of dwelling which is occupied during any portion of the relevant year.

§61.92 Standard

Emissions of radionuclides to the ambient air from Department of Energy facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/yr.

§61.93 Emission monitoring and test procedures.

- (a) To determine compliance with the standard, radionuclide emissions shall be determined and effective dose equivalent values to members of the public calculated using EPA approved sampling procedures, computer models CAP-88 or AIRDOS-PC, or other procedures for which EPA has granted prior approval. DOE facilities for which the maximally exposed individual lives within 3 kilometers of all sources of emissions in the facility, may use EPA's COMPLY model and associated procedures for determining dose for purposes of compliance.
- (b) Radionuclide emission rates from point sources (stacks or vents) shall be measured in accordance with the following requirements or other procedures for which EPA has granted prior approval:
 - (1) Effluent flow rate measurements shall be made using the following methods:
 - (i) Reference Method 2 of appendix A to part 60 shall be used to

determine velocity and volumetric flow rates for stacks and large vents.

- (ii) Reference Method 2A of appendix A to part 60 shall be used to measure flow rates through pipes and small vents.
 - (iii) The frequency of the flow rate measurements shall depend upon the variability of the effluent flow rate. For variable flow rates, continuous or frequent flow rate measurements shall be made. For relatively constant flow rates only periodic measurements are necessary.
- (2) Radionuclides shall be directly monitored or extracted, collected and measured using the following methods:
- (i) Reference Method 1 of Appendix A, Part 60 shall be used to select monitoring or sampling sites.
 - (ii) The effluent stream shall be directly monitored continuously with an in-line detector or representative samples of the effluent stream shall be withdrawn continuously from the sampling site following the guidance presented in ANSI N13.1-1969 "Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities" (including the guidance presented in appendix A of ANSI N13.1)(incorporated by reference--see §61.18). The requirements for continuous sampling are applicable to batch processes when the unit is in operation. Periodic sampling (grab samples) may be used only with EPA's prior approval. Such approval may be granted in cases where continuous sampling is not practical and radionuclide emission rates are relatively constant. In such cases, grab samples shall be collected with sufficient frequency so as to provide a representative sample of the emissions.
 - (iii) Radionuclides shall be collected and measured using procedures based on the principles of measurement described in Appendix B, Method 114. Use of methods based on principles of measurement different from those described in Appendix B, Method 114 must have prior approval from the Administrator. EPA reserves the right to approve measurement procedures.
 - (iv) A quality assurance program shall be conducted that meets the performance requirements described in Appendix B, Method 114.
- (3) When it is impractical to measure the effluent flow rate at an existing source in accordance with the requirements of paragraph (b)(1) of this section or to monitor or sample an effluent stream at an existing source in accordance with the site selection and sample extraction requirements of paragraph (b)(2) of this section, the facility owner or operator may use alternative effluent flow rate measurement procedures or site selection and sample extraction procedures provided that:
- (i) It can be shown that the requirements of paragraph (b)(1) or (2) of this section are impractical for the effluent stream.
 - (ii) The alternative procedure will not significantly underestimate the emissions.
 - (iii) The alternative procedure is fully documented.

- (iv) The owner or operator has received prior approval from EPA.
- (4)
- (i) Radionuclide emission measurements in conformance with the requirements of paragraph (b) of this section shall be made at all release points which have a potential to discharge radionuclides into the air in quantities which could cause an effective dose equivalent in excess of 1% of the standard. All radionuclides which could contribute greater than 10% of the potential effective dose equivalent for a release point shall be measured. With prior EPA approval, DOE may determine these emissions through alternative procedures. For other release points which have a potential to release radionuclides into the air, periodic confirmatory measurements shall be made to verify the low emissions.
 - (ii) To determine whether a release point is subject to the emission measurement requirements of paragraph (b) of this section, it is necessary to evaluate the potential for radionuclide emissions for that release point. In evaluating the potential of a release point to discharge radionuclides into the air for the purposes of this section, the estimated radionuclide release rates shall be based on the discharge of the effluent stream that would result if all pollution control equipment did not exist, but the facilities operations were otherwise normal.
- (5) Environmental measurements of radionuclide air concentrations at critical receptor locations may be used as an alternative to air dispersion calculations in demonstrating compliance with the standard if the owner or operator meets the following criteria:
- (i) The air at the point of measurement shall be continuously sampled for collection of radionuclides.
 - (ii) Those radionuclides released from the facility, which are the major contributors to the effective dose equivalent must be collected and measured as part of the environmental measurement program.
 - (iii) Radionuclide concentrations which would cause an effective dose equivalent of 10% of the standard shall be readily detectable and distinguishable from background.
 - (iv) Net measured radionuclide concentrations shall be compared to the concentration levels in Table 2 of Appendix E to determine compliance with the standard. In the case of multiple radionuclides being released from a facility, compliance shall be demonstrated if the value for all radionuclides is less than the concentration level in Table 2, and the sum of the fractions that result when each measured concentration value is divided by the value in Table 2 for each radionuclide is less than 1.
 - (v) A quality assurance program shall be conducted that meets the performance requirements described in Appendix B, Method 114.
 - (vi) Use of environmental measurements to demonstrate compliance with the standard is subject to prior approval of EPA. Applications for approval shall include a detailed description of the sampling

and analytical methodology and show how the above criteria will be met.

§61.94 Compliance and reporting.

- (a) Compliance with this standard shall be determined by calculating the highest effective dose equivalent to any member of the public at any offsite point where there is a residence, school, business or office. The owners or operators of each facility shall submit an annual report to both EPA headquarters and the appropriate regional office by June 30 which includes the results of the monitoring as recorded in DOE's Effluent Information System and the dose calculations required by §61.93(a) for the previous calendar year.
- (b) In addition to the requirements of paragraph (a) of this section, an annual report shall include the following information:
- (1) The name and location of the facility.
 - (2) A list of the radioactive materials used at the facility.
 - (3) A description of the handling and processing that the radioactive materials undergo at the facility.
 - (4) A list of the stacks or vents or other points where radioactive materials are released to the atmosphere.
 - (5) A description of the effluent controls that are used on each stack, vent, or other release point and an estimate of the efficiency of each control device.
 - (6) Distances from the points of release to the nearest residence, school, business or office and the nearest farms producing vegetables, milk, and meat.
 - (7) The values used for all other user-supplied input parameters for the computer models (e.g., meteorological data) and the source of these data.
 - (8) A brief description of all construction and modifications which were completed in the calendar year for which the report is prepared, but for which the requirement to apply for approval to construct or modify was waived under §61.96 and associated documentation developed by DOE to support the waiver. EPA reserves the right to require that DOE send to EPA all the information that normally would be required in an application to construct or modify, following receipt of the description and supporting documentation.
 - (9) Each report shall be signed and dated by a corporate officer or public official in charge of the facility and contain the following declaration immediately above the signature line: "I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See, 18 U.S.C. 1001."

- (c) If the facility is not in compliance with the emission limits of §61.92 in the calendar year covered by the report, then the facility must commence reporting to the Administrator on a monthly basis the information listed in paragraph (b) of this section, for the preceding month. These reports will start the month immediately following the submittal of the annual report for the year in noncompliance and will be due 30 days following the end of each month. This increased level of reporting will continue until the Administrator has determined that the monthly reports are no longer necessary. In addition to all the information required in paragraph (b) of this section, monthly reports shall also include the following information:
- (1) All controls or other changes in operation of the facility that will be or are being installed to bring the facility into compliance.
 - (2) If the facility is under a judicial or administrative enforcement decree, the report will describe the facilities performance under the terms of the decree.
- (d) In those instances where the information requested is classified, such information will be made available to EPA separate from the report and will be handled and controlled according to applicable security and classification regulations and requirements.

§61.95 Recordkeeping requirements.

All facilities must maintain records documenting the source of input parameters including the results of all measurements upon which they are based, the calculations and/or analytical methods used to derive values for input parameters, and the procedure used to determine effective dose equivalent. This documentation should be sufficient to allow an independent auditor to verify the accuracy of the determination made concerning the facility's compliance with the standard. These records must be kept at the site of the facility for at least five years and, upon request, be made available for inspection by the Administrator, or his authorized representative.

§61.96 Applications to construct or modify.

- (a) In addition to any activity that is defined as construction under 40 CFR Part 61, Subpart A, any fabrication, erection or installation of a new building or structure within a facility that emits radionuclides is also defined as new construction for purposes of 40 CFR Part 61, Subpart A.
- (b) An application for approval under §61.07 or notification of startup under §61.09 does not need to be filed for any new construction of or modification within an existing facility if the effective dose equivalent, caused by all emissions from the new construction or modification, is less than 1% of the standard prescribed in §61.92. For purposes of this paragraph the effective dose equivalent shall be calculated using the source term derived using appendix D as input to the dispersion and other computer models described in §61.93. DOE may, with prior approval from EPA, use another procedure for estimating the source term for use in this paragraph. A facility is eligible for this exemption only if, based on its last annual report, the facility is in compliance with this subpart.
- (c) Conditions to approvals granted under §61.08 will not contain requirements for post approval reporting on operating conditions beyond those specified in §61.94.

§61.97 Exemption from the reporting and testing requirements of 40 CFR 61.10.

All facilities designated under this subpart are exempt from the reporting requirements of 40 CFR 61.10.

Authority: T.C.A §§68-201-105 and 4-5-202 et seq. Administrative History:
Original rule filed August 14, 1995; effective October 28, 1995.

- (1) Applicability and designation of source
 - (a) The source to which this rule applies is each glass melting furnace that uses commercial arsenic as a raw material. This rule does not apply to pot furnaces.
 - (b) Rebricking is not considered construction or modification.
- (2) Definition
 - (a) "Arsenic-containing glass type" means any glass that is distinguished from other glass solely by the weight percent of arsenic added as a raw material and by the weight percent of arsenic in the glass produced. Any two or more glasses that have the same weight percent of arsenic in the raw materials as well as in the glass produced shall be considered to belong to one arsenic-containing glass type without regard to the recipe used or any other characteristics of the glass or the method of production.
 - (b) "By-pass the control device" means to operate the glass melting furnace without operating the control device to which that furnace's emissions are directed routinely.
 - (c) "Commercial arsenic" means any form of arsenic that is produced by extraction from any arsenic-containing substance and is intended for sale or for intentional use in a manufacturing process. Arsenic that is a naturally occurring trace constituent of another substance is not considered "commercial arsenic".
 - (d) "Cullet" means waste glass recycled to a glass melting furnace.
 - (e) "Glass melting furnace" means a unit comprising a refractory vessel in which raw materials are charged, melted at high temperature, refined, and conditioned to produce molten glass. The unit includes foundations, superstructure and retaining walls, raw material charger systems, heat exchangers, melter cooling system, exhaust system, refractory brick work, fuel supply and electrical boosting equipment, integral control systems and instrumentation, and appendages for conditioning and distributing molten glass to forming apparatuses. The forming apparatuses, including the float bath used in flat glass manufacturing are not considered part of the glass melting furnace.
 - (f) "Glass produced" means the glass pulled from the glass melting furnace.
 - (g) "Inorganic arsenic" means the oxides and other noncarbon compounds of the element arsenic included in particulate matter, vapors, and aerosols.
 - (h) "Malfunction" means any sudden failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner so that emissions of arsenic are increased.
 - (i) "Pot furnace" means a glass melting furnace that contains one or more refractory vessels in which glass is melted by indirect heating. The openings of the vessels are in the outside wall of the furnace and are covered with refractory stoppers during melting.

- (j) "Rebricking" means cold replacement of damaged or worn refractory parts of the glass melting furnace. Rebricking includes replacement of the refractories comprising the bottom, sidewalls, or roof of the melting vessel; replacement of refractory work in the heat exchanger; and replacement of refractory portions of the glass conditioning and distribution system.
- (k) "Shutdown" means the cessation of operation of an affected source for any purpose.
- (l) "Theoretical arsenic emissions factor" means the amount of inorganic arsenic expressed in grams per kilogram of glass produced, as determined based on a material balance.
- (m) "Uncontrolled total arsenic emissions" means the total inorganic arsenic in the glass melting furnace exhaust gas preceding any add-on emission control device.

(3) Emission Limits

- (a) The owner or operator of an existing glass melting furnace subject to the provisions of this rule shall comply with either part 1. or part 2. of this subparagraph; except as provided in subparagraph (c) of this paragraph.
 - 1. Uncontrolled total arsenic emissions from the glass melting furnace shall be less than 2.5 Mg per year, or
 - 2. Total arsenic emissions from the glass melting furnace shall be conveyed to a control device and reduced by at least 85 percent.
- (b) The owner or operator of a new or modified glass melting furnace subject to the provisions of this rule shall comply with either part 1. or part 2. of this subparagraph; except as provided in subparagraph (c) of this paragraph.
 - 1. Uncontrolled total arsenic emissions from the glass melting furnace shall be less than 0.4 Mg per year, or
 - 2. Total arsenic emissions from the glass melting furnace shall be conveyed to a control device and reduced by at least 85 percent.
- (c) An owner or operator of a source subject to the requirements of this paragraph may, after approval by the Technical Secretary, bypass the control device to which arsenic emissions from the furnace are directed for a limited period of time for designated purposes such as maintenance of the control device, as specified in subparagraph (6)(e).
- (d) At all times, including periods of startup, shutdown, and malfunction, the owner or operator of a glass melting furnace subject to the provisions of this rule shall operate and maintain the furnace and associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions of inorganic arsenic to the atmosphere to the maximum extent practicable. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Technical Secretary, which may include, but is not limited to,

monitoring results, review of operating and maintenance procedures, inspection of the source, and review of other records.

(4) Emission monitoring

- (a) An owner or operator of a glass melting furnace subject to the emission limits in part (3)(a)2. or part (3)(b)2. shall:
 - 1. Install, calibrate, maintain, and operate a continuous monitoring system for the measurement of the opacity of emissions discharged into the atmosphere from the control device; and
 - 2. Install, calibrate, maintain, and operate a monitoring device for the continuous measurement of the temperature of the gas entering the control device.
- (b) All continuous monitoring systems and monitoring devices shall be installed and operational prior to performance of an emission test required by subparagraph (5)(a). Verification of operational status shall, at a minimum, consist of an evaluation of the monitoring system in accordance with the requirements and procedures contained in Performance Specification 1, as specified in subparagraph 1200-3-16-.01(8)(a).
- (c) During the emission test requested in subparagraph (5)(a) each owner or operator subject to subparagraph (a) of this paragraph shall:
 - 1. Conduct continuous opacity monitoring from the beginning of the first test run until the completion of the third test run. Process and control equipment shall be operated in a manner that will minimize opacity of emissions, subject to the Technical Secretary's approval.
 - 2. Calculate 6-minute opacity averages from 24 or more data points equally spaced over each 6-minute period during the test runs.
 - 3. Determine, based on the 6-minute opacity averages, the opacity value corresponding to the 97.5 percent upper confidence level of a normal or lognormal (whichever the owner or operator determines is more representative) distribution of the average opacity values.
 - 4. Conduct continuous monitoring of the temperature of the gas entering the control device from the beginning of the first test run until completion of the third test run.
 - 5. Calculate 15-minute averages of the temperature of the gas entering the control device during each test run.
- (d) An owner or operator may redetermine the values described in subparagraph (c) of this paragraph during any emission test that demonstrates compliance with the emission limits in part (3)(a)2. or part (3)(b)2.
- (e) The requirements of 1200-3-16-.01(8)(d) and (f) shall apply to an owner or operator subject to subparagraph (a) of this paragraph.
- (f) Except for system breakdowns, repairs, calibration checks and zero and

span adjustments, required under 1200-3-16-.01(8)(d), all continuous monitoring systems shall be in continuous operation and shall meet minimum frequency of operation requirements by completing a minimum of one cycle of sampling and analyzing for each successive 10-second period and one cycle of data recording for each successive 6-minute period.

(g) An owner or operator subject to subparagraph (a) of this paragraph shall:

1. Reduce all opacity data to 6-minute averages. Six-minute averages shall be calculated from 24 or more data points equally spaced over each 6-minute period. Data recorded during periods of monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages calculated under this paragraph, and
2. Calculate 15-minute averages of the temperature of the gas entering the control device for each 15-minute operating period.

(h) After receipt and consideration of written application, the Technical Secretary may approve alternative monitoring systems for the measurement of one or more process or operating parameters that is or are demonstrated to enable accurate and representative monitoring of a properly operating control device. Upon approval of an alternative monitoring system for an affected source, the Technical Secretary will specify requirements to replace the requirements of subparagraphs (a) through (g) of this paragraph for that system.

(5) Test methods and procedures

(a) To demonstrate compliance with paragraph (3), the owner or operator shall conduct emission tests, reduce test data, and follow the procedures specified in this paragraph unless the Technical Secretary:

1. Specifies or approves, in specific cases, the use of a reference method with minor changes in methodology;
2. Approves the use of an equivalent method;
3. Approves the use of an alternative method the results of which he has determined to be adequate for indicating whether a specific source is in compliance.

(b) The owner or operator shall conduct emission tests required by this paragraph:

1. No later than 90 days after November 6, 1988 for a source that has an initial startup date preceding the effective date: or
2. No later than 90 days after startup for a source that has an initial startup date after November 6, 1988.
3. At such other times as may be required by the Technical Secretary.
4. While the source is operating under such conditions as the Technical Secretary may specify, based on representative

performance of the source.

- (c) To demonstrate compliance with part 1. of subparagraph (3)(a) when less than 8.0 Mg per year of elemental arsenic is added to any existing glass melting furnace, or to demonstrate compliance with part 1. of subparagraph (3)(b) when less than 1.0 Mg per year of elemental arsenic is added to any new or modified glass melting furnace, an owner or operator shall:

1. Derive a theoretical uncontrolled arsenic emission factor (T), in grams of elemental arsenic per kilogram of glass produced, based on material balance calculations for each arsenic-containing glass type (i), produced during the 12-month period, as follows:

$$T_i = (A_{bi} \times W_{bi}) + (A_{ci} \times W_{ci}) - A_{yi}$$

Where:

T_i = the theoretical uncontrolled arsenic emission factor (g/kg) for each glass type (i).

A_{bi} = fraction by weight of elemental arsenic in the fresh batch for each glass type (i).

W_{bi} = weight (g) of fresh batch melted per kg of glass produced for each glass type (i).

A_{ci} = fraction by weight of elemental arsenic in cullet for each glass type (i).

W_{ci} = weight (g) of cullet melted per kg of glass produced for each glass type (i).

A_{yi} = weight (g) of elemental arsenic per kg glass produced for each glass type (i).

2. Estimate theoretical uncontrolled arsenic emissions for the 12-month period for each arsenic-containing glass type as follows:

$$Y_i = \frac{(T_i \times G_i)}{10^4}$$

Where:

Y_i = the theoretical uncontrolled arsenic emission estimate for the 12-month period for each glass type (Mg/year).

T_i = the theoretical uncontrolled arsenic emission factor for each type of glass (i) produced during the 12-month period as calculated in part (c)1. of this paragraph (g/kg).

G_i = the quantity (kg) of each arsenic-containing glass type (i) produced during the 12-month period.

3. Estimate the total theoretical uncontrolled arsenic emissions for the 12-month period by finding the sum of the values calculated

for Y_i in part 2. of subparagraph (c) of this paragraph.

4. If the value determined in part (c)3. of this paragraph is equal to or greater than the applicable limit in part (3)(a)1. or part (3)(b)1., conduct the emission testing and calculations described in parts 1. through 5. of subparagraph (d), of this paragraph. If the value is less than the applicable limit, the source is in compliance and no emission testing or additional calculations are required.

(d) To demonstrate compliance with part (3)(a)1. when 8.0 Mg per year or more of elemental arsenic are added to any existing glass melting furnace, or to demonstrate compliance with part (3)(b)1. when 1.0 Mg per year or more of elemental arsenic is added to any new or modified glass melting furnace, an owner or operator shall:

1. Estimate the theoretical uncontrolled arsenic emissions for each glass type for the 12-month period by performing the calculations described in parts 1. and 2. of subparagraph (c), of this paragraph.
2. Conduct emission testing to determine the actual uncontrolled arsenic emission rate during production of the arsenic-containing glass type with the highest theoretical uncontrolled arsenic emissions as calculated in part (d)1. of this paragraph. The owner or operator shall use the following test methods and procedures:

(i) Use Method 108, as specified in the Federal Register, Vol. 51, No. 149, August 4, 1986 beginning on page 28035, for determining the arsenic emission rate (g/h). The emission rate shall equal the arithmetic mean of the results of three 60-minute test runs.

(ii) Use the following methods referenced in 1200-3-16-.01(5)(g):

(I) Method 1 for sample and velocity traverse.

(II) Method 2 for velocity and volumetric flowrate.

(III) Method 3 for gas analysis.

(IV) For sources equipped with positive pressure fabric filters, use Section 4 of Method 5D as specified in 1200-3-16-.01(5)(g)5.(iv) to determine a suitable sampling location and procedure.

3. Determine the actual uncontrolled arsenic emission factor (R_a) in grams of elemental arsenic per kilogram of glass produced, as follows:

$$R_a = E_a/P$$

Where:

R_a = the actual uncontrolled arsenic emission factor (g/kg).

E_a = the actual uncontrolled arsenic emission rate (g/hr) from part (d)2., of this paragraph.

P = the rate of glass production (kg/hr), determined by dividing the weight (kg) of glass pulled from the furnace during the emission test by the number of hours (hr) taken to perform the test under part (d)2., of this paragraph.

4. Calculate a correction factor to relate the theoretical and the actual uncontrolled arsenic emission factors as follows:

$$F = R_a + T_i$$

Where:

F = the correction factor.

R_a = the actual uncontrolled arsenic emission factor (g/kg) determined in part (d)3., of this paragraph.

T_i = the theoretical uncontrolled arsenic emission factor (g/kg) determined in part (c)1., of this paragraph for the same glass type for which R_a was determined.

5. Determine the uncontrolled arsenic emission rate for the 12-month period, as follows: n

$$U = \frac{\sum_{i=1}^n (T_i \times F \times G_i)}{10^6}$$

Where:

U = the uncontrolled arsenic emission rate for the 12-month period (Mg/year).

T_i = the theoretical uncontrolled arsenic emission factor for each arsenic-containing glass type (i) produced during the 12-month period, as calculated in part (c)1., of this paragraph (g/kg).

F = the correction factor calculated in part (d)4., of this paragraph.

G_i = the quantity (kg) of each arsenic-containing glass type (i) produced during the 12-month period.

n = the number of arsenic-containing glass types produced during the 12-month period.

6. If the value determined in part (d)5., of this paragraph is less than the applicable limit in part (3)(a)1. or part (3)(b)1., the source is in compliance.

(e) To demonstrate compliance with part (3)(a)2. or part (3)(b)2., an owner

or operator shall:

1. Conduct emission testing to determine the percent reduction of inorganic arsenic emissions being achieved by the control device, using the following test methods and procedures:

- (i) Use Method 108, as specified in the Federal Register, Vol. I, No. 149, August 4, 1986, beginning on page 28035, to determine the concentration of arsenic in the gas streams entering and exiting the control device. Conduct three 60-minute test runs, each consisting of simultaneous testing of the inlet and outlet gas streams. The gas streams shall contain all the gas exhausted from the glass melting furnace.

- (ii) Use the following methods reference in 1200-3-16-.01(5)(g):

- (I) Method 1 for sample and velocity traverses.

- (II) Method 2 for velocity and volumetric flowrate.

- (III) Method 3 for gas analysis.

- (IV) For sources equipped with positive pressure fabric filters, use Section 4 of Method 5D as specified in 1200-3-16-.01(5)(g)5.(iv) to determine a suitable sampling location and procedure.

2. Calculate the percent emission reduction for each run as follows:

$$D = \frac{(C_b - C_a) \times 100}{C_b}$$

Where:

D = the percent emission reduction.

C_b = the arsenic concentration of the stack gas entering the control device, as measured by Method 108.

C_a = the arsenic concentration of the stack gas exiting the control device, as measured by Method 108.

3. Determine the average percent reduction of arsenic by calculating the arithmetic mean of the results for the three runs. If it is at least 85 percent, the source is in compliance.

(6) Reporting and recordkeeping requirements

- (a) Each owner or operator of a source subject to the requirements of paragraph (3) shall maintain at the source for a period of at least 2 years and make available to the Technical Secretary upon request a file of the following records:

1. All measurements, including continuous monitoring for measurement of opacity, and temperature of gas entering a control device;

2. Records of emission test data and all calculations used to produce the required reports of emission estimates to demonstrate compliance with paragraph (3);
 3. All continuous monitoring system performance evaluations, including calibration checks and adjustments;
 4. The occurrence and duration of all startups, shutdowns, and malfunctions of the furnace;
 5. All malfunctions of the air pollution control system;
 6. All periods during which any continuous monitoring system or monitoring device is inoperative;
 7. All records of maintenance and repairs for each air pollution control system, continuous monitoring system, or monitoring device.
- (b) Each owner or operator who is given approval by the Technical Secretary to bypass a control device under subparagraph (e) of this paragraph shall maintain at the source for a period of at least 2 years and make available to the Technical Secretary upon request a file of the following records:
1. The dates the control device is bypassed; and
 2. Steps taken to minimize arsenic emissions during the period the control device was bypassed.
- (c) Each owner or operator of a source subject to the emission limit in part (3)(a)1. or part (3)(b)1. shall determine and record at the end of every 6 months the uncontrolled arsenic emission rate for the preceding and forthcoming 12-month periods. The determinations shall:
1. Be made by following the procedures in parts 1., 2. and 3. of subparagraph (5)(c); or in part (5)(d)5., whichever is applicable; and
 2. Take into account changes in production rates, types of glass produced, and other factors that would affect the uncontrolled arsenic emission rate.
- (d) Each owner or operator of a source subject to the provisions of this rule shall:
1. Provide the Technical Secretary 30 days prior notice of any emission test required in paragraph (5) to afford the opportunity to have an observer present; and
 2. Submit to the Technical Secretary a written report of the results of the emission test and associated calculations required in subparagraph (5)(d) or (e), or as applicable, within 60 days after conducting the test.
 3. Submit to the Technical Secretary a written report of the arsenic emission estimates calculated under subparagraph (5)(c):

- (i) Within 45 days after November 6, 1988, for a source that has an initial startup date preceding the effective date; or
 - (ii) Within 45 days after startup for a source that has an initial startup date after November 6, 1988.
4. Submit to the Technical Secretary a written report of the uncontrolled arsenic emission rates determined in accordance with subparagraph (c) of this paragraph, if:
- (i) The emission rate for the preceding 12-month period (or preceding 6-month period for the first 6-month determination) exceeded the applicable limit in part (3)(a)1. or part (3)(b)1.
 - (ii) The emission rate for the forthcoming 12-month period will exceed the applicable limit in part (3)(a)1. or part (3)(b)1. In this case, the owner or operator shall also notify the Technical Secretary of the anticipated date of the emission test to demonstrate compliance with the applicable limit in part (3)(a)1. or part (3)(b)1.
5. Ensure that the reports required in part (d)4. of this paragraph are postmarked by the tenth day following the end of the 6-month reporting period.
- (e) To obtain approval to bypass a control device, as provided in subparagraph (3)(e), an owner or operator of a source subject to this rule may make written application to the Technical Secretary. Each application for such a waiver shall be submitted to the Technical Secretary no later than 60 days before the bypass period would begin and shall include:
- 1. Name and address of the owner or operator;
 - 2. Location of the source;
 - 3. A brief description of the nature, size, design, and method of operation of the source;
 - 4. The reason it is necessary to bypass the control device;
 - 5. The length of time it will be necessary to bypass the control device;
 - 6. Steps that will be taken to minimize arsenic emissions during the period the control device will be bypassed;
 - 7. The quantity of emissions that would be released while the control device is bypassed if no steps were taken to minimize emissions;
 - 8. The expected reduction in emissions during the bypass period due to the steps taken to minimize emissions during this period; and
 - 9. The type of glass to be produced during the bypass period, and, if applicable, an explanation of why non-arsenic or lower-

arsenic-containing glass cannot be melted in the furnace during the bypass period.

(f) Each owner or operator required to install and operate a continuous opacity monitoring system under paragraph (4) shall:

1. Submit a written report to the Technical Secretary of the results of the continuous monitoring system evaluation required under subparagraph (4)(b) within 60 days after conducting the evaluation.
2. Submit a written report to the Technical Secretary every 6 months if excess opacity occurred during the preceding 6-month period. For purposes of this paragraph, an occurrence of excess opacity is any 6-minute period during which the average opacity, as measured by the continuous monitoring system, exceeds the opacity level determined under part 3. of subparagraph (4)(c) or the opacity level redetermined under subparagraph (4)(d).

Ensure that any semiannual report of excess opacity required by part (f)2., of this paragraph is postmarked by the thirtieth day following the end of the 6-month period and includes the following information.

- (i) The magnitude of excess opacity, any conversion factor(s) used, and the date and time of commencement and completion of each occurrence of excess opacity.
- (ii) Specific identification of each occurrence of excess opacity that occurs during startups, shutdowns and malfunctions of the source.
- (iii) The date and time identifying each period during which the continuous monitoring system was inoperative, except for zero and span checks, and the nature of the system repairs or adjustments.

Authority: T.C.A. §§68-201-105 and 4-5-202. Administrative History: Original rule filed September 21, 1988; effective November 6, 1988.

(1) Applicability and designation of source

- (a) The provisions of this rule are applicable to each copper converter at any new or existing primary copper smelter, except as noted in subparagraph (3)(a) of this rule.

(2) Definitions

- (a) "Blowing" means the injection of air or oxygen-enriched air into a molten converter bath.
- (b) "Charging" means the addition of a molten or solid material to a copper converter.
- (c) "Control device" means the air pollution control equipment used to collect particulate matter emissions.
- (d) "Converter arsenic charging rate" means the hourly rate at which arsenic is charged to the copper converters in the copper converter department based on the arsenic content of the copper matte and of any lead matte that is charged to the copper converters.
- (e) "Copper converter" means any vessel in which copper matte is charged and is oxidized to copper.
- (f) "Copper converter department" means all copper converters at a primary copper smelter.
- (g) "Copper matte" means any molten solution of copper and iron sulfides produced by smelting copper sulfide ore concentrates or calcines.
- (h) "Holding of a copper converter" means suspending blowing operations while maintaining in a heated state the molten bath in the copper converter.
- (i) "Inorganic arsenic" means the oxides and other noncarbon compounds of the element arsenic included in particulate matter, vapors, and aerosols.
- (j) "Lead matte" means any molten solution of copper and other metal sulfides produced by reduction of sinter product from the oxidation of lead sulfide ore concentrates.
- (k) "Malfunction" means any sudden failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner so that emissions of inorganic arsenic are increased.
- (l) "Opacity" means the degree to which emissions reduce the transmission of light.
- (m) "Particulate matter" means any finely divided solid or liquid material, other than uncombined water, as measured by the specified reference method.
- (n) "Pouring" means the removal of blister copper from the copper converter bath.

- (o) "Primary copper smelter" means any installation or intermediate process engaged in the production of copper from copper-bearing materials through the use of pyrometallurgical techniques.
 - (p) "Primary emission control system" means the hoods, ducts, and control devices used to capture, convey, and collect process emissions.
 - (q) "Process emissions" means inorganic arsenic emissions from copper converters that are captured directly at the source of generation.
 - (r) "Secondary emissions" means inorganic arsenic emissions that escape capture by a primary emission control system.
 - (s) "Secondary hood system" means the equipment (including hoods, ducts, fans, and dampers) used to capture and transport secondary inorganic arsenic emissions.
 - (t) "Shutdown" means the cessation of operation of a stationary source for any reason.
 - (u) "Skimming" means the removal of slag from the molten converter bath.
- (3) Standard for new and existing sources
- (a) The provisions of subparagraphs (b) through (f) of this paragraph do not apply to any copper converter at a facility where the total arsenic charging rate for the copper converter department averaged over a 1-year period is less than 75 kg/hr, as determined under subparagraph (5)(f) of this rule.
 - (b) The owner or operator of each copper converter subject to the provisions of this rule shall reduce inorganic arsenic emissions to the atmosphere by meeting the following design, equipment, work practice, and operational requirements:
 1. Install, operate, and maintain a secondary hood system on each copper converter. Each secondary hood system shall consist of a hood enclosure, air curtain fan(s), exhaust system fan(s), and ductwork that conveys the captured emissions to a control device, and shall meet the following specifications:
 - (i) The configuration and dimensions of the hood enclosure shall be such that the copper converter mouth, charging ladles, skimming ladles, and any other material transfer vessels used will be housed within the confines or influence of the hood enclosure during each mode of copper converter operation.
 - (ii) The back of the hood enclosure shall be fully enclosed and sealed against the primary hood. Portions of the side-walls in contact with the copper converter shall be sealed against the converter.
 - (iii) Openings in the top and front of the hood enclosure to allow for the entry and egress of ladles and crane apparatus shall be minimized to the fullest extent practicable.

- (iv) The hood enclosure shall be fabricated in such a manner and of materials of sufficient strength to withstand incidental contact with ladles and crane apparatus with no significant damage.
 - (v) One side-wall of the hood enclosure shall be equipped with a horizontal-slotted plenum along the top, and the opposite side-wall shall be equipped with an exhaust hood. The horizontal-slotted plenum shall be designed to allow the distance from the base to the top of the horizontal slot to be adjustable up to a dimension of 76 mm.
 - (vi) The horizontal-slotted plenum shall be connected to a fan. When activated, the fan shall push air through the horizontal slot, producing a horizontal air curtain above the copper converter that is directed to the exhaust hood. The fan power output installed shall be sufficient to overcome static pressure losses through the ductwork upstream of the horizontal-slotted plenum and across the plenum, and to deliver at least 22,370 watts (30 air horsepower) at the horizontal-slotted plenum discharge.
 - (vii) The exhaust hood shall be sized to completely intercept the airstream from the horizontal-slotted plenum combined with the additional airflow resulting from entrainment of the surrounding air. The exhaust hood shall be connected to a fan. When activated, the fan shall pull the combined airstream into the exhaust hood.
 - (viii) The entire secondary hood system shall be equipped with dampers and instrumentation, as appropriate, so that the desired air curtain and exhaust flow are maintained during each mode of copper converter operation.
2. Optimize the capture of secondary inorganic arsenic emissions by operating the copper converter and secondary hood system at all times as follows:
- (i) Copper converter
 - (I) Increase the air curtain and exhaust flow rates to their optimum conditions prior to raising the primary hood and rolling the copper converter out for charging, skimming, or pouring.
 - (II) Once rolled out, prior to the commencement of skimming or pouring, hold the copper converter in an idle position until fuming from the molten bath has been minimized.
 - (III) During skimming, raise the receiving ladle off the ground and position the ladle as close to the copper converter mouth as possible to minimize the drop distance between the converter mouth and the receiving ladle.
 - (IV) Control the rate of flow into the receiving ladle to

the extent practicable to minimize fuming.

- (V) Upon the completion of each charge, withdraw the charging ladle or vessel used from the confines of the secondary hood in a slow, deliberate manner.
 - (VI) During charging, skimming, or pouring, ensure that the crane block does not disturb the air flow between the horizontal-slotted plenum and the exhaust hood.
- (ii) Secondary hood system.
- (I) Operate the secondary hood system under conditions that will result in the maximum capture of inorganic arsenic emissions.
 - (II) Within 30 days after November 6, 1988, or within 30 days after the initial operation of each secondary hood system, whichever comes later, provide to the Technical Secretary a list of operating conditions for the secondary hood system that will result in the maximum capture of inorganic arsenic emissions. This list shall specify the operating parameters for the following:
 - I. The dimensions of the horizontal slot.
 - II. The velocity of air through the horizontal slot during each mode of converter operation.
 - III. The distance from the horizontal slot to the exhaust hood.
 - IV. The face velocity at the opening of the exhaust hood during each mode of converter operation.
 - (III) Operate the secondary hood system under the conditions listed in item (b)2.(ii)(II) of this paragraph, unless otherwise specified by the Technical Secretary.
 - (IV) Notify the Technical Secretary in writing within 30 days if there is any change in the operating conditions submitted pursuant to the requirements in item (b)2.(ii)(II) of this paragraph that will result in any reduction in the maximum capture of inorganic arsenic emissions.
3. Comply with the following inspection and maintenance requirements after installing the secondary hood system required in part (b)1. of this subparagraph:
- (i) At least once every month, visually inspect the components of the secondary hood system that are exposed to potential damage from crane and ladle operation, including the hood enclosure, side and back-wall hood seals, and the

horizontal slot.

- (ii) Replace or repair any defective or damaged components of the secondary hood system within 30 days after discovering the defective or damaged components.
- (e) No owner or operator of a copper converter subject to the provisions of this rule shall cause or allow to be discharged into the atmosphere any copper converter secondary emissions that exit from a control device and contain particulate matter in excess of 11.6 milligrams per dry standard cubic meter.
 - (d) The owner or operator of a copper converter subject to the provisions of this rule shall submit a description of a plan for control of inorganic arsenic emissions from the copper converter and associated air pollution control equipment. For existing facilities this plan shall be submitted within 90 days after November 6, 1988. New facilities must submit a completed construction permit application. Approval of a plan for existing sources shall be granted by the Technical Secretary provided he finds that:
 - 1. It includes a systematic procedure for identifying malfunctions and for reporting them immediately to smelter supervisory personnel.
 - 2. It specifies the procedures that will be followed to ensure that equipment or process breakdowns due entirely or in part to poor maintenance or other preventable conditions do not occur.
 - 3. It specifies the measures that will be taken to ensure compliance with part (b)2. of this subparagraph.
 - (e) The owner or operator shall implement the plan required under subparagraph (d) of this paragraph unless otherwise specified by the Technical Secretary.
 - (f) At all times, including periods of startup, shutdown, and malfunction, the owner or operator of a copper converter subject to the provisions of this rule shall operate and maintain the converter and associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions of inorganic arsenic to the atmosphere to the maximum extent practicable. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Technical Secretary, which may include, but is not limited to, monitoring results, review of operating and maintenance procedures, inspection of the source, and review of other records.
- (4) Compliance Provisions.
- (a) The owner or operator of each copper converter to which subparagraph (3)(b) through (f) apply shall demonstrate compliance with the requirements of part (3)(b)1. as follows:
 - 1. The owner or operator of each existing copper converter shall install a secondary hood system to meet the requirements of part (3)(b)1., no later than 90 days after November 6, 1988.

2. The owner or operator of each new copper converter shall install a secondary hood system to meet the requirements of part (3)(b)1., prior to the initial startup of the converter, except that if startup occurs prior to the effective date, the owner or operator shall meet the requirements of part (3)(b)1. on November 6, 1988.

(5) Test Methods and Procedures.

- (a) To determine compliance with subparagraph (3)(e), the owner or operator shall conduct emission tests and reduce the test data in accordance with the test methods and procedures contained in this paragraph unless the Technical Secretary:
 1. Specifies or approves, in specific cases, the use of a reference method with minor changes in methodology,
 2. Approves the use of an equivalent method,
 3. Approves the use of an alternative method, the results of which he has determined to be adequate for indicating whether a specific source is in compliance.
- (b) The owner or operator shall conduct the emission tests required in subparagraph (a) of this paragraph:
 1. After achieving the optimum operating conditions submitted under item (3)(b)2.(ii)(II) for the equipment required in part (3)(b)1., but no later than 90 days after November 6, 1988 in the case of an existing copper converter or a copper converter that has an initial startup date preceding November 6, 1988.
 2. After achieving the optimum operating conditions submitted under item (3)(b)2.(ii)(II) for the equipment required in part (3)(b)1., but no later than 90 days after startup in the case of a new copper converter, initial startup of which occurs after November 6, 1988.
 3. At such other times as may be required by the Technical Secretary.
- (c) The owner or operator shall conduct each emission test under representative operating conditions and at sample locations subject to the Technical Secretary's approval, and shall make available to the Technical Secretary such records as may be necessary to determine the conditions of the emission test.
- (d) For the purpose of determining compliance with subparagraph (3)(c), the owner or operator shall use reference methods in Subparagraph 1200-3-16-.01(5)(g), as follows:
 1. Method 5 for the measurement of particulate matter,
 2. Method 1 for sample and velocity traverses,
 3. Method 2 for velocity and volumetric flow rate,
 4. Method 3 for gas analysis, and

5. Method 4 for stack gas moisture.

(e) For Method 5, the sampling time for each run shall be at least 60 minutes and the minimum sampling volume shall be 0.85 dscm (30 dscf) except that smaller times or volumes when necessitated by process variables or other factors may be approved by the Technical Secretary.

(f) For the purpose of determining applicability under subparagraph (3)(a), the owner or operator shall determine the converter arsenic charging rate as follows:

1. Collect daily grab samples of copper matte and any lead matte charged to the copper converters.
2. Each calendar month, from the daily grab samples collected under part (f)1. of this subparagraph, put together a composite copper matte sample and a composite lead matte sample. Analyze the composite samples individually using Method 108A as specified in the Federal Register, Vol. 51, No. 149, August 4, 1986, beginning on page 28040, to determine the weight percent of inorganic arsenic contained in each sample.
3. Calculate the converter arsenic charging rate once per month using the following equation:

$$R_c = \frac{\sum_{i=1}^n A_c W_{ci} + A_l W_{li}}{100 H_c}$$

Where:

R_c is the converter arsenic charging rate (kg/hr).

A_c is the monthly average weight percent (%) of arsenic in the copper matte charged during the month as determined under part (f)2. of this subparagraph.

A_l is the monthly average weight percent (%) of arsenic in the lead matte charged during the month as determined under part (f)2. of this subparagraph.

W_{ci} is the total weight of copper matte charged to a copper converter during the month (kg).

W_{li} is the total weight of lead matte charged to a copper converter during the month (kg)

H_c is the total number of hours the copper converter department was in operation during the month (hr).

n is the number of copper converters in operation during the month.

4. Determine an annual arsenic charging rate for the copper converter department once per month by computing the arithmetic average of the 12 monthly converter arsenic charging rate values

(R_c) for the preceding 12-month period.

- (g) An owner or operator may petition the Technical Secretary for a modified sampling and analysis schedule if analyses performed for the first 12-month period after November 6, 1988, show the source to be considerably below the applicability limit prescribed in subparagraph (3)(a) of this rule.

(6) Monitoring Requirements.

- (a) Each owner or operator of a source that is subject to the emission limit specified in subparagraph (3)(c) of this rule shall install, calibrate, maintain, and operate a continuous monitoring system for the measurement of the opacity of emissions discharged from the control device according to the following procedures:

1. Ensure that each system is installed and operational no later than 90 days after November 6, 1988, for an existing source or a new source that has an initial startup date preceding November 6, 1988. For a new source whose initial startup occurs after November 6, 1988, ensure that the system is installed and operational no later than 90 days after startup. Verification of the operations status shall, as a minimum, consist of an evaluation of the monitoring system in accordance with the requirements and procedures as specified in 1200-3-16-.01(8)(a).
2. Except for system breakdowns, repairs, calibration checks, and zero span adjustments, ensure that each continuous monitoring system is in continuous operation and meets frequency of operation requirements by completing a minimum of one cycle of sampling and analysis for each successive 10-second period and one cycle of data recording for each successive 6-minute period. Each data point shall represent the opacity measured for one cycle of sampling and analysis and shall be expressed as percent opacity.

- (b) Except as required in subparagraph (c) of this paragraph, calculate 1-hour opacity averages from 360 or more consecutive data points equally spaced over each one-hour period. Data recorded during periods of monitoring systems breakdowns, repairs, calibration checks, and zero span adjustments shall not be included in the data averages computed under this subparagraph.

- (c) No later than 60 days after each continuous opacity monitoring system required in subparagraph (a) of this paragraph becomes operational, the owner or operator shall establish a reference opacity level for each monitored emission stream according to the following procedures:

1. Conduct continuous opacity monitoring over a preplanned period of not less than 36 hours during which the processes and emission control equipment upstream of the monitoring system are operating under representative operating conditions subject to the Technical Secretary's approval.
2. Calculate 6-minute averages of the opacity readings using 36 or more consecutive data points equally spaced over each 6-minute period.

3. Calculate 1-hour average opacity values using 10 successive 6-minute average opacity values (i.e., calculate a new 1-hour average opacity value every 6 minutes). Determine the highest 1-hour average opacity value observed during the 36-hour preplanned test period.
 4. Calculate the reference opacity level by adding 5 percent opacity to the highest 1-hour average opacity calculated in part (c)3. of this subparagraph.
- (d) The owner or operator may redetermine the reference opacity level according to the provisions of parts (c)1. through (c)4. of this subparagraph for the copper converter secondary emission stream at the time of each emission test that demonstrates compliance with the emission limit required in subparagraph (3)(c) of this rule.
 - (e) With a minimum of 30 days prior notice, the Technical Secretary may require the owner or operator to redetermine the reference opacity level for any monitored emission stream.
 - (f) Each owner or operator who is required to install the equipment specified in part 1. of subparagraph (3)(b) for the capture of secondary copper converter emissions shall install, calibrate, maintain, and operate a continuous monitoring device on each secondary hood system for the measurement of the air flow through the horizontal-slotted plenum and through the exhaust hood. Each device shall be installed and operational no later than 90 days after November 6, 1988, for a source that has an initial startup preceding the effective date; and no later than 90 days after startup for other sources.
 - (g) Each owner or operator subject to the requirements in subparagraph (f) of this paragraph shall establish for each secondary hood system reference air flow rates for the horizontal-slotted plenum and exhaust hood for each mode of converter operation. The reference flow rates shall be established when the equipment is operating under the optimum operating conditions required in subpart (ii) of part (3)(b)2.
 - (h) Each owner or operator shall install the continuous monitoring systems and monitoring devices required in subparagraphs (a) and (f) of this paragraph in such a manner that representative measurements of emissions and process parameters are obtained.
- (7) Recordkeeping Requirements.
- (a) Each owner or operator subject to the requirements of part 1. of subparagraph (3)(b) shall maintain at the source for a period of at least 2 years records of the visual inspections, maintenance, and repairs performed on each secondary hood system as required in part 3. of subparagraph (3)(b).
 - (b) Each owner or operator subject to the provisions of subparagraph (3)(c) shall maintain at the source for a period of at least 2 years and make available to the Technical Secretary upon request a file of the following records:
 1. All measurements, including continuous monitoring for measurement of opacity;

2. Records of emission test data and all calculations used to produce the required reports of emission estimates to demonstrate compliance with subparagraph (3)(c);
 3. All continuous monitoring system performance evaluations, including calibration checks and adjustments;
 4. The occurrence and duration of all startups, shutdowns, and malfunctions of the copper converters;
 5. All malfunctions of the air pollution control system;
 6. All periods during which any continuous monitoring system or device is inoperative;
 7. All maintenance and repairs performed on each air pollution control system, continuous monitoring system, or monitoring device;
 8. All records of 1-hour average opacity levels for each separate control device; and
 9. For each secondary hood system:
 - (i) The reference flow rates for the horizontal-slotted plenum and exhaust hood for each convener operating mode established under subparagraph (6)(g);
 - (ii) The actual flow rates; and
 - (iii) A daily log of the start time and duration of each convener operating mode.
- (c) Each owner or operator subject to the provisions of this rule shall maintain at the source for a period of at least 2 years and make available to the Technical Secretary upon request the following records:
1. For each copper convener, a daily record of the amount of copper matte and lead matte charged to the copper convener and the total hours of operation.
 2. For each copper convener department, a monthly record of the weight percent of arsenic contained in the copper matte and lead matte as determined under subparagraph (5)(f).
 3. For each copper convener department, the monthly calculations of the average annual arsenic charging rate for the preceding 12-month period as determined under subparagraph (5)(f).

(8) Reporting Requirements.

- (a) Each owner or operator subject to the provisions of subparagraph (3)(c) shall:
1. Provide the Technical Secretary 30 days prior notice of the emission test required in subparagraph (5)(a) to afford the Technical Secretary the opportunity to have an observer present;

and

2. Submit to the Technical Secretary a written report of the results of the emission test required in subparagraph (5)(a) within 60 days after conducting the test.
- (b) Each owner or operator subject to the provisions of subparagraph (6)(a) shall provide the Technical Secretary at least 30 days prior notice of each reference opacity level determination required in subparagraph (6)(c) to afford the Technical Secretary the opportunity to have an observer present.
- (c) Each owner or operator subject to the provisions of subparagraph (6)(a) shall submit to the Technical Secretary:
1. Within 60 days after conducting the evaluation required in part 1. of subparagraph (6)(a), a written report of the continuous monitoring system evaluation;
 2. Within 30 days after establishing the reference opacity level required in subparagraph (6)(c), a written report of the reference opacity level. The report shall also include the opacity data used and the calculations performed to determine the reference opacity level, and sufficient documentation to show that process and emission control equipment were operating normally during the reference opacity level determination; and
 3. A written report each quarter of each occurrence of excess opacity during the quarter. For the purposes of this paragraph, an occurrence of excess opacity is any 1-hour period during which the average opacity, as measured by the continuous monitoring system, exceeds the reference opacity level established under subparagraph (6)(c).
- (d) The owner or operator subject to the provisions of subparagraph (6)(g) shall submit to the Technical Secretary:
1. A written report of the reference air flow rate within 30 days after establishing the reference air flow rates required in subparagraph (6)(g).
 2. A written report each quarter of all air flow rates monitored during the preceding 3-month period that are less than 80 percent of the corresponding reference flow rate established for each converter operating mode; and
 3. A written report each quarter of any changes in the operating conditions of the emission capture system, emission control device, or the building housing the converters that might increase fugitive emissions.
- (e) All quarterly reports shall be postmarked by the 30th day following the end of each 3-month period and shall include the following information:
1. The magnitude of each occurrence of excess opacity, any conversion factor(s) used, and the dates and times of commencement and completion of each occurrence of excess opacity, the cause of each exceedance of the reference opacity level, and

the measures taken to minimize emissions.

2. The magnitude of each occurrence of reduced flow rate and the date and time of commencement and completion of each occurrence of reduced flow rate, and the associated converter operating mode.
 3. The date and time identifying each period during which the continuous monitoring system or monitoring device was inoperative, except for zero and span checks, and the nature of the system repairs or adjustments.
 4. The date and time identifying each period during which the continuous monitoring system or monitoring device was inoperative, except for zero and span checks, and the nature of the system repairs or adjustments.
 5. Specific identification of each change in operating conditions of the emission capture system or control device, or in the condition of the building housing the converters.
- (f) Each owner or operator of a source subject to the provisions of this rule shall submit annually a written report to the Technical Secretary that includes the monthly computations of the average annual converter arsenic charging rate as calculated under part 4 of subparagraph (5)(f). The annual report shall be postmarked by the 30th day following the end of each calendar year.

Authority: T.C.A. §§68-201-105 and 4-5-202. Administrative History: Original rule filed September 21, 1988; effective November 6, 1988.

(1) Applicability and Designation of Sources

- (a) The provisions of this rule are applicable to each metallic arsenic production plant and to each arsenic trioxide plant that processes low-grade arsenic bearing materials by a roasting condensation process.

(2) Definitions

- (a) "Arsenic kitchen" means a baffled brick chamber where inorganic arsenic vapors are cooled, condensed, and removed in a solid form.
- (b) "Control device" means the air pollution control equipment used to collect particulate matter emissions.
- (c) "Curtail" means to cease operations to the extent technically feasible to reduce emissions.
- (d) "Inorganic arsenic" means the oxides and other noncarbon compounds of the element arsenic included in particulate matter, vapors, and aerosols.
- (e) "Malfunction" means any sudden failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner so that emissions of inorganic arsenic are increased.
- (f) "Opacity" means the degree to which emissions reduce the transmission of light.
- (g) "Primary emission control system" means the hoods, enclosures, ducts, and control devices used to capture, convey, and remove particulate matter from exhaust gases which are captured directly at the source of generation.
- (h) "Process emissions" means inorganic arsenic emissions that are captured and collected in a primary emission control system.
- (i) "Roasting" means the use of a furnace to heat arsenic plant feed material for the purpose of eliminating a significant portion of the volatile materials contained in the feed.
- (j) "Secondary emissions" means inorganic arsenic emissions that escape capture by a primary emission control system.
- (k) "Shutdown" means the cessation of operation of a stationary source for any purpose.

(3) Standards for New and Existing Sources

- (a) Within 30 days after November 6, 1988, the owner or operator of each source to which this rule applies shall identify and submit to the Technical Secretary a list of potential sources (equipment and operations) of inorganic arsenic emissions.
- (b) The owner or operator shall submit a description of an inspection, maintenance, and housekeeping plan for control of inorganic arsenic

emissions from the potential sources identified under subparagraph (a) of this paragraph. This plan shall be submitted within 90 days after November 6, 1988. Approval of the plan will be granted by the Technical Secretary provided he finds that:

1. It achieves the following objectives in a manner that does not cause adverse impacts in other environmental media:
 - (i) Clean-up and proper disposal, wet-down, or chemical stabilization to the extent practicable (considering access and safety) of any dry, dusty material having an inorganic arsenic content greater than 2 percent that accumulates on any surface within the plant boundaries outside of a dust-tight enclosure.
 - (ii) Immediate clean-up and proper disposal, wet-down, or chemical stabilization of spills of all dry, dusty material having an inorganic arsenic content greater than 2 percent.
 - (iii) Minimization of emissions of inorganic arsenic to the atmosphere during removal of inorganic arsenic from the arsenic kitchen and from flue pulling operations by properly handling, wetting down, or chemically stabilizing all dusts and materials handled in these operations.
2. It includes an inspection program that requires all process, conveying, and air pollution control equipment to be inspected at least once per shift to ensure that the equipment is being properly operated and maintained. The program will specify the evaluation criteria and will use a standardized checklist, which will be included as part of the plan required in subparagraph (b) of this paragraph, to document the inspection, maintenance, and housekeeping status of the equipment and that the objectives of part (b)1. of this subparagraph are being achieved.
3. It includes a systematic procedure for identifying malfunctions and for reporting them immediately to supervisory personnel.
4. It specifies the procedures that will be followed to ensure that equipment or process malfunctions due entirely or in part to poor maintenance or other preventable conditions do not occur.
5. It includes a program for curtailing all operations necessary to minimize any increase in emissions of inorganic arsenic to the atmosphere resulting from a malfunction. The program will describe:
 - (i) The specific steps that will be taken to curtail each operation as soon as technically feasible after the malfunction is discovered.
 - (ii) The minimum time required to curtail each operation.
 - (iii) The procedures that will be used to ensure that the curtailment continues until after the malfunction is corrected.

- (c) The owner or operator shall implement the plan required in subparagraph (b) of this paragraph until otherwise specified by the Technical Secretary.
 - (d) At all times, including periods of startup, shutdown, and malfunction, the owner or operator of each source to which this rule applies shall operate and maintain the source including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions of inorganic arsenic to the atmosphere to the maximum extent practicable. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Technical Secretary, which may include, but is not limited to, monitoring results, review of operating and maintenance procedures, inspection of the source, and review of other records.
- (4) Emission Monitoring
- (a) The owner or operator of each source subject to the provisions of this rule shall install, calibrate, maintain, and operate a continuous monitoring system for the measurement of the opacity of each arsenic trioxide and metallic arsenic process emission stream that exits from a control device.
 - (b) The owner or operator shall install, operate, and maintain each continuous monitoring system for the measurement of opacity required in subparagraph (a) of this paragraph according to the following procedures:
 - 1. Ensure that each system is installed and operational no later than 90 days after November 6, 1988 for an existing source or a new source that has an initial startup date preceding November 6, 1988. For a new source whose initial startup occurs after November 6, 1988, ensure that the system is installed and operational no later than 90 days after startup. Verification of the operations status shall, as a minimum, consist of an evaluation of the monitoring system in accordance with the requirements and procedures as specified in 1200-3-16-.01(8)(a).
 - 2. Except for zero and span drift adjustments required under 1200-3-16-.01(8)(d), and system breakdowns, repairs, and calibration checks, ensure that each continuous monitoring system is in continuous operation and meets frequency of operation requirements by completing a minimum of one cycle of sampling and analysis for each successive 10-second period and one cycle of data recording for each successive 6-minute period. Each data point shall represent the opacity measured for one cycle of sampling and analysis and shall be expressed as percent opacity.
 - (c) The owner or operator shall calculate 6-minute opacity averages from 36 or more consecutive data points equally spaced over each 6-minute period. Data recorded during periods of monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages computed under this subparagraph.
 - (d) No later than 60 days after each continuous opacity monitoring system required in subparagraph (a) of this paragraph becomes operational, the owner or operator shall establish a reference opacity level for each

monitored emission stream according to the following procedures:

1. Conduct continuous opacity monitoring over a preplanned period of not less than 36 hours during which the processes and emission control equipment upstream of the monitoring system are operating in a manner that will minimize opacity under representative operating conditions subject to the Technical Secretary's approval.
 2. Calculate 6-minute averages of the opacity readings using 36 or more consecutive data points equally spaced over each 6-minute period.
 3. Establish the reference opacity level by determining the highest 6-minute average opacity calculated under part (d)2. of this subparagraph.
- (e) With a minimum of 30 days prior notice, the Technical Secretary may require an owner or operator to redetermine the reference opacity level for any monitored emission stream.
- (f) Each owner or operator shall install all continuous monitoring systems or monitoring devices required in subparagraph (a) of this paragraph in such a manner that representative measurements of emissions or process parameters are obtained.
- (5) Ambient Air Monitoring for Inorganic Arsenic
- (a) The owner or operator of each source to which this rule applies shall operate a continuous monitoring system for the measurement of inorganic arsenic concentrations in the ambient air.
 - (b) The ambient air monitors shall be located at sites to detect maximum concentrations of inorganic arsenic in the ambient air in accordance with a plan approved by the Technical Secretary that shall include the sampling and analytical method used.
 - (c) The owner or operator shall submit a written plan describing, and explaining the basis for, the design and adequacy of the monitoring network, sampling and analytical procedures, and quality assurance within 45 days after November 6, 1988.
 - (d) Each monitor shall be operated continuously except for a reasonable time allowance for instrument maintenance and calibration, for changing filters, or for replacement of equipment needing major repair.
 - (e) Filters shall be changed daily and shall be analyzed and concentrations calculated within 30 days after filters are collected.
 - (f) The Technical Secretary at any time may require changes in, or expansion of, the sampling program, including sampling and analytical protocols and network design.
- (6) Record Keeping Requirements
- (a) Each owner or operator of a source subject to the provisions of this rule shall maintain at the source for a period of at least 2 years the following records: all measurements, including continuous monitoring

for measurement of opacity; all continuous monitoring system performance evaluations, including calibration checks and adjustments; all periods during which the continuous monitoring system or monitoring device is inoperative; and all maintenance and repairs made to the continuous monitoring system or monitoring device.

- (b) Each owner or operator shall maintain at the source for a period of at least 2 years a log for each plant department in which the operating status of process, conveying, and emission control equipment is described for each shift. For malfunctions and upsets, the following information shall be recorded in the log:
 - 1. The time of discovery.
 - 2. A description of the malfunction or upset.
 - 3. The time corrective action was initiated.
 - 4. A description of corrective action taken.
 - 5. The time corrective action was completed.
 - 6. A description of steps taken to reduce emissions of inorganic arsenic to the atmosphere between the time of discovery and the time corrective action was taken.
- (c) Each owner or operator subject to the provisions of this rule shall maintain for a period of at least 2 years records of 6-minute average opacity levels for each separate control device.
- (d) Each owner or operator subject to the provisions of paragraph (7) shall maintain for a period of at least 2 years records of ambient inorganic arsenic concentrations at all sampling sites and other data needed to determine such concentrations.

(7) Reporting Requirements

- (a) Each owner or operator subject to the provisions of subparagraph (4)(a) shall provide the Technical Secretary at least 30 days prior notice of each reference opacity level determination required in subparagraph (4)(a) to afford the Technical Secretary the opportunity to have an observer present.
- (b) Each owner or operator subject to the provisions of subparagraph (4)(a) shall submit to the Technical Secretary:
 - 1. Within 60 days of conducting the evaluation required in part 1. of subparagraph (4)(b), a written report of the continuous monitoring system evaluation;
 - 2. Within 30 days of establishing the reference opacity level required in subparagraph (4)(d), a written report of the reference opacity level. The report shall also include the opacity data used and the calculations performed to determine the reference opacity level, and sufficient documentation to show that process and emission control equipment were operating normally during the reference opacity level determination; and

3. A written report each quarter of each occurrence of excess opacity during the quarter. For the purposes of this paragraph, an occurrence of excess opacity is any 6-minute period during which the average opacity, as measured by the continuous monitoring system, exceeds the reference opacity level established under subparagraph (4)(d).
- (c) All quarterly reports of excess opacity shall be postmarked by the 30th day following the end of each quarter and shall include the following information:
1. The magnitude of excess opacity, any conversion factor(s) used, and the dates and times of commencement and completion of each occurrence of excess opacity, the cause of each exceedance of the reference opacity level, and the measures taken to minimize emissions.
 2. Specific identification of each period of excess opacity that occurred during startups, shutdowns, and malfunctions of the source.
 3. The date and time identifying each period during which the continuous monitoring system or monitoring device was inoperative, except for zero and span checks, and the nature of the system repairs or adjustments.
- (d) Each owner or operator subject to this rule shall submit a written report semiannually to the Technical Secretary that describes the status and results, for the reporting period, of any pilot plant studies on alternative arsenic trioxide production processes. Conclusions and recommendations of the studies shall also be reported.
- (e) All semiannual progress reports required in subparagraph (d) of this paragraph shall be postmarked by the 30th day following the end of each 6-month period.
- (f) Each owner or operator of a source to which this rule applies shall submit a written report each quarter to the Technical Secretary that includes the following information:
1. All ambient inorganic arsenic concentrations measured at all monitoring sites in accordance with paragraph (5) of this rule.
 2. A description of any modifications to the sampling network, during the reporting period, including any major maintenance, site changes, calibrations, and quality assurance information including sampling and analytical precision and accuracy estimates.
- (g) All quarterly reports required in subparagraph (f) of this paragraph shall be postmarked by the 30th day following the end of each quarter.

Authority: T.C.A. §§68-201-105 and 4-5-202. Administrative History: Original rule filed September 21, 1988; effective November 6, 1988.

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(RESERVED)

NATIONAL EMISSION STANDARDS FOR RADON EMISSIONS FROM DEPARTMENT OF ENERGY FACILITIES

- (1) Adopted herein by reference are the Federal regulations 40 CFR 61 Subpart Q as published in the December 15, 1989 edition of the Federal Register: **(See Paragraph (3) of this rule for test).**
- (2) Agreements regarding waivers, compliance reports, testing, and monitoring between the Department of Energy and the Environmental Protection Agency will be recognized by the Tennessee Division of Air Pollution Control providing these agreements are current, valid, and supported by appropriate documentation.
- (3) **40 CFR PART 61 - Subpart Q - National Emission Standards for Radon Emissions From Department of Energy Facilities**

Source: 54 FR 51701, Dec. 15, 1989, unless otherwise noted.

§61.190 Designation of facilities.

The provisions of this subpart apply to the design and operation of all storage and disposal facilities for radium-containing material (i.e., byproduct material as defined under section 11.e(2) of the Atomic Energy Act of 1954 (as amended)) that are owned or operated by the Department of Energy that emit radon-222 into air, including these facilities: The Feed Materials Production Center, Fernald, Ohio; the Niagara Falls Storage Site, Lewiston, New York; the Weldon Spring Site, Weldon Spring, Missouri; the Middlesex Sampling Plant, Middlesex, New Jersey; the Monticello Uranium Mill Tailings Pile, Monticello, Utah. This subpart does not apply to facilities listed in, or designated by the Secretary of Energy under title I of the Uranium Mill Tailings Control Act of 1978.

§61.191 Definitions.

- (a) As used in this subpart, all terms not defined here have the meaning given them in the Clean Air Act or Subpart A of Part 61. The following terms shall have the following specific meanings:
- (b) Facility means all buildings, structures and operations on one contiguous site.
- (c) Source means any building, structure, pile, impoundment or area used for interim storage or disposal that is or contains waste material containing radium in sufficient concentration to emit radon-222 in excess of this standard prior to remedial action.

§61.192 Standard.

No source at a Department of Energy facility shall emit more than 20 pCi/m²-s of radon-222 as an average for the entire source, into the air. This requirement will be part of any Federal Facilities Agreement reached between Environmental Protection Agency and Department of Energy.

§61.193 Exemption from the reporting and testing requirements of 40 CFR 61.10.

All facilities designated under this subpart are exempt from the reporting requirements of 40 CFR 61.10.

Authority: T.C.A. §§68-201-105 and 4-5-202 et seq. Administrative History:

Original rule filed August 14, 1995; effective October 28, 1995.