

[Code of Federal Regulations]
[Title 40, Volume 7, Parts 61 to 62]
[Revised as of April 1, 2000]
From the U.S. Government Printing Office via GPO Access
[CITE: 40CFR61]

TITLE 40--PROTECTION OF ENVIRONMENT CHAPTER I--ENVIRONMENTAL PROTECTION AGENCY

PART 61--NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS Subpart V--National Emission Standard for Equipment Leaks (Fugitive Emission Sources)

Source: 49 FR 23513, June 6, 1984, unless otherwise noted.

Sec. 61.240 Applicability and designation of sources.

- (a) The provisions of this subpart 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 subpart.
- (b) The provisions of this subpart apply to the sources listed in paragraph (a) after the date of promulgation of a specific subpart in part 61.
- (c) While the provisions of this subpart are effective, a source to which this subpart applies that is also subject to the provisions of 40 CFR part 60 only will be required to comply with the provisions of this subpart.

Sec. 61.241 Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act, in subpart A of part 61, or in specific subparts of part 61; and the following terms shall have specific meaning given them:

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.

Connector means flanged, screwed, welded, or other joined fittings used to connect two pipelines or a pipeline and a piece of equipment. For the purpose of reporting and record keeping, connector means flanged fittings that are not covered by insulation or other materials that prevent location of the fittings.

Control device means an enclosed combustion device, vapor recovery system, or flare.

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.

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 subpart.

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.

In gas/vapor service means that a piece of equipment contains process fluid that is in the gaseous state at operating conditions.

In liquid service means that a piece of equipment is not in gas/vapor service.

In-situ sampling systems means nonextractive samplers or in-line samplers.

In vacuum service means that equipment is operating at an internal pressure that is at least 5 kilopascals (kPa) below ambient pressure.

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 Sec. 61.245(d). The provisions of Sec. 61.245(d) also specify how to determine that a piece of equipment is not in VHAP service.

In VOC service means, for the purposes of this subpart, that (a) the piece of equipment contains or contacts a process fluid that is at least 10 percent VOC by weight (see 40 CFR 60.2 for the definition of volatile organic compound or VOC and 40 CFR 60.485(d) to determine whether a piece of equipment is not in VOC service) and (b) the piece of equipment is not in heavy liquid service as defined in 40 CFR 60.481.

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.

Pressure release means the emission of materials resulting from the system pressure being greater than the set pressure of the pressure relief device.

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.

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.

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.

Repaired means that equipment is adjusted, or otherwise altered to eliminate a leak.

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 subpart that references this subpart for existing sources.

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.

Stuffing box pressure means the fluid (liquid or gas) pressure inside the casing or housing of a piece of equipment, on the process side of the inboard seal.

Volatile hazardous air pollutant or VHAP means a substance regulated under this part for which a standard for equipment leaks of the substance has been proposed and promulgated. Benzene is a VHAP. Vinyl chloride is a VHAP.

[49 FR 23513, June 6, 1984; 49 FR 38946, Oct. 2, 1984, as amended at 51 FR 34915, Sept. 30, 1986; 54 FR 38076, Sept. 14, 1989]

Sec. 61.242-1 Standards: General.

- (a) Each owner or operator subject to the provisions of this subpart shall demonstrate compliance with the requirements of Secs. 61.242-1 to 61.242-11 for each new and existing source as required in 40 CFR 61.05, except as provided in Secs. 61.243 and 61.244.
- (b) Compliance with this subpart will be determined by review of records, review of performance test results, and inspection using the methods and procedures specified in Sec. 61.245.
- (c) (1) An owner or operator may request a determination of alternative means of emission limitation to the requirements of Secs. 61.242-2, 61.242-3, 61.242-5, 61.242-6, 61.242-7, 61.242-8, 61.242-9 and 61.242-11 as provided in Sec. 61.244.
(2) If the Administrator makes a determination that a means of emission limitation is at least a permissible alternative to the requirements of Sec. 61.242-2, 61.242-3, 61.242-5, 61.242-6, 61.242-7, 61.242-8, 61.242-9 or 61.242-11, an owner or operator shall comply with the requirements of that determination.
- (d) Each piece of equipment to which this subpart applies shall be marked in such a manner that it can be distinguished readily from other pieces of equipment.

- (e) Equipment that is in vacuum service is excluded from the requirements of Sec. 61.242-2, to Sec. 61.242-11 if it is identified as required in Sec. 61.246(e)(5).

[49 FR 23513, June 6, 1984; 49 FR 38946, Oct. 2, 1984]

Sec. 61.242-2 Standards: Pumps.

- (a) (1) Each pump shall be monitored monthly to detect leaks by the methods specified in Sec. 61.245(b), except as provided in Sec. 61.242-1(c) and paragraphs (d), (e), and (f) of this section.
- (2) Each pump shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal.
- (b) (1) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.
- (2) If there are indications of liquids dripping from the pump seal, a leak is detected.
- (c) (1) 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 Sec. 61.242-10.
- (2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
- (d) Each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of paragraphs (a) and (b) of this section, provided the following requirements are met:
- (1) 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 Sec. 61.242-11; or
 - (iii) Equipped with a system that purges the barrier fluid into a process stream with zero VHAP emissions to atmosphere.
- (2) The barrier fluid is not in VHAP service and, if the pump is covered by standards under 40 CFR part 60, is not in VOC service.
- (3) Each barrier fluid system is equipped with a sensor that will detect failure of the seal system, the barrier fluid system, or both.
- (4) Each pump is checked by visual inspection each calendar week for indications of liquids dripping from the pump seal.
- (i) If there are indications of liquid dripping from the pump seal at the time of the weekly inspection, the pump shall be monitored as specified in Sec. 61.245 to determine the presence of VOC and VHAP in the barrier fluid.
 - (ii) If the monitor reading (taking into account any background

readings) indicates the presence of VHAP, a leak is detected. For the purpose of this paragraph, the monitor may be calibrated with VHAP, or may employ a gas chromatography column to limit the response of the monitor to VHAP, at the option of the owner or operator.

- (iii) If an instrument reading of 10,000 ppm or greater (total VOC) is measured, a leak is detected.
- (5) Each sensor as described in paragraph (d)(3) of this section is checked daily or is equipped with an audible alarm.
- (6) (i) The owner or operator determines, based on design considerations and operating experience, criteria applicable to the presence and frequency of drips and to the sensor that indicates failure of the seal system, the barrier fluid system, or both.
 - (ii) If indications of liquids dripping from the pump seal exceed the criteria established in paragraph (d)(6)(i) of this section, or if, based on the criteria established in paragraph (d)(6)(i) of this section, the sensor indicates failure of the seal system, the barrier fluid system, or both, a leak is detected.
 - (iii) When a leak is detected, it shall be repaired as soon as practicable, but no later than 15 calendar days after it is detected, except as provided in Sec. 61.242-10.
 - (iv) A first attempt at repair shall be made no later than five calendar days after each leak is detected.
- (e) Any pump that is designated, as described in Sec. 61.246(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 paragraphs (a), (c), and (d) if the pump:
 - (1) Has no externally actuated shaft penetrating the pump housing,
 - (2) 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 Sec. 61.245(c), and
 - (3) Is tested for compliance with paragraph (e)(2) initially upon designation, annually, and at other times requested by the Administrator.
- (f) 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 Sec. 61.242-11, it is exempt from the requirements of paragraphs (a)-(e).
- (g) Any pump that is located within the boundary of an unmanned plant site is exempt from the weekly visual inspection requirement of paragraphs (a)(2) and (d)(4) of this section, and the daily requirements of paragraph (d)(5)(i) of this section, provided that each pump is visually inspected as often as practicable and at least monthly.

Sec. 61.242-3 Standards: Compressors.

- (a) 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 Sec. 61.242-1(c) and paragraphs (h) and (i) of this section.
- (b) Each compressor seal system as required in paragraph (a) shall be:
 - (1) Operated with the barrier fluid at a pressure that is greater than the compressor stuffing box pressure; or
 - (2) Equipped with a barrier fluid system that is connected by a closed-vent system to a control device that complies with the requirements of Sec. 61.242-11; or
 - (3) Equipped with a system that purges the barrier fluid into a process stream with zero VHAP emissions to atmosphere.
- (c) The barrier fluid shall not be in VHAP service and, if the compressor is covered by standards under 40 CFR part 60, shall not be in VOC service.
- (d) Each barrier fluid system as described in paragraphs (a)-(c) of this section shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.
- (e) (1) Each sensor as required in paragraph (d) 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.
 - (2) 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.
- (f) If the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined under paragraph (e)(2) of this section, a leak is detected.
- (g) (1) 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 Sec. 61.242-10.
 - (2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
- (h) A compressor is exempt from the requirements of paragraphs (a) and (b) 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 Sec. 61.242-11, except as provided in paragraph (i).
- (i) Any Compressor that is designated, as described in Sec. 61.246(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 paragraphs (a)-(h) if the compressor:

- (1) 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 Sec. 61.245(c); and
- (2) Is tested for compliance with paragraph (i)(1) initially upon designation, annually, and at other times requested by the Administrator.

[49 FR 23513, June 6, 1984; 49 FR 38946, Oct. 2, 1984]

Sec. 61.242-4 Standards: Pressure relief devices in gas/vapor service.

- (a) 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 Sec. 61.245(c).
- (b) (1) 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 Sec. 61.242-10.
(2) 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 Sec. 61.245(c).
- (c) 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 Sec. 61.242-11 is exempt from the requirements of paragraphs (a) and (b).

[49 FR 23513, June 6, 1984; 49 FR 38946, Oct. 2, 1984]

Sec. 61.242-5 Standards: Sampling connection systems.

- (a) Each sampling connection system shall be equipped with a closed-purge system or closed vent system, except as provided in Sec. 61.242-1(c).
- (b) Each closed-purge system or closed-vent system as required in paragraph (a) shall:
 - (1) Return the purged process fluid directly to the process line with zero VHAP emissions to atmosphere; or
 - (2) Collect and recycle the purged process fluid with zero VHAP emissions to atmosphere; or
 - (3) Be designed and operated to capture and transport all the purged process fluid to a control device that complies with the requirements of Sec. 61.242-11.

(c) In-situ sampling systems are exempt from the requirements of paragraphs (a) and (b).

Sec. 61.242-6 Standards: Open-ended valves or lines.

- (a) (1) Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve, except as provided in Sec. 61.242-1(c).
- (2) 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.
- (b) 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.
- (c) 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 paragraph (a) at all other times.

Sec. 61.242-7 Standards: Valves.

- (a) Each valve shall be monitored monthly to detect leaks by the method specified in Sec. 61.245(b) and shall comply with paragraphs (b)-(e), except as provided in paragraphs (f), (g), and (h) of this section, Sec. 61.243-1 or Sec. 61.243-2, and Sec. 61.242-1(c).
- (b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.
- (c) (1) 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.
- (2) If a leak is detected, the valve shall be monitored monthly until a leak is not detected for 2 successive months.
- (d) (1) 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 Sec. 61.242-10.
- (2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
- (e) First attempts at repair include, but are not limited to, the following best practices where practicable:
- (1) Tightening of bonnet bolts;
 - (2) Replacement of bonnet bolts;
 - (3) Tightening of packing gland nuts; and
 - (4) Injection of lubricant into lubricated packing.
- (f) Any valve that is designated, as described in Sec. 61.246(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 paragraph (a) if the valve:

- (1) Has no external actuating mechanism in contact with the process fluid;
- (2) Is operated with emissions less than 500 ppm above background, as measured by the method specified in Sec. 61.245(c); and
- (3) Is tested for compliance with paragraph (f)(2) initially upon designation, annually, and at other times requested by the Administrator.

(g) Any valve that is designated, as described in Sec. 61.246(f)(1), as an unsafe-to-monitor valve is exempt from the requirements of paragraph (a) if:

- (1) 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 paragraph (a); and
- (2) 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.

(h) Any valve that is designated, as described in Sec. 61.246(f)(2), as a difficult-to-monitor valve is exempt from the requirements of paragraph (a) if:

- (1) 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;
- (2) The process unit within which the valve is located is an existing process unit; and
- (3) The owner or operator of the valve follows a written plan that requires monitoring of the valve at least once per calendar year.

Sec. 61.242-8 Standards: Pressure relief devices in liquid service and flanges and other connectors.

(a) Pressure relief devices in liquid service and flanges and other connectors shall be monitored within 5 days by the method specified in Sec. 61.245(b) if evidence of a potential leak is found by visual, audible, olfactory, or any other detection method, except as provided in Sec. 61.242-1(c).

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

(c) (1) 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 Sec. 61.242-10.

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

(d) First attempts at repair include, but are not limited to, the best practices described under Sec. 61.242-7(e).

[49 FR 23513, June 6, 1984; 49 FR 38946, Oct. 2, 1984]

Sec. 61.242-9 Standards: 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 Sec. 61.242-11, except as provided in Sec. 61.242-1(c).

[49 FR 23513, June 6, 1984; 49 FR 38946, Oct. 2, 1984]

Sec. 61.242-10 Standards: Delay of repair.

(a) 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.

(b) Delay of repair of equipment for which leaks have been detected will be allowed for equipment that is isolated from the process and that does not remain in VHAP service.

(c) Delay of repair for valves will be allowed if:

- (1) 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
- (2) When repair procedures are effected, the purged material is collected and destroyed or recovered in a control device complying with Sec. 61.242-11.

(d) Delay of repair for pumps will be allowed if:

- (1) Repair requires the use of a dual mechanical seal system that includes a barrier fluid system, and
- (2) Repair is completed as soon as practicable, but not later than 6 months after the leak was detected.

(e) 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 of 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.

Sec. 61.242-11 Standards: Closed-vent systems and control devices.

- (a) Owners or operators of closed-vent systems and control devices used to comply with provisions of this subpart shall comply with the provisions of this section, except as provided in Sec. 61.242-1(c).
- (b) 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.
- (c) 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 deg.C.
- (d) Flares shall used to comply with this subpart shall comply with the requirements of Sec. 60.18.
- (e) Owners or operators of control devices that are used to comply with the provisions of this subpart shall monitor these control devices to ensure that they are operated and maintained in conformance with their design.
- (f)
 - (1) 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 as Sec. 61.245(c).
 - (2) Closed-event systems shall be monitored to determine compliance with this section initially in accordance with Sec. 61.05, annually, and at other times requested by the administrator.
 - (3) 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.
 - (4) A first attempt at repair shall be made no later than 5 calendar days after the leak is detected.
- (g) Closed-vent systems and control devices use to comply with provisions of this subpart shall be operated at all times when emissions may be vented to them.

[49 FR 23513, June 6, 1984; 49FR 38946, Oct. 2, 1984, as amended at 51 FR 2702, Jan. 21, 1986]

**Sec. 61.243-1 Alternative Standards for Valves in VHAP Service--
Allowable Percentage of Valves Leaking.**

- (a) An owner or operator may elect to have all valves within a process unit to comply with an allowable percentage of valves leaking of equal to or less than 2.0 percent.
- (b) The following requirements shall be met if an owner or operator decides to comply with an allowable percentage of valves leaking:
 - (1) An owner or operator must notify the Administrator 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 Sec. 61.247(d).

(2) A performance test as specified in paragraph (c) of this section shall be conducted initially upon designation, annually, and at other times requested by the Administrator.

(3) If a valve leak is detected, it shall be repaired in accordance with Sec. 61.242-7(d) and (e).

(c) Performance tests shall be conducted in the following manner:

(1) All valves in VHAP service within the process unit shall be monitored within 1 week by the methods specified in Sec. 61.245(b).

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

(3) 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.

(d) 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.

(e) If an owner or operator decides no longer to comply with Sec. 61.243-1, the owner or operator must notify the Administrator in writing that the work practice standard described in Sec. 61.242-7(a)-(e) will be followed.

Sec. 61.243-2 Alternative standards for valves in VHAP service--skip period leak detection and repair.

(a) (1) An owner or operator may elect for all valves within a process unit to comply with one of the alternative work practices specified in paragraphs (b)(2) and (3) of this section.

(2) An owner or operator must notify the Administrator before implementing one of the alternative work practices, as specified in Sec. 61.247(d).

(b) (1) An owner or operator shall comply initially with the requirements for valves, as described in Sec. 61.242-7.

(2) 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.

(3) 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.

(4) If the percentage of valves leaking is greater than 2.0, the owner or operator shall comply with the requirements as described in

Sec. 61.242-7 but may again elect to use this section.

Sec. 61.244 Alternative means of emission limitation.

- (a) Permission to use an alternative means of emission limitation under section 112(e)(3) of the Clean Air Act 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. limitation to test data for the equipment, design, and operational requirements.
 - (3) The Administrator 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 Administrator will compare the demonstrated emission reduction for the alternative means of emission limitation to the demonstrated emission reduction for the required work practices and will consider the commitment in paragraph (c)(4).
 - (6) The Administrator 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 subpart.
- (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 Administrator 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 subpart.

- (2) The Administrator will grant permission according to the provisions of paragraphs (b), (c), and (d).

Sec. 61.245 Test methods and procedures.

- (a) Each owner or operator subject to the provisions of this subpart shall comply with the test methods and procedures requirements provided in this section.
- (b) Monitoring, as required in Secs. 61.242, 61.243, 61.244, and 61.135, shall comply with the following requirements:
 - (1) Monitoring shall comply with Method 21 of appendix A of 40 CFR part 60.
 - (2) The detection instrument shall meet the performance criteria of Reference Method 21.
 - (3) The instrument shall be calibrated before use on 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 or monitored for no detectable emissions, the owner or operator shall comply with the following requirements:
 - (1) The requirements of paragraphs (b) (1) through (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(incorporated by the reference as specified in Sec. 61.18) shall be used.

- (2)(i) An owner or operator may use engineering judgment rather than the procedures in paragraph (d)(1) of this section to demonstrate that the percent VHAP content does not exceed 10 percent by weight, provided that the engineering judgment demonstrates that the VHAP content clearly does not exceed 10 percent by weight. When an owner or operator and the Administrator do not agree on whether a piece of equipment is not in VHAP service, however, the procedures in paragraph (d)(1) of this section 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 paragraph (d)(1) of this section.
 - (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) Method 22 of appendix A of 40 CFR part 60 shall be used to determine compliance of flares with the visible emission provisions of this subpart.
- (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:

[GRAPHIC] [TIFF OMITTED] TC15NO91.055

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 deg. C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20 deg. C.

K = Constant, 1.74×10^{-7} (1/ppm) (g mole/scm) (MJ/kcal) where standard temperature for (g mole/scm) is 20 deg. C

C_i = Concentration of sample component i in ppm, as measured by Reference Method 18 of Appendix A of 40 FR part 60 and ASTM D2504-67(reapproved 1977) (incorporated by reference as specified in Sec. 61.18).

H_i = Net heat of combustion of sample component i , kcal/g mole.

The heats of combustion may be determined using ASTM D2382-76 (incorporated by reference as specified in Sec. 61.18) 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 flow rate (in units of standard temperature and pressure), as determined by Reference Method 2, 2A, 2C, or 2D, 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

8.706 = Constant.

0.7084 = Constant.

H_T = The net heating value as determined in paragraph (e)(3) of this section.

[49 FR 23513, June 6, 1984, as amended at 49 FR 38946, Oct. 2, 1984; 49 FR 43647, Oct. 31, 1984; 53 FR 36972, Sept. 23, 1988; 54 FR 38077, Sept. 14, 1989]

Sec. 61.246 Record keeping requirements.

- (a) (1) Each owner or operator subject to the provisions of this subpart shall comply with the record keeping requirements of this section.
- (2) An owner or operator of more than one process unit subject to the provisions of this subpart may comply with the record keeping requirements for these process units in one record keeping system if the system identifies each record by each process unit.
- (b) When each leak is detected as specified in Secs. 61.242-2, 61.242-3, 61.242-7, 61.242-8, and 61.135, 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 Sec. 61.242-7(c) 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 Secs. 61.242-2, 61.242-3, 61.242-7, 61.242-8, and 61.135, 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 Sec. 61.245(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 Sec. 61.242-11 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 Sec. 61.242-11(e), 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 Secs. 61.242-2, 61.242-3, 61.242-4, 61.242-5 and 61.242-9 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 Secs. 61.242-2, 61.242-3, 61.242-4, 61.242-5 and 61.242-9.

(e) The following information pertaining to all equipment to which a standard applies 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 subpart.
- (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.

(ii) The designation of this equipment for no detectable emissions shall be signed by the owner or operator.
- (3) A list of equipment identification numbers for pressure relief devices required to comply with Sec. 61.242-4(a).

- (4) (i) The dates of each compliance test required in Secs. 61.242-2(e), 61.242-3(i), 61.242-4, 61.242-7(f), and 61.135(g).
 - (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 Sec. 61.242-7(g) and (h) 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 Sec. 61.243-2:
- (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 Secs. 61.242-2(d)(5), 61.242-3(e)(2), and 61.135(e)(4) 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 subpart and other specific subparts:
- (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.

Sec. 61.247 Reporting requirements.

- (a) (1) An owner or operator of any piece of equipment to which this subpart applies shall submit a statement in writing notifying the Administrator that the requirements of Secs. 61.242, 61.245, 61.246, and 61.247 are being implemented.
- (2) In the case of an existing source or a new source which has an initial startup date preceding the effective date, the statement is to be submitted within 90 days of the effective date, unless a waiver of compliance is granted under Sec. 61.11, along with the information required under Sec. 61.10. If a waiver of compliance is granted, the statement is to be submitted on a date scheduled by the Administrator.
- (3) In the case of new sources which did not have an initial startup date preceding the effective date, the statement shall be submitted with the application for approval of construction, as described in Sec. 61.07.
- (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 Administrator semiannually starting 6 months after the initial report required in paragraph (a) of this section 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 Sec. 61.242-7(b) of Sec. 61.243-2.
 - (ii) Number of valves for which leaks were not repaired as required in Sec. 61.242-7(d).
 - (iii) Number of pumps for which leaks were detected as described in Sec. 61.242-2 (b) and (d)(6).
 - (iv) Number of pumps for which leaks were not repaired as required in Sec. 61.242-2 (c) and (d)(6).
 - (v) Number of compressors for which leaks were detected as described in Sec. 61.242-3(f).
 - (vi) Number of compressors for which leaks were not repaired as required in Sec. 61.242-3(g).
 - (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 paragraph (a) if changes have occurred since the initial report or subsequent revisions to the initial report.

Note: Compliance with the requirements of Sec. 61.10(c) is not required for revisions documented under this paragraph.

- (5) The results of all performance tests and monitoring to determine compliance with no detectable emissions and with Secs. 61.243--1 and 61.243--2 conducted within the semiannual reporting period.
- (c) In the first report submitted as required in paragraph (a) of this section, 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 Secs. 61.243-1 and 61.243-2 shall notify the Administrator of the alternative standard selected 90 days before implementing either of the provisions.
- (e) An application for approval of construction or modification, Secs. 61.05(a) and 61.07, will not be required if:
- (1) The new source complies with the standard, Sec. 61.242;
 - (2) The new source is not part of the construction of a process unit; and
 - (3) In the next semiannual report required by paragraph (b) of this section, the information in paragraph (a)(4) of this section is reported.

[49 FR 23513, June 6, 1984, as amended at 49 FR 38947, Oct. 2, 1984; 54 FR 38077, Sept. 14, 1989]