

RCRA ORGANIC AIR EMISSIONS STANDARDS INSPECTOR & PERMIT WRITER TRAINING WORKSHOP

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BRIEF SHEET TOOL



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RCRA Subpart AA Regulations Applicable Units & Waste Streams

Facilities that treat, store or dispose of hazardous wastes must comply with Subpart AA standards if they use distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping to manage wastes with organic concentrations of at least 10 ppmw.

40 CFR §264.1030(a) & (b) and 40 CFR §265.1030(a) & (b)

Performance Standard/ Control Method 40 CFR §264/265.1032(a)(1)&(2)	Reduce total organic emissions from all affected process vents at the facility below 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 tons/yr) or, by use of a control device, reduce these emissions by 95 weight percent.
Applicability	Determination of vent emissions and emission reductions or total organic compound concentrations achieved by add-on engineering control devices are based on engineering calculations or performance tests.
Requirements	Performance tests must conform to the requirements of 40 CFR §264.1034(c) or 40 CFR §265.1034(c). When the operator and the Regional Administrator do not agree on determinations of emissions or emission reductions, based on engineering calculations, test procedures in 40 CFR §264.1034(c) or 40 CFR §265.1034(c) will be used to resolve the disagreement.
Performance Test Methods	• Method 2 for velocity • Method 18 for organic content See Brief Sheet AA - <i>Test Methods for Process Vents: Performance Tests</i>
Duration	• Three separate runs each for at least 1 hour. • When the unit is operating at the highest load or capacity reasonably expected. • The average of results of all runs computed on a time-weighted basis will apply.
Organic Mass Flow Rate Formula 40 CFR §264/265.1034(c)(1)(iv)	$E_h = Q_{2sd} \sum_{i=1}^n C_i MW_i [0.0416][10^{-6}]$

Recordkeeping & Reporting Compliance 40 CFR §264/265.1035(a) & (b)	• Multiple hazardous waste units can be addressed by one recordkeeping system. • Each record must be identified by hazardous waste management unit. • Identify all affected process vents (PV). • Location of each PV (map preferred). • Annual throughput of each PV. • Estimated emissions rate for each PV (including calculations and identification of representative worst case waste contacted). • Organic removal efficiency test plan (a.k.a. Source Test). See Brief Sheet AA - <i>Test Methods for Process Vents: Performance Tests</i> for details of content. • Add-on control device reductions for each PV (including engineering calculations or source test). • Documentation of monitoring systems as described in 40 CFR §264.1035(c) and 40 CFR §265.1035(c). • Overall facility total estimated emissions rate. • All information references used in preparing the documents – design analysis; – specifications; – drawings; – schematics; and – piping and instrumentation diagrams based on the appropriate sections of “APTI Course 415: Control of Gaseous Emissions” or other engineering texts. – control device manufacturer documentation that describes how the control device design may be used and recommended operation and maintenance. • Compliance tests, reports and dates.
Permit Application	• Documentation of compliance with PV standards. • Information on processes. • Information on emissions. • Information to determine applicability of specific regulation. • Performance test methods for determining organic concentrations and flow rates. • Performance test plan and/or results. • Documentation of engineering calculations for design or performance if required. • Documentation of monitoring systems as required.

- ◇ 40 CFR §60, Appendix A, EPA Methods 2 and 18 referenced in this brief sheet are available at <http://www.epa.gov/ttn/emc/promgate.html>.
- ◇ See [Section M, Subpart AA Process Vents, of the Checklist for Review of Federal RCRA Permit Applications \(Subpart AA Checklist\)](#) and 40 CFR §270.14(a), 40 CFR §270.24 for detailed requirements.

Example Inspector's Checklist for Applicability of Subpart AA

Objective: The Inspector should try to determine if Subpart AA applies at the facility. If applicable, evaluate the facility's efforts to achieve compliance.

1. Is facility a: LARGE QUANTITY GENERATOR INTERIM STATUS TSD PERMITTED TSD

IF NOT, DO NOT CONTINUE WITH THE RCRA AIR EMISSIONS CHECKLISTS

2(a). Does the facility have a hazardous waste management unit using the following processes?
 DISTILLATION FRACTIONATION THIN FILM EVAPORATION
 SOLVENT EXTRACTION AIR OR STEAM STRIPPING

IF NOT, PROCEED TO THE SUBPART BB CHECKLIST

IF YES, LIST EACH PROCESS VENT ASSOCIATED WITH ONE OF THE PROCESSES:

2(b). Are any of these processes exempt under the closed loop recycling exemption?
 YES NO If YES, explain:

2(c). Does the hazardous waste contain greater than 10 ppmw organics? YES NO

2(d). For process vents with a YES answer at 2(c), describe the waste(s), unit(s), and process(es):

2(e). Identify those process vents with a NO answer to 2(c) and describe the information / documentation used to make the determination (collect this information and submit to EPA):

3(a). Is total hourly emission rate of affected process vents greater than 3 lb/hr? YES NO
 AND

3(b). Is the facility-wide yearly emission rate greater than 3.1 tons/yr? YES NO

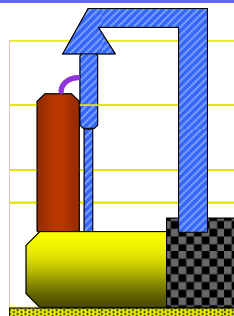
3(c). If the answer to 3(a) or 3(b) is NO, describe the calculations done by the facility to support this determination (provide copies of the calculations and associated information and submit to EPA):

Excerpt from [NCDENR Modified Version of Region II's Subpart AA, BB and CC Checklist](#)

RCRA Subpart AA Regulations

Equipment: Closed-Vent System

A Closed-Vent System (CVS) is one that is not open to the atmosphere and 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. Subpart AA applies to CVSs associated with distillation, fractionation, thin-film evaporation, solvent extraction, and air or steam stripping operations that handle hazardous waste with a total organic concentration of 10 ppmw or more. CVS must also comply with Subpart CC regulations so tanks, containers, service impoundments and miscellaneous units are also affected.



40 CFR §264.1031, 40 CFR §264/265.1030, 40 CFR §264/265.1033, 40 CFR §264/265.1080 and 40 CFR §264.1087/40 CFR §265.1088

Performance Standard/ Control Method	Positive Pressure System	Negative Pressure System
40 CFR §264.1033(k)(1)&(2) 40 CFR §265.1033(j)(1)&(2)	No detectable emissions defined as less than 500 ppmv above background.	Negative pressure maintained in system.
Monitoring Requirement 40 CFR §264.1033(l) 40 CFR §265.1033 (k)	Leak detection at system joints, seams, flanges, and welds.	Pressure measurement device.
Method	Method 21 (applied while the equipment is operating and contacting hazardous waste).	Monitoring of pressure measurement device.
Frequency	Annually	When device is operating
Inspection Requirement 40 CFR §264.1033(l) 40 CFR §265.1033 (k)	On or before the date the system becomes subject to transport (i.e., begins transporting of gas or vapor to a control device).	
Frequency	At least once per year or when requested by the Regional Administrator (unless portions of the system are deemed unsafe to monitor).	
Visual Inspection	All system components and connections such as joints, seams, flanges, and welds must be visually inspected for leaks. Use sensory observation (e.g., sight, sound, smell) as a guide.	

Recordkeeping & Reporting Compliance 40 CFR §264.1033(l)(1)(iv), (2)(iv)&(3)(iv) 40 CFR §265.1033(k)(1)(iv), (2) (iv) &(3)(iv)	Design documentation from the Part B permit application, records with dates of performance tests, and records detailing leak detection information. This information is normally found in the facility operating log and/or in annual inspection reports/logs. Inspection reports/logs should include dates, times, wastes being processed at time of inspection, calibration information such as calibration gases used, etc. (see information at end of this brief sheet).
Permit Application	• Identify closed-vent systems and map location. • Describe procedures implemented to ensure compliance with Subpart AA. • Documentation of compliance with process vent standards (See Brief Sheet AA - <i>Applicable Units & Waste Streams, Recordkeeping & Reporting</i> for a detailed list of documents demonstrating compliance). • Information on processes (see the facility operating record). • Information on emissions (see performance test documents, air permits, etc.). • Information to determine applicability of specific regulation. • Performance test methods for determining organic concentrations and flow rates. • Performance test plan and/or results. • Documentation of engineering calculations for design or performance if required. • Documentation of monitoring systems as required.

- ◇ 40 CFR §60, Appendix A, EPA Method 21 and other methods referenced in this brief sheet are available at <http://www.epa.gov/ttn/emc/promgate.html>
- ◇ Refer to 40 CFR §270.24 and [Section M of the Subpart AA Checklist for detailed requirements.](#)

What a regulator should see in:

The Permit Application

CVSs are identified and located on Piping and Instrumentation Diagrams, photographs or similar documents and given a unique identification number along with the hazardous waste management unit identification. These drawings are maintained at the facility and are subject to change. If a CVS is removed, added or replaced, the changes are incorporated into the drawings, equipment is assigned identification numbers as appropriate and the information is placed into the plant VOC database prior to return to hazardous waste service. Instrument calibration information is also maintained in the operating record. The instrument serial number used during an inspection can then be referenced to the VO data in the database.

The Operating Log and the Permit Application

For each CVS which manages hazardous waste provide in an operational log:

- A. Provide equipment identification number and hazardous waste unit identification;
- B. Location provided within facility;
- C. Type of equipment;
- D. Percent by weight total organics in waste stream at equipment;
- E. Hazardous waste state at equipment (e.g., gas/vapor or liquid); and
- F. Method of compliance.
- G. Comments

When a leak is detected, the following information is recorded in an inspection log and maintained in the operating record:

- A. The monitoring instrument, equipment and operator identification numbers;
- B. The date evidence of the leak was found;
- C. The date the leak was detected (confirmed) and the date of each attempt to repair the leak;
- D. The methods used in each attempt to repair the leak;
- E. "Repair Delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after a leak was discovered;
- F. Documentation supporting the delay of repair;
- G. The signature of the area manager who decided that repair could not be implemented without a hazardous waste management unit shutdown;
- H. The expected date of successful repair of the leak if it is not repaired within 15 calendar days; and
- I. The date of successful repair of the leak.
- J. Comments

Records for the monitoring instruments:

- A. The monitoring and equipment shall be as required in 40 CFR Part 60 [.05(28)(n)2.(i) and (ii)];
- B. The instruments shall be calibrated before use on each day in accordance with Method 21.[.05(28)(n)2.(iii)]; and
- C. Calibration gases shall be [.05(28)(n) 2.(iv)]:
 - I. Zero air (>10 ppm of hydrocarbon in air)
 - II. A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm.
- D. Comments.

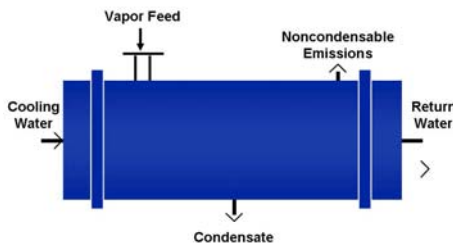
Excerpt from [NCDENR Modified Version of Region II's Subpart AA, BB and CC Checklist](#)

RCRA Subpart AA Regulations Vapor Recovery Device: Condenser

A condenser can be used to recover the organics from a process vent on affected units using closed vent systems and control devices.

40 CFR §264.1033(b)

40 CFR §265.1033(b)



Performance Standard/ Control Method 40 CFR §264/265.1033(b)	Recover the organic vapors vented to the control device with an efficiency of 95 weight percent or greater. This must be maintained unless the affected process vents at the facility can be maintained at less than 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 tons/yr) if the vapor recovery device is operating at efficiency less than 95 weight percent. The device must be operating at all times when emissions may be vented to them.	
Monitoring Requirement 40 CFR §264/265.1033(f)(1) & (f)(2)	A flow indicator sensor must be installed in the vent stream at the nearest feasible point to the control device inlet but before the point at which any vent streams are combined. The flow from the process vent to the condenser must be recorded at least once an hour. Also, control device operation must be monitored.	
Method 40 CFR §264/265.1033(f)(2)(vi) (A) & (B)	Organics concentration monitoring device equipped with a continuous recorder	Temperature monitoring device equipped with continuous reader. Must operate with an accuracy of $\pm 1\%$ °C of the temp being monitored or $\pm 0.5^\circ\text{C}$
Location	Exhaust vent stream from the condenser.	
Frequency	Continuously recorded by a device that takes a reading at least once every 15 minutes.	
Inspection Requirement 40 CFR §264/265.1033(f)((2) (vi) and (f)(3) 40 CFR §264.1087(c)(7) 40 CFR §265.1088(c)(7)	Condenser must be maintained and operated according to the manufacturer's specifications. Inspector should ask to see monitoring records, daily inspection logs, maintenance records, and manufacturer's design specifications. Ask for the manufacturer's information, the monitoring records, daily inspection logs, and maintenance records. Monitoring records should be checked against the manufacturer's specifications and maintenance records for the unit. Compare to determine that records are complete and completed in a timely manner.	

Example Inspector's Checklist for Condensers Covered by Subpart AA

A. Did facility install a condenser to reduce emissions?	YES	NO
B. Describe the condenser:		
C. Do the design calculations/analyses seem reasonable?	YES	NO
D. Are design calculations/analyses current?	YES	NO
E. Are facility operating hours correct?	YES	NO
F. Were worst case scenarios considered?	YES	NO
G. Comments:		
H. Is condenser inspected and monitored at least once each operating day?	YES	NO
I. Is there indication of a problem with the condenser?	YES	NO
J. In the case of problems were corrective measures implemented immediately?	YES	NO

Excerpt from [NCDENR Modified Version of Region II's Subpart AA, BB and CC Checklist](#)

RCRA Subpart AA Regulations
Control Device: Vapor Recovery Devices, Carbon Adsorption Systems

A carbon adsorption system can be used to recover the organics from a process vent on affected units using closed vent systems and control devices.

40 CFR §264.1033(b) and 265.1033(b)



Performance Standard/ Control Method 40 CFR §264/265.1033(b)	Recover organic vapors vented to it with an efficiency of 95 weight percent or greater. <i>(If operating at less than above efficiency, the total organic emission for all of the affected process vents at the facility must be maintained at less than 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 tons/yr).</i>	
Monitoring 40 CFR §264/265.1033(f)(1) & (f)(2)	A flow indicator sensor must be installed in the vent stream at the nearest feasible point to the carbon adsorption system inlet but before the point at which any vent streams are combined. The flow from the process vent to the carbon adsorption system must be recorded at least once an hour. Also, control device operation must be monitored.	
Requirement	Fixed-bed Carbon Absorber	Carbon Canister
	Install a continuous recorder for monitoring. A continuous recorder takes a reading at least once every 15 minutes.	Must replace the existing carbon in the control device with fresh carbon on a regular basis.
Method 40 CFR §264/265.1033(f)(2)(vii) & (h)	• Monitor the organic concentration in the exhaust vent stream from carbon bed, or • Measure a parameter that indicates the carbon bed is regenerated on a regular predetermined cycle. (Example parameter: organic concentration of the effluent from the adsorber).	• Monitor organic compounds in the exhaust vent stream from the carbon adsorption system and replace existing carbon with fresh carbon immediately upon carbon breakthrough. • Replace existing carbon with fresh carbon at a pre-determined time interval that is less than the design interval (no monitoring device).

Carbon Replacement Frequency <i>40 CFR §264/265.1033(g) & (h)</i>	The carbon in a fixed bed carbon adsorber regenerated on site must be replaced at a regular, predetermined interval that is no longer than the carbon service life established by <i>40 CFR §264.1035(b)(4)(iii)(F)</i> .	Daily or at an interval no greater than 20% of the time required to consume the total carbon working capacity in <i>40 CFR §264.1035(b)(4)(iii)(G)</i>, whichever is greater.
Inspection Requirement <i>40 CFR §264/265.1033(f)(3)</i>	Inspect the readings from each monitoring device.	
Frequency	Once each operating day.	
Recordkeeping & Reporting Compliance <i>40 CFR §264/265.1035(b)(4)(F) & (G)</i> <i>40 CFR §264/265.1035(c)(4)(viii) & (ix)</i> <i>40 CFR §264/265.1035(c)(5-8)</i>	Design documentation, records with dates of performance tests, and records detailing leak detection information.	
Permit Application	- Documentation of compliance with process vent standards (See Brief Sheet AA - <i>Applicable Units & Waste Streams, Recordkeeping & Reporting</i> for a detailed list of documents demonstrating compliance). - Information on processes. - Information on emissions. - Information to determine applicability of specific regulation. - Performance test methods for determining organic concentrations and flow rates. - Performance test plan and/or results. - Documentation of engineering calculations for design or performance if required. - Documentation of monitoring systems as required.	

- ◇ All carbon that is hazardous waste that is removed from a carbon adsorption system must be managed appropriately per *40 CFR §264.1033(n)* and *40 CFR §265.1033(m)*.
- ◇ Refer to *40 CFR §270.24* and [Section M of the Subpart AA Checklist](#) for detailed requirements.

Recordkeeping & Reporting Compliance	Design documentation, records with dates of performance tests, and records detailing leak detection information.
Permit Application	• Documentation of compliance with process vent standards (See Brief Sheet AA - <i>Applicable Units & Waste Streams, Recordkeeping & Reporting</i> for a detailed list of documents demonstrating compliance). • Information on processes. • Information on emissions. • Information to determine applicability of specific regulation. • Performance test methods for determining organic concentrations and flow rates. • Performance test plan and/or results. • Documentation of engineering calculations for design or performance if required. • Documentation of monitoring systems as required.

- ◇ 40 CFR §60, Appendix A
- ◇ Refer to 40 CFR §270.24 and [Section M of the Subpart AA Checklist](#) for detailed requirements.

RCRA Subpart AA Regulations

Control Device: Boiler or Process Heater

Boiler or process heater can be used to destroy the organics from a process vent on affected units using closed vent systems and control devices.

40 CFR §264.1033(c) and 265.1033(c)



Firetube Boiler

Performance Standard/ Control Method 40 CFR §264/265.1033(c)	1. Reduce the organic emissions vented to it by 95 weight percent or greater. 2. Achieve a total organic compound concentration of 20 ppmw, expressed as the sum of actual compounds, not carbon equivalents, on a dry basis corrected to 3% oxygen; or 3. Provide minimum residence time of 0.5 seconds at a minimum temperature of 760°C (1,400°F). <i>Vent stream from closed-vent system must be introduced directly into the flame combustion zone of the boiler/process heater.</i>	
Monitoring Requirement 40 CFR §264/265.1033(f)	Capacity < 44 MW	Capacity ≥ 44 MW
	Temperature monitoring device with an accuracy of ±1% of the temperature being monitored in °C or ±0.5°C, whichever is greater.	Continuous monitoring of a parameter(s) that indicates good combustion operating practices. Examples include: CO, O ₂ , THC.
Method	Continuous Recorder with sensor installed at a location in the furnace downstream of the combustion zone.	Continuous recorder
Frequency	Continuously recorded by a device that takes a reading at least once every 15 minutes.	
Inspection Requirement 40 CFR §264/265.1033(f)(2)(iv) & (v)	All devices must be installed, calibrated, operated and maintained according to the manufacturer's specifications. Ask for the manufacturer's information, the monitoring records, daily inspection logs, and maintenance records. Monitoring records should be checked against the manufacturer's specifications and maintenance records for the unit. Compare to determine that records are complete and completed in a timely manner. Determine if corrective actions are taken promptly.	

Frequency	Continuous monitor's readings must be inspected daily.
Recordkeeping & Reporting Compliance 40 CFR §264/265.1035(b)(4)(C) 40 CFR §264/265.1035(c)(4)(iv) 40 CFR §264/265.1035(c)(5) & (c)(8)	Design documentation, records with dates of performance tests, and records detailing leak detection information.
Permit Application	• Documentation of compliance with process vent standards (See Brief Sheet AA - <i>Applicable Units & Waste Streams, Recordkeeping & Reporting</i> for a detailed list of documents demonstrating compliance). • Information on processes. • Information on emissions. • Information to determine applicability of specific regulation. • Performance test methods for determining organic concentrations and flow rates. • Performance test plan and/or results. • Documentation of engineering calculations for design or performance if required. • Documentation of monitoring systems as required.

- ◇ 40 CFR §60, Appendix A
- ◇ Refer to 40 CFR §270.24 and [Section M of the Subpart AA Checklist](#) for detailed requirements.

RCRA Subpart AA Regulations

Control Device: Flares

A flare can be used to destroy the organics from a process vent on affected units using closed vent systems and control devices.

40 CFR §264.1033(d) and 40 CFR §265.1033(d)



Performance Standard/Control Method 40 CFR §264/265.1033(d)	A flare shall have no visible emissions except for periods not to exceed a total of 5 minutes during any consecutive 2 hours. A flare shall be operated with a flame present at all times. Steam-Assisted and Air-Assisted: Net heating value of gas being combusted must be 11.2 MJ/scm (300 BTU/scf) or greater. Non-assisted: Net heating value of gas being combusted must be 7.45 MJ/scm (200 BTU/scf) or greater. <i>A steam-assisted or non-assisted flare must have an exit velocity of <18.3 m/s (60 ft/sec) except when the net gas heating value is >37.3 MJ/scm (1,000 BTU/scf) it may be >18.3 m/s (60 ft/sec) but < 122 m/sec (400 ft/sec). An air-assisted flare shall be operated with an exit velocity less than $V_{max} = 8.706 + 0.7084(H_T)$ as described in 40 CFR §264.1033(e)(5) and 40 CFR §265.1033(e)(5).</i>	
Monitoring Requirement	No visible emissions	Flame present at all times
Method	Method 22	Heat sensing monitor device equipped with a continuous recorder that indicates continuous ignition of the pilot flame. A continuous recorder takes a reading at least once every 15 minutes.
	Flow indicator must be installed and provide a record of vent stream flow from each affected process vent to the control device.	
Frequency	At least once an hour.	

- ◇ Refer to Reference Methods 2, 2A, 2C, or 2D in 40 CFR §60 Appendix A for assistance in calculating net heating value and velocity/exit velocity.
- ◇ EPA Method 22 is available at www.epa.gov/ttn/emc/promgate.html
- ◇ ASTM D 1946-82 is used to determine concentration of component i , C_i , for hydrogen and carbon monoxide.
- ◇ The heat of combustion, H_i , may be determined using ASTM D 2382-83 if published values are not available or a value cannot be calculated.
- ◇ Refer to 40 CFR §270.24 and [Section M of the Subpart AA Checklist](#) for detailed requirements.

RCRA Subpart AA Regulations

Recordkeeping and Reporting

Recordkeeping for applicable units must comply with *40 CFR §264/265.1035*. An operator of more than one unit subject to Subpart AA may comply with the requirements in one recordkeeping system if the system identifies each record by each hazardous waste management unit.

40 CFR §264/265.1035(a)(2)

Facility Information <i>40 CFR §264/265.1035(b)</i>	• Implementation schedule, if necessary • Affected process vents • Data and information on the annual throughput • Operating hours of each affected vent • Estimated emission rates for the overall facility • Approximate location of each vent within the facility as depicted on a map or figure • Information supporting determinations of vent emissions and emission reductions achieved by add-on control devices
Performance Test Plans <i>40 CFR §264/265.1035(b)(3)</i>	• Performance testing procedures • Detailed engineering description • Manufacturer's name and model number of each device • Type of control device, dimensions, capacity, and construction materials • Detailed description of sampling and analysis procedures including sampling and locations in the system • Sampling and monitoring equipment to be used • Sampling and monitoring frequency • Planned analytical procedures for sample analysis
Compliance Documentation <i>40 CFR §264/265.1035(b)(4)</i>	• List of references and sources used to prepare documentation • All test results if performance tests are used to demonstrate compliance • Dates of all each compliance test • A design analysis based on APTI Course 415: Control of Gaseous Emissions

Design Documentation for Closed-Vent System and/or Control Device 40 CFR §264/265.1035(c)	• Must include description and date of each modification and kept up-to-date • Identification of each operating parameter • Description of each monitoring device and diagram of each monitoring sensor location • Date, time, and duration of each period that control device operates with a parameter exceeding the level established in the design analysis • For each period recorded, explain why the parameter exceeded its design value • Date of each control device startup and shutdown • Unsafe to monitor components – Record of components designated as unsafe to monitor in a log and explanation stating why unsafe to monitor – Plan to monitor each component designated unsafe
Leak Detection 40 CFR §264/265.1035(c)(10)	• Identification number for the instrument and the closed-vent system • Operator name, initials or identification number • Date leak was repaired (including date of first attempt repair and the date of successful repair of the leak) • Maximum instrument reading after leak repaired or determined to be non-repairable using Method 21 (applied while the equipment is operating and contacting hazardous waste) • If repair was not completed within 15 calendar days, reason for delay must be recorded
Reporting Requirements 40 CFR §264/265.1036	• Semiannual report must be submitted to the Regional Administrator including EPA identification number, facility name, and facility address • If no control devices exceeded or operated outside of the requirements, then no report is necessary • For each month a control device exceeded or operated outside of requirements, the report must include duration and cause of exceeding and any corrective action taken

- ◇ For compliance determinations and determinations of vent emissions and emission reductions, operating parameter values representing conditions that result in the maximum organic emissions must be used. If actions are taken that will increase the organic emissions from affected process units, new determinations must be made.
- ◇ If engineering calculations are used to demonstrate compliance, a design analysis including specifications, drawings, schematics, and P&IDs based on appropriate sections of APTI Course: Control of Gaseous Emissions or other engineering texts acceptable to the Regional Administrator must be provided. Information provided by the manufacturer or vendor of the control device may be used if it complies with paragraphs (b)(4)(iii)(A) through (b)(4)(iii)(G) [40 CFR §264/265.1035(b)(4)(iii)]. See the AA Brief Sheets for vapor incinerators; boilers and process heaters; flares; condensers; and carbon adsorption systems. 40 CFR §60, Appendix A, EPA Method 21 is available at <http://www.epa.gov/ttn/emc/promgate.html>.
- ◇ EPA SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods is one source for sampling and analytical methods applicable to performance testing. SW-846 is available on-line at: <http://www.epa.gov/sw-846/main.htm>.
- ◇ Refer to 40 CFR §270.24 and [Section M of the Subpart AA Checklist](#) for detailed requirements.

RCRA Subpart AA Regulations

Test Methods for Process Vents: Performance Tests

Performance tests may be used to determine if a facility is meeting the requirement of maintaining total organic air emissions from affected process vents below 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 tons/yr) and achieving 20 ppmw limit in enclosed combustion devices.

40 CFR §264.1034 and 40 CFR §265.1034



Performance Standard/ Control Method	Performance tests must conform to the requirements outlined in 40 CFR §264.1034 and 40 CFR §265.1034.	
No Detectable Emissions	Compliance with no detectable emissions for a closed-vent system using Method 21 (applied while the equipment is operating and contacting hazardous waste).	
Requirement 40 CFR §264/265.1034(b)	Arithmetic difference between the maximum concentration at the leak interface and the background shall be less than 500 ppm.	
Performance Tests Requirement 40 CFR §264/265.1034(c)	Total organic compound concentrations	Volumetric flow rates entering or exiting control devices
Method	Method 18 or Method 25A	Method 2
Calculation of Organic Mass Flow Rate 40 CFR §264/265.1034(c)(1)(iv)-(vi)	Average results from 3 separate runs; each run lasts at least 1 hour with unit operating at the highest load or capacity expected to occur. Averages computed on a time-weighted basis. When using Method 18, unit-specific total organic mass flow rate, Kg/hr is calculated as: (variables are defined in citation) $E_h = Q_{2sd} \left[\sum_{i=1}^n C_i MW_i \right] [0.0416] [10^{-6}]$ When using Method 25A, unit-specific total organic mass flow rate, Kg/hr is calculated as: $E_h = (Q) (C) (MW) (0.0416) (10^{-6})$ Annual total organic emission rate for a unit is given by: $E_A = (E_h)(H)$	

	Total organic emissions from all affected process vents shall be determined by summing the unit-specific hourly total organic mass emission rates and unit-specific annual total organic emission rates.	
Responsibility	The owner/operator must ensure that appropriate sampling ports, safe sampling platforms, safe access to sampling platforms and utilities necessary for implementation.	
Frequency	When any action that would result in an increase in total organic emissions from affected process vents at the facility (e.g., changes to the managed wastes, changes in equipment or operating parameters of the unit).	
Determination of Total Organic Concentration <i>40 CFR §264/265.1034(d)</i>	To demonstrate that a process vent is not subject to Subpart AA, show that the wastes handled in the hazardous waste management unit have a time-weighted annual average total organic concentration less than 10 ppmw. Use direct measurement or process knowledge. <i>40 CFR §264.1034(d)</i> and <i>40 CFR §265.1034(d)</i> .	
	<u>Direct Measurement</u> • Minimum of 4 grab samples of each waste managed in the unit. • Onsite wastes: take samples at a location before waste exposed to the atmosphere. • Offsite wastes: take samples at the inlet of the onsite waste management unit that first receives the waste. • Samples analyzed and concentration computed by Method 9060A. • The arithmetic mean of the 4 samples used to determine the time-weighted annual average total organic concentration of the waste. The time-weighted average shall be based on the annual	<u>Process Knowledge</u> Examples include: • Production information documenting that no organic compounds are used. • Waste generated by a process identical to one previously shown by direct measurement as having a total organic content < 10 ppmw. • Speciation results on a waste showing no process changes have occurred since previous analyses were performed that could affect the total organic concentration of the waste.

Requirements	quantity and the mean organic concentration of each waste stream managed in the unit.	
Frequency 40 CFR §264/265.1034(e)	- The determination shall be made by the date that the facility falls subject to Subpart AA or the date that waste is first managed in a waste management unit. - Annually for continuously generated waste. - After any change in the managed waste or a change in the process that generates or treats the waste.	
Recordkeeping and Reporting	Process information is necessary to determine the conditions during the performance tests (i.e. operating temp, flow rate, or pressure). (See Brief Sheet AA - <i>Applicable Units & Waste Streams, Recordkeeping & Reporting</i> for a detailed list of documents demonstrating compliance.)	
Compliance		
Permit Application	Description of all tests including procedures, equipment, data, data analyses, and conclusions drawn performed in demonstrating compliance with Subpart AA requirements. Performance test plan per 40 CFR §264/265.1035(b)(3)(ii).	

- ◇ 40 CFR §60, Appendix A EPA Method 18, [21](#), [25A](#) and other EPA Methods are available at <http://www.epa.gov/ttn/emc/promgate.html>.
- ◇ For determining no detectable emissions, monitoring shall conform with [Method 21](#) and the detection instrument shall comply with the performance criteria in the method. The instrument shall be calibrated before use each date according to the procedures outlined in the method. Calibration gases shall be zero air (i.e., less than 10 ppm of hydrocarbon in air) and a mixture of methane or n-hexane and air with a concentration of approximately, but less than, 10,000 ppm methane or hexane. The background level shall be determined as described in [Method 21](#). The instrument probe shall be traversed AS CLOSE AS POSSIBLE around ALL potential leak surfaces. Compliance is determined by comparing the difference between the maximum concentration indicated on the instrument and the background level. Differences less than 500 ppm represent no detectable emissions.
- ◇ For Method [25A](#), the calibration HAP must be the single organic HAP representing the largest percent by volume of the emissions.
- ◇ Method 9060A is available in EPA SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. SW-846 is available on-line at: <http://www.epa.gov/sw-846/main.htm>.

RCRA Subpart AA Regulations Exemptions

Exemptions from Subpart AA requirements include those facilities exempt from RCRA under 40 CFR §264.1(g) and those exempt from Subpart AA under 40 CFR §264.1030(d) & (e). The specific exemptions include process vents which are directly subject to process vent requirements of certain Clean Air Act (CAA) regulations requiring unit-specific control of volatile organic emissions. CAA exemptions cannot be assumed just because a facility has a Title V Air Permit or is subject to CAA regulations related to volatile organic emissions. CAA regulations tend to not require emissions controls until emissions exceed an annual emission level (e.g., Benzene NESHAP, 11 Mega tons/year) and not be unit specific (i.e., emissions are averaged over the entire facility or “bubbling”, only specified hazardous air pollutants). Unless controls are installed and operating on the unit subject to Subpart AA (and CAA regulations), the unit is not exempted by the CAA. Research/consultation with the Air Program will likely be required to determine if a CAA exemption is valid.

Subpart AA General Exemptions 40 CFR §264.1030(e) 40 CFR §265.1030(d)	Process vents that would otherwise be subject to this subpart are equipped with and operating air emission controls in accordance with the process vent requirements of an applicable CAA regulation under 40 CFR §§60, 61, or 63.
Subpart AA Specific Exemption 40 CFR §264.1030(d) 40 CFR §265.1030(c)	Process vents in the Stonewall pharmaceutical plant which are covered under the plant's CAA permit.
Recordkeeping and Reporting Compliance	Owner or operator must certify to and keep documentation of compliance with the CAA regulations in the facility operating record.

- ◇ Refer to 40 CFR §270.24 and [Section M of the Subpart AA Checklist](#) for detailed requirements.

RCRA Subpart AA Regulations
Process Vents

Subpart AA standards regulate organic air emissions from process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations at hazardous waste treatment, storage, and disposal facilities (TSDFs) managing hazardous wastes with organic concentrations of at least 10 ppmw.
40 CFR §264.1030(b) and 40 CFR §265.1030(b)

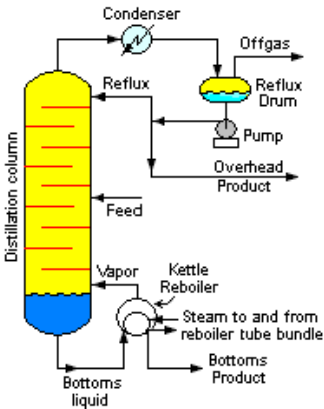


**Performance
Standard/ Control
Method**

40 CFR
§264/265.1032(a)

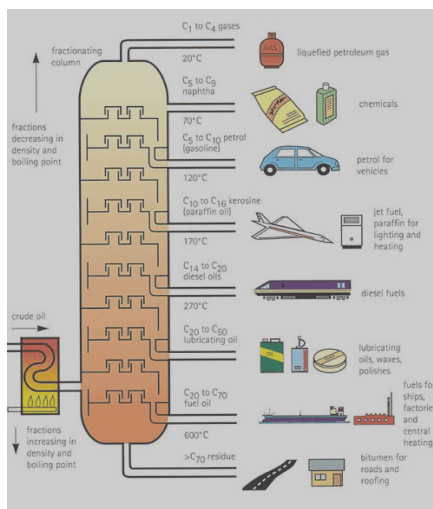
Reduce total organic emissions from all affected process vents at the facility below 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 tons/yr) or reduce total organic emissions from all affected process vents at the facility by 95%.

Either a batch or continuous process for separating one or more feed streams into two or more exit streams each of which has a composition different from the feed.



Distillation

A distillation operation used to separate a mixture of several volatile components of different boiling points in successive stages, each stage removing from the mixture some proportion of one of the components.



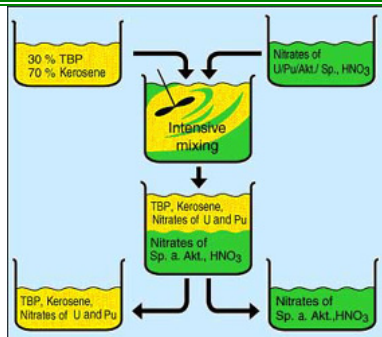
Fractionation

A distillation operation that employs a heating surface which promotes heat transfer by distributing a thin layer of liquid on one side of the metal while applying heat on the other side.

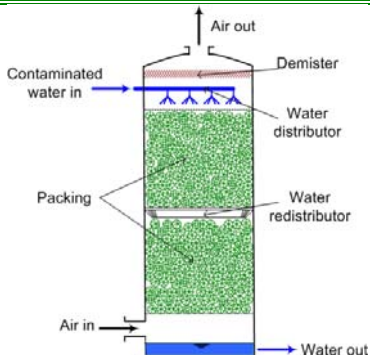


Thin-Film Evaporation

A method of separation in which a solid or solution is contacted with a liquid solvent to preferentially dissolve and transfer one or more components into the solvent.



Solvent Extraction

Air or Steam Stripping	A distillation operation in which vaporization of the volatile constituents of a liquid takes place by the injection of air or steam directly into the charge. 
Recordkeeping and Reporting Permit Application	• Documentation of compliance with process vent standards (See Brief Sheet AA - <i>Applicable Units & Waste Streams, Recordkeeping & Reporting</i> for a detailed list of documents demonstrating compliance). • Information on processes. • Information on emissions. • Information to determine applicability of specific regulation. • Performance test methods for determining organic concentrations and flow rates. • Performance test plan and/or results. • Documentation of engineering calculations for design or performance if required. • Documentation of monitoring systems as required.

- ◇ See Section M, Subpart AA Process Vents, of the [Subpart AA Checklist](#) and 40 CFR §270.14(a), 40 CFR §270.24 for detailed requirements.

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RCRA Subpart BB Regulations Applicable Waste Streams

Facilities that treat, store, or dispose of hazardous wastes must comply with Subpart BB standards if specified equipment contains or contacts hazardous wastes with organic concentrations of at least 10% by weight.

40 CFR §§26/2654.1050(b)

Performance Standard/Control Method 40 CFR §264.1050(b)(1), 40 CFR §264.1063(d) 40 CFR §265.1050(b)(1), 40 CFR §265.1063(d)	Subpart BB is applicable to hazardous waste management units that are subject to the permitting requirements of 40 CFR §270 with equipment that contains or contacts hazardous waste having an organic concentration of at least 10% by weight. Applicability determinations must be made in accordance with the facility waste analysis plan required by 40 CFR §264.13(b) or process knowledge.	
Monitoring Requirement 40 CFR §264.1063(d) 40 CFR §265.1063(d)	Analytical Methods	Process Knowledge
Method	ASTM Method D2267-88, E169-87, E168-88, E260-85 or SW-846 Methods 9060A or 8260	Documentation of the waste determination
Documentation 40 CFR §§246/265.1063(d)(1-3)	Analytical results	Some examples include: • Demonstrate no organic compounds used in process. • Waste from a process identical to a process previously measured at < 10% organics. • Previous analytical results and demonstrate changes since testing have not raised organic content to at least 10%.
Recordkeeping & Reporting Compliance 40 CFR §§264/265.1064(b)(iv)	Owner/operator must document the analysis of the percent-by-weight total organics in the facility operating record.	

Permit Application	Identify hazardous waste management units and wastes streams that require an applicability determination. Provide analytical results and detailed descriptions as needed to demonstrate compliance. Further, all information listed under recordkeeping requirements must be included in the Part B permit application. Refer to Section N-1a, Applicability, of the Checklist for Review of Federal RCRA Permit Applications, Section N, Subpart BB Equipment Leaks (Subpart BB Checklist) for additional details.
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- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ EPA. 2002. RCRA Organic Air Emission Standards Permit and Compliance Training Course. Training Manual. United States Environmental Protection Agency. Training Presented in Charleston, South Carolina. March 5-7.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart BB Air Emission Standards for Equipment Leaks. Sections 264.1050, 264.1052 through 264.1059, 264.1061, 264.1062. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.
- ◇ [Section N, Subpart BB Equipment Leaks, Checklist for Review of Federal RCRA Permit Applications.](#)

Example Inspector's Checklist for Applicability of Subpart BB

Rule of thumb: if a LQG or TSD operates a hazardous waste tank or conveys hazardous waste via piping, **and** they have organic wastes, Subpart BB applies.

NOTE: Permitted TSD's are regulated under 40 CFR §264; interim status facilities under 40 CFR §265. Permitted facilities should have Subpart BB regulations referenced in their permit and they also have additional reporting requirements under 40 CFR §264.1065.

All facilities: Waste determination required: [1063(d)]
 Organic concentration of all waste streams must be known.
 Can use SW-846 Methods 9060 or 8260 or ASTM Methods: D 2267-88, E 169-87, E 260-85.
 Can use knowledge- must have documentation.
If no information on organic concentration, Subpart BB must be adhered to.

Applicability

- | | | |
|--|-----|----|
| 1. Large quantity generator or TSD (SQG exempt)? | Yes | No |
| 2. Waste stream 10% total organic concentration? | | |

- (Includes volatile and semi-volatile compounds) (10% = 100,000 ppm). Yes No
3. Hazardous waste with >10% organics in equipment? Yes No
- NOTE:** at LQG's, equipment on recycling units themselves are exempt.
(See definitions- Equipment)

If yes, look under applicable 40 CFR §§
264/265 requirements:

Valve(s)	Yes	No	1056, 1057, 1058, 1061, 1062
Pump(s)	Yes	No	1052, 1058
Compressor(s)	Yes	No	1053
Pressure relief device(s)	Yes	No	1054, 1058
Sampling connection system(s)	Yes	No	1055
Open-ended valve or line(s)	Yes	No	1056
Flange(s)	Yes	No	1058
Any control device(s) or system(s)	Yes	No	1060

If any yes, 1063 (testing and monitoring) and 1064 (Recordkeeping) apply in addition to specific regulations.

If **all no**, then no equipment applies, only waste determination requirements of 1063 apply.

Excerpt from [NCDENR, Robin Proctor's Subpart BB Inspection Check Sheet](#)

RCRA Subpart BB Regulations Heavy Liquid Service: Pumps

At facilities subject to 40 CFR §270, Subpart BB regulations for heavy liquid service are applicable to pumps that contain or contact hazardous waste with an organic concentration of at least 10% by weight. Heavy liquid service means the pump contains or contacts a liquid waste stream that does not meet the requirements for light liquid service in 40 CFR §§264/265.



Performance Standard/Control Method 40 CFR §§264/265.1058(a), (c), & (d)	Comply with leak detection, monitoring, and leak repair requirements. Upon detection, a leak shall be repaired as soon as practicable but no later than 15 calendar days after detection. First attempt at repair shall be made no later than 5 calendar days after detection. First attempts should consider, but not be limited to, the best practices described in 40 CFR §§264/265.1057(e).
Monitoring Requirement	Monitoring of potential leaks identified through incidental inspection and observation. An instrument reading of 10,000 ppm or more over background constitutes detection of a leak.
Method	Method 21 (apply while equipment is operating and in contact with subject hazardous waste).
Frequency	Monitoring by Method 21 within five calendar days of identification of a potential leak.
Inspection Requirement	Observation to identify potential leaks.
Frequency	Visual, audible, olfactory, and other methods suitable for identifying potential leaks.
Visual Inspection	Specific frequency not stated in 40 CFR §§264/265.1058. However, frequency is specified in the RCRA inspection requirements for the unit associated with the pump. Visual inspections are required daily for tanks and secondary containment (40 CFR §265.195); weekly for containers and secondary containment (40 CFR §265.174). Surface Impoundments require both daily and weekly leak detections (40 CFR §265.226). Thermal treatment units require daily inspections (40 CFR §265.377) while biological, chemical and physical treatment units require daily and weekly inspections per 40 CFR §265.403.

Recordkeeping & Reporting 40 CFR §264.1064(a),(b) & (d) 40 CFR §264.1065(a)(1), (2)(ii), (3), & (4) 40 CFR §265.1064(a),(b) & (d)	• Pump ID number and ID number of hazardous waste management unit containing the pump. • Location of the hazardous waste management unit within the facility (request map or figure indicating location of the unit). • Type of equipment (e.g., pump in heavy liquid service). • Percent-by-weight organics. • Hazardous waste state. • Methods of compliance. • Facility name and EPA ID number. • Facility Address. • Dates of hazardous waste management unit shutdowns. Owner/operator must record the above information in the facility operating record. A semi-annual report must be submitted if a leak is detected and not repaired within 15 days of first detection. Request to see unit specific inspection log and checklist to ensure inspection of equipment for releases (liquid, sound, smell) and repair records for duration and response time comply with Subpart BB requirements.
Compliance	Permit Application Identify pumps in heavy liquid service subject to Subpart BB and describe procedures implemented to ensure compliance. Further, all information listed under recordkeeping requirements must be included in the Part B permit application. Refer to Section N-1b, Definition of Equipment, Section N-8a, Monitoring, and Section N-8c, Leak Repairs As Soon As Practicable, of the Subpart BB Checklist for additional details on information included in the RCRA Part B Permit Application.

- ◇ 40 CFR §60, Appendix A, EPA Methods 21 is available at <http://www.epa.gov/ttn/emc/promgate.html>
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ EPA. 2002. RCRA Organic Air Emission Standards Permit and Compliance Training Course. Training Manual. United States Environmental Protection Agency. Training Presented in Charleston, South Carolina. March 5-7.

- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart BB Air Emission Standards for Equipment Leaks. 40 CFR §§264.1050, 264.1052 through 264.1059, 264.1061, 264.1062. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.
- ◇ [Section N, Subpart BB Equipment Leaks, Checklist for Review of Federal RCRA Permit Applications.](#)

Example from Inspector's Checklist for Subpart BB

Pumps and valves in heavy liquid service; Pressure relief devices in light or heavy liquid service; and flanges and connectors (1058)

- (a) If **evidence of leak** by audible, visual, olfactory or other detection method, **monitor** within 5 days.
- (b) Instrument reading of > 10,000 ppm = leak.
- (c) First attempt within 5 days. Repaired within 15 days.
- (a) **Connectors** that are **inaccessible** or ceramic lined exempt.

Excerpt from [NCDENR, Robin Proctor's Subpart BB Inspection Check Sheet](#)

RCRA Subpart BB Regulations

Light Liquid Service: Pumps

Pumps that contain or contact a waste stream where the vapor pressure of one or more of the organic components is greater than 0.3 kilopascals (kPa) (0.044 psi, 2.26 mm Hg) at 20°C (68°F) and the total concentration of the pure organic components meeting these specifications is equal to or greater than 20% by weight and the fluid is a liquid at operating conditions.

40 CFR §§264/265.1031.



Performance Standard/Control Method	Maintain a reading of less of 10,000 ppm and comply with the leak repair program. 40 CFR §§264/265.1052	
Monitoring Requirement	Pumps in Light Liquid Service 40 CFR §§264/265.1052 (a)	Pumps with Dual Mechanical Seal System which includes a Barrier Fluid System 40 CFR §§264/265.1052(d)
Method	Method 21 (apply while equipment is operating and in contact with subject hazardous waste).	Use of a sensor to monitor seal system, barrier fluid system, or both. Owner/operator must determine a criterion that indicates failure of the system.
Frequency	Monthly	Each sensor must be checked daily or be equipped with an audible alarm that is checked monthly.
Inspection Requirement	- Visible above ground equipment, secondary containment, or surrounding area evidence of leaks, corrosion, stains, dead vegetation. - Monitoring and leak detection equipment data for deviation from operation design parameters. 40 CFR §§264/265.195 40 CFR §§264/265.1052(a)(2)	- Sensor system checked for correct operation. If the sensor indicates a seal system and/or barrier system failure, a leak is detected. - Visual for liquids dripping from pump seal. 40 CFR §§264/265.195 40 CFR §§264/265.1052(d)(5)(i)

Frequency	Weekly	Each sensor must be checked daily or be equipped with an audible alarm that is checked monthly.
Visual Inspection	• Visually inspect for liquid dripping from pump seal. • Visually inspect above ground, secondary containment, or surrounding area leaks, corrosion, stains, dead vegetation. • Review monitoring and leak detection equipment data for deviation from operation design parameters.	Visually inspect each pump weekly for indications of liquids dripping from the pump seals.
Recordkeeping & Reporting	• Owner/operator must record all monitoring and inspection information in the facility operating record and the facility inspection log. • Pump ID number and ID number of hazardous waste management containing the pump. • Location of the hazardous waste management unit within the facility (request a map or figure). • Type of equipment (e.g., pump in light liquid service). • Percent-by-weight organics. • Hazardous waste state (i.e. gas or vapor). • Methods of compliance. • Criterion/criteria developed to indicate seal failure; thus a leak. • Facility name and EPA ID number. • Facility address. • Dates of hazardous waste management unit shutdowns. • A semi-annual report must be submitted if a leak is detected and not repaired within 15 days of first detection. • Daily monitoring records and data logger records. • Calibration records and calibration drift assessments for Method 21. • Tank integrity tests. • Daily inspection logs for tank systems.	

Compliance 40 CFR §§264/265.195 40 CFR §§264/265.1064	• Inspection reports for secondary containment associated with tank systems.
Permit Application 40 CFR §§264/265.1064	The following information must be included in the permit application: • A listing or table which clearly identifies for each pump in light liquid service subject to Subpart BB the equipment I.D. Number, equipment type, hazardous waste management unit and equipment location, EPA Hazardous Waste Number (i.e., F001), brief description of waste, physical state of waste, percent by weight organics, and method of compliance. • A facility map showing the location of all equipment subject to Subpart BB. • Detailed design, installation and maintenance specifications. • Standard operating procedures for each pump subject to Subpart BB. • Refer to Section N-1b, Definition of Equipment, Section N-2a, Monthly Monitoring of Leaks, Section N-2b, Visual Inspection for Pump Seal Leakage on a Weekly Basis, N-2c, Leak Detection, N-2d, Leak Repair as Soon as Practicable, and Section N-2e, Specific Exceptions to these Standards, of the Subpart BB Checklist for additional details on information included in the RCRA Part B Permit Application.

- ◇ Any pump that is designated for no-detectable emissions limit (<500 ppm above background by Method 21) must be monitored initially upon designation, annually, and as requested by Regional Administrator. 40 CFR §264.1052(e).
- ◇ Once a leak is detected, the owner operator must make a first attempt to repair within 5 calendar days and repair must be repaired as soon as practicable but no later than 15 calendar days.
- ◇ Method 21 is found in 40 CFR Part 60 Appendix A and is available at <http://www.epa.gov/ttn/emc/promgate.html>.
- ◇ [2008 NOD Template for Subparts AA/BB/CC.](#)
- ◇ [Section N, Subpart BB Equipment Leaks, Checklist for Review of Federal RCRA Permit Applications.](#)

RCRA Subpart BB Regulations Exemptions

Exemptions from Subpart BB requirements are provided in *40 CFR §264.1050* for equipment in vacuum service, equipment containing or contacting hazardous wastes with an organic concentration of at least 10% by weight for less than 300 hours per year, and purged coatings and solvents subject to the NESHAP for the Surface Coating of Automobiles and Light Duty Trucks.

Performance Standard/Control Method	Equipment in Vacuum Service <i>40 CFR §264.1050(e) and 40 CFR §265.1050(d)</i> Equipment in vacuum service is excluded from Subpart BB requirements if it is identified as required in <i>40 CFR §264.1064(g)(5) and 40 CFR §265.1064(g)(5)</i>.	Equipment Contacting Wastes with Organics Less than 300 Hours per Year <i>40 CFR §264.1050(f) 40 CFR §265.1050(e)</i> Equipment that contains or contacts hazardous waste with an organic concentration of at least 10% by weight for less than 300 hours per calendar year is excluded from Subpart BB inspection and monitoring requirements if it is identified as required in <i>40 CFR §§264/265.1064(g)(6)</i>.
Recordkeeping & Reporting Compliance	A list of identification numbers for all equipment in vacuum service must be recorded and kept in the facility operating record.	Either a list or the location of equipment that contains or contacts hazardous waste with an organic concentration of at least 10% by weight for less than 300 hours per year must be recorded and kept in the facility operating record. These records must include the number of hours per year the equipment did contact organic hazardous waste subject to Subpart BB. <i>40 CFR §§264/265.1064(g)(6)</i>
Permit Application	All information listed under Recordkeeping & Reporting must be included in the Part B permit application. Refer to Section N-1b, Equipment in a Vacuum or Equipment that Contains or Contacts Hazardous Waste with an	

Organic Concentration of at Least 10 Percent by Weight for a Period of Less than 300 Hours per Calendar Year, of the Subpart BB Checklist for additional details on information included in the RCRA Part B Permit Application.

- ◇ Exemption for Purged Coatings and Solvents - *40 CFR §264.1050(h)*: Purged coatings and solvents subject to the NESHAP for the Surface Coating of Automobiles and Light Duty Trucks (i.e., *40 CFR Part 63, Subpart IIII*) are exempt from Subpart BB requirements.
- ◇ Other Exemptions - *40 CFR §§261.4, and 264.1(g)*: Facilities exempted under *40 CFR §§261.4 and 264.1(g)* are not affected by these requirements.
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ EPA. 2002. RCRA Organic Air Emission Standards Permit and Compliance Training Course. Training Manual. United States Environmental Protection Agency. Training Presented in Charleston, South Carolina. March 5-7.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, part 264, Subpart BB Air Emission Standards for Equipment Leaks. 40 CFR §§264.1050, 264.1052 through 264.1059, 264.1061, 264.1062. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.
- ◇ [Section N, Subpart BB Equipment Leaks, Checklist for Review of Federal RCRA Permit Applications.](#)

RCRA Subpart BB Regulations Test Methods

In demonstrating compliance with Subpart BB Regulations, owners/operators must comply with the test methods and testing procedures outlined below.
40 CFR §§264/265.1063(a).

Performance Standard/Control Method	Leak Detection Monitoring 40 CFR §§264/265.1063(b) Monitor for leaks as required in 40 CFR §§264.1052 through 264.1062 using an instrument meeting the performance criteria of reference Method 21.	No Detectable Emissions 40 CFR §§264/265.1063(c) Test equipment to ensure there are no detectable emissions as required by 40 CFR §§264.1052(e), 264.1053(i), 264.1054, and 264.1057(f).
Monitoring	• Use an instrument meeting the performance criteria of reference Method 21. Apply Method 21 while the equipment is operating and in contact with subject hazardous waste. • Calibrate instrument every day before use following the procedures in Method 21. Use zero air and a mixture of methane or n-hexane and air at a concentration close to but less than 10,000 ppm methane or n-hexane. • Traverse instrument probe slowly around all potential leak interfaces as close (within 2 inches) to the interface as possible.	• Monitoring shall comply with Method 21. • The detection instrument shall meet the performance criteria of Method 21. • Calibrate instrument every day before use following the procedures in Method 21. Use zero air and a mixture of methane or n-hexane and air at a concentration close to but less than 10,000 ppm methane or n-hexane. • Monitoring is performed while the equipment is operating and in contact with subject hazardous waste. • Determine background level as described in Method 21. • Traverse instrument probe slowly around all potential leak interfaces as close (within 2 inches) to the interface as possible.

Requirement		Calculate the difference between the maximum measured concentration and the background level. Compare the difference to 500 ppm. If the difference is less than 500 ppm, there are no detectable emissions.
Method	Method 21	Method 21

- ◇ 40 CFR §60, Appendix A, EPA Methods 21 is available at <http://www.epa.gov/ttn/emc/promgate.html>
- ◇ Determination of Applicability - 40 CFR §264.1063(d), (e), (f), & (g):
 - Determine if equipment subject to Subpart BB contains or contacts hazardous waste with total organic concentration of 10% or more by weight.
 - Once equipment is shown to contain or contact waste with a total organic concentration of at least 10%, the determination can only be revised using the analytical methods specified in 40 CFR §264.1063(d)(1) and (d)(2).
 - Disagreements between the owner/operator and the Regional Administrator regarding this determination can be resolved using the analytical methods specified in 40 CFR §264.1063(d)(1) and (d)(2).
 - Samples used in this determination shall represent the highest total organic content expected in the hazardous waste.
 - See brief sheet entitled Applicable Waste Streams and 40 CFR §264.1063(d)(1) through (d)(3) for Methods and Method Requirements.
 - See brief sheet entitled Applicable Waste Streams for Recordkeeping and Reporting requirements.
- ◇ Determination of Equipment in Light Liquid Service (LLS) - 40 CFR §264.1063(h): Determine if pumps and valves subject to Subpart BB are in light liquid service. See brief sheet entitled Light Liquid Service vs. Heavy Liquid Service vs. Gas/Vapor Service for Methods, Method Requirements, and Recordkeeping and Reporting requirements.
- ◇ Performance Tests for Control Devices - 40 CFR §264.1064(i): Performance tests to determine if a control device achieves 95% weight reduction in organic emissions shall comply with procedures of 40 CFR §264.1034(c)(1) through (c)(4).
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.

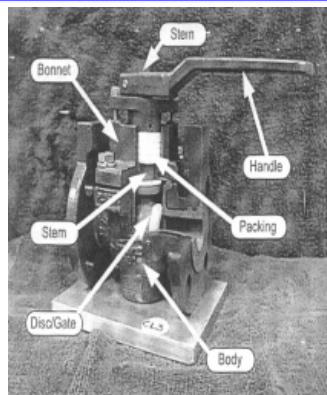
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ EPA. 2002. RCRA Organic Air Emission Standards Permit and Compliance Training Course. Training Manual. United States Environmental Protection Agency. Training Presented in Charleston, South Carolina. March 5-7.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart BB Air Emission Standards for Equipment Leaks. *40 CFR §§264.1050, 264.1052 through 264.1059, 264.1061, 264.1062*. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.
- ◇ Refer to Section N-2c, Leak Detection, and Section N-8a, Monitoring, of the [Subpart BB Checklist](#) for additional details on information included in the RCRA Part B Permit Application.

RCRA Subpart BB Regulations

Alternative Valve Standards for Light Liquid Service or Gas/Vapor Service

For valves in gas/vapor service (GVS) or light liquid service (LLS), owner/operators may elect to have all valves within a hazardous waste management system comply with an alternative standard or work practice.

40 CFR §264.1061(a), 40 CFR §264.1062(a), and 40 CFR §265.1061(a), 40 CFR §265.1062(a)



Performance Standard/Control Method	2% Leak Allowance	Skip Quarterly Period
	Instrument reading $\geq$ 10,000 ppm. Repair detected leaks as soon as practicable and no more than 2% of valves within the hazardous waste management unit may have detected leaks. 40 CFR §§264/265.1061	Instrument reading $\geq$ 10,000 ppm. Repair detected leaks as soon as practicable and: - After 2 consecutive quarterly leak detection periods with percentage of valves leaking $\leq$ 2%, go to semiannual leak detection; or - After five consecutive quarterly leak detection periods with percentage of valves leaking $\leq$ 2%, go to annual leak detection. 40 CFR §§264/265.1062
Monitoring Requirement	Performance test (see RCRA Subpart BB Regulations Brief Sheet for Test Methods). 40 CFR §§264/265.1063(b)	
Method	Method 21 (applied while equipment is operating and in contact with subject hazardous waste).	
Frequency	Within 1 week of designation and thereafter, annually and at the request of the Regional Administrator.	Quarterly to: - Semiannually; or - Annually.
Inspection Requirement	None specified. Verify inspection requirements through document review.	

- ◇ 40 CFR §60, Appendix A, EPA Methods 21 is available at <http://www.epa.gov/ttn/emc/promgate.html>.
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ EPA. 2002. RCRA Organic Air Emission Standards Permit and Compliance Training Course. Training Manual. United States Environmental Protection Agency. Training Presented in Charleston, South Carolina. March 5-7.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart BB Air Emission Standards for Equipment Leaks. 40 CFR §§264.1050, 264.1052 through 264.1059, 264.1061, 264.1062. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.
- ◇ [Section N, Subpart BB Equipment Leaks, Checklist for Review of Federal RCRA Permit Applications](#).

RCRA Subpart BB Regulations

Light Liquid Service vs. Heavy Liquid Service vs. Gas/Vapor Service

Subpart BB regulations are applicable to pumps, valves, and pressure relief devices. However, specific requirements vary for this equipment depending on the state of the hazardous waste stream and a determination of its vapor pressure and organic content. In GVS means that equipment contains or contacts waste in the gaseous state at operating conditions. In LLS means the equipment contains or contacts compound(s) with vapor pressure > 0.3 kPa (0.044 psi, 2.26 mm Hg) at 20°C (68°F), concentrations of pure components with vapor pressure > than 0.3 kPa sums to 20% or more by weight, and is a liquid at operating conditions. In heavy liquid service refers to anything that is not a LLS or GSV. 40 §§CFR 264/265.1031



Performance Standard/ Control Method	GVS	LLS	HLS
	Equipment may be in gas/vapor service (GVS), light liquid service (LLS), or heavy liquid service (HLS). Determine hazardous waste service to establish requirements for pumps, valves, and pressure relief devices.		
Method of Determination	Physical state at operating conditions.	Vapor pressures from standard reference texts or ASTM D-2879-86.	Physical state at operating conditions and elimination of LLS as an option.
Recordkeeping & Reporting Compliance 40 CFR §§264/265.1064 (b) (iii), (b)(iv), & (b)(v)	- Type of equipment (e.g., pump, valve, pressure relief device). - Percent-by-weight of total organics in the hazardous waste. - Physical state of hazardous waste (i.e. gas or liquid). - All calculations associated with determining if equipment is in LLS as outlined in <i>In Light-Material Service Determination for Containers</i>.		
Permit Application	Identify equipment in GVS, LLS, and HLS. All information listed under recordkeeping requirements shall be included in the Part B permit application. Further, describe how percent-by-weight of total organics and physical state of hazardous waste were determined. Refer to Section N-1b, Definition of Equipment, of the Subpart BB Checklist for additional details on information included in the RCRA Part B Permit Application.		

- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.

- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ EPA. 2002. RCRA Organic Air Emission Standards Permit and Compliance Training Course. Training Manual. United States Environmental Protection Agency. Training Presented in Charleston, South Carolina. March 5-7.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart BB Air Emission Standards for Equipment Leaks. *40 CFR §§264.1050, 264.1052 through 264.1059, 264.1061, 264.1062*. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.
- ◇ [Section N, Subpart BB Equipment Leaks, Checklist for Review of Federal RCRA Permit Applications](#).

RCRA Subpart BB Regulations

Pressure Relief Devices in Light Liquid or Heavy Liquid Service

Pressure relief device refers to a pressure relief valve or a rupture disc. A pressure relief valve is a valve used for safety or emergency purposes which is automatically actuated by upstream static pressure. A rupture disc is a diaphragm held between flanges for the purpose of isolating a VOC from the atmosphere or a downstream pressure relief valve. Light liquid service means that the pressure relief device contains or contacts a waste stream where the vapor pressure of one or more of the organic components is greater than 0.3 kPa (0.044 psi, 2.26 mmHg) at 20°C (68°F) and the total concentration of such compounds is equal to or greater than 20% by weight. Heavy liquid service means the pressure relief device contains or contacts a liquid waste stream that does not meet the requirements for light liquid service in 40 CFR §§264/265.1031.



Pressure Relief Valve

Performance Standard/Control Method 40 CFR §§264/265.1058(a), (c), & (d)	Comply with leak detection, monitoring, and leak repair requirements. Upon detection, a leak shall be repaired as soon as practicable but no later than 15 calendar days after detection. First attempt at repair shall be made no later than 5 calendar days after detection. First attempts should consider, but not be limited to, the best practices described in 40 CFR §264.1057(e).
Monitoring Requirement 40 CFR §§264/265.1058(b)	Monitoring of potential leaks identified through incidental inspection and observation. An instrument reading of 10,000 ppm or more over background constitutes detection of a leak.
Method	Method 21 (apply method while equipment is operating and in contact with subject organic hazardous waste).
Frequency	Monitoring by Method 21 within five calendar days of identification of a potential leak.
Inspection Requirement	Visual, audible, olfactory, and other methods suitable for identifying potential leaks.
Frequency	Incidental. Specific frequency not stated in 40 CFR §§264/265.1058.
Visual Inspection	Incidental. Specific frequency not stated in 40 CFR §§264/265.1058.

Recordkeeping & Reporting Compliance 40 CFR §§264/265.1064(a),(b) & (d) 40 CFR §264.1065(a)(1), (3), & (4)	• Device ID number and ID number of hazardous waste management unit containing the device. • Approximate location of the hazardous waste management unit within the facility. • Type of equipment (e.g., flange). • Percent-by-weight organics. • Hazardous waste state. • Methods of compliance. • Facility name and EPA ID number. • Facility Address. • Dates of hazardous waste management unit shutdowns. Owner/operator must record the above information in the facility operating record. A semi-annual report must be submitted if a leak is detected and not repaired within 15 days of first detection.
Permit Application	Identify pressure relief devices in light liquid and heavy liquid service subject to Subpart BB and describe procedures implemented to ensure compliance. Further, all information listed under recordkeeping requirements must be included in the Part B permit application. Refer to Section N-1b, Definition of Equipment, Section N-8a, Monitoring, Section N-8b, Leak Detection, Section N-8c, Leak Repair as Soon as Practicable, and N-8d, Any Connector that is Inaccessible or is Ceramic or Ceramic-Lined is Exempt from the Monitoring Requirements of 264.1058(a) and 264.1064, of the Subpart BB Checklist for additional details on information included in the RCRA Part B Permit Application.

- ◇ 40 CFR §60, Appendix A, EPA Methods 21 is available at <http://www.epa.gov/ttn/emc/promgate.html>.
- ◇ Any connector that is associated with a pressure relief device in light liquid or heavy liquid service that is inaccessible or is ceramic or ceramic-lined (e.g., porcelain, glass, or glass-lined) is exempt from the monitoring and recordkeeping requirements.
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4.

- ◇ RCRA Organic Air Emissions Training and Assistance. Atlanta, GA.
- ◇ EPA. 2002. RCRA Organic Air Emission Standards Permit and Compliance Training Course. Training Manual. United States Environmental Protection Agency. Training Presented in Charleston, South Carolina. March 5-7.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart BB Air Emission Standards for Equipment Leaks. 40 CFR §§264.1050, 264.1052 through 264.1059, 264.1061, 264.1062. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.
- ◇ [Section N, Subpart BB Equipment Leaks, Checklist for Review of Federal RCRA Permit Applications.](#)



*Spring-Operated Tank
Pressure Relief Valve*

RCRA Subpart BB Regulations Open-Ended Valves or Lines

Applicable to valves (except pressure relief valves) having one side of the valve seat in contact with hazardous waste and one side open to the atmosphere, either directly or through open piping.

40 CFR §§264/265.1056



Performance Standard/Control Method 40 CFR §§264/265.1056	• Must be equipped with a cap, blind flange, plug, or a second valve, to seal the open end except when in use. • If a second valve is used, the upstream valve must be closed before the second valve (i.e., end valve) is closed. • If a double block and bleed system is used, the bleed valve or line may remain open during operations that require venting the line between block valves but must be closed at all other times.
Monitoring Requirement	None specified in Subpart BB but leaks from this equipment can be confirmed using Method 21. Apply the method while equipment is operating and contacting subject hazardous waste.
Inspection Requirement	None specified in Subpart BB, but this equipment is associated with tank systems and would be included in the daily tank inspection and should be noted in the daily inspection log. 40 CFR §§264/265.195
Recordkeeping & Reporting Compliance 40 CFR §§264/265.1064(a) & (b)	• Open-ended valve/line ID number and ID number of hazardous waste management containing the valve/line. • Approximate location of the hazardous waste management unit within the facility. • Type of equipment (e.g., open-ended valve). • Percent-by-weight organics. • Hazardous waste state (i.e., gas or vapor). • Methods of compliance.

Permit Application	Identify open-ended valves/lines subject to Subpart BB and describe procedures implemented to ensure compliance. Further, all information listed under recordkeeping requirements must be included in the Part B permit application. Refer to Section N-6a, Open-Ended Valve or Line, and N-6b, Second Valve, of the Subpart BB Checklist for additional details on information included in the RCRA Part B Permit Application.
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- ◇ 40 CFR §60, Appendix A, EPA Methods 21 is available at <http://www.epa.gov/ttn/emc/promgate.html>.
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ EPA. 2002. RCRA Organic Air Emission Standards Permit and Compliance Training Course. Training Manual. United States Environmental Protection Agency. Training Presented in Charleston, South Carolina. March 5-7.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart BB Air Emission Standards for Equipment Leaks. 40 CFR §§264.1050, 264.1052 through 264.1059, 264.1061, 264.1062. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.
- ◇ [Section N, Subpart BB Equipment Leaks, Checklist for Review of Federal RCRA Permit Applications](#).

RCRA Subpart BB Regulations

Sampling Connection Systems

A sampling connection system is an assembly of equipment within a process or waste management unit used during periods of representative operation to take samples of the process or waste fluid. Equipment used to take non-routine grab samples is not considered a sampling connection system.

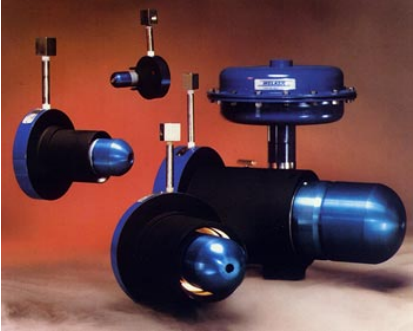
Performance Standard/Control Method <i>40 CFR §§264/265.1055</i>	Each sampling connection must be equipped with a closed-purge, closed-loop, or a closed-vent system. The system must: • Return the purged hazardous waste stream directly to the hazardous waste management process line; • Collect and recycle the purged hazardous waste stream; or • Capture and transport the purged hazardous waste stream to a control device.
Monitoring Requirement	None specified in Subpart BB but leaks from this equipment can be confirmed using Method 21. Apply the method while equipment is operating and contacting subject hazardous waste.
Inspection Requirement	None specified in Subpart BB, but this equipment is associated with tank systems and would be included in the daily tank inspection and should be noted in the daily inspection log. <i>40 CFR §§264/265.195</i>
Recordkeeping & Reporting Compliance <i>40 CFR §§264/265.1064(a) & (b)</i>	• Sampling connection system ID number and ID number of hazardous waste management containing the sampling connection system. • Approximate location of the hazardous waste management unit within the facility. • Type of equipment (e.g., open-ended valve). • Percent-by-weight organics. • Hazardous waste state (i.e. gas or vapor). • Methods of compliance.
Permit Application	Identify sampling connection systems subject to Subpart BB and describe procedures implemented to ensure compliance. Further, all information listed under recordkeeping requirements must be included in the Part B permit application. Refer to Section N-5a, Each Sampling Connecting System Shall Be Equipped with a Closed-Purge, Closed Loop, or Closed-Vent System, and N-5b, Exemption for Qualified Sampling Systems, of the Subpart BB Checklist for additional details on information included in the RCRA Part B Permit Application.

- ◇ 40 CFR §60, Appendix A, EPA Methods 21 is available at <http://www.epa.gov/ttn/emc/promgate.html>.
- ◇ In-situ sampling systems and sampling systems without purges are exempt and equipment used to take non-routine grab samples is not considered a sampling connection system. 40 CFR §264.1031, 40 CFR §264.1055(c)
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ EPA. 2002. RCRA Organic Air Emission Standards Permit and Compliance Training Course. Training Manual. United States Environmental Protection Agency. Training Presented in Charleston, South Carolina. March 5-7.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart BB Air Emission Standards for Equipment Leaks. 40 CFR §§264.1050, 264.1052 through 264.1059, 264.1061, 264.1062. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.
- ◇ [Section N, Subpart BB Equipment Leaks, Checklist for Review of Federal RCRA Permit Applications](#).

RCRA Subpart BB Regulations

Valves in Gas/Vapor Service or Light Liquid Service

Subpart BB regulations are applicable to valves in gas/vapor service (GVS) and light liquid service (LLS).
 40 CFR §264.1057 and 40 CFR §265.1057



Performance Standard/Control Method	Valve in GVS or LLS Instrument reading $\geq$ 10,000 ppm. Repair detected leaks as soon as practicable	Unsafe- and Difficult-to-Monitor No routine monitoring, but repair detected leaks as soon as practicable	
Monitoring Requirement	Instrument reading of $\geq$ 10,000 ppm denotes a leak	Monitored according to a written plan	
Method	Method 21 (apply method with equipment operating and in contact with subject hazardous waste)	Exempt from Method 21, alternate method described in written monitoring plan	
Frequency	Monthly/ Quarterly	As frequently as possible	As frequently as possible for unsafe- and at least once a year for difficult-to-monitor.
Inspection Requirement	None specified in Subpart BB but this equipment is associated with tank systems and would be included in the daily tank inspection and should be noted in the daily inspection log. 40 CFR §§264/265.195		

Recordkeeping & Reporting	- Valve ID number and ID number of hazardous waste management containing the valve. - Approximate location of the hazardous waste management unit within the facility. - Type of equipment (e.g., valve in LLS). - Percent-by-weight organics. - Hazardous waste state (i.e. gas or liquid). - Methods of compliance. Recorded in the facility operating record. Submit a semi-annual report if a leak is detected and not repaired within 15 days of first detection. Include: - Facility name and address; - EPA ID number; - Valve ID number; and - Dates of hazardous waste management unit shutdowns.	For Unsafe- and Difficult-to-Monitor Valves add: - Valve ID number for all unsafe- and difficult-to-monitor valves; - Justification of unsafe- or difficult-to-monitor designation; and - Written monitoring plan.
Compliance <i>40 CFR §§264/265.1064 (b)(1), (d), (g)(2), (g)(4), & (h)</i> <i>40 CFR §264.1065 (a)(1), (2)(i), (3), & (4)</i>		
Permit Application	Identify valves in GVS, LLS and valves unsafe- and difficult-to-monitor. Describe procedures implemented to ensure compliance. Further, all information listed under recordkeeping requirements must be included in the Part B permit application. Refer to Section N-7, Monitoring Schedule Based on Detection of Leaks and Predetermined Schedule, and N-7d, Specific Exceptions to the Monitoring Schedule, of the Subpart BB Checklist for additional details on information included in the RCRA Part B Permit Application.	

- ◇ 40 CFR §60, Appendix A, EPA Methods 21 is available at <http://www.epa.gov/ttn/emc/promgate.html>.
- ◇ Difficult-to-monitor valves cannot be monitored without elevating personnel more than 2 meters above a support surface. Valves must be

part of a hazardous waste management unit in operation before 6/21/1990.

- ◇ Monitoring may be quarterly if valve has two successive months without leaks. Once a leak is detected, return to monthly monitoring.
- ◇ A valve in GVS designated as no detectable emissions with no external actuating mechanism in contact with the hazardous waste is exempt from monthly monitoring. Annual testing by [Method 21](#) is required to demonstrate no detectable emissions.
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ EPA. 2002. RCRA Organic Air Emission Standards Permit and Compliance Training Course. Training Manual. United States Environmental Protection Agency. Training Presented in Charleston, South Carolina. March 5-7.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart BB Air Emission Standards for Equipment Leaks. *40 CFR §§264.1050, 264.1052 through 264.1059, 264.1061, 264.1062*. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.
- ◇ [Section N, Subpart BB Equipment Leaks, Checklist for Review of Federal RCRA Permit Applications](#).

Example from Inspector's Checklist for Subpart BB Valves in gas/vapor or light liquid service (1057)

- (b) Each must be **monitored monthly**.
- (c) Instrument reading of > 10,000 ppm = leak.
- (d) Valve with no leak for two months may be monitored first of each quarter. If leak detected, monitored monthly until 2 consecutive months with no leak.
- (e) If leak detected, first attempt at repair within 5 days, no later than 15 days.
- (f) Valve designated as **no detectable emissions** (<500 ppm instrument reading) **monitored** initially, annually and must have no external actuating mechanism in contact with the HW. [See 1064(g)(2)].
- (g) Valve designated as **unsafe to monitor**- (personnel exposed to **Immediate** danger to monitor). Must have written plan designating monitoring when safe to do so. (exempt from monthly monitoring). [See 1064(h)].
- (h) Valve designated as **difficult to monitor** (personnel elevated > 2 meters and unit in place prior to June 21, 1990). Written plan requiring minimum of once per year monitoring. [See 1064(h)].

Excerpt from [NCDENR, Robin Proctor's Subpart BB Inspection Check Sheet](#)

RCRA Subpart BB Regulations Compressors

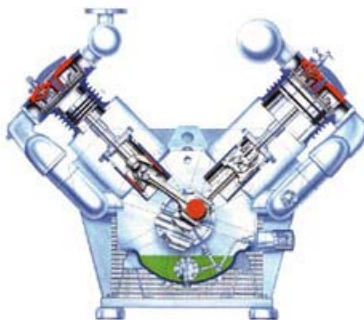
Subpart BB regulations are applicable to compressors at facilities subject to 40 CFR §270 that contain or contact hazardous waste with an organic concentration of at least 10% by weight.



Performance Standard/Control Method 40 CFR §§264/265.1053 (a)-(c)	Compressors must be equipped with a seal system that includes a barrier fluid system that prevents leakage of total organic emissions to the atmosphere. Compressor seal system must: 1. Operate with the barrier fluid at a pressure that is at all times greater than the compressor stuffing box pressure; 2. Be equipped with a barrier fluid system that is connected by a closed-vent system to a control device; or 3. Purge the barrier fluid into a hazardous waste stream with no detectable emissions to the atmosphere (Method 21). <i>The barrier fluid must NOT be hazardous waste with organic concentrations 10% or greater by weight.</i>
Monitoring Requirement 40 CFR §§264/265.1053 (d)	A sensor must be installed to detect failure of the seal system, the barrier fluid system, or both.
Method	Use of a sensor to monitor seal system, barrier fluid system, or both. Owner/operator must determine a criterion that indicates failure of the system.
Frequency	Sensor continuously monitors for failure of seal system; thus, leaks.
Inspection Requirement 40 CFR §§264/265.1053 (e)	Sensor system shall be checked for correct operation.
Frequency	Sensor system shall be checked daily unless equipped with an audible alarm which then requires monthly checks. All compressors located at unmanned sites, must be inspected daily.

Recordkeeping & Reporting Compliance 40 CFR §§264/265.1064(a),(b) & (d) 40 CFR §264.1065(a)(1), (2)(iii), (3), & (4)	• Compressor ID number and ID number of hazardous waste management unit containing the compressor. • Approximate location of the hazardous waste management unit within the facility. • Type of equipment (e.g., compressor). • Percent-by-weight organics. • Hazardous waste state (i.e. gas or vapor). • Methods of compliance. • Criterion/criteria developed to indicate seal failure; thus a leak. • Facility name and EPA ID number. • Facility Address. • Compressor ID number. • Dates of hazardous waste management unit shutdowns. Owner/operator must record the above information in the facility operating record. A semi-annual report must be submitted if a leak is detected and not repaired within 15 days of first detection.
Permit Application	Identify compressors subject to Subpart BB and describe procedures implemented to ensure compliance. Further, all information listed under recordkeeping requirements must be included in the Part B permit application. Refer to Section N-3a, Barrier Fluid Pressure Greater than the Compressor Stuffing Box Pressure, Section N-3b, Barrier Fluid System Connected by a Closed-Vent System to a Control Device Described in Subpart AA, Section N-3c, No Detectable Atmospheric Emissions of Hazardous Contaminants from the Barrier System, Section N-3d, Sensors Checked Daily or an Audible Alarm Checked Monthly, Section 3-e, Leak Detection, Section N-3f, Leak Repair as Soon as Practicable, and N-3g, Specific Exceptions to these Standards, of the Subpart BB Checklist for additional details on information included in the RCRA Part B Permit Application.

- ◇ Compressor equipped with a closed-vent system capable of capturing and transporting any leakage from the seal to a control device that complies with 40 CFR §§264.1060 and 265.1060 is exempt from the seal system requirements.
- ◇ Compressor designated for no detectable emissions using



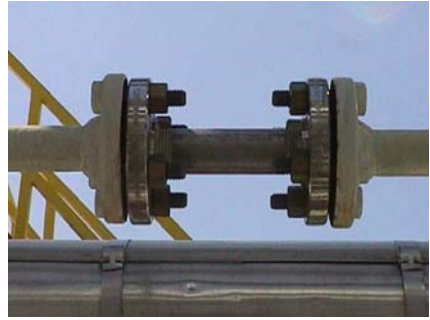
Common Compressor

Method 21 (i.e., instrument reading of less than 500 ppm above background) is exempt from the requirements listed above. Any such compressor designated by the facility must be identified in the operating record and the designation signed by the owner/operator *40 CFR* §264.1064(g)(2)(i) & (ii).

- ◇ EPA. 2000. General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC. Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. RCRA Subpart AA, BB and CC Regulations Body of Knowledge. U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ EPA. 2002. RCRA Organic Air Emission Standards Permit and Compliance Training Course. Training Manual. United States Environmental Protection Agency. Training Presented in Charleston, South Carolina. March 5-7.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart BB Air Emission Standards for Equipment Leaks. *40 CFR* §§264.1050, 264.1052 through 264.1059, 264.1061, 264.1062. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.
- ◇ Section N, Subpart BB Equipment Leaks, Checklist for Review of Federal RCRA Permit Applications.

RCRA Subpart BB Regulations *Flanges and Other Connectors*

At facilities subject to 40 CFR §270, Subpart BB regulations are applicable to flanges and other connectors that contact hazardous waste with an organic concentration of at least 10% by weight.



Performance Standard/Control Method <i>40 CFR §§264/265.1058(a), (c), & (d)</i>	Comply with leak detection, monitoring, and leak repair requirements. Upon detection, a leak shall be repaired as soon as practicable but no later than 15 calendar days after detection. First attempt at repair shall be made no later than 5 calendar days after detection. First attempts should consider, but not be limited to, the best practices described in 40 CFR §264.1057(e).
Monitoring Requirement	Monitoring of potential leaks identified through incidental inspection and observation. An instrument reading of 10,000 ppm or more over background constitutes detection of a leak.
Method	Method 21 (apply while equipment is operating and in contact with subject hazardous waste).
Frequency	Monitoring by Method 21 within five calendar days of identification of a potential leak.
Inspection Requirement	Observation to identify potential leaks.
Frequency	Visual, audible, olfactory, and other methods suitable for identifying potential leaks.
Visual Inspection	Incidental. Specific frequency not stated in 40 CFR §264.1058.
Recordkeeping & Reporting	• Flange/Connector ID number and ID number of hazardous waste management unit containing the flange or other connector. • Approximate location of the hazardous waste management unit within the facility. • Type of equipment (e.g., flange). • Percent-by-weight organics. • Hazardous waste state. • Methods of compliance. • Facility name and EPA ID number. • Facility address.

Compliance <i>40 CFR §§264/265.1064(a),(b) & (d)</i> <i>40 CFR §264.1065(a)(1), (3), & (4)</i>	Dates of hazardous waste management unit shutdowns. Owner/operator must record the above information in the facility operating record. A semi-annual report must be submitted if a leak is detected and not repaired within 15 days of first detection.
Permit Application	Identify flanges and other connectors subject to Subpart BB and describe procedures implemented to ensure compliance. Further, all information listed under recordkeeping requirements must be included in the Part B permit application. Refer to Section N-8a, Monitoring, Section N-8b, Leak Detection, Section N-8c, Leak Repair as Soon as Practicable, and N-8d, Any Connector that is Inaccessible or is Ceramic or Ceramic-Lined is Exempt from the Monitoring Requirements of 264.1058(a) and 264.1064, of the Subpart BB Checklist for additional details on information included in the RCRA Part B Permit Application.

- ◇ 40 CFR §60, Appendix A, EPA Methods 21 is available at <http://www.epa.gov/ttn/emc/promgate.html>.
- ◇ Any connector that is inaccessible or is ceramic or ceramic-lined (e.g., porcelain, glass, or glass-lined) is exempt from the monitoring and recordkeeping requirements.
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ EPA. 2002. RCRA Organic Air Emission Standards Permit and Compliance Training Course. Training Manual. United States Environmental Protection Agency. Training Presented in Charleston, South Carolina. March 5-7.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart BB Air Emission Standards for Equipment Leaks. *40 CFR §§264.1050, 264.1052 through 264.1059, 264.1061, 264.1062*. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.
- ◇ [Section N, Subpart BB Equipment Leaks, Checklist for Review of Federal RCRA Permit Applications](#).



RCRA Subpart BB Regulations Valves, Heavy Liquid Service

At facilities subject to 40 CFR §270, Subpart BB regulations are applicable to valves that contain or contact hazardous waste with an organic concentration of at least 10% by weight. Heavy liquid service means the valve contains or contacts a liquid waste stream that does not meet the requirements for light liquid service in 40 CFR §§264/265.1031.



Performance Standard/Control Method 40 CFR §§264/265.1058(a), (c), & (d)	Comply with leak detection, monitoring, and leak repair requirements. Upon detection, a leak shall be repaired as soon as practicable, but no later than 15 calendar days after detection. First attempt at repair shall be made no later than 5 calendar days after detection. First attempts should consider, but not be limited to, the best practices described in 40 CFR §264.1057(e).
Monitoring Requirement	Monitoring of potential leaks identified through incidental inspection and observation. An instrument reading of 10,000 ppm or more over background constitutes detection of a leak.
Method	Method 21 (apply while equipment is operating and in contact with subject hazardous waste).
Frequency	Monitoring by Method 21 within five calendar days of identification of a potential leak.
Inspection Requirement	Observation to identify potential leaks.
Frequency	Visual, audible, olfactory, and other methods suitable for identifying potential leaks.
Visual Inspection	Incidental. Specific frequency not stated in 40 CFR §264.1058 and 40 CFR §265.1058.
Recordkeeping & Reporting	• Valve ID number and ID number of hazardous waste management unit containing the valve • Approximate location of the hazardous waste management unit within the facility • Type of equipment (e.g., valve in heavy liquid service) • Percent-by-weight organics • Hazardous waste state • Methods of compliance • Facility name and EPA ID number • Facility address

Compliance	Dates of hazardous waste management unit shutdowns Owner/operator must record the above information in the facility operating record. A semi-annual report must be submitted if a leak is detected and not repaired within 15 days of first detection.
Permit Application	Identify valves in heavy liquid service subject to Subpart BB and describe procedures implemented to ensure compliance. Further, all information listed under recordkeeping requirements must be included in the Part B permit application. Refer to Section N-1b, Definition of Equipment, Section N-8a, Monitoring, Section N-8b, Leak Detection, Section N-8c, Leak Repair as Soon as Practicable, and N-8d, Any Connector that is Inaccessible or is Ceramic or Ceramic-Lined is Exempt from the Monitoring Requirements of 264.1058(a) and 264.1064, of the Subpart BB Checklist for additional details on information included in the RCRA Part B Permit Application.

- ◇ 40 CFR §60, Appendix A, EPA Methods 21 is available at <http://www.epa.gov/ttn/emc/promgate.html>.
- ◇ Any connector associated with valves in heavy liquid service that is inaccessible or is ceramic or ceramic-lined (e.g., porcelain, glass, or glass-lined) is exempt from the monitoring and recordkeeping requirements.
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ EPA. 2002. RCRA Organic Air Emission Standards Permit and Compliance Training Course. Training Manual. United States Environmental Protection Agency. Training Presented in Charleston, South Carolina. March 5-7.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart BB Air Emission Standards for Equipment Leaks. 40 CFR §§264.1050, 264.1052 through 264.1059, 264.1061, 264.1062. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.
- ◇ [Section N, Subpart BB Equipment Leaks, Checklist for Review of Federal RCRA Permit Applications.](#)

BB – Recordkeeping and Reporting Requirements

For all equipment subject to Subpart BB, owners and operators of more than one hazardous waste management unit subject may maintain one recordkeeping system provided the system identifies each record by its corresponding hazardous waste management unit number, *40 CFR §264.1064(a)*. A semiannual report shall be submitted to the Regional Administrator for each detected leak not effectively repaired in the time specified or if a control device operates outside of its design and no corrective action is taken within 24 hours. *40 CFR §264.1065*

Performance Standard/Control Method <i>40 CFR §§264/265.1064(a)</i> <i>40 CFR §264.1065(a)</i>	Each owner or operator shall comply with these recordkeeping and reporting requirements.
For Equipment	• Equipment ID number and hazardous waste management unit ID number • Location of the hazardous waste management unit • Type of equipment • Percent-by-weight organics • Hazardous waste state (i.e. gas or vapor) • Methods of compliance • If test data used to demonstrate performance, a performance test plan • For closed vent systems and control devices, documentation of compliance with <i>40 CFR §264.1060</i> including detailed design documentation or performance test results. • The owner/operator must identify, either by list or location, equipment that contains or contacts hazardous waste with an organic concentration of at least 10 percent by weight for a period less than 300 hours per year.
Requirement	<i>40 CFR §§264/265.1064(b) and 40 CFR §264/265.1064(g)(6)</i>
Method	The owner or operator must record the above information in the facility operating record.
Frequency	Records should be continually updated as needed.
For Detected Leaks	Equipment is required to be tagged with a weatherproof and visible identification tag marked with: • Equipment ID number, • Date evidence of potential leak was found; and • The date the leak was detected. The identification on equipment, except valves, may be removed once it is effectively repaired. For valves, the

	identification can be removed after repair and monitoring for 2 successive months with no leak detected using Method 21. <i>40 CFR §§264/265.1064(c)</i> A written inspection log of when a leak is detected must be kept in the facility operating record with the following: • Instrument and Operator ID number; • Equipment ID number; • Date of evidence of a potential leak; • Date leak was detected; • Dates of each attempt to repair the leak; • Repair methods; and • Date of successful repair. Reason for delay if not repaired within 15 calendar days including expected date of successful repair and signature of owner/operator or designee who determined equipment could not be repaired without a hazardous waste management unit shutdown. <i>40 CFR §§264/265.1064(d)</i>
Frequency <i>40 CFR §§264/265.1064(l)</i>	Record information upon leak detection. Log must be maintained in the facility record for 3 years.
Method	Tag on leaking equipment. Owner/operator records information in the facility record.
For Exemptions Requirement <i>40 CFR §§264/265.1064(k)</i>	Owners/operators must record the following in a log for use in determining exemptions under Subpart BB: • Analysis of the design capacity of the hazardous waste management unit; • Hazardous waste influent to and effluent from each hazardous waste management unit covered by Subpart BB including the determination of these wastes as heavy liquids; and • Up-to-date determination of whether equipment is subject to <i>40 CFR §§264.1052 through 264.1060 (40 CFR §§265.1052 through 265.1060)</i> or not including supporting information.
Method	Recorded in a log within the facility operating record.
Frequency	Records should be updated as needed. Records for applicability determinations must be updated when owner/operator takes an action that could increase the total organic content of the waste contained in or contacted by equipment previously determined not be subject to <i>40 CFR §§264.1052 through 264.1060 and 40 CFR §§265.1052 through 265.1060</i> .

RCRA Subpart BB Regulations Pressure Relief Devices, Gas/Vapor Service

Subpart BB regulations are applicable to pressure relief devices in gas/vapor service (GVS).
 40 CFR §§264/265.1054



Performance Standard/Control Method	Pressure relief device must operate with no detectable emissions. However, during a pressure release, the device shall function according to its design and return to no detectable emissions as soon as practicable, but no later than 5 calendar days.
Monitoring Requirement 40 CFR §§264/265.1054(a) & (b)	Instrument reading less than 500 ppm above background.
Method	Method 21 (apply while equipment is operating and in contact with subject hazardous waste).
Frequency	After each pressure release but no later than 5 calendar days after release.
Inspection Requirement	Inspect to monitor. See monitoring requirements.
Recordkeeping & Reporting Compliance 40 CFR §§264/265.1064(a), (b), (g)(3), & (g)(4)	• Pressure Relief Device ID number and ID number of hazardous waste management containing the device. • Approximate location of the hazardous waste management unit within the facility. • Type of equipment (e.g., pressure relief device in GVS). • Percent-by-weight organics. • Hazardous waste state (i.e. gas). • Methods of compliance • Date of each monitoring compliance test.

Permit Application	Identify pressure relief devices in GVS subject to Subpart BB and describe procedures implemented to ensure compliance. Further, all information listed under recordkeeping requirements must be included in the Part B permit application. Refer to Section N-4a, Except During Pressure Releases, No Pressure Relief Device Shall Release Detectable Emissions, Section N-4b, Within 5 Calendar Days after a Pressure Release, No Detectable Emissions Shall Emanate from Pressure Released Device, and Section N-4c, Specific Exceptions to These Standards, of the Subpart BB Checklist for additional details on information included in the RCRA Part B Permit Application.
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- ◇ 40 CFR §60, Appendix A, EPA Methods 21 is available at <http://www.epa.gov/ttn/emc/promgate.html>.
- ◇ Exempt from monitoring if system is connected to a closed-vent system which is capable of capturing and transporting leakage to a control device (40 CFR §264.1054(c)).
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ EPA. 2002. RCRA Organic Air Emission Standards Permit and Compliance Training Course. Training Manual. United States Environmental Protection Agency. Training Presented in Charleston, South Carolina. March 5-7.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart BB Air Emission Standards for Equipment Leaks. 40 CFR §§264.1050, 264.1052 through 264.1059, 264.1061, 264.1062. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.
- ◇ [Section N, Subpart BB Equipment Leaks, Checklist for Review of Federal RCRA Permit Applications](#).

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RCRA Subpart CC Regulations Applicable Units and Waste Stream Determination

Application of Subpart CC controls is based on organic content of the hazardous waste and applies to certain units that are permitted TSDF's, interim status TSDF's, or less-than-90-day large quantity generators.

Performance Standard/Control Method <i>40 CFR §§264/265.1080</i>	Controls required on tanks, surface impoundments, and containers if the average volatile organic (VO) concentrations $\geq$ 500 ppmw at point of origination.	
Waste Determination Requirements Tanks <i>40 CFR §§264/265.1082(c)(1)</i>	Maximum organic vapor pressure determination is required if Tank Level 1 controls are used.	
Containers	A vapor pressure determination that the waste is not in light material service for all containers with capacities of 0.46m ³ or greater that use Level 1 controls.	
Method	• See Direct Measurement Methods for example methods for average VO concentration of waste at the point of origination. • Method 25E, ASTM 2879-92, and methods from API and standard reference texts for vapor pressure.	
Frequency	Initially and any time conditions change. Add annually for average VO concentration.	
VO Concentration Requirement <i>40 CFR §264.1083(a)(2)</i> <i>40 CFR §265.1084(a)(2) - (4)</i>	Direct Measurement	Process Knowledge
	Organic compounds with a dimensionless Henry's law constant value of at least 0.1 at 25°C must be included.	
Method	Method 25D; Method 624; Method 625; Method 1624; Method 1625; Method 8260; and Method 8270.	Owner/operator must provide demonstration documents of representative, worst-case VO waste concentration and constituents. Example sources: manifests, shipping papers, waste certification notices, material balances or compound-specific tests data from previous testing.

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- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart CC Air Emission Standards for Tanks, Surface Impoundments, and Containers. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.

Example Inspector's Checklist for Applicability of Subpart CC

Note: Permitted TSD facilities are regulated under 40 CFR §264. The applicable sections have a different numbering system and they have additional reporting requirements that do not apply to other facilities.

All generators: [1084(a)]

Waste determination- All facilities required to **determine average volatile organic concentration of waste** at the point of waste generation. If no waste determination records, CC must be adhered to.

Testing: Sampling: averaging period designated and recorded; no less than 4 samples per average.
Methods: 40 CFR §60 Methods 25D, 624 or 625. 40 CFR §136 Methods: 1624, 1625. SW-846 Methods 8260 or 8270.

Knowledge: Documentation: material balances, manifests, MSDS.

Applicability

LQG or TSD?	YES	NO
Waste 500-ppm Volatile organics?	YES	NO
Waste stored in containers or tanks?	YES	NO

NOTE: Surface impoundments included but not applicable in NC; tank-like Subpart X units also included.

Exemptions:

Satellite containers
Containers < 26.4 gallons
Mixed waste
Units in closure
Universal waste
Units equipped with CAA control device
WWT tanks
HW recycling unit
RCRA empty

If YES to all, then CC applies, if NO to any only waste determination applies.

Excerpt from [NCDENR, Robin Proctor's Subpart CC Inspection Check Sheet](#)

RCRA Subpart CC Regulations

Tank Levels Determination

RCRA organic air emissions standards have two levels of control for emissions from tanks managing hazardous waste, Tank Level 1 controls and Tank Level 2 controls.

Performance Standard/Control Method <i>40 CFR §264.1084</i> <i>40 CFR §265.1085</i>	Control level applicable to tanks determined by tank design capacity and maximum organic vapor pressure of the material in the tank.
Tank Level 1 Criteria <i>40 CFR §264.1084(b)(1)(i)</i> <i>40 CFR §265.1085(b)(1)(i)</i>	Tank Capacity : Maximum Vapor Pressure $\geq 151 \text{ m}^3$ (39,950 gal): 0.75 psi $\geq 75 \text{ m}^3$ (19,840 gal) and $< 151 \text{ m}^3$ (39,950 gal): 4.0 psi $< 75 \text{ m}^3$ (19,840 gal): 11.1 psi
Method	Method 25E, <i>40 CFR §60</i> , Appendix A or ASTM Method 2879-92 (API Publication 2517)
Requirements	- Hazardous waste cannot be heated to a temperature greater than the temperature at which the maximum organic vapor pressure was determined. - Hazardous waste may not be treated using a waste stabilization or other exothermic process.
Tank Level 2 Criteria	Tank contains waste which exceeds the maximum organic vapor pressure for tank capacity; or if stabilization or other exothermic treatment process is occurring in tank.
Method	Level 2 controls may be used to avoid waste determination requirements when waste composition is varied or unknown.
Recordkeeping & Reporting Compliance	Document vapor pressure determinations for tanks using Tank Level 1 controls as outlined in <i>40 CFR §264.1089(b)(2)(i)</i> and <i>40 CFR §265.1090(b)(2)(i)</i> .
Permit Application	- Identify all tanks subject to Level 1 and Level 2 controls. - Record for each determination of the maximum organic vapor pressure including: – Date; – Time of sampling; – Method of analysis; and – Analytical results. - Further, information must be sufficient to justify the Subpart CC Status entered in Table F-4 of the 2008 HSWA Permit Template. See Table F-4 header excerpt below for detailed information needs. Refer

	to 40 CFR §270.14(a), 40 CFR §270.27, and Section O of the Subpart CC Checklist for detailed requirements.
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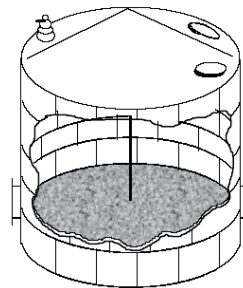
- ◇ Method 25E is found in 40 CFR §60 and is available at <http://www.epa.gov/ttn/emc/promgate.html>.
- ◇ [2008 HSWA Permit Template](#)
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ EPA. 2002. RCRA Organic Air Emission Standards Permit and Compliance Training Course. Training Manual. United States Environmental Protection Agency. Training Presented in Charleston, South Carolina. March 5-7.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart CC Air Emission Standards for Tanks, Surface Impoundments, and Containers. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.
- ◇ Header of Table F-4: Summary of Tank Management Units Subject to Subpart CC:

Hazardous Waste Management Unit (HWMU)	HWMU Location	EPA Hazardous Waste Codes Managed in HWMU	Waste Description	Average Volatile Organic Concentration of the Hazardous Waste	Subpart CC Status	Control Options

RCRA Subpart CC Regulations

Tank Level 1 Fixed-Roof Tanks

The fixed roof and its closure devices must be designed to form a continuous barrier over the entire surface area of the hazardous waste in the tank.



Performance Standard/Control Method <i>40 CFR §264.1084(c)</i> <i>40 CFR §265.1085(c)</i>	No visible cracks, holes, gaps or other open spaces between roof section joints or between the interface of the roof edge and tank wall. Each opening must be equipped with a closure device or connected to a closed-vent system.	
Monitoring Requirement <i>40 CFR §264.1084(c)(4)</i> <i>40 CFR §265.1085(c)(4)</i>	Closure Device	Closed-Vent System Vented to a Control Device
	No visible openings when in the closed position	Remove or destroy organics in the vent system
Method	In operation any time hazardous waste is managed in the tank.	
Frequency	Annually, unless designated as 'unsafe to monitor'.	
Inspection Requirement <i>40 CFR §264.1084(c)(4)</i> <i>40 CFR §265.1085(c)(4)</i>	• The owner or operator must check for defects that could result in air pollutant emissions. • Tank standards at Subpart J of <i>40 CFR §§264/265.195</i> require: – Inspect overfill controls; – Inspect cathodic protection systems; and – Daily inspection of: - Monitoring and leak detection data; - Signs of corrosion or releases of wastes (weekly with a leak detection system); and - Area around tanks (including secondary containment) for signs of erosion and releases (weekly with a leak detection system). • For the closed-vent system and control device, see brief sheet Level 2 Enclosed Tank Vented to Closed-Vent System to Control Device.	
	Initial inspection and then annually. Daily tank inspections are required by <i>40 CFR §§264/265.195</i> and overlap these requirements.	
Frequency		

Visual Inspection	Check for visible defects such as cracks, holes, or gaps in roof section or between the roof and tank wall; deteriorated seals/gaskets; and broken or missing hatches, access covers, caps or other closure devices.
Recordkeeping & Reporting	• Tank ID number. • Document vapor pressure determinations for tanks using Tank Level 1 controls as outlined in <i>40 CFR §§264/265.1089(b)(2)(i)</i>. • Develop and maintain a written inspection plan and schedule as outlined in <i>40 CFR §264.1088/40 CFR §264.1089</i>. • Document inspections as outlined in <i>40 CFR §264.1089(b)/40 CFR §265.1090(b)</i>. Also, request copies of daily tank inspection logs and annual Subpart CC inspections. • See brief sheet Level 2 Enclosed Tank Vented to Closed-Vent System to Control Device for requirements specific to closed-vent systems and control devices. • If management of tank wastes is not in compliance with <i>40 CFR §264.1084(b)/40 CFR §265.1085(b)</i>, submit a report to the Regional Administrator within 15 days of becoming aware of the situation. Provide: – Facility name, address, and EPA ID number; – Description of noncompliance and its cause(s); – Date of noncompliance; – Corrective actions taken; and – Report signed by an authorized representative of the owner/operator.
Compliance	
Permit Application	Identify tanks subject to Level 1 controls. Include the information listed under the above recordkeeping requirements. Further, information must be sufficient to justify the Subpart CC Status entered in Table F-4 of the 2008 HSWA Permit Template. Refer to <i>40 CFR §270.14(a)</i> , <i>40 CFR §270.27</i> , and Section O of the Subpart CC Checklist for detailed requirements.

- ◇ [2008 NOD Template for Subparts AA/BB/CC](#)
- ◇ [2008 HSWA Permit Template](#)
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.

- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart CC Air Emission Standards for Tanks, Surface Impoundments, and Containers. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.

The diagram illustrates a cross-section of a floating roof tank. A vertical line on the left is labeled "Tank wall". A horizontal line at the top right is labeled "Floating roof". A curved line below the floating roof is labeled "Scuff band". A horizontal line at the bottom right is labeled "Liquid-filled tube".

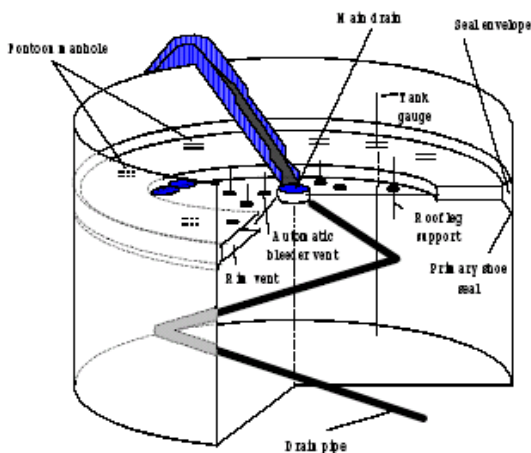
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Recordkeeping & Reporting Compliance 40 CFR §264.1089(b) 40 CFR §265.1090(b)	• Tank identification number. • Document the floating roof design. • Develop and maintain a written inspection plan and schedule as outlined in 40 CFR §264.1088/40 CFR §265.1089. • Document inspections as outlined in 40 CFR §264.1089(b)/40 CFR §265.1090(b). • The Regional Administrator must be notified before each inspection as outlined in 40 CFR §264.1084(e)(3)(iv)/40 CFR §265.1085(e)(3)(iv). • If management of tank wastes is not in compliance with 40 CFR §264.1084(b)/40 CFR §265.1090(b), submit a report to the Regional Administrator within 15 days of becoming aware of the situation. Include the facility name, address, and EPA ID number; a description of noncompliance and its cause(s); the date of noncompliance; and the corrective actions taken. • Report signed by an authorized representative of the owner/operator.
Permit Application	Identify each fixed roof tank with IFR. Include the information listed under recordkeeping requirements. Further, provide information sufficient to justify the Subpart CC Status entered in Table F-4 of the 2008 HSWA Permit Template. Refer to 40 CFR §270.14(a), 40 CFR §270.27, and Section O of the Subpart CC Checklist for detailed requirements.

- ◇ [2008 NOD Template for Subparts AA/BB/CC](#)
- ◇ [2008 HSWA Permit Template](#)
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart CC Air Emission Standards for Tanks, Surface Impoundments, and Containers. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.

RCRA Subpart CC Regulations

A tank equipped with an External Floating Roof (EFR) must comply with Tank Level 2 controls.



Performance Standard/Control Method	Float on the liquid surface except when supported by the leg supports. Must be equipped with two continuous seals, one above the other, between the wall of the tank and the roof edge. Additional design specifications are listed in 40 CFR §264.1084(f)(1)/40 CFR §265.1085(f)(1). Operating requirements are found in 40 CFR §264.1084(f)(2)/40 CFR §265.1085(f)(2).	
Monitoring Requirement 40 CFR §264.1084(f)(3)(i) 40 CFR §265.1085(f)(3)(i)	Monitor the Seal Gaps	
	Primary Seal: Lower	Secondary Seal: Upper
	Gap between the tank wall and primary seal must not exceed 212 cm ² (33 in ²) per meter of tank diameter and width of any portion of these gaps must not exceed 3.8 cm (1.5 in).	Total area of the gaps between the tank wall and the secondary seal must not exceed 21.2 cm ² (3.3 in ²) and the width of any portion of these gaps must not exceed 1.3 cm (0.5 in).
Method	Gaps shall be measured in accordance with procedures contained in 40 CFR §264.1084(f)(3)(i)/40 CFR §265.1085(f)(3)(i).	
Frequency	Within 60 calendar days of initial operation then at least once every 5 years.	Within 60 calendar days of initial operation then at least once every year.

Inspection Requirement <i>40 CFR §264.1084(f)(3)(ii) and 40 CFR §265.1085(f)(3)(ii)</i>	- Inspect for visible defects on the EFR and closure devices that could result in air pollutant emissions. - Examples of defects are listed in <i>40 CFR §264.1084(f)(3)(ii)/40 CFR §265.1085(f)(3)(ii)</i>. - Tank standards at Subpart J of <i>40 CFR §§264/265.195</i> require: - Inspect overfill controls; - Inspect cathodic protection systems; and - Daily inspection of: - Monitoring and leak detection data; - Signs of corrosion or releases of wastes (weekly with a leak detection system); and - Area around tanks (including secondary containment) for signs of erosion and releases (weekly with a leak detection system).
Frequency	Initially then annually. Tank inspection is required daily per <i>40 CFR §264/265.195</i>. If identified in a daily inspection, first attempt at repair must be done within 5 days and completed no later than 45 calendar days after detection.
Recordkeeping & Reporting Compliance <i>40 CFR §264.1089(b)</i> <i>40 CFR §265.1090(b)</i>	- Tank ID number. - Document the floating roof design and tank dimensions. - Document seal gap measurements as outlined in <i>40 CFR §264.1089(b)(2)(iii)(B)/40 CFR §265.1090(b)(2)(iii)(B)</i>. - Develop and maintain a written inspection plan and schedule as outlined in <i>40 CFR §264.1088/40 CFR §265.1089</i>. - Document inspections as outlined in <i>40 CFR §264.1089(b)/40 CFR §265.1090(b)</i> and overlapping requirements of <i>40 CFR §264/265.195</i>. Also, request copies of daily tank inspection logs. - The Regional Administrator must be notified before each seal measurement and/or inspection as outlined in <i>40 CFR §264.1084(f)(3)(iii)/40 CFR §265.1085(f)(3)(iii)</i>. - If management of tank wastes is not in compliance with <i>40 CFR §264.1084(b)/40 CFR §265.1085(b)</i>, submit a report to the Regional Administrator within 15 days of becoming aware of the situation. Include the facility name, address, and EPA ID number; a description of noncompliance and its cause(s); the date of noncompliance; and the corrective actions taken.

	• Report signed by an authorized representative of the owner/operator.
Permit Application	Identify each tank with an external floating roof. Include the information listed under recordkeeping requirements. Further, provide information sufficient to justify the Subpart CC Status entered in Table F-4 of the 2008 HSWA Permit Template. Refer to <i>40 CFR §270.14(a)</i> , <i>40 CFR §270.27</i> , and Section O of the Subpart CC Checklist for detailed requirements.

- ◇ [2008 HSWA Permit Template](#)
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart CC Air Emission Standards for Tanks, Surface Impoundments, and Containers. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.

RCRA Subpart CC Regulations

Level 2 Fixed-Roof Tank Vented to Closed-Vent System to Control Device

Transport vapors through the closed-vent system and destroy the organics in the approved control device.



Performance Standard/Control Method <i>40 CFR §§264.1084(g) and 264.1087</i> <i>40 CFR §§265.1085(g) and 265.1088</i>	The fixed roof and closure devices form a continuous barrier over the entire surface area of the liquid in the tank. Each opening in the fixed roof not vented to the control device must be equipped with a closure device. The fixed roof and its closure devices shall be made of materials that minimize exposure of the waste to the atmosphere and maintain the integrity of the fixed roof and closure devices over the intended service life. Whenever waste is in the tank, the fixed roof must be installed with each closure device secured and the vapor headspace vented to the control device. The design and operation of the closed-vent system and control device must comply with <i>40 CFR §264.1087/40 CFR §265.1088</i> .	
Monitoring 		

Frequency	Initially and then annually and overlapping requirements of 40 CFR §§264/265.195
Recordkeeping & Reporting	• Tank ID number (request a map or figure illustrating the location of tanks at the facility). • Design and performance information of closed-vent system and control device including certification as outlined in 40 CFR §264.1089(e)/40 CFR §265.1090(e). • Develop and maintain a written inspection plan and schedule as outlined in 40 CFR §264.1088/40 CFR §265.1089. • Document inspections as outlined in 40 CFR §264.1089(b)/40 CFR §265.1090(b). • If management of tank wastes is not in compliance with 40 CFR §264.1084(b)/40 CFR §265.1085(b), submit a report to the Regional Administrator within 15 days of becoming aware of the situation. Include the facility name, address, and EPA ID number; a description of noncompliance and its cause(s); the date of noncompliance; and the corrective actions taken. • Report signed by an authorized representative of the owner/operator.
Compliance 40 CFR §264.1089(b) and (e) and 40 CFR §265.1090(b) and (e)	
Permit Application	Identify each fixed roof tank vented through a closed-vent system to a control device. Include the information listed under recordkeeping requirements. Further, provide information sufficient to justify the Subpart CC Status entered in Table F-4 of the 2008 HSWA Permit Template. Refer to 40 CFR §270.14(a), 40 CFR §270.27, and Section O of the Subpart CC Checklist for detailed requirements.

- ◇ Method 21 is found in 40 CFR §60 and is available at <http://www.epa.gov/ttn/emc/promgate.html>.
- ◇ [2008 HSWA Permit Template](#)
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.

- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart CC Air Emission Standards for Tanks, Surface Impoundments, and Containers. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.

RCRA Subpart CC Regulations

Level 2 Pressure Tank

Prevent venting to the atmosphere as a result of compression of the vapor headspace in the tank.



Performance Standard/Control Method <i>40 CFR §264.1084(h)</i> <i>40 CFR §265.1085(h)</i>	All tank openings must be equipped with closure devices designed to operate with no detectable emissions during the filling of the tank. Whenever a hazardous waste is in the tank it must be operated as a closed system that does not vent, except for safety device.
Monitoring Requirement <i>40 CFR §264.1084(h)(2)</i> <i>40 CFR §265.1085(h)(2)</i>	Confirm no detectable emissions from tank closure devices.
Method	Method 21
Frequency	Initially, then annually. Also, daily tank inspections for leaks are performed under Subpart J Tank requirements (<i>40 CFR §§264/265.195</i>).
Recordkeeping & Reporting Compliance <i>40 CFR §264.1089</i> <i>40 CFR §265.1090</i>	• Tank ID number • Develop and maintain a written monitoring plan and schedule as outlined in <i>40 CFR §264.1088/40 CFR §265.1089</i>. • Document monitoring events. • If management of tank wastes is not in compliance with <i>40 CFR §264.1084(b)/40 CFR §265.1085(b)</i>, submit a report to the Regional Administrator within 15 days of becoming aware of the situation. Include the facility name, address, and EPA ID number; a description of noncompliance and its cause(s); the date of noncompliance; and the corrective actions taken. • Report signed by an authorized representative of the owner/operator.

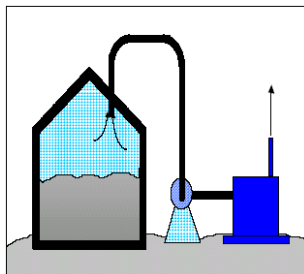
Permit Application	Identify each Level 2 pressure tank vented through a closed-vent system to a control device. Include the information listed under recordkeeping requirements. Further, provide information sufficient to justify the Subpart CC Status entered in Table F-4 of the 2008 HSWA Permit Template. Refer to <i>40 CFR §270.14(a)</i>, <i>40 CFR §270.27</i>, and Section O of the Subpart CC Checklist for detailed requirements.
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- ◇ Method 21 is found in *40 CFR §60* and is available at <http://www.epa.gov/ttn/emc/promgate.html>.
- ◇ [2008 HSWA Permit Template](#)
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.

RCRA Subpart CC Regulations

Level 2 Enclosed Tank Vented to Closed-Vent System to Control Device

The tank must be located inside an enclosure and the enclosure must be vented through a closed-vent system to an enclosed combustion control device.



Performance Standard/Control Method <i>40 CFR §264.1084(i)</i> <i>40 CFR §265.1085(i)</i>	The tank must be located within a permanent enclosure and vented through a closed-vent system to a vapor incinerator, boiler, or process heater designed and operated as outlined in <i>40 CFR §264.1087(c)(ii)/40 CFR §265.1088(c)(ii)</i> . The enclosure shall be designed and operated in accordance with <i>Procedure T – Criteria for and Verification of a Permanent or Temporary Total Enclosure</i> .		
Monitoring Requirement <i>40 CFR §264.1084(i)</i> <i>40 CFR §265.1085(i)</i>	Verification Procedure for Enclosure	Control Device	Closed Vent System Operates with No Detectable Emissions
Method	Specified in Section 5.0 of <i>Procedure T – Criteria for and Verification of a Permanent or Temporary Total Enclosure</i> and the Permanent Enclosure Brief Sheet.	In accordance with procedures in <i>40 CFR §§264/265.1033 (f)(2)</i> .	Method 21 as outlined in <i>40 CFR §§264.1033(l) & 264.1034(b) / 40 CFR §§265.1033(k) & 265.1034(b)</i> .
Frequency	Initially then annually	Once per operating day	Initially then annually
Recordkeeping & Reporting	- Tank ID number (request a map or figure illustrating the location of the tanks at the facility). - Design and performance information of closed-vent system and control device including certification as outlined in <i>40 CFR §264.1089(e)/40 CFR §265.1090(e)</i>. - Develop and maintain a written monitoring plan and schedule as outlined in <i>40 CFR §264.1088/40 CFR §265.1089</i>.		

Compliance 40 CFR §264.1089(d) 40 CFR §265.1090(d)	• Document monitoring events. • Document the most recent verification analysis of the enclosure. • If management of tank wastes is not in compliance with 40 CFR §264.1084(b) /40 CFR §265.1085(b), submit a report to the Regional Administrator within 15 days of becoming aware of the situation. Include the facility name, address, and EPA ID number; a description of noncompliance and its cause(s); the date of noncompliance; and the corrective actions taken. • Report signed by an authorized representative of the owner/operator.
Permit Application	Identify each Level 2 enclosed tank vented through a closed-vent system to an enclosed combustion control device. Include the information listed under recordkeeping requirements. Further, provide information sufficient to justify the Subpart CC Status entered in Table F-4 of the 2008 HSWA Permit Template. Refer to 40 CFR §270.14(a), 40 CFR §270.27, and Section O of the Subpart CC Checklist for detailed requirements.

- ◇ Method 21 is found in 40 CFR §60 and is available at <http://www.epa.gov/ttn/emc/promgate.html>.
- ◇ [Procedure T - Criteria for Permanent Total Enclosure](#) [40 CFR §52.741, Appendix B]
- ◇ See brief sheet Permanent Total Enclosure Requirements for more details.
- ◇ [2008 NOD Template for Subparts AA/BB/CC](#)
- ◇ [2008 HSWA Permit Template](#)
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart CC Air Emission Standards for Tanks, Surface Impoundments, and Containers. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.

RCRA Subpart CC Regulations

Permanent Total Enclosure Requirements

Control option allowing a tank or container to be located inside a permanent total enclosure.



Two inspectors inside an enclosure

Performance Standard/Control Method Requirement 40 CFR §52.741	Enclosure must be designed and operated in accordance with <i>Procedure T - Criteria for Permanent Total Enclosure</i> [40 CFR §52.741, Appendix B] and satisfy the following criteria: - Any natural draft opening (NDO) shall be at least 4 equivalent opening diameters from each VOC emitting point. - Any exhaust point from the enclosure shall be at least 4 equivalent duct or hood diameters from each NDO. - The total area of all NDOs shall not exceed 5% of the surface area of the enclosure's four walls, floor, and ceiling. - The average facial velocity (FV) of air through all NDOs shall be at least 3,600 m/hr (200 fpm). The direction of air through all NDO's shall be into the enclosure. - All access doors and windows shall be closed during routine operation of the process. - All VOC emissions must be captured and contained for discharge through a control device.
Monitoring Requirement 40 CFR §264.1084(i) 40 CFR §265.1085(i)	The owner or operator must perform the verification procedure for the enclosure outlined in Section 5 of <i>Procedure T</i>.
Frequency	Initially and Annually
Recordkeeping & Reporting Compliance 40 CFR §264.1089(d)(1) 40 CFR §265.1090(d)(1)	Document the most recent verification analysis of the enclosure. Including all calculations and measurements performed by the owner/operator to verify the enclosure meets the criteria.

Permit Application	Identify all enclosures used to comply with Subpart CC requirements. Include the information listed under recordkeeping requirements in the Part B permit application. Refer to <i>40 CFR §270.14(a)</i> , <i>40 CFR §270.27</i> , and Section O of the Subpart CC Checklist for detailed requirements.
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- ◇ [2008 NOD Template for Subparts AA/BB/CC](#)
- ◇ [Procedure T - Criteria for Permanent Total Enclosure](#) is available in 40 CFR §52.741, Appendix B.
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.

RCRA Subpart CC Regulations

Surface Impoundment with Floating Membrane

Control air emissions from a surface impoundment using a floating membrane.



Performance Standard/Control Method <i>40 CFR §264.1085(c)</i> <i>40 CFR §265.1086(c)</i>	Membrane forms a continuous barrier over the entire surface area of the liquid and is fabricated from HDPE at least 2.5 mm thick or material or composite of materials with organic permeability properties equivalent to HDPE. Other design and operating requirements are outlined in <i>40 CFR §264.1085(c)(1)(iii through v)/40 CFR §265.1086(c)(1)(iii through v)</i>. Membrane must be in place when hazardous waste is in the surface impoundment and closure devices secured in the closed position except to provide access for routine operations (e.g., sampling, equipment repair) and to remove accumulated sludge or other residues from the bottom <i>40 CFR §264.1085(c)(2)(i)/40 CFR §265.1086(c)(2)(i)</i>.
Inspection Requirement <i>40 CFR §264.1085(c)(3)</i> <i>40 CFR §265.1086(c)(3)</i>	Visually inspect for defects that could result in emission of pollutants. Example defects include: • Visible cracks; • Holes or gaps in the cover section seams or; • Holes or gaps between the interface of the cover edge and its foundation mountings; • Broke, cracked, or damaged seals or gaskets on closure devices; and • Broken or missing hatches, access covers, caps, or other closure devices.
Frequency	Initially then annually.
Recordkeeping & Reporting Compliance <i>40 CFR §264.1089(c)(1 through 3)</i> <i>40 CFR §265.1090(c)(1 through 3)</i>	• Surface impoundment ID number. Request a map or figure illustrating the location of the surface impoundment(s). • Design documentation for the floating membrane cover including certification by the owner/operator that cover meets the requirements of <i>40 CFR §264.1085(c)/40 CFR §265.1086(c)</i>. • Develop and maintain a written monitoring plan and schedule as outlined in <i>40 CFR §264.1088/40 CFR §264.1089</i>. Also, request a copy of all monitoring records and logs.

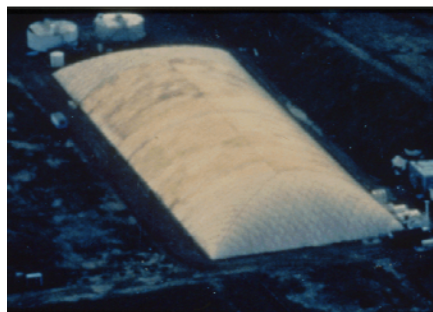
	Documentation of each inspection as outlined in <i>40 CFR §264.1089(c)(3)/40 CFR §265.1090(c)(3)</i>. Request copies of inspection records/logs.
Permit Application	Identify each surface impoundment fitted with a floating membrane. Include the information listed under recordkeeping requirements in the Part B permit application. Refer to <i>40 CFR §270.14(a)</i> , <i>40 CFR §270.27</i> , and Section O of the Subpart CC Checklist for detailed requirements.

- ◇ [2008 NOD Template for Subparts AA/BB/CC](#)
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ EPA. 2002. RCRA Organic Air Emission Standards Permit and Compliance Training Course. Training Manual. United States Environmental Protection Agency. Training Presented in Charleston, South Carolina. March 5-7.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart CC Air Emission Standards for Tanks, Surface Impoundments, and Containers. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.

RCRA Subpart CC Regulations

Covered Surface Impoundment Vented to Closed-Vent System to Control Device

Controls air pollutant emissions from a surface impoundment by using a cover vented through a closed vent system to a control device.



Performance Standard/Control Method <i>40 CFR §264.1085(d)</i> <i>40 CFR §265.1086(d)</i>	The cover and closure devices form a continuous barrier over the entire surface area of the liquid. Other design specifications are listed in <i>40 CFR §264.1085(d)(1)(ii) and (iii)/40 CFR §265.1086(d)(1)(ii) and (iii)</i> . Operating requirements are found at <i>40 CFR §264.1085(d)(2)/40 CFR §265.1086(d)(2)</i> . The design and operation of the closed-vent system and control device must comply with <i>40 CFR §264.1087/40 CFR §265.1088</i> .	
Monitoring Requirement <i>40 CFR §264.1087</i> <i>40 CFR §265.1088</i>	Pressure in the vapor headspace underneath the cover < Atmosphere	Pressure in the vapor headspace underneath the cover ≥ Atmosphere
	No visible cracks, holes, gaps or other spaces in the closure devices or around the perimeter.	No detectable organic emissions (<500 ppmv above background).
Method	Visual Inspection	Method 21 as outlined in <i>40 CFR §265.1084(d)</i>
Frequency	Initially then annually	
Inspection Requirement <i>40 CFR §264.1087</i> <i>40 CFR §265.1088</i>	- Visually inspect for defects that could result in emission of pollutants as outlined in <i>40 CFR §264.1085(d)(3)/40 CFR §265.1086(d)(3)</i>. - Example defects are listed in <i>40 CFR §264.1085(d)(3)(i)/40 CFR §265.1086(d)(3)(i)</i>. - The closed-vent system and control device are inspected as outlined in <i>40 CFR §264.1087(b)(4) and (c)(7)/40 CFR §265.1088(b)(4) and (c)(7)</i>.	
Frequency	Initially then annually	

Recordkeeping & Reporting Compliance 40 CFR §264.1089(c)(1) through (4) 40 CFR §265.1090(c)(1) through (4)	• Surface impoundment ID number. Request a map or figure illustrating the location of the surface impoundment(s). • Design documentation for the cover including certification by the owner/operator that cover meets the requirements of 40 CFR §264.1085(c)/40 CFR §265.1086(c). • Design and performance information of closed-vent system and control device including certification as outlined in 40 CFR §264.1089(e)/40 CFR §265.1090(e). • Develop and maintain a written inspection/monitoring plan and schedule as outlined in 40 CFR §264.1088/40 CFR §264.1089. Also, request a copy of all monitoring records and logs. • Documentation of each inspection as outlined in 40 CFR §264.1089(c)(3)/40 CFR §265.1090(c)(3). Request copies of inspection records/logs.
Permit Application	Identify each surface impoundment fitted with a cover vented through a closed-vent system to a control device. Include the information listed under recordkeeping requirements in the Part B permit application. Refer to 40 CFR §270.14(a), 40 CFR §270.27, and Section O of the Subpart CC Checklist for detailed requirements.

- ◇ Method 21 is found in 40 CFR Part 60 and is available at <http://www.epa.gov/ttn/emc/promgate.html>.
- ◇ [2008 NOD Template for Subparts AA/BB/CC](#).
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ EPA. 2002. RCRA Organic Air Emission Standards Permit and Compliance Training Course. Training Manual. United States Environmental Protection Agency. Training Presented in Charleston, South Carolina. March 5-7.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart CC Air Emission Standards for Tanks, Surface Impoundments, and Containers. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.

RCRA Subpart CC Regulations Container Levels Determination

The use of controls is required on containers that manage hazardous wastes with an average VO concentration equal to or greater than 500 ppmw.

Performance Standard/Control Method <i>40 CFR §264.1086</i> <i>40 CFR §265.1087</i>		Controls are applied to limit the amount of organics escaping from the containers and entering the atmosphere. The use of a specific level of control is determined by the size of the container, type of waste within the container, and if stabilization occurs in the container.	
Container Size		Service Container	Container Control Level
Cubic Meters	Gallons,		
<0.1	<2.4	Exempt from Subpart CC	Not Applicable
>0.1 to ≤ 0.46	>2.4 to ≤ 122	Light or heavy material service	Container Level 1
> 0.46	> 122	Heavy material service	Container Level 1
> 0.46	> 122	Light material service	Container Level 2
> 0.1	> 2.4	Waste stabilization	Container Level 3
Waste Determinations		Light or Heavy Material Service	Waste Stabilization
		Vapor pressure determination <i>40 CFR §264.1083(c)/40 CFR §265.1084(c)</i>	By regulatory definition <i>40 CFR §265.1081</i>
Requirements		Method 25E, ASTM 2879-92, and methods from API Publication 2717 and standard reference texts.	- Reduces the mobility of hazardous constituents in a waste or eliminates free liquids. - Includes mixing waste and binders or other materials then curing. - Does not include adding absorbents to waste surface without mixing/agitation, or subsequent curing.
Frequency		Initially and anytime conditions change.	
Recordkeeping & Reporting Compliance		Document vapor pressure determinations as outlined in <i>40 CFR §264.1086(c)(5)/40 CFR §265.1087(c)(5)</i> .	

Permit Application	For each container or group of like containers considered, identify size, service (including stabilization), and applicable control level. Describe procedures implemented to ensure compliance with these determinations. Include all information listed under recordkeeping requirements. Further, information must be sufficient to justify completion of Table F-5 of the 2008 HSWA Permit Template. Refer to <i>40 CFR §270.14(a)</i> , <i>40 CFR §270.27</i> , and Section O of the Subpart CC Checklist for detailed requirements.
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- ◇ Method 25E is found in *40 CFR §60* and is available at <http://www.epa.gov/ttn/emc/promgate.html>.
- ◇ [2008 NOD Template for Subparts AA/BB/CC](#)
- ◇ ASTM is available from ASTM International (formerly the American Society for Testing and Materials)
- ◇ API methods are available in *Evaporative Loss from External Floating Roof Tanks*, Third Edition. American Petroleum Institute Publication 2517. February 1989.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ EPA. 2002. RCRA Organic Air Emission Standards Permit and Compliance Training Course. Training Manual. United States Environmental Protection Agency. Training Presented in Charleston, South Carolina. March 5-7.

Example from Inspector's Checklist for Subpart CC

Container Controls (1087)

Determine Container Level (1087(b))

- Level I 26.4 to 122 gallon or > 122 gallon and not in light material service
- Level II > 122 gallons in light material service
- Level II > 26.4 gallon used for stabilization (see definitions).

Light Material Service determination

Vapor pressure of waste is $\geq$ to 0.3 kPa at 20°C. (0.43 PSI, 1.68 mm Hg at 20°C).
Only needs to be made if container(s) are > 122 gallons.

Level I Container Standards (1087(c))

- (1) (i) Meets **DOT regulations** on packaging for type of waste including securing closures (1087(f)). **or**
- (ii) **Cover is continuous barrier** and all closure devices with no visible holes, gaps, or other open spaces (e.g., lid on drum, secured tarp on roll-off). **or**
- (iii) An open-top container with **organic-vapor suppressing barrier**.
- (3) **Covers closed**, except when material added or removed, must be closed within 15 minutes of adding or removing waste.
- (iv) **Spring-loaded, pressure-vacuum relief valve**, conservation vent, or similar pressure relief device **allowed**. Setting must be in closed position except during pressure release.
- (4) **Inspect initially and annually**, defects corrected within 5 days or waste removed from container. No log required.

Level II Container Standards (1087(d))

- (1) (i) Meets **DOT regulations** on packaging for type of waste including securing closures (1087(f)). **OR**
- (ii) Operates **with no detectable emissions** (> 500 ppm above background) monitored per 1087(g). **OR**
- (iii) Container demonstrated to be **vapor tight using** 40 CFR §60 Method 27 per 1087(h).
- (2) **Transfer of waste** conducted to minimize volatilization (e.g., submerged fill, vapor-recovery, etc.).
- (3) **Covers closed** except when adding or removing waste, must be closed within 15 minutes of completion of adding or removing operation.
- (iv) **Spring-loaded, pressure-vacuum relief valve**, conservation vent, or similar pressure relief device **allowed**. Setting must be in closed position except during pressure release.
- (4) **Inspect initially and annually**, defects corrected with in 5 days or waste removed from container. No log required

Level III Container Standards (1087(e))

NOTE: only at TSD

- (1)(i) Vented through closed-vent system to control device (regulations under 1087(e)(2-4). OR
- (1)(ii) Located inside an enclosure to a control device. (regulations under 1087(e)(2-4).

Excerpt from [NCDENR, Robin Proctor's Subpart CC Inspection Check Sheet](#)

RCRA Subpart CC Regulations

Level 1 US Dept. of Transportation Containers

A container that meets U.S. Dept of Transportation (DOT) regulations on packaging, hazardous materials for transportation.



Performance Standard/Control Method <i>40 CFR §264.1086(b)(1)(i), (b)(1)(ii) and (c)</i> <i>40 CFR §265.1087(b)(1)(i), (b)(1)(ii) and (c)</i>	There are three control options for Level 1 containers: • Container meets DOT regulations on packaging hazardous materials for transportation. • Use a container equipped with a cover and closure devices that provide a continuous barrier over the container openings. • Open-top container with an organic-vapor suppressing barrier. • Additional design specifications are listed in <i>40 CFR §264.1086(c)(2)/40 CFR §265.1087(c)(2)</i>. Operating requirements are found at <i>40 CFR §264.1086(c)(3)/40 CFR §265.1087(c)(3)</i>.
Monitoring Requirement	No monitoring other than inspections specified.
Inspection Requirement <i>40 CFR §264.1086(c)(4)</i> <i>40 CFR §265.1087(c)(4)</i>	Inspected for visible cracks, holes, gaps, and other openings into the container interior. Inspect while container is covered and closure devices secured.
Method	Visual inspection
Frequency	• For containers already full when accepted by the TSD, within 24 hours of acceptance <i>40 CFR §264.1086(c)(4)(i)/40 CFR §265.1087(c)(4)(i)</i>. • For containers present at the TSD for 1 year or more, initially (i.e., upon completion of filling) and then annually <i>40 CFR §264.1086(c)(4)(ii)/40 CFR §265.1087(c)(4)(ii)</i>.

RCRA Subpart CC Regulations

Level 2 Containers

Level 2 controls must be applied to containers greater than 0.46 m³ in light material service.



Performance Standard/Control Method 40 CFR §264.1086(d)(1 - 3) 40 CFR §265.1087(d)(1 - 3)	Container Level 2 controls offer three options: • Container that meets DOT regulations on packaging hazardous materials for transportation. • Container which is operating with no detectable emissions. • Vapor-tight container. • Operating requirements are found at 40 CFR §264.1086(d)(2) and (3)/40 CFR §265.1087(d)(2) and (3).	
Monitoring Requirement	No detectable emissions, defined as < 500ppmv	Vapor-tight container, defined as pressure change < 750 Pascals (0.11 psi) within 5 minutes. Demonstrated vapor-tight in preceding 12 months.
Method	Method 21 40 CFR §264.1086(g) 40 CFR §265.1087(g)	Method 27 40 CFR §264.1086(h) 40 CFR §265.1087(h)
Frequency	Initially and Annually	
Inspection Requirement 40 CFR §264.1086(d)(4) 40 CFR §265.1087(d)(4)	Inspected for visible cracks, holes, gaps, or other openings into the interior of the container. Inspect while container is covered and closure devices are secured.	
Method	Visual Inspection	
Frequency	• For containers already full when accepted by the TSD, within 24 hours of acceptance 40 CFR §264.1086(d)(4)(i)/40 CFR §265.1087(d)(4)(i). • For containers present at the TSD for 1 year or more, initially (i.e., upon completion of filling) and then annually 40 CFR §264.1086(d)(4)(ii)/40 CFR §265.1086(d)(4)(ii).	

RCRA Subpart CC Regulations Level 3 Containers

If waste stabilization is occurring within the container then Container Level 3 controls apply.

Performance Standard/Control Method <i>40 CFR §264.1086 (e)(1)</i> <i>40 CFR §265.1087 (e)(1)</i>	Container Level 3 controls offer two options: • Container is vented through a closed-vent system to a control device. • Container is vented inside an enclosure which is exhausted through a closed-vent system to a control device. Additional design and operating requirements are found at <i>40 CFR §264.1086(e)(2), (e)(3), & (e)(6)/ 40 CFR §265.1087(e)(2), (e)(3), & (e)(6)</i> .		
Monitoring Requirement <i>40 CFR §264.1087</i> <i>40 CFR §265.1088</i>	Closed vent system No detectable emissions (<500 ppm)	Control Device	Verification procedure for enclosure
Method	Method 21 <i>40 CFR §264.1033(l), 40 CFR §264.1034(b)/40 CFR §265.1033(k), 40 CFR §265.1034(b)</i>	Procedures outlined in <i>40 CFR §264.1033(f)(2)/40 CFR §265.1033(f)(2)</i>	Section 5.0 of <i>Procedure T 40 CFR §52.741</i>
Frequency	Initially then Annually	Once per operating day	Initially then Annually
Recordkeeping & Reporting Compliance <i>40 CFR §264.1089(d)</i> <i>40 CFR §265.1090(d)</i>	• Design and performance information on closed-vent system and control device including certification as outlined in <i>40 CFR §264.1089(e)/40 CFR §265.1090(e)</i>. • Develop and maintain a written monitoring plan and schedule as outlined in <i>40 CFR §264.1088/40 CFR §264.1089</i>. • Document monitoring events. • Document the most recent verification analysis of the enclosure.		

Permit Application	Identify each container or group of containers designated for Level 3 controls, Specify selected control option. Describe procedures implemented to support the designation of Level 3 controls and selected options. Include information listed under recordkeeping & reporting. Information supplied must be sufficient to support completion of Table F-5 of the 2008 HSWA Permit Template. Refer to <i>40 CFR §270.14(a)</i> , <i>40 CFR §270.27</i> , and Section O of the Subpart CC Checklist for detailed requirements.
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- ◇ Method 21 is found in *40 CFR §60* and is available at <http://www.epa.gov/ttn/emc/promgate.html>.
- ◇ [2008 HSWA Permit Template](#).
- ◇ [Procedure T - Criteria for Permanent Total Enclosure](#) is available in *40 CFR §52.741*, Appendix B.
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, GA. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, GA.
- ◇ Code of Federal Regulations.2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart CC Air Emission Standards for Tanks, Surface Impoundments, and Containers. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.

RCRA Subpart CC Regulations Exemptions

A listing is provided of the exemptions from Subpart CC, their applications and locations.

VO Concentration Exemption <i>40 CFR §264.1082(c)(1)</i> <i>40 CFR §265.1083(c)(1)</i>	Less than 500 ppmw must be determined for each waste stream as described in the brief sheet entitled Applicable Units and Waste Stream Determination.
Exemptions for Pre-Treatment <i>40 CFR §264.1082(c)(2)(i – viii)</i> <i>40 CFR §265.1083(c)(2)(i – viii)</i>	Eight alternatives are provided for treatment of wastes before entering tanks, surface impoundments, and containers potentially subject to Subpart CC regulations. Units downstream of one of these 8 alternative processes do not require air emission controls.
Unit Exemptions	• Wastewater treatment units • Elementary neutralization units • Emergency or spill management units • Totally enclosed treatment units • Hazardous waste recycling units • Conditionally exempt small quantity generators • Small quantity generators • Satellite accumulation units • RCRA empty containers • Other permitting exemptions
Exclusions	• Units used on-site for federal or state clean-up <i>40 CFR §264.1080(b)(5)/40 CFR §265.1080(b)(5)</i>. • Containers of less than 0.1m³ <i>40 CFR §264.1080(b)(2)/40 CFR §265.1080(b)(2)</i>. • Mixed radioactive and hazardous waste <i>40 CFR §264.1080(b)(6)/40 CFR §265.1080(b)(6)</i>. • Organic peroxide manufacturing waste (recordkeeping requirements still apply) <i>40 CFR §264.1080(d)/40 CFR §265.1080(d)</i>. • Pre-December 6, 1996 units <i>40 CFR §264.1080(b)(1)/40 CFR §265.1080(b)(1)</i>. • Tanks with process vents that could be managed under Subpart AA <i>40 CFR §264.1080(b)(8)/40 CFR §265.1080(b)(8)</i>. • Units in closure <i>40 CFR §264.1080(b)(3) & (b)(4)/40 CFR §265.1080(b)(3) & (b)(4)</i>. • Biological treatment of hazardous waste in accordance with <i>40 CFR §264.1082(c)(3)/40 CFR §264.1083(c)(3)</i> in surface impoundments or tanks. • Units managing hazardous wastes that meet LDR standards under <i>40 CFR §268.40</i> that have been treated by the treatment technology established for

	the waste in <i>40 CFR §268.42 (c)</i> or treated by an equivalent method of treatment. Units fitted with operating control devices and in compliance with Clean Air Act (CAA), NESHAP or NSAP controls <i>40 CFR §264.1080(b)(7)/40 CFR §265.1080(b)(7)</i>. CAA exemptions cannot be assumed just because a facility has a Title V Air Permit or is subject to CAA regulations related to volatile organic emissions. CAA regulations tend to not require emissions controls until emissions exceed an annual emission level (e.g., Benzene NESHAP, 11 Mega tons/year) and may not be unit specific (i.e., emissions are averaged over the entire facility or “bubbling”, only specified hazardous air pollutants). Unless controls are installed and operating on the unit subject to Subpart CC (and CAA regulations), the unit is not exempted by the CAA. Research and consultation with the Air Program will be required to determine if a CAA exemption is valid.
Documentation Compliance	In the facility operating log: - Document exemptions based on average VO concentrations as outlined in <i>40 CFR §1089(f)(1)/40 CFR §1090(f)(1)</i>. - For exemptions based on <i>40 CFR §264.1082(c)(2)(vii) & (c)(2)(viii)/40 CFR §265.1083(c)(2)(vii) & (c)(2)(viii)</i>, record the ID number for incinerators, boilers, and/or industrial furnaces that treated the hazardous waste. - Certification that a tank, surface impoundment, or container is equipped with and complies with CAA regulations. The specific regulation should be identified.
Permit Application	Identify all units potentially subject to Subpart CC standards that qualify for exclusion or exemption. Describe procedures followed to demonstrate that the exclusion or exemption applies. Information must be sufficient to justify exemptions addressed in Part IV.A.4. b of the 2008 HSWA Permit Template. Refer to <i>40 CFR §270.14(a)</i>, <i>40 CFR §270.27</i>, and Section O of the Subpart CC Checklist for detailed requirements.

- ◇ See brief sheet Applicable Units and Waste Stream Determination for additional details.
- ◇ [2008 HSWA Permit Template.](#)
- ◇ [2008 NOD Template for Subparts AA/BB/CC.](#)

- ◇ [Section O, Subpart CC Air Emission Standards](#), of the Checklist for Review of Federal RCRA Permit Applications.
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, GA. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, GA.
- ◇ EPA. 2002. RCRA Organic Air Emission Standards Permit and Compliance Training Course. Training Manual. United States Environmental Protection Agency. Training Presented in Charleston, South Carolina. March 5-7.
- ◇ Code of Federal Regulations.2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart CC Air Emission Standards for Tanks, Surface Impoundments, and Containers. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.

RCRA Subpart CC Regulations Methods

A listing is provided of the methods referenced in the Subpart CC regulations, their applications and locations.

Average VO Concentration <i>40 CFR §265.1084(a)(2) thru (4)</i> Method (Location)	• Method 25D (<i>40 CFR §60</i>, Appendix A). • Method 624, Method 625, Method 1624, Method 1625 (<i>40 CFR §136</i>, Appendix A). • Method 8260, Method 8270 (EPA SW-846). • Process knowledge.
Application	• Determine applicability of Subpart CC regulations (<i>40 CFR §§264.1080</i>, <i>264.1082(c)(1)</i>). • Determine concentrations of as-treated wastes for pre-treatment exemptions <i>40 CFR §264.1082(c)(2)(i – vi)</i>/<i>40 CFR §265.1083(c)(2)(i – vi)</i>.
Vapor Pressure Method (Location) <i>40 CFR §264.1083(c) /40 CFR §265.1084(c)</i>	• Method 25E (<i>40 CFR §60</i>, Appendix A). • ASTM 2879-92 (American Society of Testing & Materials). • Methods from API Publication 2717. • Methods from standard reference texts. • Process knowledge.
Application	• Determine tank control options. • Determine if containers are in light material service.
No Detectable Organic Emissions Method (Location)	Method 21 (<i>40 CFR §60</i> , Appendix A)
Application	• Tank, surface impoundment, and container control options involving closed-vent systems • Monitoring pressure tanks. <i>40 CFR §264.1084(h)(2)/ 40 CFR §265.1085(h)(2)</i>
Vapor Tight Container Method (Location)	Method 27 (<i>40 CFR §60</i> , Appendix A, <i>40 CFR §264.1086(h)</i>)
Application	Container Level 2 control option.

- ◇ Methods 21, 25D, 25E, and 27 are found in *40 CFR §60* and are available at <http://www.epa.gov/ttn/emc/promgate.html>.
- ◇ Methods [624](#), [625](#), [1624](#), and [1625](#) are found in *40 CFR §136*, Appendix A.
- ◇ [2008 HSWA Permit Template](#)

- ◇ Methods 8269 and 8270 are found in SW-846. SW-846 is available on-line at: <http://www.epa.gov/sw-846/main.htm>.
- ◇ ASTM is available from ASTM International (formerly the American Society for Testing and Materials)
- ◇ API methods are available in Evaporative Loss from External Floating Roof Tanks, Third Edition, American Petroleum Institute Publication 2517, February 1989.
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls under RCRA Air Standard Subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, Georgia. November 27.
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge](#). U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ EPA. 2002. RCRA Organic Air Emission Standards Permit and Compliance Training Course. Training Manual. United States Environmental Protection Agency. Training Presented in Charleston, South Carolina. March 5-7.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart CC Air Emission Standards for Tanks, Surface Impoundments, and Containers. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.

Additional documentation requirements are outlined.

Performance Standard/Control Method <i>40 CFR §270.27</i>	Documentation to demonstrate facility compliance with <i>40 CFR §§264/265</i> , Subpart CC and develop effective permit conditions.
Additional Recordkeeping Requirements for Tanks and Surface Impoundments Requirement	In addition to the recordkeeping & reporting requirements listed on the fact sheets for tanks and surface impoundments, inspection records must include the following: • Date of inspection; • Description of identified defects including date detected; • Location of each identified defect (not required for surface impoundments); • Corrective actions taken to repair identified defects; and • For each repair delayed beyond 45 calendar days, document the reason for the delay and the expected date of completion of the repair. <i>40 CFR §264.1089(b)(1)(B) and 40 CFR §264.1089(c)(3)/40 CFR §265.1090(b)(1)(B) and 40 CFR §265.1090(c)(3)</i>
Additional Recordkeeping Requirements for Control Device	In addition to the recordkeeping & reporting requirements listed on the brief sheets for units vented to a closed-vent system and control device, the facility operating record must include the following: • Signed certification by owner or operator that installed control devices are designed to perform at a level equivalent to that demonstrated by design analysis or performance test. • If a design analysis is used as a representation of as-installed performance, the design documentation required by <i>40 CFR §264.1035(b)(4)/40 CFR §265.1035(b)(4)</i> must be included in the facility operating record. • If a performance test is used as a representation of as-installed performance, the facility operating record must include the performance test plan. • Design documentation required by <i>40 CFR §§264/265.1035(b)(4)</i> must be included in the facility operating record. • As applicable, additional design, monitoring, operating, and inspection information as delineated in <i>40 CFR §§264/265.1035(c)(1) and (c)(2)</i>.

Requirement	• On a semi-annual basis, record a description of planned routine maintenance for the upcoming 6-month period. Identify periods when the control device will not meet performance requirements due to maintenance and describe the type of maintenance; planned frequency of maintenance; and lengths of maintenance periods. Further, maintain a record of maintenance actually performed in the previous six month period including times when the control device did not meet performance requirements. • For each unexpected control device malfunction during which performance requirements were not met, document the occurrence and duration of the event; the length of time the control device did not function properly; and actions taken to restore the control device to normal operation. • For carbon adsorption devices, document the management of removed carbon as outlined in <i>40 CFR §264.1087(c)(3)(ii)/40 CFR §265.1088(c)(3)(ii)</i>. <i>40 CFR §264.1089(e)/40 CFR §265.1090(e)</i>
Recordkeeping & Reporting Compliance <i>40 CFR §264.1089(a)</i> <i>40 CFR §265.1090(a)</i>	• All written plans must be maintained on-site in the facility records. • Air emission control equipment design documentation should be maintained until the equipment is replaced no longer in service. • Records for tanks and containers handling hazardous wastes from the manufacture of organic peroxide exempt from air emission control requirements should be maintained as long as the unit is not using air emission controls. • Records for units complying with 40 CFR Parts 60, 61, or 63 requirements should be maintained as long as emissions from the units are regulated under the Clean Air Act. • All other records should be retained for a minimum of 3 years.

Permit Application	Ensure all information listed in this brief sheet is included in the Part B permit application. Further, an emissions monitoring plan for Method 21 and monitoring method for each installed control device should be included. The plan should address monitoring points, monitoring methods, frequency of monitoring, procedures for documented exceedances, and procedures for mitigating noncompliance issues. Refer to <i>40 CFR §270.14(a)</i>, <i>40 CFR §270.27</i>, and Section O of the Subpart CC Checklist for detailed requirements.
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- ◇ Detailed requirements for documenting the design analysis required by *40 CFR §264.1089(e)(ii)* can be found on the brief sheets for condensers, carbon adsorption devices, vapor incinerators, boiler and process heaters, and flares.
- ◇ Information requirements for a performance test plan are outlined in *40 CFR §264.1035(b)(3)*.
- ◇ *40 CFR §264.1035(c)(1)* and *(c)(2)* cover design documentation; monitoring, operating, and inspection information; system modifications; and details related to flow indicators and monitoring/control devices.
- ◇ Spent carbon from a carbon adsorption system is managed in accordance with *40 CFR §264.1033(n)*.
- ◇ Monitoring plans are required under *40 CFR §270.27(a)(6)*.
- ◇ EPA. 2000. [General Recordkeeping and Reporting Guidance for Waste Management Units Requiring Air Emission Controls Under RCRA Air Standard subpart CC](#). Environmental Protection Agency, RCRA Programs Branch, Region 4. Atlanta, GA. November 27.
- ◇ Code of Federal Regulations.2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart CC Air Emission Standards for Tanks, Surface Impoundments, and Containers. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.

Example from Inspector's Checklist for Subpart CC

Recordkeeping Requirements (1090)

NOTE: Container Level III and Tank Level II have additional recordkeeping and monitoring requirements not listed here.

- (a) Maintain records **3 years**
- (b) Tanks
 - (1)(i) **Tank ID number** or unique identification description
 - (1)(ii) **Records of inspections:** date of inspection, location of defects, description of defect, date of detection and date of correction
 - (2) Records of **each maximum organic vapor pressure determination**.

Excerpt from [NCDENR, Robin Proctor's Subpart CC Inspection Check Sheet](#)

RCRA Subpart CC Regulations

DOT Regulations & Use to Determine Compliance with Container Standard

For complying with Subpart CC standards for Container Level 1 and Level 2 controls, containers that meet applicable United States Department of Transportation (DOT) regulations will be used.

Performance Standard/Control Method	Containers for Level 1 and Level 2 controls must satisfy DOT's regulations on packaging hazardous materials for transportation. <i>40 CFR §264.1086(f)/40 CFR §265.1087(f)</i>
Waste Determination Requirements Design	• 49 CFR §178, Specifications for Packaging; or • 49 CFR §179, Specifications for Tank Cars <i>40 CFR §264.1086(f)(1)/40 CFR §265.1087(f)(1).</i>
Waste Management	• 49 CFR §107, Subpart B, Exemptions; • 49 CFR §172, Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements; • 49 CFR §173, Shippers – General Requirements for Shipments and Packages; and • 49 CFR §180, Continuing Qualification and Maintenance of Packagings. <i>40 CFR §264.1086(f)(2)/40 CFR §265.1087(f)(2)</i>
Exemptions Requirement	No exceptions to 49 CFR §§178 and 179 regulations are allowed except for lab packs managed in accordance with the requirements of 49 CFR 178. These may comply with the exceptions for combination packagings in 49 CFR §173.12(b). 40 CFR §264.1086(f)(3) and (f)(4)/40 CFR §265.1087(f)(3) and (f)(4)
Recordkeeping & Reporting Compliance	No requirements specified. However, finger-print analysis should be requested for random containers and contents cross-referenced to approved containers in the DOT regulations to demonstrate compliance with the claim of DOT container use controls.
Permit Application	Identify all containers or types of containers classified as DOT containers for the purpose of compliance with Level 1 and Level 2 control requirements. Provide a comparison of actual container specifications and waste management activities to those listed in the applicable DOT standards to demonstrate compliance with Subpart CC standards. Further, the information must be sufficient to justify completion of Table F-5 of the 2008 HSWA Permit Template. Refer to 40 CFR §270.14(a), 40 CFR §270.27, and Section O of the Subpart CC Checklist for detailed requirements.

- ◇ [2008 NOD Template for Subparts AA/BB/CC.](#)
- ◇ EPA. [RCRA Subpart AA, BB and CC Regulations Body of Knowledge.](#) U.S. EPA Region 4, RCRA Organic Air Emissions Training and Assistance. Atlanta, Georgia.
- ◇ EPA. 2002. RCRA Organic Air Emission Standards Permit and Compliance Training Course. Training Manual. United States Environmental Protection Agency. Training Presented in Charleston, South Carolina. March 5-7.
- ◇ Code of Federal Regulations. 2008. Title 40 Protection of the Environment, Chapter I Environmental Protection Agency, Part 264, Subpart CC Air Emission Standards for Tanks, Surface Impoundments, and Containers. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.
- ◇ Code of Federal Regulations. 2008. Title 49 Transportation, Chapter I Pipeline and Hazardous Materials Safety Administration, Department of Transportation, Parts 107, 172, 173, 178, 179, and 180. Government Printing Office. GPO Access @ <http://www.gpoaccess.gov/cfr/retrieve.html> July.

Industry Types Commonly Subject to the RCRA Organic Air Emissions Standards (Including SIC / NAICS Codes)

This brief sheet outlines the industry types potentially subject to the RCRA Organic Air Emissions Standards. The industries are organized by their corresponding Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes. This listing is not intended to be exhaustive, but rather provide a guide regarding entities likely to be regulated by the RCRA Organic Air Emissions Standards.

SIC Code	2007 NAICS Code(s)	Corresponding NAICS 2007 Description
4925	22121	Natural Gas Distribution
2911	32411	Petroleum Refineries
9511	324110	Petroleum Refineries
NA	3251	Basic Chemical Manufacturing
2800	32512-325182	Industrial Gas Manufacturing, Synthetic Dye and Pigment Manufacturing, Inorganic Dye and Pigment Manufacturing, Synthetic Organic Dye and Pigment Manufacturing, Other Basic Inorganic Chemical Manufacturing, Alkalies and Chlorine Manufacturing, Carbon Black Manufacturing
2869	325188	All Other Basic Inorganic Chemical Manufacturing
2865	325192	Cyclic Crude and Intermediate Manufacturing
NA	3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing
2821	325211	Plastics Material and Resin Manufacturing
NA	3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing
NA	3254	Pharmaceutical and Medicine Manufacturing
NA	3255	Paint, Coating, and Adhesive Manufacturing
NA	3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing
NA	3259	Other Chemical Product and Preparation Manufacturing

3312	331111	Iron and Steel Mills
5171	42269	Other Chemical & Allied Products Wholesale
NA	42271	Petroleum Bulk Stations and Terminals
5169	48611	Pipeline Transportation of Crude Oil
4226	49311	General Warehousing and Storage
4612	49319	Other Warehousing and Storage
4953	562211	Hazardous Waste Treatment and Disposal

- ◇ U.S. Census Bureau, 1997 Economic Census: Bridge Between NAICS and SIC, available at <http://www.census.gov/epcd/ec97brdg/>.
- ◇ Federal Register, National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing and Miscellaneous Coating Manufacturing, Volume 67, No. 65, April 4, 2002.
- ◇ Federal Register, National Emission Standards for Hazardous Air Pollutants: Organic Liquids Distribution (Non-Gasoline), Volume 70, No. 218, November 14, 2005.
- ◇ Federal Register, National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing and Miscellaneous Coating Manufacturing, Volume 67, No. 218, November 12, 2002.