



County of San Diego

DEPARTMENT OF ENVIRONMENTAL HEALTH

HAZARDOUS MATERIALS DIVISION

P.O. BOX 129261, SAN DIEGO, CA 92112-9261

Phone: (858) 505-6700 1 (800) 253-9933

www.sdcdeh.org

INSPECTION GUIDE (Ver. 1)

Hazardous waste regulation of emissions from Large Quantity Generators (LQGs)

Subparts BB and CC California Regulations Inspection Guidance

January 1, 2013

Federal and California regulations control the emissions of organic hazardous waste from LQGs. The RCRA waste emission rules were developed in the 1990s to decrease organic waste emissions from hazardous waste and their associated risk to human health and the environment. California regulations are codified in Title 22 California Code of Regulations (CCR), Chapter 15, Articles 27, 28, and 28.5 and mirror the federal RCRA regulations. This guide is for inspectors, contractors, consultants, and facility owners/operators with organic hazardous waste generation. Subparts BB and CC is the reference in the EPA RCRA regulations. California adopted the RCRA regulations and LQGs are required to comply as directed by CCR §66262.34(a)(1)(A). This inspection guide focuses on Subparts BB and CC which are likely the set of regulations that affect LQGs. Subpart AA of the RCRA regulation is not covered in this guide.

Subpart BB standards were promulgated to regulate organic air emissions from equipment such as valves, flanges, open-ended lines, pumps, compressors, and sampling connections which contain or come into contact with hazardous waste. Subpart CC standards were developed to regulate organic air emissions from hazardous waste tanks, surface impoundments, and containers. Surface impoundments are not common in California and are not addressed in this guide. Appropriate knowledge of the concentration of organic constituents in the hazardous waste that is managed at a facility is essential to making Subparts BB and CC compliance determinations. For the Subparts BB and CC standards, emission controls generally are required if the equipment that is subject to the regulation manages waste with organics concentrations at the point of generation equal to or greater than the regulatory level of concern presented in the regulation. This guide explains the specific regulatory levels and cites the California regulations.

Compliance with the emission standards for organic hazardous waste may be achieved by three basic methods:

- Change the process which is responsible for generating the waste to make the waste nonhazardous; or
- Change the process that is used at the facility to reduce the volatile organics concentration of the waste below levels which require maintenance of control options; or
- Apply acceptable emission controls to all affected equipment.

A helpful website from EPA that discusses the RCRA hazardous waste emission regulation is:

http://www.trainex.org/web_courses/subpart_x/EPA%20CD%20Content/TopicSearch.htm

California is more stringent because the State regulates onsite hazardous waste treatment in wastewater treatment units, totally enclosed treatment units, and elementary neutralization units; therefore several Subpart CC regulatory exemptions offered in federal regulation are not applicable in California. LQGs with specified organic hazardous waste streams are responsible for compliance with the regulations referenced in this guide. Review the official California regulations and law to verify compliance and with Subparts BB and CC and other hazardous waste generator regulations.

Subpart BB California Regulations

TABLE OF CONTENTS

PAGE

Introduction and brief checklist.....5

BB applicability.....6

BB equipment monitoring standard chart.....8

BB exemptions.....9

BB test methods.....10

BB recordkeeping and reporting requirements.....11

Heavy Liquid Service: Pumps14

Light Liquid Service: Pumps17

Alternative Valve Standards for Light Liquid Service or Gas/Vapor Service.....20

Light Liquid Service vs. Heavy Liquid Service vs. Gas/Vapor Service.....22

Pressure Relief Devices in Light Liquid or Heavy Liquid Service.....23

Open-Ended Valves or Lines25

Sampling Connection Systems26

Valves in Gas/Vapor Service or Light Liquid Service.....27

Compressors.....29

Flanges and Other Connectors31

Valves, Heavy Liquid Service33

Pressure Relief Devices, Gas/Vapor Service35

Subpart CC California Regulations

TABLE OF CONTENTS

Introduction and list of exemptions.....36

Applicable Units and Waste Stream Determination.....37

Exemptions.....39

Test methods.....41

Recordkeeping and Reporting.....	42
Tank Levels Determination.....	44
Tank Level 1 Fixed-Roof Tanks.....	45
Level 2 Fixed-Roof Tank with Internal Floating Roof.....	47
Level 2 External Floating Roof.....	49
Level 2 Fixed-Roof Tank Vented to Closed-Vent System to Control Device.....	51
Level 2 Pressure Tank.....	53
Level 2 Enclosed Tank Vented to Closed-Vent System to Control Device.....	54
Permanent Total Enclosure Requirements.....	56
Container Levels Determination.....	58
Container Levels, Inspection and Recordkeeping Reference Chart.....	60
Level 1 Dept. of Transportation Containers.....	61
Level 2 Containers.....	63
Level 3 Containers.....	64
DOT Regulation & Use to Determine Compliance with Container Standard.....	65

Subpart BB Regulations: Equipment, Leak Detection and Repair

Subpart BB applies to LQGs with RCRA waste and adopted in CCR Title 22 §66265.1050 -1064. Subpart BB is a equipment leak detection and repair program which applies to pumps, valves, compressors, pressure relief devices, sampling connections, open ended lines, and connections such as threaded joints and flanges, which contact hazardous waste with organic concentrations of at least 10 percent by weight. A common application of Subpart BB is to hazardous waste tank systems with solvent-containing waste streams, flammable liquid waste, etc. The majority of components at RCRA LQGs consist of pumps, valves, flanges, and connections. Standards apply depending on whether the waste is “light liquid”, “heavy liquid”, or “gas/vapor”. Wastes generated from parts cleaning, degreasing operations, and painting systems often contain constituents such as xylene, toluene, acetone, chlorinated solvents, or other petroleum distillates that are considered “light liquids” by virtue of their relatively high vapor pressure.

Brief Checklist for Applicability/Compliance for Subpart BB

Rule of thumb: If a LQG operates a hazardous waste tank system or conveys hazardous waste using piping equipment, **and** they have organic RCRA wastes of at least 10% by weight, Subpart BB can apply.

NOTE: LQGs are regulated as directed by Title 22 California Code of Regulations (CCR) §66262.34(a)(1)(A).

LQGs RCRA waste with organics: Waste determination of organic concentrations (OCs) required if OC is in the RCRA waste: [66265.1063(d)]

Organic concentration of RCRA waste streams must be known by generator. Can use SW-846 Methods 9060 or 8260, or ASTM Methods: D 2267-88, E 169-87, E 260-85 to do waste determination. Generator can use RCRA waste knowledge- must have documentation. If no information on organic concentration, Subpart BB non-compliance can be determined if the facts supports the violation observed.

BB applicability-all shall be Yes's.

- | | | | | |
|--|-----|----|-----|----|
| 1. Large quantity generator (SQGs are NOT regulated under BB)? | Yes | No | | |
| 2. RCRA waste stream 10% total organic concentration?
(Includes volatile and semi-volatile compounds) (10% = 100,000 ppmw). | | | Yes | No |
| 3. RCRA hazardous waste with ≥10% organics in specified equipment? | | | Yes | No |

If Yes's above, review applicable CCR sections 66265... subsection req. Subsections for specified equipment

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) and connectors	Yes	No	.1058
Any emission control device(s) or system	Yes	No	.1060

If any Yes, CCR 66265.1063 (testing and monitoring) and .1064 (recordkeeping) apply in addition to equipment-specific regulation.

If all No, then **no** equipment regulation applies.

RCRA Subpart BB Regulations BB Applicability

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

66265.1050

<p>Standard</p> <p>66265.1050(b)2</p> <p>66265.1063(d)</p> <p>66265.1050(b)(3)</p>	<p>Subpart BB is applicable to RCRA hazardous waste management unit that is 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 66265.13(b) or process knowledge (documentation required).</p>	
<p>Waste Determination Requirement</p> <p>66265.1063(d)</p>	<p>Analytical Methods ..or..</p> <p>Samples used in determining the percent organic content shall be representative of the highest total organic content hazardous waste that is expected to be contained in or contact the equipment.</p>	<p>...Process Knowledge</p>
<p>Method</p>	<p>ASTM Method D2267-88, E169-87, E168-88, E260-85 or EPA SW-846 Methods 9060 or 8260</p>	<p>Good documentation of the waste determination is required</p>
<p>Documentation</p> <p>66265.1063(d)(1-3)</p>	<p>Sampling and Analytical results.</p> <p>Per 66265.1063(d) a waste analysis plan (66265.13(b) is required.</p> <p>Samples used in determining the percent organic content shall be representative of the highest total organic content hazardous waste that is expected to be contained in or contact the equipment.</p>	<p>Some examples include:</p> <p>-Demonstrate no organic compounds used in all processes.</p> <p>-Waste from a process identical to a process previously measured at <10% organics.</p> <p>-Previous analytical results and demonstrate changes since testing has not raised organic content to 10%.</p>
<p>Recordkeeping & Reporting Compliance 66265.1064(b)</p>	<p>Owner/operator must fully document the analysis of the percent-by-weight total organics in the facility operating record for regulated equipment.</p>	

- Pumps to move liquids or sludge
- Compressors to move gas/vapors
- Pressure relief devices to prevent overstress and blow out or structural failure
- Waste sampling connection system
- Open-ended valves or lines - such as hazardous waste taps, sinks, drains, sumps, ends of transfer lines, etc. Much more common than often thought
- Valves - gate, ball, swing check, butterfly. May be manual operated or power assisted
- Flanges and other connectors - joints between pipe lengths or pipes and equipment. May be bolted, slip joint, compression, glued, screwed or welded

- Hazardous waste streams with organic concentrations of at least 10 percent by weight
- Gas or liquid at operating conditions
- Liquid waste stream may be either a light or heavy liquid

1. Determination of Applicability - 66265.1063(d), (e), (f), & (g):
2. Determine if equipment subject to Subpart BB contains or contacts hazardous waste with total organic concentration of 10% or more by weight.
3. 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 66265.1063(d)(1) and (d)(2), (e).
4. Disagreements between the owner/operator and the regulator regarding this determination can be resolved using the analytical methods specified in 66265.1063(d)(1) and (d)(2), (f).
5. Samples used in waste determination shall represent the highest total organic content expected in the hazardous waste.

WHAT IS REQUIRED Each piece of equipment to which Subpart BB applies must be marked in such a manner that it can be distinguished readily from other pieces of equipment. Each piece of equipment must also be monitored and inspected according to the required scheduled standards to detect and prevent leaks (eg..leak detection and repair -LDAR). All activities concerning monitoring, inspection, and repairs must be documented and kept for 3 years, as part of the LQG recordkeeping requirement.

The equipment is under different standards depending on whether the hazardous waste is in:

- **Light liquid service:** means that the piece of equipment contains or contacts a waste stream where the vapor pressure of one or more of the organic components in the stream is greater than 0.3 kilopascals (kPa) at 20 deg.C, the total concentration of the pure organic components having a vapor pressure greater than 0.3 kilopascals (kPa) at 20 deg.C is equal to or greater than 20 percent by weight, and the fluid is a liquid at operating conditions. . (*0.3Kpa = 0.044 psi, 2.25 mm Hg*)
- **Gas/Vapor service:** hazardous waste is in the gaseous state at operating condition.
- **Heavy liquid service:** hazardous waste not in gas/vapor, or light liquid state.

Quick Reference on Subpart BB Equipment Monitoring Standard

	<u>Light liquid services</u>	<u>Gas/Vapor services</u>	<u>Heavy liquid services</u>
Pumps	Monthly inspection	NA	Monitor within 5 calendar days, if evidence of a <u>potential leak*</u> is found
Compressors	Barrier fluid system must be equipped with sensor which should be checked daily/ if the sensor equipped with audible alarm- check monthly	Same as light liquid	Same as light liquid
Pressure relief devices	Monitor within 5 calendar days, if evidence of a <u>potential leak</u> is found	No later than 5 calendar days after the pressure release, the pressure relief device shall be monitored	Monitor within 5 calendar days, if evidence of a <u>potential leak</u> is found
Waste sampling connection system	Each connection system must be equipped with a <u>closed-purge</u> or <u>closed-vent system</u>	Same as light liquid	Same as light liquid
Flanges and connectors	Monitor within 5 calendar days, if evidence of a <u>potential leak</u> is found	Monitor within 5 calendar days, if evidence of a <u>potential leak</u> is found	Monitor within 5 calendar days, if evidence of a <u>potential leak</u> is found
Valves	Monthly inspection	Monthly inspection	Monitor within 5 calendar days, if evidence of a <u>potential leak</u> is found
Open-ended valves or lines	Monthly inspection	Monthly inspection	Monitor within 5 calendar days, if evidence of a <u>potential leak</u> is found

Note: ALL BB EQUIPMENT MUST BE MARKED, INCLUDING ALL FLANGES AND THREADED CONNECTIONS. The above chart is not a substitute for the subpart BB regulations concerning monitoring schedules, but merely a quick reference/reminder. *Potential leaks during operator inspections could be observed by visual, audible, olfactory, or any other detection method.

RCRA Subpart BB Regulations Exemptions

Exemptions from Subpart BB requirements are provided in 66265.1050 for equipment in vacuum service, or equipment containing or contacting hazardous wastes with an organic concentration of at least 10% by weight for less than 300 hours (total) per year.

66265.1050(d)(e)

<p>Standard</p>	<p>Equipment in Vacuum Service 66265.1050(d) Equipment in vacuum service is excluded from Subpart BB requirements if it is identified as required in 66265.1064(g)(5).</p>	<p>Equipment Contacting Waste with Organics Less than 300 Hours per Calendar Year 66265.1050(e) 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 66265.1064(g)(6).</p>
<p>Recordkeeping & Reporting Compliance 66265.1064(g)(5)(6)</p>	<p>A list of identification numbers for all equipment in vacuum service must be recorded and kept in the facility operating record.</p>	<p>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. 66265.1064(g)(6)</p>

Federal Register, Vol. 62, No. 235
December 8, 1997, pg 64641
EPA clarified whether equipment which is not in service, but contains hazardous waste residue, is considered to be in contact with hazardous waste. The EPA considers the language of the provision explicit on this point; the amount of time that equipment contains hazardous waste, whether at operating capacity or as a residue, is considered time that the equipment "contains or contacts" hazardous waste. Thus, if subpart BB equipment contains subpart BB-regulated hazardous waste residues for more than 300 hours during a calendar year, that equipment would not be exempt from subpart BB under the provisions at §264.1050(f) or §265.1050(f). The EPA purposefully worded the provision to say, "contains or contacts" because the emissions from the equipment are related to the organic hazardous waste that is in the equipment; even if the process or equipment is not in service, the organic hazardous waste in contact with the equipment has the potential to volatilize, and EPA considers it necessary to subject the equipment to the requirements of subpart BB. Thus, EPA is reiterating that the regulation at § 264.1050(f) and § 265.1050(f) requires the equipment to be void of subpart BB-regulated waste for a minimum of 300 hours per calendar year. The Agency's intent that for this regulatory requirement, instances during which equipment contains or contacts subpart BB regulated waste need not be consecutive; it is only required that the sum of all time that the equipment contains or contacts subpart BB regulated waste is less than 300 hours per calendar year.

Exemption Issue: Equipment in vacuum service 66265.1050(d)) or equipment that contains or contacts hazardous waste less than 300 hours/calendar year (66265.1050(e)). Exempt equipment requires documentation/identification per 66265.1064(g)(5)-(6) and (k).

RCRA Subpart BB Regulations Test Methods

In demonstrating compliance with Subpart BB Regulations, owners/operators must comply with the test methods and procedures outlined below.

66265.1063(a)

Standard	Leak Detection Monitoring 66265.1063(b) Monitor for leaks as required in 66265.1052 - .1062 using an instrument meeting the performance criteria of reference Method 21.	No Detectable Emissions 66265.1063(c) Test equipment to ensure there are no detectable emissions as required by 66265.1052(e), 66265.1053(i), 66265.1054, and 66265.1057(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.
Verify Method	Method 21	Method 21

EPA Method 21 monitoring identifies leak, does not quantify emissions. Method uses a portable instrument organics analyzer: PID, FID, Infra-red. Traverse probe around potential leak interface when equipment is operating. Must know background level.

40 CFR §60, Appendix A, EPA Method 21 is available at <http://www.epa.gov/ttn/emc/promgate.html>

RCRA Subpart BB Regulations 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, ref. 66265.1064(a).

66265.1064

<p>Standard 66265.1064(a)</p>	<p>Each owner or operator shall comply with these BB recordkeeping and reporting requirements.</p>
<p>For Equipment Requirement 66265.1064(b) to (j)</p>	<ul style="list-style-type: none"> • 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, liquid or vapor) • Methods of compliance! • If test data used to demonstrate performance, a performance test plan 66265.1064(b)(3). • For closed vent systems and control devices, documentation of compliance with 66265.1060 including detailed design documentation or performance test results 66265.1064(e). • 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 <u>less than 300 hours per year</u> see 66265.1064(g)(6).
<p style="text-align: right;">Method</p>	<p>The owner or operator must record the above information in the facility operating record.</p>
<p style="text-align: right;">Frequency</p>	<p>Records should be continually updated as needed.</p>
<p>For Detected Leaks Records 66265.1064(c)(d)</p>	<p>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</p>

	<p>effectively repaired. For valves, the identification can be removed after repair and monitoring for 2 successive months with no leak detected using Method 21. 66265.1064(c)</p> <p>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.</p> <p>Reason <u>for delay</u> 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. 66265.1064(d)</p>
Frequency 66265.1064(l)	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 66265.1064(k)	<p>Owners/operators must record the following in a log for use in determining <u>exemptions under Subpart BB</u>:</p> <ul style="list-style-type: none"> • 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 66265.1052 through 66265.1060 or not, including supporting information.
Method	Recorded in a log within the facility operating record.

Frequency	<ul style="list-style-type: none">• 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 66265.1052 through 66265.1060.
-----------	--

RCRA Subpart BB Regulations *Heavy Liquid Service: Pumps*

At facilities subject to 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.

66260.10 definitions:

- “In gas/vapor service” means that the piece of equipment contains or contacts a hazardous waste stream that is in the gaseous state at the operating conditions.
- “In heavy liquid service” means that the piece of equipment is not in either gas/vapor service or in light liquid service.
- “In light liquid service” means that the piece of equipment contains or contacts a wastestream where the vapor pressure of one or more of the components in the stream is greater than 0.3 kilopascals (kPa) at 20 degrees C, the total concentration of the pure components having a vapor pressure greater than 0.3 kPa at 20 degrees C is equal to or greater than 20 percent by weight, and the fluid is a liquid at the operating conditions. *(0.3Kpa = 0.044 psi, 2.25 mm Hg)*
- “In light material service” means the container is used to manage a waste material for which both of the following conditions apply: The vapor pressure of one or more of the organic constituents in the material is greater than 0.3 kilopascals (kPa) at 20 deg.C; and the total concentration of the pure organic constituents having a vapor pressure greater than 0.3 kPa at 20 deg.C is equal to or greater than 20 percent by weight.

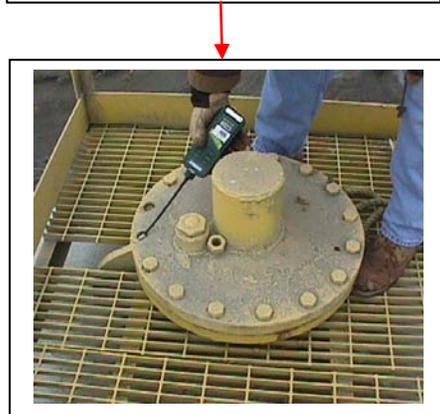
<u>Equipment</u>	<u>Frequency</u>	<u>Monitoring Activity</u>
Pumps in heavy liquid service	No frequency stated	Incidental observation of potential leak Visual method, olfactory, audible methods, or other method

66265.1058

Standard 66265.1058(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 66265.1057(e).
Monitoring Requirement 66265.1058(a)(b) Evidence of a potential leak is found by visual, audible, olfactory, or any other detection method	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 66265.1058(a)(b)	Method 21 (apply while equipment is <u>operating</u> and in contact with subject hazardous waste).
Frequency 66265.1058(a) and .1063(b)	Monitoring by Method 21 within five calendar days of identification of a potential leak.
Equipment Inspections Requirement	Observation to identify potential leaks.
Frequency 66265.1058(a)	Visual, audible, olfactory, and other methods suitable for identifying potential leak.
Visual Inspection	Specific frequency not stated in 66265.1058. However, frequency is specified in the RCRA inspection requirements for the unit associated with the pump. Visual inspections are required daily for tank systems and secondary containment (66265.195); weekly for containers and secondary containment (66265.174). Thermal treatment units require daily inspections (66265.377) while biological, chemical and physical treatment units require daily and weekly inspections per 66265.403.
Verify Recordkeeping & Reporting 66265.1064(a),(b) & (d)	<ul style="list-style-type: none"> • 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. <p>Owner/operator must record the above information in the facility operating record.</p> <p>Request to see unit specific inspection log and checklist to ensure inspection of</p>

EPA Method 21 identifies leak, does not quantify emissions. Method uses a portable organic analyzer: PID, FID, Infra-red. Traverse probe around potential leak interface when equipment is operating. Must know background level.



equipment for releases (liquid, sound, smell) and repair records for duration and response time comply with Subpart BB requirements.

66265.1058(c)(d) When a leak is detected, it shall be repaired as soon as practicable, but not later than fifteen (15) calendar days after it is detected, except as provided in Section 66265.1059.

The first attempt at repair shall be made as soon as possible, to minimize escape of hazardous constituents to the environment, but no later than 24 hours after each leak is detected.

First attempts at repair include, but are not limited to, the best practices described under Section 66265.1057(e).

Inspector's Brief 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) During inspection, if **evidence of a leak** by audible, visual, olfactory or other detection method, **monitor** within 5 days.
- (b) Monitor with Method 21 instrument reading **of > 10,000 ppm = leak.**
- (c) First attempt within 5 days. Repaired within 15 days.
- (d) **Connectors** that are **inaccessible** or ceramic lined, exempt.

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, 2.25 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.

66265.1052

<u>Equipment</u>	<u>Frequency</u>	<u>Monitoring Activity</u>
Pumps in light liquid service	Weekly	Visual check for evidence of potential leak, wet, drips, staining.
	Monthly	Instrument measure for leak determination (>10,000 ppm above background)

- 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 the agency. 66265.1052(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>.

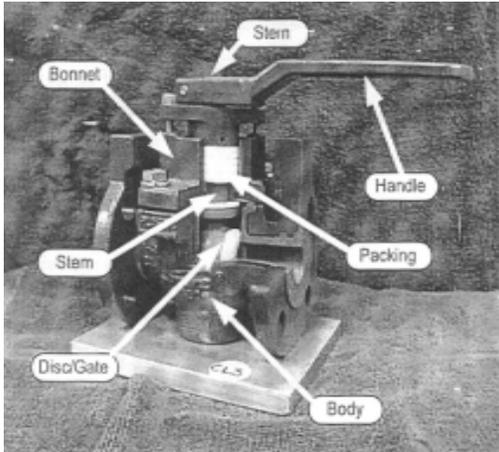
Standard	Maintain a reading of less of 10,000 ppm and comply with the leak repair program. 66265.1052	
Verify Monitoring Requirement	Pumps in Light Liquid Service 66265.1052 (a)	Pumps with Dual Mechanical Seal System which includes a Barrier Fluid System 66265.1052(d)
Method	Method 21 (apply while equipment 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. 66265.1052(d)(5)

<p>Verify Routine Inspection Requirements</p>	<p>Visible above ground equipment checking, secondary containment, or surrounding area for evidence of leaks, corrosion, stains, etching, dead vegetation.</p> <p>Monitoring and leak detection equipment data for deviation from operation design parameters. 66265.195 66265.1052(a)(2)</p>	<p>Sensor system checked for correct operation. If the sensor indicates a seal system and/or barrier system failure, a leak is detected.</p> <p>Visual for liquids dripping from pump seal. 66265.1052(d)(6)</p>
<p>Frequency</p>	<p>Weekly</p>	
	<p>Visually inspect for liquid dripping from pump seal. Visually inspect above ground, secondary containment, or surrounding area leaks, corrosion, stains, etching, dead vegetation. Review monitoring and leak detection equipment data for deviation from operation design parameters.</p>	<p>Visually inspect each pump weekly for indications of liquids dripping from the pump seals. 66265.1052(d)(4)</p>
<p>Verify Recordkeeping & Reporting 66265.1064(a)(b) and 66265.195</p>	<p>Owner/operator must record all monitoring and inspection information in the facility operating record and the facility inspection log.</p> <p>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.</p>	

	<p>Hazardous waste state (i.e. gas, liquid 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. Daily monitoring records and data logger records. Calibration records and calibration drift assessments for Method 21. Tank system integrity tests if applicable. Daily inspection logs for tank systems eg..ancillary equipment. Leak detected, tagging of equipment and leak repair record, see 66265.1064(c)(d)</p>
--	--

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.



66265.1061(a), 66265.1062(a)

Standard	2% Leak Allowance 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. 66265.1061(a)(c)	Skip Quarterly Period 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. 66265.1062(b)
Monitoring Requirement 66265.1061		
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 regulator.	Quarterly to: Semiannually; or Annually.
Inspection Requirement	None specified. Verify inspection requirements through document review.	

<p>Recordkeeping & Reporting Compliance</p>	<p>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. 66265.1064(b)</p> <p>Recorded in the facility operating record. If a leak is detected and not repaired within 15 days of first detection, document delay. 66265.1064(d)</p> <p><u>Include:</u> Facility name and address EPA ID number. Valve ID number</p> <p>Dates of hazardous waste management unit shutdowns.</p>	<p>In addition to those specified for valves in GVS and LLS, a schedule for monitoring; and the percent of valves found leaking for each monitoring period. 66265.1064(i)</p>
--	--	--

RCRA Subpart BB Regulations Light Liquid Service (LLS) vs. Heavy Liquid Service (HLS) vs. Gas/Vapor Service (GVS)

Subpart BB regulations are applicable to hazardous waste 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 service 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, 2.25 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 (HLS) refers to anything that is not a LLS or GSV.

66265.1052; 66265.1054; 66265.1057; 66265.1058

Standard	GVS	LLS	HLS
	Equipment may be in gas/vapor service (GVS), light liquid service (LLS), or heavy liquid service (HLS). Must have a determination of 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 & Compliance 66265.1064 (b)(1)(C)(D)(E)	<ul style="list-style-type: none"> • 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. 		

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, 2.25 mmHg) at 20°C (68°F) and the total concentration of such compounds is equal to or greater than 20% by weight.

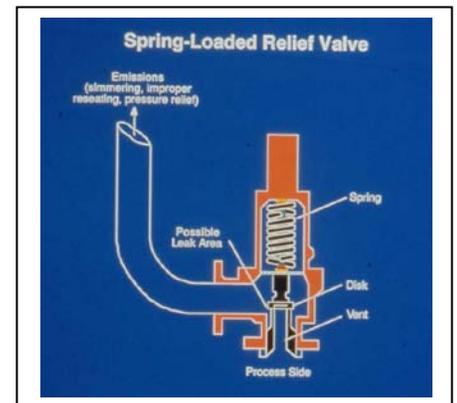
Heavy liquid service means the pressure relief device contains or contacts a liquid waste stream that does not meet the requirements for light liquid service.

<u>Equipment</u>	<u>Frequency</u>	<u>Monitoring Activity</u>
Pressure relief devices in light or heavy liquid service	No frequency stated	Incidental observation of potential leak Visual method, olfactory method, audible method, or other method

66265.1058

A key issue - How does a facility know when a pressure relief event has occurred? There is no standard in the regulations. It is an issue for design, what is an appropriate pressure for a relief event? Because of the 5-day time period requirement, the valve must close within 5 days. The responsibility is on the facility to prove that the valve actually closes, meaning that the facility must also document when the pressure relief event occurs. Hence, monitoring and recordkeeping is important. The answer sometimes comes in the form of a control device, typically plumbing the vent stream to a carbon unit, etc. for vapor recovery and for employee safety.

Standard 66265.1058(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 66265.1057(e).
Monitoring Requirement	66265.1058(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 first identifying potential leaks. This is referred to as "incidental".
	Frequency	Incidental. Specific frequency not stated in 66265.1058.



Visual Inspection	Incidental. Specific frequency not stated in 66265.1058.
Recordkeeping & Reporting Compliance 66265.1064(a),(b) & (d)	<p>Equipment ID number and ID number of hazardous waste management unit containing the device.</p> <p>Approximate location of the hazardous waste management unit within the facility.</p> <p>Type of equipment (e.g., flange).</p> <p>Percent-by-weight organics.</p> <p>Hazardous waste state.</p> <p>Methods of compliance.</p> <p>Facility name and EPA ID number.</p> <p>Facility Address.</p> <p>Dates of hazardous waste management unit shutdown if applicable.</p> <p>Owner/operator must record the above information in the facility operating record.</p>

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 or drains.

66265.1056

<u>Equipment</u>	<u>Frequency</u>	<u>Monitoring Activity</u>
Open-ended valves or pipes	Operational	Cap or plug when not in use, or use double-valve system

Hint: Open-ended or single-valved piping, include sinks, sumps, drains, and transfer lines. For leaks from a single valve pipeline, think of a dripping faucet (which has a ball valve) and scale up into other types of valves and applications. Also consider an open floor drain for hazardous waste transfers beneath 'process units'.

Standard 66265.1056(a),(b),(c)		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. 66265.195
Recordkeeping & Reporting Compliance 66265.1064(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. Methods of compliance.



RCRA Subpart BB Regulations Waste Sampling Connection Systems

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

66265.1055

<u>Equipment</u>	<u>Frequency</u>	<u>Monitoring Activity</u>
Sampling connections	None	Design and installation requirements

<p>Standard 66265.1055(a)(b)(c)</p>	<p>Each sampling connection must be equipped with a closed-purge, closed-loop, or a closed-vent system. The system must:</p> <ul style="list-style-type: none"> • 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.
<p>Monitoring Requirement</p>	<p>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.</p>
<p>Inspection Requirement</p>	<p>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. 66265.195</p>
<p>Recordkeeping & Reporting Compliance 66265.1064(a) & (b)</p>	<ul style="list-style-type: none"> • 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. • Methods of compliance.

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).

66265.1057

<u>Equipment</u>	<u>Frequency</u>	<u>Monitoring Activity</u>
-Valves in gas/vapor or light liquid service	Monthly	Instrument measure for leak determination (>10,000 ppm above background)

Standard	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 66265.1057(a),(b)	Instrument reading of $\geq 10,000$ ppm denotes a leak	Monitored according to a written monitoring 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 system inspection and should be noted in the daily inspection log. 66265.195		



<p>Recordkeeping & Reporting Compliance</p> <p>66265.1064 (b), (d), (g), & (h)</p>	<p>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.</p> <p>Recorded in the facility operating record. Include: Facility name and address; EPA ID number; Valve ID number; and Dates of hazardous waste management unit shutdown.</p>	<p>For Unsafe- and Difficult-to-Monitor Valves add:</p> <ul style="list-style-type: none"> • Valve ID number for all unsafe- and difficult-to-monitor valves; • Justification of unsafe- or difficult-to-monitor designation; and • Written monitoring plan.
---	--	---

Brief checklist from Inspector's for Subpart BB

Valves in gas/vapor or light liquid service (66265.1057)

- (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, monitor 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)].

RCRA Subpart BB Regulations Compressors

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

66265.1053

Notes:

Compressor equipped with a closed-vent system capable of capturing and transporting any leakage from the seal to a control device that complies with 66265.1053(h) and 66265.1060 is exempt from the seal system requirements.

Compressor designated for no detectable emissions using Method 21 (i.e., instrument reading of less than 500 ppm above background) is exempt from the requirements listed above per 66265.1053(i). Any such compressor designated by the facility must be identified in the operating record and the designation signed by the owner/operator 66265.1064(g)(2)(A) & (B).



<u>Equipment</u>	<u>Frequency</u>	<u>Monitoring Activity</u>
Compressor	Continuous	Sensor system on seals and barrier fluids
	Daily	Check on sensor system (unless sensor system uses audible alarm, then monthly check)

<p>Standard 66265.1053 (a)(b)(c)</p>	<p>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:</p> <ul style="list-style-type: none"> • Operate with the barrier fluid at a pressure that is at all times greater than the compressor stuffing box pressure; • Be equipped with a barrier fluid system that is connected by a closed-vent system to a control device; or • Purge the barrier fluid into a hazardous waste stream with no detectable emissions to the atmosphere (Method 21). <p>The barrier fluid must NOT be hazardous waste with organic concentrations 10% or greater by weight.</p>
<p>Monitoring Requirement</p>	<p>66265.1053 (d) A sensor must be installed to detect failure of the seal system, the barrier fluid system, or both.</p>

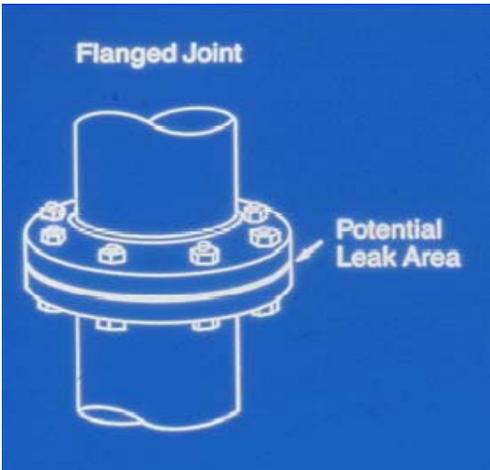
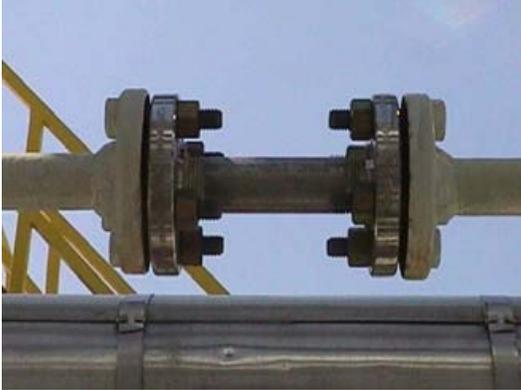
Method	Use of a sensor to monitor seal system, barrier fluid system, or both. Owner/operator must determine a criterion that indicates failure of the system.
Frequency	Sensor continuously monitors for failure of seal system; thus, leaks.
Inspection Requirement 66265.1053 (e)	Sensor system shall be checked 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 66265.1064(a),(b) & (d) 66265.1053(e)(2)	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. 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.

RCRA Subpart BB Regulations Flanges and Other Connectors

Subpart BB regulations are applicable to flanges and other connectors that contact hazardous waste with an organic concentration of at least 10% by weight.

Per 66265.1058(e) any connector that is *inaccessible* or is ceramic or ceramic-lined (e.g., porcelain, glass, or glass-lined) is exempt from the monitoring requirements of subsection (a) of this section and from the recordkeeping requirements of section 66265.1064.

66265.1058



Leaks caused by:

- Improperly chosen gaskets
- Damaged gaskets
- Poor assembly
- Vibrations
- Age

<u>Equipment</u>	<u>Frequency</u>	<u>Monitoring Activity</u>
Flanges and connections	No frequency stated	Incidental observation of potential leak. Visual method, or olfactory method, or audible method, or other method

Standard 66265.1058(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 66265.1057(e).
Monitoring Requirement 66265.1058(a)	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. 66265.1058(b)
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 66265.1058
Recordkeeping & Reporting 66265.1064(a)(b)(d)	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. Dates of hazardous waste management unit shutdowns. Owner/operator must record the above information in the facility operating record.

From RCRA online Faxback #11802
"Connector" is defined at 40 CFR 264.1031 [& CCR 66260.10] as "flanged, screwed, welded, or other joined fittings used to connect two pipelines or a pipeline and a piece of equipment." For the purposes of reporting and recordkeeping, "connector" is further defined as "flanged fittings that are not covered by insulation; or other materials that prevent location of the fittings." EPA interprets these regulations to mean that although the general definition of "connector" includes flanged fittings as a subset. For reporting and recordkeeping purposes the definition of "connector" includes only flanged fittings (e.g., those screwed, welded, or otherwise joined are not flanges). The following items are ...identified and requested an interpretation as to whether they are "flanges:"

1. Screwed unions
2. Quick disconnect hose fittings
3. Quick disconnect hose fittings at the end of a pipe preceded by a closed valve, that has been plugged capped (i.e., to meet the requirements of (66)265.1056)
4. Strainer housing that has a flange-type top

While all of the above listed items meet the general definition of "connector," EPA does not believe they meet the more specific definition of "flanged fittings" for reporting/recordkeeping purposes under Subpart BB (66)265.1064. Please be advised, however, that these "other-than-flange type connectors" remain subject to the Subpart BB requirements for inspection and leak monitoring and repair.

RCRA Subpart BB Regulations Valves Heavy Liquid Service

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.

66265.1058

<u>Equipment</u>	<u>Frequency</u>	<u>Monitoring Activity</u>
Valves in heavy liquid service	No frequency stated	Incidental observation of potential leak : <ul style="list-style-type: none"> • Visual method • Olfactory method • Audible method • Other method

Standard 66265.1058(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 66265.1057(e).
Monitoring Requirement 66265.1058(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 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 66265.1058 But 66265.195 for tank systems requires daily inspections.
Recordkeeping & Reporting 66265.1064(a),(b) & (d)		<ul style="list-style-type: none"> • Valve ID number and ID number of hazardous waste management unit containing the valve • Approximate location of the hazardous waste management

	<p>unit within the facility</p> <ul style="list-style-type: none">• 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• Dates of hazardous waste management unit shutdowns <p>Owner/operator must record the above information in the facility operating record.</p>
--	--

Note: 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.

RCRA Subpart BB Regulations Pressure Relief Devices in Gas/Vapor Service (GVS)

Subpart BB regulations are applicable to pressure relief devices in gas/vapor service (GVS). Exempt from monitoring if system is connected to a closed-vent system which is capable of capturing and transporting leakage to emission control device (66265.1054(c)).

66265.1054

Standard 66265.1054(a)	Pressure relief device must operate with no detectable emissions. However, <u>during a pressure release</u> , 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 66265.1054(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.
Recordkeeping & Reporting Compliance 66265.1064(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, vapor). Methods of compliance Date of each monitoring compliance test.



SUBPART CC Regulations: Tanks and Containers

Subpart CC standards are aimed at controlling volatile organic air emissions from tanks, surface impoundments, and containers used to manage hazardous waste at LQGs. Tanks are extensively used in the waste management industry for the accumulation, storage, and treatment of RCRA hazardous waste at TSDFs and LQGs. The Subpart CC standards require the implementation of air emission controls on tanks used to manage RCRA hazardous waste having an average volatile organic concentration equal to or greater than 500 parts per million by weight (ppmw) as determined using the test procedures specified in the regulation. For tanks, the Subpart CC standards establish two categories of air emission control requirements, called Tank Level 1 and Level 2 controls. Subpart CC includes recordkeeping requirements (eg. waste determination documentation), inspection requirements, and the application of emission control devices and procedures. The regulation also addresses containers holding RCRA waste at LQG facilities.

LQGs are regulated per Title 22 California Code of Regulations (CCR) 66262.34(a)(1)(A).

List of exemptions to Subpart CC:

- Satellite containers
- SQGs & CESQGs
- Containers < 26.4 gallons design capacity
- Mixed hazwaste
- Units in closure
- Universal waste
- Units equipped with CAA control device under special conditions of the CC regulation CCR 66265.1080(b)(7)
- RCRA-empty (see ref. 66265.1087(c) & (d)(3)(B)(1))

The following reference chart identifies the exemptions and exclusions to Subpart CC tanks and containers:

<u>66265.1080(b) exceptions</u>	<u>66265.1083(c) exemptions:</u>	<u>66265.1080(a)/66265.1 general excl./exemptions:</u>
<ul style="list-style-type: none">• Unit did not receive HW after 12/6/96• Using containers of less than 26.4 gallons design capacity• Unit undergoing closure• Units used in an on-site RCRA or CERCLA clean-up• Mixed Radioactive and hazardous waste• Units with certified CAA, NESHAPS or NSPS emissions controls• Tanks with process vents* (Subject to Subpart AA)	<ul style="list-style-type: none">• Waste stream less than 500 ppmw average VO. If so, was waste determination done per 66265.1084?• Organic content of waste already reduced by treatment.• Tank is used for biological treatment• All waste placed in unit already meets 66268.40 (LDR) limits• All waste placed in unit has been treated to limits as specified in 66268.42• Tank is used for bulk feed to incinerator and requirements are met• Mass removal rate• Miscellaneous treatment• Organic reduction efficiency• Combustion Processes	<ul style="list-style-type: none">• Satellite accumulation per 66262.34(e)• Emergency or spill management exemption• The addition of absorbent to waste in a container per 66265.1(d)(13)

*66260.10 For the purposes of chapters 14 and 15, "Process vent" means any open-ended pipe or stack that is vented to the atmosphere either directly, through a vacuum-producing system, or through a tank (e.g., distillate receiver, condenser, bottoms receiver, surge control tank, separator tank, or hot well) associated with hazardous waste distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations.

RCRA Subpart CC Regulations Applicable Units and Waste Stream Determination

Application of Subpart CC emission controls is based on organic content of the hazardous waste and applies to LQGs that generate RCRA hazardous waste.

66262.34(a)(1)(A); 66265.1080(a); 66265.202

Standard 66265.1080(a)	Emission controls required on tanks and containers if the average volatile organic (VO) concentrations \geq 500 ppmw at point of waste origination.	
Verify waste determination of VO concentration 66265.1084(a)(2) - (4)	Direct Measurement Method	Process Knowledge Method
	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 their 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.
Frequency	Initially and any time conditions change. Add annually for average VO concentration.	
Vapor pressure determination verify Tank 66265.1084(c)(2)	Maximum organic vapor pressure determination is required if Tank Level 1 controls are used. 66265.1084(c)(1) <ul style="list-style-type: none"> An owner or operator shall use either direct measurement as specified in subsection 66265.1084(c)(3) of this section (sampling plan required) or knowledge of the waste as specified by subsection (c)(4) of this section to determine the maximum organic vapor pressure which is representative of the hazardous waste composition stored or treated in the tank. 	
Containers	A vapor pressure determination that the waste is not in light material service for all containers with capacities of 0.46m ³ (122 gallons) or greater that use Level 1 controls. 66265.1087(b)(1)(B), 66265.1087(c)(5)	
Verify method performed	See Direct Measurement Method for example methods for average VO concentration of waste at the point of origination ; 66265.1084(a) Method 25E, ASTM 2879-92, and methods from API and standard reference texts for <u>vapor pressure</u> . 66265.1084(c)(3)(B)	

Organic compounds with a Henry's law constant value of at least 0.1 mole-fraction-in-the-gas phase/mole fraction-in-the liquid-phase at 25 degrees (°) Celsius (C) (66265.1081) which can also be expressed as 1.8×10^{-6} atmospheres/gram-mole/m³ at 25 degrees Celsius.

Appendix VI of Subpart CC presents a list of compounds known to have a Henry's law constant values less than the cutoff level.

http://www.dtsc.ca.gov/LawsRegsPolicies/Title22/upload/OEARA_REG_Ti tle22_Ch15_Art28-5_AppI.pdf

An EPA reference for Henry's values H unit-less:
<http://www.epa.gov/reg3hwmd/r isk/human/rb- concentration table/Generic Tabl es/pdf/params sl table run NOV 2012.pdf>

What are the recordkeeping requirements?
The following records must be kept:
*If claiming exemption that your hazardous wastestream is less than 500 ppmw, you must document the basis of knowledge, test results, and calculations in the facility operating log. 66265.1090(f)(1)
*If you use process knowledge in your waste determination, that knowledge must be documented. 66265.1084(a)(4)
* If you use direct measurement in your waste determination, you must document and keep records of the point of waste origination, averaging period, quality assurance program, and sampling plan. 66265.1084(a)(3)

Recordkeeping & Reporting Compliance	<p>Document claim of exemptions based on average VO concentrations as outlined in 66265.1090(f)(1).</p> <p>Document vapor pressure determinations for tanks using Tank Level 1 controls as outlined in 66265.1090(b)(2)(A); 66265.1085(c)(1).</p> <p>Document vapor pressure determinations for containers larger than 122 gallons using Level 1 controls as outlined in 66265.1087(c)(5).</p>
---	--

Brief Inspector’s checklist for Applicability of Subpart CC

LQG RCRA hazardous waste generators have to comply : [66265.1080(a), 66262.34(a)]

Applicability:

1. LQG ? YES NO ... if **no, STOP!**
2. RCRA waste 500 ppmw Volatile Organics(VO)? YES NO
3. RCRA waste stored in containers or tank? YES NO

If YES to all, then CC applies unless exempted, if NO, only waste determination for VO waste applies.

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 may be required.

Testing: Waste 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, MSDSs.

Methods 21, 25D, and 25E 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.

Methods 8260 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.

Basic information to obtain during inspection:

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	Emission Control Options

RCRA Subpart CC Regulations Exemptions

A listing is provided of the exemptions/exclusions from Subpart CC, their applications and section numbers.

<p>VO Concentration Exemption 66265.1083(c)(1)</p>	<p>Less than 500 ppmw must be determined for each waste stream eg... Waste Stream Determination at point of generation.</p>
<p>Exemptions for Pre-Treatment 66265.1083(c)(2)(A-H)</p>	<p>Eight alternatives are provided for treatment of wastes before entering tanks and containers potentially subject to Subpart CC regulations. Units <u>downstream</u> of one of these 8 alternative processes do not require air emission controls.</p>
<p>Unit Exemptions</p>	<ul style="list-style-type: none"> • Emergency or spill management units • Conditionally exempt small quantity generators • Small quantity generators • Satellite accumulation units • RCRA/Cal. empty containers
<p>Exclusions</p>	<ul style="list-style-type: none"> • Units used on-site for federal or state clean-up 66265.1080(b)(5). • Containers of less than 0.1m³ (27 gallons) 66265.1080(b)(2). • Mixed radioactive and hazardous waste 66265.1080(b)(6). • Organic peroxide manufacturing waste (recordkeeping requirements still apply) 66265.1080(d). • Pre-December 6, 1996 units 66265.1080(b)(1) with no HW after that date. • Tanks with process vents that could be managed under Subpart AA 66265.1080(b)(8). • Units in closure 66265.1080(b)(3). • Biological treatment of hazardous waste in accordance with 66264.1083(c)(3) in tanks. • Units managing hazardous wastes that meet LDR standards under 66268.40 that have been treated by the treatment technology established for the waste in 66268.42 (c) or treated by an equivalent method of treatment. • Units fitted with operating control devices and in

	<p>compliance with Clean Air Act (CAA), NESHAP or NSAP controls 66265.1080(b)(7). 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, 3.1 tons/year) and may not be unit specific (i.e., emissions are averaged over the entire facility or “bubbling”, only specified hazardous air pollutants). <i>Unless controls are installed and operating on the unit subject to Subpart CC (and the CAA regulations), the unit is <u>not</u> exempted by the CAA. Consultation with the air pollution regulatory agency may be required to determine if a claimed CAA exemption is valid.</i></p>
<p>Documentation Compliance</p>	<p>In the facility operating log:</p> <ul style="list-style-type: none"> • Document exemptions based on average VO concentrations as outlined in 66265.1090(f)(1). • For exemptions based on 66265.1083(c)(2)(G) & (c)(2)(H), record the ID number for incinerators, boilers, and/or industrial furnaces that treated the hazardous waste. • Certification that a tank or container is equipped with and complies with CAA regulations. The specific CAA regulation should be identified by the operator.

RCRA Subpart CC Regulations Methods

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

<p>Average VO Concentration determination 66265.1084(a)(2) thru (4)</p> <p style="text-align: right;">Methods</p>	<p>Method 25D (40 CFR §60, Appendix A). Method 624, Method 625, Method 1624, Method 1625 (40 CFR §136, Appendix A). Method 8260, Method 8270 (EPA SW- 846).</p> <p>OR.....</p> <p>Process knowledge.</p>
<p style="text-align: right;">Application</p>	<ul style="list-style-type: none"> • Determines applicability of Subpart CC regulations 66265.1080, 66265.1082(c)(1)). • Determine concentrations of as-treated wastes for pre-treatment exemptions 66265.1083(c)(2)(A – F).
<p>Maximum Vapor Pressure Determination Method 66265.1084(c)</p>	<p>Method 25E (40 CFR §60, Appendix A). ASTM 2879-92 (American Society of Testing & Materials). Methods from API Publication 2717. Methods from standard reference texts.</p> <p>Or.....</p> <p>Process knowledge.</p>
<p style="text-align: right;">Application</p>	<ul style="list-style-type: none"> • Determines tank control options. • Determines if containers are in light material service.
<p>No Detectable Organic Emissions Method 66265.1084(d)</p>	<p>Method 21 (40 CFR §60, Appendix A)</p>
<p style="text-align: right;">Application</p>	<p>Tank and container control options involving closed-vent systems.</p> <p>Monitoring pressure tanks. 66265.1085(h)(2)</p>
<p>Vapor Tight Container</p> <p style="text-align: right;">Method</p>	<p>Method 27 (40 CFR §60, Appendix A, 66265.1087(h))</p>
<p style="text-align: right;">Application</p>	<p>Container Level 2 control option 66265.1087(d)(1)</p>

RCRA Subpart CC Regulations Recordkeeping & Reporting

Additional documentation requirements are outlined.

66265.1090

Additional Recordkeeping Requirements for Tanks Requirement	<p>Inspection records must include the following:</p> <ul style="list-style-type: none">• Date of inspection;• Description of identified defects including date detected;• Location of each identified defect;• 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. <p>66265.1090(b)(1)(B) and 66265.1090(c)(3)</p>
Additional Recordkeeping Requirements for Control Devices 66265.1088(c)	<p>In addition to the recordkeeping & reporting requirements for units vented to a closed-vent system and control device, the facility operating record must include the following:</p> <ul style="list-style-type: none">• 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 66265.1035(b)(4), 66265.1088(c) 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. 66265.1088(c)(5)• Design documentation required by 66265.1035(b)(4) must be included in the facility operating record.• As applicable, additional design, monitoring, operating, and inspection information as delineated in 66265.1035(c)(1)

	and (c)(2).
Requirement	<p>66265.1090(e)(1)(E)(F)</p> <p>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 the control device did not meet performance requirements.</p> <p>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.</p> <p>For carbon adsorption device, document the management of removed carbon as outlined in 66265.1088(c)(3).</p>
<p>Recordkeeping & Reporting Compliance 66265.1090(a) and 66265.1089(b)</p>	<ul style="list-style-type: none"> • 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.

RCRA Subpart CC Regulations Tank Levels Determination

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

66265.1085

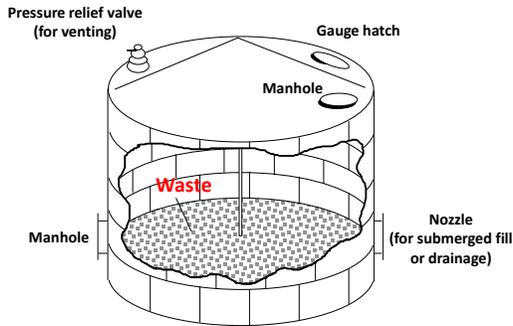
Standard 66265.1085	Control level applicable to tanks determined by tank design capacity and maximum organic vapor pressure of the waste in the tank.
Tank Level 1 criteria 66265.1085(b)(1)(A)	Tank Capacity: Maximum Vapor Pressure <ul style="list-style-type: none"> • ≥ 151 m³ (39,950 gal): 0.75 psi • ≥ 75 m³ (19,840 gal) and < 151 m³ (39,950 gal): 4.0 psi • < 75 m³ (19,840 gal): 11.1 psi
Method 66265.1085(c) (3) or 66265.1084(c)(1)	Method 25E, 40 CFR §60, Appendix A or ASTM Method 2879-92 (API Publication 2517) or Knowledge. <ul style="list-style-type: none"> • <u>Note</u>: Maximum organic vapor pressure determination is <u>required</u> if Tank Level 1 controls are used. 66265.1084(c)(1)
Requirements 66265.1085(b)(1)(B)(C)	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 66265.1085(b)(2)	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.
	Level 2 controls may be used to avoid waste determination requirements when waste composition is varied or changes.
Recordkeeping & Reporting Compliance	Document vapor pressure determinations for tanks using Tank Level 1 controls as outlined in 66265.1090(b)(2)(A).

RCRA Subpart CC Regulations Tank Level 1 Fixed-Roof Tanks

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

66265.1085(c)(2)

Fixed-Roof Tank example



66

Standard 66265.1085(c)(2)(B)(C)	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 66265.1085(c)(2)(C)	Closure Device	Closed-Vent System Vented to a Control Device
	No visible openings when in the closed position	Removes or destroys organics in the vent system
	In operation any time hazardous waste is managed in the tank.	
Frequency 66265.1085(c)(4)	*Annually, unless designated as 'unsafe to monitor per 66265.1085(l)'.	
Inspection Requirements 66265.1085(c)(4)	<ul style="list-style-type: none"> The owner or operator must check for defects that could result in air pollutant emissions. Tank standards at 66265.195 <i>require</i>: <ul style="list-style-type: none"> – Inspect overfill controls; – Inspect cathodic protection systems; and – Daily inspection of: <ul style="list-style-type: none"> Monitoring and leak detection data; Signs of corrosion or releases of wastes; and Area around tanks (including secondary containment) for signs of erosion and releases. 	
Frequency	Initial inspection and then annually. <ul style="list-style-type: none"> Daily tank system inspections are required by 66265.195 and overlap the CC requirements. 	

* In the case when inspecting or monitoring the cover would expose a worker to dangerous, hazardous, or other unsafe conditions, then the owner or operator may designate a cover as an “unsafe to inspect and monitor cover” and comply with all of the following requirements:

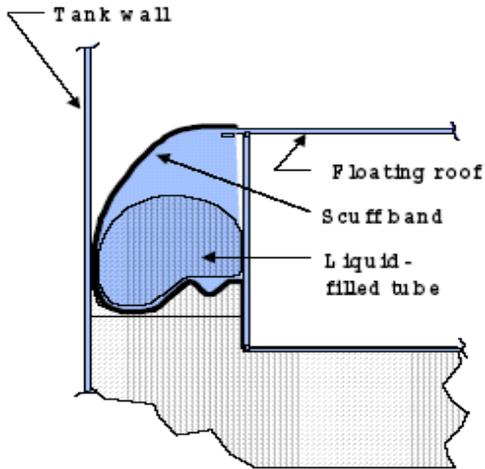
- (A) Prepare a written explanation for the cover stating the reasons why the cover is unsafe to visually inspect or to monitor.
- (B) Develop and implement a written plan and schedule to inspect and monitor the cover, using the procedures specified in the applicable section of this article, as frequently as practicable during those times when a worker can safely access the cover.
- (2) In the case when a tank is buried partially or entirely underground, an owner or operator is required to inspect and monitor, as required by the applicable provisions of this section, only those portions of the tank cover and those connections to the tank (e.g., fill ports, access hatches, gauge wells, etc.) that are located on or above the ground surface.

<p>Visual Inspection 66265.1085(c)(4)(A)</p>	<p>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, plugs or other closure devices.</p>
<p>Recordkeeping & Reporting Compliance 66265.1090(a) & (b)</p>	<ul style="list-style-type: none"> • Tank ID number. 66265.1090(b)(1)(A) • Document vapor pressure determinations for tanks using Tank Level 1 controls as outlined in 66265.1084(c) and 66265.1090(b)(2)(A). • Must develop and maintain a <u>written</u> inspection plan and schedule as outlined in 66265.1089(b). • Document inspections as outlined in 66265.1090(b)(1). <p>Also, request copies of daily tank system inspection logs and annual Subpart CC inspections.</p>

RCRA Subpart CC Regulations Level 2 Fixed-Roof Tank with Internal Floating Roof

A fixed-roof tank with Internal Floating Roof (IFR) must comply with Tank Level 2 controls.

66265.1085(e)



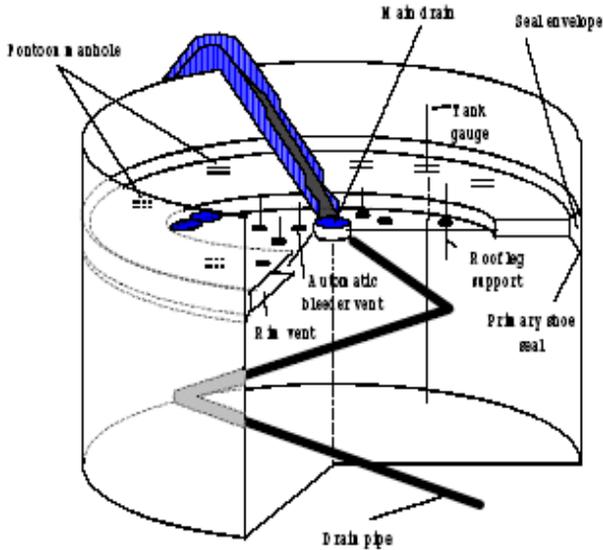
<p>Standard 66265.1085(e)</p>	<p>Must float on the liquid surface except when supported by the leg supports, and must be equipped with a continuous seal between the wall of the tank and the floating roof edge. Additional design specifications are listed in 66265.1085(e)(1) to (4). Operating requirements are found at 66265.1085(e)(2).</p>
<p>Monitoring Requirement</p>	<p>Monitoring of performance is accomplished through inspection.</p>
<p>Inspection Requirement 66265.1085(e)(3)</p>	<ul style="list-style-type: none"> • Visual inspection of floating roof components. • Visual inspection of the IFR, primary seal, secondary seal (if present), gaskets, membranes, and sleeve seals. • Examples of defects are listed in 66265.1085(e)(3)(A). • Tank standards at 66265.195 <i>require</i>: <ul style="list-style-type: none"> – Inspect overfill controls – Inspect cathodic protection systems – Daily inspection of: <ul style="list-style-type: none"> Monitoring and leak detection data Signs of corrosion or releases of wastes Area around tanks (including secondary containment) for signs of erosion and releases.

<p>Frequency 66265.1085(e)(3)(B)</p>	<p>Initially and then at least every 12 months for components. Each time tank is emptied and degassed and at least once every 10 years for IFR and seals. IFRs with two continuous seals can be inspected when emptied and degassed and at least once every 5 years with no component inspection required.</p>
<p>Recordkeeping & Reporting Compliance 66265.1090(b)</p>	<ul style="list-style-type: none"> • Tank identification number. • Document the floating roof design. • Must develop and maintain a written inspection plan and schedule as outlined in 66265.1089(b). • Document inspections as outlined in 66265.1090(b).

RCRA Subpart CC Regulations Level 2 External Floating Roof

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

66265.1085(f)



<p>Standard 66265.1085(f)</p>	<p>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 66265.1085(f)(1). Operating requirements are found in 66265.1085(f)(2).</p>	
<p>Monitoring Requirement 66265.1085(f)(3)(A)</p>	<p>Monitor the Seal Gaps</p>	
	<p>Primary Seal: Lower</p> <p>Gap between the tank wall and primary seal must not exceed 212 cm² (33 in²) per meter of tank diameter and width of any portion of these gaps must not exceed 3.8 cm (1.5 in).</p>	<p>Secondary Seal: Upper</p> <p>Total area of the gaps between the tank wall and the secondary seal must not exceed 21.2 cm² (3.3 in²) and the width of any portion of these gaps must not exceed 1.3 cm (0.5 in).</p>
<p>Method</p>	<p>Gaps shall be measured in accordance with procedures contained in 66265.1085(f)(3)(A).</p>	
<p>Frequency</p>	<p>Within 60 calendar days of initial operation then at least once every 5 years.</p>	<p>Within 60 calendar days of initial operation then at least once every year.</p>
<p>Inspection Requirement 66265.1085(f)(3)(B)</p>	<ul style="list-style-type: none"> • Inspect for visible defects on the EFR and closure devices that could result in air pollutant emissions. • Examples of defects are listed in 66265.1085(f)(3)(B). • Tank standards at 66265.195 <i>require</i>: <ul style="list-style-type: none"> – Inspect overfill controls; – Inspect cathodic protection systems; and 	

	<p>– Daily inspection of: Monitoring and leak detection data; Signs of corrosion or releases of wastes; and Area around tanks (including secondary containment) for signs of erosion and releases.</p>
Frequency	Initially then annually. Tank system inspection is required daily per 66265.195. 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 66265.1085(k).
Recordkeeping & Reporting Compliance 66265.1090(b)	<ul style="list-style-type: none"> • Tank ID number. • Document the floating roof design and tank dimensions. • Document seal gap measurements as outlined in 66265.1090(b)(2)(C). • Must develop and maintain a written inspection plan and schedule as outlined in 66265.1089(b). • Document inspections as outlined in 66265.1090(b) and overlapping requirements of 66265.195. Also, request copies of daily tank system inspection logs. • The inspection agency must be notified before each seal measurement and/or inspection as outlined in 66265.1085(f)(3)(C).

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.

66265.1085(g)



Standard 66265.1085(g) and 66265.1088	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 66265.1088.	
Monitoring Requirement 66265.1085(g)(1)(B)	Pressure in the vapor headspace underneath the fixed roof < Atmospheric Pressure	Pressure in the vapor headspace underneath the fixed roof ≥ Atmospheric Pressure
	No visible cracks, holes, gaps or other spaces	No detectable organic emissions (eg..<500 ppm above background)
Method	Visual inspection	Method 21
Frequency	Initially, then annually 66265.1085(g)(3)(C)	
Inspection Requirement 66265.1085(g)(3)	Visually inspect for defects that could result in air pollutant emissions. Examples of defects are listed in 66265.1085(g)(3)(A). The closed-vent system and control device are inspected as outlined in 66265.1088(b)(4) and (c)(7). Tank system standards at 66265.195 for additional requirements not related to Subpart CC.	

<p>Frequency 66265.1085(g)(3)(C)</p>	<p>Initially and then annually and overlapping requirements of 66265.195</p>
<p>Recordkeeping & Reporting Compliance 66265.1090(b) and (e)</p>	<ul style="list-style-type: none"> • 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 66265.1090(e). • Must develop and maintain a written inspection plan and schedule as outlined in 66265.1089(b). • Document inspections as outlined in 66265.1090(b)

RCRA Subpart CC Regulations Level 2 Pressure Tank

Prevent venting to the atmosphere not allowed as a result of compression of the vapor headspace in the tank.

66265.1085(h)

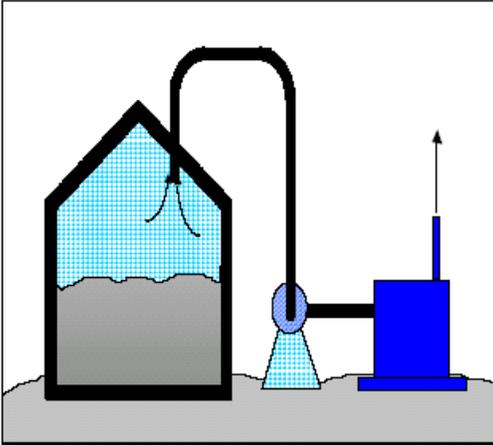


Standard 66265.1085(h)	All tank openings must be equipped with closure devices designed to operate with no detectable emissions during the filling of the tank. Whenever a hazardous waste is in the tank it must be operated as a closed system that does not vent, except for safety device. 66265.1085(h)(1) to(3)
Monitoring Requirement 66265.1085(h)(2)	Confirm no detectable emissions from tank closure devices.
Method	Method 21
Frequency	Initially, then annually. Also, daily tank system inspections for leaks are performed per 66265.195
Recordkeeping & Reporting Compliance 66265.1090(b)	<ul style="list-style-type: none"> • Tank ID number • Develop and maintain a written monitoring plan and schedule as outlined in 66265.1089(b). • Document monitoring events.

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.

66265.1085(i)



<p>Standard 66265.1085(i)</p>	<p>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 66265.1085(i)(1) to (2). 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>. 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.</p>		
<p>Monitoring Requirement 66265.1085(i)</p>	<p>Verification Procedure for Enclosure</p>	<p>Control Device</p>	<p>Closed Vent System Operates with No Detectable Emissions</p>
<p>Method</p>	<p>Specified in Section 5.0 of <i>Procedure T – Criteria for and Verification of a Permanent or</i></p>	<p>In accordance with procedures in 66265.1033(f)(2) & 66265.1088(c)(7)</p>	<p>Method 21 as outlined in 66265.1033(k) & 66265.1034(b)</p>

	<i>Temporary Total Enclosure</i> 40 CFR 52.741, Appendix B		
Frequency	Initially then annually	Once per operating day	Initially then annually
Recordkeeping & Reporting	<ul style="list-style-type: none"> • 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 66265.1090(e). • Develop and maintain a written monitoring plan and inspection schedule as outlined in 66265.1089(b). 		
Recordkeeping & Reporting Compliance 66265.1090(d)	<ul style="list-style-type: none"> • Document monitoring events. • Document the most recent verification analysis of the enclosure. 		

RCRA Subpart CC Regulations Permanent Total Enclosure Requirements

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



66265.1085(i) or 66265.1087(e)(2)

<p>Standard Requirement 40 CFR §52.741</p> <p>66265.1085(i) or 66265.1087(e)(2)</p>	<p>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:</p> <ul style="list-style-type: none"> • 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.
<p>Monitoring</p> <p>Requirement 66265.1085(i)</p>	<p>The owner or operator must perform the verification procedure for the enclosure outlined in Section 5 of Procedure T.</p>
<p>Frequency</p>	<p>Initially and Annually</p>
<p>Recordkeeping & Reporting</p> <p>Compliance</p>	<p>Document the most recent verification analysis of the enclosure. Including all calculations and measurements performed</p>

66265.1090(d)(1)	by the owner/operator to verify the enclosure meets the criteria.
------------------	---

RCRA Subpart CC Regulations Container Levels Determination

The use of emission controls is required on containers that manage hazardous waste with an average VO concentration equal to or greater than 500 ppmw. Examples of containers include drums, carboys, totes, dumpsters, bags, boxes, roll-offs, and other packages. Transport vehicles such as tank trucks and rail cars also are considered containers under RCRA.

66265.1087

Waste Determinations Method	Light or Heavy Material Service	Waste Stabilization *
	Vapor pressure determination 66265.1084(c)(5) for containers above 122 gallons and not DOT packaging compliant.	By regulatory definition 66260.10 (refer to 40 CFR 265.1081)
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.
Frequency	Initially and when VO conditions change.	
Recordkeeping & Reporting Compliance	Document vapor pressure determinations as outlined in 66265.1087(c)(5) for containers >122 gallons.	
Standard 66265.1087	Controls are applied to limit the amount of organics escaping from the containers and entering the atmosphere. <ul style="list-style-type: none"> 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 Sizes	Container Sizes	
Cubic Meters	Gallons (design cap.)	Container Control Level
<0.1	<26.4	Exempt from Subpart CC
>0.1 to ≤ 0.46	>26.4 to ≤ 122	Light or heavy material service
> 0.46	> 122	Heavy material service
> 0.46	> 122	Light material service
> 0.1	> 26.4	Waste stabilization
		Not Applicable
		Container Level 1
		Container Level 1
		Container Level 2
		Container Level 3

**Waste Stabilization process* means any physical or chemical process used to either reduce the mobility of hazardous constituents in a hazardous waste or eliminate free liquids as determined by EPA Test Method 9095. A waste stabilization process includes mixing the hazardous waste with binders or other materials, and curing the resulting hazardous waste and binder mixture. Other synonymous terms used to refer to this process are waste fixation or waste solidification. This does not include the adding of absorbent materials to the surface of a waste, without mixing, agitation, or subsequent curing, to absorb free liquid.

Brief Checklist for Subpart CC 66265.1087

Container Controls (66265.1087)

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 III > 26.4 gallon design capacity used for waste stabilization (see definition).

Light Material Service determination

Vapor Pressure of RCRA waste is \geq to 0.3 kPa at 20°C (0.044 psi, 2.25 mmHg). Only needs to be made if container(s) are > 122 gallons size.

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**.
- (2) **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.
- (3) **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 within 5 days or waste removed from container. No log required

Level III Container Standards (.1087(e)) NOTE: usually only at TSDFs.

- (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)).

Subpart CC: Container Controls, Inspection and Recordkeeping Requirements

Level 1

Larger than 26.4 gallons and less than or equal to 122 gallons, or larger than 122 gallons and does not manage HW in light material service

One of the following: -Use containers that meet DOT requirements -Use a cover and control with no visible gaps - Use organic vapor suppression on or above the container
66265.1087(c)

No waste transfer requirements apply

The covers, openings, and closure devices should be closed except:

1. When transferring HW in and out of the containers
 2. between batch transfer not exceeding 15 minutes between transfer
 3. While performing sampling and equipment access
 4. Conservation vents are allowed
 5. Safety vents are allowed
- 66265.1087(c)

Minimal inspection required: -when transferring waste, check to make sure closure devices are in good condition - if unloading of off-site waste takes longer than 24 hours, then container must be visually checked -repair any noted defects 66265.1087(c)(4)

When a defect is detected; attempt to repair within 24 hours must be made and: 1. Repair within 5 calendar days or empty and remove the container from service 2. Do not use until defect is repaired 66265.1087(c)(4)

Level 2

Larger than 122 gallons and manage HW "in light material service

Controls

One of the following: -Use containers that meet DOT requirements -Use containers that operate with no detectable emissions (EPA method 21) -Use containers that are demonstrated to be vapor-tight within the last 12 months (EPA method 27)
66265.1087(d)

Waste transfer requirements

-Waste transfer requirements apply regardless of container alternative used in level 2
-Transfer waste into or out of a container in such a manner as to minimize exposure of the waste to the atmosphere
66265.1087(d)(2)

Operating requirements

-All covers and closure devices must be kept closed and secured, except while transferring -Containers may be open while performing sampling or equipment access -Safety valves and conservation vents may be used if normally left in close position.
66265.1087(d)

Inspection requirements 66265.1089

Same as Level 1 requirements, plus -if wastes are stored greater than a year, then visually inspect once a year
66265.1087(d)(4)

Repair requirements

Same as Level 1 requirements
66265.1087(d)(4)

Level 3

Larger than 26.4 gallons and treat HW by a waste stabilization process

-Containers used to stabilize HW with volatile organics greater than 500 ppm
-For waste stabilized in a container either: 1.container must be vented directly to a control device; or 2.container is vented inside an enclosure which is exhausted through a closed vent to a control device. Conservation vents are not allowed.
66265.1087(b)(2)

Not applicable

-If the vapors are directly vented to a control device, there are specific design and operating criteria that must be met same as tanks that have closed vent and control device systems -If an enclosure is used, the enclosure must meet the design and operating criteria specified in "Procedure T-Criteria for and Verification of a Permanent or Temporary Total Enclosure" under 40 CFR 52.741 The container, enclosure, control device or closed vent system may have safety relief devices.
66265.1087(e)

Inspection requirements are the same as for tanks 66265.1087(e)(4)

Necessary corrective measures shall be immediately implemented to ensure that the control device is operated in compliance 66265.1087(e)(4)

-Volatile organic waste determination records
 -If container exceeds 122 gallons and does not meet DOT standards, records indicating that the container is not managing HW “in light material service” 66265.1087(c)(5)

Recordkeeping requirements 66265.1090

Since Level 2 waste is “in light material service” no records need to be kept

Depends upon how the organic emissions are vented:
 -If an enclosure is used, records must be maintained for the most recent set of calculations and measurements performed to verify that the enclosure meets the criteria of a permanent total enclosure (Procedure T)

-Records for the closed vent and control device system are the same for those used on tanks
 66265.1090(d)(e)

RCRA Subpart CC Regulations Level 1 DOT Containers

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

66265.1087(b)(c)



<p>Standard 66265.1087(b)(1)A), (b)(1)B), and (c)</p>	<p>There are three control Options for Level 1 containers:</p> <ul style="list-style-type: none"> • Container kept closed and meet 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. <p>Additional design specifications are listed in 66265.1087(c)(2). Operating requirements are found at 66265.1087(c)(3).</p>
<p>Monitoring Requirement</p>	<p>No monitoring other than inspections specified.</p>

Inspection Requirement 66265.1087(c)(4)	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 66265.1087(c)(4)(A). For containers present at the TSD for 1 year or more, initially (i.e., upon completion of filling) and then annually 66265.1087(c)(4)(B).
Recordkeeping & Reporting Compliance	<ul style="list-style-type: none"> • Document vapor pressure procedure determination as outlined in 66265.1087(c)(5) if containers ≥ 122 gallons are not a DOT container and not in light material service. • Develop and maintain a written inspection/monitoring plan and schedule as outlined in 66265.1089(b).

RCRA Subpart CC Regulations Level 2 Containers

Level 2 controls must be applied to containers greater than 0.46 m³ (122 gallons) in light material service.

66265.1087(d)

Standard 66265.1087(d)(1 - 3)	Container Level 2 controls offer <u>three options</u> : <ul style="list-style-type: none"> • Container that meets DOT regulations on packaging hazardous materials for transportation. or • Container which is operating with no detectable emissions. or • Vapor-tight container. Operating requirements are found at 66265.1087(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 66265.1087(g)	Method 27 66265.1087(h)
Frequency	Initially and Annually	
Inspection Requirement 66265.1087(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 66265.1087(d)(4)(A). For containers present at the TSD for 1 year or more, initially (i.e., upon completion of filling) and then annually 66265.1087(d)(4)(B).	
Recordkeeping & Reporting Compliance	<ul style="list-style-type: none"> • Develop and maintain a written inspection/monitoring plan and schedule as outlined in 66265.1089(b). 	

RCRA Subpart CC Regulations Level 3 Containers

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

66265.1087(e)

Standard 66265.1087 (e)(1)	Container Level 3 controls offer <u>two Options</u> : <ul style="list-style-type: none"> • 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 66265.1087(e)(2), (e)(3), & (e)(6).		
Monitoring Requirement 66265.1087(e)(4) 66265.1088	Closed vent system; no detectable emissions (<500 ppm)	Control Device	Verification procedure for enclosure
Method	Method 21	Procedures outlined in 66265.1033(f)(2)	Section 5.0 of Procedure T 40 CFR §52.741
Frequency	Initially then Annually	Once per operating day	Initially then Annually
Recordkeeping & Reporting Compliance 66265.1090(d)	<ul style="list-style-type: none"> • Design and performance information on closed-vent system and control device including certification as outlined in 66265.1090(e). • Develop and maintain a written monitoring plan and schedule as outlined in 66265.1089(b). • Document monitoring events. • Document the most recent verification analysis of the enclosure. 		

Brief Checklist for Subpart CC

Recordkeeping Requirements (66265.1090)

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)(A) Tank ID number or unique identification description

(B) Records of inspections: date of inspection, location of defects, description of defect, date of detection and date of correction

(2) Record of each maximum organic vapor pressure determination.

Detailed requirements for documenting the Design Analysis required by 6626.1090(e)(1)B) for condensers, carbon adsorption devices, vapor incinerators, boiler and process heaters, and flares.

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 must meet applicable DOT packaging regulations.

66265.1087(f)

Standard	Containers for Level 1 and Level 2 controls must satisfy DOT's regulations on packaging hazardous materials for transportation. 66265.1087(f)
Waste Determination Requirements Design	<i>49 CFR §178</i> , Specifications for Packaging; or <i>49 CFR §179</i> , Specifications for Tank Cars 66265.1087(f)(1) to (4).
Waste Management	<i>49 CFR §107</i> , Subpart B, Exemptions; <i>49 CFR §172</i> , Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements; <i>49 CFR §173</i> , Shippers – General Requirements for Shipments and Packages; and <i>49 CFR §180</i> , Continuing Qualification and Maintenance of Packagings. 66265.1087(f)(2)
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). 66265.1087(f)(3) and (f)(4)
Recordkeeping & Reporting Compliance	No requirements specified. However, waste screening 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.