

**ATTACHMENT I – 40 CFR PART 264, SUBPART CC**

**40 CFR PART 264, SUBPART CC  
AIR EMISSION STANDARDS**

Heritage Environmental Services, LLC (“Heritage”) is not permitted to treat or store hazardous waste in tanks or surface impoundments. Therefore, these units are not addressed in this document. Heritage does manage containers subject to Subpart CC air emission standards. Subpart CC standards are applicable to containers in which hazardous wastes are managed with the following exceptions:

1. Containers in which only hazardous waste with an average volatile organic concentration of less than 500 ppmw is managed.
2. Containers in which only hazardous waste that meets applicable organic hazardous constituent treatment standards under the land disposal restrictions is managed; and
3. Containers with a design capacity of less than or equal to 0.1 m<sup>3</sup> (approximately 26 gallons).

See the attached document: Subpart CC Air Emission Standards for Tanks, Surface Impoundments, and Containers – Inspection and Monitoring Plan for additional details.

**SUBPART CC AIR EMISSION STANDARDS  
FOR TANKS, SURFACE IMPOUNDMENTS, AND  
CONTAINERS - INSPECTION AND MONITORING PLAN**

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**TABLE OF CONTENTS**

1. INTRODUCTION/APPLICABILITY..... 5

2. DEFINITIONS..... 6

3. STANDARDS: CONTAINERS ..... 8

4. INSPECTION AND MONITORING SCHEDULE ..... 12

5. INSPECTION AND MONITORING PROCEDURES ..... 14

6. REPAIRS..... 16

7. RECORDKEEPING ..... 17

8. REPORTING ..... 18

**LIST OF APPENDICES**

- Appendix A Subpart CC Inspection/Monitoring Log
- Appendix B Organic Vapor Analyzer (OVA) Inspection/Calibration Log
- Appendix C Method 21 - Determination of Volatile Organic Compounds Leaks
- Appendix D Method 27 - Determination of Vapor Tightness of Gasoline Delivery Tank Using Pressure-Vacuum Test

## 1. INTRODUCTION/APPLICABILITY

This document specifies the procedures Heritage Environmental Services, LLC (“Heritage”) will integrate with overall facility operations to maintain compliance with the Air Emission Standards for Tanks, Surface Impoundments, and Containers (40 CFR 264, Subpart CC, hereinafter referred to as “Subpart CC”). As a facility operations manual, this document summarizes the requirements for inspection and monitoring, equipment repairs, recordkeeping, and reporting in accordance with Subpart CC.

The US EPA requires routine inspection and monitoring of containers subject to Subpart CC, and 40 CFR 264.1088(b) of Subpart CC requires that an owner/operator develop and implement a written plan and schedule to perform the inspection and monitoring requirements of Subpart CC. This document outlines the procedures Heritage will implement to comply with these inspection and monitoring requirements. These procedures are included as part of the facility's inspection plan required under 40 CFR 264.15.

Only the containers that are specifically subject to Subpart CC air emissions standards will be subject to the procedures outlined in this document. Heritage does not own or operate any surface impoundments or hazardous waste tanks at the Coolidge facility. Therefore, these units are not discussed in this document.

Subpart CC standards are applicable to containers in which hazardous wastes are managed with the following exceptions:

1. Containers in which only hazardous waste with an average volatile organic concentration of less than 500 ppmw is managed.
2. Containers in which only hazardous waste that meets applicable organic hazardous constituent treatment standards under the land disposal restrictions is managed; and
3. Containers with a design capacity of less than or equal to 0.1 m<sup>3</sup> (approximately 26 gallons).

For additional unit exemptions, consult 40 CFR 264.1080, 264.1082, and 264.1086.

The provisions of this document do not apply to units managing products or virgin materials not regulated as hazardous waste, including but not limited to materials managed under RCRA exclusions or exemptions, non-hazardous wastes, or used oils managed in accordance with the Used Oil Management Standards specified at 40 CFR Part 279.

## 2. DEFINITIONS

The following definitions as specified in Subpart CC apply to this document:

**Average volatile organic concentration or average VO concentration** - The mass-weighted average volatile organic concentration of a hazardous waste as determined in accordance with the requirements of 40 CFR 264.1083 of Subpart CC (Waste Determination Procedures).

**Closure Device** - A cap, hatch, lid, plug, seal, valve, or other type of fitting that blocks an opening in a cover such that when the device is secured in the closed position it prevents or reduces air pollutant emissions to the atmosphere. Closure devices include devices that are detachable from the cover (e.g., a sampling port cap), manually operated (e.g., a hinged access lid or hatch), or automatically operated (e.g., a spring-loaded pressure relief valve).

**Container** - Any portable device in which a material is stored, transported, disposed of, or otherwise handled.

**Cover** - A device that provides a continuous barrier over the hazardous waste managed in a unit to prevent or reduce air pollutant emissions to the atmosphere. A cover may have openings (such as access hatches, sampling ports, gauge wells) that are necessary for operation, inspection, maintenance, and repair of the unit on which the cover is used. A cover may be a separate piece of equipment that can be detached and removed from the unit, or a cover may be formed by structural features permanently integrated into the design of the unit. An example of a cover is a lid on a drum.

**Fixed roof** - A cover that is mounted on a unit in a stationary position and does not move with fluctuations in the level of the material managed in the unit.

**Hard-piping** - Pipe or tubing that is manufactured and properly installed in accordance with relevant standards and good engineering practices.

**In light material service** - The container is used to manage a 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) (approximately  $4.35 \times 10^{-2}$  psi) at 20 °C; and the total concentration of the pure organic constituents having a vapor pressure greater than 0.3 kPa (approximately  $4.35 \times 10^{-2}$  psi) at 20 °C is equal to or greater than 20 percent by weight.

**No detectable organic emissions** - No escape of organics to the atmosphere as determined using the procedure specified in 40 CFR 264.1083(d) of Subpart CC (i.e., by an instrument reading less than 500 parts per million by volume (ppmv) above the background level when measured in accordance with the requirements of Method 21 (see Appendix C), and by no visible openings or defects in the device or system such as rips, tears, gaps, etc.

**Point of waste origination** - When the facility owner/operator is the generator of the hazardous waste, the point of waste origination means the point where a solid waste produced by a system, process, or waste management unit is determined to be a

hazardous waste as defined in 40 CFR Part 261. When the facility owner/operator is not the generator of the hazardous waste, the point of waste origination means the point where the facility accepts delivery or takes possession of the hazardous waste.

**Vapor tight** – No escape of organics to the atmosphere as determined using the procedure specified in 264.1086(h) of Subpart CC [i.e., in accordance with the requirements of Method 27 (see Appendix D)].

**Volatile organic concentration, or VO concentration** - The fraction by weight of the volatile organic compounds contained in a hazardous waste expressed in terms of parts per million (ppmw) as determined by direct measurement or by knowledge of the waste in accordance with the requirements of 40 CFR 264.1083 of Subpart CC (Waste Determination Procedures). For the purpose of determining the VO concentration of a hazardous waste, 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 (0.1 Y/X) (which can also be expressed as  $1.8 \times 10^{-6}$  atmospheres/gram-mole/m<sup>3</sup>) at 25 °C must be included. Chemical reference books are available to determine Henry's Law Constants.

### 3. STANDARDS: CONTAINERS

40 CFR 264.1086 specifies three levels of air emission controls for containers depending on the size of the container, the types of wastes managed (e.g., "in light material service"), and whether the wastes are managed by stabilization in containers. These three control levels and Heritage's container management procedures are described below. Inspection and monitoring procedures for containers subject to Subpart CC are detailed in Section 4 (Schedule) and Section 5 (Procedures).

Table O-1 provides an overall summary of Heritage's approach to compliance with the standard. In summary, if a container meets US DOT hazardous materials packaging specifications, then the container complies with Subpart CC. In the unlikely event of receipt of a container that does not meet US DOT packaging specifications, then the container will be overpacked (if possible, based on size), or vapor monitoring will be conducted with results recorded on an Inspection/Monitoring Log. Additional details are provided below.

#### 3.1 Container Level 1 Standards (40 CFR 264.1086(c))

Heritage will manage the following types of containers in accordance with Container Level 1 standards:

1. **Containers with a design capacity greater than 0.1 m<sup>3</sup> (approximately 26 gallons) and less than or equal to 0.46 m<sup>3</sup> (approximately 119 gallons)** - Such containers may include, but are not limited to, 30-, 55-, and 80-gallon drums (most containers managed by Heritage are in this category).
2. **Containers with a design capacity greater than 0.46 m<sup>3</sup> (approximately 119 gallons) that are not "in light material service" (see Section 2 - Definitions)** - Containers of this size are called "bulk containers" by the US DOT and include, but are not limited to, intermediate bulk containers (tote tanks), tank trucks, railcars, and rolloff boxes. Containers of this size for which a determination regarding "in light material service" status has not been made will be managed in accordance with Container Level 2 standards (see Section 3.2).

Heritage will comply with Container Level 1 standards using one of the following control methods specified by 40 CFR 264.1086(c)(1):

1. The container will meet applicable US DOT hazardous material packaging specifications (this will be Heritage's primary method of complying with Container Level 1 standards; see Section 4.1 Evaluation of US DOT-Specification Packaging); or
2. The container will be equipped with a cover and closure devices that form a continuous barrier over the container openings such that when the cover and closure devices are secured in the closed position there are no visible holes, gaps, or other open spaces (e.g., a lid on a drum, a suitably secured tarp on a rolloff box, or bulk cargo container equipped with screw-type cap).



**TABLE O-1**  
 Summary of Subpart CC Compliance Methodology  
 Heritage Environmental Services, LLC  
 Coolidge, Arizona

	Container Size	DOT / Non-DOT Specification	Light liquid service?	Subpart CC Control Level	Method of Compliance
A1	< 119 gal	DOT	Not determined	Level 1	DOT-spec container
A2	> 119 gal	DOT	Not determined	Level 2	DOT-spec container
A3	< 119 gal	DOT	Not light	Level 1	DOT-spec container
A4	> 119 gal	DOT	Not Light	Level 1	DOT-spec container
A5	< 119 gal	DOT	Yes – Light	Level 1	DOT-spec container
A6	> 119 gal	DOT	Yes – Light	Level 2	DOT-spec container
B1	55 gal	Non-DOT, then DOT Overpack <sup>(1)</sup>	Not determined	Level 1	DOT-spec container
B2	55 gal	Non-DOT, then DOT Overpack <sup>(1)</sup>	Not light	Level 1	DOT-spec container
B3	55 gal	Non-DOT, then DOT Overpack <sup>(1)</sup>	Yes – Light	Level 1	DOT-spec container
C1	> 119 gal	Non-DOT	Not determined	Level 2	Method 21/27 monitor <sup>(2)</sup>
C2	> 119 gal	Non-DOT	Not light	Level 1	DOT-spec container
C3	> 119 gal	Non-DOT	Yes - Light	Level 2	Method 21/27 monitor <sup>(2)</sup>

Notes:

<sup>(1)</sup> Record details on the Subpart CC Inspection/Monitoring Log.

<sup>(2)</sup> Record monitoring results and details on the Subpart CC Inspection/Monitoring Log.

**3.2 Container Level 2 Standards (40 CFR 264.1086(d))**

Heritage will manage the following types of containers in accordance with Container Level 2 standards:

1. **Containers with a design capacity greater than 0.46 m<sup>3</sup> (approximately 119 gallons) that are "in light material service"** - Containers of this size are called "bulk containers" by the US DOT and include, but are not limited to, intermediate bulk containers (tote tanks), tank trucks, railcars, and rolloff boxes.
2. **Containers with a design capacity greater than 0.46 m<sup>3</sup> (approximately 119 gallons) for which a determination has not been made regarding their status as "in light material service."**

Heritage will comply with Container Level 2 standards using one of the following control methods specified by 40 CFR 264.1086(d)(1):

1. Containers subject to Container Level 2 standards at Heritage will meet applicable US DOT hazardous material packaging regulations, as specified by 40 CFR 264.1087(d)(1)(i) (this will be Heritage's primary method of complying with Container Level 2 standards; see Section 4.1 Evaluation of US DOT- Specification Packaging).
2. Alternatively, Heritage may choose to use a non-DOT specification packaging and perform organic vapor monitoring in accordance with Method 21 of 40 CFR Part 60, Appendix A, or use a container that has been demonstrated within the preceding 12 months to be vapor-tight by using Method 27 of 40 CFR Part 60, Appendix A (this method of compliance with Container Level 2 standards will be used only in very limited cases when the container is not to be shipped off-site).

### 3.3 Container Level 3 Standards (40 CFR 264.1086(e))

**Containers with a design capacity greater than 0.1 m<sup>3</sup> (approximately 26 gallons) used for stabilization of hazardous waste** are subject to Container Level 3 standards. Heritage does not currently perform stabilization of hazardous wastes in containers at the facility. Therefore, Container Level 3 standards are not specified in this document. Should Heritage elect to undertake such activities in the future, this document will be amended to include Container Level 3 standards.

### 3.4 Container Management Procedures

Whenever hazardous waste is in a container, all covers and closure devices for that container will be installed, secured, and maintained in the closed position except in the following situations:

1. A container that is RCRA-empty (40 CFR 261.7(b)) is not subject to Subpart CC and may be open at any time.
2. A closure device or cover may be opened to add waste or other material to the container. If the container is filled in one continuous operation, the closure devices must be secured in the closed position and the cover installed promptly upon conclusion of the filling operation. If the container is filled in discrete quantities or batches, the closure devices must be promptly secured in the closed position and the covers installed upon either: the container being filled to its final fill level; the completion of a batch loading after which no additional material will be added within 15 minutes; the person performing the loading operation leaving the immediate vicinity of the container; or the shutdown of the process generating the material added to the container, whichever occurs first.

3. A closure device or cover may be opened to remove waste from the container. If the waste is removed in discrete quantities or batches, but the container is not RCRA-empty, the closure devices must be secured in the closed position and cover installed promptly upon completion of a batch removal after which no additional material will be removed within 15 minutes, or the person performing the unloading leaves the immediate vicinity of the container, whichever comes first.
4. A closure device or cover may be opened when access inside a container is needed to perform routine activities other than transfer of waste. Following completion of the activity, the closure device must be promptly secured in the closed position and the cover reinstalled.
5. Opening of a spring-loaded pressure-vacuum relief valve, conservation vent, or similar type of pressure relief device which vents to atmosphere during normal operations for the purpose of maintaining the container's internal pressure in accordance with the container's design specifications, such as during loading or diurnal temperature fluctuations (see 264.1086(c)(3)(iv) for details). The device must be designed to operate with no detectable organic emissions when closed.
6. Opening of a safety device to avoid unsafe conditions.

Transfers of hazardous wastes into or out of containers subject to Container Level 2 standards will minimize exposure of the waste to the atmosphere, to the extent practical, considering the physical properties of the waste and good engineering and safety practices applicable to the hazards of the material.

Examples of such transfers include:

- A submerged fill pipe or other submerged fill method to load liquids into the container,
- A vapor balancing system or a vapor recovery system to collect and control the vapors from the container filling operation, and
- A fitted opening in the top of a container through which the hazardous waste is filled with subsequent purging of the transfer line before removing from the container opening.

#### 4. INSPECTION AND MONITORING SCHEDULE

##### 4.1 Evaluation of US DOT-Specification Packaging

Upon receipt, containers shipped to Coolidge are inspected to determine if they meet US DOT specifications. In the unlikely event that a container does not meet DOT packaging requirements, if the container size is 55 gallons or less, the container is overpacked into a container that meets DOT packaging requirements. If the container size is greater than 55 gallons, and the container does not meet US DOT specifications, wastestream profile data are reviewed to determine if the container is subject to Subpart CC regulations (e.g., the hazardous waste contains over 500 ppm VOC as indicted by the wastestream survey and/or analytical data provided by the generator). If subject to Subpart CC, the container is evaluated to determine the applicable air emissions control standards (i.e., Level 1 or Level 2, as described in Sections 3.1 and 3.2, respectively).

An Inspection/Monitoring Log for containers that are subject to Subpart CC that do not meet DOT packaging specifications is maintained at the facility. The log includes container ID and volume, container storage area, waste type, and type of emissions control. The Inspection/Monitoring Log is provided as Table O-2 in Appendix A for reference.

Personnel performing the evaluations have theoretical and practical training in the implementation of Subpart CC standards, including inspections, recordkeeping, and repair of containers. Subpart CC training is included in the review of the Clean Air Act in the Introduction to RCRA training session and during the training session on Container Management and Storage.

Containers at Heritage that are subject to Subpart CC standards will be inspected and monitored in accordance with the requirements of 40 CFR 264.1088 and as described below.

##### 4.2 Container Level 1 and Level 2 meeting DOT Specifications - Inspection Schedule

**Containers managed under the Container Level 1 standards, or under the Container Level 2 standards meeting applicable US DOT packaging requirements** - Perform a visual inspection of these hazardous waste containers, including covers and closure devices. ORGANIC VAPOR MONITORING IS NOT REQUIRED FOR CONTAINERS MEETING APPLICABLE US DOT PACKAGING REQUIREMENTS. Perform these visual inspections in accordance with the following schedule:

1. **Initial visual inspection** - at the time the containers are first received (i.e., prior to signing the manifest); and for containers generated on-site, at the time hazardous waste subject to Subpart CC is added to the container.
2. **Annual visual inspection (at least once every 12 months)** - only for containers that remain at the facility for one year or more.

3. Document results of the monitoring or the date of the container tightness testing on the Subpart CC Inspection/Monitoring Log (see Table O-2 in Appendix A).

Additional details pertaining to container inspections are provided in Section 5.

#### 4.3 Container Level 2 not meeting DOT Specifications – Monitoring & Inspection Schedule

**Containers managed under the Container Level 2 standards that do not meet applicable US DOT packaging requirements.** In the event a non-DOT specification packaging with a design capacity greater than 0.46 m<sup>3</sup> (approximately 119 gallons) is used to store hazardous waste subject to Subpart CC, either:

1. Perform organic vapor monitoring in accordance with Method 21 (see Appendix C), as specified by 40 CFR 264.1083(d) and 264.1086(g), when the container is received or waste is first placed in it; or
2. Use a container that has been demonstrated within the preceding 12 months to be vapor-tight by using Method 27 (see Appendix D) of 40 CFR Part 60, Appendix A.

Additional details pertaining to container monitoring are provided in Section 5.

In addition, for Container Level 2 containers not meeting US DOT packaging requirements perform visual inspections in accordance with the following schedule:

1. **Initial visual inspection** - at the time the containers are first received (i.e., prior to signing the manifest); and for containers generated on-site at the time hazardous waste subject to Subpart CC is added to the container.
2. **Annual visual inspection (at least once every 12 months)** - only for containers that remain at the facility for one year or more.
3. Document details of the inspection on the Subpart CC Inspection/Monitoring Log (see Table O-2 in Appendix A).

Additional details pertaining to container inspections are provided in Section 5.

## 5. INSPECTION AND MONITORING PROCEDURES

Container inspections and monitoring are performed to confirm that the applicable control is effective in preventing emissions.

### 5.1 Inspection Procedures

Heritage will visually inspect containers subject to Subpart CC and their covers and closure devices as follows:

1. View the entire container, its cover, and closure devices (e.g., bungs, valves, caps, etc.) for evidence of any defect that could result in air pollutant emissions.
2. Defects include, but are not limited to, visible cracks, holes, gaps, or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position. In addition, visible vapor or liquid leakage may indicate a leak is present.
3. Note any visible evidence of any defect and the inspection date on the Inspection/Monitoring Log (see Table O-2 in Appendix A).
4. Immediately report such observations to the Facility Maintenance Department for repair in accordance with Section 6. Note the dates when repair begins and the date when repair is completed on the Inspection/Monitoring Log (see Table O-2 in Appendix A).

### 5.2 Monitoring Procedures

In addition to the inspection procedures specified in Section 5.1, for any non-DOT specification packaging with a design capacity greater than 0.46 m<sup>3</sup> (approximately 119 gallons) used to store hazardous waste subject to Subpart CC, Heritage will monitor the container covers and closure devices. Heritage will maintain an organic vapor analyzer (OVA) on site. The OVA will be stored in the office of the Environmental Compliance Manager or other suitable location. The OVA will be inspected and calibrated by the Environmental Compliance Manager or designee before each use. An OVA Inspection/Calibration Log will be maintained at the facility (see Appendix B). The container covers and closure devices will be monitored as follows:

1. Perform monitoring in accordance with the procedures specified in Method 21 (see Appendix C) and 40 CFR 264.1083(d). Use an instrument that meets applicable Method 21 criteria and calibrate the instrument before each day of use using the calibration gases specified by 40 CFR 264.1083(d)(5). (See Appendix B for OVA Inspection/Calibration Log.)
2. Determine the background level according to the procedures in Method 21.
3. Ensure the container cover and closure devices are secured in the closed position prior to monitoring.

4. Traverse the instrument probe around the potential leak interface as close to the interface as possible, as required by Method 21. Check each potential leak interface (i.e., a location where organic vapor leakage could occur) on the container, its cover, and associated closure devices, including but not limited to the interface of the cover rim and container wall; the periphery of any opening on the container or container cover and its associated closure device; and the sealing seat interface on a spring-loaded pressure-relief valve.
5. Perform monitoring when the container is filled with a material having a volatile organic concentration representative of the range of volatile organic concentrations for the hazardous wastes expected to be managed in this type of container.
6. If the arithmetic difference between the maximum organic concentration indicated by the instrument and the background level is less than 500 ppmv, then the container is considered to have no detectable organic emissions (i.e., it "passes").
7. If the arithmetic difference between the maximum organic concentration indicated by the instrument and the background level is equal to or greater than 500 ppmv, note this condition on the Inspection/Monitoring Log (see Table O-2 in Appendix A).
8. Immediately report such observations to the Facility Maintenance Department for repair in accordance with Section 6. Note the dates when repair begins and the date when repair is completed on the Inspection/Monitoring Log (see Table O-2 in Appendix A).

## 6. REPAIRS

When a defect is detected by either a visual inspection, as described in Section 5.1, or by leak detection monitoring, as described in Section 5.2, Heritage will repair the container in the following manner:

1. The first attempt at repairing a container will be no later than 24 hours after the defect is detected.
2. Repair the container as soon as possible, but no later than 5 calendar days after detection of the defect.
3. If repair of the defect cannot be completed within 5 calendar days, then remove the hazardous waste from the container and do not use the container to manage hazardous waste until the defect is repaired. Note details on the Inspection/Monitoring Log (see Table O-2 in Appendix A).



## 7. RECORDKEEPING

Heritage will record and maintain the information described in this section in accordance with 40 CFR 264.1089. Heritage will maintain records specified in this section in the facility operating record stored as hardcopy files on site in Coolidge or available electronically for a minimum of 3 years.

For containers exempted from Subpart CC because they manage only wastes with an average volatile organic concentration of less than 500 ppmw, or for which volatile organics have been destroyed or removed, Heritage will maintain the following records:

1. For wastes with an average volatile organic concentration of less than 500 ppmw, information used for each waste determination, including wastestream profile data from the generator, in the facility operating record filed onsite in Coolidge and/or available electronically. If analytical results are used, the date, time, and location of each sample will be recorded.
2. For wastes treated to remove volatile organics, the identification number of the incinerator, boiler, or industrial furnace in which the waste was treated.
3. For wastes that are exempt because they meet applicable organic treatment standards under the land disposal restrictions (LDR) (40 CFR 264.1082(c)(4)), Heritage already maintains LDR notifications as required by 40 CFR 268.7. These records are not required by Subpart CC but can be used to document these determinations.

For containers managed under Container Level 2 standards that do not meet applicable US DOT packaging requirements, Heritage will maintain copies of Table O-2 as hardcopy files onsite in Coolidge for a minimum of 3 years. Copies of the OVA Inspection/Calibration logs (Table O-3) will also be maintained as hardcopy files onsite in Coolidge for a minimum of 3 years.

## 8. REPORTING

Heritage will submit a report to the Arizona Department of Environmental Quality (ADEQ) within 15 calendar days of the time Heritage becomes aware of each occurrence when hazardous waste subject to Subpart CC emission control requirements is placed in a container not in compliance with Subpart CC emission control standards.

Each report will include the facility EPA identification number, facility name and address, a description of the noncompliance event and cause, the dates of noncompliance, and the actions taken to correct the noncompliance and prevent recurrence. The report will be signed, dated, and certified by the person authorized to submit reports in accordance with R18-8-270.A (40 CFR 270.11(d)(1)).

Causes of noncompliance may include, but are not limited to, the following:

1. Placing in a container without suitable emissions controls a hazardous waste having an average volatile organic concentration of equal to or greater than 500 ppmw at the point of waste origination,
2. Placing in a container without suitable air emissions controls a treated hazardous waste of which the organic content has been reduced by an organic destruction or removal process that fails to achieve the applicable conditions specified in 40 CFR 264.1082 (c)(2)(i-vi), and
3. Placing hazardous waste subject to Subpart CC Level 2 controls in a container that does not meet US DOT packaging requirements without conducting monitoring in accordance with Method 21.

Heritage will submit annually a copy of Table O-2 (see Appendix A) to the ADEQ. The report will be for containers inspected in the calendar year prior to the date of the report and will be submitted by not later than February 1 of each calendar year. The report will be signed, dated, and certified by the person authorized to submit reports in accordance with R18-8-270.A (40 CFR 270.11(d)(1)).

**APPENDIX A**  
**SUBPART CC INSPECTION/MONITORING LOG**



**APPENDIX B**  
**ORGANIC VAPOR ANALYZER INSPECTION/CALIBRATION LOG**



**APPENDIX C**

**METHOD 21 - DETERMINATION OF VOLATILE  
ORGANIC COMPOUNDS LEAKS**

## Method 21 -- Determination of Volatile Organic Compound Leaks

### 1.0 Scope and Application

#### 1.1 Analytes.

Analyte	CAS No.
Volatile Organic Compounds (VOC)	No CAS number assigned

1.2 Scope. This method is applicable for the determination of VOC leaks from process equipment. These sources include, but are not limited to, valves, flanges and other connections, pumps and compressors, pressure relief devices, process drains, open-ended valves, pump and compressor seal system degassing vents, accumulator vessel vents, agitator seals, and access door seals.

1.3 Data Quality Objectives. Adherence to the requirements of this method will enhance the quality of the data obtained from air pollutant sampling methods.

### 2.0 Summary of Method

2.1 A portable instrument is used to detect VOC leaks from individual sources. The instrument detector type is not specified, but it must meet the specifications and performance criteria contained in section 6.0. A leak definition concentration based on a reference compound is specified in each applicable regulation. This method is intended to locate and classify leaks only and is not to be used as a direct measure of mass emission rate from individual sources.

### 3.0 Definitions

3.1 Calibration gas means the VOC compound used to adjust the instrument meter reading to a known value. The calibration gas is usually the reference compound at a known concentration approximately equal to the leak definition concentration.

3.2 Calibration precision means the degree of agreement between measurements of the same known value, expressed as the relative percentage of the average difference between the meter readings and the known concentration to the known concentration.

3.3 Leak definition concentration means the local VOC concentration at the surface of a leak source that indicates that a VOC emission (leak) is present. The leak definition is an instrument meter reading based on a reference compound.

3.4 No detectable emission means a local VOC concentration at the surface of a leak source, adjusted for local VOC ambient concentration, that is less than 2.5 percent of the specified leak definition concentration. that indicates that a VOC emission (leak) is not present.

3.5 Reference compound means the VOC species selected as the instrument calibration basis for specification of the leak definition concentration. (For example, if a leak definition



concentration is 10,000 ppm as methane, then any source emission that results in a local concentration that yields a meter reading of 10,000 on an instrument meter calibrated with methane would be classified as a leak. In this example, the leak definition concentration is 10,000 ppm and the reference compound is methane.)

3.6 Response factor means the ratio of the known concentration of a VOC compound to the observed meter reading when measured using an instrument calibrated with the reference compound specified in the applicable regulation.

3.7 Response time means the time interval from a step change in VOC concentration at the input of the sampling system to the time at which 90 percent of the corresponding final value is reached as displayed on the instrument readout meter.

#### 4.0 Interferences [Reserved]

#### 5.0 Safety

5.1 Disclaimer. This method may involve hazardous materials, operations, and equipment. This test method may not address all of the safety problems associated with its use. It is the responsibility of the user of this test method to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to performing this test method.

5.2 Hazardous Pollutants. Several of the compounds, leaks of which may be determined by this method, may be irritating or corrosive to tissues (e.g., heptane) or may be toxic (e.g., benzene, methyl alcohol). Nearly all are fire hazards. Compounds in emissions should be determined through familiarity with the source. Appropriate precautions can be found in reference documents, such as reference No. 4 in section 16.0.

#### 6.0 Equipment and Supplies

A VOC monitoring instrument meeting the following specifications is required:

6.1 The VOC instrument detector shall respond to the compounds being processed. Detector types that may meet this requirement include, but are not limited to, catalytic oxidation, flame ionization, infrared absorption, and photoionization.

6.2 The instrument shall be capable of measuring the leak definition concentration specified in the regulation.

6.3 The scale of the instrument meter shall be readable to  $\pm 2.5$  percent of the specified leak definition concentration.

6.4 The instrument shall be equipped with an electrically driven pump to ensure that a sample is provided to the detector at a constant flow rate. The nominal sample flow rate, as measured at the sample probe tip, shall be 0.10 to 3.0 l/min (0.004 to 0.1 ft<sup>3</sup>/min) when the probe is fitted with a glass wool plug or filter that may be used to prevent plugging of the instrument.

6.5 The instrument shall be equipped with a probe or probe extension or sampling not to exceed 6.4 mm (1/4 in) in outside diameter, with a single end opening for admission of sample.

6.6 The instrument shall be intrinsically safe for operation in explosive atmospheres as defined by the National Electrical Code by the National Fire Prevention Association or other applicable regulatory code for operation in any explosive atmospheres that may be encountered in its use. The instrument shall, at a minimum, be intrinsically safe for Class 1, Division 1 conditions, and/or Class 2, Division 1 conditions, as appropriate, as defined by the example code. The instrument shall not be operated with any safety device, such as an exhaust flame arrestor, removed.

## 7.0 Reagents and Standards

7.1 Two gas mixtures are required for instrument calibration and performance evaluation:

7.1.1 Zero Gas. Air, less than 10 parts per million by volume (ppmv) VOC.

7.1.2 Calibration Gas. For each organic species that is to be measured during individual source surveys, obtain or prepare a known standard in air at a concentration approximately equal to the applicable leak definition specified in the regulation.

7.2 Cylinder Gases. If cylinder calibration gas mixtures are used, they must be analyzed and certified by the manufacturer to be within 2 percent accuracy, and a shelf life must be specified. Cylinder standards must be either reanalyzed or replaced at the end of the specified shelf life.

7.3 Prepared Gases. Calibration gases may be prepared by the user according to any accepted gaseous preparation procedure that will yield a mixture accurate to within 2 percent. Prepared standards must be replaced each day of use unless it is demonstrated that degradation does not occur during storage.

7.4 Mixtures with non-Reference Compound Gases. Calibrations may be performed using a compound other than the reference compound. In this case, a conversion factor must be determined for the alternative compound such that the resulting meter readings during source surveys can be converted to reference compound results.

## 8.0 Sample Collection, Preservation, Storage, and Transport

8.1 Instrument Performance Evaluation. Assemble and start up the instrument according to the manufacturer's instructions for recommended warmup period and preliminary adjustments.

8.1.1 Response Factor. A response factor must be determined for each compound that is to be measured, either by testing or from reference sources. The response factor tests are required before placing the analyzer into service, but do not have to be repeated at subsequent intervals.

8.1.1.1 Calibrate the instrument with the reference compound as specified in the applicable regulation. Introduce the calibration gas mixture to the analyzer and record the

observed meter reading. Introduce zero gas until a stable reading is obtained. Make a total of three measurements by alternating between the calibration gas and zero gas. Calculate the response factor for each repetition and the average response factor.

8.1.1.2 The instrument response factors for each of the individual VOC to be measured shall be less than 10 unless otherwise specified in the applicable regulation. When no instrument is available that meets this specification when calibrated with the reference VOC specified in the applicable regulation, the available instrument may be calibrated with one of the VOC to be measured, or any other VOC, so long as the instrument then has a response factor of less than 10 for each of the individual VOC to be measured.

8.1.1.3 Alternatively, if response factors have been published for the compounds of interest for the instrument or detector type, the response factor determination is not required, and existing results may be referenced. Examples of published response factors for flame ionization and catalytic oxidation detectors are included in References 1–3 of section 17.0.

8.1.2 Calibration Precision. The calibration precision test must be completed prior to placing the analyzer into service and at subsequent 3-month intervals or at the next use, whichever is later.

8.1.2.1 Make a total of three measurements by alternately using zero gas and the specified calibration gas. Record the meter readings. Calculate the average algebraic difference between the meter readings and the known value. Divide this average difference by the known calibration value and multiply by 100 to express the resulting calibration precision as a percentage.

8.1.2.2 The calibration precision shall be equal to or less than 10 percent of the calibration gas value.

8.1.3 Response Time. The response time test is required before placing the instrument into service. If a modification to the sample pumping system or flow configuration is made that would change the response time, a new test is required before further use.

8.1.3.1 Introduce zero gas into the instrument sample probe. When the meter reading has stabilized, switch quickly to the specified calibration gas. After switching, measure the time required to attain 90 percent of the final stable reading. Perform this test sequence three times and record the results. Calculate the average response time.

8.1.3.2 The instrument response time shall be equal to or less than 30 seconds. The instrument pump, dilution probe (if any), sample probe, and probe filter that will be used during testing shall all be in place during the response time determination.

8.2 Instrument Calibration. Calibrate the VOC monitoring instrument according to section 10.0.

8.3 Individual Source Surveys.

8.3.1 Type I—Leak Definition Based on Concentration. Place the probe inlet at the surface of the component interface where leakage could occur. Move the probe along the interface

periphery while observing the instrument readout. If an increased meter reading is observed, slowly sample the interface where leakage is indicated until the maximum meter reading is obtained. Leave the probe inlet at this maximum reading location for approximately two times the instrument response time. If the maximum observed meter reading is greater than the leak definition in the applicable regulation, record and report the results as specified in the regulation reporting requirements. Examples of the application of this general technique to specific equipment types are:

8.3.1.1 Valves. The most common source of leaks from valves is the seal between the stem and housing. Place the probe at the interface where the stem exits the packing gland and sample the stem circumference. Also, place the probe at the interface of the packing gland take-up flange seat and sample the periphery. In addition, survey valve housings of multipart assembly at the surface of all interfaces where a leak could occur.

8.3.1.2 Flanges and Other Connections. For welded flanges, place the probe at the outer edge of the flange-gasket interface and sample the circumference of the flange. Sample other types of nonpermanent joints (such as threaded connections) with a similar traverse.

8.3.1.3 Pumps and Compressors. Conduct a circumferential traverse at the outer surface of the pump or compressor shaft and seal interface. If the source is a rotating shaft, position the probe inlet within 1 cm of the shaft-seal interface for the survey. If the housing configuration prevents a complete traverse of the shaft periphery, sample all accessible portions. Sample all other joints on the pump or compressor housing where leakage could occur.

8.3.1.4 Pressure Relief Devices. The configuration of most pressure relief devices prevents sampling at the sealing seat interface. For those devices equipped with an enclosed extension, or horn, place the probe inlet at approximately the center of the exhaust area to the atmosphere.

8.3.1.5 Process Drains. For open drains, place the probe inlet at approximately the center of the area open to the atmosphere. For covered drains, place the probe at the surface of the cover interface and conduct a peripheral traverse.

8.3.1.6 Open-ended Lines or Valves. Place the probe inlet at approximately the center of the opening to the atmosphere.

8.3.1.7 Seal System Degassing Vents and Accumulator Vents. Place the probe inlet at approximately the center of the opening to the atmosphere.

8.3.1.8 Access door seals. Place the probe inlet at the surface of the door seal interface and conduct a peripheral traverse.

8.3.2 Type II—"No Detectable Emission". Determine the local ambient VOC concentration around the source by moving the probe randomly upwind and downwind at a distance of one to two meters from the source. If an interference exists with this determination due to a nearby emission or leak, the local ambient concentration may be determined at distances closer to the source, but in no case shall the distance be less than 25 centimeters. Then move the probe inlet to the surface of the source and determine the concentration as outlined in section 8.3.1. The difference between these concentrations

determines whether there are no detectable emissions. Record and report the results as specified by the regulation. For those cases where the regulation requires a specific device installation, or that specified vents be ducted or piped to a control device, the existence of these conditions shall be visually confirmed. When the regulation also requires that no detectable emissions exist, visual observations and sampling surveys are required. Examples of this technique are:

8.3.2.1 Pump or Compressor Seals. If applicable, determine the type of shaft seal. Perform a survey of the local area ambient VOC concentration and determine if detectable emissions exist as described in section 8.3.2.

8.3.2.2 Seal System Degassing Vents, Accumulator Vessel Vents, Pressure Relief Devices. If applicable, observe whether or not the applicable ducting or piping exists. Also, determine if any sources exist in the ducting or piping where emissions could occur upstream of the control device. If the required ducting or piping exists and there are no sources where the emissions could be vented to the atmosphere upstream of the control device, then it is presumed that no detectable emissions are present. If there are sources in the ducting or piping where emissions could be vented or sources where leaks could occur, the sampling surveys described in section 8.3.2 shall be used to determine if detectable emissions exist.

8.3.3 Alternative Screening Procedure.

8.3.3.1 A screening procedure based on the formation of bubbles in a soap solution that is sprayed on a potential leak source may be used for those sources that do not have continuously moving parts, that do not have surface temperatures greater than the boiling point or less than the freezing point of the soap solution, that do not have open areas to the atmosphere that the soap solution cannot bridge, or that do not exhibit evidence of liquid leakage. Sources that have these conditions present must be surveyed using the instrument technique of section 8.3.1 or 8.3.2.

8.3.3.2 Spray a soap solution over all potential leak sources. The soap solution may be a commercially available leak detection solution or may be prepared using concentrated detergent and water. A pressure sprayer or squeeze bottle may be used to dispense the solution. Observe the potential leak sites to determine if any bubbles are formed. If no bubbles are observed, the source is presumed to have no detectable emissions or leaks as applicable. If any bubbles are observed, the instrument techniques of section 8.3.1 or 8.3.2 shall be used to determine if a leak exists, or if the source has detectable emissions, as applicable.

## 9.0 Quality Control

### Section

Quality control measure

### Effect

8.1.2 Instrument calibration precision check. Ensure precision and accuracy, respectively, of instrument response to standard.

## 10.0 Instrument calibration

### 10.0 Calibration and Standardization

10.1 Calibrate the VOC monitoring instrument as follows. After the appropriate warmup period and zero internal calibration procedure, introduce the calibration gas into the instrument sample probe. Adjust the instrument meter readout to correspond to the calibration gas value.

Note:

If the meter readout cannot be adjusted to the proper value, a malfunction of the analyzer is indicated, and corrective actions are necessary before use.

### 11.0 Analytical Procedures [Reserved]

### 12.0 Data Analyses and Calculations [Reserved]

### 13.0 Method Performance [Reserved]

### 14.0 Pollution Prevention [Reserved]

### 15.0 Waste Management [Reserved]

### 16.0 References

1. Dubose, D.A., and G.E. Harris. Response Factors of VOC Analyzers at a Meter Reading of 10,000 ppmv for Selected Organic Compounds. U.S. Environmental Protection Agency, Research Triangle Park, NC. Publication No. EPA 600/2-81051. September 1981.

2. Brown, G.E., et al. Response Factors of VOC Analyzers Calibrated with Methane for Selected Organic Compounds. U.S. Environmental Protection Agency, Research Triangle Park, NC. Publication No. EPA 600/2-81-022. May 1981.

3. DuBose, D.A. et al. Response of Portable VOC Analyzers to Chemical Mixtures. U.S. Environmental Protection Agency, Research Triangle Park, NC. Publication No. EPA 600/2-81-110. September 1981.

4. Handbook of Hazardous Materials: Fire, Safety, Health. Alliance of American Insurers. Schaumburg, IL. 1983.

### 17.0 Tables, Diagrams, Flowcharts, and Validation Data [Reserved]

## **APPENDIX D**

### **Method 27 - Determination of Vapor Tightness of Gasoline Delivery Tank Using Pressure Vacuum Test**

## **Method 27 -- Determination of Vapor Tightness of Gasoline Delivery Tank Using Pressure Vacuum Test**

### 1.0 Scope and Application

1.1 Applicability. This method is applicable for the determination of vapor tightness of a gasoline delivery collection equipment.

### 2.0 Summary of Method

2.1 Pressure and vacuum are applied alternately to the compartments of a gasoline delivery tank and the change in pressure or vacuum is recorded after a specified period of time.

### 3.0 Definitions

3.1 Allowable pressure change ( $\Delta p$ ) means the allowable amount of decrease in pressure during the static pressure test, within the time period  $t$ , as specified in the appropriate regulation, in mm H<sub>2</sub>O.

3.2 Allowable vacuum change ( $\Delta v$ ) means the allowable amount of decrease in vacuum during the static vacuum test, within the time period  $t$ , as specified in the appropriate regulation, in mm H<sub>2</sub>O.

3.3 Compartment means a liquid-tight division of a delivery tank.

3.4 Delivery tank means a container, including associated pipes and fittings, that is attached to or forms a part of any truck, trailer, or railcar used for the transport of gasoline.

3.5 Delivery tank vapor collection equipment means any piping, hoses, and devices on the delivery tank used to collect and route gasoline vapors either from the tank to a bulk terminal vapor control system or from a bulk plant or service station into the tank.

3.6 Gasoline means a petroleum distillate or petroleum distillate/alcohol blend having a Reid vapor pressure of 27.6 kilopascals or greater which is used as a fuel for internal combustion engines.

3.7 Initial pressure ( $P_i$ ) means the pressure applied to the delivery tank at the beginning of the static pressure test, as specified in the appropriate regulation, in mm H<sub>2</sub>O.

3.8 Initial vacuum ( $V_i$ ) means the vacuum applied to the delivery tank at the beginning of the static vacuum test, as specified in the appropriate regulation, in mm H<sub>3</sub>.

3.9 Time period of the pressure or vacuum test ( $t$ ) means the time period of the test, as specified in the appropriate regulation, during which the change in pressure or vacuum is monitored, in minutes.

### 4.0 Interferences [Reserved]

### 5.0 Safety



5.1 Gasoline contains several volatile organic compounds (e.g., benzene and hexane) which presents a potential for fire and/or explosions. It is advisable to take appropriate precautions when testing a gasoline vessel's vapor tightness, such as refraining from smoking and using explosion-proof equipment.

5.2 This method may involve hazardous materials, operations, and equipment. This test method may not address all the safety problems associated with its use. It is the responsibility of the user of this test method to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to performing this test method.

## 6.0 Equipment and Supplies

The following equipment and supplies are required for testing:

6.1 Pressure Source. Pump or compressed gas cylinder of air or inert gas sufficient to pressurize the delivery tank to 500 mm (20 in.) H<sub>2</sub>O above atmospheric pressure.

6.2 Regulator. Low pressure regulator for controlling pressurization of the delivery tank.

6.3 Vacuum Source. Vacuum pump capable of evacuating the delivery tank to 250 mm (10 in.) H<sub>2</sub>O below atmospheric pressure.

6.4 Pressure-Vacuum Supply Hose.

6.5 Manometer. Liquid manometer, or equivalent instrument, capable of measuring up to 500 mm (20 in.) H<sub>2</sub>O gauge pressure with  $\pm 2.5$  mm (0.1 in.) H<sub>2</sub>O precision.

6.6 Pressure-Vacuum Relief Valves. The test apparatus shall be equipped with an inline pressure-vacuum relief valve set to activate at 675 mm (26.6 in.) H<sub>2</sub>O above atmospheric pressure or 250 mm (10 in.) H<sub>2</sub>O below atmospheric pressure, with a capacity equal to the pressurizing or evacuating pumps.

6.7 Test Cap for Vapor Recovery Hose. This cap shall have a tap for manometer connection and a fitting with shut-off valve for connection to the pressure-vacuum supply hose.

6.8 Caps for Liquid Delivery Hoses.

## 7.0 Reagents and Standards [Reserved]

## 8.0 Sample Collection, Preservation, Storage, and Transport

### 8.1 Pretest Preparations.

8.1.1 Summary. Testing problems may occur due to the presence of volatile vapors and/or temperature fluctuations inside the delivery tank. Under these conditions, it is often difficult to obtain a stable initial pressure at the beginning of a test, and erroneous test results may occur. To help prevent this, it is recommended that prior to testing, volatile vapors be

removed from the tank and the temperature inside the tank be allowed to stabilize. Because it is not always possible to completely attain these pretest conditions, a provision to ensure reproducible results is included. The difference in results for two consecutive runs must meet the criteria in sections 8.2.2.5 and 8.2.3.5.

8.1.2 Emptying of Tank. The delivery tank shall be emptied of all liquid.

8.1.3 Purging of Vapor. As much as possible the delivery tank shall be purged of all volatile vapors by any safe, acceptable method. One method is to carry a load of non-volatile liquid fuel, such as diesel or heating oil, immediately prior to the test, thus flushing out all the volatile gasoline vapors. A second method is to remove the volatile vapors by blowing ambient air into each tank compartment for at least 20 minutes. This second method is usually not as effective and often causes stabilization problems, requiring a much longer time for stabilization during the testing.

8.1.4 Temperature Stabilization. As much as possible, the test shall be conducted under isothermal conditions. The temperature of the delivery tank should be allowed to equilibrate in the test environment. During the test, the tank should be protected from extreme environmental and temperature variability, such as direct sunlight.

8.2 Test Procedure.

8.2.1 Preparations.

8.2.1.1 Open and close each dome cover.

8.2.1.2 Connect static electrical ground connections to the tank. Attach the liquid delivery and vapor return hoses, remove the liquid delivery elbows, and plug the liquid delivery fittings.

Note:

The purpose of testing the liquid delivery hoses is to detect tears or holes that would allow liquid leakage during a delivery. Liquid delivery hoses are not considered to be possible sources of vapor leakage, and thus, do not have to be attached for a vapor leakage test. Instead, a liquid delivery hose could be either visually inspected, or filled with water to detect any liquid leakage.

8.2.1.3 Attach the test cap to the end of the vapor recovery hose.

8.2.1.4 Connect the pressure-vacuum supply hose and the pressure-vacuum relief valve to the shut-off valve. Attach a manometer to the pressure tap.

8.2.1.5 Connect compartments of the tank internally to each other if possible. If not possible, each compartment must be tested separately, as if it were an individual delivery tank.

8.2.2 Pressure Test.

8.2.2.1 Connect the pressure source to the pressure-vacuum supply hose.

8.2.2.2 Open the shut-off valve in the vapor recovery hose cap. Apply air pressure slowly, pressurize the tank to  $P_i$ , the initial pressure specified in the regulation.

8.2.2.3 Close the shut-off and allow the pressure in the tank to stabilize, adjusting the pressure if necessary to maintain pressure of  $P_i$ . When the pressure stabilizes, record the time and initial pressure.

8.2.2.4 At the end of the time period ( $t$ ) specified in the regulation, record the time and final pressure.

8.2.2.5 Repeat steps 8.2.2.2 through 8.2.2.4 until the change in pressure for two consecutive runs agrees within 12.5 mm (0.5 in.) H<sub>2</sub>O. Calculate the arithmetic average of the two results.

8.2.2.6 Compare the average measured change in pressure to the allowable pressure change,  $\Delta p$ , specified in the regulation. If the delivery tank does not satisfy the vapor tightness criterion specified in the regulation, repair the sources of leakage, and repeat the pressure test until the criterion is met.

8.2.2.7 Disconnect the pressure source from the pressure-vacuum supply hose, and slowly open the shut-off valve to bring the tank to atmospheric pressure.

### 8.2.3 Vacuum Test.

8.2.3.1 Connect the vacuum source to the pressure-vacuum supply hose.

8.2.3.2 Open the shut-off valve in the vapor recovery hose cap. Slowly evacuate the tank to  $V_i$ , the initial vacuum specified in the regulation.

8.2.3.3 Close the shut-off valve and allow the pressure in the tank to stabilize, adjusting the pressure if necessary to maintain a vacuum of  $V_i$ . When the pressure stabilizes, record the time and initial vacuum.

8.2.3.4 At the end of the time period specified in the regulation ( $t$ ), record the time and final vacuum.

8.2.3.5 Repeat steps 8.2.3.2 through 8.2.3.4 until the change in vacuum for two consecutive runs agrees within 12.5 mm (0.5 in.) H<sub>2</sub>O. Calculate the arithmetic average of the two results.

8.2.3.6 Compare the average measured change in vacuum to the allowable vacuum change,  $\Delta v$ , as specified in the regulation. If the delivery tank does not satisfy the vapor tightness criterion specified in the regulation, repair the sources of leakage, and repeat the vacuum test until the criterion is met.

8.2.3.7 Disconnect the vacuum source from the pressure-vacuum supply hose, and slowly open the shut-off valve to bring the tank to atmospheric pressure.

8.2.4 Post-Test Clean-up. Disconnect all test equipment and return the delivery tank to its pretest condition.

## 9.0 Quality Control

### Section(s)

### Quality control measure

### Effect

8.2.2.5, 8.3.3.5

Repeat test procedures until change in pressure or vacuum for two consecutive runs agrees within  $\pm 12.5$  mm (0.5 in.) H<sub>2</sub>O

Ensures data precision.

### 10.0 Calibration and Standardization [Reserved]

### 11.0 Analytical Procedures [Reserved]

### 12.0 Data Analysis and Calculations [Reserved]

### 13.0 Method Performance

13.1 Precision. The vapor tightness of a gasoline delivery tank under positive or negative pressure, as measured by this method, is precise within 12.5 mm (0.5 in.) H<sub>2</sub>O

13.2 Bias. No bias has been identified.

### 14.0 Pollution Prevention [Reserved]

### 15.0 Waste Management [Reserved]

### 16.0 Alternative Procedures

16.1 The pumping of water into the bottom of a delivery tank is an acceptable alternative to the pressure source described above. Likewise, the draining of water out of the bottom of a delivery tank may be substituted for the vacuum source. Note that some of the specific step-by-step procedures in the method must be altered slightly to accommodate these different pressure and vacuum sources.

16.2 Techniques other than specified above may be used for purging and pressurizing a delivery tank, if prior approval is obtained from the Administrator. Such approval will be based upon demonstrated equivalency with the above method.

### 17.0 References [Reserved]

### 18.0 Tables, Diagrams, Flowcharts, and Validation Data [Reserved]