



COMPLIANCE ASSISTANCE BULLETIN
August 2008

BULK PLANT LEAK INSPECTIONS

District Rule 4621 – *Gasoline Transfer Into Stationary Storage Containers, Delivery Vessels, and Bulk Plants*, requires that bulk plant operators perform leak inspections on any aboveground storage tanks, loading racks, and/or vapor control system piping and components during product transfer to demonstrate compliance with the rule. On December 20, 2007, the District's Governing Board adopted amendments to Rule 4621 that changed the approved methods and frequency of the required bulk plant leak inspections.

Applicability

Rule 4621 applies to gasoline storage tanks greater than 250 gallons and transfer operations located at bulk plants that load less than 20,000 gallons of gasoline per day. The rule requires all aboveground storage tanks, loading racks, and/or vapor control system piping and components be maintained free of vapor and liquid leaks. Furthermore, the rule also limits the amount of excess organic liquid drainage when hoses or other fittings are disconnected at the loading rack.

Key Definitions

1. *Excess Organic Liquid Drainage* - more than 10 milliliters (approximately 0.03 fluid ounces) of liquid drainage which is not contained by a CARB certified spill box. Such liquid drainage for disconnect operations shall be determined by computing the average drainage from three consecutive disconnects at any one loading arm.
2. *Leak* - any one of the following:
 - The dripping of liquid organic compounds at a rate of more than three (3) drops per minute.
 - The detection of any gaseous or vapor emissions with a concentration of total organic compounds greater than 10,000 ppmv, as methane, above background when measure in accordance with US EPA Method 21.
3. *Business Day* – a weekday, including Monday, Tuesday, Wednesday, Thursday, or Friday.

Leak Inspection Procedures

All gasoline aboveground storage tanks, loading racks, and/or vapor control system piping and components must be inspected for vapor and liquid leaks **during product transfer at a minimum of once every 6 months** (from four to eight months apart). The leak inspections are required in addition to any static leak testing required to be conducted on storage tanks associated with phase II dispensing operations (e.g., card-lock sites). It is recommended that the required inspections be performed under worst-case conditions during the warmer parts of the year and during the warmest part of the day.

Leak inspections must be performed according to US EPA Method 21 using a portable hydrocarbon detection instrument calibrated with methane. **Please note that the soap bubble method is no longer an acceptable leak detection method for the purposes of Rule 4621.**

Specific procedures must be followed when using a portable hydrocarbon detection instrument. The probe inlet must be placed at the surface of the component interface where a leak 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 10,000 ppmv as methane, record the leak on the appropriate form.

Upon detection of a leak or leaking component, the operator must affix to the component a weatherproof, readily visible tag with the date and time of leak detection and for gas leaks, the leak concentration in ppmv. All leaks must be repaired within seven (7) business days after the leak is discovered. If the component cannot be repaired within seven (7) business days, the operator must remove the leaking component from service until repaired. Upon returning the leaking component to service, the component must be verified to be leak free in accordance with US EPA Method 21.

After repair, any component found to be leaking must be inspected quarterly until the component is demonstrated to be free of leaks during five (5) consecutive quarterly inspections. Subsequently, the inspection frequency for the component may be changed from quarterly to semi-annually.

Please note that the periodic leak inspections are required to be performed even if the loading rack is not in use. As the inspections must be performed during transfer operations, facilities must either load enough delivery vessels to perform the periodic inspections as required or submit an application to the District to authorize the facility to disconnect the loading rack and operate as a gasoline dispensing, that is, non-bulk loading, facility.

Portable Hydrocarbon Detection Instrument Specifications

The portable hydrocarbon detection instrument must meet the following specifications:

- The detector must respond to the volatile organic compounds being processed. Detector types that may meet this requirement include, but are not limited to, catalytic oxidation, flame ionization, infrared absorption, and photoionization.
- The instrument must be capable of measuring the leak definition concentration (10,000 ppmv as methane).
- The scale of the instrument meter must be readable to ± 2.5 percent of the leak definition concentration, which is equivalent to ± 250 ppmv.
- The instrument response time must be equal to or less than 30 seconds.
- The instrument must be equipped with an electrically driven pump to ensure that a sample is provided to the detector at a constant flow rate.
- The instrument shall be equipped with a probe or probe extension for sampling not to exceed $\frac{1}{4}$ inch in outside diameter, with a single end opening for admission of sample.
- The instrument must be intrinsically safe for Class 1, Division 1 conditions, and/or Class 2, Division 1 conditions, as appropriate.
- The instrument must be calibrated with methane in accordance with the procedures specified in US EPA Method 21 or the manufacturer's instructions, as appropriate, not more than 30 days prior to use.

If an operator rents a portable hydrocarbon detection instrument to perform the required leak inspections, it is the operator's responsibility to ensure that the instrument meets the above specifications and was calibrated with methane not more than 30 days prior to the day the instrument will be used.

Recordkeeping

Rule 4621 requires that bulk plant operators maintain the following records and retain them on the premises for a minimum of five (5) years:

- A record of all inspections and all repairs performed on any part of the storage tanks, loading racks, and vapor collection systems. The records must be maintained in chronological order showing the date of inspection, description and location of any equipment replaced, and a description of the problem which required repair. Attached is a suggested self-inspection form which you may use for documenting the required self-inspections.

- A record of the portable hydrocarbon detection instrument's calibrations. If an operator rents a portable hydrocarbon detection instrument to perform the required leak inspections, it is the operator's responsibility to obtain a copy of the instrument's calibration documentation from the rental agency.
- A record of **daily** gasoline throughput.

Phase I and Phase II Gasoline Vapor Recovery Self-Inspections

In addition to the above mentioned leak inspections, bulk plants that also operate phase II gasoline dispensing operations must perform maintenance inspections of the phase I and phase II vapor recovery systems in accordance with the following schedule:

- Facilities that dispense **25,000 gallons of gasoline or more per month** are required to inspect the phase I and phase II vapor recovery systems **at least 5 days per week**.
- Facilities that dispense **less than 25,000 gallons of gasoline per month** are required to inspect the phase I and phase II vapor recovery systems **at least 1 day per week**.

Questions and Additional Information

If you have any questions or need clarification regarding the requirements of Rule 4621 or the information contained within this bulletin, please feel free to contact Mr. Morgan Lambert by telephone at (559) 230-5950 or by email at morgan.lambert@valleyair.org.

San Joaquin Valley Air Pollution Control District Bulk Plant Leak Inspection Form

Semi-Annual¹ Quarterly²

Facility: _____ Address: _____ Inspection Date: _____

Inspections on the loading rack must be done during product transfer

Directions: Tally each component inspected. Record any leaks in the right portion of the table.

Liquid Leak is more than 3 drops per minute

Vapor Leak is more than 10,000 ppmv as methane

Pump	Loading Arm	Dry Break	Swing Joint	Pressure Relief Device	Hatch	Flange	Valve	Threaded Connection	Other	Leak #	Location	Concentration (drops/min or ppmv)	Repair Date
										1			
										2			
										3			
										4			
										5			
										6			

Check here if no leaks were detected
Excess liquid drainage³? Y / N

Analyzer Brand: _____ S/N: _____
Model: _____ Cal. Date: _____

Inspection Results – describe any problem found and the repairs made, including date(s):

Person Performing Inspections

Signature

¹ Self-inspections are required twice a year (a minimum of 4 months apart, but not more than eight months apart).

² Quarterly inspections are required any time a leak is found, after 5 consecutive quarterly inspections with no leaks, semi-annual inspections may be resumed

³ Excess liquid drainage = more than 10 mL of drainage at disconnect (as determined by the average of three disconnects)

Instructions for Performing Bulk Plant Self-inspections

Leak detection shall be conducted according to EPA Method 21 using an appropriate portable hydrocarbon detection instrument calibrated with methane.

EPA Method 21

Instrument Specifications:

The VOC monitoring device shall meet the following specifications:

- Shall respond to VOCs
- Capable of measuring the leak definition (10,000 ppmv)
- Scale shall be readable to ± 250 ppmv
- Equipped with an electrically driven pump to ensure a constant sample flow rate
- Intrinsically safe for Class 1, Division 1 conditions and/or Class 2, Division 1 conditions
- Response time of less than or equal to 30 sec

Calibration of Instrument:

- Performed in accordance with Method 21 or manufacturer's instruction **30 days** (or less) prior to its use.
- Operator shall record and maintain records of the calibration date of the hydrocarbon detector.

Inspection Procedure:

The probe inlet shall be placed **at the surface of the component interface** where a leakage could occur. If an increased meter reading is observed, slowly sample the interface until the maximum meter reading is obtained. Leave the probe at the maximum reading location for approximately two times the response time (60 sec or less).

For moving components, such as a rotating shaft, place the probe inlet within 1 cm of the interface. For pressure relief devices equipped with an enclosed extension, place the probe inlet at the center of the exhaust area.

Inspect all flanges, unions, threaded connections, access hatches, P/V vents, hose connections, dry break, swing joints, valves, or any other potential leak source.

Upon Detection of a Leak:

- Inspection frequency must be increased to quarterly (until 5 consecutive quarterly inspections are conducted without the detection of a leak).
- A weatherproof tag shall be affixed to the component stating the date and time of leak detection and leak concentration in ppmv
- The tag shall not be removed until the leak is repaired
- The leak shall be repaired within seven (7) *business* days. If a component cannot be repaired within 7 business days, it shall be removed from service.
- Before returning a leaking component to service (and removing the tag) the component must be re-inspected using Method 21.