

Engineering Guide #8:

Compliance Tests at Bulk Gasoline Terminals

Questions:

Are compliance tests required for all vapor control systems installed at bulk gasoline terminals? What constitutes an acceptable compliance test? How is the maximum throughput of a loading rack determined?

Answers:

1. Are compliance tests required for all vapor control systems installed at bulk gasoline terminals?

The compliance test method for OAC rule 3745-21-09(Q) is specified in OAC rule 3745-21-10(E). This rule indicates that the compliance test method is the method specified in NSPS Subpart XX (Standards of Performance for Bulk Gasoline Terminals).

Emission tests are not required for all vapor control systems. According to 40 CFR 60.503, emission tests are not required for bulk gasoline terminals that employ flares, as defined in 40 CFR 60.501, and the flares meet the requirements in 40 CFR 60.18(b) through (f). Emission tests are required for all other types of vapor control systems installed at bulk gasoline terminals.

Emission tests at another terminal with a similar vapor control system cannot be used in place of an actual test at the terminal under evaluation. Similarly, engineering design and installation data cannot be used in place of an emission test. Each vapor control system is a complex integration of various equipment components (pumps, automatic valves, carbon adsorption beds, compressors, etc.), and each system is designed according to the operating specifications for the terminal at which it is installed.

The Ohio EPA believes that periodic emission tests, at each terminal where a vapor control system has been installed, are necessary in order to adequately demonstrate compliance with OAC rule 3745-21-09(Q). The frequency of emission testing should be at least once per permit term. If the results of the emission tests indicate marginal compliance (i.e., the tested emission rate is at equal to or greater than 80% of the allowable emission rate), the testing frequency should be increased to twice per permit term, or once every 2.5 years.

2. What constitutes an acceptable compliance test?

An acceptable compliance test is one that complies with both OAC rule 3745-21-10(E) and the methods and procedures contained in 40 CFR Part 60.503(b), (c), (e) and (f) of "Subpart XX - Standards of Performance for Bulk Gasoline Terminals"

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It is important to note that the testing flexibility under the NSPS which relaxes the product loading requirements is not part of Ohio's rule. Specifically, NSPS does not contain a requirement to achieve 90% of the maximum throughput of the loading rack, whereas rule OAC 3745-21-10(E) does.

Ohio's testing requirements to achieve 90% of the maximum throughput of the loading rack and load no less than 80,000 gallons over the course of the 6-hour test are more stringent than the requirements established under the NSPS, and therefore testing that meets the requirements of Ohio's rule can be considered compliant with the NSPS requirements. The only flexibility allowed under both rules is the testing period of 6 hours may be either extended that same day to meet the minimum volume requirements, or a second, 6-hour test the following day of testing may be performed. At no time should the requirement of achieving 90% of the maximum throughput capacity of the loading rack be waived.

3. How is the maximum throughput of a loading rack determined?

The maximum throughput of a loading rack should not be confused with the average throughput of the facility on a daily basis averaged to a 6-hour block, or an annual throughput limitation reduced to an average 6-hour block. The maximum throughput of a loading rack is based on how much gasoline can be moved through the rack at any point in time, taking into account real-world inherent physical limitations.

In order to determine the capacity of the loading rack the following factors should be considered:

- The number of loading arms in use at any time during operation
- The number of loading racks in use at any time during operation
- The length of time necessary to load a truck (including pumping rate)
- Inherent limitations of moving trucks into position to be loaded

As an example, if a facility loads (during any portion of their operations) 10,000 gallon tank trucks simultaneously on a loading racks with 2 arm (total of 2 trucks), and can hook up, load, and move a new truck into position every 20 minutes then the maximum capacity of the loading racks is 60,000 gallons per hour (1 rack X 2 arms X 10,000 gallons / truck X 3 loading cycles per hour). For a six-hour test, the minimum throughput for a six-hour test period that meets the requirement of OAC 3745-21-10(E) would be 324,000 gallons (6 hours X 60,000 gallons / hour X 0.9 = 324,000 gallons).