



# ONTARIO FIRE DEPARTMENT FIRE PROTECTION STANDARD

## Enhanced Vapor Recovery (EVR) Systems

STANDARD #E-007

EFFECTIVE 12-16-08

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### **PURPOSE:**

To provide consistent guidelines regarding the installation requirements for Enhanced Vapor Recovery (EVR) systems commonly known as a Clean Air Separator (CAS) or Vapor Processing Systems or units. EVR systems collect gasoline vapors that would otherwise escape into the atmosphere during bulk fuel delivery (phase I) or vehicle refueling (phase II). This standard is not intended to address carbon canister systems or air scrubbers.

### **AUTHORITY:**

This standard was developed in accordance with 2013 CFC Chapters 23 and 57; California Code of Regulations Title 19 Division 1 Chapter 11.5 Article 5.

### **REQUIREMENTS:**

#### 1. Construction permits

- A. A construction permit must be obtained from the Ontario Building Department prior to the start of construction and must be maintained onsite at all times with a copy of the approved plans while improvements are being made. This permit process will include the reviews of the Ontario Fire Department in addition to any other City of Ontario departments deemed appropriate. Contact the Ontario Building Department at (909) 395-2023 for permit information.
- B. Plan submittals shall include the following:
  - i. Plans shall be clear and legible.
  - ii. Plans shall be to scale and show the complete site. If the site is very large, additional pages shall detail the specific areas on the site. The site shall show all tanks, buildings, trash enclosures, property lines, street names, main electrical panels and emergency shut-offs.
  - iii. Plans shall clearly indicate the scope of work under this permit.
  - iv. Plans shall use a legend that provides a description of any symbols or abbreviations used.

- v. Plans shall include a product equipment list which includes manufacture, make and model number of components used and list their size and/or capacity. Provide proof of California State Fire Marshal (CSFM) and UL approvals. Provide cut sheets if available.

## 2. Installation requirements

- A. EVR systems shall not be located under canopies, overhangs or other areas where vapors may become trapped.
- B. EVR systems shall be located at or above grade. If locating the systems at or above grade is impossible/impractical, below grade installations are permissible if six air changes per hour are provided by mechanical ventilation and all electrical equipment meets Class 1, Division 1 requirements.
- C. EVR systems are allowed to be installed on roofs when approved.
- D. Any manifolding of vent piping from the risers to the vapor processing system tank shall be a minimum of 8 feet above grade.
- E. If any vent lines are to be removed or relocated, a detail of the new vent line runs shall be shown.
- F. A "NO SMOKING/FLAMMABLE VAPORS" sign shall be provided at EVR system locations with minimum 3-inch-high lettering on a contrasting background. NFPA704 placarding may also be required.
- G. Bollards, guardrails, curbs, fencing or protective enclosures shall be provided to protect EVR systems from tampering, trespassing and vehicular traffic.
  - i. Bollards shall be not less than 4 inch diameter steel, concrete filled, not less than 3 feet above grade and not less than 3 feet below grade into a minimum of 15 inches of concrete base.
  - ii. Bollards shall be spaced not more than 4 feet apart and located not less than 3 feet from the tank.
  - iii. Bollards shall be provided in front of enclosure openings which exceed 3 feet in width.
- H. EVR systems shall be located a minimum of 10 feet from the nearest building, trash enclosure, combustible storage and/or lot line of a property which can be built upon.
- I. EVR systems shall be located a minimum of 20 feet away from fueling dispensers.
- J. When the above required distances cannot be provided, the following alternate methods shall be applied:
  - i. When EVR systems are located less than the distances listed in H and/or I above, they shall be provided with a protective enclosure wall with a two-hour fire rating or provided with fire protection using an approved water-spray system.
  - ii. The enclosure wall is required on the side(s) that the distance modification is being applied to and shall contain no openings. The enclosure wall shall extend a minimum of 30 inches above the highest part of the tank and a minimum of 30 inches to each side of the tank. Provide at least 18 inches of clearance between the tank and the enclosure.

- iii. Any enclosures that have more than one side will need to account for flammable vapor pocketing.
- K. Ignition sources of vapor processing equipment shall be located not less than 50 feet from fuel transfer areas and not less than 18 inches above tank fill openings and tops of dispenser islands.
  - i. Spacing can be reduced when the height above grade is increased per the following:
    - a. 40 feet clearance/30 inches above grade
    - b. 30 feet clearance/42 inches above grade
    - c. 20 feet clearance/48 inches above grade
  - ii. When the minimum 20 feet required distance cannot be obtained, a minimum height of 12 feet from any ignition source shall be provided, or a protective enclosure or an approved water-spray system shall be provided.
  - iii. In no case shall a cargo tank be permitted within the minimum 20 foot clearance during delivery operations.
- L. Vent pipes on EVR systems shall discharge in a fashion that will tend to disperse vapors and shall terminate at least 12 feet above grade. The outlets shall be directed and located so that ignitable vapors will not accumulate or travel to an unsafe location or enter buildings.
- M. At least one rated 2-A: 20BC fire extinguisher shall be located at a minimum 20 feet, but no more than 75 feet from the tank.
- N. A 10 foot area around the EVR shall be kept clear of combustible materials of any nature unless an approved protective enclosure wall is provided
- O. Where a down slope exists, towards the location of the vapor processing unit from a fuel-transfer area, the fire code official is authorized to require additional separation by distance and height.
- P. Tanks shall be securely mounted on concrete, masonry or structural steel supports on concrete or other noncombustible foundations.
- Q. All components that are subject to external corrosion shall be fabricated from noncorrosive materials or coated with corrosion protection. Dissimilar metallic parts that promote galvanic action shall not be joined.

For additional information, you may contact the Ontario Fire Department, Fire Prevention Bureau at (909) 395-2029.