Updated Informative Digest

ENHANCED VAPOR RECOVERY

Sections Affected: This action amends sections 60030, 94010, 94011, 94148, 94149 and 94154, title 17, California Code of Regulations (CCR) and the documents incorporated by reference therein. This action adopts new section 94163, title 17, CCR, and the documents incorporated by reference therein.

Background: Health and Safety Code (H&SC) section 41954 requires the Board to adopt standards and procedures for certifying systems designed to control gasoline vapor emissions during gasoline marketing operations, including storage and transfer operations. Section 39607(d) of the Health and Safety Code requires ARB to adopt test methods to determine compliance with ARB and district non-vehicular emissions standards. The adopted test procedures related to gasoline vapor recovery are referenced in sections 94000-94015 and 94101-94162, title 17, CCR.

Vapor recovery system configurations for gasoline dispensing facilities are certified by the state as achieving a certain level of emissions control performance. Field inspection data reveals that many installed vapor recovery systems are operating less efficiently than as certified. These amendments improve the certification process as well as provide new monitoring requirements for in-use systems. The amendments address concerns raised by both air pollution control districts and gasoline marketers who purchase vapor recovery equipment.

Additional hydrocarbon emission reductions are needed to meet the 1994 Ozone State Implementation Plan for the South Coast Air Quality Management District (SIP). Staff have identified additional controls that staff believe are reasonable and necessary to achieve progress towards meeting ozone attainment standards statewide.

The amendments increase the stringency of the emission standards, which triggers re-evaluation and possibly recertification of all currently certified systems. New systems and installations must conform to the new standards according to the EVR implementation schedule with the first effective date in July 2001. As provided in state law, systems already installed at service stations may use their existing systems for up to four years after the effective date. Vapor recovery systems are likely to require substantial upgrades.

The amendments affect a multitude of stakeholders. These include the vapor recovery equipment manufacturers, gasoline marketers who purchase this equipment, contractors who install and maintain vapor recovery systems and air pollution control districts who enforce vapor recovery rules. In addition, California certified systems are required by most other states and many countries.

Description of Regulatory Action: At a public hearing held on March 23, 2000, the ARB considered and adopted the amendments proposed by staff, which included modifications from the proposal as originally noticed. The modified amendments were made available for comment for a period beginning September 29, 2000 and ending October 27, 2000. Based on comments received, additional changes were made which were made available for comment for a period beginning December 12, 2000 and ending January 4, 2001.

This action modifies the requirements for certification of both Phase I and Phase II systems as well as imposing new requirements for monitoring of in-use systems. These requirements are outlined in the revisions to CP-201, Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities. The regulation also includes a new standard to reduce liquid leaks at the nozzle. This regulatory action can be grouped into six Enhanced Vapor Recovery Modules which are described below:

Module 1: Phase I Vapor Recovery

Amendments to Phase I certification consist of an increase in the efficiency requirement from 95% to 98%, a new specification for Phase I couplers to reduce leaks, new performance specifications for drain valves in spill containment boxes and other improved Phase I equipment specifications. The two test procedures for determination of Phase I efficiency, TP-201.1 and TP201.1A, have been updated to allow better measurement of vent emissions and other improvements. A new test procedure, TP-201.2O, Pressure Integrity of Drop Tube Overfill Protection Devices, determines compliance with the new drop tube leak limits.

Module 2: Phase II Vapor Recovery

Amendments to Phase II certification for all system types are as follows. The existing 90% minimum efficiency standard to a dual standard of 95% efficiency and an emission limit (0.38 lb/1000 gallons) for certification testing using summer fuel. Either the efficiency or emission limit standard is required for certification tests using winter fuel. Pressure-related fugitives are included with transfer, vent and processor emissions in determining the emissions from each system. Positive underground storage tank vapor space pressure limits for all systems are established. A vent “sleeve” will improve measurement of vent emissions. Emission limits for selected toxic air pollutants must be met when a processor is part of the system. The certification operational test, which assesses the durability and reliability of the system, has increased from a minimum of 90 days to a minimum of 180 days. Additional performance tests, such as static pressure integrity and air-to-liquid ratio tests, are required during the operational test. The Phase II system must be compatible, that is, cause no excess emissions, with Phase I operations.

Changes in certification requirements for balance systems include new limits on nozzle operational parameters, such as the vapor valve leakrate and bellows insertion force.

A pressure drop budget has been established with individual pressure drop limits for system components.

Changes in assist system certification requirements include a maximum air-to-liquid ratio of 1.00, new nozzle vapor valve leakrates, a specification for nozzle pressure drop and that nozzles must possess a vapor guard.

Vapor recovery systems with processors are required to have minimum and maximum vacuum levels set during the certification process. The maximum number of fueling points per vacuum device will be established during certification. Emission standards for toxic pollutants have been set for processors, including emission limits for 1,3-butadiene and aldehydes. A maximum hydrocarbon rate to the processor will limit potential gasoline vapor emissions in the event of processor failure.

Additional changes to the certification process include new warranty requirements to ensure performance requirements are met for the warranty period, a requirement to submit system and component pressure drop range information, and new specifications for P/V valves and dispensers designed to minimize leak sources. A major change is to limit new certifications to four years, with renewal being allowed with no additional testing if no deficiencies are documented during the four-year certification.

Revisions to TP-201.2, Emission Factor for Phase II Systems, have been made to correspond to the new efficiency and emission limit standards, add in the vent sleeve measurement technique and make other improvements. TP-201.2A, Determination of Vehicle Matrix for Phase II System, is updated to reflect the change to a 200-car test. A new appendix for TP-201.2B, Pressure Integrity of Vapor Recovery Equipment, will determine compliance with pressure/vent valve limits. A new procedure, TP-201.2F, Pressure-Related Fugitive Emissions, includes pressure-related fugitives in the emission factor calculation. A new procedure, TP-201.2H: Determination of Hazardous Air Pollutants from Vapor Recovery Processors, has been adopted to measure hazardous air pollutants from processors.

Module 3: Onboard Refueling Vapor Recovery (ORVR) Compatibility

Future certified systems must demonstrate that the system is compatible with ORVR vehicles. Compatibility assessment includes a determination that the system can refuel ORVR vehicles and that refueling of ORVR vehicles does not cause the vapor recovery system emissions to exceed the 0.38 lbs/1000 gal standard.

Module 4: Liquid Retention

A new liquid retention standard will help eliminate evaporation from liquid gasoline in vapor recovery nozzles between refueling events. The proposed liquid retention limits are phased in with a final limit of 100 ml/1000 gallons dispensed. A new test procedure, TP-201.2E, Gasoline Liquid Retention in Nozzles and Hoses, has been adopted to determine compliance with the liquid retention limits.

Module 5: Spillage and Dripless Nozzles

The allowable spillage limit for Phase II dispensing has been lowered from 0.42 lbs/1000 gallons to 0.24 lbs/1000 gallons. In addition, nozzles will be limited to one drip per fueling. The spillage procedure, TP-201.2C, has been revised to streamline the testing procedure and include spillage, such as on vehicles, which is not counted in the current procedure. A new procedure, TP-201.2D, Post-Fueling Drips from Nozzle Spouts, will determine compliance with the new nozzle requirements.

Module 6: In-Station Diagnostics

New requirements for in-station diagnostics will ensure installed systems are operating within certified parameters. Facilities with throughputs less than 160,000 gal/yr are exempt from ISD requirements. Vapor recovery systems will be required to install dataloggers and record underground storage tank pressure to ensure pressure integrity of the underground storage tank. Additional monitoring will be required based on three system categories: balance, assist and innovative technology. The in-station diagnostics will be evaluated during the system certification tests. During certification, system failure modes that would lead to significant excess emissions will be identified. Audible and visual alarms will alert the station operator of a system malfunction; failure to correct the problem within the allotted timeframe will result in shutdown of dispensing. A technology review will evaluate the feasibility of ISD prior to the first effective date of April 2003.

The proposed changes, if adopted, would become effective April 2001. The proposed regulatory action will achieve VOC emission reductions of about 25 tons per day statewide in 2010 after all the EVR standards are implemented. A four-year delay is due to the phase in of some of the EVR standards and existing law that provides that existing installed vapor recovery systems have four years to meet new standards.

Comparable Federal Regulations: There are no comparable federal regulations that certify gasoline recovery systems for service stations; however, changes to ARB vapor recovery regulations have a national impact. ARB certification is required by most other states which mandate Phase I or Phase II vapor recovery at service stations.