Enhanced Vapor Recovery

January 19, 2000 Workshop

Monitoring and Laboratory Division
Compliance Division
Office of Legal Affairs
California Air Resources Board
California Environmental Protection Agency

www.arb.ca.gov/vapor/evr/evr.htm

Agenda

- Introduction
- EVR Modules
- Emission Reductions
- EVR Implementation
- EVR Schedule
- Draft CP-201
- Draft Test procedures
- Field Testing
- Cost-effectiveness

EVR Modules

Module 1: Phase I vapor recovery

Module 2: Phase II vapor recovery

Module 3: ORVR compatibility

Module 4: Liquid retention and spitback

Module 5: Spillage and dripless nozzles

Module 6: In-Station diagnostics

Module 1 - Phase I Vapor Recovery

- Increase Phase I transfer efficiency from 95% to 98%
- Improve equipment components

Module 2 - Phase II Vapor Recovery

- Numerous significant changes to certification process and standards
  - pressure-related fugitives
  - component specifications
    - pressure drop budget
  - certification testing
    - HAPs from processors

Module 3 - ORVR Compatibility

- Require Phase II to have no excess emissions for ORVR fuelings
- Test to be proposed by applicant
- Vehicle-side fix not cost-effective

Module 4 - Liquid Retention

- New emission category
- Liquid evaporates from hanging hardware between fuelings
- Still developing baseline data
- Expected to be technology-forcing
- Proposed phase-in of limits
  - first limit based on best nozzles

Module 5 - Spillage & Dripless Nozzle

- More stringent spillage standard
  - reduce from 0.42 to 0.24 lbs/1000 gal
  - add criteria to limit drops from nozzles after fueling
- Technology forcing

Module 6 - In-Station Diagnostics

- Monitor critical VR system parameters
- Signals, alarms => shut-down
- Expect tie-in to existing UST monitors
- Working with CAPCOA and vendors to develop criteria

Uncontrolled Emission Factor

- EVR estimates use summer RVP emission factor: 7.6 lbs/1000 gal
- Recognize that winter gasoline has higher RVP : 9 to 11? lbs/1000 gal
- EVR is ozone control measure, yet year-round emission controls are important to reduce toxics exposure

Basis for EVR Emission Reduction Estimates

- Phase I: 95% to 98% efficiency
- Phase II: pressure related fugitives from ORVR test baseline (May 99 draft report)
- ORVR: excess emissions from ARB field tests (May 99 Draft report)
- Liquid retain: 5 stations - will do more
- Spillage: eliminate pre and post fueling spillage quantified by ARB in 1989-1990
- ISD: excess emissions due to A/L failures in ARB/CAPCOA April 99 draft report

EVR Emission Reductions

2010 ROG Estimates

	Emission Category	SCAB tons/day	Statewide tons/day	Applicable to SIP settlement
1	Phase I VR: 95% to 98% efficiency	2.1	5.0	Yes
2	Phase II Pressure related fugitives	1.3	3.1	No
3	ORVR Compatibility	2.7	6.3	No
4	Liquid Retention	0.1	0.2	No
5	Spillage including Dripless Nozzle	1.6	3.9	Yes
6	In-Station Diagnostics	2.8	6.6	No
	TOTALS	10.6	25.1	

SIP Settlement Emission Reductions

Emission Category	Estimated Emission Reductions (SCAB tons/day in 2010)
Phase I	2.1
Spillage (0.42 to 0.38 lb/1000 gal for EVR)	1.6
ORVR Credit	1.9
Spillage (0.7 to 0.42 lb/1000 gal in 1996)	2.3
TOTAL	7.9

EVR Implementation

Module	Emission Category	Proposed Operative Date
1	Phase I	April 2001
2	Phase II	April 2001
3	ORVR Compatibility	April 2001
4	Liquid Retention	April 2001 April 2002 April 2003
5	Spillage	April 2001
	Dripless Nozzle	April 2003
6	In-Station Diagnostics	April 2001* April 2004

Technology Review

- Review feasibility for:
  - final liquid retention limit
  - dripless nozzle
  - in-station diagnostics

- Technology Review in 2002

EVR Schedule

- Staff report: February 4, 2000
  (Start of 45-day comment period)
- Board hearing March 23-24, 2000