Enhanced Vapor Recovery (EVR) For Gasoline Dispensing Facilities

Kevin Heiss
San Diego County APCD
www.sdapcd.org
October 2, 2008
PLEASE NOTE !!!

• The following comments apply only to the Phase II vapor recovery system of gasoline dispensing facilities (GDF).
• They **do not apply to diesel** dispensing facilities.
• They only apply to underground gasoline storage tanks (UST) at this time.
• At some point in the future there will also be EVR requirements for above ground storage tanks (AST). Please watch for future APCD advisories on this issue.
Gasoline Distribution Network

- Pipeline
- Refinery
- Marine loading
- Terminal
Gasoline Distribution Network
**History Of Vapor Recovery**

- **1972 & 73**: BAAQMD and SDCAPCD adopt regulations requiring vapor recovery systems.
- **1974**: Health and Safety Code 41954 adopted to establish CA vapor recovery equipment certification program.
- **1987**: Benzene Air Toxic Control Measure is adopted which requires vapor recovery at any CA station that pumps greater than 480,000 gallons/year.
- **1998**: The FCAA requires the installation of gasoline vapor recovery systems at stations with a throughput greater than 100,000 gals/month in ozone non-attainment areas across the United States AND ORVR.
- **1990**: CARB approves EVR.
- **2000**: First ORVR cars sold.

The slide outlines the historical timeline and key events related to vapor recovery systems, emphasizing regulatory changes and technological advancements.
Government Regulatory Roles

**California Air Resources Board (CARB)**
- Adopts vapor recovery system standards
- Certifies Phase I and Phase II vapor recovery systems

**Local Air Pollution Control Districts (APCD)**
- Permit GDFs and enforce vapor recovery rules

**State Fire Marshal**
- Approval part of vapor recovery certification

**Local Fire Agencies**
- Enforce fire codes and approve upgrades

**Water Resources Control Board**
- USTs, Overfill Prevention, Secondary Containment

**Certified Unified Program Agencies (CUPAs)**
- Permit GDFs and enforce UST program rules
VAPOR RECOVERY PROGRAM

PHASE I AND PHASE II VAPOR RECOVERY SYSTEMS

PHASE I VAPOR RECOVERY

FUEL TO TANK

VAPORS TO TRUCK

PHASE II VAPOR RECOVERY

FUEL TO TANK

VAPORS TO TANK

FUEL TO CAR
San Diego APCD Rules For GDFs

- These rules are available at [www.sdapcd.org](http://www.sdapcd.org)
- Rule 61.3  Phase I System
- Rule 61.3.1  Phase I EVR System
- Rule 61.4  Phase II System
- Rule 61.4.1  Phase II EVR System
GDF Vapor Recovery Benefits

- 16 billion gallons/year CA gasoline sales
- Uncontrolled emissions of 8.4 lbs of gasoline vapor for each 1000 gallons gasoline transferred
- **347 tons/day** vapor recovery emission reductions from pre-EVR Phase I and Phase II systems
- **25 additional tons/day** from Enhanced Vapor Recovery systems
- **372 tons/day of VOC emissions prevented statewide once EVR is fully implemented**
“Why Enhanced Vapor Recovery?”

- Vapor Recovery Equipment in field not working as efficiently as originally certified by CARB
- SIP Settlement Agreement Emission Reductions
- Incompatibility of Onboard Refueling Vapor Recovery (ORVR) With Existing Vapor Recovery Systems

EVR addresses all of these areas!
## Onboard Refueling Vapor Recovery or “ORVR”

### ORVR Phase-In

<table>
<thead>
<tr>
<th>Vehicle Class</th>
<th>40%</th>
<th>80%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger</td>
<td>1998</td>
<td>1999</td>
<td>2000</td>
</tr>
<tr>
<td>LD Trucks &amp; MDV (&lt;6000 lbs)</td>
<td>2001</td>
<td>2002</td>
<td>2003</td>
</tr>
<tr>
<td>MD Vehicles (6001-8500 lbs)</td>
<td>2004</td>
<td>2005</td>
<td>2006</td>
</tr>
</tbody>
</table>
EVR Improvements

- More stringent certification requirements
- “Dripless” nozzles – less spillage
- Control of fugitive emissions
- Better components – less system leaks
- Compatible with vapor recovery systems on newer vehicles (ORVR)
- Vapor recovery system monitor (ISD)
Phase II EVR 2009 Deadline

- GDFs now have 6 months to upgrade to EVR Phase II systems!
  - Obtain permits
  - Purchase equipment
  - Install using certified contractor
- Potential contractor shortage if wait until last minute
Permitting EVR Upgrades

- EVR Phase II upgrades involve more permitting agencies than previous EVR upgrades.
- Local Planning Department is concerned about processor appearance.
- CUPAs concerned that ISD upgrade could affect UST monitoring system.
GDF Fueling Operations That Don’t Need Phase II EVR

• Diesel Fueling Operations
• Aircraft & Boat Fueling Operations
• Non-Retail Gasoline Fueling Operations Where Less Than 2,000 Gallons Are Dispensed Every Calendar Month
• E85 Fueling Operations
• Non-Retail Gasoline Fueling Operations Where 95% or more of vehicles fueled are equipped with ORVR
Important APCD Phase II EVR Deadlines

- October 1, 2008: An application and fees for the Phase II EVR equipment upgrades, or an application for an exemption from EVR upgrades must be submitted to the San Diego APCD.
- April 1, 2009: The Phase II EVR equipment upgrades must be installed.
Other APCD EVR Deadlines For GDFs That Dispense More Than 1,800,000 Gallons Per Year

• March 1, 2009: An application and fees should be submitted to the San Diego APCD for the installation of a CARB certified In-Station Diagnostic (ISD) system.

• September 1, 2009: The ISD system must be installed at these stations.
Other APCD EVR Deadlines For GDFs That Dispense Between 600,000 and 1,800,000 Gallons Per Year

• March 1, 2010: An application and fees should be submitted to the San Diego APCD for the installation of a CARB certified ISD system.
• September 1, 2010: The ISD system must be installed at these stations
In-Station Diagnostics (ISD)

- Identifies failures automatically
- Notifies station operator
- Reduces emissions by early detection and prompt repair
- Supplements district inspections
- Concept similar to OBD for vehicles
- Tie-in to existing UST leak monitors
How ISD Works

Monitors Two Primary VRS Functions:
1. Collection of Vapors during Fueling
   – ISD flow monitor
2. Containment of Vapors in UST system
   – ISD pressure monitor
   – ISD leak test
Summary of ISD Implementation

Deadlines

- > 1.8 million gallons/yr: September 2009
- 600,000 – 1.8 million gallons/yr: September 2010
- ≤ 600,000 gallons/yr: Exempt From ISD
EVR Phase II Certified Systems

• Two EVR Phase II systems certified to date:

  **Healy EVR Phase II System (Assist)**
  Not including ISD: Executive Order (E.O.) VR-201
  Including ISD: E. O. VR-202

  **VST EVR Phase II System (Balance)**
  Not including ISD: E.O. VR-203
  Including ISD: E.O. VR-204

• Other systems currently in cert process

• Takes about 1 year to complete certification
Healy Clean Air Separator (CAS)
Healy Clean Air Separator
Healy Clean Air Separator
CAS Enclosures
Another Option: Horizontal CAS
VST EVR Phase II System
VST Processor Operation

- ECS Membrane Processor
- Blower Pump
- Vacuum Pump

UST

Power
Sensor Conduit
Processor Site Requirements

- NFPA 30A, Chapter 10
  - Located outside of buildings
  - 10 ft from adjacent property lines that can be built upon
  - 20 ft from dispensing devices
  - When required distances cannot be achieved, then other means may be used to protect against fire exposure
Total Estimated Cost for EVR Phase II and ISD (CARB)

<table>
<thead>
<tr>
<th>Number of Dispensers</th>
<th>EVR Phase II</th>
<th>ISD</th>
<th>TOTAL (rounded to nearest $100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>$17,240</td>
<td>$13,600</td>
<td><strong>$30,800</strong></td>
</tr>
<tr>
<td>4</td>
<td>$24,925</td>
<td>$16,500</td>
<td><strong>$41,400</strong></td>
</tr>
<tr>
<td>6</td>
<td>$32,765</td>
<td>$19,700</td>
<td><strong>$52,500</strong></td>
</tr>
<tr>
<td>12</td>
<td>$56,285</td>
<td>$28,900</td>
<td><strong>$85,200</strong></td>
</tr>
</tbody>
</table>

Does not include cost to replace dispensers, obtain permits, install electrical lines or conduct start-up tests.
Money Available For Phase II EVR Upgrades; “RUST” program

- Limited funding remaining for FY 08-09
- Fund covers Enhanced Vapor Recovery and electronic monitoring system (ISD)
- Grants: $3,000 to $50,000
- Loans: $10,000 to $750,000

www.waterboards.ca.gov/water_issues/programs/ustcf/rust.shtml
“evrhome” Website

- www.evrhome.org
- Information resource for GDF operators, contractors, and local agencies
- Will populate with identified EVR contacts for each agency
- Still under construction…
- All aspects of vapor recovery can be found at: www.arb.ca.gov/vapor/vapor.htm
San Diego APCD Contacts/Info

- **Permits** – Mahiany Luther
  - Mahiany.Luther@sdc county.ca.gov
  - (858) 586-2725

- **Enforcement** – Randy Smith
  - Randy.Smith@sdc county.ca.gov
  - (858) 586-2677

www.sdapcd.org/comply/compliance.html
Want To Learn More?

• CARB will be teaching a 3 day course (Course #340) on Phase I & Phase II vapor recovery systems (including EVR) in San Diego November 4-6, 2008.

• To register, contact Nancy Thompson at 916-322-2227, or at arbtrain@arb.ca.gov

• You can also register using the form on-line at http://www.arb.ca.gov/training/Reg_form.pdf
Questions?