

UALIT MANAGEME

CARB Passes New Enhanced Vapor Recovery Amendments

Gas prices aren't the only things going sky-high this year at your local service station. Every day, in our automobilesaturated state, more than 75 tons of smog-forming gases escapes into the air as we fill up our cars.

In March, the California Air Resources Board (CARB) took aim at this problem by adopting a sweeping series of amendments to its gas station vapor recovery regulations. These changes, known collectively as the Enhanced Vapor Recovery (EVR) program, are designed to capture an estimated 25 tons per day of these statewide excess emissions by the year 2010.

Vapor recovery is basically a fancy term for a simple concept: Just as it's important to avoid spilling liquid gasoline on the ground when you fill your tank, it's also important to prevent gasoline vapors from "spilling" into the air.

Gasoline itself is a fairly complex substance, made up of over 450 different organic compounds. When it sits in a storage tank, at a refinery or service station, a certain amount volatilizes from its liquid state into vapor. With no vapor recovery controls, about 7.6 pounds of these compounds would be released to

the air for every 1,000 gallons of gasoline that gets dispensed. This is a fairly significant amount when you figure that about 14.7 billion gallons of gasoline gets pumped out every year in California.

The vapor recovery systems affected by these new EVR amendments are associated with two stages of gasoline transfer. Phase I takes place when a cargo truck fills the underground storage tank connected to the pumps at your service station. Phase II takes place when you use the pump and nozzle to fill up your car. In both cases, a certain amount of vapor has to be contained, collected, and ultimately transferred back by the cargo truck to the refinery, to be recompressed into liquid gasoline. This relatively simple procedure requires a certain amount of sophisticated technology.

CARB passed its first series of regulations addressing vapor recovery technology and procedures in 1976. From the beginning, CARB has shared responsibility for implementing its vapor recovery program with local air districts. Service stations are required to install vapor recovery equipment that has been certified by CARB to achieve a certain level of emissions control performance.

Local air districts then permit, inspect, and test the installed vapor recovery systems to ensure their continued effectiveness.

In 1999, data from field testing revealed that, all across the state, a good number of vapor recovery systems have been operating at less-than-certified efficiency. And when it comes to air pollution, there's little margin for error. Equipment failure rates for one system, for example, were found to vary from 5 percent to over 60 percent.

CARB passed its new EVR amendments in large part to remedy these problems. Taken as a whole, they consititute the most sweeping changes to CARB's vapor recovery program since it was adopted.

The EVR changes call for increased stringency for existing performance standards and tighter performance specifications for all new Phase I and Phase II equipment and systems. These changes will trigger re-evaluation and possibly recertification of all currently certified systems.

In addition, new standards were adopted to reduce gasoline spillage, liquid retain in the nozzles, and pressure-related fugitive emissions, and to make vapor recovery systems compatible with on-board vapor recovery (ORVR) systems on motor vehicles. The adopted amendments also include mandatory In-Station-Diagnostics (ISD), requiring electronic monitoring of vapor recovery system operation and performance. This kind of monitoring system is designed to identify and notify the station operator of any defects that create excess emissions.

Martinez Refining Settles 44 Violation Notices

In a recent settlement agreement, the Air District collected \$90,000 in penalties from the Martinez Refining Company (formerly Shell), a Division of Equilon Enterprises, on 44 violation notices for infractions of Air District rules and regulations.

The majority of the violations were for leaking connectors within a sulfur recovery unit. The excess emissions from these leaks contributed to ozone formation in the Bay Area and beyond. Other rule infractions included seven instances of excess sulfur dioxide emissions and one public nuisance violation for odor. The violations settled in this agreement occurred between late 1998 and March 2000.

"The Air District's revised penalty structure looks at the history and type of violation," said Air District Executive Officer Ellen Garvey. "Recurring violations escalate the amount of the penalty. It is our intention to use this escalating penalty structure to deter future infractions."

–Lucia Libretti



Customers lined up to exchange their old mowers at the San Jose Arena on April 15.

EVR

continued from front page

The EVR program was divided into six modules to allow separate evaluation of the cost/benefit efficiency and technological feasibility of each component. Due to the technology-forcing nature of several of the new standards, CARB has adopted a phase-in approach to the EVR regulation, with different implementation dates for each module. (See page 5 for pull-out boxes on the modules and implementation schedules.)

New systems must comply with the proposed requirements by the scheduled dates. State law, however, provides that systems already installed at service stations may use their existing systems for up to four years after their scheduled implementation dates. In addition, a technology review of the regulation is scheduled for 2002, to determine how the technology needed to implement the rule is advancing.

The EVR amendments cover approximately 11,250 service stations throughout the state. They affect a multitude of stakeholders, including manufacturers of vapor recovery equipment, gasoline marketers purchasing this equipment, contractors installing and maintaining vapor recovery systems, and air pollution control districts enforcing vapor recovery rules. California-certified systems are required by most other states and in many other countries, further increasing the significance and scope of the program.

Some costs are expected to be passed on to the consumer, but this is estimated to result in an overall increase of only about one quarter of a cent per gallon of gasoline. In a summer of mysteriously escalating gas prices, with pumps hitting \$2.69 a gallon in the Midwest and President Clinton calling for a Federal Trade Commission investigation, this seems a small price to pay for cleaner air.

The EVR amendments are currently undergoing minor modifications by CARB staff. These should be completed in early September, at which point the amendments will undergo a "fifteenday" public comment period. During this period, some suggestions for further revision may be accepted from local air districts, manufacturers, environmental groups, and other stakeholders. No major changes are expected, however, and the final amendments will be presented to the Office of Administrative Law (OAL) when this comment period is over. Upon completion of OAL review, the EVR Amendments will be officially promulgated as law. This is expected to take place sometime between December 2000 and March 2001.

For more detailed information, visit CARB's EVR web page:

www.arb.ca.gov/vapor/evr/evr.htm. This site contain links to the ISOR, Public Hearing Notice, and all of the test and certification procedures. You may also call Cindy Castronovo and George Lew of CARB at (916) 327-0900.

—Aaron Richardson & Ken Kunaniec

Lawn Mower Buyback Ends Successfully

The Air District's Spring 2000 Lawn Mower Buyback Program underwent a significant increase in size and scope from last year's inaugural campaign. It is now the largest program of its kind, with more mowers exchanged than any other program in California or the US.

From April 15 through the end of June, 1,340 mowers were exchanged—over three times last year's number of 430. The District also added two new partners—the Sonoma County Waste Management Department and the City of San Jose Environmental Services Department, increasing the number of counties participating from three to five. (Contra Costa, Napa, and Solano rejoined this year.)

On April 15, 2000, the inaugural Santa Clara County "Mow Down Air Pollution" event was held in the San Jose Sports Arena parking lot. A PR kick-off event took place the previous day at the Arena Green in which local TV weathercasters competed in a lawn mower-pushing footrace. There was good media coverage of the event on channels 5, 7, and 11, as well as various radio stations. A feature article was also published in the *San Francisco Chronicle*.

Preliminary indications for next year's campaign suggest continued growth, as interest from residents and waste management partners brings about increased demand. Alameda County has already expressed interest in joining next year. The challenge will be to plan for the continued growth of a rebate and air quality education campaign that serves the entire region, and that remains easy for residents to take advantage of.

—Ralph Borrmann

Lawn Mowers Exchanged SPRING 2000

Total	1,340
Santa Clara County	489
Sonoma County	120
Solano County	240
Napa County	151
Contra Costa County	340

BAY AREA AIR POLLUTION SUMMARY — 1999

—See notes of explanation on back of this sheet

MONITORING STATIONS	OZONE					CARBON MONOXIDE			NITROGEN Dioxide		SULFUR DIOXIDE		PM ₁₀								
	Max 1-Hr	Nat Days	Cal Days	3-Yr s Avg	Max 8-Hr	Nat Days	3-Yr Avg	Max 1-Hr	Max 8-Hr	Nat Days	Max 1-Hr	Ann Avg	Cal Days	Max 24-Hr	Ann Avg	Cal Days	Ann Geo Mean	Ann Avg	Max 24-Hr	Nat Days*	Cal Days*
North Counties	(pphr	n)			(pph	ım)		(ppm)			(pph	ım)		(ppb))		$(\mu g/m^3)$	3)			
Napa	12	0	4	0.3	9	1	6.6	5.5	4.2	0	9	1.4	0	-	-	-	16.3	18.6	66	0	2
San Rafael	10	0	2	0.0	8	0	5.1	5.6	2.9	0	9	1.8	0	-	-	-	19.5	22.0	76	0	2
Santa Rosa	10	0	1	0.0	8	0	5.4	5.7	3.5	0	7	1.4	0	-	-	-	19.6	21.4	54	0	1
Vallejo	11	0	4	0.0	9	1	6.2	6.6	5.5	0	8	1.4	0	7	1.4	0	16.4	19.5	84	0	3
Coast & Central Bay																					
Oakland	8	0	0	0.0	6	0	4.0	6.4	5.2	0	_		_	_	-	_	_	-	-	_	-
San Francisco	8	0	0	0.0	6	0	4.5	5.4	3.7	0	10	2.1	0	7	2.0	0	22.7	26.4	78	0	6
San Pablo	10	0	1	0.0	7	0	5.0	3.9	2.4	0	7	1.4	0	8	2.2	0	-	-	-	-	-
Eastern District																					
Bethel Island	13	1	5	0.3	10	5	8.0	1.8	1.4	0	5	1.1	0	8	1.4	0	21.2	25.4	101	0	6
Concord	16	2	8	1.4	12	6	8.4	4.9	3.1	0	8	1.8	0	12	1.7	0	18.2	20.9	64	0	3
Crockett	-	-	-	-	-	-	-	-	-	-	_	-	-	34	3.0	0	-	-	-	-	-
Fairfield	13	1	9	0.3	10	4	8.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Livermore	15	2	14	2.7	12	5	8.6	5.2	2.9	0	9	2.0	0	-	-	-	22.7	25.7	87	0	3
Martinez	-	-	-	-	-	-	-	-	-	-	-	-	-	8	1.7	0	-	-	-	-	-
Pittsburg	10	0	2	0.0	9	1	6.8	7.8	3.3	0	9	1.5	0	9	1.8	0	-	-	-	-	-
South Central Bay																					
Fremont	13	1	3	0.3	9	1	6.5	5.6	3.1	0	11	2.2	0	_	-	_	21.9	24.3	88	0	2
Hayward	12	0	4	0.0	9	1	7.0	-	-	-	-	-	-	_	-	-	-	-	-	-	-
Mountain View	11	0	7	0.0	9	1	6.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Redwood City	8	0	0	0.0	6	0	4.9	8.0	3.8	0	10	1.9	0	-	-	-	22.4	25.1	85	0	3
San Leandro San Leandro	11	0	3	0.0	8	0	6.2	-	-	-	-	-	-	-	-	-	-	-	-	0	-
Santa Clara Valley																					
Gilroy	11	0	3	0.7	8	0	7.6	-	-	-	-	-	-	_	-	-	-	-	-	-	-
Los Gatos	12	0	4	0.3	10	1	7.1	-	-	-	-	-	-	_	-	-	-	-	-	-	-
San Jose, 4th Street	11	0	3	0.3	8	0	6.5	8.8	5.9	0	13	2.6	0	-	-	-	25.3	28.7	114	0	5
San Jose East	12	0	2	0.3	8	0	6.2	-	-	-	-	-	-	-	-	-	-	-	-	0	-
San Jose, Tully Road	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21.7	25.4	97	0	4
San Martin	13	1	7	1.7	10	3	8.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Bay Area Days over Standard		3	20			9				0			0			0	sixth day,	<i>actual</i> days timated to b	sampled eve over standa oe six times	ard	12

NOTES

This year we have expanded the Bay Area Air Pollution Summary to include measurements for a more complete set of federal and California time-averaged pollutant standards.

Most significantly, we've added columns for the new EPA eight-hour average ozone standard, proposed in 1997. This standard currently awaits a Supreme Court hearing to determine its final legal status.

Explanation of Terms

State and federal excesses occur when pollutant concentrations surpass the indicated standards, with values in most cases rounded to the same number of decimal places.

MAX HR / MAX 8-HR / MAX 24-HR

The highest average contaminant concentration over a one-hour period, an eight-hour period, or a 24-hour period.

NAT DAYS

The number of days during the year for which the monitoring station recorded contaminant concentration levels in excess of the national standard.

CAL DAYS

The number of days during the year for which the station recorded contaminant levels in excess of the California standard.

3-YR AVG (1-hr ozone standard)

The average number of days per year in excess of the national ozone standard, based on the most recent three-year period. *An average higher than 1.0 means the region will be considered out of attainment by the EPA.*

3-YR AVG (8-hr ozone standard)

The average of the fourth highest 8-hour average ozone concentration for each monitoring station, based on the most recent three-year period. A concentration greater than 8.5 means that the region will be considered out of attainment by the EPA.

ANN AVG

The yearly average (arithmetic mean) of the readings taken at a given monitoring station.

ANN GEO MEAN

The annual geometric mean concentration level (used for PM_{10}). The geometric mean of n positive numbers is the nth root of their product.

PM₁₀

Particulate matter under ten microns in size. (PM_{10} is only sampled every sixth day. *Actual* days over standard can be estimated to be six times the number shown.)

TOTAL BAY AREA DAYS OVER STANDARD is not a sum of excesses at individual stations, but rather of the number of days for which excesses occurred at anyone or more stations.

HEALTH-BASED AMBIENT AIR QUALITY STANDARDS

	Access with a Time a	0-116	National Ctal
Pollutant	Averaging Time	California Std	National Std
Ozone	1 Hour 8 Hour	9 pphm	12 pphm 8 pphm
Carbon Monoxide	1 Hour 8 Hour	20 ppm 9.0 ppm	35 ppm 9 ppm
Nitrogen Dioxide	1 Hour Annual	25 pphm —	
Sulfur Dioxide	24 Hour Annual	40 ppb —	140 ppb 30 ppb
Particulates < 10 microns	24 Hour Annual Annual Geometric Mean	50 μg/m ³ — 30 μg/m ³	150 μg/m ³ 50 μg/m ³ —

Concentrations ppm parts per million parts per hundred million parts per billion micrograms per cubic meter

TEN-YEAR BAY AREA AIR QUALITY SUMMARY												
OZONE			CARBON MONOXIDE				Nitrogen Dioxide	Sulfur Dioxide		PM ₁₀		
YEAR	1-I Nat	Hr Cal	8-Hr* Nat	1- Nat	Hr Cal	8-I Nat	Hr Cal	1-Hr Cal	24 Nat	-Hr Cal	24- Nat**	Hr Cal**
1990	2	14	-	0	0	2	4	0	0	0	1	15
1991	2	23	-	0	0	4	5	0	0	0	2	18
1992	2	23	-	0	0	0	0	0	0	0	0	18
1993	3	19	-	0	0	0	0	0	0	0	0	10
1994	2	13	-	0	0	0	0	0	0	0	0	9
1995	11	28	-	0	0	0	0	0	0	0	0	7
1996	8	34	-	0	0	0	0	0	0	0	0	3
1997	0	8	-	0	0	0	0	0	0	0	0	4
1998	8	29	16	0	0	0	0	0	0	0	0	5
1999	3	20	9	0	0	0	0	0	0	0	0	12
*EPA promulgated the 8-Hr standard in mid-1997				**PM ₁₀ is sampled every six over standard can be estima the numbers listed.								

THE SIX EVR MODULES

Module 1: Phase I Vapor Recovery

Changes to Phase I requirements include:

- · Increasing the efficiency requirement from 95% to 98%
- Including an emission factor standard of 0.15 pounds of emissions/ 1,000 gallons loaded
- Requiring compatibility of the system components with all fuel blends sold in California
- Requiring rotatable, or equivalent, Phase I product and vapor couplers to reduce leaks
- Requiring a pressure/vacuum (P/V) valve on the storage tank vent pipes on all systems
- · Eliminating the allowable leak rate for Phase I vapor coupler poppets
- Lowering the allowable leak rate for drain valves in spill containment hoxes
- · Lowering the allowable leak rate for drop tubes with overfill protection

Module 2: Phase II Vapor Recovery

Changes to Phase II requirements include:

- Increasing the existing 90% minimum efficiency standard to 95% AND 0.38 pounds/1,000 gallons in summer and 95% OR 0.38 pounds/1,000 gallons dispensed during the winter (the difference is due to the gasoline vapor pressures of summer and winter gasoline)
- Including pressure-related fugitive emissions in the efficiency and emission factor
- Imposing a limit on the pressure in the storage tank vapor containment space
- Requiring compatibility between nozzle and dispenser to ensure that the vapor check valve and hold-open latch are closed when not in use
- Requiring a minimum 1.0 inch nominal inside diameter (ID) for the Phase II riser
- Requiring that all new Phase II piping be a minimum 3.0 inches ID from the point of the first manifold to the storage tank
- Requiring a minimum slope of the vapor return piping from the dispensers to the tank of 1/4 inch per foot of length (1/8 inch per foot is allowed only if the 1/4 inch per foot is not feasible)
- Allowing liquid condensate traps, which must be certified by CARB, only if the 1/8 inch slope cannot be achieved
- Imposing a pressure drop "budget" for individual components used for balance systems
- Limiting the maximum air-to-liquid ratio to 1.00 for systems without a processor, and 1.30 for systems with a processor
- Reducing the allowable nozzle vapor valve leak rates for vacuum assist
 nozzles
- · Requiring a "mini-boot" on all vacuum assist nozzles
- Requiring that the minimum warranty period include compliance with all performance specifications
- Requiring that storage tank vent pipes be manifolded to a single P/V valve
- · Limiting the life of certifications to four years, automatically renewable if there are no unresolved significant deficiencies

Module 3: Onboard Refueling Vapor Recovery (ORVR) Compatibility

Federal regulations require that vehicles be equipped with ORVR, to be phased in beginning with model year 1998. Testing proved that fueling ORVR vehicles with currently certified Phase II vacuum assist vapor recovery systems creates pressure-related fugitive emissions by ingesting ambient air into the storage tank, with resulting evaporation of liquid gasoline. The new standard does not allow excess emissions due to the refueling of ORVR-equipped vehicles.

Module 4: Liquid Retention

Some gasoline vapor emissions occur when liquid gasoline is retained on the atmosphere side of the vapor check valve. In addition, some of this retained gasoline is spilled when the next customer attempts to insert the nozzle spout into the vehicle fillpipe. To reduce the emissions created by liquid retention, CARB is requiring the following, phased in over a two-year period:

- · An initial limit on liquid retain of 350 mls/1,000 gallons dispensed
- · A final limit on liquid retain of 100 mls/1,000 gallons

Another new standard was adopted to reduce the emissions associated with "nozzle spitting." This is defined as the release of liquid gasoline when the nozzle trigger is depressed prior to activation of the dispenser. This event typically occurs when a customer inadvertently engages the nozzle trigger while removing the nozzle from the dispenser, or upon replacing the nozzle. To reduce the emissions created by nozzle spitting, CARB is requiring the following:

· A limit on nozzle spitting of 1 ml/refueling event

Module 5: Spillage and Dripless Nozzles

Changes to Phase II requirements include:

- Lowering the allowable spillage limit for Phase II systems from 0.42 pounds/ 1,000 gallons dispensed to 0.24 pounds/1,000 gallons
- Adopting new performance standard to limit post-fueling nozzle drips to one drop per refueling

Module 6: In-Station Diagnostics

The most controversial of the EVR modules, In-Station Diagnostics (ISD) monitoring requirements will require continuous evaluation of vapor recovery system performance and provide signals and alarms when failure modes are detected. All vapor recovery systems will be required to monitor and record underground storage tank pressures to verify the pressure integrity of components and connectors associated with the underground storage tank vapor containment space.

Other requirements for ISD are required on a system-specific basis. These include:

- · Incinerator performance
- · Air to liquid ratio performance
- · Blockage of underground vapor piping
- · Performance of non-destructive processors, such as membrane systems

To alleviate concerns over cost-effectiveness and need, the ISD requirements are scheduled to be phased in over a three-year period. A technology review will occur one year prior to ISD requirements, to determine the necessity, cost-effectiveness, and technical feasibility of full ISD implementation.

—Ken Kunaniec

EVR IMPLEMENTATION SCHEDULE

The EVR implementation schedule is shown in the following table. "Effective dates" start the four-year clock for the corresponding EVR modules. The term "operative date" describes those requirements applicable to certification requirements. As an example, a system manufacturer applying for certification in May of 2001 is required to comply only with Modules 1 and 4. CARB will, however, certify vapor recovery systems that meet the requirements of other EVR Modules prior to their operative dates.

Module	Control Type	Effective Date	Operative Date
Module 1	Phase I	April 1, 2001	April 1, 2001
Module 2	Phase II	April 1, 2003	April 1, 2003
Module 3	ORVR Compatibility	April 1, 2001	April 1, 2003
Module 4	Liquid Retention 350 mls/1,000 gallons 100 mls/1,000 gallons	April 1, 2001 April 1, 2001	April 1, 2001 April 1, 2003
Module 5	Phase II Spillage	April 1, 2001	April 1, 2004
Module 6	In-Station Diagnostics >1,800,000 gal/year >160,000 gal/year	April 1, 2003 April 1, 2004	April 1, 2003 April 1, 2004



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Hearing Board Gets Two New Members

On March 7, Christian Colline, P.E., was appointed to the Hearing Board. He replaces Larry Milnes, filling the Registered Professional Engineer position. Mr. Colline has extensive experience as an environmental and air quality engineer. He is currently the Senior Air Quality Engineer for IT Corporation's Environmental Safety & Health Group. Before this, he worked for eight years as the western region Lead Air Quality Engineer for *Ecology and Environment*. Inc. Mr. Colline holds an M.S. in Environmental Engineering and a B.S. in Chemical Engineering from the University of California at Berkeley.

On June 4, Marita M. Daly, Esq., was appointed to the Hearing Board. She replaces Tiffany Schauer, filling the Attorney position. Ms. Daly is a former Pillsbury, Madison, & Sutro Senior Counsel with ten years experience in environmental law. She has been a member of the California State Bar Association since 1985, and is currently on the Board of Directors of the Sunny Hills Children's Garden, a non-profit shelter for abused children. She holds a J.D. from the University of California, Hastings College of the Law, and a B.S. in Conservation of Natural Resources from the University of California at Berkeley.

BAAOMD ACTIVITIES

ENFORCEMENT	APR	MAY
Total Inspections Complaints Processed Violation Notices	862 198 130	1,163 218 174
LEGAL		
Cases Resolved Mutual Settlement Civil Penalties PERMIT SERVICES	124 \$ 69,362 \$ 0	105 \$ 75,499 \$ 2,000
Authorities to Construct Grane Permits to Operate Granted	nted 25 90	41 117
TECHNICAL		
Highest Ozone AQI Highest CO AQI Highest Particulates AQI State Excess Days Source Tests	50 32 28 0 44	124 30 38 3 77

Pollutant values are expressed according to the Air Quality Index Scale: 0–50 Good; 51–100 Moderate; 101–150 Unhealthy for Sensitive Groups;

151– 200 Unhealthy; 201–300 Very Unhealthy;

Over-300 Hazardous.

The District issues "Spare the Air" requests when air quality forecasts predict that concentrations of ozone will exceed the national health standard.

YEAR TO DATE (06/30/00)		
State Ozone Violations	5	
Federal Ozone Violations (8-Hour)	3	
Carbon Monoxide Violations	0	

DAILY AIR QUALITY1-800-HELP AIRCOMPLAINT LINE1-800-334-ODORSMOKING VEHICLES1-800-EXHAUST