

**ANNUAL COMPLIANCE REPORT  
2001**

**MARTINEZ REFINING COMPANY  
PLANT #11  
MARTINEZ, CALIFORNIA**



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# MARTINEZ REFINING CO. ANNUAL REPORT, PLANT #11

December 31, 2001

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## INTRODUCTION

The Bay Area Air Quality Management District (BAAQMD) Compliance and Enforcement Division is committed to making an annual report to the community to review and discuss the compliance status of major petrochemical facilities within the District. The following report is a summary of District enforcement activities at the Martinez Refining Company during the period of January 1, 2001 through December 31, 2001.

## FACILITY SUMMARY

On January 15, 1998, Shell Oil Company (Shell) and Texaco Inc. signed a definitive agreement to combine the major elements of their western and central U. S. refining and marketing operations. The name of the new company was Equilon Enterprises, LLC. On July 1, 1998 all permits were transferred from Shell Martinez Refining Company to the **Martinez Refining Company, a Division of Equilon Enterprises LLC**. As a result of recent FTC approval, Texaco Inc. has sold its interest in Equilon back to Shell. As of March 1, 2002, Equilon will do business as **Shell Oil Products, U. S.** The next permit renewal will reflect this new name change.

The Martinez Refining Company (MRC/Shell) operates a petroleum refinery in Martinez. This refinery processes up to 160,000 barrels of crude oil per day. The Bay Area Air Quality Management District (BAAQMD) permits this facility to operate 533 sources. These sources include a variety of petroleum processing units, tankage, wastewater treating facilities, pumps, compressors and associated combustion sources (heaters, furnaces, and boilers). The major process units include a crude distillation unit, fluid catalytic cracking unit, Flexi-coker unit, delayed coker unit, lubricant production units, hydrotreating units, Cogen units, hydrogen plants, and sulfur recovery units. Tankage is used for storage of organic liquids (unrefined, intermediate, and finished), and for waste oils and water. The wastewater treatment system includes the American Petroleum Institute (API) oil water separator, dissolved nitrogen flotation unit (DNF), carbon filtration system and wastewater treatment ponds and tanks.

The District enforces regulations stipulated in the Code of Federal Regulations, the California Health and Safety Code and the District's regulations and rules. In addition to regulatory enforcement, the District works with facilities to achieve federal, state and local standards by conducting workshops, office conferences, public meetings and complaint investigations. This report serves as a summary of events that occurred during the period of January 1, 2001 through December 31, 2001, including Notices of Violation (NOV) issued, complaints, episodes, inspections, office conferences and variances.

## **COMPLIANCE STATUS**

During the reporting period, MRC was visited by District inspectors an average of 3 to 4 hours per day, two to five days per week. These visits included inspections of sources, episode investigations, records and charts review, complaint follow-up and the issuance of NOV's. The Compliance and Enforcement Division's field engineers have worked closely with field inspectors, assisting with episode investigations. The Technical Services Division routinely conducts stack source tests, and audits on all CEM's and GLM's.

## **NOTICES OF VIOLATION**

When a violation of a regulation is documented, a NOV is issued and a penalty is assessed. Twenty-five NOV's were issued between January 1, 2001 and December 31, 2001. There were six violations of Regulation 10 (H<sub>2</sub>S in fuel gas, CO at the FCC, and a leak on a storage tank); four violations of Regulation 1 (Monitor maintenance & reporting requirements); five violations of Regulation 6 (excessive visible emissions); three violations of Regulation 9, Rule 1 (excess of SO<sub>2</sub> from sulfur recovery units); two violations of Regulation 9, Rule 2 (excess of H<sub>2</sub>S on GLM); three violations of Regulation 8, Rule 2 (>15 lbs hydrocarbon release); and two violations of Regulation 1 (Public Nuisance).

**SEE THE ATTACHED CHRONOLOGICAL SUMMARY OF VIOLATION ACTIVITY.**

## **DISCUSSION OF SIGNIFICANT VIOLATIONS – {Public Nuisances}**

There was 2 public nuisances at MRC occurring between January 1, 2001 and December 31, 2001.

On October 14, 2001 there was a release of Fluid Catalytic Cracker, (FCC), catalyst dust over parts of Martinez and Pacheco. The FCC was in a hot standby mode following an emergency shutdown on October 12. The release occurred during an attempt to restart the unit on the 14<sup>th</sup>. Operators lost control of internal temperatures due to the presence of oil inside the unit. Silica-Alumina catalyst dust and hydrocarbon was released via an atmospheric bypass stack in order to protect the structural integrity of process vessels. The District received 11 complaints of odors and dust fallout attributed to this incident, and issued Notice-of-Violation #12229 for a violation of Regulation 1, Section 301 (Public Nuisance).

On October 17<sup>th</sup> there was another attempt to restart the FCC after draining oil from the unit. Errors in instrumentation and internal catalyst levels led operators to believe that all of the oil introduced into the unit on the 14<sup>th</sup> had been removed. Oil was still in the unit, and again operators had to relieve pressure by venting catalyst dust out the bypass stack. There was less fallout on Martinez and Pacheco but a plume of catalyst impacted I680 and

the California Highway Patrol shut down the freeway. The District received 5 public complaints of smoke and odor attributed to this incident and issued Notice-of-Violation #12230 for creating a public nuisance.

**COMPLAINT SUMMARY**

The District maintains a toll-free number to allege complaints of odors, smoke, dust, fall-out, fires, and other related air pollutants. Complaints can also be referred from the Environmental Protection Agency (EPA), and California Air Resources Board (CARB). Between January 1, 2000 and December 31, 2000 a total of 36 complaints were alleged against MRC. 10 complaints were confirmed, and 26 complaints were unconfirmed. These complaints can be categorized as follows:

<b>Category:</b>	<b><u>ODOR</u></b>	<b><u>SMOKE</u></b>	<b><u>OTHER</u></b>	<b><u>TOTAL</u></b>
Confirmed:	4	8	3	15
<u>Unconfirmed:</u>	<u>44</u>	<u>2</u>	<u>0</u>	<u>46</u>
<b>Total</b>	<b>48</b>	<b>10</b>	<b>3</b>	<b>61</b>

**EPISODES**

The District requires MRC to maintain and operate ground level monitors (GLM), continuous emission monitors (CEM), and parametric monitors. MRC currently has 4 GLM stations, three of which monitor for H2S and one monitoring both H2S and SO2. MRC currently has 24 CEMs, which record pollutants from four sulfur recovery units, seven boilers and furnaces, three fuel-gas treaters, two gas turbine co-generation units, and one flare. MRC currently has 37 parametric monitors that are required by permit conditions or regulation.

The District assigns episode numbers to reported equipment breakdowns, monitored emission excesses, inoperative monitors, and for pressure relief valve (PRV) ventings. These episodes are investigated by District inspectors for compliance with applicable regulations. The District's Technical Services Division evaluates continuous emission monitor excesses, to determine if a violation has occurred. Between January 1, 2001 and December 31, 2001 there were; one reported breakdown, 18 CEM excesses, 4 GLM excesses, 9 reported pressure relief valve ventings, and 83 inoperative monitor reports. There were 7 NOV's issued for monitor excesses as previously discussed, and another two excesses are pending review by the Technical Services Division.

## **INSPECTIONS**

The District has established a compliance verification inspection frequency for all sources. This varies from 6 months for loading racks, 12 months for process units and tankage, 18 months for combustion sources, and 24 months for exempt sources. One District inspector is assigned to MRC for conducting compliance inspections, episode investigations, and responding to citizen complaints. The inspector conducts daily odor patrols around MRC and reviews all monitor charts monthly. MRC conducts daily inspections for fugitive emissions and daily calibrations on all emission monitors.

## **OFFICE CONFERENCES**

The District conducts office conferences when three NOV's are issued to the same source within a 12-month period or when a significant episode occurs. The purpose is to discuss the severity of the violations, to develop a plan for corrective action, and to prevent future violations. Variations from this policy are at the discretion of District management. There were many meetings and interviews held with MRC to investigate and discuss the operation of the FCC and releases from Pressure Release Valves. A case summary has been prepared for violations at the FCC and an office conference will follow.

## **VARIANCES**

A facility may request variance relief for a violation of any regulation if legal requirements are met. The variance cases are presented before the District's Hearing Board. There were no requests for variance relief made by MRC between January 1, 2001 and December 31, 2001.

## COMPARISON TO PREVIOUS YEARS

**NOTE:** The numbers for 97-98 are covering an 18-month period (07/01/97-12/31/98). All other years' comparisons are for 12-month periods.

<u>Notices of Violation</u>	<u>2001</u>	<u>2000</u>	<u>1999</u>	<u>97 - 98</u>
Storage tanks	1	5	3	12
Valve & connectors	0	3	27	8
Visible emissions	5	2	0	1
H <sub>2</sub> S in fuel gas	4	7	0	4
Oil/Water Separator	0	2	0	1
Late Monitor Reporting	4	4	0	1
Monitor Maintenance	0	1	0	0
Public nuisance	2	1	0	3
PRV releases	3	0	0	0
GLM excess (H <sub>2</sub> S)	2	1	1	3
CEM excess (NO <sub>x</sub> )	0	1	0	0
CEM excess (SO <sub>2</sub> )	3	1	5	13
<b>Total</b>	<b>24</b>	<b>28</b>	<b>36</b>	<b>46</b>

<u>Episodes</u>	<u>2001</u>	<u>2000</u>	<u>1999</u>	<u>97 - 98</u>
Breakdowns	1	0	4	5
GLM	4	6	3	4
CEM	18	19	14	28
Out-of-service	83	28	15	55
PRV	10	3	4	6
<b>Total</b>	<b>116</b>	<b>56</b>	<b>40</b>	<b>98</b>

<u>Complaints</u>	<u>2001</u>	<u>2000</u>	<u>1999</u>	<u>97 - 98</u>
Confirmed	15	10	0	27
Unconfirmed	46	27	26	137
<b>Total</b>	<b>61</b>	<b>37</b>	<b>26</b>	<b>164</b>

## **SIGNIFICANT PERMIT ACTIVITY**

On July 22, 1996, MRC submitted application # 16467 for their Title-V permit. This application is still under review and pending approval by the District. The District has produced the proposed Title-V permit and this document is under review.

## **COMPLIANCE SUMMARY**

In summary, MRC's compliance has been marginal for this annual period. Complaint activity is much higher than previous reporting periods, although the number of NOV's was about the same. The number of reported episodes increased dramatically due to the addition of over 30 parametric monitors and problems with CEM calibration. There were no NOV's for fugitive emission leaks from valves and connectors, but the number of pressure release events more than tripled resulting in 3 NOV's. However, this years record shows cause for concern. Events in July and October that impacted the public were significant and unacceptable. A pressure vent release in July triggered the public alarm system in Martinez and resulted in a NOV. The events at the Fluid Catalytic Cracking unit starting on October 12 and ending on October 17 resulted in the issuance of 7 NOV's to date and created the greatest public impact in years. The District's investigation may result in even more enforcement action and MRC's own root cause analysis has resulted in many changes in operation policies and procedures.

## MARTINEZ REFINING COMPANY ANNUAL REPORT – NOV SUMMARY

<u>NOV #</u>	<u>OCCURRENCE DATE</u>	<u>REGULATION(S)</u>	<u>PROBLEM (Reason)</u>	<u>CORRECTIVE ACTION (Remedy)</u>
4393	1/26/01	1- 523.1	Late reporting of inoperative Parametric monitor	Administrative Violation
4394	1/17/01	1- 523.1	Late reporting of inoperative Parametric monitor	Administrative Violation
4395	2/7/01	1- 523.1	Late reporting of inoperative Parametric monitor	Administrative Violation
4396	2/6/01	9-1-307	Excess of SO2 at SRU SCOT #4	Excess during start up. Excess cleared as plant lined-out
4388	3/15/01	10-Kb-60.112b	P/V valve leaking >500 ppm on Tank 13, (new source standard).	Pressure/vacuum valve repaired
4399	3/19/01	9-2-301	Excess of H2S at GLM	Source probably pond #6. Pond was treated for H2S
10753	4/7/01	10-40-60.103	Excess of Federal Carbon Monoxide standards for new fluid catalytic crackers	Upset in fuel/air mixture. The excess cleared after operators regained control.
4397	4/18/01	9-1-307	Excess of SO2 at SRU #3	Operators regain control after upset
4398	1/16/01	9-2-301	Excess of H2S at GLM	Sulfur plant #4 shut down was the probable source of the excess
10755	5/18/01	10-40-60.104	Excess of H2S in fuel gas	Upset in fuel gas treatment system. Excess cleared when operators regained control
10754	5/17/01	1-522.4	Late reporting of inoperative monitor	Equilon staff reviews internal procedures for notification of inoperative monitors
10756	7/2/01	9-1-307	Excess of SO2 at sulfur recovery unit	Excess caused by upset at sulfur recovery unit #2. Excess cleared when operators regained control
10757	7/9/01	10-40-60.104	Excess of H2S in fuel gas	Upset in fuel gas treatment system. Excess cleared when operators regained control
10758	7/9/01	10-40-60.104	Excess of H2S in fuel gas. Same event as NOV #10757	Same event as NOV #10757
10752	7/18/01	8-2-301	Pressure relief valve release of hydrocarbon, >15 lbs	Pressure relief valve reseated and release cleared
10760	7/27/01	8-2-301	Pressure relief valve release of	Pressure relief valve reseated and

## MARTINEZ REFINING COMPANY ANNUAL REPORT – NOV SUMMARY

<u>NOV #</u>	<u>OCCURRENCE DATE</u>	<u>REGULATION(S)</u>	<u>PROBLEM (Reason)</u>	<u>CORRECTIVE ACTION (Remedy)</u>
			hydrocarbon, >15 lbs	release cleared
10761	8/9/01	8-2-301	Pressure relief valve release of hydrocarbon, >15 lbs	Associated with NOV #10759. Pressure relief valve reseated and release cleared
10759	8/9/01	10-40-60.104	Excess of H2S in fuel gas	4 episodes triggered by upset on 8/9. Excess cleared when operators regained control
12229	10/14/01	1- 301	Public Nuisance, 11 public complaints	See discussion of Significant Violations
12237	10/14/01	6- 302	CO boiler stack opacity excess associated with Public Nuisance	See discussion of Significant Violations
12238	10/14/01	6- 302	CO boiler stack opacity excess associated with Public Nuisance	See discussion of Significant Violations
12230	10/17/01	1- 301	Public Nuisance, 5 public complaints and shut down of I680	See discussion of Significant Violations
12236	10/17/01	6- 302	Excessive visible emission associated with Public Nuisance	See discussion of Significant Violations
12239	10/17/01	6- 302	Excessive visible emission associated with Public Nuisance	See discussion of Significant Violations
12240	10/17/01	6- 302	Same	Same

## GLM NETWORK - FACILITIES REQUIRED BY REGULATION TO MAINTAIN GLM

<u>COMPANY, SITE</u>	<u>SITE LOCATION</u>	<u>POLLUTANT/S MONITORED</u>
<b><u>Chevron USA</u></b>		
Castro Street Gertrude Avenue	Castro St. at Gate 115 W. Gertrude Ave.	SO <sub>2</sub> , H <sub>2</sub> S SO <sub>2</sub> , H <sub>2</sub> S, Wind
Golden Gate Avenue	W. end of Golden Gate Ave.	SO <sub>2</sub> , H <sub>2</sub> S
<b><u>Valero –(formerly Exxon)</u></b>		
GLM #1 Exxon	E. 2nd at I-680	SO <sub>2</sub> , H <sub>2</sub> S
GLM #2 Warehouse	Benicia Industrial Pk.	SO <sub>2</sub> , H <sub>2</sub> S
GLM #3 WWT Office	Mallard at Industrial Pk. Main Office	SO <sub>2</sub> , H <sub>2</sub> S Wind
<b><u>Pacific Refining, (closed)</u></b>		
2 <sup>nd</sup> & A St. Rodeo Firehouse	2 <sup>nd</sup> & A St. (see Tosco-Rodeo)	H <sub>2</sub> S
<b><u>Equilon - Martinez Refining Company</u></b>		
H <sub>2</sub> S #1	Near 1622 Shell Ave.	H <sub>2</sub> S
SO <sub>2</sub> #2, H <sub>2</sub> S #2	Pacheco Blvd. at Wygal Dr.	SO <sub>2</sub> , H <sub>2</sub> S
H <sub>2</sub> S #4	Refinery wastewater plant	H <sub>2</sub> S
H <sub>2</sub> S #3	MRC/Mt. View STP boundary	H <sub>2</sub> S
Lube Distillation Unit	Central refinery	Wind Sp & D
10 m*	Near 1801 Marina Vista	Wind Sp & D
<b><u>Ultramar Corporation – (formerly Tosco – Avon)</u></b>		
Chenery	Old Filter Plt. - N. Mallard Res.	SO <sub>2</sub> , H <sub>2</sub> S
Martinez Gun Club	E. end Arthur Rd.	SO <sub>2</sub> , H <sub>2</sub> S
Pacheco Slough	Waterfront Rd. at Pacheco Slough	H <sub>2</sub> S
Waterfront Rd.	Waterfront Rd. at Clean canal	SO <sub>2</sub> , H <sub>2</sub> S
Avon Coker	S. refinery near Solano Way	Wind Sp & D
Office	150 Solano Way	Wind Sp & D
<b><u>Tosco Corporation – Rodeo (formerly Unocal)</u></b>		
Crockett	702 Bay St. at Edward St.	SO <sub>2</sub> , H <sub>2</sub> S
East Refinery	Cummings Skyway at I-80	SO <sub>2</sub> , H <sub>2</sub> S
Rodeo	Rodeo Firehouse - 326 Third St.	SO <sub>2</sub> , H <sub>2</sub> S
10 m*	San Pablo Ave, Gate 100	Wind Sp & D
Hillcrest Elementary	Hillcrest Elementary, Rodeo	SO <sub>2</sub> , H <sub>2</sub> S

\* 10 meter station, required location 10 meters off ground

## BAAQMD MAINTAINED MONITORING STATIONS

Company, Site	Site Location	Pollutant/s Monitored
<b>Chevron USA</b>		
Pt. Richmond	140 Washington St.	H <sub>2</sub> S
Richmond - 7th St.	1065 - 7th St.	H <sub>2</sub> S, SO <sub>2</sub>
Richmond - 13th St.	1144 - 13th St.	O <sub>3</sub> , NO <sub>2</sub> , SO <sub>2</sub> , CO, lead, TSP, PM <sub>10</sub>
<b>Valero Refining Co. (formerly Exxon)</b>		
Benicia	200 E. L St.	SO <sub>2</sub>
<b>Martinez Refining Co. (Shell/Equilon)</b>		
Martinez	521 Jones St.	SO <sub>2</sub>
<b>Ultramar Corp. - Avon</b>		
Pittsburg	583 W. 10th St.	O <sub>3</sub> , NO <sub>2</sub> , SO <sub>2</sub> CO, lead, TSP
<b>Phillips Corp.- Rodeo (formerly Unocal)</b>		
Crockett	End of Kendall Ave.	SO <sub>2</sub>

### Meteorology Locations - Wind Speed And Direction

Exxon	3400 E. Second St.
Martinez Refining Company,(Shell)	SE corner of refinery near Pacheco Blvd.
Ultramar Corp.- Avon	NW corner of refinery near Waterfront Rd. & Pacheco Crk.
Phillips Corp.- Rodeo	SW corner of refinery

### MRC's Continuous Emission Monitors (CEM)

COMPANY NAME	SOURCE	NO <sub>x</sub>	SO <sub>2</sub>	CO	O <sub>2</sub>	TRS	H <sub>2</sub> S	FLOW	LTA
MRC	SCOT #1 & 2		x		x				
MRC	SCOT #3		x		x				
MRC	SCOT #4		x		x	x			
MRC	COGEN #1	x	x		x				
MRC	COGEN #2	x	x		x				
MRC	HGHT	x	x		x				
MRC	DCU	x			x				
MRC	Clean Fuels Fuel Gas					x	x		
MRC	Fuel Gas						x		
MRC	Flexi Gas						x		
MRC	CO Boiler #1	x	x	x	x				x
MRC	CO Boiler #2	x	x	x	x				x
MRC	CO Boiler #3	x	x	x	x				x
MRC	Boiler #4	x			x				x
MRC	Boiler #5	x			x				

## DISTRICT RULES THAT AFFECT REFINERIES

**Regulation 1** provides for **General Provisions and Definitions** that are used in District regulations. Regulation 1 prohibits Public Nuisances, "emissions of air contaminants that cause injury, detriment nuisance or annoyance to a considerable number of people." Regulation 1 also provides requirements for siting, recording maintenance and reporting from continuous emission (in stack) monitors and area concentration (ground level) monitors.

**Regulation 6** limits **Visible Emissions** (smoke) and the emission of **Particulate Matter**. PM10 is particulate matter that is 10 microns or less in diameter, a particular health concern. Visible emissions are determined by a certified observer, as all District inspectors are required to be, or by an opacity measuring device in a stack.

**Regulation 7** limits the concentrations of **Odorous Substances**. At facilities where this rule applies and upon receipt of a complaint, the District can take a sample of the odorous air and run a blind test by human observer to determine whether it is odorous. Refineries may be subject to this regulation regardless of pollutant specific regulations.

**Regulation 8** limits the emissions of **Organic Compounds**. Organic compounds consist of compounds containing at least one atom of carbon and hydrogen. Organic compounds, when emitted to the atmosphere in gaseous form, react in the presence of sunlight with oxides of nitrogen to form photochemical smog or ozone. Organic compounds, by definition in Regulation 8, do not include methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates or ammonium carbonate. These compounds are not reactive.

Precursor organic compounds are those which contribute to photochemical reactivity in the atmosphere. EPA has determined some compounds not to be precursors (non-precursors). Those non-precursors include methylene chloride, 1,1,1 trichloroethane and other chlorinated, fluorinated compounds and chlorofluorocarbons (CFCs). CFCs are stratospheric ozone depleting compounds and methylene chloride is toxic.

**Refineries are subject to the following rules in Regulation 8:**

### **Rule 2: Emissions from Miscellaneous Operations**

This rule reduces emissions of precursor organic compounds from miscellaneous operations not limited by the other Rules of Regulation 8 and Rules of Regulation 10. Any operation that emits precursor organic compounds not specifically exempted or limited by Regulation 8 and 10 is subject to the 15 pounds per day and 300 ppm total carbon limit.

### **Rule 5: Storage of Organic Liquids**

This rule sets standards for the storage of organic liquids with a vapor pressure of more than 25.8 mm Hg (0.5 psia) at storage temperature. This includes gasoline, but does not include kerosene, most jet fuels, diesel fuel, and asphalt oil.

### **Rule 8: Wastewater (Oil-Water) Separators**

This rule controls critical precursor organic compounds in water separators used to separate oil or hydrocarbon compounds from wastewater before it can be discharged. Critical organic compounds include phenols and all precursor organic compounds with 14 carbon atoms or less.

### **Rule 9: Vacuum Producing Systems**

This rule limits the emissions of precursor organic compounds from systems that operate under a vacuum in refineries.

### **Rule 10: Process Vessel Depressurization**

This rule controls the emissions of precursor organic compounds from vessels or process units in refineries that operate under pressure, when those units are depressurized for service or turnaround.

### **Rule 18: Equipment Leaks at Petroleum Refinery Complexes, Chemical Plants, Bulk Plants and Bulk Terminals**

This rule controls the fugitive emissions of total organic compounds from valves, connectors, pumps, compressors, and pressure relief valves. Total organic compounds include the non-precursors, and methane. Methane is a global warming gas.

### **Rule 28: Episodic Releases from Pressure Relief Valves at Petroleum Refineries and Chemical Plants**

This rule controls the emissions from valves intended to vent to atmosphere when refinery process units exceed safe pressures and to prevent them from reoccurring.

**Regulation 9** controls the emissions of **Inorganic Compounds**. Inorganic Compounds include compounds of sulfur and nitrogen. EPA has determined that sulfur dioxide is a criteria pollutant, one for which ambient air quality standards exist. Sulfur dioxide (SO<sub>2</sub>) is an odorless gas that is produced from combustion of fossil fuels that contain sulfur, such as fuel oil and coal. Hydrogen sulfide, (H<sub>2</sub>S), is formed by anaerobic decomposition and as a by-product of refining crude oil. Oxides of nitrogen, (NO<sub>x</sub>), also formed from combustion sources, react with organic compounds to form photochemical smog. Carbon Monoxide, (CO), is a poisonous gas formed by incomplete combustion.

**Refineries are subject to the following rules in Regulation 9:**

#### **Rule 1: Sulfur Dioxide**

This rule controls the emissions of SO<sub>2</sub> from various processes and sets limits for concentrations measured at the property line of a facility.

#### **Rule 2: Hydrogen Sulfide**

This rule limits the concentration of H<sub>2</sub>S at the property line of a facility.

### **Rule 9: Nitrogen Oxides from Stationary Gas Turbines**

This rule limits the emissions of NO<sub>x</sub> from stationary gas turbines.

### **Rule 10: Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Petroleum Refineries**

This rule limits the emissions of NO<sub>x</sub> and CO from combustion processes in refineries used to heat water, produce steam and heat process streams.

**Regulation 10** provides for **New Source Performance Standards**. These are rules promulgated by EPA that limit emissions on large sources constructed after a certain date. The District adopts these rules by reference, in order to enforce the standards. Some of the rules provide stringent limitations for units in a refinery, in many cases, existing District rules are already more stringent than these standards.

**Regulation 11** controls the emissions of **Hazardous Air Pollutants**. Hazardous Air Pollutants are identified by the EPA or the Air Resources Board. District regulations either adopt these rules by reference, to give the District enforcement authority, or go beyond the federal or state promulgations.

### **Rule 11: National Emission Standards for Benzene Emissions from Coke By-Product Recovery Plants and Benzene Storage Vessels**

This rule consists of national standards, adopted by reference. Coke by-product recovery plants are common in refineries.

### **Rule 12: National Emission Standards for Benzene Emissions from Benzene Transfer Operations and Benzene Waste Operations**

This rule consists of national standards, adopted by reference. Wastewater separators in refineries are affected.

## ANNUAL REPORTS - GLOSSARY

**Ground Level Monitor (GLM):** An off-site monitor which measures the quality of the air we all breathe for a specific pollutant such as sulfur dioxide or hydrogen sulfide. May be installed and maintained by the facility as required by District regulation or by the District. Such monitors are often helpful in locating the source for an odor complaint.

**Continuous Emission Monitor (CEM):** Also known as an in-stack monitor, this instrument measures pollutants in the source's stack. Measurements are specific for several pollutants such as sulfur dioxide, hydrogen sulfide in fuel gas, and opacity (smoke or dust). The District requires CEMs for sources by regulations and others as a condition to their permit.

**Barrel** of oil is considered to be 42 gallons.

**Refinery Flare(s):** Large combustion sources, which serve the facility as a pressure safety relief for flammable gases from process vessels. The District requires that they burn without smoke and without nuisance to the community.

**Exempt Source:** Small sources of emissions which are exempted by District permit standards from the requirements for permit or specifically exempted from District emission standards. These are usually always exempted due to very low emissions.

**Source:** An individual emission producing piece of equipment; i.e., boiler, incinerator, paint spray booth, flare.

**Facility:** A company with a single or group of permitted sources.

**CO Boiler:** A steam boiler associated with the fluid catalytic cracking unit (FCCU). Carbon monoxide off-gases from the FCCU feed are used as partial fuel for this special boiler. The FCCU splits heavier hydrocarbons into lighter components.

**HDS:** Hydrogen desulfurization = Hydrotreating. Treatment of partially refined products with hydrogen to remove sulfur.

**H2:** Hydrogen. Used in a refinery to create more useful hydrocarbons.

**Cogen:** A steam turbine source added to a facility to provide steam and generate electricity.

**De-NOx:** Process equipment used in combination with combustion sources to reduce nitrogen oxide emissions.

**SRU:** Sulfur Recovery Unit. Removes sulfur impurities naturally occurring in crude oil.

**Fuel Gas:** Flammable gases such as butane and propane produced from the refinery distillation process. This gas can then be used for fuel for refinery heaters and boilers.

## LIST OF ACRONYMS

A/C	Authority to Construct
BAAQMD	Bay Area Air Quality Management District
CARB	California Air Resources Board
CFR	Code of Federal Regulations
CHSC	California Health and Safety Code
CO	Carbon Monoxide
EPA	Environmental Protection Agency
FCCU	Fluid Catalytic Cracking Unit
H <sub>2</sub> S	Hydrogen Sulfide
LPG	Liquefied Petroleum Gas
NOV	Notice of Violation
NO <sub>x</sub>	Nitrogen Oxide
O <sub>2</sub>	Oxygen
P/O	Permit to Operate
SO <sub>2</sub>	Sulfur Dioxide
LTA	Light Transmission Attenuation (Opacity Meter)