

**Motiva Enterprises LLC, Equilon Enterprises LLC, and
Deer Park Refining Limited Partnership Civil Judicial Settlement
Information Sheet**

March 21, 2001

Overview: The settlement announced commits nine refineries owned by Motiva, Equilon, and the Deer Park Refining Limited Partnership (Shell Deer Park) to an ambitious program to assure compliance with major provisions of the Clean Air Act. The companies expect to spend a total of \$400 million over eight years to reduce emissions of nitrogen oxides (NO_x) by an estimated 8,000 tons per year, sulfur dioxide (SO₂) by more than 49,550 tons per year, and particulate matter (PM) by 1,300 tons per year.

The consent decree provides for a limited pool of emission reductions that can be used to expedite production of clean fuels to meet “Tier II” and low sulfur diesel standards that begin to take effect in 2004. These provisions, which will help eliminate clean fuel production bottlenecks that could shrink supply and raise prices, are subject to review by state and local permit authorities.

Refineries Compliance Strategy: This is the third settlement in a federal strategy for achieving cooperative across-the-board compliance with U.S. refining companies. Last year the federal government reached similar and record settlements with BP and Koch Petroleum Group, two of the nation’s largest oil refiners. When combined with BP and Koch, the three agreements cover nearly 25 percent of total U.S. refining capacity.

EPA also is engaged in settlement negotiations with several other companies comprising an additional 25 percent of total U.S. refining capacity.

State Partnerships: The states of Delaware and Louisiana, and the Northwest Air Pollution Authority (NWAPA) have joined in this settlement. NWAPA is the Washington State’s regional regulatory agency charged with enforcing air pollution laws in Island, Skagit, and Whatcom counties. The states of Delaware and Louisiana will share in the civil penalty and all plaintiffs will benefit from additional environmental projects in communities where the refineries are located.

Companies/Affected Refineries: Motiva Enterprises LLC is a joint venture of Shell, Texaco, and Saudi Refining, Inc. Deer Park Refining Limited Partnership is a joint venture of Shell and a subsidiary of Petroleos Mexicanos. Equilon Enterprises LLC is a joint venture between Shell Oil Company and Texaco Inc. The nine refineries, located in five states, together process about 1.6 million barrels of oil a day, and represent approximately 10 percent of total refining capacity. The following refineries are subject to the consent decree:

Equilon Enterprises LLC: The company’s four refineries are capable of refining approximately 460,000 barrels per day.

- # Bakersfield, CA., 62,000 barrels per day.
- # Wilmington, CA., 99,000 barrels per day.
- # Martinez, CA., 155,000 barrels per day
- # Anacortes, WA., 145,000 barrels per day.

Motiva Enterprises LLC: Motiva’s four refineries are capable of refining approximately 830,000 barrels per day.

- # Convent, La., 225,000 barrels per day.
- # Delaware City, DE., 152,000 barrels per day.
- # Norco, La., 220,000 barrels per day.
- # Port Arthur, TX., 235,000 barrels per day.

Deer Park Refining Limited Partnership: Deer Park, TX., 340,000 barrels per day.

Clean Air Act: The consent decree resolves certain violations associated with:

- # New Source Review (NSR) standards requiring facilities to apply best available technology (BACT) or lowest achievable emission reductions (LAER) when “grandfathered” units are expanded in a way that increases emissions;
- # New source performance standards and other pollution control practices applicable to certain units, including the flaring of sulfur gases during process upsets;
- # Leak detection and repair (LDAR) requirements governing fugitive emissions from process components including valves, pumps, flanges; and
- # Benzene emissions from wastewater treatment plants.

These are the most significant sources of air emissions at refineries nationwide.

Settlement Terms:

Civil Penalty: The companies have agreed to a \$9.5 million penalty: \$4.4 million to the United States, \$2.8 million to Delaware, and \$2.3 million to Louisiana.

Environmental projects: The agreement includes \$5.5 million in community-based supplemental environmental projects; some of which will fund projects requested by NWAPA.

Enhanced Pollution Controls (\$400 Million): The agreement requires major capital expenditures at all refineries to build and operate technologies to control NO_x and SO₂ emissions at fluidized catalytic cracking units (FCCUs) and a fluid coking unit (FCU), refinery processes that break crude oil down into major categories of refined product, and at heaters and boilers, which fuel the refining process. The companies also will invest in controls and operating practices to minimize the excess flaring of sulfurous gases, reduce fugitive emissions from process components, including leaking valves, pumps and flanges, and the release of benzene gases from wastewater treatment and conveyance systems.

ENHANCED POLLUTION CONTROLS

FCCU/FCU	SO₂: Install wet gas scrubbers at five units to reduce SO ₂ (also reducing particulate emissions). Aggressive use of catalyst additives at two other units to achieve improvement. NO_x: Install selective catalytic reduction (SCR) or selective noncatalytic reduction (SCNR) at three units. Aggressive use of catalysts at five other units in an effort to achieve improvement.
Heaters/Boilers	SO₂: Eliminate burning of liquid and solid fuels. NO_x: Install “ultra-low NO _x ” burners or other technologies to reduce overall NO _x emissions from heaters and boilers greater than 40 MMBtu by more than 6,000 tons per year.
Flare Gas Recovery	Meet “new source” standards at all sulfur recovery plants and most hydrocarbon flares. Install flare gas recovery systems and take other actions to reduce emissions from process upsets. Reroute and eliminate sulfur pit emissions. Implement protocol to diagnose and prevent upsets that result in significant releases of SO ₂ and other gases.
Leak Detect/Repair	Implement an enhanced program for identifying and repairing leaking valves and pumps, a significant source of fugitive VOC emissions through more frequent monitoring, the use of lower definitions for what is a “leak,” and regular auditing of each facility’s LDAR program.
Benzene/Wastewater	Develop an enhanced program for ensuring compliance with benzene waste management practices through comprehensive auditing, regular monitoring, and improved emission controls (e.g., secondary carbon canisters and water scrubbers).

REFINERY	FCCU CONTROL SCHEDULE	
	NO _x	SO ₂
DELAWARE CITY, DE	Catalysts (2001)	Wet Gas Scrubbers (2004), <i>Optimize (2005)</i>
	SNCR at FCU (2004) <i>*Optimize (2005)</i>	Wet Gas Scrubbers at FCU (2003) <i>Optimize(2006)</i>
CONVENT, LA	Catalysts (2001)	Wet Gas Scrubber (2006), <i>Optimize 2007)</i>
NORCO, LA	SNCR (2004) <i>Optimize (2005)</i>	<i>Optimize existing Wet Gas Scrubber (2001)</i>
PORT ARTHUR, TX	Catalysts (2001)	<i>Set lower limits - existing Wet Gas Scrubber</i>
WILMINGTON, CA	Catalysts (2001)	Catalysts (2001)
BAKERSFIELD, CA	N/A	N/A
MARTINEZ, CA	<i>SNCR Optimization (2001)</i>	Catalysts (2001)
ANACORTES, WA	Catalysts (2001)	Wet Gas Scrubber (2006)
DEER PARK, TX	SCR (2004) <i>Optimize (2005)</i>	Wet Gas Scrubber (2003)

**Enhance performance*

GLOSSARY OF TERMS

BACT/LAER: BACT, or Best Available Control Technology, calls for emission controls that are the best generally available while considering costs, and is required on major new or modified sources in clean areas (i.e., attainment areas). LAER, or Lowest Achievable Emission Rate, calls for the best control technology ever applied in practice, without consideration of costs. LAER is required on major new or modified sources in non-attainment areas.

Benzene: Benzene is a colorless gas and is one of the many chemicals that make up gasoline. A known carcinogen, benzene can cause drowsiness, dizziness, headaches and vomiting. Death may result from high exposures. Leukemia is the form of cancer most commonly associated with benzene exposure. About 90 percent of airborne benzene results from gasoline. Benzene enters the air through tailpipe emissions and through evaporation, such as during refueling. Refineries are the single largest industrial source of benzene emissions.

Catalyst: A chemical compound that promotes the reaction among other compounds without undergoing chemical change or being expended in the process.

Cracking: The breakup of heavy petroleum molecules into shorter ones through the application of heat and pressure or catalysts.

Flaring: The process of disposing of waste gas streams by burning them in the open atmosphere.

Fluid Catalytic Cracking Unit (FCCU): Refinery process used for cracking petroleum products by using a powdered catalyst in suspension in a moving stream of oil vapor.

Fluid Coking Unit (FCU): A refinery process used for cracking heavy petroleum products into shorter molecules through the application of heat.

Leak Detection and Repair (LDAR): A regulatory requirement to check equipment such valves and pumps throughout a refinery for leaks using portable monitoring equipment, and repairing any leaks above a certain rate within a set timeframe.

National Emission Standards for Hazardous Air Pollutants: Specific air pollution requirements designed to target sources of emissions deemed especially hazardous to public health.

New Source Performance Standards (NSPS): Requirements aimed at ensuring that newly built or significantly refurbished sources of air pollution apply modern control technology upon construction or reconstruction.

Nitrogen Oxides (NO_x): Burning fossil fuels, such as coal and gasoline, releases NO_x into the atmosphere. Nitrogen oxide emissions contribute to the formation of ground level ozone, acid rain, nitrogen deposits in lakes and coastal waters, crop damage, and reduced visibility. Ground level ozone can cause premature mortality, reduced lung function and aggravate existing respiratory problems such as asthma. Major sources of NO_x include oil refineries, power plants

and automobiles.

Prevention of Significant Deterioration/New Source Review(PSD/NSR): Provisions in the Clean Air Act that require that permits and pollution controls be applied to major sources of air pollution when they are first built or undergo modifications that can increase emissions.

Selective Catalytic Reduction (SCR): An add-on control device that reduces NO_x emissions by converting them to nitrogen and water through the intervention of ammonia and a non-reacting catalyst that remains in place for continued reuse. The NO_x reduction reactions occur in a narrow temperature range, generally 550-900° F. SCR is capable of NO_x emission reductions of 90 percent or greater.

Selective Non-catalytic Reduction (SNCR): An add-on control device that reduces NO_x emissions by converting them to nitrogen and water using ammonia or urea injection without a catalyst. In the absence of a catalyst, higher temperatures in the range 1600 to 2000° F are required for ammonia to selectively react with nitric oxide to form molecular nitrogen and water.

Sulfur Dioxide (SO₂): Colorless gas, odorless at low concentrations but pungent at very high concentrations. One of the major pollutants that cause acid rain. Harmful to humans and vegetation when concentrations are sufficiently high. Major sources of this pollutant are petroleum refineries, coal or oil burning power plants and diesel engines.

Tier II/Low Sulfur Diesel: EPA's recently promulgated Tier II rule for lowering motor vehicle emissions and lowering the sulfur in gasoline. The rule, effective in 2004, sets strict tailpipe emissions limits for light duty cars and trucks and requires refiners to manufacture lower sulfur levels in gasoline to achieve ambient air pollution levels, primarily in urban areas.

Volatile organic compounds (VOCs): Carbon-containing compounds that evaporate into the air. May be toxic. Volatile organic compounds directly contribute to smog, which aggravates respiratory diseases such as asthma, particularly in the young and elderly. Refineries are the largest stationary source of VOCs in the communities in which they are located. VOCs are the primary precursor of urban smog. EPA has estimated that oil refineries are releasing at least 80 million pounds of undetected VOCs from leaking valves each year.

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