Overview of Company and Location of Facilities

The facilities that are the subject of this settlement are an integrated refinery and chemical plant located in the City of Deer Park, Texas. Deer Park is situated about 15 miles southeast of Houston. Shell Oil Company operates the refinery, which is owned by Deer Park Refining LP. Shell Chemical LP is the entity that owns and operates the chemical plant.

The refinery processes approximately 330,000 barrels per day of crude oil, which makes it the eleventh largest refinery in the United States. It produces a variety of refined products, including gasoline, jet fuel and diesel. The chemical plant manufactures base chemicals that are sold to other chemical companies that transform them into thousands of consumer products, ranging from plastics to building materials. In total, the chemical plant produces approximately 8000 tons per day of petrochemical and chemical products, such as ethylene, propylene, butylene, isoprene, butadiene, benzene, toluene, xylene, phenol, acetone and cumene. Both the chemical plant and the refinery operate 24 hours a day, 365 days a year.

Violations

The complaint alleges violations of Clean Air Act requirements at SDP’s twelve steam assisted flares that resulted in excess emissions of volatile organic compounds (VOCs) and various hazardous air pollutants (HAPs) including benzene. The complaint allegations include violations of:

- New Source Review/Prevention of Significant Deterioration (NSR/PSD) and Minor New Source Review, 40 C.F.R. Parts 51 and 52
- New Source Performance Standards (NSPS), 40 C.F.R. Part 60, Subparts A, J, VV, VVa, GGG, and GGGa
- Title V and the Title V permits at SDP’s facilities
- Texas State Implementation Plan (SIP) requirements
- Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9603(a), and the Emergency Planning and Community Right-to-Know Act (EPCRA), 42 U.S.C. § 11004(b)

Injunctive Relief

The consent decree requires the following actions to resolve the CAA claims:

Flare Minimization/Caps/Flare Gas Recovery System (FGRS) Sizing

- Submit and implement a waste gas minimization plan which is a very detailed plan for reducing waste gas to flares. Update the plan on a yearly basis. Plan is enforceable.
- Undertake a root cause analysis and implement corrective action for “Reportable Flaring Incidents” (i.e., greater than 500 lb/day SO₂ or 500,000 standard cubic feet per day (scfd) waste gas flow).
- At the Refinery take a limit on flaring. i.e., flaring caps
  - Facility-wide 30-day rolling average limit of 2,455,944 scfd.
  - Facility-wide 365 day rolling average limit of 1,637,296 scfd.
- At the Chemical Plant install FGRS capable of eliminating base load/routine flaring and will at minimum be capable of capturing 6.5 million scfd of process gas.
- All of SDP’s FGRSs will be required to be available for operation a high percentage of time.

Flare Efficiency

- Comply with current regulatory standards.
- Install and operate the following monitoring systems and equipment: Vent Gas Flow Meter; Steam Flow Meter; Steam Control Equipment; Gas Chromatograph or a Net
Environmental Mitigation Projects

SDP will implement three mitigation projects valued at between $15 and $60 million. SDP will: (1) significantly modify its wastewater treatment plant to reduce emissions of VOCs; (2) control VOC emissions from certain tanks by replacing two old tanks, repairing one tank, and engaging in an innovative bi-weekly infrared-camera imaging program for fifteen other tanks; and (3) control emissions of hazardous air pollutants ("HAPs") and VOCs at its benzene production unit through enhanced monitoring and repair practices. When fully implemented, EPA estimates that these projects will reduce VOC emissions by at least 300 tons per year.

Pollutant Reductions

When fully implemented, the new controls and requirements under the Consent Decree are estimated to reduce emissions by over 4,500 tons per year (tpy) of the following pollutants, as follows:

- SO_{2} by approximately 2,412 tpy
- VOCs by approximately 1,838 tpy, of which approximately 264 tpy are Hazardous Air Pollutants
- Additional reductions of PM, PM_{10}/PM_{2.5}, carbon monoxide (CO) and H_{2}S

In addition, the controls required by the Consent Decree will result in a reduction of GHGs by approximately 261,033 tpy (as carbon dioxide equivalents, or CO_{2}e).

Health and Environmental Benefits

- Nitrogen Oxides – Nitrogen oxides can cause ground-level ozone, acid rain, particulate matter, global warming, water quality deterioration, and visual impairment. Nitrogen oxides play a major role, with volatile organic chemicals, in the atmospheric reactions that produce ozone. Children, people with lung diseases such as asthma, and people who work or exercise outside are susceptible to adverse effects such as damage to lung tissue and reduction in lung function.

- Sulfur Dioxide – High concentrations of SO_{2} affect breathing and may aggravate existing respiratory and cardiovascular disease. Sensitive populations include asthmatics, individuals with bronchitis or emphysema, children and the elderly. Sulfur dioxide is also a primary contributor to acid deposition, or acid rain.

- Volatile Organic Compounds - VOCs, along with NOx, play a major role in the atmospheric reactions that produce ozone, which is the primary constituent of smog. People with lung disease, children, older adults, and people who are active can be affected when ozone levels are unhealthy. Ground-level ozone exposure is linked to a variety of short-term health problems, including lung irritation and difficulty breathing, as well as long-term problems, such as permanent lung damage from repeated exposure, aggravated asthma, reduced lung capacity, and increased susceptibility to respiratory illnesses such as pneumonia and bronchitis.

- Benzene - Acute (short-term) inhalation exposure of humans to benzene may cause drowsiness, dizziness, headaches, as well as eye, skin, and respiratory tract irritation, and, at high levels, unconsciousness. Chronic (long-term) inhalation exposure has caused various disorders in the blood, including reduced numbers of red blood cells and anemia in occupational settings. Reproductive effects have been reported for women exposed by inhalation to high levels, and adverse effects on the developing fetus have been observed in animal tests. Increased incidences of leukemia have been observed in humans occupationally exposed to benzene. EPA has classified benzene as a Group A human carcinogen.

- Greenhouse Gases – The release of GHGs into the atmosphere traps heat. The continued release of GHGs at or above the current rate will increase average temperatures around the globe. Increases in global temperatures will most likely change our planet’s climate in ways that will have significant long-term effects on people and the environment.

- Particulate Matter – PM, especially fine particles, contain microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. PM is linked to a variety of problems, including increased respiratory symptoms such as irritation of the airways, coughing, or difficulty breathing, decreased lung function, aggravated asthma, and premature death in people with heart or lung disease.

Civil Penalty

SDP will pay a civil penalty of $2.6 million.

Comment Period

The proposed settlement is lodged in the U.S. District Court for the Southern District of Texas. The consent decree will be subject to a 30-day public comment period and final
court approval. Information on submitting comments is available at the Department of Justice website.

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More information
- EPA's Air Toxics National Enforcement Initiative
- Enforcement Alert: EPA Enforcement Targets Flaring Efficiency Violations (August 2012)

Prior enforcement settlements related to industrial flaring
- BP North America
- Marathon Petroleum Company
- CountryMark Refining and Logistics

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