



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

Frontier Refining Co. Settlement Information Sheet

Frontier Refining Co.

Geography: Two refineries:

Cheyenne, Wyoming.
El Dorado, Kansas.

Refining Capacity:

Approximately 156,000 bbl/day.
Less than 1% percent of U.S. domestic refining capacity.

Emissions reductions:

Nitrogen oxide (NO_x) reduced by more than 2,098 tons per year.
Sulfur dioxide (SO₂) reduced by more than 2,987 tons per year.
Particulate matter (PM) reduced by 589 tons per year
Carbon Monoxide (CO) reduced by 622 tons per year

Injunctive Relief:

More than \$127 million will be spent on injunctive relief through 2016

New Source Review/Prevention of Significant Deterioration (NSR/PSD) -- Fluidized catalytic cracking units (FCCUs) and Heaters and Boilers:

- FCCU NO_x limits of not more than 40 ppm (365-day) and 80 ppm (7-day) at the Wyoming refinery, and not more than 20 ppm (365-day) and 40 ppm (7-day) at the Kansas refinery
- FCCU SO₂ limits of 25 ppm (365-day) and 50 ppm (7-day) at both the Wyoming and Kansas refineries.
- Installation of NO_x and SO₂ continuous emission monitors.
- Installation of Ultra Low NO_x Burners (or equivalent technology) that are designed to achieve an emission rate of 0.040 lb NO_x/mmBTU for heaters and boilers greater than 40 MMBtu/hr.
- Particulate emissions limits of 0.5 pound per 1,000 pounds coke burned at the FCCUs

New Source Performance Standards (NSPS) and Flaring:

- All flares, heaters and boilers subject to NSPS Subpart J.
- All sulfur recovery plants subject to NSPS Subpart J.
- No fuel oil burning except in limited circumstances.
- A “root cause” analysis for all future flaring events.
- Stipulated penalties for repeated causes of acid gas and tail gas flaring.

Benzene Waste Operations National Emissions Standards for Hazardous Air Pollutants (NESHAP):

- Total annual benzene (TAB) less than 10 Mg/yr at the Wyoming refinery.
- Compliance with the “2 Mg” benzene compliance option at the Kansas refinery.
- Modified management of change procedures to ensure that new benzene streams are included in the TAB calculation.
- Conduct laboratory audits.
- Quarterly sampling and TAB calculation.
- Training for those who sample benzene.

Leak Detection and Repair Program:

- NSPS Subpart GGG for each affected facility.
- Training, including refresher courses, for refinery personnel with LDAR responsibility.
- Required LDAR compliance audits.
- Strict internal leak definitions (500 ppm for valves and 2,000 ppm for pumps).
- Internal first attempt at repair at 200 ppm for valves.
- More frequent monitoring than required by regulation.

Risk Management (El Dorado Refinery):

- Implement an inspection and testing program consistent with applicable industry standards, prioritizing inspections of vessels containing toxic and flammable substances which have the largest worst-case scenarios.
- Conduct an audit of the adequacy of the refinery’s Risk Management Plan and implement identified corrective actions and procedures.
- Ensure and certify that equipment complies with good engineering practices.

Environmental Benefits:

When all controls are installed, the settlement will result in substantial reductions of the following pollutants:

- Nitrogen oxide (**NO_x**), which can cause or contribute to a variety of health problems and adverse environmental impacts, such as ground-level ozone, acid rain, global warming, water quality deterioration, and visual impairment. Affected populations include

children, people with lung diseases such as asthma, and exposure to these conditions can cause damage to lung tissue for people who work or exercise outside.

- Sulfur dioxide (**SO₂**), which in high concentrations can affect breathing and may aggravate existing respiratory and cardiovascular disease. Sensitive populations include asthmatics, individuals with bronchitis or emphysema, children, and the elderly. SO₂ is also a primary contributor to acid deposition, or acid rain.
- Volatile Organic Compounds (**VOCs**), which -- along with NO_x -- plays 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.
- 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.

For more information on NO_x, SO₂, PM and VOCs, please visit [EPA's Air Pollutants Web Site](#).

Penalty: \$1.23 million (includes penalty to be paid to participating state partners)

Supplemental Environmental Projects:

- \$405,000 in projects at the Wyoming refinery and \$722,000 in projects at the Kansas refinery to reduce VOC emissions by installing geodesic dome covers on refinery storage tanks.
- \$180,000 SEP to purchase air contaminant detection equipment to assist emergency responders in the vicinity of the Kansas refinery.

For more information on Supplemental Environmental Projects (SEPs), please visit [EPA's SEP Web Site](#).

State Partners: Kansas and Wyoming.

Comment Period:

The proposed settlement, lodged in the U.S. District Court for the District of Kansas, is subject to a 30-day public comment period and final court approval. Information on submitting comment is available at the [Department of Justice](#) website.