

EMISSION RATES FOR UNITED REFINING COMPANY SOURCES

| Source | Emissions in pounds per hour | Emissions in tons per year |
|--|------------------------------------|----------------------------------|
| Boiler house (boiler #1, 2, and 3) | 195.10 | 854.50 |
| No. 4 Boiler | 24.30 | 106.40 |
| FCC Charge Heater | 1.10 | 0.40 |
| DHT1 Heater | 0.10 | 0.40 |
| Prefractionator Reboiler | 18.00 | 78.80 |
| Old Reformer Heater (East Reformer Heater) | 91.30 | 399.90 |
| Crude Heater (Wheco) | 207.70 | 909.70 |
| Vacuum Heater | 0.80 | 3.50 |
| Pretreater Heater | 28.00 | 122.60 |
| New Reformer Heater (West Reformer Heater) | 2.20 | 9.60 |
| Sat Gas Reboiler | 0.40 | 1.80 |
| Fluid Catalytic Cracking Unit (FCC Regenerator) | 285.00 | 1248.30 |
| Combo Flare | 0.40 | 1.80 |
| FCC Flare | 0.10 | 0.40 |
| No. 5 Boiler | 1.20 | 5.30 |
| Sat Gas KVG Compressor Engine | 0.10 | 0.40 |
| T-241 Heater (Volcanic Heater) | 0.30 | 1.30 |
| Distillate Hydrotreater Heater (DHT2) | 33.40 | 146.30 |
| Sulfur Recovery Unit 2 (SRU2) Incinerator | 12.00 | 52.60 |
| SRU2 Hot Oil Heater | 0.10 | 0.40 |
| Old FCC Unit (Only to be used when new FCC Charge Heater is not in use). | | |
| West FCC KVG Compressor Engine (Standby basis only). | | |
| Middle FCC KVG Compressor Engine | 0.14 | 0.60 |
| East FCC KVG Compressor | 0.14 | 0.60 |
| VCU Unit | 0.81 | 0.76 |
| Total Allowable | 902.69 | 3946.36 |

Monitoring and reporting requirements require the sources listed in the table above (except the SRU2 incinerator, and the FCC Regenerator) to monitor the hydrogen sulfide (H₂S) concentration in the refinery fuel for the source. The H₂S monitors for these sources shall be installed, calibrated, maintained, and operated by the owner or operator of the facility in compliance with the requirements of the Department Continuous Emission Monitor (CEM) Manual.

The SRU2 Incinerator and the FCC Regenerator shall monitor SO₂ emissions from the Sulfur Recovery Unit (SRU2) and the Fluid Catalytic Cracking Unit respectively. The SO₂ emissions from the SRU2 shall not exceed 0.025% by volume of sulfur dioxide at 0% oxygen on a dry basis. A

CEM system shall be installed and concentrations of SO₂ in the gases discharged into the atmosphere from the tail gas treating unit shall be recorded. The span of the CEM shall be set at 500 ppm. The SO₂ monitors for these sources shall be installed, calibrated, maintained, and operated by the owner or operator of the facility in compliance with the requirements of the Department CEM Manual.

This permit applies to the emissions of SO₂ only. Emissions of other pollutants, including criteria pollutants, shall be governed by the existing Plan Approvals, Operating Permits, and applicable requirements and other rules and regulations of the Department. This permit does not require testing and monitoring beyond what is already required under the facility's Plan

Approvals, Operating Permits, and the rules and regulations of the Department.

3. Dispersion Modeling

A dispersion modeling analysis was performed to demonstrate compliance with the SO₂ NAAQS. A summary of the analysis is available in the technical support document (TSD) for this rulemaking. The final dispersion modeling, based upon the SO₂ emission limits of sources amended through operating permits in addition to a representative background, demonstrates that the maximum SO₂ impacts do not violate the SO₂ NAAQS. The modeled impacts, including background concentrations, are as follows:

PREDICTED SULFUR DIOXIDE IMPACTS [Micrograms per cubic meter]

| Period | LAPPES | NAAQS | Percent of NAAQS |
|---------------|--------|-------|---------------------|
| 3-Hour | 1241. | 1300 | 95.46 |
| 24-Hour | 364.7 | 365 | 99.92 |
| Annual | 75.6 | 80 | 94.50 |

4. Air Quality

The modeling demonstration shows that the extreme (highest second-high 3-

hour and 24-hour) concentrations approach but do not exceed the NAAQS. The maximum modeled annual concentration is about 95

percent of the NAAQS. All of these concentrations include an estimate of background SO₂. The monitored values