



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

Compliance and Enforcement Division

INCIDENT REPORT

Shell Martinez Refinery (Site #A0011)
Martinez, CA
March 26, 2006

On March 26, 2006 at about 3:40 pm, the Shell Martinez Refinery had a high temperature excursion in a catalyst oxidation bed in the Sulfur Recovery Unit (SRU) #3 which resulted in an excessive sulfur dioxide (SO₂) release. The SRU removes hydrogen sulfide from scrubber solutions and converts it to elemental sulfur. Continuous emission monitors in the SRU indicated that sulfur dioxide was released at levels above the regulatory limit from about 3:40 pm to about 4:25 pm. A Level-3 (off site impact is expected) emergency notification was issued on the Contra Costa County's Warning System, the community warning sirens were activated and a shelter in place order was given.

Shell reported a visible grey-yellow plume from this unit for about 6 minutes starting at 4:30 pm. The wind was from the Southeast at this time. The California Highway Patrol closed Shell Avenue from 4:30 to 4:35 pm. Costa County Hazardous Materials and District staff responded to the incident. Shell staff took actions to reduce the catalyst bed temperatures and levels were back to acceptable by 4:30 pm. The Level-3 notification was downgraded to Level-0 (contained and controlled by plant personnel) and later the "all clear" was given at 5:20 pm. The SRU was not shut down.

Shell personnel took air samples around the refinery including downtown Martinez and did not report any elevated levels of hydrogen sulfide (H₂S) or SO₂. Costa County Hazardous Materials Division staff took a canister air sample at the corner of Shell Ave and Marina Vista at 4:57 pm which is being analyzed by the District Laboratory for elevated levels of H₂S or SO₂. None of the Ground Level Monitors positioned around the refinery recorded any elevated levels of H₂S or SO₂. No air pollution complaints from the public, alleging either smoke or odor, were received by the District or Shell. SO₂ tends to have a burnt match sulfurous odor while H₂S tends to have a rotten egg odor.

District staff will continue to investigate this incident to further determine the root cause of the upset and to determine if any air quality regulations were violated.

UPDATE:

The District issued Notice of Violation (NOV) A47340 for an alleged violation of Regulation 1, Section 301: Public Nuisance. The District has evaluated the air quality impact resulting from emissions during the Shell Refinery Sulfur Recovery Unit #3 upset, and has estimated that 1,493 lbs of SO₂ was emitted each hour for two (2) hours beginning at 3:30 pm. The National Atmospheric Release Advisory Center (NARAC) model was executed for the two (2) hour period, and indicated that the 10-minute SO₂ concentration on Shell Avenue would have been between 2.88 parts per million (ppm) and 2.22 ppm – well above the Acute Exposure Guideline Level-2 (AEGL-2) 10-minute average of 0.75 ppm. The residential areas to the southwest of the facility also experienced SO₂ concentrations in excess of the AEGL-2. Level-2 indicates that the general population could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape. The California 1-hour SO₂ standard of 0.25 ppm was not exceeded.