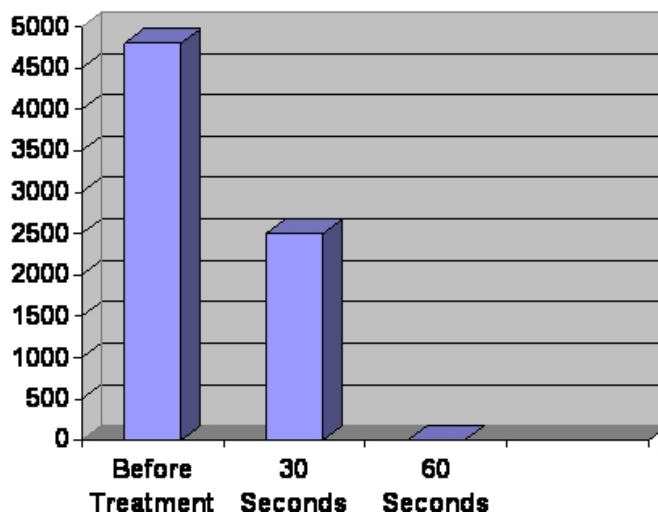


Rapid Oxidation of Hydrogen Sulfide (H₂S) in a Refinery Waste Stream

Using the Sulfox Process



Application of the Sulfox Oxidation Process for Treatment of Refinery Hydrogen Sulfide Waste Streams.

Economically viable recovery of a resaleable fertilizer can be accomplished from a common petroleum refining waste stream using a combination of easy to implement processes.

Hydrogen sulfide and ammonia from an amine regenerator reflux bleed stream at a petroleum refinery can be converted to ammonium sulfate using a combination of processes. The bleed stream is a concentrated (typically ~50,000 ppm ammonia and ~50,000 ppm hydrogen sulfide) solution that comes off of the reflux accumulator.

Most of the sulfide can be removed from the stream through conversion to gaseous hydrogen sulfide through a pH adjustment. Acidification releases the majority of the hydrogen sulfide back into the sulfur plant. The conversion of the bleed stream to ammonium sulfate is accomplished by acidifying the bleed stream with sulfuric acid to a slightly acidic pH (~6.5). All of the remaining hydrogen sulfide is then converted to elemental sulfur using the **Sulfox Oxidation Process (Sulfox)** to make the solution safe for handling and shipment to customers.

The Sulfox process is a combination of oxidation reagents that converts hydrogen sulfide to elemental sulfur upon contact. The process is environmentally safe and can be implemented with a minimum of capital equipment. Because the process works upon contact, ingredients can be added and mixed in-line prior to reaching the finished product holding tank. Dose rates are easily determined and will correlate predictably with hydrogen sulfide levels. **The process** can also be adapted to treat hydrogen sulfide in a gaseous state. Importantly, the **Sulfox Oxidation Process** is inexpensive as compared to competing hydrogen sulfide treatment technologies.