

Giant Refinery treatability study of a hydrogen sulfide wastestream

Based on the testing at Giant Refinery in Yorktown, Virginia, it was determined that the following amounts of VTX catalyst and hydrogen peroxide was needed to convert hydrogen sulfide to elemental sulfur. The dosages reflect the necessary volumes of the two chemicals needed to treat 1,000 ppm of hydrogen sulfide per 1,000 gallons of target wastewater. Therefore, if a user were to find, for example, 2,200 ppm of hydrogen sulfide in a refinery waste stream, the dose rates would be 2.2 times the following rates:

<u>Additive</u>	<u>Gallons of Additives</u>
50% Hydrogen Peroxide	2.0 gallons/ 1,000 gallons/1000 ppm H ₂ S
VTX Catalyst	0.6 gallons/1,000 gallons/1000 ppm H ₂ S

The above strategy was used to treat ~4,200 ppm of hydrogen sulfide to non detection levels. Further, a Drager Hydrogen Sulfide kits was used to determine that it took less than one minute from the initial dosing to have non detected levels of hydrogen sulfide gas above the test vessel.

It was apparent that the efficiency of the catalyzed process falls off at low pH (i.e. < 5) and at the elevated pH of the initial wastestream (pH > 9.6). The preferred pH for optimal efficiency was ~ 6.8.

BP Refinery, England

A sour water discharge waste stream from the BP Refinery outside of London, England was treated with VTX/hydrogen peroxide. The initial sour water waste stream contained 3,707 ppm of hydrogen sulfide. A dose rate of 8 mls of 50% hydrogen peroxide/liter of wastewater and 2.5 mls of concentrated VTX catalyst/ liter of wastewater was added to the raw sample. The VTX and peroxide were added simultaneously and vigorously mixed into the sample. Test results indicated that hydrogen sulfide levels registered at non detectable within the waste water shortly after the treatment (< 5 minutes).