

**PURPOSE/APPLICATION**

To provide guidance for working around iron sulphide. Iron sulphide is a pyrophoric material. This means that it can spontaneously ignite when exposed to air. Iron sulphide is created when rust is present in an oxygen-free environment where hydrogen sulphide gas is present, or where the concentration of hydrogen sulphide (H<sub>2</sub>S) exceeds that of oxygen.

When iron sulphide is subsequently exposed to air, it is oxidized back to iron oxide forming either sulfur or sulfur dioxide gas. This chemical reaction between iron sulphide and oxygen generates a considerable amount of heat. In fact, so much heat is released that individual particles of iron sulphide become incandescent and glow. This heat can ignite any nearby flammable materials.

Pyrophoric iron fires most commonly occur during shutdowns when equipment and piping are opened for inspection or maintenance. Spontaneous ignition of iron sulphide most commonly occurs with materials stored on the ground or while inside refinery equipment.

**PPE**

- Strike minimum requirements
- Gas monitors
- Respiratory protective equipment (As required)

**TRAINING**

- WHMIS
- Fit testing
- H<sub>2</sub>S Alive

**HAZARDS Sources & CONCERNS**

- Personal injury
- H<sub>2</sub>S
- Chemical Exposure
- Fires/Explosions
- NORM's



Example of dry filters spontaneously combusting

**Common location of Iron Sulphide:**

- Crude oil tanks
- Asphalt tanks
- Sour water tanks
- Vessels in sour service such as coke drums, distillation columns, inlet separators, pig receiver/senders
- Reactors
- Separators
- Marine tankers and barges
- Portable tanks and tote bins

Examples of Iron Sulphide found on filters, process equipment:



