



## **Review Of Process Safety Incidents**

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# Process Safety

- 1. HAZOP
- 2. Mechanical Integrity
- 3. Management of Change

# Hydrogen Explosion

- 1. After Anodic Protected Cooler tube failure
- 2. After Anodic Protected Cooler tube failure
- 3. After a boiler tube failure

# Hydrogen Explosion

- Have you considered the hazard of hydrogen formation in the units?
- How do you mitigate/prevent the potential hazard

# Sulfur Incidents

- 1.Sulfur Tank floor leak and sulfur fire inside the tank
- 2.Sulfur fire in the converter during unit start-up
- 3.Sulfur fire and explosion during loading

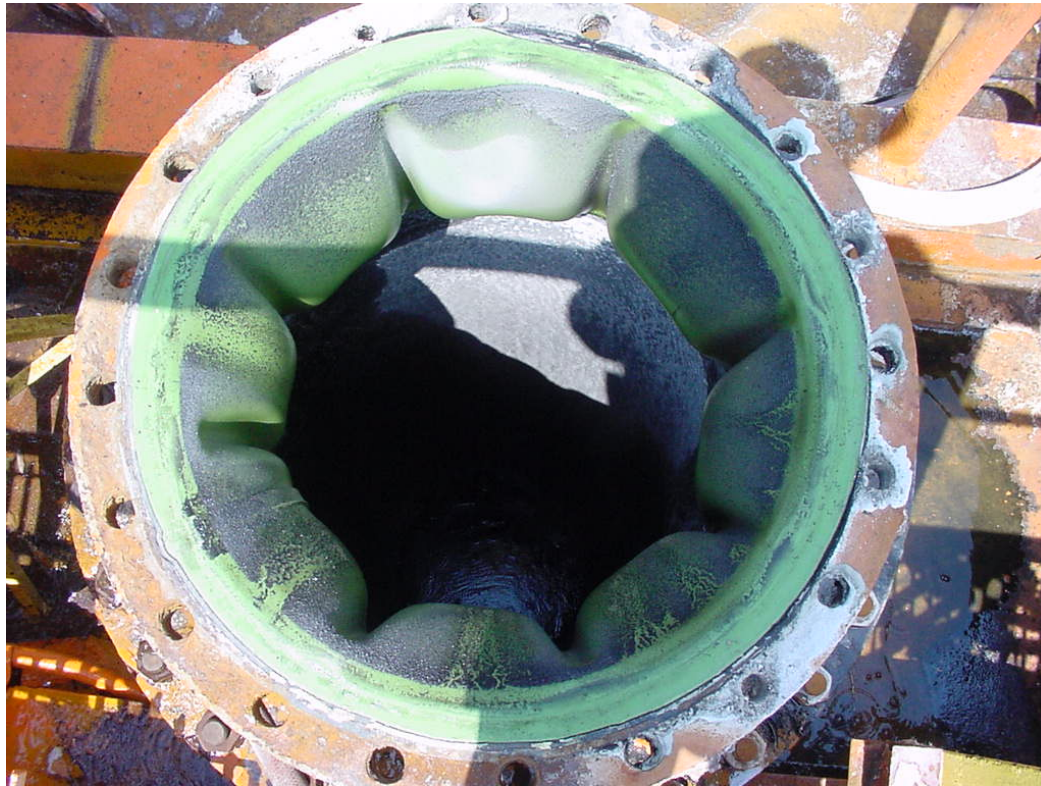


# Sulfur Incidents

- Have you considered the hazard of Hydrogen Sulfide and Pyrophoric Iron Sulfide?
- How do you mitigate/prevent the potential of the fire and explosion hazards

# S03 Releases

- 1.SS braided PTFE hose failure during offloading operation



# SO<sub>3</sub> releases

- Have you considered the SO<sub>3</sub> permeation issues?
- How do you mitigate/prevent the hazard of SO<sub>3</sub> releases?

# Mechanical Integrity

- 1. Failure of OEM pump part causing corrosion
- 2. Failure of SS piping in Sulfuric acid
- 3. Failure of DI piping Elbow







# Mechanical Integrity

- What is your quality assurance and quality control program?
- How do you minimize/prevent substandard/off spec material/equipment get into your plant?

# Management of Change

- Failure of boiler and turbine caused by unqualified supervision/management





# Management of Change

- What is your personnel qualification and training program?
- How do you address inexperience and lack of knowledge and training issues?

# Purpose of Conference

- Let us share our experience
- We can all learn together
- Networking and have fun