

## **SPA1. Sulfide Stress Cracking**

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### **Introduction**

My poster will display information on hydrogen sulfide stress cracking failures in material. The causes and effects of this cracking are the main concerns of the poster. The causes of cracking include improper material and hardness selections, and the effects of the sulfide cracking include the different types of distortion and failure in material. The importance of hydrogen sulfide has grown throughout the years as a more important issue as it becomes a more common problem in areas where metal is being used for drilling.

### **Technical Approach & Results**

The poster will include factors which contribute to the causes of the cracking. The displayed information will include the PH of the environment, the metal chemical composition, the hydrogen sulfide concentration, the tensile stress, the temperature, and the time exposed.

The poster will also display a few of the effects hydrogen sulfide has on the material. Generally the hydrogen will increase the brittleness of the material and cause pits and cracks. My poster will display information on the failures and pictures of cracking and pitting in the material.

Information included in the poster will be obtained from various sources including NACE documentation, metallurgy research, articles obtained from internet research, and information from houston oilfield engineers. The information will be grouped into the cause and effect categories in order to contrast them. A table of acceptable materials by NACE standards will be displayed with the causes. The pictures examples of failures will be displayed with the effects.

### **Conclusions**

These causes and effects of hydrogen sulfide on metals is the purpose of this poster. The corrosion and reduced quality of the material is presented on the poster in the form of tables and pictures. Companies with exposure to this dangerous gas keep standards and guidelines to protect the safety of their employees and assets. This subject is important to metallurgy because of its influence on active Houston industries, and because of its direct tie with metal property changes.