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**Meeting Paper**



**Corrosion Experiences in Salt Cavern  
Storage and Mining Operations  
at Grand Bayou**

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*by*

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## **Abstract**

Dow Chemical is experiencing corrosion problems at its Grand Bayou brine mining and hydrocarbon storage operations in south Louisiana. Several corrosion mechanisms have been identified and efforts are underway to mitigate the corrosion impacts to the site. Over the past few years, Dow's GBO facility has recorded several brine spills in the environmentally sensitive swamp and wetlands areas surrounding the site. Dow Chemical has set demanding environmental goals requiring significant reductions in loss of primary containment incidents for each plant. Dow businesses are supporting projects that will help achieve these goals. GBO is currently implementing a series of corrosion related measures designed to address and minimize the corrosion related incidents at the site.

Internal corrosion of the mining water lines, brine lines and well casings is the primary cause of the corrosion-related incidents at the site. Microbiologic Influenced Corrosion (bacteria) is the prevalent corrosion mechanism in the various field lines at the site. Oxygen corrosion is identified as the primary corrosion mechanism in the cross-country brine pipeline from Grand Bayou to the main plant at Plaquemine.

Corrosion mitigation measures include:

- Passivation of the field lines by the chemical injection of polyphosphate. Polyphosphate serves a dual purpose to aid in sulfate suppression in the mining wells and to produce a thin calcium phosphate protective coating in the mining water lines and well casings.
- Chlorine injection into mining water for treatment of high bacteria populations in the lines.
- Corrosion monitoring of all field lines by standard coupons and electronic types of corrosion probes.
- On line oxygen analyzer on the cross-country brine line to Plaquemine.
- Piping upgrade project designed to replace underground brine lines in the plant area with aboveground HDPE lined pipe.