

Solution Mining Research Institute; Fall 2005 Technical Meeting
Nancy, France, October 2-5, 2005

MICROBIALLY INFLUENCED CORROSION ISSUES IN A POTASH SOLUTION MINE

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Abstract

The purpose of the paper is to describe the results of investigations into ongoing corrosion issues affecting Mosaic's Belle Plaine Potash Solution Mine. Over the life of the mine, problems with chemical and mechanical sources of corrosion have been discovered and mitigated to the extent possible. Results of 2004 pipeline failure analyses have led to the conclusion that Microbially Influenced Corrosion (MIC) is a key factor in corrosion issues affecting MPBP operations today.

MIC has been traced to the application of used motor oil for the control of cavity development. Used motor oil is able to absorb water droplets into an emulsion. Bacteria thrive in the water phase of the emulsion amongst the nutrient-rich oil. Day-to-day operations permit movement of the bacteria into the pipeline system where a number of bacterial species co-exist, destroying the pipeline system through their activities.

Current efforts are aimed at mitigating MIC through biocide applications and pipeline repair. The effectiveness of these efforts is monitored using a number of measurement devices. The results of monitoring and new directions aimed at controlling MIC within MPBP's pipeline system are also described.

Key words: Microbially influenced corrosion, MIC, sulphate-reducing bacteria, SRB

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