

# Maintaining Proper Manganese Levels

**CASE**  
STUDY:

## CLIENT PROFILES

A coal mine operator in West Virginia.

## OPERATIONAL CHALLENGE

The operator experienced a challenge maintaining manganese levels in outlet water. The company's goal was to reach levels that are compliant with the provisions of an Outfall Permit issued by the West Virginia Department of Environmental Protection, which is three parts per million monthly average and six parts per million as a daily maximum.

The company had previously utilized commodity caustic to level pH, but the treatment was not effective at keeping manganese from falling out of range. The difficulty was keeping both pH and manganese in compliance at the same time.

## CHEMICAL SOLUTION

Kroff Chemical Company, Inc. engineered a treatment program whereby an oxidizer precipitates and settles manganese in the operator's pond systems at a much lower pH, effectively reducing caustic fees and keep manganese and pH levels in compliance.

By oxidizing soluble manganese, the material becomes insoluble and settles in the bottom of the ponds instead of flowing out into a receiving stream. The settled materials are then de-sludged and disposed of properly.

## BOTTOM-LINE RESULTS

After the initiation of Kroff Chemical's treatment program, the operator's manganese levels quickly settled into the range set forth by DEP, and the solution reduced the cost of treatment by 80 percent.



*Kroff Chemical Company, Inc. provides custom-blended chemicals and specialty services that improve clients' critical water and process system performance, which helps maximize efficiency of operations and lower costs of operation.*

*Kroff Chemical's services focus on energy efficiency, regulatory compliance, waste minimization and water reuse, fully automated and integrated chemical applications, and a safety-conscious approach.*

*With the support of Kroff Chemical Company, Inc., facilities operate with less staff, but they operate safely, efficiently and profitably. Clients focus more on their core competencies and look to Kroff Chemical Company, Inc. to treat, operate and maintain their critical water and process systems.*