

# ChemScan<sup>®</sup>

## PROCESS ANALYZERS

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### ChemScan<sup>®</sup> Application Summary #83 Dechlorination Control in Chloraminated Wastewater

#### Statement of the Problem

Chlorination of partially nitrified or un-nitrified wastewater is seldom carried far enough to produce free chlorine, because of the substantial demand from ammonia, amine and organic compounds present in the wastewater. Depending on relative concentrations of ammonia and organic nitrogen present and on the relative feed rate of chlorine, reaction time, temperature and sample pH, monochloramine or other forms of combined chlorine may be formed.

#### Process Control Strategy

Dechlorination of chlorinated or chloraminated wastewater requires the detection of combined chlorine residuals. One strategy is to feed a dechlorinating agent such as sodium thiosulfite, sulfur dioxide or other similar compound based on the desired effluent residual, which will be in the combined chlorine (chloramine plus free chlorine) form.

#### Apparatus

ChemScan Process Analyzers are designed to detect ammonia, chloramine, and or combined chlorine in wastewater from one or more points in the treatment process, at concentrations as low as hundredths of a part per million.

Monochloramine is detected directly in wastewater at a standard pH of 6-9, without the need for reagents or pH buffer. Results may be reported as ppm or  $\text{NH}_2\text{Cl}$  or as ppm of Cl. Trace concentrations (less than 0.3 ppm of  $\text{NH}_2\text{Cl}$ ) may require an expanded path length flow cell for analysis down to concentrations of 0.05 of  $\text{NH}_2\text{Cl}$  or less.

An alternate method of chloramine analysis injects a pH buffer to force monochloramine into the di- or tri-chloramine state, and compares the difference in absorbance spectra before and after the pH change.

Total chlorine is detected using a modified idiometric approach with multiple wavelength detection of displaced iodide.