

# ChemScan<sup>®</sup>

## PROCESS ANALYZERS

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### ChemScan<sup>®</sup> Method Summary #122 Monochloramine

Interactions between chlorine and various forms of nitrogen found in or intentionally added to water are complex and successive in nature, governed by the ratio of chlorine to nitrogen and by pH and reaction time. As the chlorine to nitrogen ratio increases, the combined species transform first into monochloramine, then into dichloramine, then trichloramine and finally into free chlorine plus nitrogen gas.

#### ChemScan Analysis Methods

Monochloramine has strong uv absorbance and can be detected directly in water using multiple wavelength uv spectrometry. This can reliably be performed at concentrations of a few ppm or more, even in the presence of higher forms of chloramine and other halogens.

Monochloramine can also be analyzed at very low (0.01) concentration using a secondary (reagent assisted) variation of amperometric titration (Standard Method 4500-Cl-D), but with spectrophotometric detection rather than polarographic detection. Under this method, potassium iodide is added to the sample at a pH that limits the subsequent reactions to those involving only monochloramine and free chlorine. This will liberate iodine in direct proportion to the amount of chlorine present in the sample. The liberated iodine has a unique ultraviolet absorbance signature that can be measured photometrically, even if other halogens are present. If the breakpoint has not been exceeded, the iodine can be directly attributed to monochloramine. This technique can also be used with adjustment of sample pH plus additional KI and reaction time to detect dichloramine and/or trichloramine following analysis of monochloramine.