

# **ChemScan<sup>®</sup>**

## **PROCESS ANALYZERS**

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### **ChemScan<sup>®</sup> Method Summary #134 Manganese in Water**

#### Manganese Analysis

Manganese is a common mineral found in the earth's crust. Drinking water that contains trace amounts of manganese is not considered to be harmful, but even microgram concentrations of manganese can stain textiles and can product objectionable color, taste and odor in water.

Manganese does not occur naturally as a metal, but is commonly found in various salts and minerals, frequently in combination with iron. Manganese is found in drinking water in one of three forms: particulate, colloidal and dissolved. Treatment typically involves oxidation of soluble manganese into insoluble particulates and colloids followed by separation of the solids through coagulation, sedimentation and/or filtration.

Typical analysis of manganese in the laboratory is by Atomic Absorption Spectrophotometry, which is impractical for on-line analysis.

#### ChemScan Analysis Method

The ChemScan method for manganese analysis is a variation of a former ASTM colorimetric analysis method. The method involves solubilization of particulate and colloidal manganese by acid digestion, followed by reaction with ammonium persulfate to form permanganate. Permanganate has strong absorbance spectra in certain ultraviolet and visible wavelength ranges, which is proportionate to the original manganese concentration in the sample.