

# **ChemScan<sup>®</sup>**

## **PROCESS ANALYZERS**

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### **ChemScan<sup>®</sup> Method Summary #165 Fluoride**

#### Background

Fluoride is intentionally added to drinking water in concentrations of around 1.0 mg/l in order to promote dental health. Fluoride is occasionally found in natural waters and if present in concentrations above a few mg/l, must be removed to avoid fluorosis, which can attack tooth enamel and discolor teeth. Good control of fluoride addition or removal is essential to maintain effectiveness.

#### Standard Laboratory Analysis

Several methods are used for laboratory analysis including ion-electrode, colorimetric and complexone methods. Some methods require separation from other nonvolatile constituents by distillation prior to analysis.

#### ChemScan Analysis Method

A modified ChemScan full spectrum analyzer is used for analysis. The analyzer modification shifts the detection range into the visible range so that the reaction between fluoride and a zirconium reagent at low pH can be measured. Certain interferences such as background color, iron and turbidity can be eliminated through standardization of the sample prior to addition of the reagent, so that only the color change is analyzed. This is a variation of the SPADNS method (Standard Method 4500-F-D.)