

ChemScan[®]

PROCESS ANALYZERS

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ChemScan[®] Method Summary #163 Total Ammonia in Water or Wastewater

Statement of the Problem

Ammonia can be found in surface water, groundwater and wastewater. When this water is disinfected through the addition of chlorine, there are interactions between the chlorine and ammonia that result in the formation of chloramines. The exact form of chloramine is a function of the chlorine to nitrogen ratio, pH and reaction time. Ammonia is sometimes intentionally added to potable water to form monochloramine prior to discharge of the potable water into the distribution system. Monochloramine has been shown to be less reactive with organics and therefore less likely to form disinfection byproducts. (See ChemScan Application Summaries #86, Chloramination Control and #154 Peak Point Chloramination Control).

In water or wastewater disinfection applications, Total Ammonia (expressed as $\text{NH}_3\text{-N}$) is the sum of the free ammonia-nitrogen plus the amount of nitrogen from ammonia that has combined with chlorine.

ChemScan Analysis Method

Total ammonia is calculated by performing an analysis of free ammonia (See ChemScan Method Summary #41) and a separate analysis of monochloramine (See ChemScan Method Summary #122) and the higher chloramines (See ChemScan Method Summary #162). Nitrogen from free ammonia and the chloramines can be summed to provide a total ammonia-nitrogen value.

This value is especially useful for the ratiometric method of chloramination control, which attempts to maintain the Cl_2 to N ratio in a range between 3 to 1 and 5 to 1.