DOC and Sulfide Reduction in Ground Water at the City of St. Cloud, FL

Client: City of St. Cloud
Location: St. Cloud Water Plant

BACKGROUND:

The City of St. Cloud is located near Orlando, FL and produces its water from groundwater wells in the area. Following extraction raw water is aerated, chlorinated and sent directly to the distribution system. The resultant DBP formation in the distribution system presented a significant treatment challenge for the City as well as sulfide in the raw water source.

As part of an investigation of technologies to provide lower treated water sulfide and DOC levels and to allow compliance with the EPA Stage 1 D/DBP Rule, a trial of the MIEX® Technology was conducted during summer 2004. The following objectives were set:

- To demonstrate that MIEX® Resin treatment can consistently achieve the following performance objectives:

Parameter	**Target** (average of all samples taken)
SDS THM*	<80 µg/l
SDS HAA*	<60 µg/l
Total Sulfide	<0.6 mg/l

- To operate the MIEX® Pilot Plant for an extended period of time, thus demonstrating that the MIEX® Process can achieve the required water quality on a consistent basis.

*A simulated distribution system (SDS) procedure was followed for DBP analyses. THM and HAA levels were measured after 3 and 7-day incubation periods. The samples were incubated at 25°C and ambient pH, and were dosed with enough chlorine to maintain a residual ≥ 0.2 mg/l at the end of the incubation period.

The results from the MIEX® Pilot Plant trial are summarized below. This data demonstrated that the MIEX® Process can significantly reduce raw water sulfide and DOC levels and allow a large margin of safety to meet current and future EPA DBP standards. SDS tests conducted on water without MIEX® Resin treatment produced THM and HAA concentrations well above the EPA standards.

RESULTS:

Table 1: DOC/Sulfide Removal

	Raw	Post MIEX® Resin Treatment
Average DOC (mg/l)	4.1	1.0
Average sulfide (mg/l)	2.0	0.4

THM and HAA concentrations of all water samples pre-treated with MIEX® Resin were well below EPA Standards after both 3 and 7-day incubation periods. The 7-day incubation period was used as a worse case scenario for THM and HAA formation in the distribution system and the 3-day incubation period was used to determine THM and HAA formation under simulated distribution system conditions.

Figure 1: THM Reduction

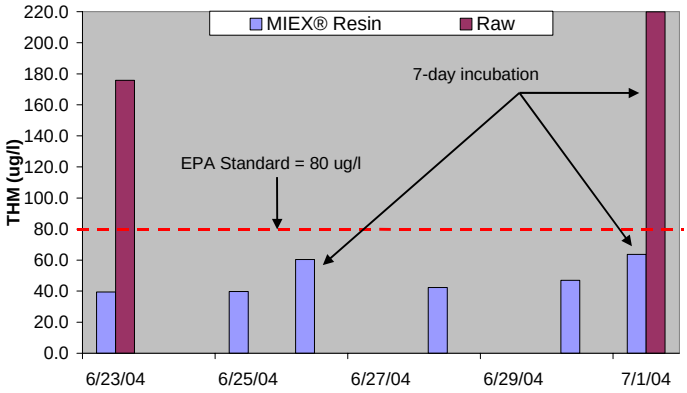
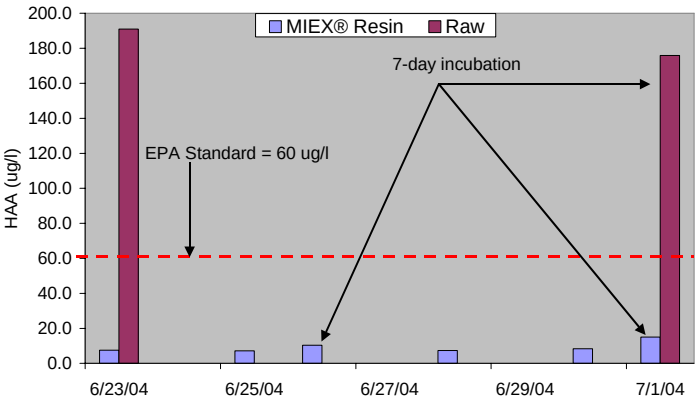


Figure 2: HAA Reduction



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