

Hach THM Plus™ test a real plus in Arkansas water plants

“...an excellent diagnostic tool”

A unique and highly effective program conducted by the Arkansas Department of Health is preparing smaller water systems for compliance with Phase I of the Disinfectants and Disinfection By-Product Rule (D/DBPR) when it impacts them in January.

From April 2002, through April 2003, department engineers helped these utilities collect samples throughout their treatment processes and distribution systems. They used Hach's THM Plus™ test to identify where disinfection by-products (DBPs) were being formed. Based on results, operators adjusted disinfectant injection and fine-tuned other process elements. Repeated testing helped assess the results of process adjustment.

“The THM Plus test is an excellent diagnostic tool, and the program has been a huge success,” stated Craig Burger, department Disinfection By-Product Engineer.

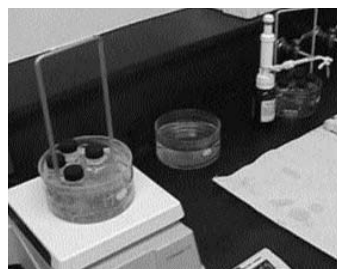
THM test yields ‘unbelievable knowledge’

Mark McIntosh, Comprehensive Performance Evaluation (CPE) Engineer, and Burger, changed the focus of Performance Based Training (PBT), which developed from the USEPA Region 6 Area Wide Optimization Program (AWOP), to include DBPs. Operators at eight area water systems participated; six systems continue testing beyond the PBT program.

Burger indicated most plants significantly reduced THMs during PBT. One plant, chlorinating water at two points in distribution, documented levels of about 170 µg/L THM leaving the plant and 350 µg/L THM remotely. In less than a month, they had made sufficient process modification to decrease THMs in the distribution system by 50%. Burger added that facilities reduced DBPs even during the summer months when levels typically rise.



During the PBT, operators at eight water systems brought samples to the water plant where Mark McIntosh, left, and Craig Burger, right, established a DBP testing hub. They found the THM Plus test, which detects more DBPs than are measured by specific reference methods, consistently correlated with results from the Dept. of Health's certified laboratory.



Burger and McIntosh set up their bench for “assembly-line style” analysis of 35 to 75 samples during each two-week period. They put the THM Plus test “to test,” even deliberately adding incorrect amounts of reagent and varying shaking and reaction time, and found it to be a robust analysis, “generally very forgiving.”



The PBT engineers hosted operators and even a regulator from neighboring Oklahoma who was interested in the implementation of Arkansas's PBT. Hands-on training demonstrated the practicality of the THM Plus test as a timely diagnostic tool for process improvement.

Interestingly, the PBT revealed that THMs often were generated in the plant itself. “The knowledge we got from these tests is unbelievable,” said Burger. “We learned where one or more adjustments at chlorine injection points solves the problem and where capital improvements may be needed. The possibilities for this [testing] system are endless.”

Note: The THM Plus test is performed with the Hach DR2800 and DR5000 Spectrophotometers.

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