

Disinfection Byproducts Optimization

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Disinfection byproducts (DBPs) are chemicals formed when disinfectants (such as chlorine or ozone) react with naturally occurring organic material or bromide that may be present in the water. Removing the precursors is the best control strategy, but it is usually expensive and time consuming. Disinfection is essential to inactivate microbial contaminants, but water systems must limit the byproducts that may be produced. Balancing disinfection needs and DBPs formation is often challenging, and may require alteration to the physical and/or chemical processes utilized for potable water treatment.

How can AWOP help?:

- Provides statistical tools to analyze your plant and system, including
 - Water age and tank turnover
 - Tracking chlorine residual decay
 - TOC reduction
 - DBP surrogates
- Demonstrates how to study, change your test conditions, then study again
- Demonstrates what has worked for other plants
- Helps you to work with existing processes and equipment
- Helps you plan for the future: what will 2012 look like? Are you ready to meet tighter standards?
- Trains you to analyze sample results, compare different types of data:
 - Organics
 - THM and HAA from labs
 - THM from other tests
 - Disinfectant residuals
- Prepares you to document and interpret trends
- Provides a forum to present your work and hone your presentation skills

The North Carolina AWOP program focuses on disinfection byproducts control through Performance Based Training (PBT, <http://www.deh.enr.state.nc.us/pws/awop.html>). There is no “silver bullet” for disinfection byproducts control; only many incremental changes that can be made in a treatment plant or distribution system. AWOP can help you learn what data to look for and to interpret what it means. As a PBT participant, you’ll learn to compile data and present it to a group, possibly including your management. Others in the PBT session become your support group, and will help guide each other through the process, including describing which changes did or didn’t work at other treatment facilities.

PBT participation can help you develop documentation for changes in your own plant, including data, trends, pictures, and presentations. This may be as simple as changing chemical feed rates or points of application, or your studies may document the existing physical structure simply isn’t capable of meeting current expectations or needs and should be replaced. Your “special study” may be the stimulus for a more complete engineering evaluation and Capital Improvement Plan. Will it cost more than you are

paying now...or less? What benefits will there be? Regardless of the outcome, you will better know and understand your plant, which will ultimately make you a more valuable employee, both for making more informed decisions and perhaps increasing your salary.

Understanding the distribution system is also critical to improving overall water quality and controlling DBPs. Once high quality water is produced at the treatment plant, management of the distribution pipes will deliver the best water possible to the customers.