

## WATER SYSTEMS, DISINFECTION BYPRODUCTS, AND THE USE OF MONOCHLORAMINE

### 8) How does EPA regulate **disinfection byproducts** (DBPs)?

EPA uses the presence of regulated **disinfection byproducts** as indicators of the presence of other disinfection byproducts.<sup>1</sup>

- EPA sets limits for two individual and two groups of disinfection byproducts (DBPs)<sup>2</sup> that are linked to health problems.
- Disinfectants react with natural organic matter<sup>3</sup> to produce disinfection byproducts, some of which are of health concern.
- Recent EPA drinking water regulations require water utilities to not exceed certain concentration limits for particular disinfection byproducts.<sup>1</sup>

***Water utilities must test water regularly to make sure regulated disinfection byproducts are within EPA limits.***

- EPA recently strengthened disinfection byproduct regulation.<sup>2</sup>
- Regardless of the disinfectant used, the types and concentrations of disinfection byproducts will vary from day to day and among utilities.
- The concentration and type of disinfectant byproducts depend on many factors, including source water type, water temperature, the levels of natural organic matter in the water, as well as the amount and type of disinfectant used.

***EPA conducts research to better understand disinfection byproducts in drinking water.***

- EPA scientists coordinate their research on disinfection byproducts with scientists from many organizations.
- Scientific studies are focused on identifying disinfection byproducts that may have an adverse effect on public health.<sup>4</sup>
- EPA scientists and decision makers review regulations of disinfection byproducts every six years to determine if they need to be revised.<sup>5</sup>

#### *Additional Supporting Information:*

1. EPA has adopted enforceable regulations to limit the occurrence of disinfection byproducts in drinking water for a group of four total trihalomethane (TTHMs) (chloroform, bromodichloromethane (BDCM), dibromochloromethane (DBCM), and bromoform), a group of five haloacetic acids (HAA5) (monochloroacetic acid (MCA), dichloroacetic acid (DCA), trichloroacetic acid (TCA), monobromoacetic acid (MBA), and dibromoacetic acid (DBA)), and the individual byproducts chlorite and bromate. The maximum contaminant levels for these disinfection byproducts are: TTHMs (0.080 mg/L), HAA5 (0.060 mg/L), chlorite (1.0 mg/L), bromate (0.010 mg/L). See Stage 2 Disinfection Byproducts Rule (71 FR 388, January 4, 2006) for more information on disinfection byproducts and discussion of epidemiological data on chlorinated water exposure and cancer, <http://www.epa.gov/fedrgstr/EPA-WATER/2006/January/Day-04/w03.pdf>. TTHMs and HAAs typically occur at higher levels than other known and known but unidentified disinfectant byproducts. The presence of TTHMs and HAA5 is representative of the occurrence of many other chlorinated disinfectant byproducts; thus, a reduction in TTHMs and HAA5 generally indicates a reduction of other types of disinfectant byproducts.

2. The two groups are total trihalomethanes and haloacetic acids. The two individual DBPs are chlorite and bromate.

3. *Natural Organic Matter*. Complex organic compounds that are formed from decomposing plant, animal and microbial material in soil and water. They can react with disinfectants to form disinfection by products. Total organic carbon (TOC) is often measured as an indicator of natural organic matter.

4. See the Contaminant Candidate List online at <http://www.epa.gov/OGWDW/ccl/ccl3.html> for contaminants EPA proposes to review.

5. EPA scientists consider new disinfection byproducts research as part of the six year review process. For information on the six year review process visit: <http://epa.gov/safewater/review.html>.