



## **Fact Sheet**

### **Disinfection By-products (DBPs)**

- Chlorine has been used to disinfect drinking water supplies in North America for most of the 20<sup>th</sup> Century.
- Chlorine disinfection has been extremely effective in protecting drinking water resources from bacterial and viral contamination. It has virtually wiped out instances of water-borne diseases like typhoid fever, cholera and dysentery in the U.S. and other developed countries.
- Over 200 million Americans currently drink water that has been disinfected.
- When added to a water supply, disinfectants not only kill bacteria and viruses, but also react with other chemicals present in the water. These chemicals generally enter the water supply through natural plant and soil breakdown.
- When disinfectants react with other chemicals, new compounds known as disinfectant by-products or "DBPs", are created. DBPs associated with chlorine disinfection include trihalomethanes (THMs), such as chloroform.
- Because chlorination has been used for almost 100 years to disinfect water supplies, approximately 40 percent of the DBPs from chlorination have been identified and researched. Much less is known about the kind of DBPs produced by other disinfectants because of their relatively recent emergence.
- Use of chloramine or chlorine dioxide in chlorine disinfection produce fewer DBPs than chlorine, but have associated risks. Chloramine is not as strong a disinfectant as chlorine, and disinfection with chlorine dioxide produces its own DBPs.
- Research on the relationship between DBPs and cancer and other health risks is ongoing.
- American drinking water has **very low** concentrations of DBPs.
- The U.S. Environmental Protection Agency (USEPA) has **not** been able to link exposure to DBPs at low concentration levels and the health risks associated with high concentration level exposure.
- Since 1984, American drinking water utilities have spent almost \$23 million researching the production of DBPs, the risks posed by them and methods to treat them. These research efforts are ongoing. In addition, the 300 largest drinking water utilities have spent more than \$150 million to conduct the information

- Since 1979, the U.S. Environmental Protection Agency (USEPA), under the authority of the Safe Drinking Water Act, has regulated the acceptable levels of some DBPs. USEPA cites the large population of Americans potentially at-risk from low-level DPB exposure as the impetus for regulation.
- The Safe Drinking Water Act Amendments of 1996 required USEPA to comply with the regulatory timeline it set forth in its initial Disinfectant and Disinfectant-By-Product (DDPB) rule and Interim Enhanced Surface Water Treatment Rule (IESWTR). USEPA proposed both in 1994.
- Because the research on DBPs and their impact on public health continue, and because serious questions about the actual health risks posed by DBPs still remain, the increased.
- Stage 1 of the DBP rule established the following course of action:
  - Establishes a goal of completely removing four particular THMs from American water supplies.
  - Reduced the acceptable level of total THMs by 20 percent.
  - Introduced a new group of DBPs, haloacetic acids (HAA5), for regulation.
  - Requires water suppliers to reduce levels of total organic carbon, which reacts with disinfectants to make DBPs.
  - Requires the levels of disinfectants in water after disinfection to be reduced.
- Stage 2 of the rule was promulgated in January 2006. The Stage 2 DBP rule focuses on public health protection by limiting exposure to DBPs, specifically total trihalomethanes (TTHM) and five haloacetic acids (HAA5).

**Contact AWWA Public Affairs for more information**

Greg Kail, Senior Public Affairs Manager

[gkail@awwa.org](mailto:gkail@awwa.org) | 303-734-3410

Kylah Hedding, Public Affairs Manager

[khedding@awwa.org](mailto:khedding@awwa.org) | 303-347-6140