Frequently Asked Questions about DISINFECTION BYPRODUCTS

Q1. What are disinfection byproducts and how are they formed?
A1. Most drinking water must be treated with disinfectants in order to kill or inactivate naturally occurring organisms that can potentially cause illness. This process is called disinfection. The most common disinfectant used is chlorine. Chlorine reacts with minute particles of naturally occurring organic matter dissolved or suspended in the treated water and forms compounds known as disinfection byproducts (DBPs). When chlorine is used in the disinfection process, the most common DBPs formed are trihalomethanes (THMs) and haloacetic acids (HAAs).

Q2. What types of water systems are most likely to have DBPs?
A2. Water systems using sources that contain larger amounts of organic substances will form more DBPs when treated with disinfectants than water systems that have lower amounts of these organic substances.

Sources with higher levels of organic substances include:
- Surface waters such as lakes, rivers and streams.
- Springs and wells that are shallow and/or located near surface waters.

Groundwater sources, especially from deep wells, tend to contain smaller amounts of organic substances; even after chlorination, lesser amounts of DBPs are typically found.

Q3. Do DBPs have harmful health effects?
A3. There have been many studies on the health effects of exposure to disinfection byproducts; some suggest a potential for both short and long term adverse health effects, others not.

Some studies for example have linked long term exposure to disinfection byproducts in drinking water over a period of 20-30 years to an increased risk for certain types of cancer. Other studies have suggested that drinking water containing elevated levels of disinfection byproducts during pregnancy may be associated with a slightly increased risk of miscarriage, low infant birth weight and birth defects. None of these studies, however, clearly indicate how much of the water was consumed and for how long, or how many byproducts the water contained. Therefore, it is unclear whether the reported adverse health risks are due to the disinfection byproducts or some other factor.

Q4. Are there regulations regarding DBPs?
A4. Yes; disinfection byproducts are regulated in accordance with the NYS Sanitary Code. The frequency with which public water systems are monitored varies depending on the size of the public water system, its source and the type of disinfectant used. A history of past disinfection byproduct level elevations may also affect frequency of monitoring. Once the level of disinfection byproducts exceeds the maximum contaminant level allowed by the NYS Sanitary Code a violation is issued to the Public Water System.

PWS users must be notified when disinfection byproduct levels exceed the state standards.
Q5. **What can be done to reduce the amount of DBPs formed?**

A5. Sometimes it is possible for the water supplier to reduce the amount of DBPs formed by changing treatment techniques at the water plant, by reducing disinfection levels throughout the distribution system, or by reducing the time water sits in the distribution system. A technique that can be used by a homeowner to reduce the amount of DBPs at the tap include granular activated carbon filtration.

Q6. **Should chlorination be discontinued in order to avoid DBPs?**

A6. The primary reason for adding chlorine to water is to make the water safe to drink by killing or inactivating microorganisms that cause illness and diseases such as typhoid, cholera, dysentery, and giardiasis. Health professionals consider the chlorination of water to be one of the most important advances in the field of public health protection. Chlorinating drinking water has saved millions of lives.

Research on the adverse health effects of DBPs and on ways to improve water treatment technology is ongoing. However, given the simplicity and low cost of chlorine and its effectiveness against infectious disease, chlorination is still the most appropriate choice as a method of ensuring safe drinking water for most water systems.

Q7. **I have a health condition, should I be concerned?**

A7. Some people may be more vulnerable to contaminants in drinking water than the general population. People undergoing chemotherapy or living with HIV/AIDS, transplant patients, children and infants, the frail elderly, and pregnant women may be at increased risk for infection. If you have special health care needs, consider taking additional precautions with your drinking water and seek advice from your healthcare provider.

Q8. **Where can I find out more if I have questions?**

A8. To learn more about your drinking water, please visit the following websites:

   www.dutchessny.gov

   http://www.cdc.gov/healthywater/drinking/

   http://www.health.ny.gov/environmental/water/drinking