

CHLORAMINE

The Burlington Municipal Water Works (BMWW), supplier of water to the Cities of Burlington, West Burlington, Middletown, Danville, the Iowa Army Ammunition Plant, and Rathbun Regional Water Association public water customers, utilizes chloramine for its disinfecting process for drinking water. BMWW uses this process to comply with the Federal Safe Drinking Water Act. Chloramination reduces levels of certain by-products of chlorination [total trihalomethanes (TTHMs) and Haloacetic acids (HAA5s)] that are suspected carcinogens.

BMWW disinfects with chloramine to meet the standards set by the EPA regarding byproducts of the disinfecting process. TTHMs are formed when chlorine reacts with natural occurring organic matter in drinking water. Prolonged consumption of water with elevated levels of TTHMs is a suspected carcinogen. TTHMs do not form readily in chloraminated water. Therefore, Burlington Municipal Waterworks is committed to ensure it provides the safest, highest quality drinking water possible to its customers. Chloramine has been used successfully, as a disinfectant in drinking water, throughout the United States for many decades, including the Iowa cities of Davenport, Cedar Rapids, Ottumwa and Keokuk. For most normal uses of drinking water, chloraminated water is the same as chlorinated water. Chloraminated water is safe for bathing, drinking, cooking and all everyday uses. For the majority of customers there is no negative impact, however there are two groups of people who need to take special care with chloraminated water: kidney dialysis patients and persons who keep fish, aquatic or semi-aquatic life.

FREQUENTLY ASKED QUESTIONS

Q: What is the disinfection process?

A: Disinfection is a step in the water treatment process to assure the biological safety of water. Chlorine, chloramine, and other chemicals can be used as disinfectants.

Q: What is chloramination?

A: Chloramination is the use of both ammonia and chlorine to disinfect water. Ammonia and chlorine are added to water at carefully controlled levels. The chlorine and ammonia react chemically to produce combined chlorine or chloramine. Chloramine is formed when ammonia is added to water that contains free chlorine. Depending upon the pH and the amount of ammonia, ammonia reacts to form one of three chloramine compounds. NH_2Cl , monochloramine, is the preferred compound and is the one BMWW uses.

Q: What are some of the advantages associated with the chloramine disinfectant?

A: The addition of chloramine to the disinfection process will quench the production of the chlorine byproducts (i.e. the THMs). The water leaving the treatment plants and entering the distribution systems will have had the bacteria killed or inactivated, but the reaction that produces THMs will have been arrested and the level of those chemicals in the water delivered to the customers will be substantially reduced. Additionally, there is less of a chlorine taste and odor in the water.

Q: Is chloramine safe?

A: Yes, chloramine is safe. The EPA accepts chloramine as a disinfectant and recognizes its ability to control THM formation. Chloraminated water is safe for bathing, drinking, cooking and all everyday uses however, there are two groups of people who need to take special care with 3 chloraminated water: kidney dialysis patients and persons who keep fish, aquatic or semi-aquatic life.

Q: Does bottled water have chloramine?

A: Bottled water may contain chloramine if the bottled water company is supplied by a chloraminated water system, unless the company takes special steps to remove them.

Q: Will chloramine affect routine business or industry water uses?

A: Businesses and industries that use water in any manufacturing process, for food or beverage preparation, commercial laundering operations, laboratory procedures, seafood handling, or other processes should be carefully controlled.

Q: What methods are available to remove chloramine?

A: Carbon filtration, or water treatment products, that neutralize chloramine may be used. If you use a carbon filter it must contain high quality granular activated carbon and you must allow sufficient contact time.

Q: Will reverse osmosis remove chloramine?

A: No. Salts can be caught by the permeable membranes, but chloramine may pass through the membranes.

Q: Do home water softeners remove chloramine?

A: Most water softeners are not designed to remove chloramine.

Q: Does using chloramine affect swimming pools?

A: No. Swimming pool managers and owners still need a free chlorine residual to retard algae and bacterial growths. Contact your local pool supply store for specifics.

HEALTH EFFECTS

Q: What precautions should kidney dialysis patients take?

A: Chloramine must also be removed from the water used in kidney dialysis machines. If you are a dialysis patient and have any questions, please call your physician or the dialysis center where you are treated.

Q: What should people with home dialysis machines do to remove chloramine?

A: You should first check with your physician who will recommend the appropriate type of water treatment. Often, home dialysis service companies can make the needed modifications, but you should check with your physician to be certain.

Q: Can kidney dialysis patients drink and bathe in chloraminated water?

A: Yes. Everyone can drink water that is chloraminated because the digestive process neutralizes the chloramine before they reach the bloodstream. Even kidney dialysis patients can drink, cook and bathe in chloraminated water. It's only when water interacts directly with the bloodstream, as in dialysis or in a fish's gill structure, the chloramine must be removed.

Q: Is chloraminated tap water safe for the general public and people with suppressed autoimmune system (AIDS, cancer, kidney dialysis, diabetes, hepatitis, lupus)?

A: Chloraminated water is safe for the general public and for people with suppressed immune systems or other diseases. Because neither chloramine nor chlorine destroy certain protozoans like cryptosporidium, some people who have compromised immune systems may wish to use bottled water or to boil their water to make sure that they are not exposed to pathogens that might be present in the water despite the use of these disinfectants.

Q: Can children and pregnant women drink chloraminated water?

A: Yes, everyone can drink water containing chloramine.

Q: Can I use chloraminated water to prepare my baby's formula?

A: Yes

Q: Can people on low-sodium diets, or with diabetes use chloraminated water?

A: Yes. People with those medical problems can use chloraminated water for all purposes.

Q: Can I wash an open wound, such as a cut, with chloraminated water?

A: Yes. Chloraminated water will not enter the bloodstream.

FISH HOBBYISTS AND AQUACULTURE BUSINESSES

Fish take chloramine directly into their bloodstreams, so chloramine must be removed from tanks, aquariums and ponds.

Q: Will chloramine change the pH of the water?

A: No. The pH of the water will remain the same.

Q: What precautions should fish hobbyists and aquaculture businesses take?

A: Chloramine should be removed from water that is used in fish tanks, ponds, and aquariums. Households, tropical fish shops, and other businesses that keep fish or other animals in tanks, aquariums, or ponds are encouraged to contact knowledgeable suppliers or veterinarians. Similarly, customers who use drinking water for aquaculture (growing plants in a water tank or pond) are encouraged to get expert advice regarding chloramine. Also, restaurants and grocery stores with lobster tanks must take special precautions to treat the water.

Q: Are Koi fish affected by chloramine like other fish?

A: Yes. Koi are just as susceptible to being harmed by chloramine as any other fish.

Q: Does letting water sit for a few days remove chloramine from tanks for pond water?

A: No. Unlike chlorine, which breaks up when water sits for a few days, chloramine may take weeks to disappear. If you choose not to use de-chloraminating chemical, install a granular activated carbon filter and allow sufficient contact time between the water and filter.

Q: Are both salt and fresh water fish affected by chloramine?

A: Chloramine will need to be removed if the water used to make salt-water solution comes from a chloraminated supply. Chloramine affect salt-water fish just as they affect fresh water fish.

Q: If only a small amount of water is added to the aquarium or pond to make up for evaporation, does chloramine still need to be removed?

A: This will depend on the amount of water added in relation to the size of the aquarium or pond, the time period in which it is added and the sensitivity of the animals being kept. An alternative is to monitor for total chlorine residual in the aquarium or pond while adding the chloraminated water. Total chlorine test kits are available from pet stores, pool supply stores, and chemical supply houses.

Q: Can chloramine be removed by boiling water?

A: No. Boiling water is not an effective method of removing chloramine from water. The only practical methods for removing chloramine from water are using a water conditioner, which contains a de-chloramination chemical, or by using granular activated carbon.

Q: Will chloramine harm my other pets?

A: No. Chloramine are only harmful to fish and other aquatic or semi-aquatic life.

FOR MORE INFORMATION

Please contact Ken Gregory at the Burlington Municipal Waterworks Treatment Plant

(319) 752-7611, Monday – Friday, 8:00 AM – 5:00 PM