



A Middlesex Water Company Affiliate

**The State of Delaware Division of Public Health Office of Drinking Water has approved Tidewater Utilities Inc.'s plans to use chloramination for disinfection. If you have questions regarding this you may contact the Office of Drinking Water directly at (302) 741-8630.**

## Frequently Asked Questions:

### What is chloramination?

Chloramination is the process of adding ammonia to drinking water which already has chlorine added as a disinfectant. The ammonia combines with the existing chlorine which is called free chlorine to create chloramines.

### Are chloramines new?

No. Many cities in the U. S. and Canada have used chloramines for decades. Denver, Colorado, for instance, has used chloramines since 1917. The City of Philadelphia has used chloramines for more than 50 years.

### Why is Tidewater Utilities making the change to chloramines?

Although your drinking water meets all state and federal regulations, Tidewater Utilities Inc. has decided to use chloramines to deliver an even better drinking water quality. It is our goal to lower disinfection by-products with the use of chloramines.

### What are Disinfection By-Products (DBPs)?

DBPs are chemical compounds that are formed when chlorine mixes with naturally occurring organics in water. The Environmental Protection Agency (EPA) has conducted tests which determined that some DBPs are carcinogenic when consumed by laboratory animals in large quantities over a prolonged period of time, and are suspected carcinogens for people.

### Are chloramines safe?

Yes. Chloramines have been used safely in the U. S. and Canada for many years. EPA accepts chloramines as a disinfectant and as a way to avoid DBP formation. Drinking water requires some type of disinfectant due to disease-causing organisms such as typhoid and cholera that could be carried in your drinking water. Chloraminated water is safe for bathing, drinking, cooking and all uses we have for water every day. However, there are some groups of people who need to take special care with chloraminated water: kidney dialysis patients, fish owners and industrial users.

## **Why do kidney dialysis patients have to take special precautions?**

In the dialysis process, water comes in contact with the blood across a permeable membrane. Chloramines in that water would be toxic, just as chlorine is toxic, and must be removed from water used in kidney dialysis machines. There are two ways to do that - either by adding ascorbic acid or using granular activated carbon treatment. Medical centers that perform dialysis are responsible for purifying the water that enters the dialysis machines.

## **Do medical centers, hospitals, and clinics that perform kidney dialysis know about the change to chloramines?**

Yes. All medical facilities have been notified of the change. All dialysis systems already pretreat their source water: some will have to modify their equipment before the change to the new type of disinfectant. If you have any doubt, please ask your physician.

## **What should people with home dialysis machines do to remove chloramines?**

You should first check with your physician who will probably 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.

## **What are the effects of ammonia on fish?**

Ammonia can be toxic to all fish, although all fish produce some ammonia as a natural byproduct. Ammonia is also released when chloramines are chemically removed. Although ammonia levels may be tolerable in individual tanks or ponds, commercial products are available at pet supply stores to remove excess ammonia. Also, biological filters, natural zeolites and pH control methods are effective in reducing the toxic effects of ammonia. Chloramines affect salt water fish just as they affect fresh water fish. Contact your pet store for specific information.

## **If chloramines are toxic, won't they harm people and pets?**

Chloramines are harmful when they go directly into the bloodstream, as happens in kidney dialysis. Fish also take chloramines directly into their blood streams through their gills. That's why chloramines must be removed from water that goes into kidney dialysis machines or is used in fish tanks and ponds.

## **If chloramines shouldn't mix with blood, is it safe to drink water containing them?**

Yes. Everyone can drink water that's chloraminated because the digestive process neutralizes the chloramines 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 - that chloramines must be removed.

## **How about washing an open wound, such as a cut, with chloraminated water?**

Certainly. Even large amounts of water used in cleaning a cut would have no effect because virtually no water actually enters the bloodstream that way.

## **Can people with kidney ailments, on low-sodium diets, or with diabetes use chloraminated water?**

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

## **If chloramines are harmful to fish, how can people safely drink the water?**

Chloraminated water is no different than chlorinated water for all of the normal uses we have for water. Water that contains chloramines is totally safe to drink. The digestive process neutralizes the chloramines before they reach the blood stream. Even kidney patients can drink and bathe in chloraminated water.

## **Can pregnant women and children drink chloraminated water?**

Yes. Everyone can drink water that contains chloramines.

## **What about people who are sensitive to chemicals?**

The amount of chloramines will be no more than 4 parts per million parts of water. If you are concerned that this concentration might cause problems for you, check with your physician. The predominant type of chloramines will be monochloramine (NH<sub>2</sub>Cl) and will be approximately in the ratio of 5 parts chlorine to one part ammonia-nitrogen.

## **Will chloramines change the pH of the water?**

No. The pH of the water will remain the same as before.

## **What will water taste like with chloramines?**

If you notice any change at all, you may find the water has less of a chlorine odor or taste.

## **Do home water softeners remove chloramines?**

Most water softeners are not designed to remove chloramines.

## **Does bottled water have chloramines?**

It could. If the bottled water company uses water supplied by a water district that uses chloramines, then the water it provides will have chloramines in it, unless the company takes special steps to remove them.

## **Will chloramines affect swimming pools?**

No. You will still need a free chlorine residual to retard algae and bacteria growth. The chlorine chemicals and test kits you currently use can still be used with confidence. Contact your local pool supply store for any specific questions.

### **How about using chloraminated water on ornamental plants, vegetables or fruit and nut trees? Will beneficial soil bacteria be harmed?**

The small amount of chloramines should have no effect on plants of any type. Beneficial bacteria will generally be protected by the soil in which they live. Chloramines will be removed by the high chlorine demand in the soil.

### **Won't letting water sit for a few days remove chloramines from tank or pond water?**

No. Unlike chlorine, which dissipates when water sits for a few days, chloramines may take weeks to disappear. If you don't want to use a dechlorinating chemical, the next best solution is to install a granular activated filter and allow sufficient contact time.

### **Will a carbon filter remove chloramines?**

Yes. However, it must contain high quality granular activated carbon and you must permit sufficient contact time.

### **Will reverse osmosis remove chloramines?**

No. Salts can be caught by the permeable membranes but chloramines pass through easily.

### **Will chloramines be removed by boiling the water?**

No. Boiling is not an effective method of removing chloramines from water. The only practical methods for removing chloramines from water are using a water conditioner which contains a dechlorination chemical or by using granular activated carbon.