

DOMESTIC WATER DISINFECTION USING CHLORAMINES

Question & Answer Sheet ●

Stanford University purchases its drinking water supply from San Francisco Public Utilities Commission (SFPUC), who uses chloramines to disinfect the domestic water.

1. What is chloramine?

Chloramine is a disinfectant used in drinking water to remove bacteria and viruses. It consists of chlorine and ammonia.

2. When did SFPUC start chloraminating the drinking water supply the conversion occur?

In 2004, the San Francisco Public Utilities Commission (SFPUC) and water agencies that receive water from the SFPUC switched their drinking water disinfection system from chlorine to chloramines.

3. Why did the SFPUC convert from chlorine to chloramine?

For many reasons. (1) Chloramine is a better choice as a final disinfectant than chlorine alone because chloramine produces lower levels of disinfectant by-products like trihalomethanes, suspected carcinogens that form when chlorine mixes with natural organic substances in water. (2) The conversion enabled water agencies to comply with more stringent regulatory standards (present and anticipated). (3) Chloramine is more stable than chlorine and lasts longer in the distribution system. This provides increased protection from bacterial and viral contamination.

4. Which customers were affected by the conversion?

Water agencies, utilities, and their customers in San Mateo, Santa Clara, and Alameda counties that receive water from the SFPUC were affected by the conversion.

5. How many utilities currently use chloraminated water?

Most large Bay Area utilities and many communities nationwide have already switched to chloramine for drinking water disinfection. Local water agencies include: Alameda County Water District, East Bay Municipal Utility District, Marin Municipal Water District, and Santa Clara Valley Water District. Some water providers throughout the United States have been using it for over 80 years.

6. Will the water with chloramine disinfection taste different?

Possibly. Most consumers should not notice the change. In fact, many consumers from other utilities report chloramine improves the taste and odor of drinking water.

7. Is chloraminated water safe?

Chloraminated water is safe for people and animals to: drink, cook with, bathe in, water the garden, and for all other general uses. However, as with chlorine, precautions must be taken to remove or neutralize chloramine during the kidney dialysis process, in the preparation of water for fish tanks and ponds, and for businesses requiring highly processed water.

8. Is it safe to wash open wounds with chloraminated water?

Yes. Chloraminated water is completely safe to use on cuts and wounds.

9. How will chloramine affect household plumbing, pipes, and water heaters?

After the conversion, rubber parts on some household plumbing and water heaters may degrade faster than previously experienced. When replacing rubber plumbing parts, ask for chloramine-resistant parts, which are readily available. Plumbing and hardware supply stores and plumbers will be able to provide further information. Please see *Chloramine Degradation* for more information.

10. Do I need to take any precautions or do anything different when using chloraminated water?

Only three special groups need to take precautions with chloraminated water: fish, reptile and amphibian owners, dialysis facilities, and businesses or research facilities using or requiring highly treated water.

11. What types of businesses/research facilities will be affected?

Businesses or research facilities using highly processed water may be affected. Types of businesses may include: laboratories, microchip manufacturers, biotech companies, soft drink bottlers, photography labs, or restaurants or seafood suppliers with fish tanks. Businesses should contact a water treatment professional or an equipment supplier to review their treatment process.

12. Why is chloramine harmful for fish and amphibians?

Fish and some amphibians and reptiles pass water through their gills directly into the bloodstream. Like chlorine, chloraminated water can do harm if passed directly into the bloodstream. Chloramine can be removed from water with inexpensive water treatment products (drops or tablets) or specified carbon filters. These products are readily available at most pet supply stores.

13. Why is chloramine harmful for dialysis patients?

Like chlorine, chloramine can harm kidney dialysis patients during the dialysis process if it is not removed from water before it passes into the bloodstream. The California Department of Health Services will inspect and certify that dialysis facilities in the SFPUC service area are prepared prior to the conversion. Like everyone else, dialysis patients can drink chloraminated water because the digestive process neutralizes chloramine.

14. How can I remove chloramine from my water?

Chloramine cannot be removed by boiling water, adding salt, or letting water stand still. Treatment devices to reduce chloramine levels are available. These devices should be independently tested and specifically certified to reduce chloramine. Although home filtration systems will reduce the level of chloramine from water, it will not remove it completely.

15. How can sensitive users remove chloramine from water?

The California Department of Health Services (DHS) will oversee the upgrades of dialysis facilities and equipment. Generally, dialysis providers can use ascorbic acid or a granular-activated carbon filtration system designed to remove chloramine as provided. Fish and amphibian owners can use water treatment products or specified carbon filters before adding water to their tank or pond. Businesses will need to upgrade their current filtration and treatment system. Businesses may wish to contact their equipment supplier or a water treatment professional to review current operations.

16. Will pool owners need to treat chloraminated water differently?

As with chlorinated water, pool owners will need to maintain the same chlorine residual as before to prevent algae and bacterial growth. Pool supply stores can provide pool owners with more information.

17. Is chloraminated water safe for plants and animals that do not live in water, like my pet dog or cat?

Chloraminated water is as safe as chlorinated water for plants and animals that do not live in water. Chloramine is only dangerous for fish, reptiles, shellfish, and amphibians that take water directly into their bloodstream.

18. If chlorine and ammonia are toxic to mix at home, why is it safe to drink chlorine and ammonia in the form of chloramine?

Household chemical cleaners such as chlorine bleach and ammonia are sold as highly concentrated solutions; the hazardous mixture of these chemicals is due to their high concentrations. In comparison, the concentrations of chlorine and ammonia added to drinking water for disinfection are very low, so low that concentrations are expressed in "parts per million" or ppm. After the conversion to chloramine, average chlorine concentrations in water will be about 2 ppm; ammonia concentrations will be even lower at 0.5 ppm. As an analogy, one ppm represents about 5 tablespoons in a 20,000-gallon swimming pool.

19. Where can I get more information?

Stanford University
Facilities Operations – Utilities Division
Water Information Line (650) 725-8030