

FREQUENTLY ASKED QUESTIONS ABOUT CHLORAMINES

What are chloramines?

The chloramines are a group of compounds that contain chlorine and nitrogen. There are three different forms: monochloramine (NH_2Cl), dichloramine (NHCl_2) and trichloramine (NCl_3), which are easily converted from one to another. They are yellow to colorless liquids with a strong ammonia odor.

Chloramines, especially monochloramine, have been used as water disinfectants. Monochloramine is a weaker disinfectant than chlorine, but is more stable. Because of this, monochloramine provides better protection against bacterial regrowth in systems with large storage tanks and dead-end water mains.

Why disinfect drinking water?

All drinking water suppliers using surface water are required by the U.S. Environmental Protection Agency (EPA) to use disinfectants to eliminate disease-causing organisms in drinking water supplies. Disinfection of drinking water has benefited public health enormously by lowering the rates of infectious diseases (i.e. typhoid, hepatitis, and cholera) spread through untreated water. Utilities must also maintain a residual disinfectant throughout the drinking water distribution system to assure there is no bacterial growth once the water has left the treatment plant.

What are the byproducts of chloramination?

Chloramines do not tend to react with organic compounds; many systems will experience fewer incidences of taste and odor complaints when using chloramine. Use of chloramines instead of chlorine prevents the formation of harmful byproducts like trihalomethanes.

What are the health effects of chloramine?



Some people who use water containing chloramine in excess of 4.0 mg/L may experience irritation to their eyes and nose. Chloramine can cause and aggravate respiratory problems. Chloramine fumes can cause an individual to become congested and cause sneezing, sinus congestion, coughing, choking, wheezing, shortness of breath and asthma. These problems are most commonly encountered in swimming pools containing excess chloramines. Chloraminated water that meets EPA's standard is safe to use for drinking, bathing, cleaning laundry, and other household activities.

Special considerations for using chloramine to disinfect public water supplies?



People on kidney dialysis may be affected. During dialysis, water comes in contact with the blood and must be pretreated to remove the chlorine and ammonia. Medical treatment centers that perform dialysis are responsible for purifying the water that enters dialysis machines. If the chloraminated water is not filtered, some dialysis patients develop a type of anemia where the blood cannot carry enough oxygen to the body's cells.

People with home dialysis machines should check with their physicians or equipment supplier to determine the proper filtration adjustment to be made prior to use of chlorinated water. Also, rubber components are susceptible to damage from exposure to chloraminated water. Fresh and salt water fish in aquaria are sensitive to chlorine and chloramine in water. Special care should be used to neutralize the water prior to exposure.

What is the drinking water standard for chloramines?

EPA sets the standards for public drinking water. These standards or limits are known as Maximum Contaminant Levels or MCLs. EPA's MCL and Maximum Residual Disinfectant Levels (MRDL) for chloramines in drinking water is 4 mg/L. A Reference Dose (RFD) for adults is 1 mg/kg/day.

Where can my physician or I get more information?

If you need further information regarding the health effects of chloramines, please contact the Virginia Department of Health, Division of Environmental Epidemiology, 109 Governor Street, 4th Floor, Richmond, VA 23219, or call (804) 864-8182.

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