



## Did you know . . .

While many systems are certified to reduce chlorine, this doesn't mean they will also be effective at reducing chloramines or disinfection byproducts like trihalomethanes. Always check the product label to be sure the system you are purchasing is certified to address your contaminant reduction needs.



# Chlorine & Chloramines in Drinking Water

To protect drinking water from bacteria and viruses, public water suppliers usually disinfect the water being delivered to local residents. In Canada and Europe, the use of ozone and ultraviolet disinfection is common, but because neither of these processes leaves a chemical residual in the water, there is no protection against bacteria growing in the pipes that deliver water to our homes.

In the U.S., most cities use either chlorine or chloramines to disinfect public water supplies.

## Chlorine

Historically, chlorine has been the most common chemical used to disinfect drinking water supplies in the U.S. Most people are familiar with the liquid form of chlorine, sodium hypochlorite, which is the same chemical found in household bleach products used for home cleaning and disinfecting. However, chlorine is also available in a gas form.

As effective as chlorine is at killing most waterborne bacteria and viruses, some microorganisms like *Cryptosporidium* are resistant to this chemical, so people with compromised immune systems may need to install a home filter certified for microbial cyst reduction even if their water supply is disinfected with chlorine. In addition, chlorine can react with naturally-occurring materials in the water to form by-products like trihalomethanes and haloacetic acids, which may pose health risks at high levels.

In addition to disinfecting water, chlorine is also a strong oxidizing agent that can change the form in which some contaminants are present in the water. For example, chlorine can convert the trivalent form of arsenic to the pentavalent form, which is important if using a reverse osmosis system for [arsenic reduction](#). It can also be used as a first step in the treatment for dissolved iron, manganese and hydrogen sulfide, as chlorine can cause these contaminants to precipitate or come out of solution. The precipitant formed during the oxidation process can then be filtered with a sediment or backwashing system.

## Chloramines

Chloramine is another type of water additive used to disinfect public drinking water supplies. It is formed when ammonia is added to water that has first been treated with chlorine. The use of chloramines has become more widespread in the U.S. as concerns about the creation of disinfection by-products from chlorine treatment alone have increased in recent years.

Another reason for the increased use of chloramines for disinfection is that this compound will remain effective in warmer water supplies for a longer period of time, which can provide better protection against bacterial growth in water distribution pipes in warmer climates.

Unfortunately, *Cryptosporidium* and other intestinal parasites are still highly resistant to chloramines, so some individuals may still need to install a filtration system at their tap to protect against these organisms.

## Home Treatment Options

Although both chlorine and chloramines provide protection against many types of disease-causing organisms, they can leave an undesirable taste in the water or sometimes cause allergic reactions when bathing.

Many [water treatment systems](#) available today are effective at reducing chlorine, including whole house filters, point-of-use filters for a single faucet location and shower filters. However, it is more difficult for water treatment systems to reduce chloramines. So if you are looking to reduce chloramines, be sure to read the product label or to check with the laboratory that certified the system to ensure the product was tested specifically for chloramine reduction under NSF/ANSI Standard 42.

To ensure ongoing performance, always change the filter at the manufacturer's recommended interval and use the manufacturer's replacement components recommended for your specific system.