CHLORAMINE FACT SHEET

The Municipal Water Supply in the United States

- There are nearly 250,000 public water supply systems in the United States.
- Approximately 90% of the US population receives their water from a community water system.
- 98% of US water utilities use either chlorine or chloramine as part of their treatment process.
- Recent studies estimate that 35-40% of the municipally-treated water in the US is now disinfected using chloramine, a percentage which has nearly doubled in the last decade. Industry analysts expect that growth trend in chloramine usage to continue.
- Some municipalities occasionally switch between disinfecting with chlorine or chloramine, depending on temporary changes in water conditions and market cost of the disinfectant.
- Utilities are required annually to provide a Consumer Confidence Report, also known as an Annual Water Quality Report, that tells you where your water comes from and what's in it, including chlorine or chloramine and at what levels.

About Disinfection

- Disinfection has been used by water treatment facilities for decades to deactivate microorganisms that may pose a health risk in the public water supply.
- Chlorine is traditionally the most widely employed disinfectant for potable water in the United States, based on its low cost and reliable effectiveness.
- Public utilities may chlorinate the water supply several times during the treatment process, often including a final step before releasing the treated water into the distribution system. Maintaining a level of disinfectant in the water as it travels through the distribution system, sometimes for miles, is critical.
- Despite its cost and efficacy benefits, free chlorine has been found to combine with naturally occurring organic matter in water distribution systems to form disinfection byproducts (DBPs) like trihalomethanes, which have been linked to cancer in laboratory testing.
- As a result, some water utilities have turned to chloramine as an alternative to chlorine, either by choice since chloramine creates lower levels of DBPs, or per updated local regulations.
- Once the water enters a home, chlorine or chloramine is no longer needed and its presence often poses problems such as dry skin and hair, ruined rubber seals, objectionable tastes and odors as well as other issues.

Kinetico®
water systems

CHLORAMINE FACT SHEET

What is Chloramine?

- Chloramine is an inorganic compound created by combining free chlorine – the type of chlorine typically found in municipal water – with ammonia.
- Chloramine is not commercially available and must be generated onsite at water treatment facilities.
- Chloramine is more stable chemically than chlorine, and retains its effectiveness for a longer period of time within water distribution systems.
- Chloramine also produces measurably lower levels of DBPs in distribution systems, and as a result is emerging as perhaps the best available technology for public water disinfection.
- Chloramine is regulated by the US EPA, with a maximum contaminant level of four mg/L (ppm).

How to Remove Chloramine

- Like chlorine, chloramine can be removed with whole-home or point of use carbon filtration, the effectiveness of which increases with the activation level of the carbon. Unlike chlorine, however, chloramine is a relatively stable molecule, and therefore requires a more reactive media and lengthier contact time for effective removal.
- Standard activated carbon – either coconut shell or coal-based – does an excellent job at filtering free chlorine, but does very little to remove chloramine, sometimes referred to as "combined chlorine." Contrary to a common belief, standard activated carbon does NOT remove the chlorine from a chloramine molecule, leaving only ammonia behind.
- Catalytic carbon beds are quite effective at filtering chloramine, and for the last decade have been the media of choice. Catalytic carbon will remove chloramine for a year or more depending on load levels and flow rates, but is eventually "spent" and needs to be replaced. It is a relatively expensive alternative to activated carbon, costing roughly twice as much.
- Hollow-core carbons (HCCs), like those used in Kinetico Chloraban™, represent the next generation of carbon filtration media. HCCs have up to ten times the active filtration sites on each carbon particle, providing a dramatic increase in filtration capacity and media bed life.
- Initial estimates, based on laboratory testing of a whole-home filter, suggest that HCCs may effectively remove chloramine for up to four years depending on the variables. HCCs are more expensive than catalytic carbons, but the higher filtration capacity and substantially longer bed life must be considered when evaluating media options for chloramine filtration.

Kinetico®
water systems