

AI Overview

The conversion from chlorine to chloramine as a water disinfectant presents several water problems related to infrastructure, water quality, and specific sensitivities

Infrastructure and Plumbing Issues

- **Corrosion of Metal Pipes:** Chloramine can change water chemistry and disrupt the protective scale that forms on older metallic pipes (especially lead and copper), potentially leading to increased corrosion, pinhole leaks, and the leaching of toxic metals like lead and copper into the water.
- **Deterioration of Rubber/Elastomers:** Chloramine is known to degrade natural rubber and some elastomeric materials used in plumbing components such as toilet flappers, gaskets, and seals in dishwashers and water heaters, leading to increased maintenance and leaks.
- **Nitrification:** The ammonia component of chloramine can act as a food source for nitrifying bacteria in the water distribution system. This biological process (nitrification) can reduce or deplete the disinfectant residual, lower the pH, and increase nitrite and nitrate levels, which can further promote corrosion and make the water more vulnerable to bacterial regrowth.

Water Quality and Health Concerns

- **Toxicity to Aquatic Life:** Chloramine is highly toxic to fish, amphibians, and other aquatic animals. Water from the tap cannot be used in aquariums, fish ponds, or for hydroponics without specialized filtration to completely remove the chloramine, which is a more complex process than removing chlorine.
- **Kidney Dialysis Patients:** Chloramine must be completely removed from water used in kidney dialysis machines, as it can enter the bloodstream and cause hemolytic anemia, a potentially life-threatening condition.

- **Taste and Odor:** While generally less noticeable than chlorine, some individuals may still find that chloramine imparts a chemical or metallic taste and odor to the water.
- **Skin and Eye Irritation:** Some people with sensitive skin or conditions like eczema or acne may experience skin dryness, rashes, and eye or sinus irritation after bathing or showering in chloramine-treated water.
- **Disinfection Byproducts (DBPs):** Although chloramine produces fewer regulated DBPs (like trihalomethanes, or THMs) than chlorine, it can form different, non-regulated DBPs (such as N-nitrosamines), some of which may also pose health concerns and require careful monitoring.

Proper management and monitoring of water chemistry, along with potential infrastructure upgrades, are crucial when converting to chloramine to mitigate these issues.