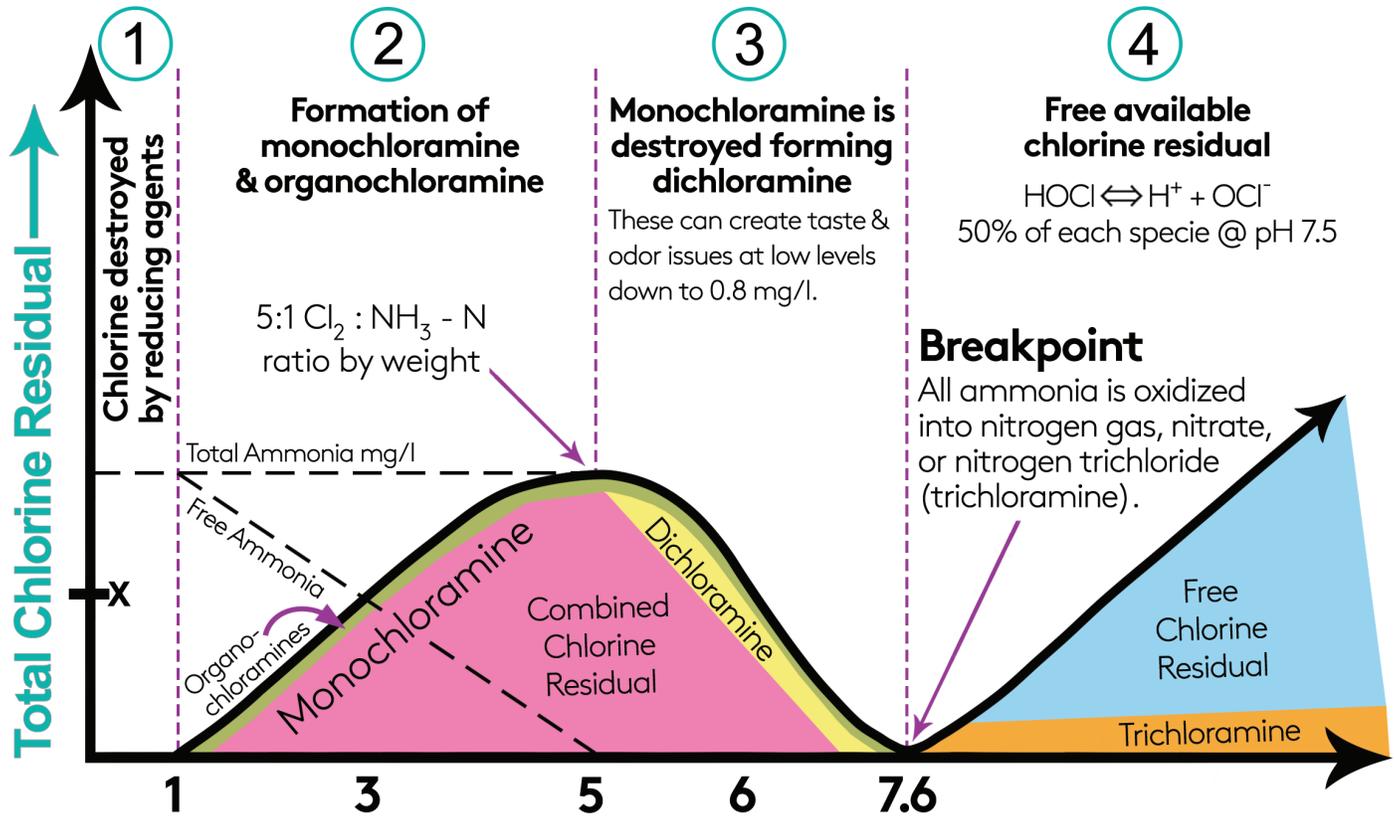


# Breakpoint Chlorination Curve

The rate of reactions shown depend largely on temperature, pH, contact time, and ratio of chlorine to ammonia. Both chlorinated water and chloraminated water can be taken through breakpoint. Each city has their own unique breakpoint curve for their water at various temperatures and different conditions.

IXOM Watercare has technologies to help you efficiently manage disinfectant residuals in distribution including ResidualHQ® Automated Disinfectant Control Systems and GridBee® GS Series Submersible Potable Tank Mixers.



Numbers on this scale represent the ratio of chlorine to ammonia, not total chlorine.

**More Chlorine Added** →

**At "X" mg/l of total chlorine residual:**

1. If the free chlorine is equal to the total chlorine, then section 4 of the curve above describes the condition of water.
2. If the free chlorine is less than the total chlorine and there is free ammonia, then section 2 applies. (mostly monochloramine, no odor)
3. If the free chlorine is less than the total chlorine and there is no free ammonia, then Section 3 applies. (some monochloramine and dichloramine)

Note the "free ammonia" line; free ammonia can nitrify. In chloraminated systems, ammonia is added at the correct ratio at the plant. Leaving the plant, you can have excess ammonia. Also, as time goes on, autodecomposition of the chloramine forms free ammonia.

**Typical goal for city using chlorine:** A minimum 1.0 mg/l free chlorine or 1.5 mg/l combined chlorine.

**Typical goal for city using chloramine:** 1.5 mg/l monochloramine, ratio 4:1.