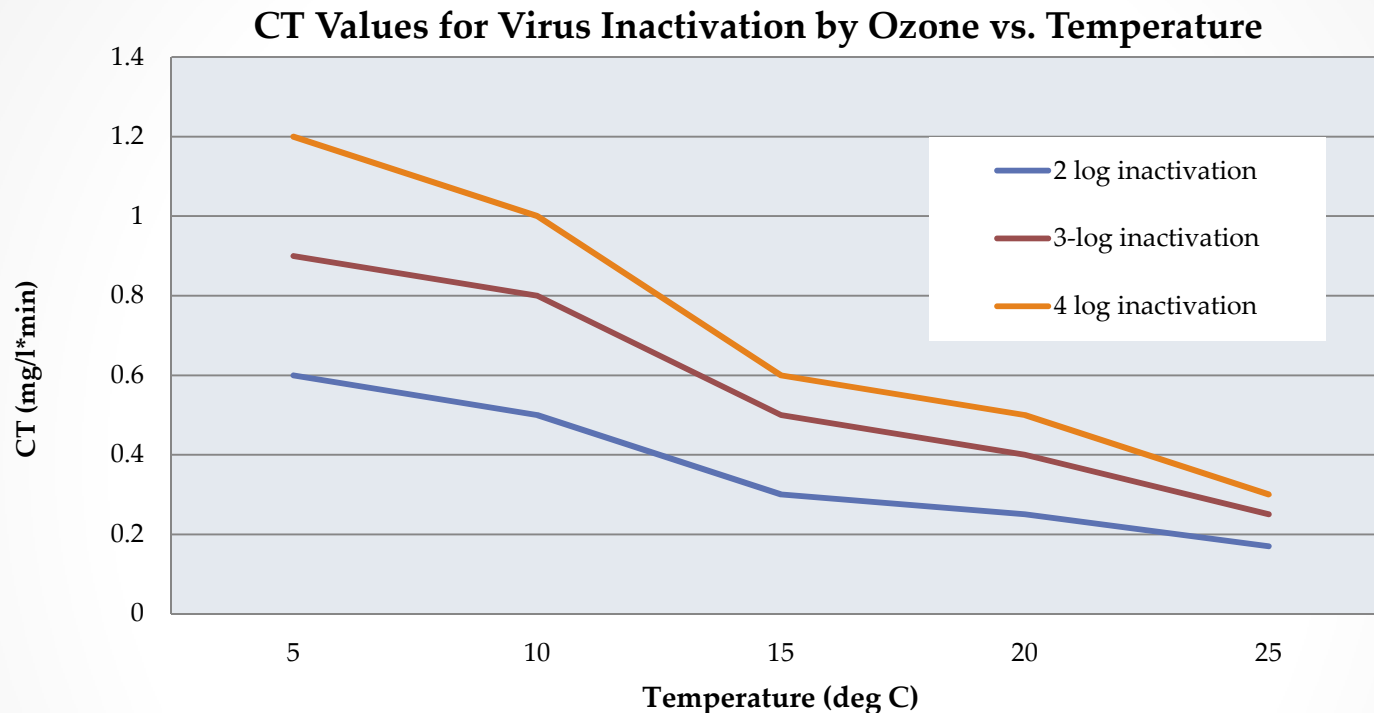


Does Ozone Work in Hot Water?

Yes it does. See supporting technical information to follow.



Ozone works in hot water!



1 mg/l = 1 ppm

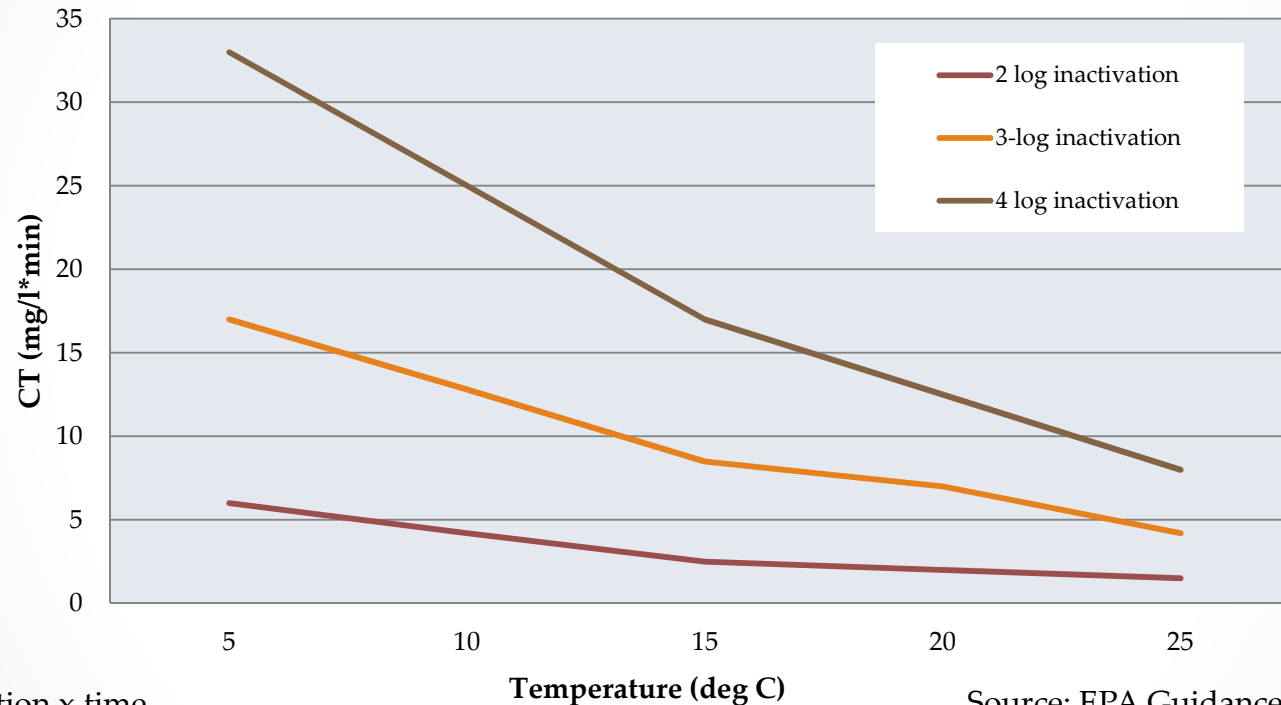
CT = concentration x time

Source: EPA Guidance Manual: Alternative Disinfectants and Oxidants – Page 3-26

The chart shows that as the temperature increases, less ozone is needed to achieve the same kill effect vs. lower temperatures. The reason is that elevated temperatures reduce pathogen's ability to resist oxidants. Elevated temperatures with ozone use have a compounding killing effect.

How well does ClO₂ work in hot water?

CT Values for Virus Inactivation by Chlorine Dioxide vs. Temperature



CT = concentration x time
1 mg/l = 1 ppm

Source: EPA Guidance Manual:
Alternative Disinfectants and Oxidants

In all fairness, all oxidants work in hot water, just like ozone. This chart also shows that increasing temperatures result in less ClO₂ required to achieve the same kill effect vs. lower temperatures. All oxidants behave in the same manner.

Ozone works in warm/hot water!

- R.N. Kinman (1975) & E. Katzenelson, et al. (1974) reported
As temperature increases, ozone becomes less soluble and less stable in water; however, the disinfection and chemical oxidation rates remain relatively stable. Studies have shown that although increasing the temperature from 0 to 30 deg C can significantly reduce the solubility of ozone and increases its decomposition rate, temperature has virtually no effect on the disinfection rate of bacteria.

In other words, the disinfection rate was found to be relatively independent of temperature despite the reduction in solubility and reduced stability at higher temperatures.



Ozone use in Hot Tubs

- Ozone is used primarily for disinfection of Hot tubs and spas.
- Almost all hot tub distributors will also supply ozone equipment for disinfection.
- Hot tub water temperatures range from 95-110 deg F.
- Ozone still is effective to kill pathogens even at these elevated temperatures.



Hot water reduces the solubility of ozone.

How is Ozone Solutions addressing the lower solubility issue?

Generating high ozone gas concentrations provides better ozone mass transfer. We generate these high concentrations by:

- using an oxygen concentrator to provide a 90% pure oxygen feed gas to the corona cell thereby increasing the generated ozone concentration
- using a high-frequency ozone generator which can generate ozone concentrations in excess of 7% by weight

