

Chemistry of Water Disinfection: Chlorination

Chlorine (Cl_2) is still the most commonly used disinfection method because it is cheap, efficient and provides lasting protection thru residual chlorine.

HOCl (hypochlorous acid) is the active bacteriocide formed immediately when Cl_2 reacts with H_2O .

HOCl is ~100 times more effective as a disinfectant than OCl^- (hypochlorite ion) due to ability to penetrate cell walls.

Note: The production of HCl will result in acidification and reduction of alkalinity.

'active' chlorine or 'free available chlorine' refers to Cl_2 , HOCl and OCl^-

all of which are oxidizing agents; chloride ion (Cl^-) is NOT

Speciation diagram: