

Potassium permanganate (KMnO_4) has been as an oxidant for decades to remove and control iron and manganese in surface water supplies. This oxidant was investigated for its ability to inactivate bacteriophage MS-2 and thereby reduce the amount of chlorine required for a 99.99% reduction of virus during drinking water treatment as required by the U.S. Environmental Protection Agency's Surface Treatment Rule (U.S. EPA 1989). Experiments were conducted in potassium monophosphate buffer (pH 6.0 and pH 8.0) at 7°C. At time intervals from 0 to 30 min, samples were taken and mixed immediately with a solution of sodium thiosulfate:sodium thioglycolate to neutralize residual KMnO_4 . At 0.5 and 5.0 mg/L KMnO_4 , results showed no significant differences ($p < 0.05$) in the inactivation of MS-2 between experiments done at pH 6.0 and those at pH 8.0. Ninety-nine percent of the virus was inactivated after 50, 35, and 5 min of exposure time to 0.5, 1.5, and 5.0 mg/L potassium permanganate at pH 8.0, respectively. It appears that at the currently used levels of KMnO_4 (up to 10 mg/L), this oxidant may supplement high levels of chlorination in the disinfection of water systems.