

Water Words Dictionary—Appendix B–6

WATER TREATMENT—DISINFECTANTS

Primary Disinfectants, Advantages, Disadvantages, and Point of Application

Disinfectant	Advantages	Disadvantages	Point of Application
Chlorine	Very effective; has a proven history of protection against waterborne disease. Widely used. Variety of possible application points. Inexpensive. Appropriate as both primary and secondary disinfectant. Operators can easily test for chlorine residual throughout the water system.	Potential for harmful by-products under certain conditions	Towards the end of the water treatment process so that water is as clarified (organic free) as possible, thereby minimizing THM (trihalomethane) formation and providing secondary disinfection.
Ozone	Very effective. Minimal harmful by-products identified to date.	Relatively high cost. More complex operations because it must be generated on site. Requires a secondary disinfectant.	Prior to the rapid mixing in all treatment processes. In addition, sufficient time for biodegradation of the oxidation products of the ozonation of organic compounds is recommended prior to secondary treatment.
Ultraviolet radiation	Very effective for viruses and bacteria. Readily available. No known harmful residuals. Simple operation and maintenance for high quality waters.	Inappropriate for surface water. Requires a secondary disinfectant.	Towards the end of the water treatment process to minimize the presence of other contaminants that interfere with this disinfectant and to minimize operating problems.

Sources: Adapted from U.S. Environmental Protection Agency, Office of Drinking Water and Center for Environmental Research Information, **Technologies for Upgrading Existing or Designing New Drinking Water Treatment Facilities**, Cincinnati, Ohio, March 1990, and reprinted from **Environmental Pollution Control Alternatives: Drinking Water Treatment for Small Communities**, Center for Environmental Research Information, U.S. Environmental Protection Agency, Cincinnati, Ohio, April 1990, pages 38-39.