

Summary of Major Possible Disinfection Methods for Drinking Water^a

Disinfection Agent ^b	Technological Status	Efficacy in Demand-Free Systems ^c				Persistence of Residual in Distribution System
		Bacteria	Viruses	Protozoan Cysts		
Chlorine ^d As hypochlorous acid (HOCl)	Widespread use in U.S. drinking water	++++ Excellent	++++ Excellent	++ Biocidal		Good
As hypochlorite ion (OCl ⁻)		+++ Excellent	++ Biocidal	NDR ^e		
Ozone ^d O ₃	Widespread use in drinking water outside United States, particularly in France, Switzerland, and the province of Quebec	++++ Excellent	++++ Excellent	++++ Excellent		No residual possible
Chlorine dioxide ^d ClO ₂	Widespread use for disinfection (both primary and for distribution system residual) in Europe, limited use in United States to counteract taste and odor problems and to disinfect drinking water	++++ Excellent	++++ Excellent	NDR ^e		Fair to good (but possible health effects)
Iodine ^d I ₂	No reports of large-scale use in drinking water					Good (but possible health effects)
As diatomic iodine (I ₂)		++++ Excellent	+++ Biocidal	+++ Biocidal		
As hypoiodous acid (HOI)		++++ Excellent	++++ Excellent	+ moderate		
Bromine ^d Br ₂	Limited use for disinfection of drinking water	++++ Poor in presence of Organics	+++ +	+++ +		Fair
Chloramines ^d NH ₂ Cl	Limited present use on a large scale in U.S. drinking water	++ Biocidal	+ Moderate	+ +		Excellent

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Drinking and General Service Water System Treatment

Drinking or general service water in commercial areas come either from corporation supplies or from local sources such as bore well / tube well or surface water from lake or pond.

Invariably it needs pre treatment for suspended impurities or dissolved solids reduction by use of water treatment plant. Pre treatment removes suspended solids by ,clari flocculation and filtration where as disinfection is completed by Chlorine/Ozone/Chlorine di oxide commonly at the distribution center. .

In the subsequent stage, it circulates in closed loop or header, may be heated until tapped out by individual resident or in case of mall or hotels by customers.

In due course of time such closed headers or even pipelines get corroded and start thinning down or develop pitting. Bypass line if kept closed for longer period is found to face more attack than those in regular use because of differential aeration

In earlier days classically, hexa poly phosphate with soda ash for pH control used to be the treatment.

Now a days silicate/poly phosphate/borate treatments are usually given at neutral or slightly alkaline pH range as they are safe within the application range.. Being anodic and cathodic inhibitors they provide protective layer on mild steel pipelines and service tanks.

Such initial treatments can be given on the total system hold up and subsequently on the make up quantities on regular basis.

Treatment quantities can be easily worked out on periodical basis and cost optimized.

The software presented provides ready calculation sheet at the application end by selecting the appropriate treatment program and there after work out the schedule.

The calculations on individual chemical basis can also be done using the same set up on 100% basis or proportionately corrected on actual purity basis.

Units of use having practically same ratio-----($\text{ppm} = \text{mg/lit} = \text{gm/tom} = \text{kg/1000 tons}$)