

# National Secondary Drinking Water Regulations

## Recognized Treatment Techniques for Meeting the National Secondary Drinking Water Regulations with the Application of Point-Of-Use Systems

National Secondary Drinking Water Regulations (NSDWRs or secondary standards) are non-enforceable guidelines for contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effect (such as taste, odor or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply. However, states may choose to adopt them as enforceable standards.

*Note: This document addresses the United States Environmental Protection Agency National Primary Drinking Water Regulations in effect at its time of publication. These regulations are continually being reviewed and updated at the federal level. Accordingly, this list of recognized treatment technologies will be reviewed and amended periodically.*

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Contaminant	SMCL, MG/L+	Treatment Methods	
Alkalinity (measured as calcium carbonate, CaCO <sub>3</sub> )	No federal limit Low alkalinity - <30mg/L High alkalinity - >300 mg/L	Raise alkalinity by feeding 1.5 mg/L of soda ash for each mg/L of alkalinity needed or calcite filtration Lower alkalinity by feeding white vinegar (acetic acid), citric acid or any acid; add carbon dioxide; ion exchange dealkalization; reverse osmosis; distillation or electrodialysis	
Aluminum (Al +3)	0.05 to 0.2 depending on case-by-case circumstances	Cation Exchange Reverse Osmosis Distillation	Electrodialysis Ultrafiltration Deionization
Chloride (Cl -1)	250	Reverse Osmosis Anion Exchange Deionization	Distillation Electrodialysis
Color	15 color units	Anion Exchange Activated Carbon Filtration Chlorination	Reverse Osmosis Distillation Ozonation
<i>Note: Color units are based on the APHA recommended standard of 1 color unit being equal to 1 mg/L of platinum or chloroplatinate ion.</i>			
Copper (Cu +2)	1.0	Reverse Osmosis Cation Exchange (20-90%)	Corrosion Control Distillation
Corrosivity	Non-corrosive	Calcite or Calcite/Magnesium Oxide (Magnesia) (5 to 1) Filter to raise pH Soda Ash Chemical Feed Polyphosphate Feed Sodium Silicate Feed Remove all hydrogen peroxide Reduce TDS via Reverse Osmosis (partial, split stream treatment) Coatings Insulating Unions with Ground straps around all insulating breaks in metal pipe	
Fluoride (F <sup>-1</sup> )	2.0	Activated Alumina Reverse Osmosis	Electrodialysis Distillation
Foaming agents (MBAS)	0.5	Chlorination Activated Carbon Ozonation	Reverse Osmosis Distillation
Hard Water (measured as calcium carbonate CaCO <sub>3</sub> )	No federal limit Soft - <17.1 Slightly hard -17.1 to 60 Moderate -60 to 120 Hard - 120 to 180 Very Hard - >180	Remove all calcium and magnesium ions with a cation exchange water softener (general limit is 1710 mg/L total hardness. Above 70 grains per gallon, install two softeners in a series.	