| Corrosion Control Treatment Options | |
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| The goal of the corrosion control treatment pilot is to determine what the most | Date: 2/6/17 |
| effective treatment chemicals would be for our system. The two most common | |
| methods of corrosion control are pH and/or alkalinity adjustment and use of | |
| phosphate based corrosion inhibitors. | |

pH and/or alkalinity adjustment works by adjusting water chemistry to make it less corrosive to lead components in premise plumbing materials.

Corrosion inhibitors work by forming a protective coating on the interior surface of pipes which helps prevent or inhibit lead from leaching into the water.

The corrosion control treatment pilot will evaluate both methods with respect to both lead reduction and other criteria such as simultaneous compliance with other water quality regulations, compatibility with multiple sources of supply, impacts to sensitive and industrial users, discharge considerations, and cost.

A table of the most commonly used corrosion control chemicals is below.

| Chemical Name | Corrosion control method | Other common uses | Other considerations |
|---|---------------------------------|--|---|
| Baking Soda (sodium | Alkalinity and pH adjustment | Baking leaveners, antacids, | Most expensive of alkalinity adjustment chemicals |
| bicarbonate) Carbon Dioxide | pH adjustment | toothpaste Carbonated beverages | Lowers pH so would only be used in conjunction with other chemicals |
| Caustic Soda (sodium hydroxide) | pH adjustment | Soap making, food processing | |
| Hydrated Lime (calcium hydroxide) | Alkalinity and pH adjustment | Food processing, calcium supplements | Labor intensive Operation & Maintenance |
| Soda Ash (sodium carbonate) | Alkalinity and pH adjustment | Soaps and detergents, glass making, water softening, food processing | |
| Orthophosphate (Phosphoric Acid) | Corrosion inhibitor | Carbonated beverages, cheese making, baking leaveners | Wastewater discharge concerns; compatibility with wholesale customers using other sources |
| Zinc orthophosphate | Corrosion inhibitor | Dental cement | Wastewater discharge concerns; compatibility with wholesale customers using other sources |

Corrosion control treatment practices used by other utilities are listed below.

| City of Everett, WA Alkalinity adjustment with moderate pH increase Seattle Public Utilities PH and alkalinity Alkalinity adjustment City of Bellingham, WA Alkalinity adjustment City of Bellingham, WA Alkalinity adjustment Sodium bicarbonate Metro Vancouver PH and alkalinity Lime and soda ash Alkalinity adjustment East Bay Municipal Utility District Oakland, CA Massachusetts Water Resources Authority Boston, MA Providence Water PH and alkalinity adjustment DC Water Corrosion inhibitor and pH Washington, DC Great Lakes Water Authority Detroit, MI City of Chicago Chicago, IL Milwaukee Water Long Beach Water Corrosion inhibitor Cortophosphate Corrosion inhibitor Orthophosphate Cortophosphate Corrosion inhibitor Orthophosphate Cortophosphate | Utility | Corrosion Control Method | Treatment Chemical |
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