Water Treatment Processes

No two public water systems are exactly the same, but all share the same goal—providing safe, reliable drinking water to the community they serve.

Tapping a Source of Water

Before a water source is used for a supply, it is tested for contaminants and other water quality parameters. These include:

Microorganisms, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural operations, and wildlife.
Inorganic contaminants, such as salts and metals, which can occur naturally or comet from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
Pesticides and herbicides, that may come from agriculture, urban stormwater runoff, and residential uses.
Organic chemicals, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production and can also come from gas stations, urban stormwater runoff, and septic systems.
Radioactive contaminants, which can be occur naturally or result from oil and gas production and mining activities.

Chanhassen Water Treatment

Chanhassen's water wells are relatively free of contaminants that could be a threat to health. However, the wells do contain high levels of minerals (iron, manganese, calcium, and magnesium) that, while harmless, cause problems for customers.

Chanhassen's water source is like that of other medium-sized Minnesota communities: groundwater wells. Our water system does differ from most in that our water treatment processes are only of the most basic kind. We add chlorine to disinfect the water and water mains, and we add fluoride to promote strong teeth.

Removal of minerals from the water at a centralized water filtration plant would have direct aesthetic and economic benefits for Chanhassen residents. Dissolved iron and manganese can be easily removed by chemically changing them to an insoluble form and then passing the water through a filter of specially-formulated sand known as media. These water filters come in two different varieties: gravity-type, where the water flows through media vertically via the force of gravity; and pressure-type, where the water is pumped through a horizontally-situated vessel filled with media. Pressure-type filters tend to be the most common for smaller systems like Chanhassen's.

The Public Works Department mitigates the effects of iron and manganese through periodic hydrant flushing. This removes iron deposits from the water mains, which can break free and travel to your home if they are not flushed out. It does nothing, however, to remove dissolved iron and manganese.

Chanhassen's situation is further complicated by numerous hydraulic "dead ends" in the water system, where water mains are not looped to allow continuous circulation. Minerals can settle out in the pipes at these dead ends and then make it into customers' plumbing systems.

The Chanhassen Public Works Department is studying the feasibility of a water treatment facility for the city. Over time, this would provide residents with clean, filtered water and eliminate staining, taste, and mineral deposits associated with iron and manganese.

Residents can follow developments on this issue by visiting the city's website (www.ci.chanhassen.mn.us).

Typical water treatment scheme for iron and manganese removal

Treatment processes are arranged in a "treatment train", or series of processes arranged in sequence. Water utilities select a combination of processes depending on the characteristics of the source water.