

What are the threats to surface water?

Many contaminants might be present in untreated drinking water, including the following:

- Microbial contaminants, such as viruses and bacteria, which can come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.
- Inorganic contaminants, such as salts and metals, which can occur naturally or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- Pesticides and herbicides, which can come from a variety of sources such as agriculture, stormwater runoff and residential uses.
- Organic chemical contaminants, 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 occur naturally or as the result of oil and gas production and mining activities.

SAFE TO DRINK TIP

If test results show that your water is unsafe to drink, follow these guidelines until your drinking water supply is safe again:

- Boil water for 1 minute, OR
- Mix ¼ tsp. (1.25 ml) of liquid household bleach (such as Javex) with 1 gallon (4.5 liters) of water and let stand for 30 minutes, OR
- Use commercially bottled water.

SAFE TO DRINK

When Your Source is



Surface Water

SURFACE WATER SOURCE

Any surface water (lake, river or stream) is open to contamination by humans and animals. Surface waters are also contaminated by natural run-off and man made operations (sewage systems, farms). Therefore, no surface water is considered safe (potable) for human consumption unless treated.

Surface water is also subject to wide variations in quality. Seasonal changes, high winds, heavy rainfall or algae blooms can all affect the quality of surface water. Due to these variations, it is important to ensure that a drinking water system is designed to provide safe drinking water under all expected conditions.



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Water Treatment

Surface water should be considered to be microbiologically contaminated with bacteria, viruses and protozoa cysts and oocysts.

Preliminary testing of the raw water source is recommended prior to selecting an appropriate treatment option. The following water quality parameters for a surface water source may affect the performance of selected disinfection units or final water quality at the tap: 1) Turbidity 2) Tannin 3) Colour

Water Intake

The surface water intake should be placed in a location which provides the most consistent water quality. Wave and wind action causes a turbulent effect close to shore lines which causes settled particles to become suspended and, as a result, affects the quality of your water.

The following items should be considered when placing your water intake:

- Attempt to locate at least 50 feet from shore to minimize effects from waves or wind.
- Suspend the intake off the bottom approximately 5'.
- If available, select an intake location, which is sheltered from the wind or in an area with a rocky bottom, to minimize suspended particles.
- Ensure the intake is located away from any obvious source of potential contamination (culverts, drains, etc.)
- Ensure the intake and line are well marked and at a depth which will not be impacted by passing boats.



For more information on drinking water sampling, see:

- ***SAFE TO DRINK: Testing Your Drinking Water***

Minimum Treatment Requirements



FILTRATION

1 micron absolute or as required by downstream disinfection



DISINFECTION

99.99% Reduction or Inactivation
for Virus, Bacteria, Cysts and Oocysts

For more information on drinking water treatment, see:

- ***SAFE TO DRINK: Water Treatment Devices***

Treatment for Aesthetics

Treatment options for aesthetics will vary depending on source water quality.

Tannin or colour can affect the appearance of your drinking water. Following proper filtration and disinfection, elevated colour or tannin can result as a faint yellow/brown stain to the water. While this may not pose a health hazard, some people may find it to be unpleasant aesthetically.

High tannin or colour can be treated through the installation of anion exchange resin filters and activated carbon filters, respectively.

Suggested Water Sampling

During initial operation, routine microbiological sampling should be performed bi-monthly until a minimum of four consecutive acceptable sample results have been received and confidence in the treatment system has been achieved. Following the receipt of four acceptable samples, monthly water sampling is recommended.

Microbiological sampling should be performed immediately upon start-up following any prolonged (seven days or more) shut-down of the drinking water treatment system, or if any changes to the drinking water quality (cloudiness, colour, taste, odour) are observed.