

Healthy Drinking Waters

for

M A S S A C H U S E T T S

Safe and healthy lives in safe and healthy communities

Fluoride in Private Drinking Water Wells

Private well owners are responsible for the quality of their drinking water. The U.S. Environmental Protection Agency (EPA) does not regulate private wells. Homeowners with private wells are generally not required to test their drinking water, although local Boards of Health or mortgage lenders may require well water testing. While there is also no state requirement to have your well water tested, the Massachusetts Department of Environmental Protection (DEP) recommends that all homeowners with private wells do so, and use a state certified testing laboratory. Homeowners can use the public drinking water standards as guidelines to ensure drinking water quality.

The Maximum Contaminant Level (MCL) for fluoride in drinking water is 4.0 milligrams per liter as established by the EPA. In addition, EPA has set a Secondary Maximum Contaminant Level (SMCL) of 2.0 milligrams per liter as a guideline in areas that have high levels of naturally occurring fluoride.

Summary

Fluoride occurs naturally in varying amounts in Massachusetts groundwater and well water. More than one-third of Massachusetts communities supply fluoridated water to public water users. Fluoride, in the right amounts, promotes the development of strong, permanent teeth and is beneficial for children under



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the age of 12. However, too much fluoride can be detrimental to permanent tooth development. If there are children under the age of 12 living in the house, arrange to test your drinking water for fluoride content and consult your dentist or physician concerning the results. If elevated fluoride levels are present, home treatment options include reverse osmosis, distillation, and ion exchange. Bottled water can be used as an alternate source for drinking and cooking, but check the fluoride content on the nutritional label or arrange to test the bottled water for fluoride content.

Potential Health Effects

In the right amounts, fluoride can have beneficial effects on a child's dental health, making teeth more resistant to lifelong tooth decay. However, excessive fluoride consumption can cause mottled enamel (fluorosis), an aesthetic problem without health effects.



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Indications of Fluoride

Fluoride does not noticeably alter the taste, color, or smell of water. A water test is the only way to determine the presence of fluoride in drinking water.

Sources of Fluoride in Drinking Water

Fluoride is a naturally occurring element found in food and drinking water sources. Bedrock wells are at greater risk for high levels of fluoride. Fluoride may also be added to some public water supplies to promote healthy teeth. Fluoride may also be discharged as by-products from fertilizer and aluminum factories.

Testing for Fluoride in Private Drinking Water Wells

To determine if fluoride is present, arrange to test your drinking water at a state certified laboratory. This is especially important when children under the age of 12 are living in the house. Carefully follow laboratory instructions to avoid contamination and to obtain a representative sample.

Interpreting Test Results

For fluoride levels in drinking water in excess of 4.0 milligrams per liter (mg/L)

Public water supplies containing fluoride in excess of 4.0 mg/L require defluoridation. If these levels are present in your drinking water and there are children under the age of 12 in the house, consult with you dentist or physician. This fluoride level is of no consequence to adults consuming the water.

For fluoride levels in drinking water between 1.2 mg/L and 4.0 mg/L

This amount of fluoride is higher than the optimal range. Children under the age of 12 who drink water with fluoride concentrations above 1.2 mg/l may have lifetime discoloration and/or roughening of the enamel surface of the



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permanent teeth. This cosmetic defect is called fluorosis. If these levels are present in your drinking water and there are children under the age of 12 in the house, consult with your dentist or physician. This fluoride level is of no consequence to adults consuming the water.

For fluoride levels in drinking water between 0.7 mg/L and 1.2 mg/L

This is the optimal fluoride range for promoting dental health in children. Children consuming this level of fluoride in their drinking water do not need fluoride supplements prescribed by a dentist or physician. Fluoride treatments (topical) are not harmful and add some level of protection to the teeth.

For fluoride levels in drinking water less than 0.7 mg/L

This level of fluoride in drinking water is not sufficient for promoting optimum dental health in children. If there are children under



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the age of 12 in the household, consult your dentist or physician for fluoride supplementation.

Corrective Action

If a water test indicates the presence of fluoride, and there are children under the age of 12 living in the house, consult your dentist or physician with the test results. If fluoride is present in levels above 1.2 mg/L, the optimal treatment alternative may be to purchase bottled water for the young children living in the house. (Note: check fluoride content on the nutritional label or arrange to test the bottled water for fluoride content.)

Reverse osmosis, ion exchange, or distillation treatment units will effectively remove fluoride from your drinking water. Treatment will only be needed for drinking and cooking purposes, which could allow for a unit to be installed at the kitchen sink, also known as point-of-use treatment.

When choosing a treatment method, consider both the initial cost and the operating costs. Operating costs include the energy needed to operate the system, additional water that may be needed for flushing the system, consumable supplies and filters, repairs, and general maintenance.

Regardless of the quality of the equipment purchased, it will not perform satisfactorily unless maintained in accordance with the manufacturer's recommendations. Keep a logbook to record equipment maintenance and repairs. Equipment maintenance may include periodic cleaning and replacement of some components. Also consider any special installation requirements that may add to the equipment cost. For more information, refer to fact sheet *Questions to Ask When Purchasing Water Treatment Equipment*.

Protection of Private Drinking Water Supplies

You can protect your private well by paying careful attention to what you do in and around your home as well as your neighbor's activities near your well. Regular testing and adopting practices to prevent contamination can help ensure that your well supplies you and your family with good quality drinking water. For more information on well protection see the fact sheet entitled *Drinking Water Wells*.



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Resources

UMass Extension

This fact sheet is one in a series on drinking water wells, testing, protection, common contaminants, and home water treatment methods available on-line at the University of Massachusetts website:

http://www.umass.edu/nrec/watershed_water_quality/watershed_online_docs.html
and Cape Cod Cooperative Extension:
508-375-6699
<http://www.capecodextension.org>

MA Department of Environmental Protection, Division of Environmental Analysis

Offers assistance, information on testing and state certified laboratories: 617-292-5770
For a listing of MassDEP certified private laboratories in Massachusetts:
<http://www.mass.gov/dep/service/compliance/wespub02.htm>

U.S. Environmental Protection Agency, New England Office

Information and education on where drinking water comes from; drinking water testing and national laws; and how to prevent contamination:
<http://www.epa.gov/ne/eco/drinkwater>

US Environmental Protection Agency

For a complete list of primary and secondary drinking water standards:
<http://www.epa.gov/safewater>

MA Department of Conservation and Recreation, Division of Water Supply Protection

Maintains listing of registered well drillers, information on well location and construction: 617-626-1409
<http://www.mass.gov/dcr/waterSupply/welldrill/index.htm>

NSF International

The NSF International has tested and certified treatment systems since 1965. For information on water treatment systems: 800-NSF-MARK (800-673-6275)
<http://www.nsf.org/consumer/>

Water Quality Association

The Water Quality Association is a not-for-profit international trade association representing the household, commercial, industrial, and small community water treatment industry. For information on water quality contaminants and treatment systems:
<http://www.wqa.org>



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