

# PRIVATE DRINKING WATER IN CONNECTICUT

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## Publication No. 8: Fluoride in Private Drinking Water Wells

Private wells are not regulated by the U.S. Environmental Protection Agency (EPA). Private well owners are responsible for the quality of their drinking water. Homeowners with private wells are generally not required to test their drinking water. However, they can use the public drinking water standards as guidelines to ensure drinking water quality. Refer to Publication # 23 *Private Drinking Water Standards* for more information.



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. In 2006 a National Academy of Sciences report found that this level is too high to adequately protect public health and young children from the adverse effects of fluoride (NAS, 2006 – available at <http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=11571>). For those public drinking water supplies that add fluoride to drinking water, the optimum concentration is 1 milligram per liter (mg/L) or parts per million (ppm). This concentration is thought to be protective of public health.

### **Introduction**

Fluoride occurs naturally in varying amounts in Connecticut groundwater usually at less the 2 mg/L. 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 nutritional label for fluoride content or arrange to test the bottled water for fluoride content. Refer to Private Well Publication #24 *Residential Well Water Testing* for more information.

### **Potential Health Effects**

At optimal levels, fluoride can have beneficial effects on 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. Very high fluoride exposure can cause crippling skeletal fluorosis. There is also some evidence that elevated fluoride intake can be a risk for bone cancer in children but potential risk requires further study (NAS, 2006).



### **Indications of Fluoride**

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



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### **Source 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 discharged as by-products from fertilizer and aluminum factories and from there it can enter groundwater.

### **Interpreting Test Results**

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

Public water systems 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 your dentist or physician.

#### **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 and may confer some health risk in some individuals. Consult your dentist or physician if there are children under the age of 12 in the home and these levels are present in your drinking water.



#### **For fluoride levels in drinking water between 0.8 mg/l and 1.2 mg/l**

This is the optimal range for promoting dental health in children. Children consuming this level of fluoride in their drinking water do not need any fluoride supplements.

#### **For fluoride levels in drinking water less than 0.8 mg/l**

This level of fluoride is not sufficient for promoting optimum dental health in children. Consult your dentist or physician for fluoride supplementation if there are children under the age of 12 in the household.



### **A Note Regarding Toothpaste, Fluoride and Young Children**

Fluoridated toothpaste contains a large concentration of fluoride which is not normally a concern if the toothpaste is used properly. However, young children learning proper brushing techniques may swallow toothpaste and create a risk for excessive fluoride exposure. This is especially the case where fluoride is also coming from drinking water. Young children should be supervised while brushing teeth and be taught to properly spit out the used toothpaste and to apply only a pearl-sized drop of toothpaste on the brush.

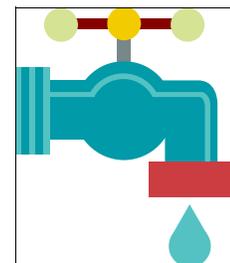
### **Corrective Action**

If a water test indicated the presence of fluoride, and there are children under the age of 12 in the household, consult your dentist or physician about the test results. If fluoride levels are above 1.2 mg/l, the optimal treatment alternative may be to purchase bottled water for the children in the house. (Note: check fluoride content of the nutritional label or have the bottled water tested 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, known as a point-of-use treatment. For more information on treatment options, refer to Publications:

*# 7 Distillation Treatment of Drinking Water Systems*

*#10 Ion Exchange Treatment of Drinking Water Systems*

*#21 Reverse Osmosis Treatment of Private Drinking Water Systems*





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, consumable supplies and filters, repair, 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 for maintenance, cleaning, and part replacement. Keep a logbook to record equipment maintenance and repairs. Equipment maintenance may include periodic cleaning and replacement of some components. Consider any special installation requirements that may add to the equipment cost. For more information, see Publication # 19 *Questions to Ask When Purchasing Water Treatment Equipment*.

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For more information please click on the following links:

*EPA Office of Groundwater and Drinking Water*

<http://www.epa.gov/ogwdw/>

*EPA New England*

<http://www.epa.gov/region01/>

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Adapted from *Healthy Drinking Waters for Rhode Islanders*, University of Rhode Island Cooperative Extension, April 2003.