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Environmental Fact Sheet

(Information compiled from New Hampshire Department of Environmental Services Literature)

Fluoride in Drinking Water

Fluoride occurs naturally in New Hampshire's bedrock. As such, it is frequently present in water samples taken from bedrock (artesian drilled) wells. Fluoride is seen at high concentrations in the Mt. Washington-Saco River Valley area, Wolfeboro through Franconia Notch area, and immediately west of Concord. In the remainder of New Hampshire, high fluoride concentrations occur in bedrock well water more irregularly. Fluoride has no taste, color, or odor and **thus the only way** to determine its concentration is by laboratory analysis.

In dug wells that are excavated into sand and gravel and are typically 15' deep and 3' in diameter, the fluoride level is generally very low (<0.1mg/L) and would not be expected to exceed 2 mg/L.

HEALTH AFFECTS

Fluoride in drinking water is beneficial at low concentrations, but presents health concerns at higher concentrations. There are many sources of fluoride in the diet. Dentists apply fluoride to teeth; some municipal water systems add fluoride to the water supply; and some tooth pastes have fluoride as an additive; and some foods also have elevated fluoride such as fish and tea.

The Centers for Disease Control (CDC) have recommended 1.0 to 1.2 milligrams per liter (mg/L) as the optimum beneficial concentration of fluoride in drinking water for dental protection in state of New Hampshire.

At higher concentration however, there are health concerns. The U.S. EPA has developed standards that limit the presence of fluoride in public drinking water supplies. These health standards are called maximum contaminant levels (MCLs). In addition, there are non-health related standards (that relate to aesthetics) called secondary maximum contaminant levels (SMCLs) that pertain to fluoride. These important ranges of fluoride in drinking water are explained below.

Fluoride Concentration of Approximately 1.1 mg/L

Fluoride has been shown to reduce tooth decay in children if they receive an adequate level. The optimal concentration, as recommended by CDC for New Hampshire, is approximately 1.1 mg/L. (1.1 mg/L is the same as saying 1.1 parts per million parts (ppm)). Below 0.5 mg/L there is little tooth decay protection. Above 1.5 mg/L, there is little additional tooth decay benefit.

Fluoride Concentration Over 2.0 mg/L.

In the range of 2.0-4.0 mg/L of fluoride, staining of tooth enamel is possible. EPA categorizes staining as an aesthetic concern, and thus only requires that customers of public water systems be notified of the elevated fluoride level. EPA does not require fluoride removal when the concentration exceeds 2.0 mg/L but is less than 4.0 mg/L. Approximately 5% of New Hampshire bedrock wells have fluoride that exceeds 2.0 mg/L.

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Fluoride Concentration Over 4.0 mg/L.

At concentrations above 4.0 mg/L, studies have shown the possibility of skeletal fluorosis as well as the staining of teeth. In its most severe form, skeletal fluorosis is characterized by irregular bone deposits that may cause arthritis and crippling when occurring at joints. EPA recognizes skeletal fluorosis as a health concern, and thus requires that public water systems not only **notify** their customers, but also **treat** the water to lower the fluoride concentration. Less than 1% of New Hampshire bedrock wells have fluoride that exceeds 4.0 mg/L of fluoride.

Specific health questions concerning fluoride's effects should be directed to a physician or dentist. For general health information concerning fluoride, please contact Nelson Analytical Lab.

FOR MORE INFORMATION

Nelson Analytical Lab can test your water to determine the concentration of fluoride in your drinking water. At least two tests are recommended since the concentration of dissolved minerals can vary due to rainfall, length of pumping, season of the year, etc. We can mail you a water test kit with the necessary test bottle and water sampling instructions. Results will be emailed upon completion within 1 to 2 business days. Nelson Analytical Lab will discuss your test results with you should you have any questions or concerns, or would like to be directed to speak with a water treatment company regarding treatment options for your water supply.