
ENVIRONMENTAL Fact Sheet



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Fluoride in Drinking Water

INTRODUCTION AND OCCURRENCE

Fluoride occurs naturally in some limited areas of New Hampshire's bedrock, most notably in the Mt. Washington Saco River Valley and Franconia Notch. Fluoride has no taste, color or odor so it must be tested by laboratory analysis. Natural fluoride occurrence is limited to bedrock or drilled wells. Dug and other overburden wells do not have naturally occurring fluoride.

HEALTH EFFECTS

Moderate drinking water fluoride levels of **0.6 to 0.8 mg/L** are recommended for oral health and prevention of dental caries for all ages from birth to senior citizens, but especially for children as they develop their permanent teeth. This is the optimal dosage recommended for community water fluoridation and takes into account the combined fluoride exposure from drinking water, toothpaste, food and beverages. Information regarding the important role of fluoride for public health protection is available from the Centers for Disease Control and Prevention [Community Water Fluoridation](#) webpage.

However, repeated consumption of very high drinking water fluoride at **4.0 mg/L** or higher may cause increased risk of dental fluorosis in young children up to age 8, when teeth are developing. Fluorosis consists of teeth staining ranging from mild small white deposits to severe brown staining and mottling. Lifetime exposure to elevated fluoride can cause irregular bone deposits, increased risk of bone fracture and crippling arthritis when occurring in the joints (EPA 2019, NHDES 2008).

HEALTH STANDARDS

Drinking water fluoride concentrations between **2 to 4 mg/L** are regulated under state and federal regulations as a *secondary or aesthetic* standard, for users to discuss appropriate dental health protection with your dentist. Drinking water fluoride of **4 mg/L** and higher are regulated as a *primary or health* standard and require treatment.

TESTING

Obtain water sample bottles by contacting an accredited laboratory from the list provided at des.nh.gov, "A to Z Topics," Private Wells, or a web search for "NHDES Private Wells." NHDES recommends testing for the "Standard Analysis" suite of parameters, which includes fluoride and other important water quality parameters. Fluoride alone can also be tested for \$15 per sample (State Lab) and is

recommended to be tested every 3 years in raw water, and quarterly if operating a fluoride treatment system.

MITIGATION AND TREATMENT

Point of Use (POU) or under the sink treatment is the preferred treatment option as only the water that is used for drinking and cooking needs to be treated for elevated fluoride. POU treatment may be via Activated Alumina cartridges or via Reverse Osmosis (RO). Equipment cost for POU Activated Alumina is about \$150 while POU RO equipment range is \$150 to over \$1,000 depending on the equipment features. Although treatment is effective, the RO process has very low water efficiency wasting about 75% of treated water, though water waste is returned to the ground via your septic system or drywell. Look for equipment certified under NSF/ANSI 58 for RO systems, or NSF/ANSI 53 Health Effects for Activated Alumina cartridges.

REFERENCES

CDC (2016) Community Water Fluoridation, <https://www.cdc.gov/fluoridation/index.html>

EPA (2019) Office of Groundwater and Drinking Water Factsheets, Fluoride
<https://safewater.zendesk.com/hc/en-us/sections/202346337>

FOR MORE INFORMATION

Contact the Drinking Water and Groundwater Bureau at dwgbinfo@des.nh.gov or (603) 271-2513. Additional fact sheets are available via a web search for “NHDES Drinking Water factsheets.”

Note: This fact sheet is accurate as of July 2019. The availability of additional information after this date may render this information inaccurate or incomplete.