



## What is fluoride?

Fluoride is a mineral that can be found in virtually all water. At proper levels, fluoride has a remineralization effect on our teeth. This means that fluoride strengthens the tooth's surface, which makes teeth more resistant to cavities, and helps rebuild the tooth's surface after decay has already started. Frequent and consistent contact with low levels of fluoride reduces tooth decay by 18 to 40 percent in people of all ages.<sup>1</sup>

## What is fluoridation?

Water is "fluoridated" when its natural fluoride concentration is adjusted to a level optimal for preventing tooth decay.

Like fortifying milk with vitamin D or orange juice with vitamin C, adding fluoride to drinking water promotes public health and reduces the gap in decay rates between low-income and upper-income Americans.<sup>2</sup> The Centers for Disease Control and Prevention (CDC) considers water fluoridation one of the [greatest public health achievements of the 20th century](#).

## Where and why did fluoridation start?

In 1945, Grand Rapids, MI became the first city to add fluoride to its water after scientists observed that people living in areas with higher water fluoride levels had fewer cavities. Over a 15-year span, the tooth decay rate dropped more than 60 percent among Grand Rapids' nearly 30,000 schoolchildren.

Minneapolis was among the thousands of U.S. communities that began water fluoridation during the 1950s and 60s.

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*0.7 mg/L = less than one drop of fluoride in one million drops of water*

## How much fluoride is in my drinking water?

All Minnesota municipal water supplies, including Minneapolis Water, are [required by state law](#) to maintain a fluoride level of 0.7 mg/L. This level is [recommended](#) by the Department of Health and Human Services and CDC because it provides enough fluoride to prevent tooth decay, while limiting the

risks of dental fluorosis.

## How is the amount of fluoride in my water monitored?

While Minneapolis Water's fluoride feed system is specially designed to prevent overfeeding, post-treatment levels are monitored continuously by online instrumentation. Certified operators test samples that are collected daily from locations representative of the entire drinking water system. Test results are reported to the Minnesota Department of Health every month, and duplicate samples are sent to the department every three months.

Minneapolis Water's monthly and annual water quality reports are available [here](#).

## Is fluoridation safe?

Public health organizations and research from around the world support the safety and effectiveness of community fluoridation. The evidence supporting community water fluoridation has been extensive and consistent for 70 years.<sup>1,3</sup> Recent [studies and research](#) strengthen earlier findings and show that fluoridation has long-term benefits.

While no link between fluoride and cancer has been found,<sup>4</sup> long-term exposure to high levels of fluoride can cause severe dental fluorosis and bone weakness or fractures.<sup>1</sup> In a few areas of the United States, natural fluoride concentrations are much higher than normal. To protect the public from adverse health effects, the Environmental Protection Agency (EPA) set a maximum containment level (MCL) for fluoride of 4 mg/L.<sup>5</sup>

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*MCL = The highest concentration of a substance allowed in public drinking water systems*

In 2006, the National Research Council published [Fluoride in Drinking Water: A Scientific Review of EPA's Standards](#), which concluded that the current MCL does not protect against adverse effects. The council noted, however, that its conclusions do not apply at the lower fluoride levels commonly experienced by most people in the United States.<sup>6</sup> The EPA is currently reviewing the MCL to determine if it should be lowered.

## What is dental fluorosis?

Dental fluorosis is a change in the appearance of the tooth's enamel. In the United States, most fluorosis is mild and appears as faint white spots on the tooth's surface.

Fluorosis occurs when young children regularly get too much fluoride while their teeth are developing. Fluorosis cannot develop or worsen once permanent teeth break through the gums.<sup>7</sup>

Fluoridated water can be safely used to prepare infant formula. However, because most infant formulas contain low levels of fluoride, if an infant only consumes infant formula mixed with fluoridated water, there may be an increased chance for mild dental fluorosis.<sup>7</sup>

For information on how to protect your infant or child against tooth decay and fluorosis, please see CDC's [FAQ on Dental Fluorosis](#).

## Where can I find more information?

- [Centers for Disease Control and Prevention \(CDC\)](#)
- [Minnesota Department of Health \(MDH\)](#)
- [American Academy of Pediatrics: Campaign for Dental Health](#)
- [Myths & Facts: Responses to Common Claims about Community Water Fluoridation](#)
- [The Center for Fluoride Research Analysis](#)
- **Contact us!** Call our Water Quality Manager George Kraynick at 612-661-4923

## References

<sup>1</sup> American Dental Association: "[Fluoridation Facts](#)"

<sup>2</sup> American Academy of Pediatrics, Campaign for Dental Health: "[A Summary of Research](#)"

<sup>3</sup> American Academy of Pediatrics, Campaign for Dental Health: "[IN THEIR OWN WORDS What Respected Organizations Say About the Safety and Effectiveness of Community Water Fluoridation](#)"

<sup>4</sup> National Cancer Institute: "[Fluoridated Water](#)"

<sup>5</sup> Environmental Protection Agency: "[Questions and Answers on Fluoride](#)"

<sup>6</sup> The National Research Council: [Summary of Fluoride in Drinking Water: A Scientific Review of EPA's Standards](#)

<sup>7</sup> Mayo Foundation for Medical Education and Research: "[Expert Answers: Is it safe to mix fluoridated tap water with infant formula?](#)"

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