

Colorado Water Fluoridation Guidelines

Operational and Administrative Guidelines

Introduction

More than 80 years of scientific research has consistently shown that an optimal level of fluoride in community water is safe and effective in preventing tooth decay by at least 25% in children and adults. Community water fluoridation (CWF) improves the oral health of all residents, regardless of dental insurance coverage, access to health care, age, gender, income, race, or ethnicity. The Centers for Disease Control and Prevention (CDC) named CWF one of 10 great public health achievements of the 20th century.

Fluoride is present in varying amounts in almost all soil, drinking water supplies, plants, and animals, and thus is a normal constituent of all diets. CWF is the adjustment of the natural fluoride concentration in drinking water to the level recommended for optimal health. Fluoride adjustments in drinking water are in accordance with scientific and dental guidelines.

Data consistently indicate that CWF is safe, cost-effective, and the most efficient means for reducing the incidence of tooth decay for all community members. Additional studies have demonstrated that oral health benefits are reduced if the optimal level of fluoride is not maintained.

In April 2015, the U.S. Department of Health and Human Services (HHS) released updated recommendations for fluoride levels in public drinking water supplies. The updated policy statement recommends that public water systems maintain fluoride levels at 0.7 mg/L (HHS, 2015). The Colorado Department of Public Health and Environment (CDPHE) has adopted the HHS recommendation and supports an optimal range of 0.6 mg/L to 0.9 mg/L. This range supports oral health for optimal health and decreases the risk of dental fluorosis.

The following is an overview of guidelines and recommendations adapted from the CDC Morbidity and Mortality Weekly Report (MMWR) Engineering and Administrative Recommendations for Water Fluoridation for water fluoridation efforts in Colorado (CDC, 1995).

Guidelines and Recommendations for Fluoridated Community Public Water Supply Systems

- I. Personnel
 - A. A trained water plant operator (one who has received greater than or equal to six hours of fluoridation training) should be responsible for each fluoridated water system.
 - B. The CDC offers [courses to assist with managing state fluoridation programs and](#)

II. System Reporting Requirements

- A. When the fluoride content of drinking water is adjusted, designated staff (water plant operator, etc.) should report daily fluoride results per water treatment plant to CDPHE. These reports should be submitted to the state fluoridation program no later than 10 days after the end of each collection period (e.g., month).
- B. Fluoride-adjusting systems with multiple water treatment plants may utilize an alternative daily reporting method, provided the system has received approval from CDPHE.

III. Monitoring and Surveillance

- A. Monthly reporting should be done using CDPHE fluoride monitoring forms and submitted to the fluoridation program at cdphe.psfluoridationsmf@state.co.us.
- B. Daily Monitoring: Water system personnel are expected to monitor daily fluoride levels in the water. CDC guidance recommends this be done in the distribution system, but CDPHE will accept fluoride monitoring at the entry point. Samples should reflect the actual level of fluoride in the water. CDC guidance recommends that distribution system samples be taken at points throughout the water system and rotated daily.
- C. Monthly Split Sample: In an effort to verify optimal distribution system levels, at least once each month, water system personnel should divide one sample and have one portion analyzed for fluoride by water system personnel and the other portion analyzed by the state laboratory or a state-certified laboratory. **Note: It is the water system's responsibility to research another state-certified laboratory if not using the state laboratory.**
 - 1. **Split samples should be collected from the distribution system** at a location representative of the water received by customers.
 - 2. Water systems are encouraged to conduct the split sample at the same time every month.
 - 3. Water systems must adhere to state-certified laboratory sample analysis guidelines. For systems using the state laboratory, email the [state laboratory chemistry department](#) to request an analytical services form. Once received, the pre-populated form must be filled out clearly. A few specifics to follow:
 - a) Sample Site:
 - (1) Collected in Distribution System: If the sample was collected in the distribution system (e.g., after the first customer), **mark as "DS001 - RTOR."**
 - (2) Please note, **fluoride samples collected at the entry point and analyzed using an approved method by a**

state-certified lab are considered compliance samples and must be reported as such. A compliance chain of custody must be used for fluoride samples collected at the entry point.

b) Additional Information

(1) Collected in Distribution System: If the sample was collected in the distribution system, mark as “Special Purpose.”

(2) Comments - Indicate “Oral Health Unit.”

c) After collection, please send the split sample as soon as possible (within 1-2 days) to the state-certified laboratory for analysis. Delays in shipping risk exceeding the testing hold time of 28 days, invalidating any result and necessitating a re-sampling.

d) Fluoride split sample collection supplies (bottles, mailing information, etc.) will be mailed by the state laboratory chemistry department every four (4) months to systems electing to use the state laboratory.

4. Fluoride variances greater than one-tenth of a point between the water system and the state or state-certified laboratory split sample result should be addressed by the water system. Variances can be addressed by testing and recalibrating the equipment to ensure the water system is maintaining the recommended fluoride level. Continued failure to be in line with the state laboratory results may result in the invalidation of all data reported to the state since the last acceptable split sample result.

D. Each water system is expected to send monthly operational reports to the state. The report must include:

1. The amount and type of fluoride fed and the total number of gallons of water treated per day.

2. The results of daily monitoring for fluoride levels in the water. The report should designate if the sample was collected from the entry point or the distribution system.

3. The water system’s results of the monthly split sample **collected from the distribution system**.

E. The calculated dosage should be cross-checked against the reported fluoride levels to spot chronic non-optimal operation.

F. There is no state requirement for checking fluoride levels in raw water.

1. If a system wants to do an annual raw water fluoride sample, CDPHE recommends using a state-certified lab for analysis.

2. If a system is having issues adjusting to optimal levels of fluoride, one option would be to analyze raw water fluoride levels. The outcome of this sampling can assist a system in determining how much fluoride to add to provide finished water with optimal fluoride levels.
- G. Water systems must maintain optimal fluoride levels for 75% of the month for nine of 12 months to be considered optimally fluoridated and meeting operational standards. Meeting this criteria, and split sample criteria (e.g., conducting monthly split samples with results within one-tenth of the state or a state-certified laboratory analysis), will qualify a system as eligible for a Colorado Excellence Award.
1. The CDC recognizes water systems that achieve optimal fluoridation levels for all 12 months with an annual Quality Award.

IV. Inspection

- A. All water systems with new or updated fluoridation systems must submit plans and specifications for the construction, improvements, or modifications for prior approval to ensure construction and installation plans are in accordance with state-approved specifications.
- B. State Water Quality Inspectors will inspect public water systems. At a minimum, the following will be inspected:
1. Fluoride feed equipment.
 2. Fluoride testing equipment.
 3. Fluoride additive storage area.
 4. Inspection of the fluoride additive certification, additives must meet ANSI/NSF Standard 60. Commonly cited accredited organizations for product certification include [Underwriters Laboratories](#), the [National Sanitation Foundation](#), and the [Water Quality Association](#).
 5. Operation and maintenance manuals.
 6. Proper operation of state-accepted backflow preventers and anti-siphon devices (as well as testing procedures for such equipment).
 7. On-site emergency plans (stipulated actions in case of overfeed and public-notification procedures to be followed). Please see the Engineering and Administrative Recommendations for Water Fluoridation (CDC, 1995) for additional information.
 8. Plant security information (e.g., placement of appropriate signs and fences to prevent entrance by unauthorized persons).
 9. On-site safety equipment and personal protective equipment (PPE) available to the operator.



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Contact Us

Please contact the [CWF program via email](#) or phone at 303-692-2269 with any questions.

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[CDPHE accessibility statement](#)

References

Centers for Disease Control and Prevention. U.S. Department of Health and Human Services. Engineering and Administrative Recommendations for Water Fluoridation (1995). *Morbidity and Mortality Weekly Report*, 44(RR-13), 1-40.
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