Idaho Department
of Health & Welfare

Idaho's Optimal Fluoridation Plan 2022

A guide for adjusting fluoride in drinking water across the state to optimal levels to improve oral health outcomes for all Idahoans.

IDAHO DEPARTMENT OF
HEALTH & WELFARE
DIVISION OF PUBLIC HEALTH

2022 Idaho's Optimal Fluoridation Plan

A guide for adjusting fluoride in drinking water across the state to optimal levels to improve oral health outcomes for all Idahoans.

Prepared For:
Idaho Oral Health Program, Idaho Department of Health and Welfare

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The American Fluoridation Society

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A NOTE ABOUT TERMS

The Idaho Oral Health Program aspires to educate Idaho residents about the benefits of drinking water containing the optimal level of fluoride, as recommended by public health experts. In this document, the term Community Water Fluoridation (CWF) refers to drinking water with optimal fluoride levels — either by adjusting or maintaining the level of fluoride.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control
and Prevention (CDC)
Atlanta, GA 30341-3724

May 19, 2022

Dear citizens of Idaho,

Oral health is essential to physical health and overall well-being. Oral disease can cause pain and infections that may lead to problems with eating, speaking, and learning. It can also affect social interaction and employment potential.[1] Over the past several decades, there have been major improvements in the nation's oral health that have benefitted most Americans. However, profound disparities in oral health status remain for some groups, such as the poor, the elderly, and many members of racial and ethnic minority groups.[2] Tooth decay and its complications are preventable, and early treatment options exist that are effective, safe, and economical.

State oral health programs, such as the Idaho Department of Health and Welfare's Oral Health Program, work tirelessly to build and maintain effective public health capacity and collaborate to implement best practices to improve oral health. Among these best practices is community water fluoridation, a cornerstone of caries prevention in the United States. The Centers for Disease Control and Prevention's (CDC) support for community water fluoridation is based on more than 75 years of experience and research showing that it is one of the most practical, cost-effective, fair, equitable, and safe measures that communities can take to prevent tooth decay and improve residents' oral health. Because of its contribution to the dramatic decline in tooth decay and its role in narrowing oral health disparities, CDC recognized water fluoridation as one of 10 great public health achievements of the 20th century.

As part of an overall strategy to reduce or prevent disease among individuals and communities, CDC works with state health departments to establish sustainable public health infrastructure and implement interventions shown to improve oral health. CDC is pleased to partner with the Idaho Department of Health and Welfare Oral Health Program under the State Actions to Improve Oral Health Outcomes (DP-1810) to manage school sealant programs, conduct oral health surveillance, and support and increase access to community water fluoridation.

A key part of this effort is the development of comprehensive plans that build the knowledge, tools, and networks that promote healthy behaviors and effective oral health practices and programs. A state fluoridation plan can be a roadmap for accomplishing the goals and objectives that have been developed in collaboration with partners and stakeholders.

[1] Oral Health in America: Advances and Challenges [Internet]. Bethesda (MD): National Institute of Dental and Craniofacial Research (US); 2021 Dec. PMID: 35020293.
[2] CDC. Oral Health Surveillance Report: Trends in Dental Caries and Sealants, Tooth Retention, and Edentulism, United States, 1999–2004 to 2011–2016. Atlanta, GA: CDC, U.S. Dept of Health and Human Services; 2019.

As noted in this plan, stating one's goals is critical to focus collective attention and energy toward achieving desirable outcomes. The Idaho Optimal Fluoridation Plan provides clear goals, objectives, and activities to increase access to this important public health intervention. Maintaining an engaged partner base and supporting increased knowledge and understanding will be key to make progress toward the national Healthy People 2030 goal of increasing the proportion of people whose water systems have the recommended amount of fluoride to promote good oral health.

Developing and updating a comprehensive state fluoridation plan is important to support sustainability. It also requires a major commitment of time from both oral health program staff and partners. CDC recognizes and applauds the efforts of the Idaho Department of Health and Welfare Oral Health Program's collective effort to promote, implement, and maintain consistency of community water fluoridation.

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With the unveiling of Idaho's first ever Optimal Fluoridation Plan, we, the undersigned Idaho organizations support efforts to educate citizens, healthcare providers, and policymakers on the safety, effectiveness, and significantly positive impact of community water fluoridation.

This document provides a historic moment and a galvanizing opportunity for those who support efforts to decrease dental decay, oral health disparities, and other co-morbid chronic diseases associated with poor oral health to come together to strengthen the health of our communities. By supporting the fluoridation of community water systems to reach optimal fluoride levels, partners can work together to reduce dental disease rates and provide safe drinking water for communities across the state.

As referenced in this, Idaho's first fluoridation plan, community water fluoridation is recommended by nearly all public health, medical, and dental organizations throughout the United States, including the American Dental Association, American Academy of Pediatric Dentists, American Academy of Pediatrics, American Water Works Association, the Centers for Disease Control and Prevention, and the National Association of County and City Health Officials.

> **The National Association of County and City Health Officials (NACCHO) recognizes the public health benefits of community water fluoridation as a safe and cost-effective measure for preventing tooth decay and encourages communities to fluoridate water systems at levels optimal for protection against tooth decay.**

As partners who are committed to better oral health through collaboration, scientific accuracy, and data-driven goals, we encourage you to review this document. All Idahoans need to have equitable access to oral healthcare and the right to achieve optimal health and quality of life. Oral health needs to be considered one of our state's priorities, and achieving optimal fluoride levels will improve oral health and quality of life and will help us take a significant step toward health equity.

We acknowledge and support this plan, the educational guidance it provides, and the collective efforts of all champions who promote safe drinking water. Through optimal fluoride levels, we acknowledge community water fluoridation as an effective public health strategy that will help improve the oral health of our fellow Idahoans.

Sincerely,

Jennifer Wheeler, Executive Director, Idaho Oral Health Alliance

Liz Woodruff, MA, Executive Director, Idaho Academy of Family Physicians

Mary Ann Reuter, Executive Director, Idaho Rural Health Association

The Idaho Oral Health Alliance

IDAHO ACADEMY OF FAMILY PHYSICIANS
STRONG MEDICINE FOR IDAHO

IDAHO RURAL HEALTH ASSOCIATION

Acknowledgments

As Idaho's first fluoride plan, this document is designed to create a shared understanding of the role Community Water Fluoridation (CWF) has in achieving good oral and overall health for the people of Idaho through optimal fluoride levels. This plan will guide the work of the Idaho Oral Health Alliance (IOHA), Idaho State Dental Association (ISDA), Idaho Primary Care Association (IPCA), and other oral health champions in communities across the state. It was prepared for the Idaho Oral Health Program (IOHP) in the Bureau of Community and Environmental Health, Division of Public Health (DPH), Idaho Department of Health and Welfare (IDHW) under a contract by the American Fluoridation Society (AFS), Community Water Fluoridation Subject Matter Expert (CWF SME).

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- Idaho Dental Hygienists' Association
- Idaho Primary Care Association
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- College of Southern Idaho
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- Brigitta Gruenberg, MEd, REHS, Program Manager, Environmental Health Program
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Introduction

Oral health is a vital part of achieving overall health, and it encompasses much more than just healthy teeth.[1] Good oral health includes the ability to eat, speak, and smile; all of which are essential to overall well-being. When oral health is not a priority, individuals face loss of productivity, pain, and increased financial expense. Tooth decay is one of the most common chronic diseases among American children and adults.[2] Community water fluoridation (CWF) — meaning drinking water that contains the optimal level of fluoride — is a fundamental public health measure that prevents tooth decay.[3] Idaho's Optimal Fluoridation Plan is an educational resource and serves as a roadmap for advancing CWF in the state, thus allowing equitable, age-friendly improvement to oral health outcomes.

Why do Healthy Teeth Matter?

Tooth decay is damage to a tooth that happens when decay-causing bacteria in the mouth make acids which attack the tooth's surface or enamel. Tooth decay can lead to a hole in a tooth, called a cavity.[6]

If left untreated, cavities can lead to:

- Pain, causing difficulty with eating, sleeping, learning, and working
- Abscessed teeth
- Root canals
- Tooth loss
- Spread of bacterial infections, which can be life threatening[7]

Untreated tooth decay can negatively impact the overall quality of life. Children who have poor oral health tend to miss more school days and receive lower grades than children with good oral health.[8] Adults with poor oral health find it more difficult to get higher-paying jobs and keep a job.[9] The high cost of dental treatment can leave less money for individuals to pay for other essential needs such as food, rent, and childcare. CWF can improve the quality of life by eliminating the negative impact of tooth decay.

Disparities in Oral Health (Health Equity)

Despite being the 14th largest state in square miles, Idaho remains one of the most rural states in the nation, with 35 of the 44 counties in Idaho considered rural or frontier.[4] Access to dental care is necessary for good oral health, yet for various reasons, rural residents may not always have readily available access to such care.

Although the nation's oral health has greatly improved in the last 50 years, due in part to the introduction of community water fluoridation, not everyone has equal access to these improvements. There are still racial/ethnic and socioeconomic groups who may have worse oral health due to social determinants of health — conditions in the places where people are born, live, learn, work, and play.

For example, some may:

- not have dental insurance;
- live in poverty and have a higher prevalence of dental decay, yet can't afford to pay out of pocket for dental care;
- not have the flexibility to take time off from work to get to dental care;
- live in communities where they don't have access to fluoridated water, healthy foods, or public transportation to get to dental appointments;
- go to emergency departments when they have dental pain and are often prescribed antibiotics and pain relievers, yet they rarely receive dental care in that setting.

On average, 1 in 4 young children living below the federal poverty level has untreated tooth decay. The 2017 Idaho Smile Survey revealed that two-thirds of third graders had experienced tooth decay, meaning they have untreated or treated cavities. CWF is a safe and cost-effective way to reduce tooth decay.

> **In the U.S., the cost of emergency department visits for non-trauma related dental pain is estimated to be more than $2 billion every year.[5]**

With tooth decay present in every community across the state, and because there is not enough naturally occurring fluoride in much of Idaho's water, now is the time for communities and their oral health champions to promote the adjustment of fluoride in their drinking water. The up or down adjustment to optimal levels will secure the benefits of good oral and overall health for generations to come.

Prevention from Nature: Fluoride

Fluoride is a natural mineral, meaning it is found in water and soil. As groundwater flows over rocks, it collects the fluoride contained in those rocks causing it to exist in nearly all water sources, including oceans.

Scientific evidence demonstrating the effect of fluoride on teeth began in the early 1900s and included an analysis conducted in the Idaho community of Oakley. Fluoride has been proven to protect teeth from decay by rebuilding and strengthening the tooth's enamel surface. Optimal fluoride levels in the drinking water prevent tooth decay by providing frequent and consistent contact with low levels of fluoride. CWF is one of the best ways to ensure an entire community has access to this means of cavity-prevention.

Community Water Fluoridation (CWF)

In many parts of the country, fluoride levels occurring in nature are too low to reduce tooth decay, while some communities have naturally occurring fluoride levels that are too high. CWF is the process of adjusting the amount of fluoride in drinking water [up or down] to the optimal level recommended for preventing tooth decay.[3] The U.S. Public Health Service has set 0.7 parts per million (ppm) or milligrams per liter (mg/L) as the recommended optimal level for CWF. Fluoride occurring naturally at 0.7 ppm is also considered optimal.[10]

Everyone who drinks tap water in a community with CWF benefits from a reduced risk of tooth decay. Given the dramatic decline in tooth decay during the past 75 years since community water fluoridation was initiated, the Centers for Disease Control and Prevention (CDC) named CWF as one of ten great public health interventions of the 20th century.[3]

> **U.S. Surgeon General Regina Benjamin, M.D. said, "Fluoridation's effectiveness in preventing tooth decay is not limited to children, but extends throughout life, resulting in fewer and less severe cavities. Each generation born since the implementation of water fluoridation has enjoyed better dental health than the generation that preceded it."**

Fluoride can be supplied to the body in two ways:

- Topical fluoride strengthens the teeth of adults and children already present in the mouth making them more resistant to decay. Fluoridated toothpaste is an example of a topical fluoride.
- Systemic fluoride is ingested and becomes incorporated into the developing tooth structure of young children.

CWF is an example of a systemic fluoride. CWF also provides topical protection because fluoride is present in saliva, which continually bathes the teeth.

CWF is beneficial because it:

- **Is effective** - CWF has been shown to reduce dental decay by 25% over a person's lifetime, this includes both adults and children.[12] One community found that discontinuing community water fluoridation led to a 51% increase in cavities for children under the age of six.[13]
- **Is safe** - Scientific evidence shows no clear evidence of adverse health effects from consuming optimally fluoridated water.[14]
- **Saves money** - CWF reduces the need for fillings and other dental treatments. On average, communities save $20 for every dollar invested.[3]
- **Reduces disparities** - Research has shown that CWF is the most effective and practical method for achieving equitable outcomes in reducing tooth decay rates.[15]
- **Improves quality of life** - CWF improves the quality of life for everyone by reducing pain and suffering related to tooth decay, time lost from school and work, and money spent to restore, remove, or replace decayed teeth.[16]

> **Community water fluoridation is one of the most practical, cost-effective, equitable and safe measures communities can take to prevent tooth decay and improve oral health. Vivek H. Murthy, M.D., M.B.A, U.S. Surgeon**

Healthy People 2030

Healthy People is a nationwide initiative focused on achieving health promotion and disease-prevention goals set by the United States Department of Health and Human Services. Every decade, a new set of science-based national objectives are created with the goal of improving the health of all U.S. residents.[7]

Healthy People 2030 (HP2030) acknowledges the importance of oral health to overall health by setting objectives to reduce tooth decay, including the proportion of adults, children, and older adults with active and untreated tooth decay. HP2030 also recognizes community-level interventions like community water fluoridation can help improve oral health by emphasizing healthy equity. As of 2018, nearly 75% of U.S. residents on public water systems had access to optimally fluoridated water. The HP2030 national target is to increase that percentage to 77.1%.[18]

The 2021 – 2026 Idaho Oral Health Improvement Plan proposes a specific goal to increase the percentage of Idaho's population receiving optimally fluoridated water from 33% to 39% by the end of 2026. By working together, communities can achieve this goal by adjusting the fluoride in community water systems to optimal levels.

Idaho Fluoridation Overview

Residents of Idaho receive most of their drinking water through groundwater sources (aquifers) accessed through wells. Only 5% of drinking water comes from surface water sources such as lakes, rivers, and reservoirs. There are roughly 2,000 public drinking water systems in Idaho, serving approximately 1.3 million residents.[19] According to the 2018 Idaho Behavioral Risk Factor Surveillance Survey (BRFSS), 28% of Idaho households get their water from private wells.

Fluoridation Status in Idaho

Of the Idaho population served by community water systems, only 33%, or 59,000 people, currently receive optimally fluoridated water. That statistic ranks Idaho 47th in the nation.[20]

> **The level of naturally occurring fluoride in Idaho water varies widely. Knowing the amount of fluoride currently in drinking water can assist with collaboration, engagement, and collective action at the community level.**

The tables below show the amount of fluoride found in Idaho public water systems and any recommended actions to reduce the risk of tooth decay for water system patrons. At this time, private well water is not routinely tested for fluoride levels.

Table 1

0.7 ppm (mg/L)	
Number of water systems reporting *	60
Number of people served by these water systems*	357,747
Recommendation: No action needed.	

* This data was extracted from the Water Fluoridation Reporting System (WFRS) on 11/16/2021

Table 2

Less than 0.6 ppm (mg/L)	
Number of water systems reporting *	621
Number of people served by these water systems*	931,790
Recommendation: Increase amount of naturally occurring fluoride to optimal levels.	

* This data was extracted from the WFRS system on 11/16/2021

Table 3

Greater or equal to 2.0 ppm (mg/L)	
Number of water systems reporting *	6
Number of people served by these water systems*	1,455
Recommendation: Decrease amount of naturally occurring fluoride to optimal levels.	

* This data was extracted from the WFRS system on 11/16/2021

- Sixty public water systems, residing within 27 counties, have natural fluoride levels that are considered optimally fluoridated.
- Only two water systems currently adjust the level of the fluoride in their water to optimal CDC recommendations.
- Data is not available on the fluoride levels of individual, privately owned wells.

Goals, Objectives & Action Plan

The overarching goal for Idaho's Optimal Fluoridation Plan is to improve oral health outcomes through access to optimally fluoridated drinking water.

Goals are powerful—they can focus our attention on achieving desirable outcomes. A group of dedicated individuals from the Idaho CWF Workgroup convened throughout the fall of 2021 to develop targeted and achievable goals and objectives for this plan. They considered goals in five areas: network building, education, policy, data, and operations. The goals, objectives, and action steps resulting from this process will be employed across the state and are designed to make progress toward the Healthy People 2030 goals and the 2021 – 2026 Idaho Oral Health Improvement Plan.

GOALS	OBJECTIVES	ACTIVITIES
Goal 1: Idaho has a strong network of stakeholders across the state who promote CWF.	**Objective 1-1:** By 2025, the CWF Workgroup will increase membership by 20%	• Identify diverse populations and communities who can help make progress on increasing the number of communities with optimal fluoridation • Create and disseminate stakeholder recruitment materials
	Objective 1-2: By 2025, in collaboration with other CWF stakeholders, the Idaho Oral Health Program will increase the number of letters of support for CWF received by 25%.	• Identify influential organizations and individuals • Create and disseminate a letter of support template • Determine where to share the letters of support

Goal 1: Continued	**Objective 1-3:** By 2025, the CWF Workgroup will identify three communities, with nonoptimal fluoride levels that have community support to adopt CWF.	• Identify communities with nonoptimal fluoride levels in their public water system • Create an assessment tool for identifying communities well-positioned for adjusting community water systems to optimal levels • Work with selected communities to determine the steps needed to achieve optimal fluoridation
Goal 2: Idahoans understand the benefits of CWF.	**Objective 2-1:** By 2024, distribute evidence-based messages on the importance of safe and optimally fluoridated drinking water.	• Create a public awareness plan • Identify/develop messages • Local stakeholders launch campaign in three communities
	Objective 2-2: By 2025, create/deliver three educational opportunities for key stakeholders to learn about CWF.	• Identify specific groups to target (dental, medical, water operator, policymakers, etc.) • Design specific content for each targeted group • Determine a schedule to present the educational programs

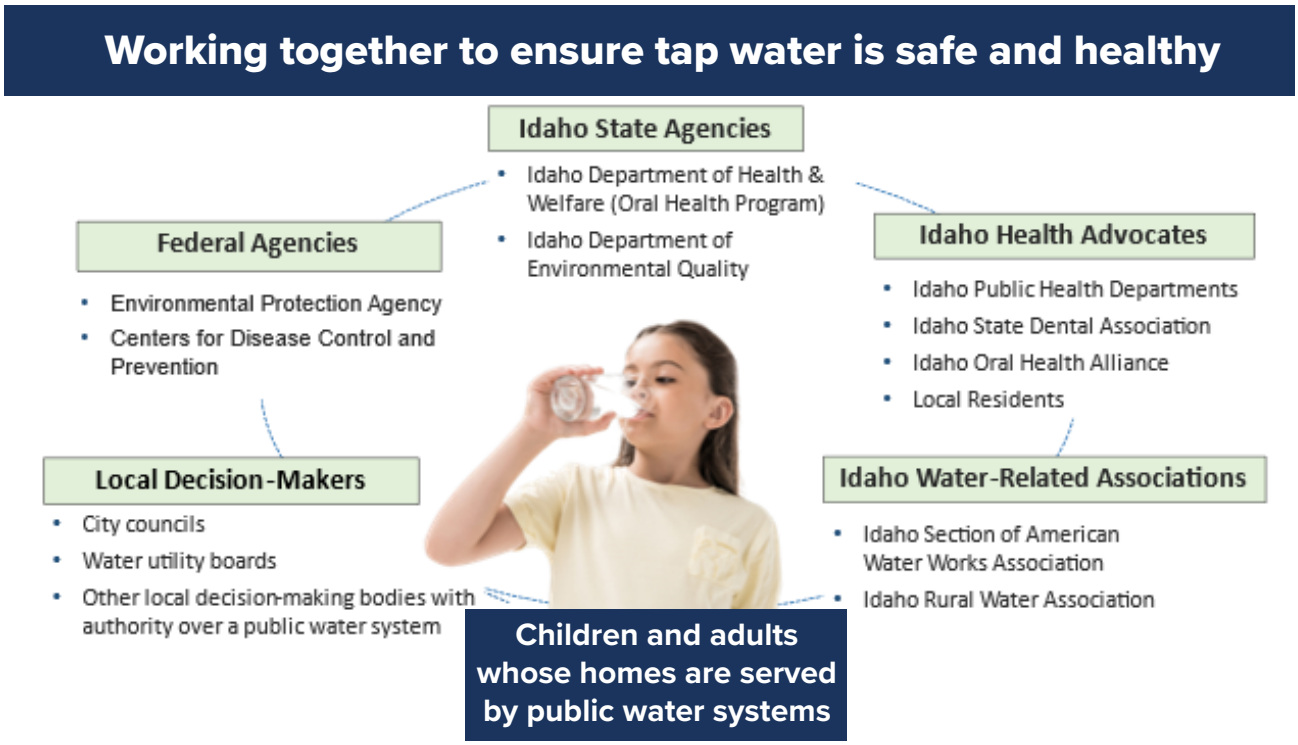
Goal 3: Communities in Idaho have access to data-informed tools and resources they need to promote CWF.	**Objective 3-1:** By 2025, the CWF Workgroup will identify tools and resources needed to support communities and partners with CWF implementation and expansion.	• Identify needed support • Locate or create support • Compile support into a toolkit • Promote and disseminate the toolkit
	Objective 3-2: By 2025, the IOHP will collaborate with the Idaho Department of Environmental Quality on a private well water data collection and educational program.	• Determine how to modify any current well water testing protocols to include fluoride • Design messages for well water users about the benefits of optimal fluoride levels • Create a dissemination /action plan for messages
	Objective 3-3: By 2025, create an Idaho-specific CWF website with data and educational resources.	• Determine Idaho specific data to include • Create a site map • Contract with a web designer

Program Management

States, like Idaho, who receive funding to promote CWF from the CDC usually have a designated administrator to manage the state's fluoridation program and serve as a liaison to other state and federal agencies. For Idaho, this position resides within Idaho's Oral Health Program (IOHP). However, the role of promoting optimal fluoride levels should be rooted in local communities with local leaders and oral health champions. By working together, the state administrator, local leaders, and oral health champions can provide support to involve communities and help citizens understand the broader picture of how promoting healthy drinking water can ensure healthy communities.

a. Strong Partnerships

In 2021, the 2021 – 2026 Idaho Oral Health Improvement Plan was released, emphasizing "success must be driven by compassion, co-ordinated efforts, and achievable goals." The plan goes on to say that a successful collaboration "brings together traditional and non-traditional participants… [and] encompasses working partnerships aligned and guided by a central plan." By forging partnerships, oral health champions across Idaho can ensure a shared vision is achieved and improvements, especially regarding equitable access, are made. Together, partners can continue existing efforts, expand new opportunities, and engage in community-driven grassroots efforts to promote CWF. The diagram below explains the entities and roles that significant partners play in ensuring access to CWF.



Idaho State Agencies

Idaho Department of Health & Welfare (Idaho Oral Health Program)

- Collects, analyzes, and disseminates oral health data to stakeholders, policy, and decision-makers, showing the prevalence and impact of dental disease .
- Promotes oral health through facilitated partnerships, educational materials, and outreach activities.
- Works with local, state, and national partners to educate and engage people living in Idaho, raising their awareness of CWF and other forms of oral health prevention.
- Works with CDC to update its WFRS database using data from the Idaho Source Water Assessment

Idaho Department of Environmental Quality

- Requires community and non-community, non-transient systems have a certified operator.
- Enforces IDAPA rules that set a maximum contaminant level (MCL) of 4.0 mg/L and a secondary MCL of 2.0 mg/L and enforces facility and design standards for fluoridation (IDAPA 58.01.08.536) for facilities adding fluoride.
- Grants approval and disapproval of water systems, including compliance activities, regular surveys of water systems, and enforcement activities.
- Oversees reporting requirements and other rules that apply if or when a local water system violates drinking water standards.
- Maintains the Idaho Source Water Assessment, a database that contains information on all Idaho DEQ-permitted public water systems, which is searchable by system types, sizes, or sources.

Federal Agencies

U.S. Environmental Protection Agency (EPA)

- Oversees the federal Safe Drinking Water Act.
- Sets limits on fluoride and other compounds in drinking water.

U.S. Centers for Disease Control and Prevention (CDC)

- Sets the scientifically recommended level for optimal fluoridation of drinking water.
- Provides support and guidance, but not regulation, to states for the addition of fluoride to drinking water for oral health benefits.
- Conducts biennial state-by-state surveillance reports on populations with access to fluoridated water.

Local Decision-Makers

City councils, local water boards, entities that own community water systems

- When appropriate, oversees administrators who manage applicable water systems.
- Keeps apprised of state or federal rules that apply to local water systems.
- Provides capital budgeting support to properly maintain treatment plant equipment and provides effective public health protection.
- Supports resource and development needs for water management staff .

Idaho Water-Related Associations

Idaho Section of American Water Works Association, Idaho Rural Water Association

- Serves as a broker of information and updates about fluoride additives and monitoring of fluoride levels.
- Sponsors and/or promotes training sessions that strengthen water operators' ability to effectively manage CWF specifically and water systems generally.
- Offers a collegial environment through which water operators and engineers can share information and insights that help strengthen the management of water systems.

Idaho Health Advocates

State & local health departments

- Educates local decision-makers and community members by answering questions and sharing reports, fact sheets, data, etc.

Health organizations / local residents

- Urges community to start or continue engaging in CWF, including direct communications with local decision-makers.
- Works effectively by knowing and respecting how each sector's role varies.

b. Community Engagement

While state-level agencies and organizations can serve as important resources for a community, the key to successful community engagement is to bring together diverse partners. Interested parties can work together to develop strategies for their specific community to promote the benefits of community water fluoridation to different audiences and groups. Dental and medical providers are generally well-respected by the public, but it is essential to also involve others in the community. In addition to other professionals, teenagers and young adults can bring a lot of energy, are effective community organizers, have important insight, and are frequent users of social media.

By understanding what each partner brings to the table, a coalition can maximize the reach of its contributions and network. Here are a few examples of where community champions can be found:

- School principals
- Children's advocates
- Local health departments
- Community leaders
- Parents
- Civic activists
- Local decision-makers
- Faith community leaders
- Youth leaders

c. Effective Communication

When highlighting the benefits of optimal water fluoridation, it is crucial to understand that different audiences have different information needs.

- **Community members** need to understand CWF is effective and safe.
- **Decision-makers** need to understand CWF benefits the entire community and provides a positive return on investment.
- **Water treatment professionals** need to understand the importance and effectiveness of CWF so they can explain it to others.

Idahoans respect individual rights. CWF is a fundamental aspect of health equity, supporting prosperity and improved health outcomes. Communities can choose their level of impact and involvement. Oral health champions who engage in CWF efforts should be respected. CWF promotion should use effective, evidence-based communication strategies to share information to strengthen their community's health.

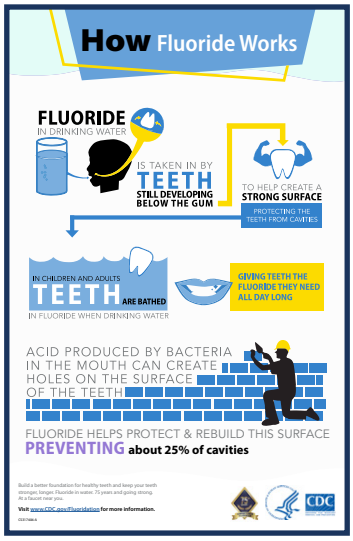
Promotional Resources

There are many readily available, evidence-based, and culturally appropriate resources which can be used to create a shared understanding of the benefits of CWF.

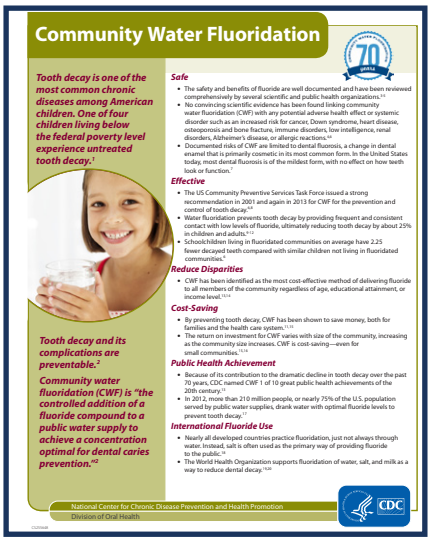
Infographic materials from CDC

The following resources are downloadable and printable for electronic posting or distribution.

Community Benefits



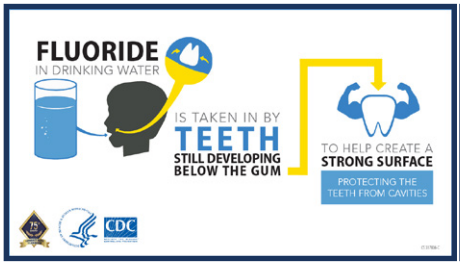
How fluoride Works
Spanish



CWF Fact Sheet

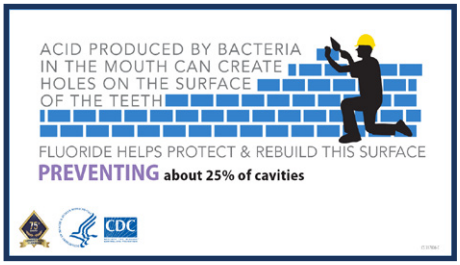
Social media messages from CDC

These resources are designed for electronic posting to Facebook or Twitter.



Creates a strong surface

Protects Teeth all day



Rebuilds tooth surfaces

Promotional materials from other credible resources
American Dental Association
American Academy of Pediatrics
Campaign for Dental Health

CWF champions in Idaho can create additional tools and resources specific to Idahoans on how to get involved in promoting CWF. The American Fluoridation Society is available to provide support to counter challenges to CWF.

Appendices

Appendix A: Definitions

The following are common terms used when discussing CWF and water systems. Some terms have not been mentioned in this document but are included as a resource for CWF champions and stakeholders.

Adjusted - This term is used to designate the change in fluoride levels of a community water system. When doing so, the water system changes the level of fluoride in the drinking water to the optimal level (0.7 mg/L) recommended by the U.S. Public Health Service.[10]

Consecutive System - A community water system is a "consecutive system" if it: a) buys water from another system; b) does not adjust the fluoride concentration; and c) provides this water, which may or may not be fluoridated depending on the source, to its customers.

Contaminant - The federal Safe Drinking Water Act defines this term differently than it might be perceived by most people. Under this Act, "contaminant" means any physical, chemical, biological, or other substances in water, including naturally occurring compounds. Basically, the law defines "contaminant" as anything in water besides the hydrogen and oxygen molecules that comprise water. Although the EPA is charged with overseeing regulations that limit the presence of contaminants, the agency's website explains that some drinking water contaminants "may be harmful if consumed at certain levels in drinking water while others may be harmless."[25]

Community Water Fluoridation (CWF) - The adjustment of the concentration of naturally occurring fluoride in water to meet the optimal level (0.7 mg/L) recommended by the U.S. Public Health Service for preventing tooth decay among people who drink the water.

Community Water System (CWS) - Also known as a Public Water System (PWS), a CWS is defined as a water system that: 1) supplies water to the same population year-round; and 2) serves at least 25 people at their primary residences or at least 15 residences that are primary residences (such as subdivisions, mobile home parks, etc.).

Consumer Confidence Report (CCR) - The EPA requires community water systems to provide an annual report to their customers summarizing the quality of drinking water they are providing. The CCR is sometimes referred to as the water quality report.

Dental Fluorosis - Ingesting higher than optimal levels of (systemic) fluoride while teeth are developing can result in a range of visible changes in tooth enamel. This condition is called dental fluorosis. In mild cases of fluorosis, the teeth may show lacy, white markings. In severe cases, pitting of the enamel of the teeth may occur. In the United States today, most dental fluorosis is mild.

Maximum Contaminant Level (MCL) - This is the highest permissible level of a compound in drinking water. The EPA has regulatory authority over community water systems, and it has set an MCL for fluoride at 4.0 milligrams per liter (mg/L).

Maximum Contaminant Level Goal (MCLG) - This goal is aimed at providing an added margin of safety by encouraging community water systems to meet this goal for a contaminant rather than simply meeting the higher level permitted (MCL). The EPA set the MCLG for fluoride at 4.0 milligrams per liter (mg/L).

Milligrams per Liter (mg/L) - This is the standard by which community water systems measure the concentration of fluoride in drinking water. Sometimes, the fluoride is measured in PPM (parts per million). These standards are equivalent, meaning that water with a 0.7 mg/L level also has a 0.7 ppm level.

Natural - This term is used to designate a community water system that is naturally fluoridated, meaning that the natural fluoride concentrations are at or very close to the optimal level (0.7 mg/L) recommended by the U.S. Public Health Service; therefore, the water system does not need to adjust the fluoride level in any way.

Natural/Non-Fluoridated - This term is used to designate a community water system that has a natural fluoride level that is not too high or too low and does not adjust.

Operational Control Range - An operational range of fluoride is established by the CDC for water systems. The purpose of the range is to achieve optimal levels of fluoride in the water provided to customers. The operational range is 0.6-1.0 ppm. Similar to other water additives like chlorine, water operators constantly make precise adjustments to achieve the optimal goal of 0.7 ppm (parts per million).

Parts per Million (PPM) - This is the standard by which community water systems measure the concentration of fluoride in drinking water. Sometimes, the fluoride is measured in milligrams per liter (mg/L). These standards are equivalent, meaning that water with a 0.7 ppm level also has a 0.7 mg/L level.

Secondary Maximum Contaminant Level (SMCL) - This is the highest recommended level of a contaminant in drinking water that will not result in negative health effects but could cause cosmetic effects (such as tooth or skin discoloration) or aesthetic effects (such as taste, odor, or color) of drinking water. This is a non-enforceable federal MCL guideline that is set for fluoride at 2.0 milligrams per liter (mg/L).

Water Additive - All additives used by water treatment plants, including fluoride additives, must meet strict quality standards that assure the public's safety. These additives are subject to a stringent system of standards, testing, and certificates by the American Water Works Association (AWWA) and National Sanitation Foundation International (NSFI). Both organizations are non-profit, nongovernmental organizations.[22]

Water Fluoridation Reporting System (WFRS) - This is the principal tool used by state programs and the CDC to manage the data on water fluoridation programs. WFRS information also serves as the basis for national surveillance reports describing the percentage of the U.S. population on community water systems that receive optimally fluoridated drinking water.

Appendix B: Water Fluoridation Operations

Each fluoridating water system in the state should be managed by a CWF-trained water plant operator, using standard operating procedures specific to its operations.[23] The following principles and practices for managing fluoridated water systems play a crucial role in benefiting community oral health.

Surveillance Data

State health departments monitor and report various indicators of the oral health status of their state's population, including access to fluoridated water. The IOHP receives information on fluoride levels from water systems and uploads this data into the CDC's Water Fluoridation Reporting System (WFRS). The WFRS database provides many benefits to Idaho:

- Data entered in the WFRS system serves as the basis for national surveillance reports describing the percentage of the U.S. population on community water systems receiving optimally fluoridated drinking water.
- The data provides information that can be shared with local decision-makers and the public to help define progress toward decreasing oral health problems.
- WFRS allows users to review and validate their operational results. The data can also be used to identify areas for improvement and to make recommendations to comply with the optimal level of fluoride in water.
- Using WFRS in accordance with CDC recommendations and guidelines makes Idaho eligible for awards and recognition for the operational quality of its water fluoridation activities.

Quality Control & Monitoring

CWF is an effective, safe, and evidence-based public health measure. In 2015, the U.S. Public Health Service recommended the optimal level for fluoride in water to be 0.7 ppm to realize the full benefits of water fluoridation while minimizing the risk of mild dental fluorosis. Most cases of dental fluorosis in the U.S. are very mild to mild, and may appear as barely noticeable white spots on the tooth surface. Mild fluorosis does not affect dental function.[11] For water plants to maintain optimally fluoridated water at 0.7 ppm, the CDC has set an operational range of 0.6-1.0 ppm fluoride levels to attain this goal.

Routine monitoring measures and provides documentation that optimal levels of fluoride are maintained. Monitoring of community water systems for fluoride content in Idaho is conducted based on the type of water system.

Currently, Idaho does not have a mandated process or system requirement for testing privately-owned wells that fall under the minimum requirements of a community water system. Therefore, unless the owner is proactive and pays for testing, there is no way to understand the level of naturally occurring fluoride in private wells.

Quality control measures include inspections of water fluoridation facilities to verify equipment function, reliability, suitability, and recommendations for managing inventory of current and future equipment and system infrastructure needed to ensure facility compliance and sustainability.

Monitoring oral health outcomes is also a method of quality control. By tracking the prevalence of cavities and how many people access fluoridated water, CWF programs can determine the reach and effectiveness of the fluoridation effort, the average cost per person per year to fluoridate, and the return on investment.

Fluoride Additives

Community water systems in the U.S. use one of three additives for water fluoridation that are either water-based or salt-based. Decisions on which additive to use are based on cost of the product, product-handling requirements, space availability, and equipment. Fluoride additives are derived from a manufacturing process that also results in other consumer products.

All water treatment additives, including fluoride additives, must comply with National Sanitation Foundation International/American National Standards Institute (NSF International/ANSI) Standard 60, a national safety standard managed by NSF International. U.S. companies produce more than 80 percent of fluoride additives.

New Fluoridation Technology Supports Rural Health

Equipment costs can make it difficult for smaller water systems to implement CWF, but in what has been hailed as a game-changer in fluoridation, a new fluoride delivery system has been developed that is less expensive and easier to use.

The New Wave Fluoridation System, which is CDC approved and is made entirely in the U.S., uses a tablet similar in size and shape to a chlorine tablet for swimming pools and is designed specifically for water systems serving populations of 50-10,000 people. Water operators are excited about this system because the tablets are easy to handle, and the mechanics of the system are simple and easy to monitor. Idaho has over 500 water systems that are the perfect size for implementing the New Wave Fluoridation System. Almost 500,000 Idahoans could drink healthy, optimally fluoridated water if each of these water systems switched to this less expensive and easy-to-use system.

Overfeed protections

Water operating systems have a variety of safety measures, including day tanks, metering pumps, backflow preventers, and residual analyzers to prevent an “overfeed” of fluoride—meaning too much fluoride added into the local water. Overfeeds are very rare, and in the event it occurs, most do not pose a health risk as the overfeed is a temporary event.

De-fluoridation

The Safe Drinking Water Act (SDWA) regulates drinking water and sets standards to limit possible contaminants. While optimal amounts of fluoride in the water protect our teeth, too much fluoride can cause health effects. Some water systems with naturally occurring fluoride greater than 4 mg/L must treat their water supply to remove the excess fluoride to comply with SDWA limits and protect public health. Water systems can use activated alumina to reduce the amount of fluoride to levels that provide protection from tooth decay.

This chart summarizes fluoride levels in water and what, if any, actions are needed.

Fluoride Level	Description	Action
Less than 0.6 mg/L	Little to no prevention against tooth decay as fluoride approaches zero	Consider adding fluoride to water system
0.7 mg/L	Optimal level for preventing tooth decay	None
>2.0 mg/L	EPA Secondary Maximum Contaminant Level- long term consumption may result in mottling (discoloration) of teeth in children under 9 years of age	Notify users
>4.0 mg/L	EPA Primary Maximum Contaminant Level- long term consumption may result in skeletal fluorosis (serious bone disorder)	Treat water to reduce fluoride to optimal levels
>- greater than or equal to		

Appendix C: Fluoride-related Laws & Regulations

Water fluoridation is influenced by various laws and regulations at the federal, state, and local levels. These include:

Federal/EPA: The EPA provides regulatory oversight of the SDWA, the federal law that was enacted in 1974 and ensures safe public drinking water supplies throughout the nation. Under SDWA, EPA fluoride regulations require that surface sources be tested for fluoride annually, and groundwater sources once every three years.[21] The EPA does not provide guidance on adjusting fluoride levels to reduce tooth decay. Its focus is on the natural fluoride content of source waters that have concentrations associated with potential risks to human health. Currently, the maximum amount allowed (or enforceable standard) for fluoride is set at 4.0 mg/L to protect against skeletal fluorosis, a rare condition. EPA requires water systems to notify customers if their fluoride level is above 4.0 mg/L. The recommended fluoride concentration for community water fluoridation (0.7 mg/L) is well below the enforceable standard and poses no risk to human health.

Federal/Military Bases: In 2011, the U.S. Department of Defense adopted a policy directing all military bases who own or operate their own water system to provide fluoridated water to military personnel and other residents of their bases. The memo explained the policy's purpose by observing that CWF "helps to improve and sustain the military readiness and health of military personnel."

State: Idaho does not have a state law guaranteeing its residents access to optimally fluoridated water. This may hinder the ability to reduce tooth decay.

Local: Cities and other communities in Idaho are allowed to determine their CWF status and decide whether they want to enact policies to ensure the fluoride concentration in their local water supplies reaches the optimal level.

Appendix D: Stakeholders in CWF

American Academy of Pediatrics (AAP) – The AAP is an organization of 67,000 pediatricians committed to the optimal physical, mental, and social health and well-being for all infants, children, adolescents, and young adults. The Campaign for Dental Health is a program of the AAP and was created to ensure people of all ages have access to the most effective, affordable, and equitable way to protect teeth from decay — community water fluoridation. Idaho has a state chapter.

American Dental Association (ADA) – The ADA is the largest and oldest national dental society in the world. On behalf of its 163,000 members and their patients, the Association is a voice for quality dental care and an advocate for public health, including fighting oral cancer and advancing community water fluoridation. The ADA's National Fluoridation Advisory Committee reviews new research and helps to guide the Association's strategies for educational activities. Idaho has a state chapter.

The Association of Idaho Cities (AIC) – The Association of Idaho Cities was formed in 1947 and is a nonpartisan, non-profit corporation serving Idaho's 199 cities. The AIC advocates on behalf of cities and provides education, training, and assistance to strengthen the ability of city elected officials and staff to serve their communities

Association of State & Territorial Dental Directors (ASTDD) – Founded in 1948, ASTDD is a membership organization comprised primarily of state and local oral health leaders. Through its Best Practices initiative and other projects, ASTDD seeks to assist state dental programs in developing and advancing evidence-based programs and policies.

American Water Works Association (AWWA) – Founded in 1881, AWWA is a non-profit, scientific and educational organization which seeks to strengthen the effective management of water. The AWWA is an association whose 51,000 members include water operators, environmental scientists, academicians, and others deeply interested in water. Idaho has an AWWA section.

Centers for Disease Control and Prevention (CDC) – This agency, based within the U.S. Health and Human Services, monitors and seeks to prevent disease by working with states and communities to implement prevention strategies and maintain health statistics. The CDC Division of Oral Health coordinates dental disease-related programmatic activities and awards grants to states. The CDC website serves as a clearinghouse of evidence-based information about fluoride and fluoridation.

Idaho Department of Environmental Quality (DEQ) – Idaho DEQ's Drinking Water Bureau protects public health by ensuring drinking water from public water systems is safe and reliable. IDEQ works closely with the state's public drinking water systems to protect drinking water sources, monitor for contaminants, inspect water systems, and review system engineering. This work is managed in partnership with the seven local public health districts in Idaho. A variety of technical and compliance assistance is provided to public drinking water systems to ensure compliance with state requirements

Environmental Protection Agency (EPA) – This federal agency has regulatory authority over community water systems. Through the Safe Drinking Water Act, EPA sets standards to protect drinking water and works with others to implement technical and financial programs to strengthen water safety.

Idaho American Water Works Association (ID-AWWA) – Idaho is represented by two sections in the AWWA. The Pacific Northwest Section covers Northern Idaho, Oregon, and Washington. The Intermountain Section covers Eastern Idaho. Both sections are committed to providing their members with the tools and education to continue managing and protecting our most valuable resource, clean and safe water.

Idaho Dental Hygienists' Association (IDHA) – IDHA is a membership organization that seeks to promote the highest standards of dental hygiene education, licensure, practice, and research while representing and promoting the interests of dental hygienists. It is a sub-organization of the American Dental Hygienists' Association.

Idaho Department of Health and Welfare (IDHW) – The Idaho Department of Health and Welfare's primary role is to provide services and oversight at the state and regional levels to promote healthy people, safe children, and stable families.

Idaho Oral Health Alliance (IOHA) – The IOHA was created in 1998 and is a statewide 501(c)(3) organization focused on attaining optimal oral health for all Idahoans through education, advocacy, and program development in collaboration with those who have a vested interest in improving the overall health of Idahoans.

Idaho Oral Health Program (IOHP) – The Idaho Oral Health Program is within the Bureau of Community and Environmental Health, Division of Public Health, Department of Health and Welfare (IDHW). The IOHP is the state oral health program, adhering to the Association of State and Territorial Dental Director's competencies and the 10 Essential Public Health Services to Promote Oral Health. The IOHP serves as the primary source of oral health surveillance and community-based oral disease prevention programs in this capacity. The IOHP, established by the state in 1951, continues to create strong partnerships that lead to improved oral health for all who live in Idaho. It offers the infrastructure and essential resources to support, create, implement, and evaluate oral health initiatives and specific policies.

Idaho Rural Water Association (IRWA) – The IRWA is a 501(c)(3) non-profit corporation originally formed in 1987 to provide training and technical assistance to water and wastewater facilities in Idaho with populations under 10,000. IRWA ensures that Idaho's rural communities are safe while maintaining a high quality of life.

Idaho State Dental Association (ISDA) – The ISDA, headquartered in Boise, represents more than 800 dentists throughout Idaho. They are a constituent of the American Dental Association, the professional organization of dentists throughout the U.S. who are dedicated to providing the best care for their patients. ISDA is affiliated with seven local district dental societies across Idaho.

National Sanitation Foundation International/American National Standards Institute (NSF International/ANSI) – These two independent organizations established quality standards for the fluoride additives used in fluoridation. NSF International is a non-profit organization founded in 1944 as the National Sanitation Foundation but changed its name to reflect the diverse consumer and environmental products for which it sets standards and certifies quality. ANSI stands for the American National Standards Institute,

which was formed in 1918. With the support of the Environmental Protection Agency, NSF International/ANSI developed Standard 60 to ensure the quality and safety of fluoride and other drinking water additives.

Partnership for Safe Water (PSW) – The PSW is an alliance of six drinking water organizations with a mission to improve the quality of water delivered to customers by optimizing water system operations. The PSW offers self-assessment and optimization programs so that operators, managers, and administrators have the tools to improve performance above and beyond even proposed regulatory levels.

Appendix E: Reliable Resources

Learning the science behind the oral health benefits of fluoride and CWF is a key part of helping Idahoans have healthy teeth and good overall health. Below is a listing of evidence-based resources that provide reliable information about CWF.

American Dental Association

- Fluoridation Facts - https://www.ada.org/~/media/ADA/Files/Fluoridation_Facts.pdf
- For consumers - https://www.mouthhealthy.org/en/az-topics/f/fluoride
- For health professionals - https://www.ada.org/resources/community-initiatives/fluoride-in-water

American Fluoridation Society - AFS provides science-based education about water fluoridation and CWF support for communities across the United States. https://americanfluoridationsociety.org/

Campaign for Dental Health - Healthy communities create conditions that benefit everyone. Community water fluoridation helps all of us – the entire community – prevent unnecessary dental problems before they begin. ilikemyteeth.org

Centers for Disease Control and Prevention

- **Community Water Fluoridation** - General information https://www.cdc.gov/fluoridation/index.html
- **My Water's Fluoride (MWF)** - Allows people to learn about their community's drinking water fluoridation levels. https://nccd.cdc.gov/doh_mwf/default/AboutMWF.aspx
- **Fluoridation Online (FLO)** - Free online training course to help increase knowledge and skills to implement and maintain community water fluoridation programs. https://www.train.org/cdctrain/course/1072975/

Fluoride Legislative User Information Database (FLUID) - Electronic search engine for case law, legislation, and journal articles related to fluoridation laws and regulations. http://fluidlaw.org/

KC Industries' Fluoridation Tablet and Feeder System - Certified feeder system providing consistent levels of fluoridation in smaller, rural, community water systems. https://kcindustries.com/our-newest-innovation-fluoridation-tablet-and-feeder-system/

National Institutes of Health - Fluoride Fact Sheet for Consumers https://ods.od.nih.gov/factsheets/Fluoride-Consumer/

About the Authors

The American Fluoridation Society prepared this report through a contractual agreement with the Idaho Oral Health Program. The American Fluoridation Society was founded in 2014 by a group of concerned professionals anxious to see all residents of the United States served by community water systems enjoy the benefits of community water fluoridation (CWF). Equally important to this Society is to prevent rollback attempts by opponents of CWF, as well as to initiate CWF where it has not been previously available.

The Society's Aims:

- To promote improvement of dental health by securing the optimum fluoride content of community water systems in areas where it is sub-optimal.
- To promote and co-ordinate medical, dental, educational, and administrative efforts to achieve this remotely by means of electronic media and personal contacts.
- To distribute information about dental health and the benefits/risks of optimally fluoridated water to the fluoridation decision-makers in the communities.
- To provide direct support to communities across the United States that may need expert testimony from the American Fluoridation Society member(s).
- To provide the necessary information to debunk the opposition to fluoridation's pseudo-science.

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AMERICAN FLUORIDATION SOCIETY

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