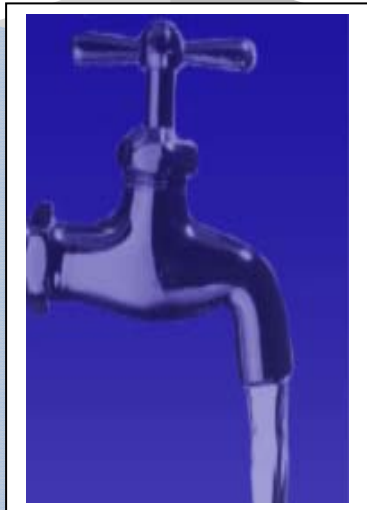


Oral Health Program

Fluoridation Plan



2010

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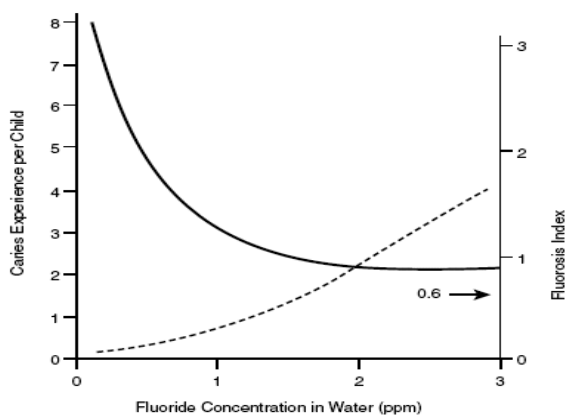
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Introduction

All water contains fluoride naturally in amounts that may be greater or lesser than the amount needed to contribute to a reduction in dental decay. Community water fluoridation (CWF) is the process of adjusting the natural fluoride concentration of a public water system (PWS) to a level of 0.7 to 1.2 parts per million (PPM) to assure the most optimal results in reduction of tooth decay. The specific level is dependent on average annual temperature to determine the optimal level for a specific region. This level assures the public of a safe, effective, inexpensive means of reducing decay up to 30 percent according to the Task Force on Community Preventive Services. The independent, non-federal, multi-disciplinary, task force appointed by the director of the Centers for Disease Control and Prevention (CDC), found that communities that initiated fluoridation realized a decrease of nearly 30 percent in childhood decay over 3-12 years of follow-up. The optimal rate of addition of fluoride to the public water system is depicted by the graph below demonstrating a diminished return with more than the optimal level of fluoride.



Community water fluoridation benefits everyone in the community that consumes public drinking water and foods that are prepared with fluoridated water. Regardless of age and socioeconomic status, fluoridation provides protection against tooth decay in populations with limited access to oral disease prevention services as well as

those who have regular access. According to Griffin, et al (2001), for every dollar spent on community water fluoridation, up to \$42 is saved in treatment costs for tooth decay. However, the economic importance of fluoridation is underscored by the fact that frequently the cost of treating dental disease is paid not only by the individual, but by the general public through services provided by health departments, welfare clinics, health insurance premiums, and other publicly supported programs.

Many indirect benefits result from the prevention of dental decay. These benefits include a reduction in pain, a more positive self image, fewer missing teeth, fewer, teeth requiring root canal treatment, a reduced need for dentures and bridges, and less need for orthodontic treatment from premature loss of primary teeth. In addition, less time is lost from school or work from dental disorders or visits to the dentist. These intangible benefits are impossible to measure economically and are often taken for granted.

Fluoridated water works in two ways to prevent dental decay. The pre-eruptive effect takes place through a systemic route with ingestion of the optimally fluoridated drinking water prior to the eruption of teeth in children. The post-eruptive effect takes place throughout the lifespan through a topical effect as the fluoridated water passes over the teeth but most importantly as it incorporates in the saliva and continuously bathes the teeth.

Wisconsin Background

Wisconsin Demographics

Wisconsin is located in the Midwest and borders Lake Michigan, Lake Superior and the Mississippi River. The land area covers 54,310 square miles, with a population density of 99 people per square mile, compared to 80 people per square mile nationally. In 2008 the estimated population of Wisconsin was 5,627,967, with a 4.9 percent increase from 2000. The population growth in Wisconsin has been lower compared to the national average of 8.0 percent [USCB 2009]. Forty-seven of Wisconsin's 72 counties are considered rural.

Wisconsin's population is primarily white non-Hispanic, with 85.1 percent compared to only 65.6 percent nationally (Figure I). However, Hispanic populations have been increasing in Wisconsin. In 2000, 3.6 percent of the population was of Hispanic ethnicity compared to 5.1 percent in 2008.

Approximately 92 percent of Wisconsin residents, age five years or older, speak only English at home. Among residents who speak something other than English the most common languages spoken are Spanish (52%), German (9%), Miao/Hmong (8%), French (3%), Chinese (3%), and Polish (2%) [USCB 2010].

The median household income in Wisconsin of \$50,567 is similar to the national average household income (\$50,740). Nonetheless, Wisconsin has a smaller percentage of people living below poverty, 10.8 percent compared to 13.0 percent nationally. In addition, Wisconsin has a higher percentage of adults with a high school diploma (85.1%) compared to the national average (80.4%). However, Wisconsin has a slightly lower percentage with a bachelor's degree or higher, 22.4 percent compared to 24.4 percent [USCB 2009].

Wisconsin Fluoridation History

In the United States, community water fluoridation has been the basis for the primary prevention of dental caries since 1945 and has been recognized as one of 10 great achievements in public health of the 20th century [CDC 1999]. In 1946, the city of Sheboygan was the first community in Wisconsin to adjust its drinking water to the Wisconsin recommended optimal level of 1.1 parts per million (1.1 PPM).

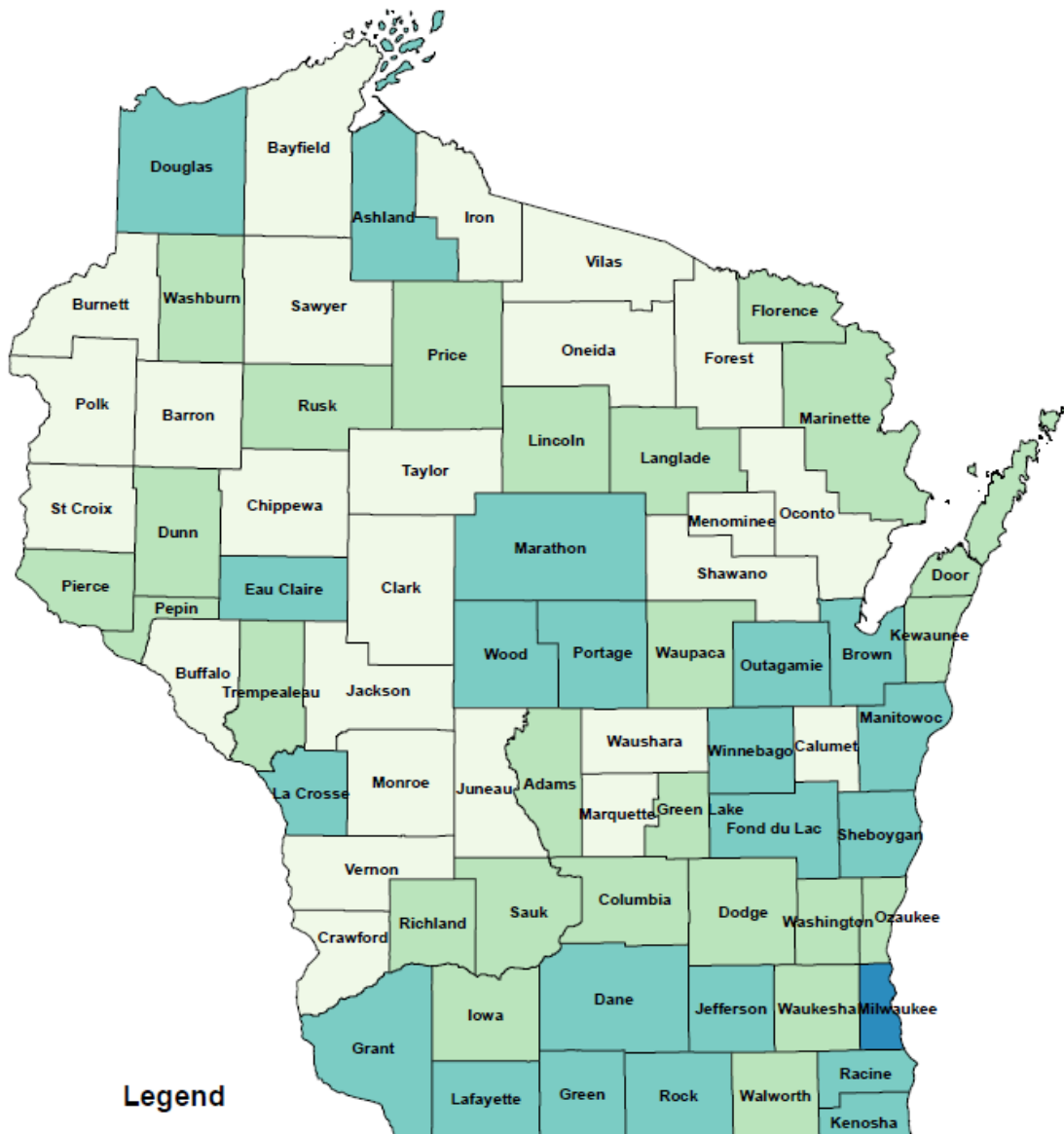
Wisconsin Exceeds Federal Healthy People 2010

Recognizing the importance of community water fluoridation, the federal *Healthy People 2010* Objective 21-9 is to:

“Increase the proportion of the U.S. population served by community water systems with optimally fluoridated water to 75 percent.”

In the United States during 2006, approximately 184 million individuals (69 percent of the population served by public water systems) received optimally fluoridated water [CDC 2010b]. Wisconsin has met the *Healthy People 2010* Objective, with approximately 90 percent of the population on community water systems accessing optimally fluoridated water [WDHS 2009b]. In addition, 43 of Wisconsin’s 72 counties have met the *Healthy People 2010* Objective (Figure XIX). All but seven of the counties are over 40 percent. However, three very small counties are at zero. Figure XX shows the percent of the total county population, including all water supplies that are served by water with appropriate levels of fluoride. Because the northern half of Wisconsin is more rural, with more people on well water, most counties in the northern regions are in the two bottom groups.

Percentage of Wisconsin Total County Population (All Water Sources) Served by Fluoridated Water



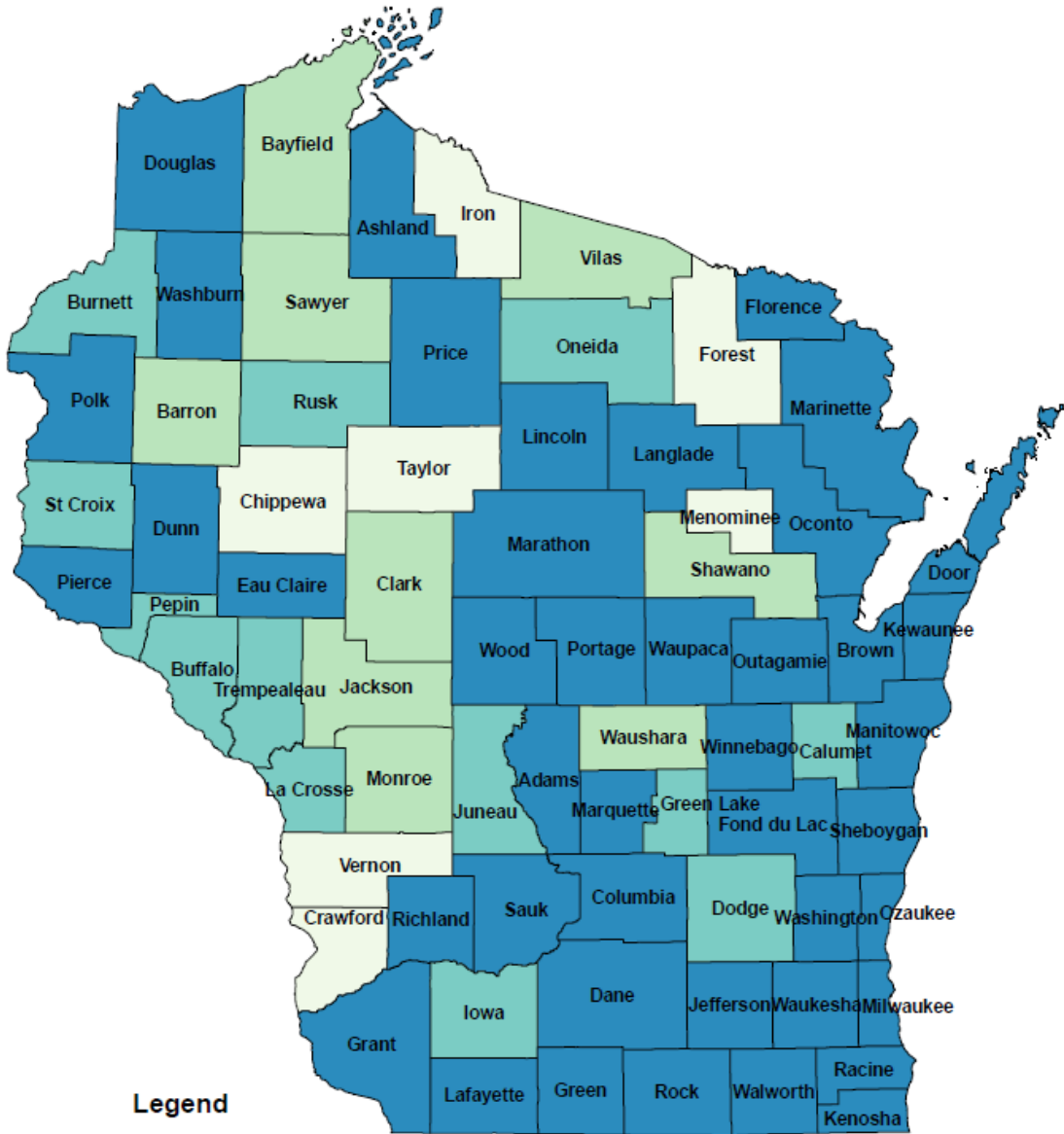
Legend

Percentage of Total Population Served by Fluoridated Water

- 0 - 24.9
- 25.0 - 49.9
- 50.0 - 74.9
- 75.0 - 100

Note: This map includes people on community water systems and private wells.

Percentage of Wisconsin Population on Community Water Systems who have Access to Optimally Fluoridated Water



Note: This map includes only people on community water systems.

Purpose of WI Fluoridation Plan

Wisconsin Fluoridation Infrastructure / Quality Assurance

As mentioned previously in this report, Wisconsin communities have been adjusting fluoride levels in their community drinking water supplies since 1946. Communities are not mandated by state law to adjust fluoride content to the Wisconsin optimal level of 1.1 parts per million as in many other states. Fluoride adjustment is a decision of the individual community through their regulatory process. State law regulates the adjustment of fluoride and monitoring of the fluoridation equipment by the Department of Natural Resources (DNR) as written in the Wisconsin Administrative Code, Natural Resources chapter NR 809.705.

Implementation of fluoridation in community/public water systems requires permits through the Environmental Protection Agency (EPA) and the Wisconsin Department of Natural Resources (DNR). Through state statute the Wisconsin DNR mandates reporting of daily samples of fluoride levels in all public water supplies as well as monthly split sample testing through the Wisconsin State Lab of Hygiene. The split sample reporting is a monthly quality test of each fluoridated PWS and is conducted by the State Lab of Hygiene to compare results with the local testing to assure proper functioning of the equipment. The Wisconsin Rural Water Association (WRWA) and Wisconsin Water Association (WWA) also play integral roles in assuring drinking water quality.

Prior to 2008, the Chief Dental Officer in the Wisconsin Division of Public Health (DPH), in collaboration with the Wisconsin DNR, monitored the daily reports and split sample reports on a quarterly schedule to serve as an oversight for malfunctioning equipment and/or operator error. In 2008, the Wisconsin Division of Public Health was awarded funding through a CDC Cooperative Agreement. One of the goals of the Cooperative Agreement was to hire a fluoridation specialist with the intent of expanding the role of the Oral Health Program in fluoridation activity. At this time the fluoridation specialist, with consultation and mentoring from the Chief Dental Officer,

is responsible for all Division of Public Health activities related to fluoridation including advocacy, education, and fluoride data entry and monitoring.

In preparation for the creation of a fluoridation plan for Wisconsin, an Advisory Committee of dental, drinking water and fluoridation experts was called together to provide guidance and advice for development of the fluoridation plan. This was the first time that any fluoridation advisory group had been called together in Wisconsin. The result was a greater understanding of the network responsible for assuring safe drinking water, including fluoridation, for the citizens of Wisconsin. The following work plan was created by the Committee using the logic model as a template and will serve as a guide for future fluoridation goals and activities related to collaboration, education, advocacy and quality assurance.

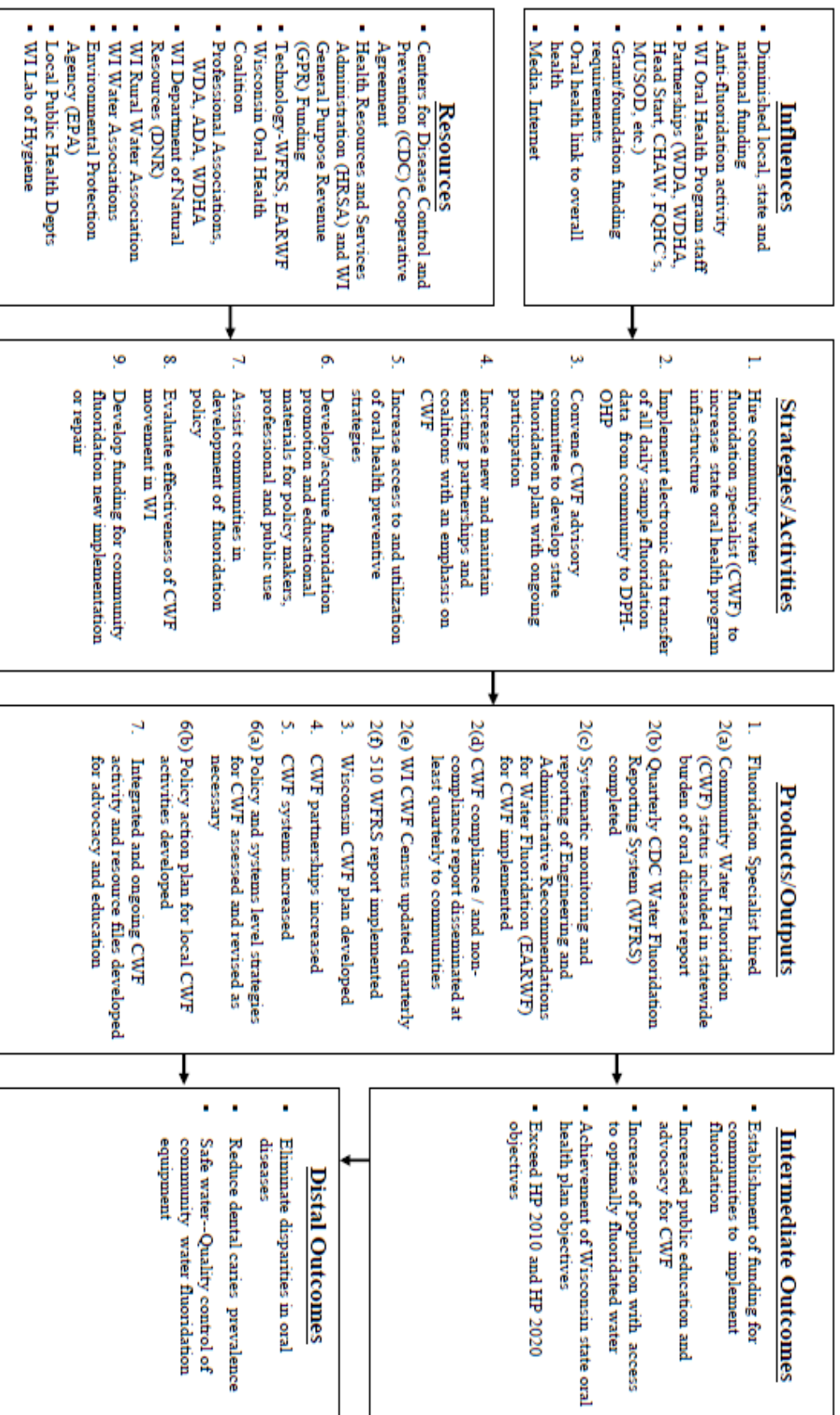
Wisconsin Oral Health Program – Fluoridation Plan Logic Model updated 4/14/2010

If we have these influences and resources

So that we can address these activities

We should get these products

That will lead to these outcomes



Wisconsin Fluoridation Plan--2010

| GOAL 1: Implement electronic data transfer of all daily split sample fluoridation data from local community public water systems to the Wisconsin Division of Public Health Oral Health Program (DPH-OHP) | | |
|---|---|-----------------|
| Objective | Action | Completion Year |
| 1.1 | Develop expert subcommittee | 3 |
| 1.2 | Survey PWS regarding operational and data transfer processes to determine acceptance and local needs | 3 |
| 1.3 | Create electronic data transfer process including software design if necessary for all aspects of data entry from local PWS to DPH-PHP and directly into CDC Water Fluoridation Reporting System (WFRS) | 3-5 |
| 1.4 | Reestablish quarterly reporting to public health departments, dental professional organizations and DNR regarding WFRS entry | 3 |
| 1.5 | Monitor and document communities that are eligible for CDC, Association of State and Territorial Dental Directors (ASTDD) fluoridation awards | ongoing |
| 1.6 | Conduct monthly fluoridation reporting in WFRS | ongoing |
| 1.7 | Monitor results of WFRS 510 report on a yearly basis and post to website and CDC MOLAR reporting system | ongoing |
| GOAL 2: Maintain existing level of CWF while working to establish new CWF systems in Wisconsin. | | |
| 2.1 | Establish data base (including GIS mapping) of all communities with and without CWF as well as organizations/agencies with interest in or contact with the fluoridation issue | ongoing |

| | | |
|---|--|---------|
| 2.2 | Develop grass roots partners to support local CWF activity | ongoing |
| 2.3 | Develop repository of fluoride and fluoridation promotional and educational materials including materials to target policy makers, oral health professionals, advocates and the public | ongoing |
| 2.4 | Assist communities interested in establishing policy and activity to implement new fluoridation of PWS and those with threats to discontinuation of existing fluoridation | ongoing |
| 2.5 | Maintain fluoridation electronic information on the DPH-OHP website with links to other partner and agency websites for detailed information | ongoing |
| 2.6 | Review and update fluoridation mapping on the DPH-OHP website at least yearly | ongoing |
| 2.7 | Review and update WI Fluoridation Census annually and post to the DPH-OHP website | ongoing |
| 2.8 | Develop science-based pro/con white paper for agencies that are required to take a neutral stand on the fluoridation issue, IE: WI Rural Water Association | 3-4 |
| 2.9 | Proactively and actively disseminate science-based educational materials | |
| GOAL 3: Develop funding for implementation and/or replacement equipment for local PWS | | |
| 3.1 | Establish subcommittee | 4 |
| 3.2 | Inventory replacement needs throughout state PWS | 4 |
| 3.3 | Develop budget and priorities | |
| 3.4 | Develop list of possible funding opportunities | 4 |
| 3.5 | Develop white paper for initial requests for funding | 4 |
| 3.6 | Contact funding agencies | 5 |
| GOAL 4: Track progress toward incorporating into practice the CDC Engineering and Administrative Recommendations for Water Fluoridation (EARWF) | | |
| 4.1 | Establish EARWF subcommittee | 4 |

| | | |
|---|---|---------|
| 4.2 | Develop database of appropriate agencies involved regulation and monitoring EARWF | 4-5 |
| 4.3 | Establish partnerships with interested agencies | 4-5 |
| 4.4 | Develop action plan for monitoring EARWF | 4-5 |
| GOAL 5: Establish collaborative training and regular informational meetings with DNR, WRWA and other interested agencies focused on the relationship of fluoridation to public health | | |
| 5.1 | Establish expert subcommittee | 3 |
| 5.2 | Include training/information needs assessment questions in the PWS survey assessing the current data collection/transfer technology | 4 |
| 5.3 | Develop and present training/informational modules | 4 |
| 5.4 | Submit articles in Wisconsin water, public health, and oral health professional publications; | 4 |
| 5.5 | Present and/or display educational/promotional fluoridation materials related to public health at various water conferences and training sessions such as: WI Rural Water Association, WI Water Association, WI DNR, WI Public Health Association, WI dental and dental hygienists professional organizations | 4 |
| 5.6 | Arrange yearly attendance to CDC fluoridation training for up to three DNR, WRWA or local water works managers | 3 |
| 5.7 | Arrange regular meetings with Regional DNR staff | ongoing |
| GOAL 6: Evaluate Wisconsin CWF | | |
| 6.1 | Establish CWF evaluation subcommittee | 4-5 |
| 6.2 | Develop evaluation plan | 4-5 |
| 6.3 | Implement evaluation plan | 4-5 |
| 6.4 | Establish state rewards system for local community compliance | 4-5 |

Conclusion

Fluoridation is an ideal public health method because it is effective, eminently safe, inexpensive, requires no behavior change by individuals, and does not depend on access or availability of professional services. Water fluoridation is equally effective in preventing dental caries among different socioeconomic, racial, and ethnic groups. Fluoridation helps to lower the cost of dental care and helps residents retain their teeth throughout life [USDHHS 2000b].

Fluoridation has been a successful public health measure in Wisconsin since 1946 serving approximately 90 percent of the population living in communities with public water systems. And yet, despite its success, the fluoridation issue continues to be an important and ongoing public policy issue requiring diligence and expertise in monitoring quality and public support. Each year communities debate the issue in terms of establishing new fluoridation systems and defeating attempts at removal of fluoridation from existing systems for various reasons including anti-fluoridation activity and budgets related to aging equipment.

Through a collaborative effort between DPH-OHP, DNR, local water systems, dental professional organizations, and many other expert organizations, agencies and individual advocates, Wisconsin is committed to maintaining and expanding its successful rate of communities and citizens served with fluoridated water—one of the greatest public health measures in history. As a result, the citizens of Wisconsin can expect safe drinking water and a reduction of dental caries benefitting overall health.

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