

M4

Water Fluoridation

Principles & Practices

Sixth Edition



American Water Works
Association

M4

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American Water Works
Association

Manual of Water Supply Practices—M4

Water Fluoridation Principles & Practices

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Contents

List of Figures, v	
List of Tables, vii	
Preface, ix	
Acknowledgments, xi	
Chapter 1 Water Fluoridation	1
Introduction, 1	
Occurrence, 2	
History of Use (Growth of Community Water Fluoridation), 2	
Regulatory, 5	
References, 8	
Chapter 2 Health and the Human Body	9
Fluoride in the Human Body, 9	
Discovery of the Benefits of Fluoride, 10	
Fluoride Delivery, 15	
References, 15	
Chapter 3 Fluoride Products	17
Chemical Characteristics, 17	
Chapter 4 System Planning	25
Deciding Whether to Fluoridate, 25	
Fluoride Application Point, 27	
Project Permitting and Planning, 28	
Process of Implementing Fluoridation, 29	
Chapter 5 Design, Equipment, and Installation	37
Saturators, 37	
Dry Feeders, 39	
Solution Dissolving Tanks, 41	
Fluorosilicic Acid Feed Systems, 42	
Metering Pumps, 42	
Flow Meters, 43	
Scales, 43	
Storage of Bulk Fluoride Products, 44	
Day Tanks, 44	
Bag Loaders, 45	
Backflow Prevention Devices, 45	
Piping and Valves, 45	
Corrosion Control, 46	
Continuous Analyzers, 46	
Injection Location, 47	
Calibration Cylinders, 47	
Wastewater Connections, 47	
Facility Construction and Startup, 48	
References, 50	

Chapter 6 Operations and Maintenance.....	51
Operational Strategies, 51	
Compliance Monitoring, 53	
Fluoride (Manual) Ion Specific Electrode (ISE) Method, 55	
Colorimetric SPADNS Method, 56	
Ion Chromatography, 57	
Relative Error, 58	
Record Keeping and Documentation, 59	
Operator Safety in Handling Fluoride Products, 60	
References, 65	
Chapter 7 Defluoridation and Managing Fluoride Levels.....	67
High Fluoride Levels, 67	
Strategies for Managing Well Fluoride Levels, 68	
Methods of Removal, 69	
Point of Use–Point of Entry, 75	
Chapter 8 Small Systems Considerations.....	77
A Small System’s Decision Process, 77	
Considerations for Simplified Systems, 78	
References, 81	
Chapter 9 Community Outreach and Communication	83
Customer Service and Communication, 83	
Fluoride Communication Strategies, 84	
Appendix A Materials Compatibility Lists	87
Appendix B Example Calculations.....	91
Appendix C Frequently Asked Questions	103
Appendix D Selected Sources of Scientific Water Fluoridation Information.....	107
Appendix E Inspection Checklists.....	113
Appendix F Testing Checklists	123
Index, 127	
AWWA Manuals, 111	

Figures



- 1-1 Growth of community water fluoridation around the world, 4
- 2-1 The demineralization and remineralization process, 13
- 2-2 Dental caries and dental fluorosis in relation to fluoride in public water supplies, 14
- 3-1 Density of fluorosilicic acid vs. percentage based on data provided by The Mosaic Company, 21
- 5-1 Upflow saturator, 38
- 5-2 Sodium fluorosilicate feed system, 40
- 6-1 Simplified process control scheme, 52
- 6-2 Example chromatogram, 58
- 7-1 Activated alumina with pH adjustment fluoride removal water treatment plant, 71

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Tables



- 1-1 States requiring fluoridation of public water supplies, 7
- 3-1 Trends in the use of fluoride products over time, 18
- 3-2 Characteristics of fluoride products, 22
- 4-1 Typical values of purity and available fluoride ion (AFI), 31
- 6-1 Analytical methods currently approved for use for SDWA monitoring programs, 45
- 6-2 Interferences for ISE measurements, 56
- 6-3 Measured relative error for ISE method compared to SPADNS method, 59
- 6-4 Recommended overfeed actions, 63
- B-1 Typical Values of Purity and Available Fluoride Ion (AFI), 92
- B-2 Amount of additive product needed based on purity, 102

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Preface



The American Water Works Association has been an active partner in water fluoridation from the original pioneering studies on its implementation and effectiveness from 1945 through 1951, and has supported community water fluoridation since 1951.

In addition, from the 1940s to the 1960s, the US Public Health Service provided national leadership in water fluoridation practice and issued periodic technical advisories on water fluoridation. The US Environmental Protection Agency (USEPA) provided support and guidance on technical practice from 1972 to 1978 until the Centers for Disease Control and Prevention (CDC) assumed responsibility for providing support to state water fluoridation programs in 1978.

These organizations' wealth of knowledge gained through the experiences and management of several thousands of fluoridation process installations can improve future installations and enhance successful continued operations to provide improved health for our communities.

This manual is a resource to assist decision makers planning to use fluoridation treatment, engineers designing and installing these facilities, and water utility personnel managing water operations. The manual presents guidelines and is not intended to take the place of expert advice. Anyone planning or using fluoridation should carefully consider fluoride research, regulations, and methods. State or provincial regulatory requirements should always be the first point of reference for water fluoridation design and practices to improve the health of the citizens.

The first edition of the American Water Works Association *M4 Water Fluoridation Principles & Practices* was prepared from material supplied and previously published by the USEPA. The second edition was updated and revised using additional technical collaboration with the US Centers for Disease Control and Prevention. The third, fourth, and fifth editions were updated and revised incrementally by section. This sixth edition represents a substantial updating and revising of the manual's content to remain consistent with industry practices and to reflect changes in regulatory and public health guidance and the experience of contributing authors.

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Water Fluoridation

INTRODUCTION

The goal of this manual is to assist with the planning and operation of fluoridation systems by decision makers, design engineers, and water utility personnel. This chapter discusses fluoride occurrence, growth of community water fluoridation, and legal issues surrounding fluoridation. The regulatory requirements of community water fluoridation are also addressed, including both federal regulations and the varying approaches states have used to implement fluoridation programs. Additionally, fluoridation outside of the United States is discussed.

Fluoridation in this manual refers to the addition of fluoride to drinking water to maintain a recommended level to improve oral health. Fluoridation was named as one of the Ten Great Public Health Achievements in the 20th Century by the Centers for Disease Control and Prevention (CDC) along with the use of chlorine for disinfection of public water supplies (CDC Morbidity and Mortality Weekly Report, April 2, 1999). Control of infectious diseases has resulted from clean water and improved sanitation. Infections such as typhoid and cholera transmitted by contaminated water, a major cause of illness and death early in the 20th century, have been reduced dramatically by improved sanitation. Water fluoridation was first implemented in 1945, and in 1951, the National Research Council (NRC) of the National Academy of Sciences (NAS), the US Surgeon General, and professional organizations including the American Water Works Association (AWWA) and the American Dental Association (ADA) recommended that communities implement water fluoridation. The US Public Health Service (USPHS) recommended a range of 0.7 to 1.2 mg/L (based on annual average ambient temperature) as part of the 1962 Drinking Water Standards. In 2011, the US Department of Health and Human Services (USHHS) proposed changing the recommended fluoride level in drinking water to a single value of 0.7 mg/L. According to national health surveillance statistics reported by the USPHS and the CDC, the number of people with access to fluoridated water continues to increase and in 2012, 210.6 million people in the United States had access to fluoridated water.*

* 2012 Water Fluoridation Statistics from the US Centers for Disease Control (CDC).