

SALT LAKE VALLEY HEALTH DEPARTMENT

HEALTH REGULATION

#33

FLUORIDATION IN PUBLIC WATER SUPPLIES

**Adopted by the Salt Lake Valley
Board of Health**

(October 3, 2002)

Amended

(November 4, 2004)

**Under Authority of Section 26A-1-121
Utah Code Annotated, 1953, as Amended**

TABLE OF CONTENTS

<u>Section</u>	<u>PAGE</u>
1.0 Definitions	2
2.0 General Provisions	4
3.0 Training	5
4.0 Fluoride Concentrations	5
5.0 Plans, Equipment, and Supplies	5
6.0 Storage and Containment	6
7.0 Accidental Releases	7
8.0 Monitoring and Reporting	7
Table 1 Fluoride Overfeeds	9
Table 2 Fluoride Underfeeds	10
9.0 Analytical Method	10
10.0 Enforcement	11
11.0 Severability	12
12.0 Variances	13
13.0 Water Fluoridation Effective Dates	13

1.0 DEFINITIONS

For purposes of this regulation, the following phrases, terms, and words shall have the meanings given in this section.

- 1.1 **Annual Control Range:** an annual range for fluoride ion concentrations established by the Department initially set at an annual minimum of 0.9 mg/L fluoride ion to an annual maximum of 1.2 mg/L of fluoride ion.
- 1.2 **Board:** The Salt Lake Valley Health Department Board of Health.
- 1.3 **Calculated Dosage:** The calculated amount of fluoride (mg/L) that has been added to a RPWS. The calculation is based on the total amount of fluoride (weight) that was added to the water system and the total amount of water (volume) that was produced.
- 1.4 **DDW:** The Utah Department of Environmental Quality, Division of Drinking Water.
- 1.5 **Department:** The Salt Lake Valley Health Department.
- 1.6 **Director:** The Director of the Salt Lake Valley Health Department or his or her designated representative.
- 1.7 **Distribution sample:** A water sample taken by an authorized RPWS or Department representative from the distribution piping of a water system.
- 1.8 **Distribution system:** A collection of pipes, valves, fire hydrants, storage tanks, and reservoirs that carries water from the water source(s) or treatment plant(s) to PWS customers.
- 1.9 **Drinking water project:** Any work or facility necessary or desirable to provide water for human consumption and other domestic uses which is a part of a RPWS.
- 1.10 **Executive Secretary:** The Executive Secretary of the State Drinking Water Board as provided for in Section 19-4-106, *Utah Code Ann., 1953* as amended.
- 1.11 **Fluoride Monitoring:** The regular analysis and recording by RPWS or Department personnel of the fluoride ion content in the drinking water.
- 1.12 **Fluoride Overfeed:** Any measured level of fluoride above the Optimum Fluoride Concentration Range detected in the RPWS drinking water supply for the time limit established by the Department. Different levels of response are expected from the RPWS depending on the extent of the overfeed (see Table 1).
- 1.13 **Fluoride Surveillance:** The regular review by the Department and RPWS of sample monitoring data to ensure that the Optimum Fluoride Concentration Range is maintained by the RPWS in a specific geographic area.
- 1.14 **Fluoride Underfeed:** Any measured level of fluoride below the Optimum Fluoride Concentration Range detected in the RPWS drinking water supply for the time limit established by the Department (see Table 2).
- 1.15 **Functionally Separate Water System (FSWS):** For the purposes of this regulation, a FSWS is a public water system that relies exclusively on its own water sources independent of any other public water systems, to provide water to its retail customers. Interconnections with any other public water systems maintained only for short term emergency service and not used to supplement water available for retail sale, shall not be considered in determining whether a system is a functionally separate water system.
- 1.16 **Milligrams per Liter:** (mg/L), also approximately equal to parts per million (ppm).

- 1.17 **Operating Permit:** Written authorization from the DDW Executive Secretary to begin operation of a facility, system, or equipment constructed as part of a RPWS.
- 1.18 **Operator:** A person employed by a RPWS to operate, repair, or maintain a RPWS.
- 1.19 **Optimum Fluoride Concentration Range:** A fluoride ion range as established by the Department which initially shall be between 0.7 mg/L to 1.4 mg/L.
- 1.20 **Owner:** An individual, business entity, special district, governmental entity, or any other entity or person with a legal or equitable interest in a RPWS. "Owner" does not include any entity or person which/who does not operate the RPWS and which/who, without participating in management, holds indicia of ownership primarily to protect its/his security interest.
- 1.21 **Person:** An individual, trust, firm, estate, company, corporation, partnership, association, state, state or federal agency or entity, municipality, commission, or political subdivision of a state.
- 1.22 **Public Water System (PWS):** A system providing water for human consumption and other domestic uses, which has at least 15 service connections or serves an average of at least 25 individuals daily at least 60 days out of the year and includes collection, treatment, storage, and distribution facilities under the control of the operator and used primarily with the system, or collection, pretreatment or storage facilities used primarily in connection with the system but not under the operator's control.
- 1.23 **Regulated Public Water System (RPWS):** For the purposes of this regulation, a PWS that serves a population greater than 3,300 and any other PWS that voluntarily adjusts or changes the fluoride ion concentration in the water system, but not functionally separate water systems (FSWS) which are excluded by definition.
- 1.24 **Sanitary survey:** An on-site inspection of RPWS facilities and operation. The survey can be conducted by the DDW, the Department, or qualified individuals authorized in writing by the Executive Secretary. The survey consists of a review of operating methods and records and a physical inspection of facilities and equipment.
- 1.25 **Split sample:** A distribution water sample taken by a trained authorized RPWS representative in duplicate or as a single sample divided into two samples. One sample is analyzed by the RPWS. The other sample is analyzed by a State-certified laboratory by a different method. Both results must be attached to the monthly report.

2.0 GENERAL PROVISIONS

2.1 Purpose and Applicability

- 2.1.1 The purpose of this regulation is to regulate the application of fluoride to RPWS to promote public health through the protection and maintenance of dental health as voted for by the citizens of Salt Lake County by:
 - 2.1.1.1 Establishing and requiring an Annual Control Range;
 - 2.1.1.2 Establishing and requiring an Optimum Fluoride Concentration Range; and
 - 2.1.1.3 Preventing damage and injury to property, persons, and water systems through promotion of safe application and storage of fluoride compounds.
- 2.1.2 This regulation applies to all RPWS.

2.2 Jurisdiction of the Department

This regulation is promulgated by the Board as authorized by Sections 26A-1-121(1), 19-4-111, *Utah Code Ann., 1953* as amended and Chapter 9.04 Salt Lake County Code of Ordinances.

2.3 General Powers and Duties

The Department shall be responsible for the implementation of this regulation by:

- 2.3.1 Requiring RPWS to meet the Annual Control Range;
- 2.3.2 Requiring RPWS to operate within the Optimum Fluoride Concentration Range;
- 2.3.3 Requiring RPWS to submit reports on fluoride addition with calculated dosage and ion test analysis;
- 2.3.4 Providing fluoride surveillance;
- 2.3.5 Taking distribution samples for fluoride analysis in addition to the RPWS required samples; and
- 2.3.6 Performing any and all acts permitted by law that are necessary for the successful enforcement of this regulation.

2.4 Scope

It shall be unlawful for any RPWS owner or any person or entity referenced in Section 10.7.1 not to comply with this regulation as promulgated by the Board.

3.0 TRAINING

A fluoridation training course, recognized by the Department, shall be completed by all RPWS operators performing operation and maintenance of a drinking water fluoridation system(s). Training shall include, but is not limited to the following: operator safety, fluoride analysis, emergency response procedures, equipment operation, reporting, and other applicable requirements of this regulation.

4.0 FLUORIDE CONCENTRATIONS

- 4.1 While fluoridating, RPWS shall maintain:
 - 4.1.1 The Optimum Fluoride Concentration Range for fluoride ion at each fluoride feed location;
 - 4.1.2 The Annual Control Range for fluoride ion at each distribution sampling site, except as provided by 4.1.2.1 below.
 - 4.1.2.1 RPWS with mixed sources requiring fluoridation in excess of 1.2 mg/L to reach the Annual Control Range minimum may meet a minimum annual fluoride ion concentration of 0.8 mg/L.
- 4.2 The Annual Control Range and Optimum Fluoride Concentration Range shall be reviewed at least biannually by the Department. The Department shall consider adjustments to the Annual Control Range and Optimum Fluoride Concentration Range based on recommendations from the Centers for Disease Control and Prevention (CDC) and the Utah Department of Health (UDOH) Oral Health Program.

5.0 PLANS, EQUIPMENT, AND SUPPLIES

5.1 Plan Review

The installation of and/or modification of fluoridation equipment for fluorosilicic acid (hydrofluorosilicic acid), sodium fluoride, or sodium fluorosilicate (sodium silicofluoride) to drinking water shall be reviewed by the DDW. These project plans and specifications shall

conform to the *Utah Administrative Code, Rule 309* and shall have written approval by the Executive Secretary. A Project Notification form shall be completed and submitted to the DDW.

5.2 Permits

Construction of a drinking water project shall not begin until complete plans and specifications have been approved in writing by the Executive Secretary. Upon completion of construction or changes to fluoridation equipment, all RPWS must obtain an Operating Permit. Operating Permits are granted by the Executive Secretary.

5.3 Standards

All chemicals and equipment shall conform to the most recent published copy of the National Sanitation Foundation (NSF) Standard 60 and 61 and shall be marked to ensure trace contaminants are tested and meet the requirements of the most recent published copy of the American Water Works Association (AWWA) Standards B703-84 (hydrofluorosilicic acid), B701-84 (sodium fluoride), or B702-84 (sodium fluorosilicate).

5.4 Equipment Evaluation

The Department shall conduct evaluations of fluoridation equipment of an RPWS at the time of the sanitary survey.

5.5 Equipment and Methods

Chemical feed equipment and methods shall conform to the applicable rules of the State Drinking Water Board as found in the *Utah Administrative Code, Rule 309*, and with any other applicable local, state, or federal regulations.

6.0 STORAGE AND CONTAINMENT

6.1 Fluoridation system design, construction, maintenance, and operation shall be in compliance with the Utah Occupational Safety and Health Act, 34A-6-101 et seq., *Utah Code Ann., 1953* as amended (UOSHA), and applicable state and federal regulations. For example, facilities may be required to have shower and eye wash facilities, guarding where applicable, and personal protective equipment.

6.2 Fluoride chemicals shall be isolated from other chemicals to prevent contamination. Fluoride chemicals shall be stored in covered or unopened containers inside a building. Buildings are not required for hydrofluorosilicic acid. Unsealed storage containers for hydrofluorosilicic acid shall be vented to the atmosphere where they are stored. Bags, fiber drums, steel drums, and other storage containers shall be stored on pallets.

6.3 Secondary containment shall be provided for fluoride chemicals.

7.0 ACCIDENTAL RELEASES

In the event of a spill, leak, or accidental release operators shall follow the “accidental release measure” instructions found on the Material Safety Data Sheet (MSDS) and any applicable Occupational Safety and Health Administration (OSHA) requirements. These instructions and any applicable UOSHA requirements shall be posted at all chemical injection sites. In the case of a release to the environment the RPWS shall contact the State Department of Environmental Quality, Division of Environmental Response and Remediation (DEQDERR), the Division of Solid and Hazardous Waste (DSHW), the local responsible HAZMAT agency, and the DDW. The RPWS shall notify the Department within 24 hours of any spill or release greater than five gallons.

8.0 MONITORING AND REPORTING

For all RPWS:

- 8.1 Fluoride concentrations exceeding 4.0 mg/L at any site shall be reported to customers by the RPWS according to EPA Public Notification (PR) rule and DDW requirements. The report shall include EPA recommended standard health effects language. The RPWS shall notify the Department within 24 hours.
- 8.2 Fluoride concentrations exceeding 2.0 mg/L at any site shall be reported to customers by the RPWS according to EPA Public Notification (PR) rule and DDW requirements. The report shall include EPA recommended standard health effects language. The RPWS shall notify the Department within 7 calendar days. Any fluoridation sites that have a concentration more than 2.0 mg/L shall be sampled daily until the concentration is within the required range.
- 8.3 The RPWS shall submit a sampling plan to the Department for approval.
- 8.4 The RPWS shall submit a fluoride report each calendar month to the Department, and to the DDW as required by *Utah Administrative Code, Rule 309*.
- 8.5 Fluoride ion levels shall be determined at least weekly at each of the representative points in the distribution system as defined in the sampling plan. Systems meeting the Annual Control Range may reduce sampling to twice monthly at each distribution site the following year. The RPWS shall take a split sample every month for the purpose of equipment calibration verification. Additional samples may be required depending on the system monitoring test.
- 8.6 Fluoride concentrations may be determined at the source, provided monitoring takes place at a point sufficiently distant to allow complete mixing. Fluoride ion concentration from a general source; e.g., reservoir or treatment plant, may be used for each connection of the general source to the RPWS provided that no source of water outside the Optimum Fluoride Concentration Range is added before the connection. Sources which are mixed within the system shall be monitored according to a sampling plan approved by the Department.
- 8.7 The RPWS shall determine daily fluoride concentrations by recording and calculating the dosage, including natural and additional fluoride. Weekly fluoride concentrations at sample sites within the distribution system shall be determined by sample analysis. Sample sites shall be representative of the entire system. Where continuous monitoring equipment is used, the RPWS shall report daily average and the monthly average or an equivalent. A yearly average of each sampling site shall be submitted by January 15 of the following year. Monthly reports shall be submitted prior to the fifteenth working day of the following month.
- 8.8 Each RPWS shall respond to Fluoride Overfeeds according to Table 1 below and Fluoride Underfeeds according to Table 2 below. Fluoride Overfeeds are considered on a timely basis. Fluoride Underfeeds are considered only after a six-month period but shall occur only once annually before a violation occurs. Each RPWS shall notify the Department within 3 weeks of any underfeed or introduction of a non-fluoridated source.

TABLE 1
FLUORIDE OVERFEEDS

Fluoride Concentration	Actions
>1.4 mg/L to 2.0 mg/L (over 30 minute continual average or single sample analysis)	<ol style="list-style-type: none"> 1. Leave the fluoridation system on. 2. Determine malfunction and make repair.
>2.0 mg/L to 4.0 mg/L (over 30 minutes or single sample analysis)	<ol style="list-style-type: none"> 1. Leave the fluoridation system on. 2. Determine malfunction and make repair. 3. Report the incident to customers served as soon as practical but within 12 months. 4. Notify the Department within seven calendar days.
>4.0 mg/L to 10.0 mg/L	<ol style="list-style-type: none"> 1. Determine malfunction and immediately attempt repair. If the malfunction is not found and corrected immediately, turn off the fluoridation system. 2. Report the incident to customers served as soon as practical but within 30 days. 3. Notify the Department within 24 hours. 4. Take water samples at several points in the distribution system, as set forth by the Department for fluoride analysis, until the results are below 1.4 mg/L. 5. Determine malfunction and make repair. 6. After the repair is complete, restart the fluoridation system. 7. Notify the Department fluoridation has resumed.
>10 mg/L	<ol style="list-style-type: none"> 1. Turn off the fluoridation system immediately. 2. Report the incident immediately to the Department. 3. Take water samples for fluoride analysis at several appropriate points in the distribution system until the results are below 1.4 mg/L. Save part of each sample for a State certified laboratory to test. 4. Determine malfunction and make repair. 5. With the Department's permission, restart the fluoridation system. 6. Comply with all EPA and DDW reporting requirements.

TABLE 2
FLUORIDE UNDERFEEDS

For less than three consecutive weeks	1. Take no action.
From three consecutive weeks to six months.	1. Contact the Department to inform of the extended period by phone and in writing within three weeks of the first day of Fluoride Underfeed.

For longer than six months.	<ol style="list-style-type: none"> 1. Respond to any remedial action in any Notice Of Violation from the Department. 2. Meet with the Department to determine how to inform health professionals about the situation prior to any public information being released so that the Department can be prepared to prescribe fluoride supplements and fill prescriptions. 3. With the cooperation of the Department, fully inform the public of the situation through a news release. 4. Fully inform the public through a news release of the Fluoride Underfeed at least 30 days before fluoridating again. 5. Notify the Department that the underfeed has continued past six months.
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9.0 ANALYTICAL METHODS

Analytical procedures shall be consistent with those found in the most recent Standard Methods for the Analysis of Water and Wastewater (APHA, AWWA, WEF), including those recorded in CDC water fluoridation manuals. Continuous monitors may be used, provided they are installed at a representative point in the water supply. Instructions provided by the manufacturer for analytical equipment shall be followed. Analytical methods which do not perform with equivalency to split samples shall not be used.

10.0 ENFORCEMENT

10.1 Notice of Violation

If the Director has inspected any property or facility used for water fluoridation or fluoridation chemical storage, or has any sample analyzed and has determined the result to be in violation of this regulation or has reasonable grounds to believe that there has been a violation of any part of this regulation, the Director shall give written notice of violation to the RPWS manager or operator thereof.

10.2 Requirements of Notice and Order

The notice of violation shall:

- 10.2.1 Describe the property or sample results;
- 10.2.2 Contain a factual statement describing the violation;
- 10.2.3 Set forth the necessary remedial action to comply with this regulation;
- 10.2.4 Set a time for the completion of the remedial action; and
- 10.2.5 Advise of the right to an administrative hearing as provided for in the Department's Adjudicative Hearing Procedures.

10.3 Previous Notices and Failure to Comply

The Director shall not be required to issue a notice of violation prior to seeking judicial relief if the violator has, within the prior 24 months, been given notice of a violation, by having been issued written Notice Of Violation or otherwise, and failed to comply with that notice or an immediate action is necessary to protect health, safety, or well being.

10.4 Emergency Orders

If the Department finds that an emergency exists because of an overfeed in excess of 4.0 mg/L requiring immediate action to protect the public health, safety, or well-being, the Director may issue an order declaring an emergency and requiring that remedial action be taken. The order shall be effective immediately.

10.5 Procedures for Cost Collection

Upon completion of any monitoring, sampling, or lab costs and issuing a Notice Of Violation, the Director shall prepare an itemized statement of all costs, including administrative expenses incurred. The itemized statement shall be sent to the owner demanding payment to the Department within 20 days of the mailing date. If the owner fails to make payment within 20 days of the date of the mailing, the Director may take appropriate legal action to collect all costs incurred.

10.6 Right to Appeal

Any Notice Of Violation and order issued pursuant to Section 10.1 and 10.4 shall become final and unappealable to any court without further action unless, within ten days after the Notice Of Violation or order is received, the aggrieved party files a written request and the request is received by the Department within the ten days requesting a departmental conference, departmental hearing, or departmental appeal. Appeals shall follow the Department's Adjudicative Hearing Procedures.

10.7 Penalty

10.7.1 Any of the following persons or entities who violates this regulation or any notice or order issued pursuant to this regulation is subject to the penalties set out in Section 26A-1-123 *Utah Code Ann., 1953* as amended.

10.7.1.1 Any person unauthorized by the RPWS who disables fluoridation equipment or operation or adds or adjusts fluoride in violation of this regulation or any notice or order issued pursuant to this regulation;

10.7.1.2 Any RPWS Owner, including but not limited to any person, trust, firm, estate, company, corporation, partnership, association, municipality, or political subdivision of the state; and

10.7.1.3 Any RPWS officer, director, agent, operator, manager, or employee.

10.7.2 Each day a violation is committed or permitted to continue shall constitute a separate violation.

10.7.3 In addition to other penalties imposed by a court of competent jurisdiction, any person found guilty of violating any of this regulation shall be liable for all expenses incurred by the Department including, but not limited to, the costs incurred for sampling and analysis, cleaning and disposal or any other costs incurred in mitigating and abating the violation.

11.0 SEVERABILITY

If any provision, clause, sentence, or paragraph of this regulation or the application thereof to any person or circumstances shall be held to be invalid, such invalidity shall not affect the other provisions or applications of this regulation.

12.0 VARIANCES

Written variances to this regulation may be granted by the Board on a case-by-case basis in connection with one or more wells with limited production, with difficulty in providing fluoridation to non-residential areas, or due to unusual circumstances encountered by a RPWS. However, the RPWS must comply with all

provisions of this regulation to which it does not have a written variance. Requests for variances must be written and sent to the Director.

13.0 WATER FLUORIDATION EFFECTIVE DATES

13.1 All RPWS systems shall comply with this regulation by October 1, 2003.

13.2 This regulation shall be effective on the date of its adoption by the Board of Health.

APPROVED AND ADOPTED THIS _____ day of _____, 2002.

SALT LAKE VALLEY
BOARD OF HEALTH

By _____
BARBARA THOMAS, Chair

ATTEST:

PATTI T. PAVEY, M.S.
Executive Director
Salt Lake Valley Health Department

GUIDANCE DOCUMENT

FLUORIDE SAMPLING PLAN REQUIREMENTS

Objective: To ensure sampling of RPWS is representative of all points within each system.

Requirements:

1. A map of the distribution system including:
 - a. All sources.
 - b. The use of sources.
 - c. Points of entry of sources.
 - d. Points of addition of fluoride.
 - e. Fluoride chemical additive.
 - f. General flow of the system.
 - g. Number and location of sampling sites.
2. A narrative of the way sample sites were determined
3. The address of each site.
4. A description of the procedure for split samples, the laboratory used, and how comparisons with the fluoride testing equipment is used and recorded.
5. A list of personnel and their defined duties pertaining to fluoridation and testing.

COMPLIANCE FOR OPTIMUM FLUORIDE CONCENTRATION RANGE

The fluoride ion range shall be determined by average daily calculated dosage and daily or weekly sampling at fluoride feed stations. Overfeeds will be determined by a single sample, daily calculated dosage, or by a maximum 30 minute average for continuous monitoring results.

COMPLIANCE FOR ANNUAL CONTROL RANGE

A RPWS annual average for compliance purposes for the annual control range shall be calculated from the monthly averages of required weekly distribution system samples. Systems with online monitors shall calculate monthly averages from weekly averages based on the calculations of daily averages.

DEPARTMENT WEBSITE

The Department web site is <http://www.slvhealth.org>. Regulation #33 and this accompanying Guidance Document is located at <http://www.slvhealth.org/eh/pdf/reg33.pdf>.

DEPARTMENT EMERGENCY PHONE NUMBER

The Department's emergency phone number to report accidental releases is 313-6702 during regular business hours and 580-6681 after hours and weekends.