



# *Fluoridation Regulatory Requirements in Connecticut*

Presented by,  
Carissa Madonna  
Sanitary Engineer 2  
Drinking Water Section

# *What is Fluoride?*

- Fluoride is a naturally occurring element that can be detected in Connecticut's drinking water.
- Nearly all water contains some natural level of fluoride
- Water passes over rock formations and dissolves the fluoride compounds.
- Surface water is typically low, less than 0.2 mg/L of fluoride
- Ground waters can have fluoride from less than 0.1 mg/L to over 5 mg/L

## *Fluoride Health Effects*

- Fluoride, in the right amounts, promotes the development of strong, permanent teeth and is beneficial for both children and adults.
- Fluoride concentrations used for water fluoridation (around 1 mg/l) have no known adverse health effects.
- Fluoridated communities have 20%-40% fewer caries (dental decay)

## *Fluoride Health Effects*

- However, excessive fluoride consumption can cause mottled enamel or fluorosis. Dental Fluorosis results from fluoride ingested during tooth development in children less than 8 years old. Some people who drink water that contains fluoride in excess of the 4.0 mg/l Maximum Contaminant Level over many years can develop bone disease, including pain and tenderness of the bones.
- Excessively high fluoride levels, generally greater than 10 mg/L, may result in skeletal fluorosis.
- Treatment options to remove excessive fluoride levels include reverse osmosis, ion exchange, and distillation.



# *Monitoring Requirements*

- **RCSA Section 19-13-B102(e)(7)(C)**  
Routine monitoring for fluoride is required at the entry point of a public water system at least once every 3 years for groundwater sources and once every year for surface water sources.
- **RCSA Section 19-13-B102(e)(7)(L)**  
The fluoridated water of each treated source is required to be tested daily and maintained in the range of 0.8 mg/l and 1.2 mg/l as a monthly average.
- **RCSA Section 19-13-B102(i)**  
Public water systems that fail to monitor for fluoride during the required monitoring period will be required to issue a Tier 3 public notice.



# *Maximum Contaminant Level Goal*

- Fluoride MCLG is 4.0 mg/l
- Maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur, and includes a margin of safety.
- Non-enforceable health-based goal



# *Secondary Maximum Contaminant Level*

- Fluoride Secondary MCL is 2.0 mg/l
- EPA website indicates that this was promulgated for naturally high fluoride waters.
- **RCSA Section 19-13-B102(i)(5)(D)**  
The Fluoride Secondary Maximum Contaminant Level's purpose is to prevent the staining of teeth (aesthetic concerns). Fluoride levels above the Secondary Maximum Contaminant Level of 2.0 mg/l will trigger a Tier 3 public notice requirement to minimize the potential for dental fluorosis.



# *Maximum Contaminant Level*

- Fluoride MCL is 4.0 mg/l
- The maximum permissible level of a contaminant in water which is delivered to any user of a public water system.
- Economically and technologically feasible
- **RCSA Section 19-13-B102(e)(2)**

The Fluoride Maximum Contaminant Level assures no short-term or long-term health risk. Fluoride levels above the Maximum Contaminant Level of 4.0 mg/l will trigger a Tier 2 public notice requirement to minimize the potential development of bone disease, including pain and tenderness of the bones.





# *Public Notification Requirements*

- **Purpose**: To notify the public any time a water system violates drinking water regulations or has other situations posing a risk to public health.
- **Compliance**: Notices must be sent within 24 hours, 30 days, or one year depending on the tier to which the violation is assigned.
- **Applicability**: All Public Water Systems violating drinking water regulations, operating under a variance or exemption, or having other situations posing a risk to public health.



# *Public Notification Compliance*

- Violations are classified into three tiers as defined in RCSA 19-13-B102(a) - Definitions
- Notices must be sent to all persons served within the period specified by each tier:
  - Tier 1: 24 hours
  - Tier 2: 30 days
  - Tier 3: 365 days
- Clock for notification starts when the system learns of the violation
- When reporting a violation, a PN template can be provided
- Minimum general content of the notice must contain ten (10) required elements



# *Public Notification Compliance*

- All violation letters include a PN template
- When properly completed, the template will address the ten (10) requirements elements
- Any deviations from the template should be submitted to the DWS for approval
- Systems shall submit a certification that is has fully complied with the requirements within ten (10) days after completing the public notification requirements
- A copy of the actual notice provided must be submitted with the completed and signed Certification
- Systems may use the Consumer Confidence Report (CCR) as a method of delivery provided the timing, content, and delivery requirements are met
- A PN Certification is still required when using the CCR



# *Public Notification Compliance*

## Ten Required Elements of a Public Notice:

- i) Description of the violation or situation
- ii) Potential Health Effects
- iii) Population at risk
- iv) What the PWS is doing to correct the violation or situation
- v) Whether alternative water supplies should be used
- vi) What action(s) the consumer should take
- vii) PWS Contact Information
- viii) When the violation or situation occurred
- ix) When the water system expects to return to compliance or resolve the situation; and
- x) Additional distribution instructions

# *How does Fluoride prevent tooth decay?*

- Fluoride helps tooth surfaces resist decay through a process called remineralization. Fluoride concentrations in dental plaque and saliva will enhance the remineralization of the tooth enamel.
- It inhibits dental caries causing bacteria from harming the tooth surface. Dental caries are a bacterial disease, which is transmissible to others.



## *Connecticut General Statutes 19a-38 – Fluoridation of Public Water Supplies*

- Whenever the fluoride content of public water supplies serving 20,000 or more persons supplies less than 0.8 mg/l of fluoride, the person, firm, corporation, or municipality having jurisdiction over the supply shall add a measured amount of fluoride to the water so as to maintain a fluoride content of between 0.8 mg/l and 1.2 mg/l.
- For Connecticut, the most benefit to oral health is achieved when waters are fluoridated to 1.0 mg/l. This level is considered optimally fluoridated.



## *Fluoridated Water Systems in Connecticut*

- 2,692,576 people or 91% of the public water system's population receive fluoridated water.
- 22 Public Water Systems are considered naturally fluoridated. These water systems have detected a natural fluoride level at or above 0.8 mg/l.
- 61 Public Water Systems either add fluoride to the drinking water or are consecutive water systems that purchase water from the adjusted water systems.

# *Operator Safety*

- Although fluoride is entirely safe at the recommended optimum dosage levels in potable water, like many things, it can be harmful when in the concentrated form.
- Fluoride chemicals used to add fluoride to the water include Fluorosilicic Acid, Sodium Fluorosilicate, and Sodium Fluoride.
- Operators must wear protective safety gear when handling or working with these chemicals.
- Ventilation is extremely important for these chemicals, especially for the Fluorosilicic Acid, which can corrode everything in the room it is located in.





# *Additional Information*

Department of Public Health Website:

<http://www.ct.gov/dph>

## Presenter Information:

Carissa Madonna

Sanitary Engineer 2

CT Department of Public Health Drinking Water Section

Information Systems Unit

410 Capitol Avenue, MS#51WAT

P.O. Box 340308

Hartford, CT 06134-0308

Phone: 860-509-7333

Fax: 860-509-7359

[carissa.madonna@ct.gov](mailto:carissa.madonna@ct.gov)