

# Speaking up for water fluoridation



**“The Science is Crystal Clear”**



Spotsylvania County Board of Supervisors  
Community Water Fluoridation  
January 23, 2018

# History Leading up to Community Water Fluoridation (CWF)

How did we discover benefits of fluoride on reducing decay?

# History Leading up to Community Water Fluoridation (CWF)

## ➡ Frederick S. McKay

- **1901** – established practice in Colorado Springs, CO
- “Colorado Brown Stain”
  - Only life-long residents (or those who had moved there as infants) had stain



➡ **1908** – began to investigate extent of condition in surrounding area

**Key Observation:** *very few cavities in this population*



- 1931 – **McKay** contacted Churchill and sent him water samples. Fluoride was discovered in each sample that McKay sent for analysis (**2.0ppm to 12.0 ppm**)
- Dean** ( Public Health Service) sent water samples from communities which had very low cavities and good looking teeth (**1ppm**)
- It was now known what substance in the water was causing the staining of teeth:

## FLUORIDE

# Mother Nature is Replicated: Community Water Fluoridation Begins

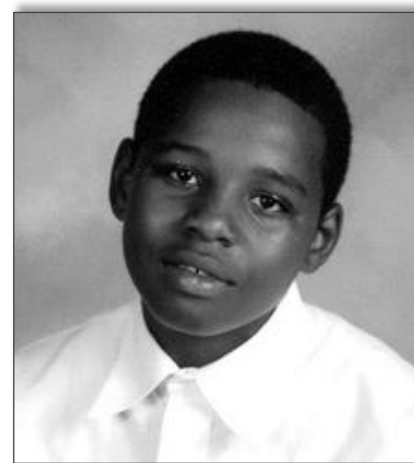
- A 21 city study is undertaken to replicate what **Mother Nature** had taught us
- **Grand Rapids, Michigan** was the first city to adjust fluoride concentration in public drinking water (1945)
- **Cavity rates dropped dramatically:  
60%**



# Why do cavities matter?

The **most common chronic disease** for children and teens. It's at least 5 times more common than asthma, 4 times more common than obesity

- Severe pain (toothaches)
- Difficulty in chewing
- Poor weight gain
- Difficulty concentrating
- Predictor of cavities later in life
- Costly to treat
- Deaths





# Cavities: Unevenly distributed



- Low-income kids are more than twice as likely to experience tooth decay.
- The disadvantaged bear a disproportionate burden of cavities
- **Nearly 1 million** Virginians are living in poverty
- **Nearly 10,000** Spotsylvania residents live in poverty

# Operating Room Full Mouth Restorations reduced by 2/3 to 3/4ths by CWF

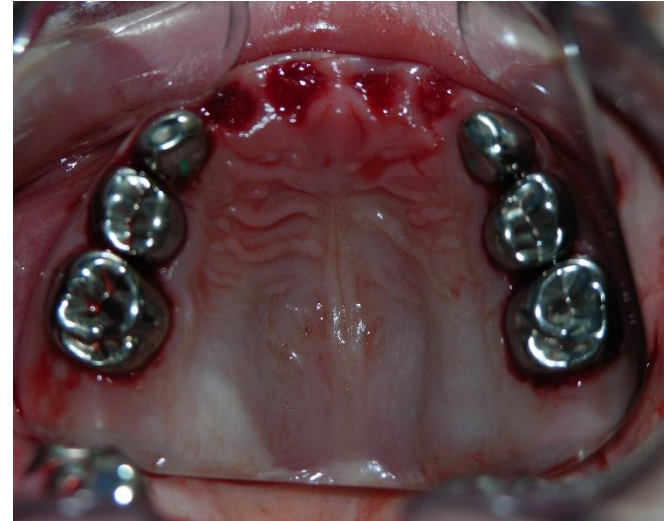
- U.S. and International studies confirm benefits for children
- As CWF decision-makers, you prevent more cavities than all of the dentists in the U.S. will ever prevent in their entire lifetimes by fluoridating the water



*(Sources: An alternative marker for the effectiveness of water fluoridation: hospital extraction rates for dental decay, a two-region study, Elmer et al, British Dental Journal 2014; 216: E10; J. Dental services, costs, and factors associated with hospitalization for Medicaid eligible children, Louisiana 1996-97. Griffin SO, et al, Public Health Dent. 2000 Winter;60(1):21-7; Hospitalizations for dental infections - Optimally versus non-optimally fluoridated areas in Israel. Amir Klivitsky, MD; et al, [http://jada.ada.org/article/S0002-8177\(14\)00115-9/](http://jada.ada.org/article/S0002-8177(14)00115-9/))*



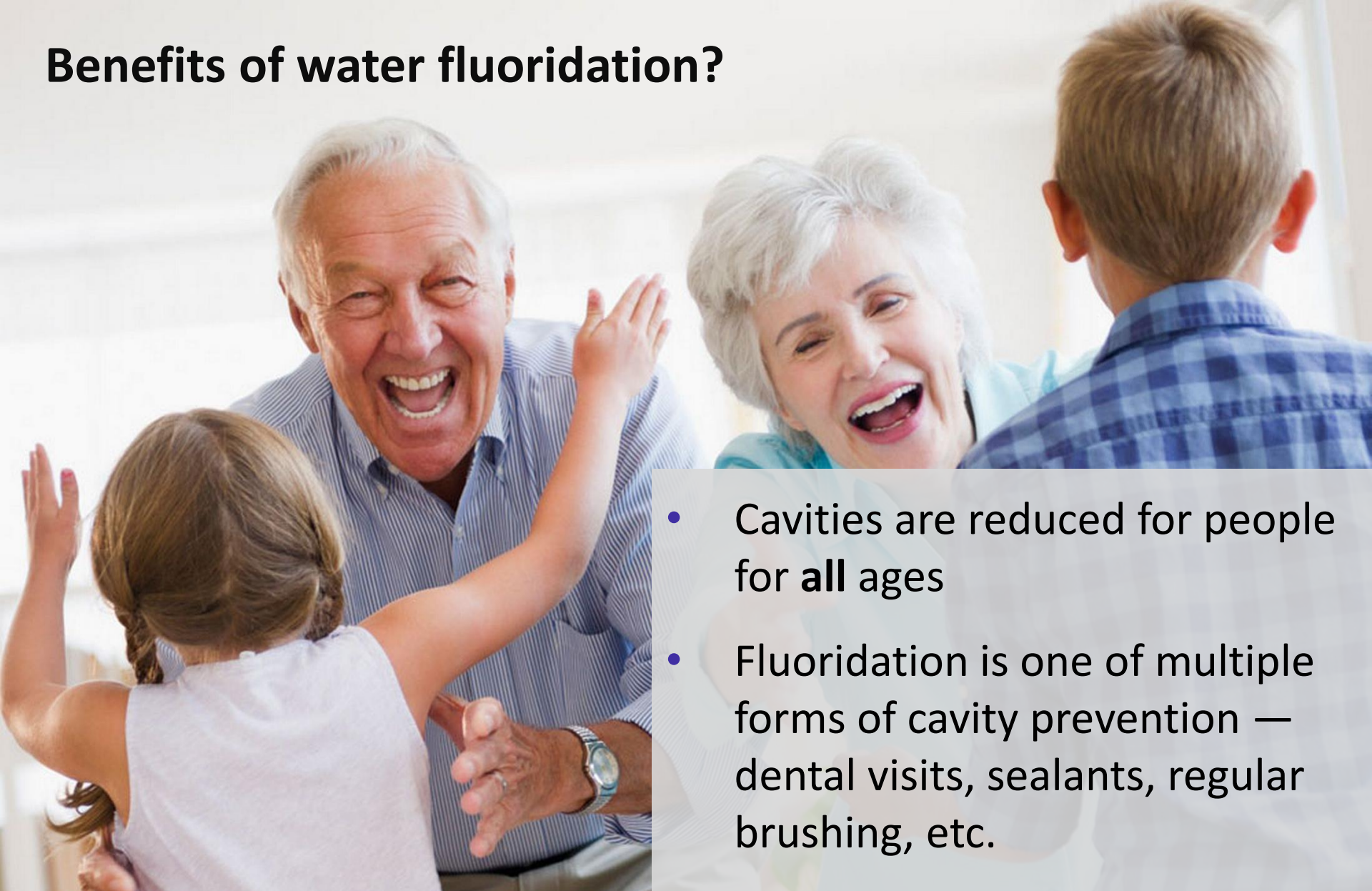
# Operating Room Full Mouth Restorations reduced by 2/3 to 3/4ths by CWF



**A scientific consensus:**  
70+ years of evidence



# Benefits of water fluoridation?



- Cavities are reduced for people for **all** ages
- Fluoridation is one of multiple forms of cavity prevention — dental visits, sealants, regular brushing, etc.



# How Fluoride Works

**Both** Topical and Systemic Fluoride are required to develop **Lifetime Benefits** and maintain teeth/roots resistant to cavities

- **Topical Effect** :

From the outside of the tooth

- Saliva, fluoridated topical products

- **SYSTEMIC EFFECT:**

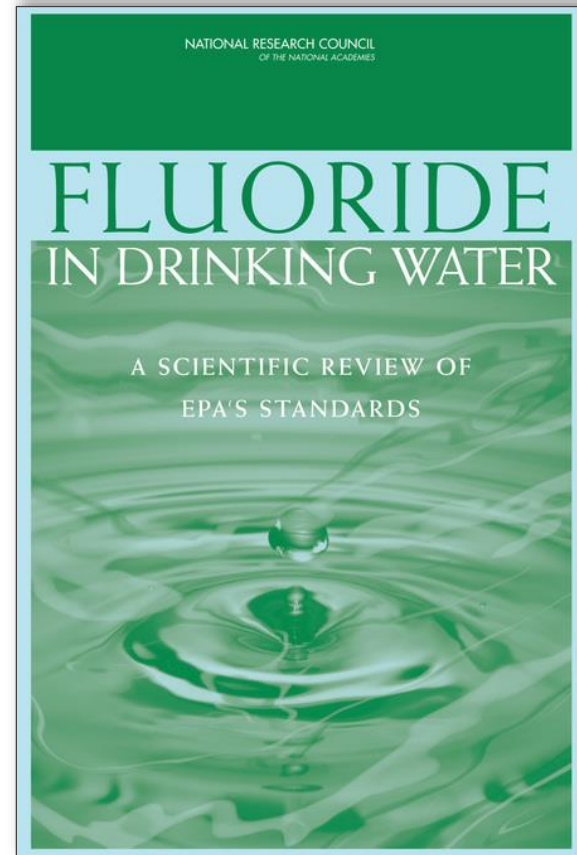
From the *inside* AND *outside* of the tooth

- Saliva-bathes teeth 24/7/365
- **Adults** also benefit from fluoride, rather than only children, as was previously assumed



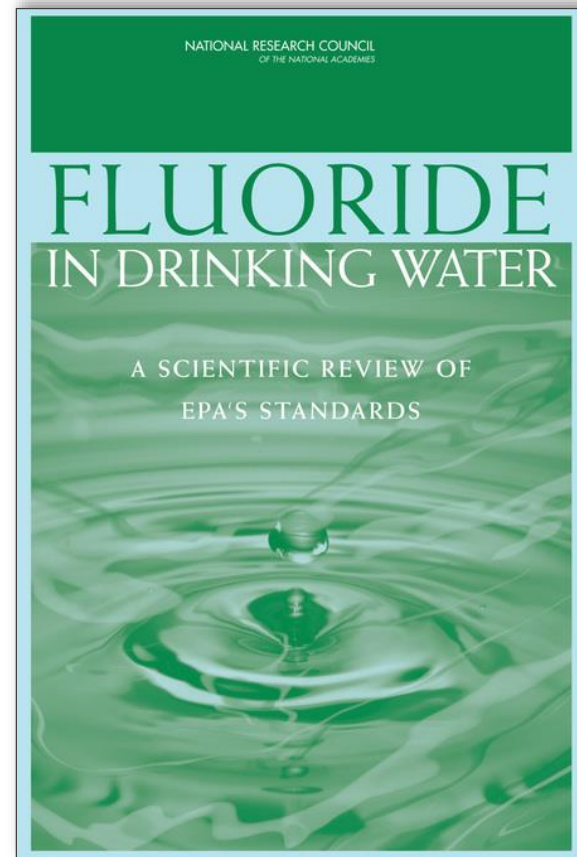
# NRC's 2006 Report: Fluoride in Drinking Water

- National Academy of Sciences
- National Research Council
- Met for 3½ years
- Determined 3 toxic endpoints that current EPA MCL of **4mg/L (ppm)** could be evaluated for:
  1. Severe dental fluorosis
  2. Skeletal fluorosis
  3. Bone Fractures





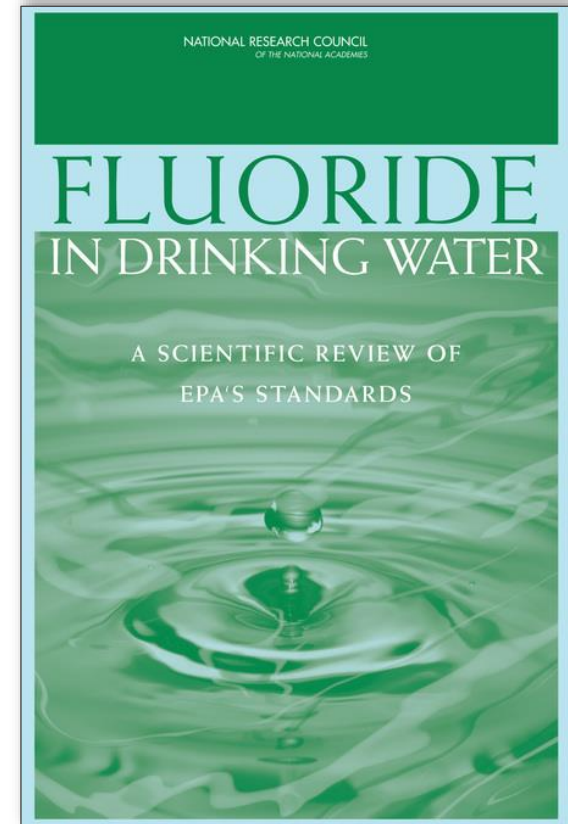
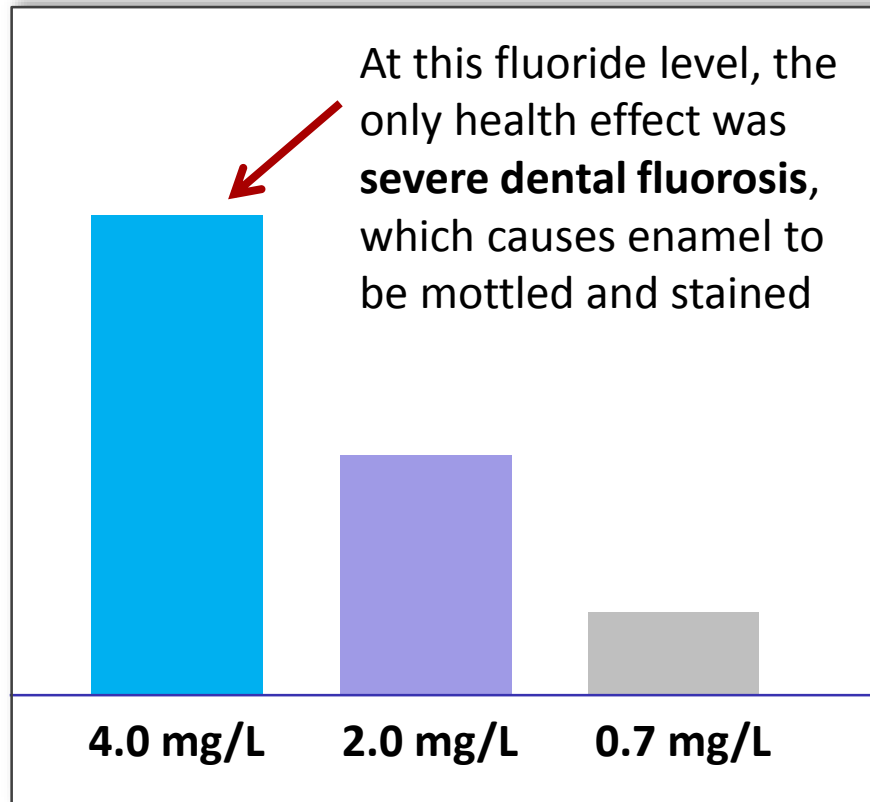
As the report explained, the EPA's maximum limit (MCL) on fluoride is “set at a concentration at which **no adverse health effects** are expected to occur and the **margins of safety** are judged ‘adequate’.”



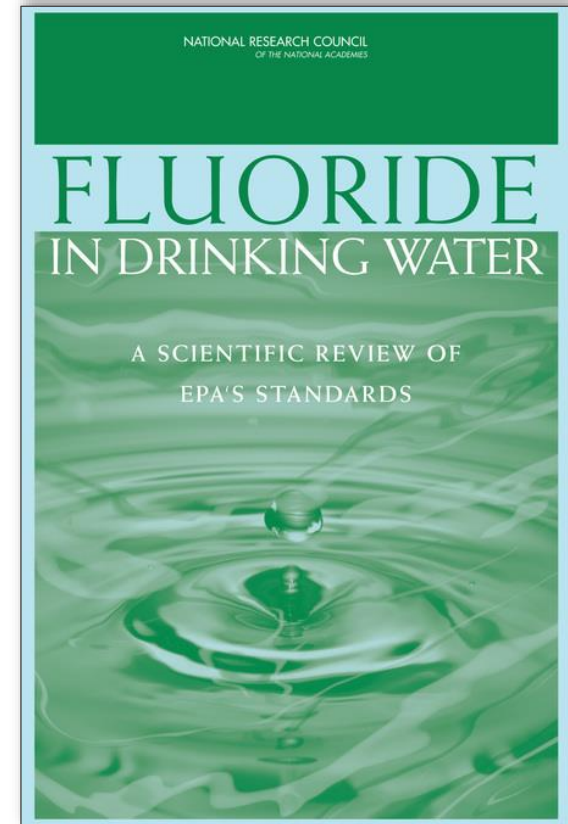
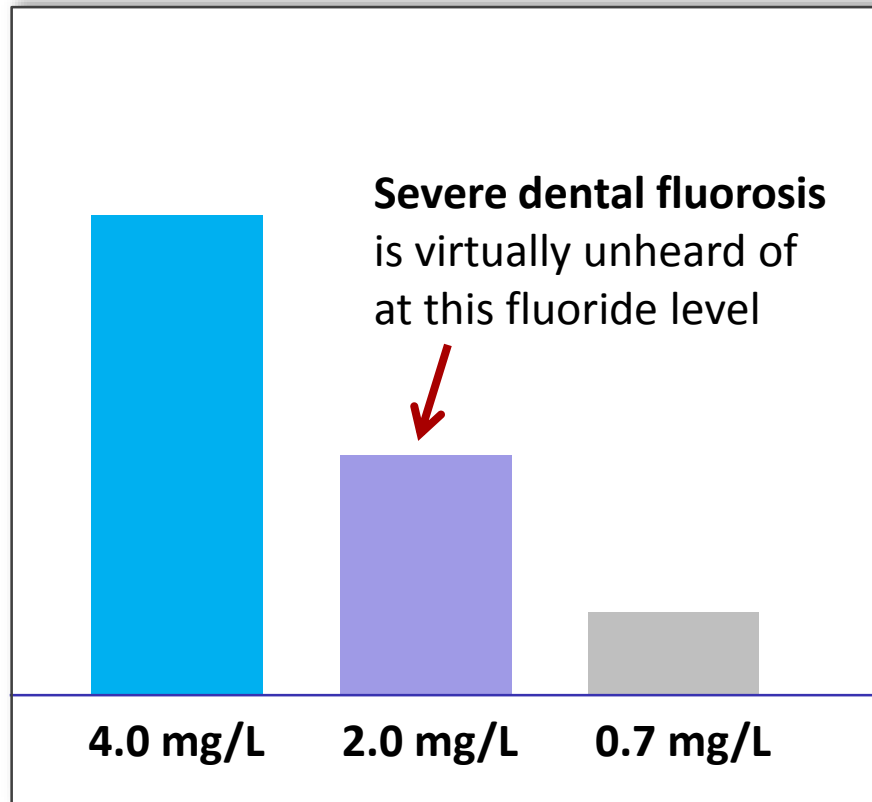
## Was there evidence at 4.0 ppm showing that fluoride had an effect on...?

- Tooth enamel ✓
- Liver ✗
- Kidneys ✗
- Endocrine system ✗
- Gastrointestinal system ✗
- Immune system ✗
- Cancer ✗
- Musculoskeletal system ✗
- Reproduction and development ✗
- Neurotoxicity and neurobehavioral ✗
- Genetic damage ✗

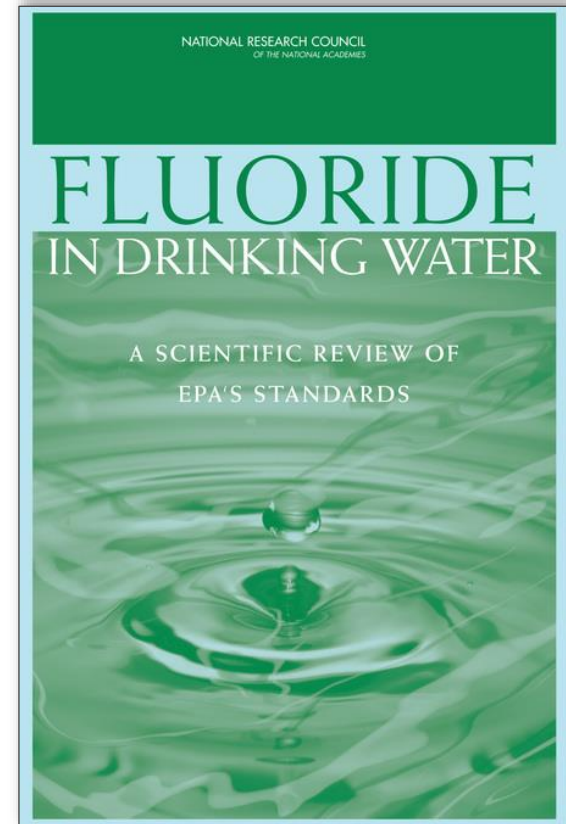
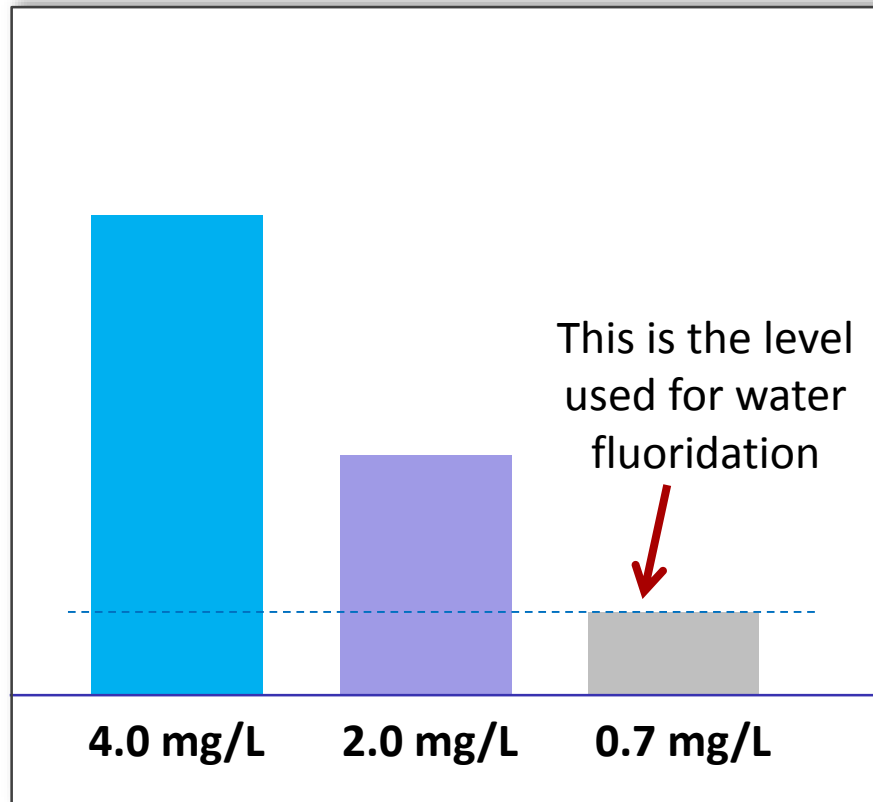
# A closer look at fluoride levels



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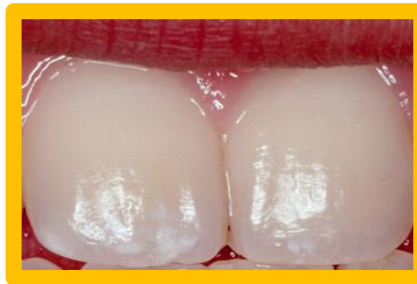
# What is Dental Fluorosis

- Dental fluorosis is a change in the appearance of tooth enamel is caused by taking in too much fluoride during the tooth-forming years.
- Dental fluorosis is typically a mild cosmetic effect that:
  - does not cause pain
  - does not affect the health or function of the teeth.It's so subtle most people don't even notice fluorosis.
- **After age 8**, it isn't possible for someone to have the kind of exposure to fluoride that can lead to dental fluorosis.

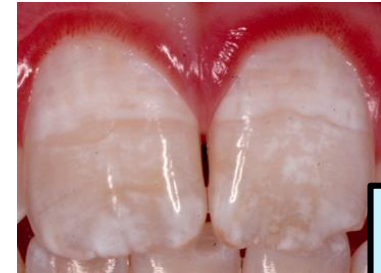
# Variations in tooth enamel (fluorosis)



Normal



Very Mild



Moderate

Improper  
use of  
fluoride  
products



Questionable



Mild



Severe

Not caused by CWF

# Which would you rather have?

Cavities



OR

Mild Fluorosis



## Numerous scientific panels and experts have **reviewed** and **rejected** anti-fluoride claims:

- U.S. Environmental Protection Agency (2017)
- National Health & Medical Research Council of Australia (2016)
- Water Research Foundation (2015)
- Public Health England (2014)
- Royal Society of New Zealand (2014)
- Community Preventive Services Task Force (2013)
- Calif. Office of Environmental Health Hazard Assessment (2011)
- National Research Council (2006, 1993, 1977 & 1951)
- Irish Forum on Fluoridation (2002)
- U.S. Public Health Service (1991)
- Britain's Royal College of Physicians (1976)

# Community Water Fluoridation

## Effective:

- ✓ Reduces cavities by at least 25% over a person's lifetime by simply drinking the water.
- ✓ Benefits all members of the community, regardless of age, race, ethnicity, SES, dental insurance, or access to dental care

## Cost Savings:

- ✓ The most Cost Effective means to reach everyone in the community with the cavity fighting benefits of CWF.
- ✓ Offers a great ROI
- ✓ Pain: Reduces needless pain & suffering from preventable cavities

Safe: ***No adverse health effects from drinking fluoridated water***



**Thank you for your attention**

**Questions?**