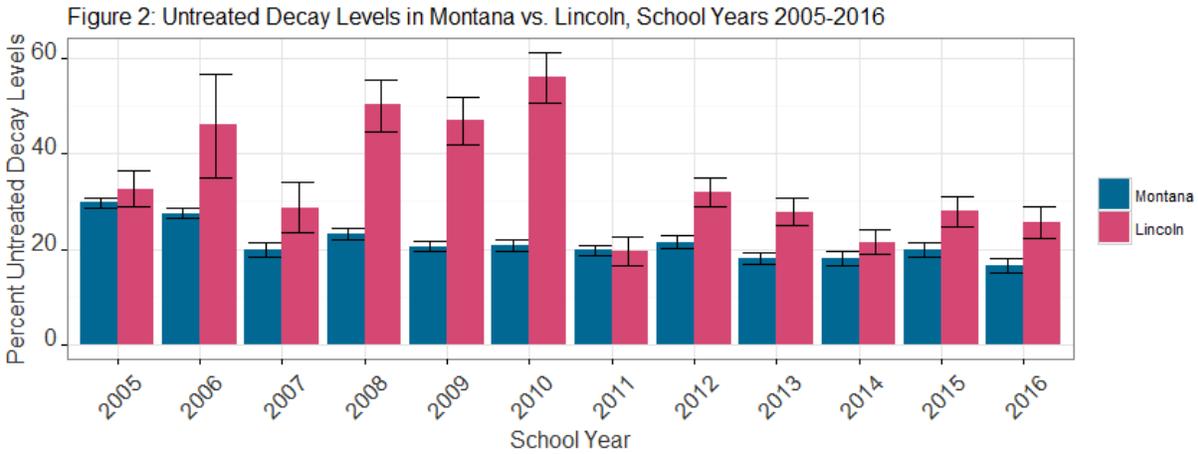


PROP: FLORIDATION OF WATER SUPPLY TO THE CITY OF LIBBY

By: Riley Black, RN | Lincoln County Health Nurse

**PROBLEM:** Data from the Montana Oral Health Program, a division of Montana DPHHS shows oral health findings of Lincoln County from 2005 to 2016.

Between 2005-2016, dental screenings were completed on 6,973 students, K-12 grade in 6 Lincoln County Schools. Of those students, 30.6% had untreated oral decay.



In a 2016 Community Health Assessment of Lincoln County, statistics showed that 31% of youth did not see a dentist within a year as opposed to 25% of Montana youth. In addition, 39% of adults in Lincoln county didn't see a dentist either. The current estimated population to dentist ratio is 2125:1. From these statistics, it is evident that besides poor oral health outcomes, there is a lack of access to dental care services in Lincoln County.

Tooth decay is the number one preventable, chronic health problem of children in the United States<sup>1</sup> Severe dental disease in children often requires the use of general anesthesia and hospitalizations which can cost over \$20,000 and is not always covered by insurances even with a dental plan.

If left untreated, dental decay can become irreversible which can lead to severe infections and tooth loss.<sup>2</sup> Dental disease can compromise a child's ability to eat well, sleep well, concentrate, function, and succeed at home or school. Untreated dental decay also compromises a child's self-esteem and social development. Dental disease has also been linked to long term negative cardiovascular effects in adults like increased risk for stroke and heart attack and increased risk of preterm labor in pregnant women.

<sup>1</sup> <https://www.cdc.gov/fluoridation/index.html>

<sup>2</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4547570/?report=classic>

Because oral health is a crucial component to total body health and development, the Surgeon General in 2000 issued a Call to Action urging that oral health promotion, oral disease prevention, and oral health care have a presence in all health policy agendas at the local, state, and national levels.<sup>3</sup> The city of Libby does not currently promote, prevent, or take a presence in this Call to Action which leaves our children vulnerable to this critical health issue, as evidenced by our statistics.

Although we have dental providers in Lincoln County, only 50% accept Medicaid Insurance which reduces Medicaid insured adult and children's potential access to oral health care services and preventative treatment. As mentioned earlier, we have a disproportionate number of population to dentists, 2125:1. Currently, only 34% of Montana's have access to optimal fluoridated water.

**Proposed Solution:** Begin supplementing the City of Libby water supply with fluoride according to guidelines and recommendations set by Department of Environmental Quality (DEQ), Environmental Protection Agency (EPA), and Centers for Disease Control and Prevention (CDC), to fluoride concentration of 0.7mg/L to maintain caries prevention benefits with a minimal risk of dental fluorosis. Current City of Libby natural water fluoridation concentration is 0.02mg/L according to current DEQ reports.

Over 70 years of extensive research and studies have proven that long-term effects of community water fluoridation are safe and beneficial for all populations including, children, pregnant women, and immunosuppressed individuals.<sup>4</sup> The CDC states that the implementation of community water fluoridation is the most cost-effective way to deliver fluoride to people of all socioeconomic levels and should especially be promoted in communities showing poor oral health outcomes.<sup>5</sup>

Fluoride is a naturally occurring mineral that helps to rebuild and strengthen the tooth's surface, or enamel. This strengthening of the tooth significantly reduces or stops the development of cavities and dental carriers from forming. This further reduces the likelihood of severe dental issues like tooth loss and infection.

Community water fluoridation is recommended by the American Dental Association, American Academy of Pediatric Dentistry, American Academy of Pediatrics<sup>6</sup>, US Public Health Service<sup>7</sup>, World Health Organization<sup>8</sup> and nearly all other public health, medical, and dental organizations. *See petition of local supporters.*

Since the introduction of community water fluoridation in the United States starting in 1945, the CDC names this one of ten great public health achievements of the 20<sup>th</sup> century. To date, 75% of the United States served by community water systems has access to fluoridated water. This act alone has

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<sup>3</sup> <https://www.healthypeople.gov/2020/topics-objectives/topic/oral-health/objectives>

<sup>4</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4547570/?report=classic>

<sup>5</sup> <https://www.cdc.gov/fluoridation/index.html>

<sup>6</sup> <https://www.aap.org/en-us/about-the-aap/aap-press-room/pages/American-Academy-of-Pediatrics-Supports-HHS-Fluoride-Recommendations-for-Drinking-Water.aspx>

<sup>7</sup> [http://www.ada.org/~media/EBD/Files/PHS\\_2015\\_Fluoride\\_Guidelines.pdf?la=en](http://www.ada.org/~media/EBD/Files/PHS_2015_Fluoride_Guidelines.pdf?la=en)

<sup>8</sup> [http://www.who.int/water\\_sanitation\\_health/publications/fluoride\\_drinking\\_water\\_full.pdf](http://www.who.int/water_sanitation_health/publications/fluoride_drinking_water_full.pdf)

prevented tooth decay by at least 25% in both children and adults simply by drinking water.<sup>9</sup> Because it is so beneficial, the United States Department of Health and Human Services has a national goal for 80% of Americans to have water with enough fluoride to prevent tooth decay by 2020<sup>10</sup>.

Community water fluoridation has been shown to save money for families and the health care system. The estimated return on investment for community water fluoridation (including productivity losses) ranged from \$4 in small communities of 5,000 people or less<sup>11</sup>, to \$27 in large communities of 200,000 people or more<sup>12</sup>.

The outcomes for this proposal will be the increased oral health of all citizens and a reduction in preventable oral decay in children. The results of this implementation will not be immediately evidenced but will have long-term benefits which should be detectable within 5 years of the adoption of this proposal.

#### **RISKS:**

The toxic range of fluoride is 5-10mg/kg. Use the weight of a 125lbs adult, equals 56.7kg. That individual would have to ingest 283.5 mg of fluoride to cause harm. Compare that with the recommended levels in drinking water which is 0.7mg/L. That individual would have to drink 405 Liters of fluoridated water in one sitting to reach toxic levels. On the low end of this, a 15lb infant would have to drink 48 liters of fluoridated water in one sitting to be at risk for toxicity.

The math shows us how unlikely a person is to risk fluoride toxicity in a well-managed fluoridated system.

Risk for fluorosis is minimal when implementing a regulated system concentration at 0.7mg/L.

**Fiscal Responsibility:** Grant availability from Montana DPHHS for equipment purchase and staff training. Deadline is May 4<sup>th</sup>.

**Conclusion:** In summary, I asked this board/council to review this proposal with the children and parents of Libby in mind. By implementing this proposal, you will be advancing and progressing the health of our community to reflect what 75% of American communities have done to ensure the continued health of their citizens in a safe, proven, cost-efficient, and sustainable way.

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<sup>9</sup> <http://www.ada.org/en/public-programs/advocating-for-the-public/fluoride-and-fluoridation>

<sup>10</sup> <https://www.healthypeople.gov/2020/topics-objectives/topic/oral-health/objectives>

<sup>11</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4547570/?report=classic>

<sup>12</sup> <https://www.cdc.gov/fluoridation/basics/index.htm>