FLUORIDE IN CENTRALIA’S DRINKING WATER

A recent letter to the editor in The Chronicle questioned Centralia’s policy of adding fluoride to our drinking water. This prompted me to do a little research. Fluoride exists naturally in the earth’s crust, rocks and soil. Water passing over rock formations dissolves fluoride compounds and releases fluoride ions into water, usually at very low concentrations. Fluoridation is the adjustment of the fluoride concentration in drinking water from the very low levels that occur naturally to a level that prevents tooth decay.

The Center for Disease Control and Prevention (CDC) recommends community water fluoridation as a safe, effective and inexpensive way to prevent tooth decay. The CDC says, “Similar to many vitamins and minerals we consume for our health, fluoride should be taken in the proper amount. Past comprehensive reviews of the safety and effectiveness of fluoride in water have concluded that water fluoridation is safe and effective. Fluoride is present naturally in most water at a very low level.”

The first city to adjust fluoride concentrations in public drinking water was Grand Rapids Michigan in 1945. Centralia first started fluoridating its water in 1959 after an ordinance directing the Water Department to do so was passed by the City (Ordinance 1066 adding Centralia Municipal Code 6.04.010 and 15.04.300). Fluoridation is not required but if communities decide to fluoridate it is controlled under both state and federal regulations.

According to the CDC the optimal concentration of fluoride in drinking water for preventing tooth decay is between 0.70 parts per million (ppm) and 1.2 ppm. Below 0.70 ppm there is no measurable benefit in terms of preventing tooth decay and anything above 2 ppm can cause staining and pitting of teeth in young children. The state approved range for fluoride in drinking water to ensure a benefit without causing harm is between 0.80 ppm and 1.3 parts per million. The City of Centralia Water Department keeps the fluoride concentration in Centralia’s water between 0.80 ppm and 1.3 ppm – the same as the state and well within the ranges recommended by the CDC.

<table>
<thead>
<tr>
<th>Target Concentration Range</th>
<th>0.7</th>
<th>0.8</th>
<th>0.9</th>
<th>1.0</th>
<th>1.1</th>
<th>1.2</th>
<th>1.3</th>
<th>2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDC</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State Health Department</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Centralia Water Dept.</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In some areas water has naturally occurring fluoride at concentrations much higher than the amount recommended to prevent tooth decay. A scientific review completed in 2006 by the National Research Council (NRC) looked at the effect of these high concentrations of naturally occurring fluoride. The NRC evaluated many health effects that are potentially associated with higher than recommended concentrations of fluoride in drinking water. The NRC concluded that only three potentially adverse health effects warranted consideration in developing regulatory standards for high levels of fluoride in drinking water:
• Fluoride at 2 parts per million or greater may put children 8 years old or younger at increased risk of severe enamel fluorosis, a condition that causes staining and pitting of the enamel surface of teeth (Centralia’s fluoride in the water is kept between 0.8 to 1.3 parts per million);
• There is a potential increased risk of bone fractures for people exposed to fluoride levels equal to or greater than 4 parts per million over a lifetime compared to those who consume water with the recommended concentration of fluoride; and,
• More severe forms of skeletal fluorosis (a rare condition in the U.S.) after a lifetime of exposure to high levels of fluoride (>4 ppm).

The last time we checked in 2010 the naturally occurring level of fluoride in Centralia’s water supply before treatment and addition of fluoride was below the state detection limit of less than 0.2 parts per million. The Water Department adds fluoride to keep the concentration between 0.8 to 1.3 parts per million.

The sodium fluoride added to Centralia’s water was manufactured domestically in the U.S. until approximately 8-10 years ago. Global competition cut the price of fluoride so much it literally shut down the U.S. producers. Solvay had a plant in Allentown, Illinois that closed. Solvay eventually formed a joint relationship with the Chinese as well as the Japanese. Almost immediately, Solvay noticed a difference in the two products. The Japanese used the same process as was used in the U.S. However, due to costs of production the Japanese all but left the marketplace leaving only the Chinese as the main provider of sodium fluoride. The Chinese produced a finer grained product using a different method and their product was harder to dissolve in the water leaving a residue. The Chinese material meets all the required ASA, NSF specifications and water municipalities have had to be creative in dealing with its different qualities.

Centralia used fluoride from China after U.S. companies stopped production until 2009 when we located a source in Japan that works better in our system. The fluoride that we currently use comes from the Onoda Chemical Industry Company in Japan. The plant where it is manufactured is located in Kitakyusyu, Japan. According to Stephen Baker who is in charge of Fluoridation Plant Operations with the Washington State Department of Health Office of Drinking Water, the State Department of Health conducted their own investigation after the tsunami and radiation leak in Japan and found that the fluoride from the Onoda plant in Kitakyusyu was not affected by radiation.
Here are a few Fluoride Benefits (taken from a March 2005 Washington State Department of Health publication):

- Thousands of research studies and 60 years of experience have shown that water fluoridation is safe, effective and the best method of improving oral health in a community.
- Water fluoridation is recognized as a major public health achievement of the 20th century by the Centers for Disease Control and Prevention.
- People in communities with fluoridated water have 20 to 40 percent less tooth decay than those in communities without fluoridated water.
- In the U.S., preventable tooth decay affects 1 out of 4 elementary school children, 2 out of 3 adolescents and 9 out of 10 adults.
- The cost to fluoridate water for the lifetime of one person is less than the cost to treat one cavity.
- Every dollar spent on fluoridation saves $38 in avoided dental bills.
- In Washington, 58.9 percent of the population has access to fluoridated water.

*This is the system that injects Fluoride into Centralia’s drinking water. Basically, dry granular Fluoride is added to the first tank (not visible) and water is pumped through it to form a super-concentrated solution of Fluoride. The concentrate then flows to this white tank where it is stored. The injector system on the left meters Fluoride into the City’s water to maintain a constant concentration between 0.8 ppm and 1.3 ppm.*

Some Other Fluoride Facts:

*Prior* to water fluoridation

- Extractions of permanent teeth in young children were routine.
- The typical school child developed 3-4 new decays each year
- High school grads received complete dentures as gifts.
- Full teeth removal and complete dentures were the norm for adults.
- Recruits into WWII were rejected because they did not have 6 pairs of contacting teeth.
- Dowries of new brides sometimes included dentures.

(Source: Joseli Alves-Dunkerson, DDS, MPH, Manager Washington State Oral Health Program)
COMPLETED CONSTRUCTION PROJECTS

The asphalt approach to the east side of the Mellen Street Bridge was repaved on September 9, 2011 and it looks great. I have already had reports that it is very smooth. Congratulations to Jan Stemkoski, Patty Page and Steve Spurgeon the Public Works Engineering staff who designed the project, handled the bid advertising and award, and oversaw the construction. And thank you to the company that did the paving, Northfork Construction, Inc.

STATUS OF ON-GOING PROJECTS

Streets

The Street Department has been patching areas along Ham Hill Road and is working on repairing failing sections of Gold Street. This work will continue until shut down by the weather.
Sanitary Sewer

The two-year sanitary sewer replacement project that started on First Street and Euclid Way is making good progress. Euclid Way has been repaved and we’ve had our first complaints about cars speeding there! We are getting good response from most property owners along the route about how Titan Construction has been working with them.

The original plan was to end construction of phase 1 of the project in 2011 at Sixth Street and complete the project in 2012. Because things are going well we have decided to push on and replace the sewer along Sixth Street as far as Pearl Street this year while groundwater levels are still low. That will save us time next year if we have high groundwater levels again at the beginning of the construction season in May. It is really challenging when you have to replace pipes that are under water because even if you can pump the water out of the immediate construction area it still makes the surrounding ground very susceptible to sloughing. This makes for wider excavations, more cost and increases the chance that other utilities in the area will be exposed. Old cement water lines are particularly susceptible to shifting and breaking when the ground surrounding them moves.

Construction on this project will extend into November if weather permits.

Stormwater

The stormwater upsizing project south along Pearl Street from Cherry Street has been our big challenge this year. Even though utility locates were done, the contractor encountered several gas lines and a water line or two that were unmarked. I have learned that once a utility is abandoned it is typically removed from the map. Unfortunately sometimes the abandoned lines are not cut off at the main so they still have gas (or water) under pressure in them. The contractor really doesn’t know if an unmarked, abandoned gas or water line is under pressure when they dig it up unless it breaks so
work comes to a halt, the Water Department or Fire Department and the gas company are all called and everyone waits until the situation is resolved.

Construction on this project should be completed by October 15th.

Public Works Director