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Drinking water fluoridation debate gathering momentum in Oregon

By ANTONIA GIEDWOYN
KGW.com Staff Writer

Mention "fluoride" to the average person and chances are the word elicits a knee-jerk positive reaction.

For decades, fluoride has been associated with shiny, happy, cavity reduced kids. Fluoride, dispensed in tablets, oozing out of toothpaste tubes, is almost as American as apple pie.

However, the topic of water fluoridation remains embedded in controversy as scientists and medical professionals call into question the safety of adding fluoridation chemicals to the public drinking water supply.

Dr Nicholas Dienel is a cardiologist at the Rogue Valley Medical Center in Medford, Ore.

"I was pro-fluoride in the late 1990s," he said, "until I was asked how much I knew about the topic. I just believed what I was told by other people, and I thought, 'that's not good - to blindly believe what I'm told.' "

Dienel researched the topic and began drawing his own conclusions.

"I think there are enough warning signs of dangers or potential danger [of fluoride]," he said.

According to Dienel, 10, 20, 30 years ago, the medical community clung tightly to standards that were felt to be "absolutely the right way."

One of his "humbling observations", Dienel said, is that over last 20 years, he has seen a "180 degree turnabout in what was thought to be absolutely correct and is now considered wrong." He believes that is becoming, and will become, the case with fluoride.

The fluoride debate is gathering momentum in Oregon.

Hood River officials last month withdrew their attempt to place a water fluoridation measure on the upcoming November ballot after a group of citizens legally challenged the move.

The water supply has been fluoridated for years in Florence. Earlier this summer, those in favor of leaving fluoride and any other substances added for medicinal effect out of drinking water asked the Florence City Council to reconsider water standards.

Jeff Green is a longtime management consultant for dentists and other health professionals and now serves as the volunteer national director of Citizens for Safe Drinking Water, an

organization co-founded by Green and a San Diego dentist. The group actively participates with Oregon and Florence affiliates in trying to establish water additive safety standards.

According to Green, the discussion in Florence and elsewhere has changed from solely focusing on children's teeth to the basics of water safety for everyone.

"The citizens in Florence have filed their intention to place an initiative on the ballot so voters can decide on criteria for water additives intended for treating people, and let the facts determine the outcome, rather than fighting with their neighbors over fluoride," said Green.

Proponents of the water quality criteria are circulating petitions. If they collect enough valid signatures in the coming weeks, they could force a vote on the measure.

Not long ago, Beaverton became the latest Oregon city to have its public water supply artificially fluoridated.

Fifty-three percent of Beaverton voters cast their ballots in favor of fluoridation before the city began injecting sodium fluoride into the water in May.

Fluoridation supporters say the health risks associated with drinking fluoridated water are negligible, but those who support non-fluoridated water contend that most people who voted for fluoridation don't know the full story. They say fluoridation's potential risks outweigh its disputed benefits.

Portland's water supply is not currently fluoridated, but there's no guarantee it will stay that way. Much to the distress of environmental groups, those campaigning for fluoridation say they want fluoridated water to flow from every faucet in every community. Though water fluoridation has been rejected by Portland voters in the past, Portland dentist Kurt Ferre said he and others working to spread water fluoridation are "not giving up."

Fluoride Facts

The issue of artificial fluoridation of the public's drinking water supply poses many unanswered questions, but the hard facts stand firm. For instance, fluoride-based drugs such as Prozac have been approved for ingestion for their stated purpose, but no fluoride compound has ever been approved by the Food & Drug Administration for ingestion for the purpose of reducing tooth decay.

Ferre doesn't think that matters. He pointed out that the FDA does not have jurisdiction over water additives, and he compared FDA approval to endorsement by any random, arbitrary organization.

"Why don't we get it [fluoride] endorsed by major league baseball?" he said.

But FDA approval is considered the public's assurance that a drug is both safe and effective.

The FDA defines any fluoride product (including prescription drops and tablets) swallowed for a reduction in tooth decay as a drug which it has never reviewed or approved for that purpose. What the FDA has approved for reducing tooth decay are fluoride products to be applied strictly topically, such as toothpaste containing fluoride.

In contrast to chlorine, which is added to treat water, making it potable, fluoride is added to treat people.

Fluoride is a poison. Merriam-Webster Dictionary defines sodium fluoride, the chemical added to Beaverton's water, as "a poisonous crystalline salt that is used in trace amounts in the fluoridation of water, in metallurgy, as a flux, and as a pesticide."

Of course, many drugs which are toxic in high concentrations are considered medicinal in small quantities. The debate hinges not only on whether this is the case with fluoride, but more importantly, whether fluoridated water is safe to drink.

The Fluoride Health Debate

Backed by prominent groups such as the American Medical Association, the U.S. dental establishment, the Centers for Disease and Prevention and others, those in favor of water fluoridation say that not only is fluoride harmless at the low level added to drinking water, but it's beneficial because of its plaque-fighting properties that promote healthy teeth. Fluoridating the water allows everyone to receive an equal health benefit, regardless of income and access to health care, they say.

Portland-area dentist April Love said children are the most vulnerable to cavities, and it's unfair that some kids receive less or no dental care compared to their more affluent peers.

"We're doing this because of health equity, essentially," Love said. "What we don't understand is why educated, liberal people don't push for health equity."

Ironically, fluoride may be hurting the very population that fluoridation proponents strive to help.

Those most vulnerable to the toxic effects of fluoride and its compounds include people suffering dietary deficiencies of calcium, magnesium and essential nutrients -- typically, the poor. Other susceptible populations include the elderly and people with cardiovascular and kidney problems. This information was released in a 1993 toxicological profile by the U.S. Department of Health and Human Services, the Public Health Service and the Agency for Toxic Substances and Disease Registry.

"It's contradictory to add something for health that hurts health in other ways," said Lynne Campbell, executive director for Oregon Citizens for Safe Drinking Water.

People in favor of leaving fluoride out of drinking water say the health equity they advocate is access to a dentist, and that mass medication is inappropriate. They say, furthermore, that the chemicals used to fluoridate water put children's health at stake.

"What individual truly supportive of children's health would raise their hand to add a product that has never been properly tested, has never been approved for safety and effectiveness for the purpose for which it is being added and that contains contaminants such as lead and arsenic at concentrations that exceed the points of safety already established by the government?" Green said.

The lead and arsenic Green alluded to are listed by NSF International, a company involved with the certification of fluoridation chemicals, as contaminants found in samples of manufacturers' products.

In an NSF document written in response to the U.S. House Committee on Science in 2000, NSF provided data showing that manufacturers' samples had tested positive for lead and arsenic. Lead was found at levels up to 1.1 micrograms per liter, below the EPA's Maximum Contaminant Level of 15 micrograms per liter, but higher than the EPA's maximum contaminant level goal of zero.

The distinction between the MCL and MCLG is important because the maximum contaminant level is the highest level of a regulated contaminant allowed in drinking water, whereas the maximum contaminant level goal is defined as the level of a contaminant in drinking water at or below which there is no known or expected health risk -- in other words, the established scientific point of safety.

"Samples taken by NSF of fluoridation chemicals have determined that arsenic was present as high as 1.66 parts per billion (micrograms per liter) after full dilution in water. This arsenic concentration correlates to the National Research Council finding that this level would result in more than one bladder or lung cancer per every 1,000 consumers," Green said, citing the NRC Arsenic in Drinking Water 2001 Update.

So if lead is considered unsafe at even minuscule levels, and arsenic is carcinogenic, why aren't the EPA's maximum contaminant levels and maximum contaminant level goals one and the same, or at least closer in number?

People on both sides of the fluoride debate seem to agree that the EPA is trying to abide by what is economically feasible for source water remediation. Whereas those in favor of leaving fluoride out of the water believe public health is potentially being compromised in favor of economics and politics, those in favor of fluoridation dismiss health concerns.

"It's almost ridiculous to be talking about the toxicity of fluoride," Love said.

David Winship, city utilities engineer for the City of Beaverton, insists that "fluoride is safe, when used safely."

Winship, who manages Beaverton's water division, said drinking water in Beaverton, Tigard, Forest Grove and several other neighboring communities is fluoridated at .9 parts per million, the equivalent of .9 mg. per liter of water.

He acknowledged that there are "impurities" in the sodium fluoride added to the water, but said the fluoridated drinking water is below the EPA's maximum contaminant level of 4 ppm for fluoride, meeting NSF's standards, and is therefore safe.

Dr Paul Connett, a professor of chemistry at St. Lawrence University in New York who specializes in environmental chemistry and toxicology, says not only are maximum contaminant levels set at unsafe concentrations, but the designation of 4 ppm as the MCL for fluoride is based on outdated data.

"There's more politics involved in this than science," Connett said. "The U.S. public health service is far more interested in protecting a policy which it launched in 1950 than it is in protecting the health of children."

Dr Tom Maier is an assistant professor at the Oregon Health & Science University Hospital School of Dentistry and believes the health concerns associated with fluoride have been exaggerated. He said a person would have to drink "bathtub-sized amounts of fluoridated water in one sitting" to experience health problems.

Maier, who specializes in microbiology and immunology, also said he doesn't know of any legitimate studies showing health hazards.

Fluoride Studies

Numerous scientific studies have linked fluoride, which accumulates in the body's bones and tissues, with cancer in both humans and animals.

In 1999, the department of health in Britain commissioned a large-scale study to examine the efficacy and safety of fluoridated drinking water. The study, referred to as the York Review, was published in October of 2000. Reviewers were surprised to find no "reliable good-quality evidence in the fluoridation literature world-wide," and drew no definitive conclusions as to fluoride's safety or danger.

"An association with water fluoride and other adverse effects such as cancer, bone fracture and Down's Syndrome was not found. However, we felt that not enough was known..." reads a statement from the Centre for Reviews and Dissemination regarding the York Review's findings.

Maier said the York Review shows the only bad effect of fluoride to be dental fluorosis, known as teeth mottling. He considers dental fluorosis solely an aesthetic concern which Maier attributes to, "probably the result of misprescribing of fluoride supplements and unsupervised teeth brushing by small children."

Connett, who served as a peer reviewer for the York Review, said he thinks the review was "weak" and underestimated fluoride's health hazards.

"My biggest concern is...they didn't look at biochemistry or animal studies. It's not what I call a good technique for toxicology - you want to look at all the clues, which means want to look at biochemistry, tissue culture, animal, human and clinical trials," Connett said. "It was not an appropriate study to inform public health policy....I think they didn't do a good job with brain or endocrine disruption studies."

As an example of what he considers good research, Connett pointed to a more recent 2003 study from China comparing the IQ levels of children in communities with differing levels of naturally-fluoridated water.

The study found that children's IQs were lower in the areas with the highest level of fluoride and vice versa.

Connett also said the U.S. government has never funded a comprehensive study of fluoride present in "our bones, blood or urine." It's never been measured, according to Connett. "It's incredible," he said.

Fluoride - Not Enough, or Too Much?

Some dentists, like Love, believe the average child needs more fluoride.

"They're [kids] not getting nearly enough," she said. Love didn't say how much fluoride the average child in a fluoridated community is getting.

That's probably because it's impossible to monitor anyone's fluoride consumption without medical testing.

Fluoridation chemicals are ubiquitous and the general public already consumes the compounds in juice and processed foods. People also ingest fluoridation chemicals from pesticide residue on fresh fruits and vegetables.

Because of this, U.S. children may be getting too much fluoride from multiple sources. Just one cup of what the dental community considers to be "optimally" fluoridated water (at 1 ppm) delivers a full day's prescription dose for children ages six months to three years. "So toddlers who drink more than one cup of water a day are exceeding the prescription dose," Green said.

Love said the prescription dose was lowered in the late 1990s to account for the other sources of ingested fluoride.

When in doubt, look to mother nature, is Connett's attitude. Summarizing the findings of Dr. Arvid Carlsson, who won the Nobel Prize for medicine in 2000, Connett said a nursing mother's body is protective against fluoride.

"The naturally occurring level of fluoride in mothers' milk ranges from 005 ppm to .012 ppm," Connett said, emphasizing that, according to Carlsson, the fact that fluoride in mother's milk doesn't appear in significant quantities demonstrates that infants should not be exposed to high doses of fluoride.

"When you put fluoride into the water, the gamble that you're taking is that giving a bottle-fed baby up to 200 times more fluoride than nature intended will not disrupt any of the delicate machinery of the baby's early development," Connett said.

Fluoridation Endorsement

The practice of fluoridating drinking water is drawing significant and increasing criticism from credible professionals and organizations, including UNICEF, the Sierra Club, Canada's former leading proponent (Hardy Limeback, D.D.S.), The National Nutritional Foods Association and NTEU 280, the union of all scientists and other professionals who work at EPA headquarters in Washington, D.C.

Yet, an even longer list of organizations endorse water fluoridation. What is the public to make of that?

Fluoridation proponents say the sheer number of and prominence attached to the organizations that support water fluoridation proves that it's safe. "It's a proven health benefit that's been in the U.S. for 59 years," said Ferre.

Fluoridation opponents believe the support comes from a mixture of politics, fear of lawsuits and institutional embarrassment.

"If I was in their shoes, [agencies endorsing fluoridation] and I said that we now know what we've been calling safe actually isn't safe, I'd fear litigation," said Campbell.

For Campbell, health concerns are secondary to any discussion of whether or not to add fluoride to the public water supply. What concerns her most is the lack of federal safety standards for water additives, as acknowledged by the EPA.

"No one is in charge, no one is assuring safety...we're all supposed to be taking someone's word for it," she said.

Oregon Citizens for Safe Drinking Water is working to establish "reasonable safety standards for water additives." Many members believe medicine should be an individual choice.

Ferre holds the opposite view. The benefit of fluoride, he said, "takes precedence over anyone's freedom."