Fluoride Usage:

Topical Application vs. Ingestion Via Supplements or Fluoridated Water

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In my continuing quest for cavity-free dental health for my family, I have taken a second look at fluoride. Whilst knowing that fluoride hardens tooth enamel very effectively, we have stayed away from it because of the negative systemic effects (toxicity and fluorosis).

As I took a second, more in-depth look at this mineral though, I came to realize that there is a big difference between *ingested* fluoride (fluoridated water, fluoride supplements) and *topical* fluoride (toothpaste, mouthwash, fluoride trays on your teeth at the dentist).

Watching my daughter receive three anesthetic injections prior to her latest dental work, I thought, "Okay, but which is more toxic to her body: fluoride toothpaste topically, or these drugs directly into her bloodstream?"

I'm also wondering about the synergy of using fluoride in toothpaste and then holding the Bone Support nano-sized minerals in the mouth immediately afterwards – would this re-mineralize the teeth further and provide even harder enamel?

> "A report by Czechoslovakian researchers indicates that fluoride matters little when it comes to preventing tooth decay. A study of 745 children aged 6 to 14 years, from several localities of Czechoslovakia where the drinking water contains calcium and magnesium in large amounts, showed impressively fewer caries in these children than in others throughout the country. This finding was no surprise to other scientists who reported previously that calcium combined with magnesium has a beneficial effect on the resistance of teeth to caries. Interestingly, in all of the localities where tooth decay was below average, the fluoride content of the water was also low." (Cesk. Stomat., May-June, 1966.)

> "Fluoride gets a lot of the credit for preventing tooth decay that should go to magnesium, a University of Colorado dental researcher says. He is Dr. Lewis Barnett, who has been doing research into tooth decay since 1950. Barnett said that magnesium also strengthens teeth and bone. 'It is just as feasible for communities to add magnesium to their water supplies,' he said. Given a choice between fluoride and magnesium, Barnett said, he would choose magnesium." ("Researcher Says Magnesium Aids Dental Health," St. Louis Post-Dispatch, Aug. 28, 1966)

You'll notice that these two quotes both referred to fluoride in the drinking water – not topically applied fluoride. As you read through this report, you'll begin to understand what the difference and significance is between these two methods of usage.

What follows is a sampling of my research into the fluoride issue and what led me to my decision to try topical fluoride next for my family. But keep in mind, I am using the sodium fluoride or the calcium fluoride form:

> "The ADA's official position is that this stuff is safe, yet there have been deaths of children in the dentists office due to fluoride, albeit very few. The point I am trying to make is that this is not to be taken lightly. In a letter (to me) from the ADA apologizing for fluoride, that stated, "There are three basic compounds commonly used for fluoridating drinking water supplies in the United States: sodium fluoride, sodium silicofluoride, and hydrofluorosilicic acid."
>
> Now any chemist can tell you that these are not the sodium fluoride we are all told about. Sodium hydrofluorosilicic acid is one of the most reactive chemical species know to man. Its toxicity is known in many chemical circles. It will eat through metal/ plastic pipes and corrode many materials including stainless steel and other metals. It will dissolve rubber tires and melt concrete. This is added to our water to produce "healthy teeth". (Source: See article below by Dr. Ted Spence, DDS, ND, PhD *The Fluoride Controversy*)

When looking for a toothpaste that contains fluoride, there are only 3 forms that have been approved by the FDA for use in toothpaste:

> "In its free elemental form, fluoride is a trace mineral (like iodine) called fluorine. In nature, it is found only in compound forms, such as the ore fluorspar (calcium fluoride) in soil. It can be found in both fresh and sea water, in food (fish, bone meal, tea), and in our bodies as part of the bone. Sodium fluoride is an intermediate in the processing of fluoride into sodium monofluorophosphate. Fluoride is currently the only toothpaste ingredient recognized by the US Food and Drug Administration to prevent cavities. The FDA recognizes three forms of fluoride: sodium monofluorophosphate, sodium fluoride, and stannous fluoride and regulates the levels at which they can be included in toothpaste formulations."
> (Source: http://www.tomsofmaine.com/research/ingredients/ingredient-detail/sodium-fluoride)

However, I found a toothpaste in India that contains natural fluorspar (calcium fluoride) along with numerous beneficial herbs, called Himalayan Dental Cream. This seems preferable to use, if possible, since calcium fluoride looks preferable to sodium fluoride:

"Fluoride, as such, is never added to the water. Only silicofluorides (a hazardous waste containing many toxic pollutants) are used to artificially fluoridate water, and studies have proven that they do not effectively prevent tooth decay, they only delay it. Silicofluorides never occur naturally in nature, and they are 85 times more toxic than natural occurring calcium fluoride. Therefore, the effect on the entire body will be different.

This was proven in a study called, "Comparative Toxicity of Fluorine Compounds." After this study was completed, this statement was made: " *... this meant a daily intake of approximately 40 mg/kg of fluorine from sodium fluoride as compared with 3400 mg/kg from calcium fluoride. Therefore, from the standpoint of lethal concentrations and amount of fluorine necessary to cause growth inhibition, wide differences in toxicity of some of the compounds of fluoride were noted.*" (See 3-1: Industrial and Engineering Chemistry. July 1934, page 797). In other words, industrial waste (sodium fluoride) is 85 times more toxic than natural calcium fluoride. Both of them contain fluoride, but they are totally different compounds.

Calcium is a well-known antidote for fluoride poisoning. When an antidote accompanies a poison, it makes the poison far less toxic to the body. Soft waters to which fluoride is artificially added lack this calcium which is present in most waters that contain natural fluoride.

"The claim that fluoridation is one of 'nature's experiments' is not valid because the salts put into the water supply, sodium fluoride or silicofluorides, are industrial products never found in natural water or in organisms. They are, furthermore, notoriously toxic, sufficiently so to be used as rat poison or insecticide. Calcium fluoride, on the other hand, which is the form commonly found in natural waters, is not toxic enough for such uses." — Dr. C. G. Dobbs, (Ph.D., A.R.C.S.) Bangor, Wales, England. (Source: http://www.fluoridedebate.com/question03.html)

It was originally thought that calcium fluoride was soluble in saliva and so would not bind to the teeth, but would be lost within 24 hours. And therefore using sodium fluoride was better. However, newer research revealed that calcium fluoride is actually stable in saliva and can provide time-released fluoride during a caries (cavity) challenge:

"The literature concerning the formation and stability of CaF2 in the oral environment is reviewed. In early work the CaF2 formed during topical application with fluoride

was assumed to be beneficial. It was suggested that it could protect the enamel surface directly or provide free fluoride ions for subsequent incorporation into the hydroxyapatite lattice. However, McCann claimed, in 1968, that CaF2 is soluble in saliva (12–15 mg/1), that it would be rapidly lost in the oral cavity, and that the clinical effect of fluoride was related to formation of firmly bound fluoride only. In this period many authors reported total loss of CaF2 during 24 h after a topical application of fluoride. It has now been shown in several laboratories that calcium fluoride is stable in saliva at neutral pH owing to surface adsorption of HPO2-4 to the crystal surface and formation of a solubility-limiting phase. Extended exposure of saliva can cause formation of a fluorapatite layer on the CaF2 crystals, restricting their dissolution further. Low pH (pH > 5) causes loss of the solubility-limiting adsorbed HPO2-4 and a slow dissolution of CaF2. The CaF2 crystals may thus serve as pH-controlled reservoirs of fluoride ions on the enamel or in plaque and release fluoride during caries challenges. It is suggested that calcium fluoride is an essential phase explaining important aspects of the mechanism of topically applied fluoride, contrary to what was assumed in the past." (Source: On the role of calcium fluoride in the cariostatic mechanism of fluoride. Acta Odontologica Scandinavica 1988, Vol. 46, No. 6 , Pages 341-345 Gunnar Rølla, Dental Faculty, University of Oslo, Oslo, Norway)

So, although we would love to use the Himalayan Dental Cream (contains fluorspar which is calcium fluoride) it is not available in North America. So instead we are using the Natural Dentist toothpaste (contains sodium fluoride). We are all also taking the Minerals of Life Trace Minerals (taken at any time of day) and the Bone Support minerals, which contains plenty of calcium (held in the mouth for 2 minutes after brushing), then we don't drink anything and go to bed.

Note: all these toothpastes and minerals are available at the JPT Holistic Health Shoppe (www.HolisticHealthShoppe.com) and the Natural Dentist line may also be available in your local organic foodstore.

Okay, so getting back to the research that led me to try incorporating topical fluoride into our dental routine. What I find most interesting about the papers and research that follows, is that tooth decay has declined significantly (some even say 'dramatically') across all Western countries, but yet the rates of sugar consumption have stayed the same, or risen! You can see the actual sugar consumption stats per country here from the World Health Organization: http://www.whocollab.od.mah.se/expl/globalsugar.html

This seems to fly in the face of all biological dentistry, naturopathy and even common sense. And what would Dr. Weston A. Price say? (www.westonaprice.org) So there is obviously some other mitigating factor(s) at work in the susceptibility to, or formation of, tooth decay – but what?

As you can see from the data below, the dental community has been actively researching whether this decline in dental decay is due to the water supply being fluoridated, or due to topical use of fluoride. And to summarize, it appears that topical fluoride is almost universally acknowledged as being the efficacious application.

However, also acknowledged, is that even topical fluoride application cannot account for the marked decline in tooth decay:

> "It is remarkable... that the dramatic decline in dental caries which we have witnessed in many different parts of the world has occurred without the dental profession being fully able to explain the relative role of fluoride in this intriguing process. It is a common belief that the wide distribution of fluoride from toothpastes may be a major explanation, but serious attempts to assess the role of fluoridated toothpastes have been able to attribute, at best, about 40-50% of the caries reduction to these fluoride products. This is not surprising, if one takes into account the fact that dental caries is not the result of fluoride deficiency."
> (SOURCE: Aoba T, Fejerskov O. (2002). Dental fluorosis: chemistry and biology. *Critical Review of Oral Biology and Medicine* 13: 155-70.)

At the end of the day, we are still left with a few questions:

1. What exactly has caused the decline in tooth decay in Western Countries?
2. Where does that leave families like mine, who continue to suffer significant tooth decay?
3. Why is it that within the same family (so same genetics, diet, oral hygiene, environment, bacteria, etc.) one child will have no cavities and the other six?

So, although my family has previously stayed away from fluoride in any form, after reading all the literature in this report, we began using fluoride toothpaste and the occasional topical application at the dentist. And of course, we have continued with our Weston A. Price mandated diet, vitamin D, cod liver oil, probiotics, nanoparticle minerals, etc. I'll let you know if this makes a difference in about a year's time and my hope is that it moves us further along the pathway to cavity-free teeth!

'Second Thoughts about Fluoride,' Reports Scientific American

Editors for *Scientific American* believe recent studies suggest that fluoride raises the risks of disorders affecting teeth, bones, the brain and the thyroid gland, and in general “scientific attitudes” about fluoridation may be shifting.

"Fluoride, the most consumed drug in the USA, is deliberately added to 2/3 of public water supplies theoretically to reduce tooth decay, but with no scientifically-valid evidence proving safety or effectiveness," says lawyer Paul Beeber, president of the New York State Coalition Opposed to Fluoridation.

Meanwhile, according to environmental reporter and director of New York University‘s Science, Health and Environmental Reporting Program Dan Fagin, "There is no universally accepted optimal level for daily intake of fluoride."

After analyzing hundreds of fluoride studies, researchers found that fluoride:

- Alters endocrine function, especially in the thyroid
- Causes dental fluorosis in young children
- May lower IQ
- May increase the risk of bone fractures

Reports Fagin, "a series of epidemiological studies in China have associated high fluoride exposures with lower IQ." "Epidemiological studies and tests on lab animals suggest that high fluoride exposure increases the risk of bone fracture, especially in vulnerable populations such as the elderly and diabetics," writes Fagin.

Because scientific evidence suggests that water fluoridation is ineffective and dangerous to health, over 1,200 professionals are now urging Congress to stop water fluoridation.

Source: http://www.reuters.com/article/idUS108377+02-Jan-2008+PRN20080102

See the articles following for actual citations of this 'scientific evidence', compiled from various peer-reviewed journals and the World Health Organization.

Fluoride & Tooth Decay: Topical Vs. Systemic Effects

When water fluoridation first began in the 1940s, dentists believed that fluoride's main benefit came from ingesting fluoride during the early years of life. This belief held sway for over 40 years.

However, it is now acknowledged by dental researchers to be incorrect. According to the Centers for Disease Control, fluoride's predominant effect is TOPICAL (direct contact with teeth) and not systemic (from ingestion).

Hence, there is no need to ingest fluoride to derive it's purported benefit for teeth. As stated by the US Centers for Disease Control:

> "Laboratory and epidemiologic research suggests that fluoride prevents dental caries predominately after eruption of the tooth into the mouth, and its actions primarily are topical for both adults and children" *(CDC, 1999, MMWR 48: 933-940).*

Excerpts from the Scientific Literature - Topical Vs. Systemic Fluoride:

"Fluoride is most effective when used topically, after the teeth have erupted."
SOURCE: Cheng KK, et al. (2007). Adding fluoride to water supplies. British Medical Journal 335(7622):699-702.

"it is now accepted that systemic fluoride plays a limited role in caries prevention."
SOURCE: Pizzo G, Piscopo MR, Pizzo I, Giuliana G. (2007). Community water fluoridation and caries prevention: a critical review. Clinical Oral Investigations 11(3):189-93.

“The major anticaries benefit of fluoride is topical and not systemic.”
SOURCE: National Research Council. (2006). Fluoride in Drinking Water: A Scientific Review of EPA's Standards. National Academies Press, Washington D.C. p 13.

"Since the current scientific thought is that the cariostatic activity of fluoride is mainly due to its topical effects, the need to provide systemic fluoride supplementation for caries prevention is questionable."
SOURCE: European Commission. (2005). The Safety of Fluorine Compounds in Oral Hygiene Products for Children Under the Age of 6 Years. European Commission, Health & Consumer Protection Directorate-General, Scientific Committee on Consumer Products, September 20.

“The results of more recent epidemiological and laboratory studies can be summarized by stating that posteruptive (topical) application of fluoride plays the dominant role in caries prevention."
SOURCE: Hellwig E, Lennon AM. (2004). Systemic versus topical fluoride. *Caries Research* 38: 258-62.

"When it was thought that fluoride had to be present during tooth mineralisation to 'improve' the biological apatite and the 'caries resistance' of the teeth, systemic fluoride administration was necessary for maximum benefit. Caries reduction therefore had to be balanced against increasing dental fluorosis. The 'caries resistance' concept was shown to be erroneous 25 years ago, but the new paradigm is not yet fully adopted in public health dentistry, so we still await real breakthroughs in more effective use of fluorides for caries prevention."
SOURCE: Fejerskov O. (2004). Changing paradigms in concepts on dental caries: consequences for oral health care. *Caries Research* 38: 182-91.

“Current evidence strongly suggests that fluorides work primarily by topical means through direct action on the teeth and dental plaque. Thus ingestion of fluoride is not essential for caries prevention."
SOURCE: Warren JJ, Levy SM. (2003). Current and future role of fluoride in nutrition. *Dental Clinics of North America* 47: 225-43.

"The majority of benefit from fluoride is now believed to be from its topical, rather than systemic, effects."
SOURCE: Brothwell D, Limeback H. (2003). Breastfeeding is protective against dental fluorosis in a nonfluoridated rural area of Ontario, Canada. *Journal of Human Lactation* 19: 386-90.

"For a long time, the systemic effect of fluoride was regarded to be most important, resulting in recommendations to use fluoride supplements such as tablets or drops. However, **there is increasing evidence that the local effect of fluoride at the surface of the erupted teeth is by far more important.**"
SOURCE: Zimmer S, et al. (2003). Recommendations for the Use of Fluoride in Caries Prevention. *Oral Health & Preventive Dentistry* 1: 45-51.

"By 1981, it was therefore possible to propose a paradigm shift concerning the cariostatic mechanisms of fluorides in which it was argued that the predominant, if not the entire, explanation for how fluoride controls caries lesion development lies in its topical effect on de- and remineralization processes taking place at the interface between the tooth surface and the oral fluids. This concept has gained wide acceptance... With today's knowledge about the mechanisms of fluoride action, it is important to appreciate that, as fluoride exerts its predominant effect... at the tooth/oral fluid interface, it is possible for maximum caries protection to be obtained

without the ingestion of fluorides to any significant extent."

SOURCE: Aoba T, Fejerskov O. (2002). *Critical Review of Oral Biology and Medicine* 13: 155-70.

"Fluoride's predominant effect is posteruptive and topical."

SOURCE: Centers for Disease Control and Prevention. (2001). Recommendations for Using Fluoride to Prevent and Control Dental Caries in the United States. *Morbidity and Mortality Weekly Report* 50(RR14): 1-42.

"The prevalence of dental caries in a population is not inversely related to the concentration of fluoride in enamel, and a higher concentration of enamel fluoride is not necessarily more efficacious in preventing dental caries."

SOURCE: Centers for Disease Control and Prevention. (2001). Recommendations for Using Fluoride to Prevent and Control Dental Caries in the United States. *Morbidity and Mortality Weekly Report* 50(RR14): 1-42.

"Fluoride incorporated during tooth development is insufficient to play a significant role in caries protection."

SOURCE: Featherstone, JDB. (2000). The Science and Practice of Caries Prevention. *Journal of the American Dental Association* 131: 887-899.

"Current evidence suggests that the predominant beneficial effects of fluoride occur locally at the tooth surface, and that systemic (preeruptive) effects are of much less importance."

SOURCE: Formon, SJ; Ekstrand, J; Ziegler, E. (2000). Fluoride Intake and Prevalence of Dental Fluorosis: Trends in Fluoride Intake with Special Attention to Infants. Journal of Public Health Dentistry 60: 131-9.

"Fluoride supplementation regimens suffer from several shortcomings, the first of which may be their derivation from a time when the major effect of fluoride was thought to be systemic. Although evidence that fluoride exerts its effects mainly through topical contact is great, supplementation schemes still focus on the ingestion of fluoride."

SOURCE: Adair SM. (1999). Overview of the history and current status of fluoride supplementation schedules. *Journal of Public Health Dentistry* 1999 59:252-8.

"The case is essentially a risk-benefit issue - fluoride has little preeruptive impact on caries prevention, but presents a clear risk of fluorosis"

SOURCE: Burt BA. (1999). The case for eliminating the use of dietary fluoride supplements for young children. *Journal of Public Health Dentistry* 59: 260-274.

"Until recently the major caries-inhibitory effect of fluoride was thought to be due to its incorporation in tooth mineral during the development of the tooth prior to eruption...There is now overwhelming evidence that the primary caries-preventive mechanisms of action of fluoride are post-eruptive through 'topical' effects for both children and adults."

SOURCE: Featherstone JDB. (1999) Prevention and Reversal of Dental Caries: Role of Low Level Fluoride. *Community Dentistry & Oral Epidemiology* 27: 31-40.

"Laboratory and epidemiologic research suggests that fluoride prevents dental caries predominately after eruption of the tooth into the mouth, and **its actions primarily are topical for both adults and children."**

SOURCE: Centers for Disease Control and Prevention. (1999). Achievements in Public Health, 1900-1999: Fluoridation of Drinking Water to Prevent Dental Caries. *Morbidity and Mortality Weekly Report* 48: 933-940.

"Although it was initially thought that the main mode of action of fluoride was through its incorporation into enamel, thereby reducing the solubility of the enamel, this pre-eruptive effect is likely to be minor. The evidence for a post-eruptive effect, **particularly its role in inhibiting demineralization and promoting remineralization,** is much stronger."

SOURCE: Locker D. (1999). Benefits and Risks of Water Fluoridation. An Update of the 1996 Federal-Provincial Sub-committee Report. Prepared for Ontario Ministry of Health and Long Term *Care*.

"Recent research on the mechanism of action of fluoride in reducing the prevalence of dental caries (tooth decay) in humans shows that fluoride acts topically (at the surface of the teeth) and that there is neglible benefit in ingesting it."

SOURCE: Diesendorf, M. et al. (1997). New Evidence on Fluoridation. *Australian and New Zealand Journal of Public Health* 21 : 187-190.

"On the basis of the belief that an adequate intake of fluoride in early life is protective against caries in later life, fluoride supplements are recommended for infants and children living in areas in which the fluoride content of the drinking water is low. However, critical reviews of the evidence have led to the conclusion that the effect of fluoride in decreasing the prevalence and severity of dental caries is not primarily systemic but exerted locally within the oral cavity. Because fluoride supplements are quickly cleared from the mouth, the possibility must be considered that they may contribute to enamel fluorosis, which is unquestionably a systemic effect, while providing relatively little protection against dental caries."

SOURCE: Ekstrand J, et al. (1994). Fluoride pharmacokinetics in infancy. *Pediatric Research* 35:157–163.

"It is now well-accepted that the primary anti-caries activity of fluoride is via topical action."

SOURCE: Zero DT, et al. (1992). Fluoride concentrations in plaque, whole saliva, and ductal saliva after application of home-use topical fluorides. *Journal of Dental Research* 71:1768-1775.

"I have argued in this paper that desirable effects of systemically administered fluoride are quite minimal or perhaps even absent altogether."

SOURCE: Leverett DH. (1991). Appropriate uses of systemic fluoride: considerations for the '90s. *Journal of Public Health Dentistry* 51: 42-7.

"It, therefore, becomes evident that a shift in thinking has taken place in terms of the mode of action of fluorides. Greater emphasis is now placed on topical rather than on systemic mechanisms..."

SOURCE: Wefel JS. (1990). Effects of fluoride on caries development and progression using intra-oral models. *Journal of Dental Research* 69(Spec No):626-33;

"Evidence has continued to accumulate to support the hypothesis that the anti-caries mechanism of fluoride is mainly a topical one."

SOURCE: Carlos JP. (1983) Comments on Fluoride. *Journal of Pedodontics* Winter. 135-136.

"Until recently most caries preventive programs using fluoride have aimed at incorporating fluoride into the dental enamel. The relative role of enamel fluoride in caries prevention is now increasingly questioned, and based on rat experiments and reevaluation of human clinical data, it appears to be of minor importance... Any method which places particular emphasis on incorporation of bound fluoride into dental enamel during formation may be of limited importance."

SOURCE: Fejerskov O, Thylstrup A, Larsen MJ. (1981). Rational Use of Fluorides in Caries Prevention: A Concept based on Possible Cariostatic Mechanisms. *Acta Odontologica Scandinavica* 39: 241-249.

ARTICLE SOURCE: http://www.fluoridealert.org/health/teeth/caries/topical-systemic.html

"Universal Decline in Tooth Decay" in Western World Irrespective of Water Fluoridation

“Although the prevalence of caries varies between countries, levels everywhere have fallen greatly in the past three decades, and national rates of caries are now universally low. This trend has occurred regardless of the concentration of fluoride in water or the use of fluoridated salt, and it probably reflects use of fluoridated toothpastes and other factors, including perhaps aspects of nutrition.”

SOURCE: Cheng KK, et al. (2007). Adding fluoride to water supplies. *British Medical Journal* 335(7622):699-702.

"In most European countries, where community water fluoridation has never been adopted, a substantial decline in caries prevalence has been reported in the last decades, with reductions in lifetime caries experience exceeding 75%."

SOURCE: Pizzo G, et al. (2007). Community water fluoridation and caries prevention: a critical review. *Clinical Oral Investigations* 11(3):189-93.

"Graphs of tooth decay trends for 12 year olds in 24 countries, prepared using the most recent World Health Organization data, show that the decline in dental decay in recent decades has been comparable in 16 nonfluoridated countries and 8 fluoridated countries which met the inclusion criteria of having (i) a mean annual per capita income in the year 2000 of US$10,000 or more, (ii) a population in the year 2000 of greater than 3 million, and (iii) suitable WHO caries data available. **The WHO data do not support fluoridation as being a reason for the decline in dental decay in 12 year olds that has been occurring in recent decades.**"

SOURCE: Neurath C. (2005). Tooth decay trends for 12 year olds in nonfluoridated and fluoridated countries. *Fluoride* 38:324-325.

"It is remarkable... that the dramatic decline in dental caries which we have witnessed in many different parts of the world has occurred without the dental profession being fully able to explain the relative role of fluoride in this intriguing process. It is a common belief that the wide distribution of fluoride from toothpastes may be a major explanation, but serious attempts to assess the role of fluoridated toothpastes have been able to attribute, at best, about 40-50% of the caries reduction to these fluoride products. This is not surprising, if one takes into account the fact that dental caries is not the result of fluoride deficiency."

SOURCE: Aoba T, Fejerskov O. (2002). Dental fluorosis: chemistry and biology. *Critical Review of Oral Biology and Medicine* 13: 155-70.

"A very marked decline in caries prevalence [in Europe] was seen in children and adolescents...The number of edentulous adults in Europe has also been declining considerably."

SOURCE: Reich E. (2001). Trends in caries and periodontal health epidemiology in Europe. *International Dentistry Journal* 51(6 Suppl 1):392-8.

"The caries attack rate in industrialized countries, including the United States and Canada, has decreased dramatically over the past 40 years."

SOURCE: Fomon SJ, Ekstrand J, Ziegler EE. (2000). Fluoride intake and prevalence of dental fluorosis: trends in fluoride intake with special attention to infants. *Journal of Public Health Dentistry* 60: 131-9.

"**Since the 1960s and 70s, however, a continuous reduction (in tooth decay) has taken place in most 'westernized' countries, it is no longer unusual to be caries-free...** During the decades of caries decline, a number of actions have been taken to control the disease, and the literature describes numerous studies where one or several factors have been evaluated for their impact. Still, **it is difficult to get a full picture of what has happened, as the background is so complex and because so many factors may have been involved both directly and indirectly. In fact, no single experimental study has addressed the issue of the relative impact of all possible factors**, and it is unlikely that such a study can ever be performed."

SOURCE: Bratthall D, Hansel-Petersson G, Sundberg H. (1996). Reasons for the caries decline: what do the experts believe? *European Journal of Oral Science* 104:416-22.

"Caries prevalence data from recent studies in all European countries showed a general trend towards a further decline for children and adolescents...The available data on the use of toothbrushes, fluorides and other pertinent items provided few clues as to the causes of the decline in caries prevalence."

SOURCE: Marthaler TM, O'Mullane DM, Vrbic V. (1996). The prevalence of dental caries in Europe 1990-1995. ORCA Saturday afternoon symposium 1995. *Caries Research* 30: 237-55

"The aim of this paper is to review publications discussing the declining prevalence of dental caries in the industrialized countries during the past decades...[T]here is a general agreement that a marked reduction in caries prevalence has occurred among children in most of the developed countries in recent decades."

SOURCE: Petersson GH, Bratthall D. (1996). The caries decline: a review of reviews. *European Journal of Oral Science* 104: 436-43.

"The regular use of fluoridated toothpastes has been ascribed a major role in the observed decline in caries prevalence in industrialized countries during the last 20 to 25 years, but only indirect evidence supports this claim."

SOURCE: Haugejorden O. (1996). Using the DMF gender difference to assess the "major" role of fluoride toothpastes in the caries decline in industrialized countries: a meta-analysis. *Community Dentistry and Oral Epidemiology* 24: 369-75.

"The marked caries reduction in many countries over the last two decades is thought to be mainly the result of the widespread and frequent use of fluoride-containing toothpaste... There seem to be no other factors which can explain the decline in dental caries, which has occurred worldwide during the same period, in geographic regions as far apart as the Scandinavian countries and Australia/New Zealand."

SOURCE: Rolla G, Ekstrand J. (1996). *Fluoride in Oral Fluids and Dental Plaque*. In: Fejerskov O, Ekstrand J, Burt B, Eds. Fluoride in Dentistry, 2nd Edition. Munksgaard, Denmark. p 215.

"**Although difficult to prove, it is reasonable to assume that a good part of the decline in dental caries over recent years in most industrialized countries, notably those Northern European countries without water fluoridation, can be explained by the widespread use of fluoride toothpastes. This reduction in caries has not been paralleled by a reduction in sugar intake...**"

SOURCE: Clarkson BH, Fejerskov O, Ekstrand J, Burt BA. (1996). *Rational Use of Fluoride in Caries Control*. In: Fejerskov O, Ekstrand J, Burt B, Eds. Fluoride in Dentistry, 2nd Edition. Munksgaard, Denmark. p 354.

"During the past 40 years dental caries h as been declining in the US, as well as in most other developed nations of the world... The decline in dental caries has occurred both in fluoride and in fluoride-deficient communities, lending further credence to the notion that modes other than water fluoridation, especially dentrifices, have made a major contribution."

SOURCE: Leverett DH. (1991). Appropriate uses of systemic fluoride: considerations for the '90s. *Journal of Public Health Dentistry* 51: 42-7.

"In most European countries, the 12-year-old DMFT index is now relatively low as compared with figures from 1970-1974. WHO (World Health Organization) data relating to availability of fluoride in water and toothpaste appear reliable. However, these data did not explain differences between countries with respect to the DMFT index of 12-year-olds."

SOURCE: Kalsbeek H, Verrips GH. (1990). Dental caries prevalence and the use of fluorides in different European countries. *Journal of Dental Research* 69(Spec Iss): 728-32.

"The most striking feature of some industrialized countries is a dramatic reduction of the prevalence of dental caries among school-aged children."

SOURCE: Binus W, Lowinger K, Walther G. (1989). [Caries decline and changing pattern of dental therapy] [Article in German] *Stomatol DDR* 39: 322-6.

"The current reported decline in caries tooth decay in the US and other Western industrialized countries has been observed in both fluoridated and nonfluoridated communities, with percentage reductions in each community apparently about the same."

SOURCE: Heifetz SB, et al. (1988). Prevalence of dental caries and dental fluorosis in areas with optimal and above-optimal water-fluoride concentrations: a 5-year follow-up survey. *Journal of the American Dental Association* 116: 490-5.

"[D]uring the period 1979-81, especially in western Europe where there is little fluoridation, a number of dental examinations were made and compared with surveys carried out a decade or so before. It soon became clear that large reductions in caries had been occurring in unfluoridated areas. The magnitudes of these reductions are generally comparable with those observed in fluoridated areas over similar periods of time."

SOURCE: Diesendorf, D. (1986). The Mystery of Declining Tooth Decay. *Nature* 322: 125-129.

"Even the most cursory review of the dental literature since 1978 reveals a wealth of data documenting a secular, or long term, generalized decline in dental caries throughout the Western, industrialized world. Reports indicate that this decline has occurred in both fluoridated and fluoride-deficient areas, and in the presence and absence of organized preventive programs."

SOURCE: Bohannan HM, et al. (1985). Effect of secular decline on the evaluation of preventive dentistry demonstrations. *Journal of Public Health Dentistry* 45: 83-89.

"The decline in caries prevalence in communities without fluoridated water in various countries is well documented. The cause or causes are, at this time, a matter of speculation."

SOURCE: Leverett DH. (1982). Fluorides and the changing prevalence of dental caries. *Science* 217: 26-30.

ARTICLE SOURCE: http://www.fluoridealert.org/health/teeth/caries/who-dmft.html

Tooth Decay Trends in Western European Countries

BELGIUM - Unfluoridated Water, Fluoridated Salt:

"Caries-free children increased from 4% to 50%...A remarkable decline in dental caries was observed during the 15-yr period."

SOURCE: Carvalho JC, Van Nieuwenhuysen JP, D'Hoore W. (2001). The decline in dental caries among Belgian children between 1983 and 1998. *Community Dentistry and Oral Epidemiology* 29: 55-61.

DENMARK - Unfluoridated Water, Unfluoridated Salt:

"The paper presents an overview of the oral health situation in Denmark...[N]ational oral epidemiological data have been provided since 1972. Partly due to the preventive approach, a general decrease over-time in the prevalence of dental caries has been documented for children and adolescents. For example, in 1972 children in first class had a mean caries experience of 12.4 def-s against 3.9 def-s in 1990."

SOURCE: Petersen PE. (1992). Effectiveness of oral health care--some Danish experiences. *Proceedings of the Finnish Dental Society* 88: 13-23.

FINLAND - Unfluoridated Water, Unfluoridated Salt:

"During the 10 years, substantial decreases were seen in the mean numbers of dental visits (from 4.0 to 2.4) and fillings (from 2.9 to 1.2). The greatest decrease was seen in the number of fillings made in incisors."

SOURCE: Vehkalahti M, Rytomaa I, Helminen S. (1991). Decline in dental caries and public oral health care of adolescents. *Acta Odontologica Scandinavica* 49: 323-8.

FRANCE - Unfluoridated Water, Fluoridated Salt:

"Epidemiological surveys showed a marked decrease of caries prevalence in French children during the last 20 years."

SOURCE: Obry-Musset AM. (1998). [Epidemiology of dental caries in children] [Article in French] *Arch Pediatr* 5: 1145-8.

GERMANY - Unfluoridated Water, Fluoridated Salt:

"Caries rates are on the decline in the Federal Republic of Germany, too. And, in some cases considerable, increase in the number of children with caries-free teeth and a clear reduction in the average number of carious teeth has been recorded, above all in kindergartens with preventive dentistry programmes."

SOURCE: Gulzow HJ. (1990). [Preventive dentistry in the Federal Republic of Germany] [Article in German] *Oralprophylaxe* 12: 53-60.

GREECE - Unfluoridated Water, Unfluoridated Salt:

"The percentage of caries-free children for the total examined population increased by 94% while the reduction in DMFT index ranged between 38 and 70%. Treatment need was significantly lower in 1991 compared to 1982 in both dentitions."

SOURCE: Athanassouli I, et al. (1994). Dental caries changes between 1982 and 1991 in children aged 6-12 in Athens, Greece. Caries Research 28(5):378-82.

ICELAND - Unfluoridated Water, Unfluoridated Salt:

"During the last decade, a continuous decrease in dental caries has been observed among schoolchildren in Iceland...There does not seem to be any single factor responsible for the onset of the caries decline."

SOURCE: Einarsdottir KG, Bratthall D. (1996). Restoring oral health: On the rise and fall of dental caries in Iceland. European Journal of Oral Science 104: 459-69.

THE NETHERLANDS - Unfluoridated Water, Unfluoridated Salt:

"According to WHO criteria, 12-year-old children in The Netherlands now have a very low caries experience."

SOURCE: Truin GJ, Konig KG, Bronkhorst EM. (1994). Caries prevalence in Belgium and The Netherlands. International Dentistry Journal 44: 379-8.

NORWAY & all SCANDINAVIAN COUNTRIES - Unfluoridated Water, Unfluoridated Salt:

"Denmark, Iceland, Norway, and Sweden have all had a similar decline in dental caries during the last 20 years, although the decline has come later in Iceland. Despite the differences in choice of preventive methods, the dental health of children varies little across the frontiers."

SOURCE: Kallestal C, et al. (1999). Caries-preventive methods used for children and adolescents in Denmark, Iceland, Norway and Sweden. *Community Dentistry and Oral Epidemiology* 27: 144-51.

"Despite differences in the dental health care services and the recording and reporting systems, a consistent and similar decline in dental caries is evident for Denmark, Finland, Norway and Sweden during the last two decades."

SOURCE: von der Fehr FR. (1994). Caries prevalence in the Nordic countries. *International Dentistry Journal* 44: 371-8.

SWEDEN - Unfluoridated Water, Unfluoridated Salt:

"Between 1967 and 1992 the mean dmfs values declined from 7.8 to 1.8. The decline was greatest between 1967 and 1980 and then levelled off."

SOURCE: Stecksen-Blicks C, Holm AK. (1995). Dental caries, tooth trauma, malocclusion, fluoride usage, toothbrushing and dietary habits in 4-year-old Swedish children: changes between 1967 and 1992. *International Journal of Paediatric Dentistry* 5: 143-8

SWITZERLAND - Unfluoridated Water, Fluoridated Salt:

"Caries prevalence has declined by 70-84 percent since the late sixties."

SOURCE: Marthaler TM. (1991). [School dentistry in Zurich Canton: changes as a result of caries reduction of 80 to 85 percent] [Article in German] *Oralprophylaxe* 13: 115-22.

"Surveys of dental caries prevalence were carried out from 1970-1993 in schoolchildren of the city of Zurich. DMFT experience declined by 68 to 80%, while the average dmft decreased by 48-53% (ages 7 to 9).″

SOURCE: Steiner M, Menghini G, Curilovic Z, Marthaler T. (1994). [The caries occurrence in schoolchildren of the city of Zurich in 1970-1993. A view of prevention in new immigrants] [Article in German]. *Schweiz Monatsschr Zahnmed* 104: 1210-8.

ARTICLE SOURCES:
http://www.fluoridealert.org/health/teeth/caries/who-dmft.html

and

http://www.whocollab.od.mah.se/euro.html

The Fluoride Controversy

By Dr. Ted Spence, DDS, ND, PhD/DSc,MH

Fluoride is a very controversial topic, but how controversial I did not realize. The data reveals that fluoride is a chemical toxin. As you can see by my studies and degrees, I place a large amount of confidence in nutritional methods for over coming disease and place little in toxic drugs, synthetic chemicals and especially toxins, like fluoride.

A few years ago, I was asked by the head of our local health department to conduct a review of existing journal research on the toxicity of fluoride with emphasis on its cancer causing potential. I went to the National Medical Library and produced for him some 40 articles on the toxicity of fluoride. When we reviewed them, there was some discrepancy in whether or not fluoride was mutagenic.

Well, half of the articles said that it was and half said that it was not. But it can not be both ways ... We wondered what was wrong. Then the element of bias entered the picture, since Proctor and Gamble has paid for some of the "negative-concluding" research. We were still puzzled. My only goal is to tell this information to the patients and let them decide. Isn't that fair ... after all it is their decision? It is the patient's choice ... isn't it? The toxicity of fluoride has caused many countries to rethink the fluoride issue and many have rescinded fluoride in favor of the health of their people.

Those banning fluoride are Sweden, Norway, Denmark, West Germany (now unified), Italy, Belgium, Austria, France, and The Netherlands. Despite these retractions of fluoride, the US still presses on with the goal to fluoridate (poison) every community water supply in the United States. All allopathically-trained dentists are very familiar with the ADA and other "authoritative" positions on fluoride. They rarely mention its toxic potential or the few studies revealing increased tooth decay after fluoride use. The research of Burk and Yiamouyiannis revealed that every major city with fluoride had increased rates of cancer. Not a fair trade for "good looking teeth".

If you don't want to look at this data, that is your decision. As health professionals, we don't want to harm patients in any way and fluoride produces great harm. I am referring to taking fluoride internally, where it has been found to cause unscheduled DNA synthesis, sister chromatid exchanges and yes, mutagenic effects on the cells.

These terms may not bother some people at all, but they mean that there will be an increase in cancer after the ingestion of fluoride. Tsutsui, et al found that the addition of fluoride to healthy liver cell, in vitro, could establish changes that can only be described as cancerous.

The ADA's official position is that this stuff is safe, yet there have been deaths of children in the dentists office due to fluoride, albeit very few. The point I am trying to make is that this is not to be taken lightly. In a letter (to me) from the ADA apologizing for fluoride, that stated, "There are three basic compounds commonly used for fluoridating drinking water supplies in the United States: sodium fluoride, sodium silicofluoride, and hydrofluorosilicic acid."

Now any chemist can tell you that these are not the sodium fluoride we are all told about. Sodium hydrofluorosilicic acid is one of the most reactive chemical species know to man. Its toxicity is known in many chemical circles. It will eat through metal/ plastic pipes and corrode many materials including stainless steel and other metals. It will dissolve rubber tires and melt concrete. This is added to our water to produce "healthy teeth".

Fluoride Does the Following:

- inactivates 62 enzymes (Judd)

- increases the aging process (Yiamouyiannis)

- increases the incidence of cancer and tumor growth (Waldbott/Yiamouyiannis)

- disrupts the immune system (Waldbott)

- causes genetic damage (Tsutsui, et al)

- interrupts DNA repair-enzyme activity (Waldbott)

- increased arthritis and

- is a systemic poison.

"Fluoride is a highly toxic substance.... "
L P Anthony, DDS editor of the Journal of the American Dental Association - 1944

Funny how times change, but truth does not change.

"....we have very strong circumstantial evidence of systemic toxicity of the so-called absolutely safe concentrate of fluoridated water"
Roy E Hanford, MD, "Where is Science Taking US? reprint from Saturday Review

"Don't drink fluoridated water .... Fluoride is a corrosive poison which will produce harm on a long term basis." Dr Charles Heyd, Past AMA president

Some 61,000 cancer deaths in the US result from fluoridation each year. I repeat 61,000. (Burk and Yiamouyiannis) One study found that fluoride elevates cancer mortality 17% in 16 years in large cities. (from Gerald Judd, PhD) "You have been led to believe the fluorine makes teeth harder. The fact is, it actually makes teeth softer." (George Meinig, a founder of the American Academy of Endodontics)

The US sees a 22% increase in decay every 16 years from fluoride use and a 50% decline in decay every 20 years compared with Finland's 98%, Sweden's 80% and Holland's 72%. And they are non-fluoridated. (Gerald Judd)

My only goal is to tell the truth about the ill-effects of a known toxin. I mentioned the paper being published by the Health Freedom News on the neurotoxicity of fluoride. Fluoride is a potent neurotoxin and this has been known for some time; at least since the early 1940s, well before the fluoridation experiment with Grand Rapids.

Dr Gerard Judd, PhD (chemistry), (emeritus Manhatten project) found that fluoride can inactivate 62 enzyme systems. As a naturopath, nutritionist and master herbalist, I cannot endorse a substance that has known detrimental effects.

Geoffrey Smith stated, "Recent studies suggest that fluoride may be genotoxic." (p 79, Smith) And added, "There is now a substantial body of evidence suggesting that fluoride is mutagenic." (p 93, Smith) Gibson also noted, "Fluoride is one of the most toxic inorganic chemicals in the Earth's crust, ... However, with increasing experience, doubts about both safety and efficacy have arisen." (p 111, Gibson)

And he added, "A possible link between fluoridation of public water supplies and an increase in the cancer death rate has been debated for over 20 years and there is now no doubt that fluoride can cause genetic damage." (p 111, Gibson)

Gibson noted, "Inhibitory effects of fluoride on different enzyme systems have been demonstrated." (p 111, Gibson) And, "A section of the population may therefore be at risk of compromised immune system function from water fluoridation schemes." (p 112, Gibson)

Get the drift; fluoride is not everything it is cracked up to be. Mutagenic, enzyme inhibition, genetic damage, increased cancer rates, genotoxic and controversial, all describe fluoride.

Tsutsui et al noted, a significant increase in chromosome aberrations at the chromatid level, sister chromatid exchanges, and unscheduled DNA synthesis was induced by NaF in a dose- and timedependent manner.

These results indicate that NaF is genotoxic and capable of inducing neoplastic transformation of Syrian hamster embryo cells in culture." (p 938, Tsutsui et al) There, you can see the controversy for yourself. Fluoride is toxic, fluoride is non-toxic; fluoride causes cancer, fluoride doesn't cause cancer. Who do we believe?

The fluoride controversy comes down to ... Who Do We Really Believe?

Here's two articles on mutations caused by fluoride:

Sodium Fluoride-induced Morphological and Neoplastic Transformation Chromosome Aberrations, Sister Chromatid Exchanges, and Unscheduled DNA Synthesis in Cultured Syrian Hamster Embryo Cells, Takeki Tsutsui, Nobuko Suzuki and Manabu Ohmori, Can Res, 44:938-941, 1984 (March)

Sodium Fluoride-induced Chromosome Aberrations in Different Stages of the Cell Cycle: A Proposed Mechanism, Marilyn J Aardema, et al, Mutation Research, 223:191-203, 1989

The titles say it all.

Therefore, because of this controversy my feelings on this matter is that is should be up to the patient. They need both sides of the story to make an "intelligent" decision. I only mean to give them the other side. References are cited for your use and reading enjoyment.
The EPA found that at 2 ppm salmon were sterile, yet at 1 ppm it is placed in our water supply. [Dr Richard Foulkes] Fluoride only helps [if it helps] children up to age 12. Yet, everybody is

"forced" to drink it. Oscar Ewing, who pushed fluoride in the legislature, told the senators not to drink it.

The last thing I would say it that by endorsing fluoride you totally eliminate the real prevention of tooth decay ... good sound nutrition. Tooth-brushing (important as it is) does not stop tooth decay. Fluoride (a toxic])does not stop rampant tooth decay. (Fluoride only hardens to outer surface of the enamel and may prevent calcium from being deposited when a tooth is re-mineralized.) Nutrition stops tooth decay. I have developed a nutritional supportive program which will totally stop tooth decay in less than two weeks.

I have watched many children go from all 20 carious deciduous teeth, to 20 ebernated (hardened) teeth, which are non-painful and hard as rock. I have never seen fluoride do this (after 21 years of dentistry) and fluoride is not even a part of my caries prevention program.

References:

Waldbott, George, MD, Fluoride: The Great Dilemma, 1978, Coronado Press, Lawrence, KS
Yaimouyiannis, John, Fluoride: The Aging Factor, 1993, Health Action Press, Delaware

On Neurotoxicity:

Varner, J A, et al, "Chronic Administration of Aluminum Fluoride or Sodium Fluoride to Rats in Drinking water: Alterations in Neuronal and Cerebrovascular Integrity", Brain Research, 784(1-2):284-298, 1998, 1998, Feb 16.
Isaacson, R L, et al, "Toxin-Induced Blood Vessel Inclusions Caused By the Chronic Administration of Aluminum and Sodium Fluoride and Their Implications in Dementia", Ann NY Acad Science, 825():152-166, 1997, Oct 15.
Varner, J A, et al , "Chronic Aluminum Fluoride Administration, Part I: Behavioral Observations", Behavior Neural Biology, 61(3):233-241, 1994, May.
Burgstahler, A W, Colquhoun, J, "Neurotoxicity of Fluoride", Fluoride, 29:57-58, 1996 and
Li, X S, Zhi, J L, Gao R O, "Effects of Fluoride Exposure on the Intelligence of Children", Fluoride, 28:182-189, 1995 and
Mullenix, P J, et al, "Neurotoxicity of Sodium Fluoride on Rats", Neurotoxicity and Teratology, 17:169-177, 1995 and
Zhao, L B, et al, "Effect of Fluoridated Water Supply on Children's Intelligence", Fluoride, 29:190-192, 199

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If you're breastfeeding, this is a very good article on Early Childhood Caries (ECC):
http://www.naturalchild.org/guest/lisa_reagan.html

Conclusion

So, as I wrote above, after reading all the literature in this report, we began using fluoride toothpaste and the occasional topical application at the dentist. Some of us are using the Himalayan Dental Cream (contains fluorspar which is calcium fluoride) and some are using the Natural Dentist toothpaste (contains sodium fluoride). We are all also taking the Minerals of Life Trace Minerals (taken at any time of day) and the Bone Support minerals (held in the mouth for 2 minutes after brushing), then we don't drink anything and go to bed.

Note: all these toothpastes and minerals are available at the JPT Holistic Health Shoppe (www.HolisticHealthShoppe.com) and the Natural Dentist line may also be available in your local organic foodstore.

Of course, we have continued with our Weston A. Price mandated diet, vitamin D, cod liver oil, probiotics, nanoparticle minerals, etc.

I'll let you know if the addition of topical fluoride to our regimen makes a difference in about a year's time and my hope is that it will move us further along the pathway to cavity-free teeth!