

To the CDW Secretariat,

I have attached four short responses as they are separate concerns.

1. Fluoride Content of Breast and Formula Milk - There are some serious discrepancies here. I question the numbers in chart B3 of the appendix.
2. Thyroid Concerns - The affects of fluoride on the human thyroid have been completely ignored in this report
3. Omissions and Questions - about the kidneys, pineal gland, use of 1940's air and soil F levels, and the elusive Toronto report that Dr. Hazel Stewart will not release.
4. Expert Panel - my take on this as an expert panel picked to maintain the status quo.

The mistakes in the B3 chart show no one is checking the math. There were typos and at least one sentence that made absolutely no sense (top page 21).

Thank you for considering my submission.

Diane Sprules
2070 Elmhurst Ave,
Oakville, Ontario
L6J 1X2
diane.sprules@cogeco

1. Fluoride Content of Breast and Formula Milk

1. Breast Milk – Data on Fluoride levels

There are two sets of data on fluoride levels in breast milk that are reported in this document for the same reference – Dabeka et al – 1986 (page 6) and Dabeka et al - 1986 (chart B3 footnotes)

In the body of the report (page 6) breast milk from unfluoridated communities had 4.4ug/L or 0.0044mg/L

In fluoridated communities breast milk had 9.8ug/L or 0.0098mg/L
See appendix chart B3. Breast milk from unfluoridated communities had 0.009mg/L

In fluoridated communities it had 0.0013mg/L

Which is it? Neither numbers make sense in chart B3 unless babies are drinking impossibly large amounts of milk – see below.

2. Errors (?) in Chart B3

Table B3 of the consultation on water fluoridation: http://hc-sc.gc.ca/ewh-semt/consult/_2009/fluoride-fluorure/b-table-b-tableau-eng.php#tab3 If you look at this chart and the footnotes below it, the numbers do not work for breast milk.. I picked a few examples for 0-1 months and 4-6 months. Up to 6 months the only food needed for breast fed babies is breast milk (Health Canada) and so no other sources of fluoride are ingested. Breast milk is 0.009 mg/L fluoride where water is NOT fluoridated and 0.013 mg/L fluoride where water is fluoridated, according to footnote "b" under the chart.(from Dabeka et al,1986). http://hc-sc.gc.ca/ewh-semt/consult/_2009/fluoride-fluorure/b-table-b-tableau-eng.php#tab3 1a. When there is fluoride in the water and an infant is 0-1 month the chart says an infant receives 12.0 ug/kg bw/day (0.012mg/kg). 0-1 month old infant ~ 4 kg so receives $4 \times 0.012\text{mg} = 0.048 \text{ mg/day}$ of fluoride. Breast milk is 0.013mg/L so baby has to drink $0.048/0.013 = 3.7 \text{ L/day}$ (3700ml) in order to imbibe 0.048mg of fluoride.

This is patently ridiculous. According to <http://www.health.alberta.ca/health-info/baby-formula.html> , the amount of baby formula which a 0-1 month old would drink would be 360 - 960 ml. I think it is fair to assume that the volume of breast milk would be very similar as formula is trying to replicate it. Therefore Health Canada's chart is 3.9 – 10.3 times too high or has an error of between 390-1030%. 1b. When there is NO fluoride in the water, and breast milk is 0.009 mg/L, by the same figuring, 2666 ml of breast milk would have to be drunk for 0-1 month old infant to get 6.0 ug/kg bw/day or 0.024 mg/day for a 4 kg infant. (0.024mg/day/0.009mg/L).

But 0-1 month old baby drinks only 360- 960ml. Therefore Health Canada's chart is roughly 2.8 - 7.4 times too high or has an error of 280-740%. 2a When there is fluoride in the water and an infant is 4-6 months the chart says an infant receives 15.0 ug/kg bw/day (0.015mg/kg). 4-6 month old infant ~ 7.5 kg average so receives $7.5\text{kg} \times 0.015\text{mg/kg} = 0.1125 \text{ mg/day}$ fluoride. At 0.013 mg/L fluoride in breast milk, infant must drink $0.1125/0.013 = 7.9 \text{ L}$ of breast milk (7900ml). 4-6 month baby drinks only 750-1080 ml/day. Therefore Health Canada is 7.3 –10.5 times too high or has an error of 730-1050% 2b When there is NO fluoride in the water, breast milk is 0.009 ug/L. Chart says infant gets 9.0ug/kg bw/day or 0.009mg/kg bw/day.

By the same figuring, a 4-6 month infant would get $0.009\text{mg/kg} \times 7.5\text{kg} = 0.0675 \text{ mg/day}$. Infant would have to drink $0.0675/0.009 = 6.9\text{L}$ of breast milk (6900ml). But 4-6 month baby drinks only 750-1080ml/day. Therefore Health Canada is 6.4 –9.3 times too high or has an error of 640-930%

3. Formula Fed Babies at Risk for High Fluoride Ingestion

3a The first item is "All formulas" and 0-1 month olds are getting 33.0 ug/kg bw/day or 0.033mg/kg. (water used was 0.99mg/L fluoride – see footnote c.) At 4kg an infant 0-1 mo old is getting 0.132mg fluoride, (0.033mg/kg X 4 kg) But HC has judiciously advised lowering the fluoride level in water to 0.7mg/L so now baby is only getting 0.092mg/day fluoride. The IOM allowance or AI (adequate

intake) is 0.01mg/day fluoride for infants 0-6 months. <http://search.nap.edu/nap-cgi/skimchap.cgi?recid=5776&chap=288-313>, so this is 9.2 times higher than the AI set by the IOM or 920% higher.

3b. For “Powder milk- based formula”, the numbers are even higher. At 0-1 months, infants are getting 0.119mg/kg bw/day, so a 4kg baby would be getting 0.476mg/day (0.119mg/kg X 4kg). (Water used 0.99mg/L). At new recommendation of 0.7mg/L fluoride, infant will get 0.33mg/day or 33 times the recommended AI.

So babies will be getting milk-based formula 3300% higher than the AI set by the IOM.

If this chart is any indication, Health Canada does not know how much fluoride babies are consuming.

It is disturbing that Health Canada is recommending the formula manufacturers to lower their fluoride content, but not recommending formula to be made with unfluoridated water. In the U.S. the ADA and the CDC both advise using unfluoridated water to mix formula if mothers wish to avoid dental fluorosis. As well in Canada, Dr. Locker <http://search.nap.edu/nap-cgi/skimchap.cgi?recid=5776&chap=288-313> and Dr. Limeback both professors in the dental school at U of T recommend that baby formula not be constituted with fluoridated water.

Why is Health Canada so out of step on this when babies are at risk?

2. Thyroid concerns

Omission - Fluoride’s effect on the thyroid gland.

There are no human studies on either sodium fluoride’s or fluorosilicic acid’s effect on the thyroid gland, reviewed in this document.

Hypothyroidism can be a serious condition as the thyroid gland affects many bodily functions. Low thyroid poses a risk to the fetus and now a recent study in NY state has shown preterm births to be higher in fluoridated communities. <http://apha.confex.com/apha/137am/webprogram/Paper197468.html>

Sodium fluoride was used in the past century to treat hyperthyroidism. Today in Canada we have an epidemic of hypothyroidism, or low thyroid. Many young women of childbearing age are affected. In 2008, there were, according to the IMS, 11.4 million prescriptions dispensed in Canada, for Synthroid (outside of hospitals), a drug used to treat hypothyroidism. This was the second most prescribed drug after Lipitor. http://us.imshealth.com/canada/Trends03_En09.pdf How can Canadians be sure that the fluoride they have been ingesting for decades has not affected their thyroid glands, when no human studies have been reviewed and the two animal ones included showed adverse effects after high

short term exposure?

Many thyroid doctors in fact do recommend that hypothyroid patients stop drinking fluoridated water, and many patients find this does help, especially in cases of mild hypothyroidism. There are undoubtedly many causes for this epidemic including iodine deficiency and environmental toxins, but fluoride may be a very important one.

From the NRC 2006 Report on Fluoride in Drinking Water (U.S.) - "In humans, effects on thyroid function were associated with fluoride exposures of 0.05-0.13 mg/kg/day when iodine intake was adequate and 0.01-0.03 mg/kg/day when iodine intake was inadequate." p218. The latter exposure is less than what Canadians are getting in fluoridated communities today. For those Canadians who are iodine deficient, this is a recipe for hypothyroidism.

The panel chair of the NRC 2006 report, Dr. John Doull, stated "The thyroid changes do worry me."

They worry many people, but not Health Canada. Even in the face of the hypothyroid epidemic that exists today, especially among women, it ignored the issue. Why?

3. Omissions and Questions

1. Effect of Fluoride on the Kidney

There appears to be enough data reviewed in this report that would suggest anyone with compromised kidney function would be wise to take a precautionary path and avoid fluoridated water. Why does Health Canada still think it is safe for these people?

2. Effect of Fluoride on the Pineal Gland

There is no mention of fluoride's effect on the pineal gland despite the fact the human pineal gland has the highest concentration of fluoride of any organ of the body and the amount increases with age. Dr. Jennifer Luke's work has shown that fluoride at the level in drinking water, causes decreased melatonin production by the pineal gland and premature sexual development of female gerbils. Luke J. (1997). The Effect of Fluoride on the Physiology of the Pineal Gland. Ph.D. Thesis. University of Surrey, Guildford.:

" In conclusion, the human pineal gland contains the highest concentration of fluoride in the body. Fluoride is associated with depressed pineal melatonin synthesis by prepubertal gerbils and an accelerated onset of sexual maturation in the female gerbil. The results strengthen the hypothesis that the pineal has a role in the timing of the onset of puberty. Whether or not fluoride interferes with pineal function in humans requires further investigation."

From the NRC Report on Drinking Water, 2006:

“The single animal study of pineal function indicates that fluoride exposure results in altered melatonin production and altered timing of sexual maturity (Table 8-1). Whether fluoride affects pineal function in humans remains to be demonstrated. The two studies of menarcheal age in humans show the possibility of earlier menarche in some individuals exposed to fluoride, but no definitive statement can be made. Recent information on the role of the pineal organ in humans suggests that any agent that affects pineal function could affect human health in a variety of ways, including effects on sexual maturation, calcium metabolism, parathyroid function, postmenopausal osteoporosis, cancer, and psychiatric disease.” p221-22

3. Use of 1940's soil and air data for present day situation

In estimating the TDI of fluoride, Health Canada makes the assumption that the intake of fluoride from soil and air is about the same today as it was in the 1940's (pg 46 of report).

This is an assumption that must be considered very very questionable. Farmlands have been subjected to years of pesticides, many of which contain fluoride. Many greenhouses, farm plots and vegetable plots are watered with fluoridated water, thus increasing the fluoride that plants will absorb. In over 60 years of water in is amazing that fluoride contents of soil and air have not been re-evaluated.

4. Recent Toronto Report Missing

Dr. Ito, the President of the Ontario Public Health Dentists, presented to the Ontario Dental Association, April 2009, the findings of a meta analysis done for the city of Toronto, to determine what would happen if Toronto stopped fluoridating its water.

This study: Azarpazhooh A, Stewart H. Oral Health Consequences of the Cessation of Water Fluoridation in Toronto 2006/ August, showed that dental caries did not go up in communities when the water fluoridation was stopped. Health Canada is aware of this study, yet chose not to include it. Why?

4. “Expert Panel”

Who picked the "expert panel" on water fluoridation?

What credentials were necessary to be a panel member?

This panel of six appears to be extremely biased. Its expertise on fluoride's effects on the body appears to be limited. Just as easily an "expert" panel could have been picked that would have recommended the abandonment of this policy.

Steven M. Levy, Iowa College of Dentistry

Christopher Clark, University of British Columbia

Robert Tardif, Université de Montreal
Michael Levy, Institut National de Santé Publique du Québec
Jayanth Kumar, New York State Department of Health
Albert Nantel, Institut National de Santé Publique du Québec

Four are dentists. How are they capable of assessing damage to the rest of the body when their education and research is about teeth?

Three have not published anything on fluoride (that I can find), so why are they considered "experts"?

Steven Levy DDS, has been doing research on fluoride and teeth in longitudinal studies.

Kumar DDS is a big promoter of fluoride in New York state. His published papers do not all strongly support water fluoridation. His latest paper attempting to show fluorosed teeth are more resistant to decay is statistically extremely weak.

Christopher Clark DDS, is a proponent of fluoride, even though some of his research in B.C. has shown cavities falling in communities where water fluoridation was stopped.

Michael Levy DDS, is from Quebec Public Health, the same institute as Albert Nantel. As far as I know he has not peer published anything on fluoride.

Albert Nantel MD, has not peer published anything I can find on fluoride.

Robert Tardif PhD, a toxicologist, has not peer published anything on fluoride that I am aware of. However, his report to Health Canada, does raise concerns about lower intelligence in children drinking water at less than 1ppm F. He also discusses the higher incidence of uterine cancer in fluoridated areas of Japan. Japan no longer fluoridates its water.

Please can the method used to pick this "expert" panel be made public?

