

Response to the Health Canada (2009) report on Fluoride in Drinking Water

By
Paul Connett, PhD,
Professor Emeritus of Environmental Chemistry,
St. Lawrence University,
Canton, NY 13617
Also
Director
Fluoride Action Network,
82 Judson Street,
Canton, NY 13617
<http://fluoridealert.org/>

Nov 11, 2009

Dear Health Canada team,

You have asked for comments on your report "Fluoride in Drinking Water" <http://www.hc-sc.gc.ca/ewh-semt/consult/2009/fluoride-fluorure/index-eng.php> prepared for you by the Federal-Provincial-Territorial Committee on Drinking Water. But noting that this report was heavily dependent on a 5-page statement from an "expert panel" (<http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/2008-fluoride-fluorure/index-eng.php>) I will comment on that as well.

Noting that Carole Clinch of WaterlooWatch has already submitted a thorough critique of your report - and I concur with much of which she has written - I will confine myself to the following areas.

- 1) The overall bias of the Health Canada report.
- 2) The six-member "expert" panel
- 3) The analysis offered on Fluoride- IQ studies
- 4) The rationale offered for downplaying Bassin's findings on osteosarcoma.

1) The overall bias of the Health Canada report.

Like many other government sponsored reviews in countries which have practiced water fluoridation for many years, this report is more about protecting the fluoridation program than it is about protecting public health. This report follows the same mold of reports orchestrated by the US government (DHHS, 1991) the Irish government (Fluoridation Forum, 2000); the UK government (MRC, 2002; South Central SHA, 2009); the Australian government (NHMRC, 1991, 1999, 2007) or the New Zealand government.

Even Alan Freeze and Jay Lehr in their recent book *Fluoride Wars*, which is otherwise heavily slanted towards a pro-fluoridation position, do at least concede this point when they wrote:

"There is one anti-fluoridationist charge that does have some truth to it. Anti-fluoride forces have always claimed that the many government-sponsored review panels set up over the years to assess the costs and benefits of fluoridation were stacked in favor of fluoridation. A review of the membership of the various panels conform this charge. The expert committees that put together reports by the American Association for the Advancement of Science in 1941, 1944 and 1954; the National Academy of Sciences in 1951, 1971, 1977 and 1993; the World Health Organization in 1958 and 1970; and the US Public Health Service in 1991 are rife with the names of well-known medical and dental researchers who actively campaigned on behalf of fluoridation or whose research was held in high regard in the pro-fluoridation movement.⁵⁹ Membership was interlocking and incestuous." (p.156)

I had hoped for something more honest from Health Canada. However, this federal health agency appears to have been captured by the dental lobby, just like the rest of these governments, and even more blatantly so in the shape of the Dr. Peter Cooney, your Chief Dental Officer. Peter Cooney holds a position with the FDI (World Dental Federation). The FDI is industry funded. Its funders include Colgate

Palmolive, GlaxoSmithKline, Johnson & Johnson, Procter & Gamble, Wrigley, and Unilever see http://www.fdiworldental.org/congress/5_0corporate.html .

The FDI is really a trade association for all the world's national dental associations. In their own words, "The FDI is the unified voice of oral health professionals around the world." The FDI has strong ties with the WHO and has been pushing fluoridation since 1951. Most recently in Geneva in 2006, the FDI joined forces with the IADR and the WHO, in declaring that "access to fluoride" should be considered as a basic human right! (See Global Consultation on Oral Health through Fluoride, 17-19 November 2006 / Geneva, Switzerland, http://www.fdiworldental.org/public_health/3_2fluoride.html).

So in the push to fluoridate the world, Dr. Peter Cooney appears to be the FDI's front man in Canada, but paid to be so by the Canadian taxpayer. In the process of pushing and defending fluoridation this man has made some horrendous statements. In Dryden, Ontario on April 1, 2007 (I was at the meeting), on the safety of fluoridation, he told citizens that "I walked down your high street today and I didn't see anybody growing horns - and Dryden has been fluoridated for 40 years!" On dental fluorosis he told officials in Thunder Bay that children and adults like dental fluorosis because it gives them very white teeth - or words to that effect.

Any way, back to your report. This 94-page report concluded that the 1.5 ppm drinking water standard is safe and should remain unchanged. The report is sloppy, superficial, selective, biased and clearly designed to protect the fluoridation program at all costs. In short, it should embarrass any Canadian who believes that Health Canada's policies are based on sound science and are bound by scientific integrity.

These are harsh words and I don't use them lightly. But it is very clear that this whole "product" was a fix from the very beginning. The first step in the process was the selection of an "expert panel" to review the literature. I will look at that panel now.

2) The Expert Panel.

"The expert panel" consisted of six people:

Steven M. Levy, Iowa College of Dentistry

Christopher Clark, University of British Columbia

Robert Tardiff, University of Montreal

Michael Levy, Institut National de Santé Publique du Quebec

Jayanth Kumar, New York State Department of Health

Albert Nantel, Institut National de Sante Publique du Quebec

This perhaps was the most blatantly biased panel that could have been selected for this task. Four of the panelists (Steven Levy, Chris Clark, Michael Levy and Jay Kumar) are dentists and well-known promoters of fluoridation. Three of these have received large amounts of money from government sources for their research on fluoride. While they have done some good research, and found results that clearly contradict the effectiveness of fluoridation, they are careful not to say so too loudly. When required to do so they continue to endorse fluoridation publicly. It is all part of the gravy train of keeping government money coming into their research programs. Just as this exercise appears to be.

It is not clear that either of the other two panelists (Nantel and Tardiff) have written anything on fluoride before. So even if they set out to do an objective job, it is hard to believe that they could have mastered this subject in a way that could bring them close to the quality of the review conducted by the US National Research Council (NRC, 2006). This took 12 panelists three and half years to produce.

A fifth panel member (Albert Nantel) is a colleague of Michael Levy and comes from the same pro-

fluoridation institute and it is questionable whether he represented either independent judgment or even input on this report.

Two of the panelists (Michael Levy, and Robert Tardiff) had already written, or were in the process of writing, a pro-fluoridation review for the same Institut National de Sante Publique du Quebec, and a third (Albert Nantel) was acknowledged for his help in writing that report. This report was entitled *Water Fluoridation: An Analysis of the Health Benefits and Risks*, and was published in June 2007. This report can be accessed

at <http://www.inspq.qc.ca/pdf/publications/705-WaterFluoridation.pdf>

Perhaps the most shocking omission from this "expert" panel – whose selection could have offered a morsel of balance to the process – was Dr. Hardy Limeback. Both Limeback and Kumar served on the NRC (2006) panel that produced the 507-page landmark review *Fluoride in Drinking Water: A Scientific Review of EPA's Standards*. Incredibly, Health Canada selected Kumar from New York, over Limeback from Toronto. There is one obvious reason for that preference. Kumar is avidly pro-fluoridation and Limeback is now, after intensely reviewing the literature, opposed to fluoridation. There is no question which one is the more qualified. Limeback has both a DDS and a PhD in biochemistry and was the former President of the Canadian Association for Dental Research. Limeback also teaches in the department of Preventive Dentistry at the University of Toronto and has his own dental practice. Kumar is a state bureaucrat whose main task is to promote fluoridation (or as they euphemistically call it, "oral health").

Not unexpectedly this panel delivered its support for fluoridation in a skinny five-page report which was published on the Health Canada website in April, 2008 - available at <http://fluoridealert.org/canada.expert.panel.2008.pdf>. Can there be any doubt that this was no more than a cynical self-fulfilling prophecy orchestrated by the pro-fluoridation lobby within Health Canada? Citizens are trying to find out more about the process in which these six panelists were selected to do this job. My hunch is that they were handpicked by Cooney to do precisely the job that they did.

This panel met in Ottawa in January, 2007, and their report was published on Health Canada's website at the time there was an intense debate going on about whether Hamilton, Ontario, would stop fluoridating its water. Here are some excerpts from their 5-page report:

"The Expert Panel was asked to provide expert advice and to make recommendations to Health Canada and the Federal-Provincial-Territorial Committee on Drinking Water (CDW) regarding fluoride in drinking water. Advice was sought from the Expert Panel on five specific issues of concern:

Total Daily Intake of Fluoride;

Dental Fluorosis;

Other Health Effects;

Risk Assessment; and

Drinking Water Fluoridation: Risks and Benefits

"The Expert Panel reached a consensus on all key issues identified, and its main conclusions and recommendations to Health Canada and the Federal-Provincial-Territorial Committee on Drinking Water on each issue are provided below...

"Fluoride - Other potential health effects

"Conclusions/Concerns:

"*Skeletal fluorosis*: The primary functional adverse effect associated with excess fluoride intake (after dental fluorosis) is still skeletal fluorosis (milder forms), likely to occur at about 10 mg/day

after 10 or more years of exposure. Definitions of the different stages of skeletal fluorosis should be developed.

“Cancer: Weight of evidence does not support a link between exposure to fluoride and increased risks of cancer. It is important to avoid any generalization and overinterpretation of the results of the Bassin *et al.* paper and to await the publication of the full study before drawing conclusions and particularly before influencing any related policy. In addition, there is supplemental negative evidence from the 2005 NTP study, even with higher levels of fluoride than the original 1992 (sic, it was 1990) NTP study.

“Intelligence Quotient: - Weight of evidence does not support a link between fluoride and intelligence quotient deficit. There are significant concerns regarding the available studies, including quality, credibility, and methodological weaknesses such as the lack of control for confounding factors, the small number of subjects, and the dose of exposure.

“Bone fracture: Studies that do not control for confounding factors, such as intake of calcium, fluoride, or vitamin D supplements, intake of other medication, or consideration of traumatic fractures, should be interpreted cautiously.

“Immunotoxicity, reproductive and developmental toxicity, genotoxicity and neurotoxicity: Weight of evidence does not support a link between exposure to fluoride in drinking water at 1.5 mg/L and any adverse health effects regarding immunotoxicity, reproductive/developmental toxicity, genotoxicity and/or neurotoxicity.

“Recommendations:

“Weight of evidence does not support modifying the current Health Canada position/opinion on the carcinogenicity of fluoride. Policy decisions should not be based on the Bassin *et al.* (2006) paper.

“The current Maximum Acceptable Concentration (MAC) of 1.5 mg/L of fluoride in drinking water is unlikely to cause adverse health effects, including cancer, bone fracture, immunotoxicity, reproductive/developmental toxicity, genotoxicity, and/or neurotoxicity.” <http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/2008-fluoride-fluore/index-eng.php>

3) The Health Canada (2009) report: IQ studies

In this section I will focus on one of the health issue on which the full report relies heavily on the judgment of the “expert” panel: the lowering of IQ in children.

To put this discussion into context, there have now been **twenty-three** studies that have found an association between lowered IQ and exposure to moderate to high levels of fluoride (see www.fluoridealert.org/brain)

In the written report submitted by one of the expert panelists Dr. Robert Tardiff, a toxicologist, only two short paragraphs are spent reviewing IQ studies. He cites only **two** studies: Li et al., 1995 and Xiang et al., 2003. He refers to the NRC (2006) report but manages to miss the fact that the NRC reviewed **five** studies (and six if you include the Lin et al. 1991 study on the thyroid). Even with this very limited review of IQ studies, Tardiff did cite Xiang's bottom line: "In endemic fluorosis areas, drinking water fluoride levels greater than 1.0 mg/L may adversely affect the development of children's intelligence." You might think that was a pretty devastating finding if your charge was to review the safety of a standard set at 1.5 ppm. How did Tardiff and the other five panel members wriggle out of this?

We have seen how they did this above. They claimed that:

“Intelligence Quotient: - Weight of evidence does not support a link between fluoride and intelligence quotient deficit. There are significant concerns regarding the available studies,

including quality, credibility, and methodological weaknesses such as the lack of control for confounding factors, the small number of subjects, and the dose of exposure."

What "weight of evidence" are we talking about here? Tardiff only looked at **two** studies. No studies were cited which did *not* find an association between fluoride exposure and lowered IQs. So what studies are these two studies being weighed against? Answer: they were being weighed against continuing support for the fluoridation program!

Now, as indicated above, there have been 23 studies that have found this association (one from Iran, one from Mexico, one from India and 20 from China. 5 of the Chinese studies await translation). We also know that there has been one small study in New Zealand that did not find this association. 23 to 1 is not looking too good for a "weight of analysis" in favor of continuing the fluoridation program. In addition, there have been three studies which have found an association between fetal brain damage in aborted fetuses in endemic fluorosis areas in China and over 50 animal studies which have found that fluoride damages the brain and alters behavior, starting with the classic paper from Mullenix et al. (1995) over which she was fired!

All the citations to the brain studies can be found at www.FluorideAlert.org/brain

Were Tardiff and the other 5 panel members unaware of the other human studies? Hard to believe because several had been published before January 2007. Maybe they weren't looking too hard.

If Hardy Limeback had been on this panel he would certainly have drawn attention to the other IQ studies. Probably one of the reasons he was not on the panel. He knows the literature too well!

What about the Health Canada team, were they unaware of the other IQ studies? Hardly. The Fluoride Action Network and the International Society for Fluoride Research organized a back-to-back conference right under their noses in Toronto, in August of 2008 - nearly a year before the Health Canada (2009) report was published. OK so Health Canada didn't bother to send someone to the conference. That won't do. FAN, with the help of local citizens, organized a media conference in Toronto where Dr. Vyvyan Howard and I spoke specifically about these 23 IQ studies. This media conference got major TV, radio and press coverage in Canada. FAN made links to all 23 IQ studies available on its home page <http://www.FluorideAlert.org> In other words these studies should not have been difficult for Health Canada to find, if their researchers had seriously looked. In addition, the journal *Fluoride* printed 19 Chinese studies on the brain (which FAN had had translated), including some of the IQ studies, a couple of the animal studies and the three studies on fluoride's impact on fetal brain.

So, by September 2009, Health Canada had a great deal of published literature on which they could do a really decent "weight of evidence" analysis, if they had wanted to. This material also included three meta-analysis, including one presented by Dr. Limeback as a poster at the International Association for Dental Research (IADR) conference in Toronto in April, 2008. So what did they write?

Health Canada reviewed only 5 of the 23 IQ studies. They state on page 36,

"The impact of fluoride exposure on children's intelligence quotient (IQ) was measured in several studies in China (Li et al, 1995; Zhao et al., 1996; Lu et al., 2000; Xiang et al., 2003 and Wang et al., 2007) [note they have missed out the studies from Mexico, Iran and India and the other 15 studies from China, as well as the three fetal brain studies and the three meta-analyses, PC] As discussed later in this section, these studies are controversial and therefore need to be interpreted cautiously."

Why are these studies *controversial* do you think? Is it because if they are given any validity they could wreck the fluoridation program?

It is interesting to contrast how *cautiously* Health Canada views these IQ findings with the way this government agency *throws caution to the wind* and continues to sanction Canadian babies' brains being dosed with fluoride at levels (in Canada) up to 200 times higher than the level in mothers' milk (as low as

0.004 ppm, NRC, 2006, p.40) with every bottle of baby formula (made up with fluoridated water) they drink!

Moreover, wouldn't you think that these experts at Health Canada who know so much about the methodological flaws in these epidemiological studies, would have designed a really superb and flawless IQ study and carried it out in Canada? Have they done that? NEVER. How *cautious* is that? The absence of study does not mean absence of harm. As long as Canada, and the other fluoridating countries, do not bother to do any IQ studies themselves, these 23 studies have to be taken seriously. At the very least they are waving a large red flag. But all we get is a green flag for more fluoridation, by continuing to snaction the 1.5 ppm standard.

Health Canada continues:

"These studies were recently reviewed by the Expert Panel on fluoride convened by Health Canada in 2007. Despite the consistency in the results from these studies, the committee agreed that the weight of evidence does not support a link between fluoride and IQ deficit... These studies performed in China were also reviewed by other organizations and/or committees, which also mentioned that the significance of these studies is uncertain (ICPS, 2002; ATSDR, 2003; NRC, 2006)."

BUT NOTE:

The ICPS (actually WHO) 2002 review only considered **two** studies: Li et al., 1995 and Zhao et al., 1996. <http://www.inchem.org/documents/ehc/ehc/ehc227.htm>

The ATSDR, 2003 review only considered **three IQ** studies (Li et al., 1995; Zhao et al, 1996; Lu et al., 2000), one behavioral study (Morgan et al., 1998) and an abstract from a paper from Mexico which indicated a decrease in visuospatial organization (Calderon, et al., 2000). <http://www.atsdr.cdc.gov/toxprofiles/tp11.pdf>

The NRC, 2006 review only considered **five or six** studies: Li et al, 1995; Zhao et al., 1996; Lu et al., 2000; Xiang et al., 2003 a and b and Lin et al., 1991 (considered under lowered thyroid function). http://www.nap.edu/catalog.php?record_id=11571

If this was an honest exercise, especially when using the phrase "weight of analysis", one would have expected that Health Canada would have gone **forward** from the date of the "expert panel" not **backwards** to previous reviews, with even fewer studies available to them. If they had gone forward and done just a moderate amount of research they should have found the other 18 studies that they somehow managed to "overlook" in the interests of protecting the fluoridation program.

4) The Health Canada (2009) report: downplaying Bassin's findings on oestrosarcoma

On pages 31-32, Health Canada states:

"Recently, Bassin et al. (2006) explored age-specific and sex-specific effects of fluoride in drinking water and the incidence of osteosarcoma based on data from a matched case-control study conducted throughout 11 hospitals in the United States. Data acquired included a complete residential history for each patient and type of drinking water (public, private well, bottled) used at each address. Analysis was limited to cases less than 20 years old, and standardized fluoride exposure estimates were based on the Centres for Disease Control and Prevention-recommended target levels that take climate into account. Exposure was categorized into three groups (<30%, 30-99%, >99% of target²) and used conditional logistic regression to estimate odds ratios. Analysis, based on 103 cases under the age of 20 and 215 matched controls, disclosed that for males, the unadjusted odds ratios for higher exposures were greater than 1.0 at each exposure age, reaching a peak of 4.07 (95% CI = 1.43-11.56) at age 7 years for the highest exposure. The adjustment for potential confounders produced similar results, with an adjusted odds ratio for males of 5.46 (95% CI = 1.50-19.90) at age 7 years. This exploratory analysis

found an association between fluoride exposure in drinking water during childhood and the incidence of osteosarcoma among males but not consistently among females.

“A letter to the editor was published by Douglass (Bassin's thesis director) and Joshipura (2006) to warn readers not to generalize or overinterpret the results of the Bassin et al. (2006) paper and to await publication from the full study before making any conclusions, particularly before influencing any related policy decision. According to the authors, Bassin et al. (2006) presented only the first of two sets of cases with their own control group. The first set was recruited from existing cases between 1989 and 1992, and the second set of cases was recruited between 1993 and 2000. Douglass and Joshipura's (2006) research group also found some positive associations between fluoride and osteosarcoma in the overall (not age-specific) analysis of the first set of cases; however, their preliminary findings from the overall analysis of the second set of cases (1993-2000) did not appear to replicate the overall findings from the first part of the study. Their findings did not suggest an overall association between fluoride exposure and osteosarcoma. According to the authors, this is particularly important, since the cases had been accrued essentially from the same hospitals within the same orthopaedic departments with the same providers, with the same pathology departments performing the diagnosis of osteosarcoma and also using similar methods of fluoride exposure (Douglass and Joshipura, 2006).”

It is important here, in order to see what is really going on, to put this commentary into its full historical and political context.

Shortly, after the US Public Health Service had “contained” the concern generated by the NTP (1990) animal study that found a linear increase in osteosarcoma in male rats fed fluoride (DHHS, 1991) a study appeared by McGuire et al. (1991). We will take the history of this issue from there.

McGuire et al., 1991

The April 1991 issue of the *Journal of the American Dental Association (JADA)* contained a cover article by McGuire et al., 1991. One of the co-authors of this study was Professor Chester Douglass, chairman of the Harvard Dental School (see more below). Even though this paper was a very small preliminary study, it was given the full treatment by JADA (it was made the cover story, replete with a cover depicting mountains and lake seen through a huge glass of water).

It is clear that McGuire, Douglass, and the other authors of this 1991 study, knew that a finding that fluoride might cause osteosarcoma would threaten the fluoridation program. Nor do they hide their concerns about such an eventuality, as the following quotes make clear:

“An incorrect inference implicating systemic fluoride carcinogenicity and its removal from our water systems would be detrimental to the oral health of most Americans, particularly those who cannot afford to pay for increasingly expensive restorative dental care” (p.39)

“Because of its strengthening action, fluoride has been widely accepted as the responsible agent for the dramatic declines in the tooth decay rates of U.S. children and adolescents.” (pp.39-40)

“A disruption in the delivery of fluoride through municipal water systems would increase decay rates over time.” (p.40)

“Linking of fluoride ingestion and cancer initiation could result in a large-scale defluoridation of municipal water systems under the Delaney clause.” (p.40)

Fortunately, for those who believed in the wonders of the fluoridation program, the authors didn't find that fluoridation was associated with an *increase* in osteosarcoma, but found the very opposite to be the case. They state that:

“fluoridation at recommended levels **may** provide a **protective** effect against the formation of osteosarcoma” (p.44) (my emphasis, PC)

Which allowed the authors to reach the final conclusion they (and the JADA editors and the ADA) clearly wanted out of this study:

“Given present knowledge, every effort should be made to continue the practice of fluoridating community water supplies.” (p. 45)

The cover of this issue of JADA carried the message that all promoters of fluoridation wanted to hear: “Fluoride and Cancer. Study points to protection.” Even the word “may” has been dropped from this statement!

Such concerns about the fate of the fluoridation program expressed by the authors of this article are in sharp contrast to the very limited concerns the authors express about the fate of the young men who succumb to osteosarcoma. This is a frequently fatal cancer and, at the very least, results in a loss of a limb. By any other standards this would be a very heavy price to pay for the saving of a modest amount of tooth decay – if indeed such a saving existed.

It is intriguing that Chester Douglass, one of the co-authors of this study, was then chosen by the NIH to receive a sizeable grant to continue researching this sensitive issue. It is surprising that the NIH would choose *any* dental researcher to oversee research on a life or death issue that might be related to the fluoridation program, let alone someone who had already made it clear that a positive finding on osteosarcoma would sabotage the practice. In the 18 years since this McGuire et al. paper was published, Douglass has received over a million dollars in funding from the NIH. We will discuss Douglass’s further involvement in this issue below.

Cohn, 1992

In 1992, Cohn, working for the New Jersey Health department, reported a significant increase in osteosarcoma in young **males** in the fluoridated communities in three NJ counties – but again not for young females (Cohn, 1992). Most significantly, Cohn suggested that there might be a time frame where young boys are particularly vulnerable to fluoride’s carcinogenic effect. Cohn wrote:

“If rapidly growing bone in adolescent males is most susceptible to the development of osteosarcomas (Glass and Fraumeni, 1970), **it is possible that fluoride acts as a cancer promoter during a narrow window of susceptibility.** The interplay of hormonal influences and the intensity of the growth spurts may be potent influences. Since fluoride is toxic to cells and a variety of enzymes at high concentrations (reviewed by Kaminsky et al., 1990; and Public Health Service, 1991), it may exert tumor-promoting effects in the osteoblast cell microenvironment during bone deposition. Genetic predisposition may also play a role.” (Cohn, 1992, p. 11.) (our emphasis, PC)

Other studies

Other epidemiological studies of various sizes and quality have failed to find this relationship (Hrudy, 1990; Mahoney 1991; McGuire, 1991; Freni, 1992; Gelberg, 1995; Moss, 1995). For a full review of these studies and other studies on osteosarcoma, see the submissions to the National Research Council by the Fluoride Action Network (Connett, Neurath and Connett, 2005 a and b).

Elise Bassin, 2001

Elise Bassin is a dentist. She investigated a possible relationship between exposure to fluoride and osteosarcoma as part of her PhD thesis at the Harvard Dental School. Suspecting a possible time window of vulnerability for this problem as Cohn had conjectured it might (see above), Bassin examined osteosarcoma rates as a function of which years the boys were exposed to fluoride.

In a matched case-control study, Bassin found, in what she herself described as a “robust finding,” that young boys exposed to fluoride in their 6th - 8th years (which corresponds to the mid-childhood growth spurt) had a 5 to 7 fold increased risk of succumbing to osteosarcoma by the age of 20. Her thesis was successfully defended in 2001 (Bassin, 2001).

Bassin’s PhD thesis hidden from the scientific community

It is extraordinary that, after Bassin’s thesis was successfully defended in 2001, it was neither followed up with a swift publication of her results nor any kind of statement made to warn the scientific community or the public about her findings. After all, if she was correct, a chemical being given daily to millions of Americans in their drinking water might actually be killing people! If this discovery had been made by industrial researchers on an industrial chemical, and the authors had hidden the findings from government regulators, they would have been in serious trouble.

Professor Chester Douglass

Professor Chester Douglass was Bassin’s thesis adviser and signed off on her thesis in 2001. This is the same professor Douglass who was co-author of the McGuire et al. study from 1991, discussed above. Clearly, he knew the very serious implications of her findings as far as the future of fluoridation was concerned. The McGuire et al., 1991 paper (see above) makes that very clear. However, even though he was given several opportunities to do so, over the next three to four years, Douglass neither warned his colleagues in professional meetings (e.g. a meeting organized by the British Fluoridation Society in 2002), nor the NRC panel, nor his funders at the NIH, about Bassin’s findings. Instead of warnings he did the very opposite. He continued to assert that “his” work showed no significant association between fluoride and osteosarcoma. In his written comments to the NRC panel he even gave Bassin’s thesis as a footnote, but without indicating that her findings actually contradicted what he had told the panel.

Bassin’s thesis discovered

Finally, Michael Connett, of the Fluoride Action Network, acting on a tip, went to the Harvard Medical School Rare Books Room in January 2005 and “discovered” the “hidden” thesis. The resulting public release of this material, triggered a demand by the Environmental Working Group for an official enquiry from the National Institute of Environmental Health Sciences (NIEHS), which had funded this work, into Douglass’s behavior. This in turn led to a great deal of press attention to the “scandal” (Begley, *Wall Street Journal*, July 22, 2005) The NIEHS gave the enquiry to Harvard. After a year, Harvard produced a short statement declaring Douglass innocent of unethical behavior, stating that he did not “deliberately” hide Bassin’s findings. Harvard has refused to provide any arguments or explanations supporting this finding despite repeated efforts to get them to do so, from alumni, from citizens and even congressional representatives.

Bassin et al., 2006

Bassin’s findings were finally published in May, 2006 (Bassin et al, 2006). However, the same issue of the journal published a letter from Chester Douglass, downplaying the significance of her findings (Douglass & Joshipura, 2006). It is interesting to contrast Douglass’s “slowness” to warn the public of Bassin’s findings in the four years between 2001 and 2005, with the speed with which he warned the public that her findings might be “premature” on the very same day that her article appeared in press.

The Douglass letter

In his letter, Douglass claimed that Bassin’s findings were based on a subset of a larger cohort, and that the larger cohort did not support her thesis. This was strange because he provided no evidence that her methodology had, at that time, been applied to this larger cohort. Nor is it clear that it has ever been applied to the larger cohort. Douglass further claimed that his larger study (to be co-authored by Robert Hoover who was used by the DHHS to downplay the NTP findings, DHHS, 1991) would be published in the summer of 2006.

Douglass had first mentioned this publication date of his study in a personal communication to the NRC panel on Jan 3, 2006 (NRC, 2006, p. 329). So it is now nearly four years since this promise was first made, and the Douglass-Hoover study has still not been published. Douglass has since retired from his position at Harvard.

Douglass's methodology cannot refute Bassin

Those who have examined the methodology described by Douglass et al. have indicated that this work would fail to test the central thesis of Bassin's work (Neurath and Connett, 2008). This is because the biometric of exposure these authors are using - bone fluoride levels found at the time of diagnosis or autopsy - could not be used to ascertain exposure during the years (6- 8) so critical to Bassin's thesis. Fluoride accumulates over time – so a level say at age 20 - gives no indication of the level of exposure at 6, 7 or 8.

Moreover, for some bizarre reason the controls being used in the “promised” Douglass-Hoover study are other bone cancers. Thus, this study would be invalidated if fluoride caused any of these other bone cancers, like Ewing's sarcoma, which is a distinct possibility.

Fluoridation proponents are using Douglass's letter to negate concern over the Bassin study

Despite the non-appearance of the promised Douglass et al. study and the limitations in the methodology he has used in terms of refuting Bassin's work, Douglass's letter is being used by fluoridation proponents in several countries, as if it was the final word on the issue. For those who insist on very high standards for the work they accept as evidence, using a “promise” of an unpublished study to negate Bassin's findings is extraordinary. Clearly, there is a double standard operating here. The same proponents who are now using the promise in the Douglass letter to negate Bassin's findings, previously used the fact that her thesis was unpublished to deflect attention from her work!

This is how the Australian National Health and Medical Research Council (NHMRC) used the Douglass letter in the systematic review they published in 2007.

“The attention of the reader is drawn to a Letter to the Editor that appeared in the same issue of *Cancer Causes and Controls* by co-investigators on the larger Harvard study (Douglass & Joshipura, 2006). The authors point out that they had not been able to replicate the findings of Bassin and colleagues in the larger study that included prospective cases from the same 11 hospitals. Furthermore, the bone samples that were taken in the broader study corroborate a lack of association between the fluoride content in drinking water and osteosarcoma in the new cases. As Bassin and colleagues acknowledged, the shortcomings of their study mean that their results should be interpreted with caution pending publication of the larger study results” (NHMRC, 2007, p.103)

This is how a local health authority pushing for fluoridation in Southampton, UK used the Douglass letter in their public consultation brochure. You will notice that in this case these authors do not make it clear that reference 13 is not a study or “comprehensive review” but a “letter” promising a study!

“Since 2006, fluoridation opponents have pointed to a study in the United States of America (12) [Reference 12 is the Bassin study, PC] that appears to suggest a possible increase in osteosarcoma (bone cancer) rates in young males – but not females –living in fluoridated areas. However, this was part of a larger study (13) [Reference 13 is the Douglass letter, PC] looking at many more osteosarcoma cases over a longer period of time and including an examination of bone samples. This more detailed and comprehensive review had found no link between water fluoride levels and osteosarcoma. The researchers therefore advised caution in selectively interpreting the results of the smaller study in isolation.” (SHA, 2008, pp 18-19)

This is how Dr. Peter Cooney, the Chief Dental Officer of Canada, described the Bassin study-Douglass letter in a presentation he gave in Dryden, Ontario on April 1, 2008:

“You are going to hear about osteosarcoma ...some of the studies that did show that there may have been a concern in young males with osteosarcoma have been – in the bigger studies – completely discounted.” (Cooney, 2008)

Dr. Cooney appears to be using here a statement made by the “expert panel” discussed above. On cancer the “expert panel” wrote:

“Cancer: Weight of evidence does not support a link between exposure to fluoride and increased risk of cancer. It is important to avoid any generalization and overinterpretation of the results of the Bassin *et al.* paper and to await the publication of the full study before drawing conclusions and particularly before influencing any related policy...”

In January 2007, the promised Douglass-Hoover study was already 6 months overdue. By April 2008, it was 18 months overdue.

In September 2009, when Health Canada published their review, the promised paper was over three years overdue and no evidence that the study will ever appear. But the mere promise of this study seems to suffice in the effort to keep fluoridation going in Canada.

In a further effort to support the notion that there is “no clear association between water fluoridation and overall cancer incidence, including osteosarcoma and bone/joint cancers and mortality” the Health Canada authors cite the following references: “McDonagh *et al.*, 2000; NHMRC, 2007; ATSDR, 2003; American Dental Association, 2005” (p.33).

Attentive readers will note that all these references were published before the all-important Bassin *et al.* (2006) study and the single reference published since (*i.e.* NHMRC, 2007) uses the same tactic of citing the “promised Douglass-Hoover study” to alleviate concern, as discussed above. Moreover, it’s hard to believe that any government review would cite anything from the American Dental Association as a serious scientific source for resolving a controversial health practice that they have avidly promoted since 1950!

Overall conclusion.

If this report is allowed to stand as is, it will embarrass the Canadian government as well as do a huge disservice to the Canadian people. I recommend that a new BALANCED panel be sort, which has not been tainted by the dental lobby. But the health and welfare of the Canadian people should not be held hostage during the time such a review takes. There are enough serious issues – lowered IQ and osteosarcoma, being just two - which should trigger the Precautionary Principle in this matter. The notion of maintaining that it is safe to add fluoride to the water at levels of 0.8 ppm, that is not only 200 times higher than the level in mothers milk, but is also so close to the MAC level of 1.5 ppm, is preposterous. Especially, when one remembers that once fluoride has been added to the water it is no longer possible to control the dose that people get. There will be literally millions of people who will get a higher dose of fluoride drinking water at 0.8 ppm than people would get drinking water at 1.5 ppm.

Thus while a new panel is found to provide a scientifically defensible MAC standard, I urge the Canadian health authorities to put a moratorium on water fluoridation.

I also hope that parliament will order an enquiry as to how (and who) managed to select such a biased panel to perform this serious task.

Sincerely,

Paul Connett, PhD,
Professor Emeritus of Environmental Chemistry,
St. Lawrence University,
Canton, NY 13617
Also

Director
Fluoride Action Network,
82 Judson Street,
Canton, NY 13617
315-379-9200
Www.FluorideAlert.org

References on Osteosarcoma section

Bassin E.B. (2001). Association Between Fluoride in Drinking Water During Growth and Development and the Incidence of Osteosarcoma for Children and Adolescents. Doctoral Thesis, Harvard School of Dental Medicine.

Bassin E.B., Mittleman M.A., Wypij D., Joshipura K., Douglass C.W. (2004). Problems in exposure assessment of fluoride in drinking water. *Journal of Public Health Dentistry* 64:45-9.

Cohn P.D. (1992). A Brief Report On The Association Of Drinking Water Fluoridation And The Incidence of Osteosarcoma Among Young Males. New Jersey Department of Health Environ. Health Service.

Connett, P, Neurath, C and Connett, M. Revisiting the Fluoride-Osteosarcoma connection in the context of Elise Bassin's findings: Part I Submitted to the NRC review panel on the Toxicology of Fluoride in Water March 2, 2005

<http://www.fluoridealert.org/health/cancer/fan-nrc.part1.pdf>

Connett, P, Neurath, C and Connett, M. (2005) Revisiting the Fluoride-Osteosarcoma connection in the context of Elise Bassin's findings: Part II Submitted to the NRC review panel on the Toxicology of Fluoride in Water March 21, 2005 revised April 8, 2005

<http://www.fluoridealert.org/health/cancer/fan-nrc.part2.pdf>

Douglass CW & Joshipura K (2006). Caution needed in fluoride and osteosarcoma study. *Cancer Causes & Control*, 17: 481-2.

Freni S.C., Gaylor, D.W. (1992). International trends in the incidence of bone cancer are not related to drinking water fluoridation. *Cancer* 70:611-8.

Gelberg K.H. (1994). Case-control study of osteosarcoma. Doctoral Thesis, Yale University.

Gelberg K.H., Fitzgerald E.F., Hwang S., Dubrow R. (1995). Fluoride exposure and childhood osteosarcoma: a case-control study. *American Journal of Public Health* 85:1678-83.

Hoover R.N., Devesa S.S., Cantor K.P., Lubin J.H., Fraumeni J.F. (1991). Time trends for bone and joint cancers and osteosarcomas in the Surveillance, Epidemiology and End Results (SEER) Program. National Cancer Institute. In: Review of Fluoride: Benefits and Risks Report of the Ad Hoc Committee on Fluoride of the Committee to Coordinate Environmental Health and Related Programs US Public Health Service. Appendix E and Appendix F.

Hrudey S.E., Soskolne C.L., Berkel J., Fincham S. (1990). Drinking water fluoridation and osteosarcoma. *Canadian Journal of Public Health* 81(6):415-6.

Mahoney M.C., Nasca P.C., Burnett W.S., Meius J.M. (1991). Bone cancer incidence rates in New York State: time trends and fluoridated drinking water. *American Journal of Public Health* 81:475-9.

McGuire S.M., Venable E.D., McGuire M.H., Buckwalter J.A., Douglass C.W. (1991). Is there a link between fluoridated water and osteosarcoma? *Journal of the American Dental Association* 122:38-45.

McGuire S.M., Douglass C.W., Joshi A., Hunter D., DaSilva J. (1995). Fluoride exposure and osteosarcoma. [Abstract] *J Dent Res* 74:98.

Moss M.E., Kanarek M.S., Anderson H.A., Hanrahan L.P., Remington P.L. (1995). Osteosarcoma, seasonality, and environmental factors in Wisconsin, 1979-1989. *Archives of Environmental Health* 50:235-41.

National Toxicology Program [NTP] (1990). Toxicology and Carcinogenesis Studies of Sodium Fluoride in F344/N Rats and B6C3f1 Mice. Technical report Series No. 393. NIH Publ. No 91-2848. National Institute of Environmental Health Sciences, Research Triangle Park, N.C.

World Health Organization (2002). Environmental Health Criteria 227: FLUORIDES. World Health Organization, Geneva.

Yiamouyiannis J. (1993). Fluoridation and cancer: The biology and epidemiology of bone and oral cancer related to fluoridation. *Fluoride* 26:83-96