

**Response to
Environmental Petition No. 221B filed by Ms. Carole Clinch
under Section 22 of the *Auditor General Act*
Received April 22, 2008**

Petition requesting the discontinuation of artificial water fluoridation

August 20, 2008

**Minister of Health and the Minister for the Federal Economic
Development Initiative for Northern Ontario**

Petition to Discontinue Water Fluoridation

The Response of Health Canada to the Petition

Background:

Health Canada works with the provinces and territories to develop the Guidelines for Canadian Drinking Water Quality. The Guidelines are then used by each province and territory as a basis to establish their own requirements for drinking water quality. Fluoride is one of the many substances for which a guideline has been established. The Maximum Acceptable Concentration (MAC) for fluoride has been established taking into consideration all sources of exposure to fluoride, including foods and dental products. In Canada, the fluoridation of drinking water supplies is a decision that is made by each municipality, in collaboration with the appropriate provincial or territorial authority. This decision may also include consultation with residents, often through a referendum.

Fluoride occurs naturally in many source waters in Canada. It can also be added to drinking water as a public health measure to protect dental health and prevent or reduce tooth decay. The fluoridation of drinking water supplies is a well-accepted measure to protect public health and is strongly supported by scientific evidence. Fluoride is used internationally to protect dental health. It has been added to public drinking water supplies around the world for more than half a century, as a public health/dental health measure. The use of fluoride in the prevention of dental caries continues to be endorsed by over 90 national and international professional health organizations including Health Canada, the Canadian Dental Association, the Canadian Medical Association, the World Health Organization and the Food and Drug Administration of the United States.

As part of its ongoing review of the health effects of exposure to fluoride in drinking water, Health Canada convened a panel of experts in January 2007 to provide advice and recommendations based on the current state of relevant science with respect to the fluoridation of water. Advice was sought from the Expert Panel on five specific issues of concern including Total Daily Intake of Fluoride; Dental Fluorosis; Other Health Effects; Risk Assessment; and Drinking Water Fluoridation: Risks and Benefits. Discussions were based on topic-specific literature reviews developed and presented by some of the invited experts.

The report produced by the Expert Panel will be used to help inform the development of an updated fluoride guideline for Canadian drinking water, by ensuring our analysis is based on the latest scientific evidence. The Expert Panel report was posted online and can be found at <http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/2008-fluoride-fluorure/index-eng.php>.

Health Canada will continue to monitor the science and review new scientific reports and articles which explore possible links between fluoride and various health effects to ensure the health of Canadians is protected.

Q1. Is it the position of Health Canada that the National Research Council 507 page report of March 22, 2006, is not relevant to water fluoridation? Would you please provide any written analysis by you (or by any other government agency)?

Health Canada response:

Health Canada works in collaboration with the provinces and territories to develop the Guidelines for Canadian Drinking Water Quality. These guidelines are based on original relevant scientific studies that are published in internationally recognized peer-reviewed journals, and the guidelines are reviewed and revised periodically to take into account new and emerging scientific knowledge. Reviews such as the one done by NRC are useful to the extent that they help ensure all relevant science has been considered.

Q2. Will Health Canada please provide the transcript evidence that Stan Hazan corrected his deposition as you state above (page 3)?

Health Canada response:

Please contact the Superior Court of the State of California for the County of San Diego to obtain the desired document from the original source.

Q3. Has Health Canada or the Public Health Service made the public aware that we are putting hydrofluorosilicic acid or sodium silicofluoride in our drinking water- a man-made toxic substance, according to CEPA-not "fluoride"? If so, please provide evidence of where this information is available to the public.

Health Canada response:

As stated in a response to an earlier petition, fluorosilicate compounds readily hydrolyse in water to release fluoride ions, which means that drinking water is not a source of exposure to these compounds. Fluorosilicate compounds are added as a source of the mineral nutrient fluoride.

Health Canada endorses the fluoridation of drinking water to prevent tooth decay, but does not participate in the decision to fluoridate a water supply. Provincial and territorial governments, in collaboration with their municipalities, decide whether or not to fluoridate their drinking water and the amount of fluoride to be added. This decision may include consultation with residents, often through a referendum. Health Canada cannot comment on what information is available to residents of a specific province or territory related to their drinking water.

Public Health Agency of Canada response:

This issue is within the mandate of Health Canada. The Public Health Agency of Canada has not addressed the issues raised in this question.

Q4. Will Health Canada, Environment Canada, Natural Resources or Fisheries and Oceans produce evidence that the research has clearly demonstrated that these fluorosilicate products completely dissociate and will never reassociate under any conditions? (e.g., acid environments

in source water created by acid, acidic foods, beverages-tea, coffee, fruit beverages-gut, bladder)? If yes, did they evaluate dissociation of fluosilicate at different pH (3 to 8)? Please provide references.

Health Canada response:

As stated in the response to question 3, fluorosilicate compounds readily hydrolyse in water to release fluoride ions, which means that drinking water is not a source of exposure to these compounds. This is based on currently available research and science. Health Canada does not conduct research on the chemistry of fluoride species.

The research community has focussed to date on levels that would result from exposures in occupational settings. A review of the toxicological literature on Sodium Hexafluorosilicate and on Fluorosilicic Acid conducted for the National Institute of Environmental Health Sciences is available at the following URL:

http://ntp.niehs.nih.gov/ntp/htdocs/Chem_Background/ExSumPDF/Fluorosilicates.pdf

Q5. Do Health Canada, Public Health Service, Environment Canada, Natural Resources and Fisheries and Oceans agree with Stan Hazan from NSF (National Sanitation Foundation) that in the absence of definitive proof that Na_2SiF_6 and H_2SiF_6 completely dissociate, toxicology tests should be performed on these products? If not, why not?

And

Q6. Do Health Canada, Public Health Service, Natural Resources and Fisheries and Oceans and Environment Canada disagree with the evidence and conclusions of the NRC 2006 and above researchers that Na_2SiF_6 and H_2SiF_6 do not completely dissociate? If so, how so?

Health Canada response to Q5 and Q6:

Health Canada has no position on Mr. Hazan's comments or the NRC review. Our conclusions are based on internal scientific reviews of original relevant scientific studies that are published in internationally recognized peer-reviewed journals. Health Canada recommends the use of certified products to ensure the protection of public health. The department works with certification and accreditation bodies to help meet this goal, but has no mandate or authority regarding the certification process.

Public Health Agency of Canada response:

This issue is within the mandate of Health Canada. The Public Health Agency of Canada has not addressed the issues raised in this question.

Q7. Can Health Canada provide a published laboratory experiment that shows the dissociation of all SIX fluoride atoms from H_2SiF_6 or Na_2SiF_6 ? That is merely because some of the Fluoride dissociates, it doesn't automatically follow that ALL six fluoride atoms dissociate, These compounds are "hexasilicates" (i.e., there are 6 Fluoride atoms on each molecule). For an indication that not all fluoride atoms necessarily dissociate, see evidence in Westendorf thesis, pp. 48-50.

And

Q8. Can Health Canada provide a peer-reviewed scientific publication that DISPROVES Westendorf's finding that, when silicofluorides are added to water, after some if not all of the six fluoride atoms have dissociated from the original silicofluoride molecule, there is an incomplete dissociation of the REST of the silicate (leaving behind what Westendorf calls a "residual species")?

And

Q9. Can Health Canada provide a peer-reviewed scientific publication that DISPROVES Westendorf's finding that "residual complex" (which Westendorf doesn't pretend to have established definitively) has independent effects on acetylcholinesterase inhibition (an important effect on human biochemistry) that are greater than free Fluoride (thesis, pp.47-48)?

And

Q10. Do Health Canada, Environment Canada, Natural Resources and Fisheries and Oceans refute the evidence above that these man-made fluoride substances used in artificial water fluoridation (Na_2SiF_6 and H_2SiF_6) may be more toxic than naturally-occurring fluoride substances such as calcium fluoride and sodium? If so, how so?

And

Q13. Can Health Canada provide irrefutable proof (scientific studies, not reviews) that H_2SiF_6 and Na_2SiF_6 are safe for human consumption, at recommended doses, for a lifetime of ingestion? Please provide scientific evidence which demonstrates clearly and unequivocally that there are no adverse health effects with the use of water fluoridated at the recommended concentration levels of 0.8-1.0mg/L.

And

Q19. Does Health Canada agree that complete NaF dissociation cannot be used to "prove" complete dissociation of silicofluorides such as H_2SiF_6 and Na_2SiF_6 which contain 6 fluoride ions? If not, why not?

Health Canada response to Q7, Q8, Q9, Q10, Q13, Q19:

Health Canada's position is based on currently available research and science. Health Canada does not conduct research on the chemistry of fluoride species. As mentioned above, the Guidelines for Canadian Drinking Water Quality developed by Health Canada, in consultation with the provincial and territorial governments, are based on original relevant scientific studies that are published in internationally recognized peer-reviewed journals.

Q11. Health Canada stated in a previous petition response: "The standard (National Sanitation Foundation (NSF) Standard 60) requires a toxicology review to determine that the product is safe at its maximum use level and to evaluate potential contaminants in the product, such as those mentioned." Has Health Canada been able to obtain any actual chronic toxicology studies (not a review) from the National Sanitation Foundation for hydrofluorosilicic acid (H_2SiF_6) which they certify for sale to municipalities across Canada? According to 2004 evidence under oath, NSF was unable to find this research, after certifying these products since 1988- 20 years.

And

Q12. Can Health Canada provide proof that chronic toxicology studies have been performed on H_2SiF_6 and Na_2SiF_6 after the EPA, NSF and FDA have all replied that these studies do not exist and the USA NTP program has recommended research to compensate for this lack of

information? Since the NIEHS review (not study) provided by Health Canada in response to petition #221 states clearly that there are no chronic toxicology studies on hydrofluorosilicic acid, the petitioner asks Health Canada AGAIN for ANY toxicology study on H₂SiF₆.

And

Q14. Manufacturers do not supply a free-fluoride ion direct water additive. They provide hydrofluorosilicic acid. Is Health Canada convinced that no due diligence is required on the part of provinces and municipalities which voluntarily use NSF standards, to determine whether NSF Standard 60 actually offers an assurance of safety, when the products they sell have never been tested for safety.

And

Q18. Is the Health Canada response to the previous petition regarding Stan Hazan (p3 above) an admission that the manufacturers have not submitted all product review data as required by Standard 60, and instead are assessed by NSF on another criteria?

Health Canada response to Q11, Q12, Q14 and Q18:

Health Canada has not conducted toxicology studies on fluorosilicates. As stated in the response to question 3, fluorosilicate compounds readily hydrolyse in water to release fluoride ions, which means that drinking water is not a source of exposure to these compounds. Health Canada recommends the use of certified products to ensure the protection of public health. The department works with certification and accreditation bodies to help meet this goal, but has no mandate or authority regarding the certification process. Health Canada also works collaboratively with provincial and territorial governments, who are responsible for the safety of drinking water.

Q15. What are the end products in food when processed with Na₂SiF₆ and H₂SiF₆? What species of fluorosilicates are then produced? Is H₂SiF₆ a legal food additive? Please provide references.

Health Canada response:

Health Canada is not aware of any published literature specific to the transformation products of silicofluorides in food, nor of any reassociations that may take place during food preparation or in food matrices. Any such reactions are likely to depend on a variety of chemical (such as pH) and physical (such as temperature) factors related to the specific food matrix and any food processing that occurs.

Fluorosilicates (including H₂SiF₆ and Na₂SiF₆) are not permitted food additives, and as such cannot be directly added to foods, with the exception of bottled water and pre-packaged ice, where their addition is considered as a mineral nutrient rather than as a food additive. Food additives for which provisions exist in the *Food and Drug Regulations* can be found in the Tables of Division 16 on Health Canada's website at the following address: <http://www.hc-sc.gc.ca/fn-an/legislation/acts-lois/fdr-rad/index-eng.php>

Q16. Does H₂SiF₆ have a Drug Identification Number (DIN)? If so, please provide DIN number and source of this information.

Health Canada response:

There are a number of drugs that contain various forms of fluoride that have received market authorization. Three of these drugs with valid Drug Identification Numbers (DIN) contain fluorosilicates. Of these three, two are homeopathics and one is an over-the-counter anti-fungal product. You can access Health Canada's website to identify whether there are any drugs with a DIN containing hydrofluorosilicic acid. Information can be obtained from the following links:

http://www.hc-sc.gc.ca/dhp-mps/prodpharma/databasdon/index_e.html

<http://205.193.93.51/dpdonline/changeLanguage.do?formname=/startup.do>

Q17. Is the endorsement of water fluoridation from trade organizations and some government organizations sufficient reason to implement and continue a policy?

Health Canada response:

Health Canada's decisions are based on internal scientific reviews of available relevant information, not on the stated position of individuals or agencies. The fact that others have reached the same conclusions is stated as a fact, and demonstrates similar independent conclusions from the various agencies.

As part of its ongoing review of the health effects of exposure to fluoride in drinking water, Health Canada convened a panel of experts in January 2007 to provide advice and recommendations based on the current state of relevant science with respect to the fluoridation of water. The report produced by the Expert Panel will be used to help inform the development of an updated fluoride guideline for Canadian drinking water, by ensuring our analysis is based on the latest scientific evidence. The Expert Panel report was posted online and can be found at <http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/2008-fluoride-fluorure/index-eng.php>.

Health Canada will continue to monitor the science and review new scientific reports and articles which explore possible links between fluoride and various health effects to ensure the health of Canadians is protected and to support our decision-making.

Q20. Can Environment Canada, Natural Resources or Fisheries and Oceans demonstrate that fluoride did NOT play a role in the catastrophic decline in salmonid stocks in the once highly productive ecosystem along the Thompson, Columbia and Fraser Rivers?

Health Canada response:

No response is required from Health Canada