

**Oral Health Section Response to Proposed APHA Policy Statement titled:  
*Moratorium on Use of silicofluorides for Water Fluoridation***

The Oral Health Section of the American Public Health Association (APHA) wishes to comment on the policy statement proposed by Myron Coplan and Robert Carton that would recommend a moratorium on water fluoridation in systems that use silicofluorides. This resolution should not be adopted, as the science base does not support such a radical change in public policy.

We wish to note that this is a resubmission of a virtually identical policy proposal originally submitted in 2001. That proposal was denied because of a lack of scientific credibility, and the state of the evidence has not changed in the intervening two years.

The proposed policy resolution calls for four actions that are based on the claim that there are sound reasons to believe that drinking water treated with silicofluorides has different health effects than that treated with sodium fluoride. It recommends: 1) endorsing the National Toxicology Programs (NTP) nomination of silicofluorides for toxicology evaluations; 2) having CDC declare an immediate moratorium on any new use of silicofluorides; 3) halting water fluoridation in systems that use silicofluorides; and 4) establishing a panel of APHA members to monitor the first three actions.

The claims that would establish the basis for such actions are based upon research of questionable quality, conclusions from research that exceed that which can validly be concluded from the findings, and assertion that previous research on the safety of fluoridated water that has been accepted by esteemed review bodies is not relevant to the current claims. Inasmuch as many of these claims extend from others, we will address first those that are central, so that the others can be dismissed without excessive discussion. For the sake of brevity, we will not address every point for which we take exception.

**Page 1, Lines 9-13:** As noted in the proposed policy, APHA has a long history of endorsing water fluoridation, beginning in 1950. Other esteemed health organizations have similarly recommended fluoridation over the last 50 fifty years. The most recent positive recommendations for water fluoridation as a valuable public health measure to decrease dental caries have been made by the Association of State and Territorial Health Officials (ASTHO) and the Association of State and Territorial Dental Directors (ASTDD) (2003), by CDC (1999, 2001), by the Surgeon General (DHHS 2000, 2001), and by the Task Force on Community Preventive Services (CDC 2001).

**Page 1, Lines 15-19 and Lines 25-27:** The resolution questions the safety of silicofluorides used in water fluoridation. These products are tested for quality and safety under a system of standards, certifications, and testing. The American Water Works Association (AWWA) and the American National Standards Institute (ANSI) sets standards for all chemicals used in the water treatment plant, including fluoride

chemicals. The AWWA standards are ANSI/AWWA B701-99 (sodium fluoride), ANSI/AWWA B702-99 (sodium fluorosilicate) and ANSI/AWWA B703-00 (fluorosilicic acid). The National Sanitation Foundation (NSF) also sets standards and does product certification for products used in the water industry, including fluoride chemicals. ANSI/NSF Standard 60, *Drinking Water Treatment Chemicals-Health Effects*, includes testing and certification to assure the purity of the products used and the safety of the finished drinking water (ANSI/NSF 1999). More than 40 states have laws or regulations requiring product compliance with Standard 60.

Regarding studies of chronic exposure, the referenced 1999 EPA letter indicates that due to the almost complete dissociation of the silicofluoride products at concentrations used in water fluoridation, data from chronic studies of sodium fluoride are applicable. The chemistry involved has been recently reviewed in several articles by Urbansky and Shock (2000) and Urbansky (2002). Urbansky (2002) stated “It is concluded that in any drinking water supply with a pH of 5 or higher, fluoridated with sodium silicofluoride [hexafluorosilicate] to the extent of 16 ppm of F or less, all of the silicofluoride is completely hydrolyzed to silicic acid, fluoride ion, and hydrogen fluoride.”

A systematic review by York University in 2000 confirmed the benefits of water fluoridation and found no evidence of harmful health effects (McDonagh 2000). There have been numerous other safety reviews of fluoridation, most notably, those done by the National Research Council (1993) and by the Ad Hoc Subcommittee on Fluoride of the Committee to Coordinate Environmental Health and Related Programs (DHHS1991).

Regarding the studies on an effect on enzymes, we find the research far from applicable to physiologic conditions. The study by Masters et al is ecologic in design, and the authors do not adequately control for one of the primary factors for increased blood lead in children - that of lead-based paint used in old housing. Other methodological issues limit the conclusions that can be drawn from this study. In a paper recently presented at the 2003 meeting of the American Association of Dental Research, Le, et al, concluded that water fluoridation using fluorosilicic acid is not associated with an acidity increase at the tap site. Fluoride concentration was modestly related to the pH level, but in the opposite direction that some opponents to water fluoridation previously claimed. There was no correlation between lead and pH levels. The Fort Collins Fluoride Technical Study Group (2003) reported no detectable increase in contaminants, such as lead, arsenic, copper, manganese, zinc, cadmium, nickel, or molybdenum, after adjustment with fluorosilicic acid.

**Page 1, Lines 21-23:** We find the interpretation of the evidence presented of different effects unconvincing. The McClure article was supportive that sodium fluoride and sodium fluorosilicate have similar physiological effects. Zipkin, et al, concluded “The results of the study do not suggest any essential difference in urinary elimination of fluoride ingested in naturally fluoridated drinking water and the elimination of fluoride ingested in drinking water fluoridated with either sodium fluoride or sodium fluorosilicate.”

**Page 1, Lines 29-31 and Page 2, Lines 1-3:** While EPA is looking to improve our understanding of the chemical dissociation and hydrolysis processes through further research, there is no urgency to justify a moratorium on use of these products. We believe it is unnecessary for APHA to endorse the National Toxicology Program (NTP) nomination for studies on silicofluorides. Nominations for study made by the public undergo several levels of NTP review. NTP has yet to decide whether any testing is warranted and what form of testing may be appropriate. We have confidence in the integrity of this process to identify an appropriate course of action. While additional study of the dissociation process will add to our knowledge, it is unnecessary for APHA to endorse any effort by NTP or EPA.

**Page 2, Lines 5-12:** The resolution purports APHA's policy is to encourage precautionary action to prevent harm to children and should result in stopping water fluoridation. We disagree with the application of the APHA policy to this situation, and in fact, believe that ceasing fluoridation would be detrimental to the health of the young, as well as to people of all ages. The precautionary principle focuses on risks for which scientific evidence is lacking. It is most useful for public health protection when confronting newly-identified risks and where the avoidance of risk poses no threat to health. The principle is less applicable when adequate scientific information on risks has been used for making policy decisions. It does not offer guidance in situations where interventions to reduce a risk to health would increase another health risk at the same time. In such situations, the weight of scientific evidence regarding risks and benefits should be compared before a change is made in public health policy. The U.S. has over fifty years of experience with fluoridation using the three fluoride products in use today. Much more of a case would have to be made to justify discontinuing this valuable preventive service currently being provided to over 162 million Americans (CDC 2002). All the research called for in the proposed policy would take many years. While a short (months) time period of discontinuation may not adversely effect caries rates, discontinuing fluoridation for the time period proposed would have a serious adverse effect.

## Conclusion

The proposed policy statement purports to protect children's health by stopping fluoridation where silicofluorides are used, when in fact, the health of children would be adversely affected because the loss of water fluoridation would result in increased tooth decay and its sequelae. To change an established, long-standing, successful prevention program based on such limited evidence would be irresponsible. Water fluoridation continues to play a vital role in reducing caries prevalence. To end this public health practices would be detrimental to the health of the public, young and old. Conversion to a different fluoride product would entail unnecessary, substantial costs for re-engineering, including design and equipment purchase and installation. The dental and public health communities will continue to seek the best available science in improving our understanding of the health effects of fluoride used in oral disease prevention. At this time, however, we believe that the single most important thing that a community can do for the oral health of its citizens is to fluoridate its drinking water. We believe that

because this proposed resolution is unwarranted and is not supported by current scientific evidence, we urge that it not be adopted. Furthermore, we would recommend that this proposed resolution not be forwarded by the Joint Policy Committee, as even its publication in the Nation's Health as a potential policy could be viewed as a legitimate concern and be detrimental to public health.

Oral Health Section, APHA

References:

ANSI/NSF (American National Standards Institute/NSF International). Standard 60: Drinking water treatment chemicals-health effects. NSF International, 1999, Ann Arbor, MI.

Association of State and Territorial Health Officials and Association of State and Territorial Dental Directors. Community Water Fluoridation: A State Best Practice in Dental Caries Prevention. January 2003.

Centers for Disease Control and Prevention. Recommendations for using fluoride to prevent and control dental caries in the United States. MMWR 2001;50(No. 55-14).

Centers for Disease Control and Prevention. Promoting oral health: interventions for preventing dental caries, oral and pharyngeal cancers, and sports-related craniofacial injuries: a report on recommendations of the Task Force on Community Preventive Services. MMWR 2001;50(No. RR-21);1-13.

Centers for Disease Control and Prevention. Populations receiving optimally fluoridated public drinking water - United States, 2000. MMWR 2002;51:144-147.

Letter to the Honorable Ken Calvert, Chairman of the Subcommittee on Energy and the Environment of the House Committee on Science, from EPA Assistant Administrator J. Charles Fox, June 23, 1999.

Le, V, Gansky, SA, Newbrun, E. Fluoride and Lead Concentrations Related to pH in Drinking Water. J Dent Res, Vol 82 Special Issue A 2003 (in press).

Fluoride Technical Study Group. Report of the Fort Collins Fluoride Technical Study Group, January 2003  
<http://www.fcgov.com/utilities/fluoride-report.php>

McClure FJ. Availability of fluorine in sodium fluoride vs. sodium fluosilicate. Pub Health Rep, 1950;65:1175-86.

McDonagh MS, Whiting PF, Wilson PM, Sutton AJ, Chestnutt I, Cooper J, Misso K, Bradley M, Treasure E, Klijn J. Systematic review of water fluoridation. *BMJ* 2000;321:855-9.

National Research Council. Health effects of ingested fluoride. Washington: National Academy Press; 1993.

Surgeon General Statement on Community Water Fluoridation. December, 2001.  
<http://www.cdc.gov/OralHealth/factsheets/fl-surgeon2001.htm>

Urbansky ET, Schock MR. Can fluoridation affect lead(II) in potable water? Hexafluorosilicate and fluoride equilibria in aqueous solution. *Intern J Environ Studies*, 2000;(57)597-637.

Urbansky, ET. Fate of fluorosilicate drinking water additives. *Chemical Reviews* 2002; 102:2837-2854.

U.S. Department of Health and Human Services. Review of fluoride benefits and risks: report of the Ad Hoc Subcommittee on Fluoride of the Committee to Coordinate Environmental Health and Related Programs. Washington: U.S. Department of Health and Human Services, Public Health Service; 1991.

U.S. Department of Health and Human Services. Oral Health in America: A Report of the Surgeon General. Rockville, MD: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health, 2000.

Zipkin, I, Likins, RC, McClure FJ, Steere, AC. Urinary fluoride levels associated with use of fluoridated water. *Pub Health Rep*, 1956; 71:767-72.