Hon. Benjamin Grumbles, Assistant Administrator
Office of Water
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

October 25, 2005

Dear Mr. Grumbles:

We submit this rejoinder to the polemic sent to you by Jerome Bowman representing the American Dental Association (ADA). We use the term "polemic" because of Bowman's classic use of repeated pejorative descriptions of us EPA employees ("small number of individuals," "antifluoridationists hiding behind false science and half truths," "beyond-the-mainstream faction," "factions that lie way outside of the mainstream," "vocal minority," and repeatedly, "antifluoridationists") and assertions that he is a champion of good science and "truth telling – the whole truth and nothing but the truth."

We wish to address, especially, Bowman's concept of "truth telling" and championship of good science, first by noting his casual citation of ADA's endorsement of fluoridation in 1950. Germane to this point is the following excerpt from Volume 31 of the *Journal of the American Dental Association*, pages 1360-1363, (***1944***) titled, "Effect of fluorine on dental caries."

"knowledge of the subject does not warrant the introduction of fluorine in community water supplies generally. Sodium fluoride is a highly toxic substance, and while its applications in safe concentrations, and under strict control by competent personnel, may prove to be useful therapeutically, under other circumstances it may definitely be harmful. To be effective, fluorine must be ingested into the system during the years of tooth development, and we do not yet know enough about the chemistry involved to anticipate what other conditions may be produced in the structure of the bone and other tissues of the body generally. We do know that the use of drinking water containing as little as 1.2 to 3.0 ppm of fluorine will cause such developmental disturbances in bones as osteosclerosis, spondylosis, and osteopetrosis, as well as goiter, and we cannot run the risk of producing such serious systemic disturbances in applying what is at present a doubtful procedure intended to prevent development of dental disfigurements among

children ... because of our anxiety to find some therapeutic procedure that will promote mass prevention of caries, the seeming potentialities of fluorine appear speculatively attractive, but, in the light of our present knowledge or lack of knowledge of the chemistry of the subject, **the potentialities for harm far outweigh those for good."** (emphasis added)

Mr. Bowman boldly states in his polemic that, "The overwhelming weight of credible, peer reviewed, scientific evidence, supported by over 60 years of experience, continues to establish that fluoridation is safe and effective…," apparently trusting that no one would find out what the ADA said in 1944 about what 1.3-3.0 ppm of fluoride was known to cause in humans. Is it not amazing that in the short period between 1944 and 1950, suddenly all the research showing that goiter, osteosclerosis, spondylosis, and osteopetrosis appears to have become, in ADA's eyes, invalid and "outside the mainstream," and that in order to "prevent dental disfigurements" it was then perfectly acceptable to expose the entire U.S. population to additional fluoride through drinking water?[1] And these exposure levels would be perilously close to the adverse effect levels cited by ADA just six years prior.

Likewise, Bowman cites 20-40% reductions in caries rate resulting from fluoridation, using a 1989 secondary review by Newbrun and ignoring the best study on effectiveness ever done (1). That study, published in 1990, was conducted on 39,000 U.S. children by the Epidemiology Branch of the National Institute of Dental Research, NIH, and showed a difference of 2.79 vs. 3.39 carious surfaces (out of 128 total tooth surfaces) in children who lived in fluoridated vs. un-fluoridated communities. The difference was not shown to be statistically significant, and similar small and statistically (and clinically) insignificant differences between fluoridated and un-fluoridated communities have been reported from Australia (2), New Zealand (3) and Canada (4). The longest running two-city study (5) in the U.S. (Kingston and Newburgh, N.Y.) actually showed lower caries incidence in the un-fluoridated community. So much for ADA's dedication to good science.

As to the pejorative characterizations of EPA employees, Bowman in so doing continues the well known practice of ADA and similar organizations of demonizing anyone who truly takes a hard look at the science supporting fluoridation and the indiscriminate exposure of the entire population, including sensitive subpopulations, to uncontrolled levels of fluoride. We resent and reject his baseless vilification of us and the EPA employees we represent.[2]

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[1] It is significant, in this connection, to note that in the period 1944-1950, virtually the only exposures most Americans would get to fluoride would be through the low levels then in the water supply, since fluoridated toothpaste did not exist, artificially fluoridated water was not used in food processing, nor were there significant uses of fluorine-containing pesticides. This means that the toxic doses of fluoride cited by ADA above that would be delivered by 1.3-3.0 ppm in drinking water would translate to about 2.6- 6.0 mg/day, based on 2 L/day water consumption. The reviews (1970, 1991,1993,1997) cited by ADA as showing fluoridation safe curiously and inappropriately ignore the studies on which ADA based its original opposition to the practice, not to mention subsequent studies with adverse findings that support ADA's original position.

[2] EPA unions had no interest in fluoridation one way or the other until we began to look into the science in 1985, and to imply that opposition to the forced and uncontrolled exposure of every U.S. citizen to this substance is somehow wrong is calumny of a high order.

We are not outside the mainstream. Indeed, *we are* the mainstream, sworn to support and defend the Constitution of the United States against all enemies, foreign and domestic, and tasked under our democratic system with providing the best scientific and legal advice possible to elected decision makers in government. It is on the basis of our sworn duty to provide that advice that we wrote to Administrator Johnson and to the Congress about this issue.

To reiterate and restate our advice to Administrator Johnson, the Bassin thesis is hardly what Bowman describes: "a lone student researcher's single, unpublished study." It was a study accepted, presumably after being reviewed by her doctoral committee of Harvard professors, in partial fulfillment of the requirements for a doctoral degree in dental medicine by Harvard University, a school not noted for granting doctoral degrees for junk science. In the study Bassin, while stating the limitations on her findings, does a remarkable job of showing why her findings are valid. Namely, she analyzes the biological plausibility of the connection between fluoride exposure during the pre-adolescent growth spurt and osteosarcoma, including the site of deposition of fluoride in the growing bone and the site of the cancer, the mitogenic nature of fluoride and its genotoxicity. She also notes the epidemiological findings, similar to hers of increases in osteosarcoma among young males, but not females, by Cohen and Hoover, and the results of the NTP study that was positive for osteoscarcoma in male but not female rats.

In addition to noting the limitations on her study – many of which , in fact, she shows might cause the connection between fluoridation and osteosarcoma to be stronger than she reports – she points out the limitations on the other epidemiology studies that found no connection and suggests re-examination of those studies' data using her age-specific exposure methodology.

So, in conclusion, we again urge you and Administrator Johnson to do more with the information available to you than sit on your hands until the National Research Council (NRC) finally submits its report at some indeterminate time in the future. Namely, we once more respectfully ask that you do two things:

1. Issue an Advanced Notice of Proposed Rulemaking - which *does not* bind EPA to a final rulemaking - advising the public that EPA is considering setting the Maximum Contaminant Level Goal for fluoride at the same level as all other known carcinogens, viz., zero, pending receipt and review of the NRC report.

2. Direct the Assistant Administrator for Enforcement and Compliance Assurance to investigate whether any statute administered by the Agency was violated by Chester Douglas' submission of a report to the NRC claiming no connection between fluoridation and osteosarcoma. Or request that the Department of Justice undertake a similar investigation with respect to any federal statute.

Citations:

1. Brunelle JA, Carlos JP. (1990). Recent trends in dental caries in U.S. children and the effect of water fluoridation. *J. Dent. Res* 69, (Special edition), 723-727.

2. Spencer AJ, et al. (1996). Water Fluoridation in Australia. *Community Dental Health*. 13(Suppl 2): 27-37.
3. De Liefde B. (1998). The Decline of Caries in New Zealand Over the past 40 Years. *New Zealand Dental Journal.* 94: 109-113
4. 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.
5. Kumar JV, Green EL. (1998). Recommendations for Fluoride Use in Children. *NY State Dental Journal*. 64(2):40-7.