NEW REVIEW RECAPITULATES URGENCY OF US NATIONAL RESEARCH COUNCIL FLUORIDE REPORT

SUMMARY: Reflecting a growing trend in western scientific journals toward serious investigation of fluoride toxicity, *Toxicology Mechanisms and Methods* has recently published an extensive review, largely taken verbatim from the 2006 US National Research Council report on *Fluoride in drinking water* concerning exposure to and health effects of fluoride from water. The author of the review includes only a few citations of work published since that 2006 report, suggesting he did not review much subsequent research.

Keywords: Fluoride in drinking water; Fluoride toxicity; US National Research Council report *Fluoride in drinking water*; Review of fluoride toxicity.

It has become increasingly evident that there is a striking East/West disparity in regard to health effects of fluoride in drinking water. Widespread areas of endemic fluorosis in India and China, for example, have led to urgent concerns over adverse health effects of this exposure to fluoride. Writing a review five years ago in an environmental science journal, two researchers in India addressed the threat plainly: “Fluorosis turns out to be the most widespread geochemical disease in India, affecting more than 66 million people including 6 million children under 14 years age. Though fluoride has spread its tentacles in 36,988 habitations and the number of people falling prey to fluoride poisoning have been steadily increasing, an exact exposure-health relationship is yet to be properly elucidated.”¹ In contrast, reviewers of toxic effects of fluoride in the West often seem to downplay the concern, and appear obliged to highlight erroneous claims for beneficial health effects of fluoride. We also see this change from the earlier literature in the field of medical geology, where reporting on the adverse effects of exposure to geological materials should require no justification. But we now read in one of the main texts in medical geology false claims that fluoride is an essential element or a nutrient.²,³

Hopefully, this situation may be changing with the publication in 2006 of the US National Research Council’s (NRC) *Fluoride in drinking water* and this past year the new trade book *The case against fluoride.*⁴,⁵ To these can be added a just-published review, based largely on, or actually taken verbatim from the NRC report, that reflects an urgency in reporting on fluoride’s toxicity.⁶ The author’s abstract, with unambiguous declarations such as, “There is strong evidence that fluoride is a non-biological chemical, demonstrating no observed beneficial function or role in [bio]organic chemistry, beyond use as a pesticide or insecticide,” and “Due to their insatiable appetite for calcium, fluorine and fluorides likely represent a form of chemistry that is incompatible with biological tissues and organ system functions.” indicate that it is not from the dentistry-influenced school of reporting in which any but the most acute exposure to fluoride is considered inconsequential.

The review consists of nearly one hundred sections and subsections. The account of the chemistry of fluorine and the history of its study are clearly presented, replete with a tip of the hat to the “fluorine martyrs,”—research scientists who
died or were injured studying the highly hazardous chemical element. The next section on the “Earliest toxicology research citations” is largely wasted with extended quotes from the 1950s, none of which deal with primary research results (see below). The three major sections of the review are “Clinical data,” “Exposure to fluoride,” and “Fluoride’s impact on organs and function.” Numerous recommendations, taken directly from the NRC report, conclude many of the sections. Only a few graphs illustrate the text. Nearly four hundred references are included. The focus throughout is on quantitative data regarding interactions of fluorides with cells and tissues.

Unfortunately, the review has many faults. One of the reasons for its extended length of 67 pages is the numerous, perhaps hundreds, of direct quotes from the NRC report and other sources. These are not presented in quotation marks, nor with different type, so the reader often cannot tell which words are the author’s and which are from the NRC report. The author has also included seemingly random documents from the past such as an extended quote from US member of Congress AL Miller’s 1952 remarks in the Congressional Record, and half a page of quotes from the 1950s by Royal Lee. These are in a section labeled “Earliest toxicology research citation” that inexplicably does not include any mention of the pioneer fluoride researcher Kaj Roholm of Denmark. Subject matter given short shrift in the review includes thyroid effects, the lack of any reference to the work of the late Professor Lennart Krook, and to other sensitivities to fluoride in drinking water, first studied by Dr. George Waldbott, and recently reviewed by Bruce Spittle. AK Susheela’s work is hardly mentioned at all. There are only a few citations of research published since the 2006 NRC report, so it appears that the author did not review much of the literature himself.

The author, a chiropractor in Colorado, does not appear to have previously written on this topic. While he does not acknowledge anyone’s help in writing the review, one has to wonder if it was co-authored with an anonymous source. I say this because parts of the review are so well written while others are, well, atrocious. This is particularly seen in one of the last sections, “Poisoned research?” which raises the possibility that a wide variety of cellular and physiological research projects may be compromised by the presence of uncontrolled fluoride. This was an issue in the 1990 US National Toxicology Program study of sodium fluoride in rats, and warrants consideration, but here the author provides only several pages of speculation, devoid of even a single citation, but filled with tortured sentences pleading for a copy editor. Alternatively, the author may have quoted so extensively from previous reviews such as the 2006 NRC report that very little of this paper is actually his own writing.

Despite these shortcomings, the review contains an extensive compilation of valuable data and citations on adverse effects of fluoride in water, essentially an extended summary of the 2006 NRC report. Even only as a compilation, it serves as a useful source of information. Perhaps students might find it worthwhile to pull the paper apart, extract the verbatim quotes, and find what remnant of the text
represents the author’s own words. It surely is one of the more unusual documents in the history of fluoride research.

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REFERENCES