UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

January 8, 2004

MEMORANDUM

SUBJECT: Review of Five Recent Papers on Fluoride Submitted by the Fluoride Action Network

FROM: Vicki L. Dellarco, Ph.D., Senior Scientist
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TO: Dennis McNeilly
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Dr. Karl Baetcke and I have conducted a preliminary review of the papers on fluoride listed in the attached table. Several of these papers were from Chinese journals with only English abstracts available and thus contained insufficient details of study method and results (doc.#'s 97-98, 117-120). Two of these papers were commentaries which did not contain original data on the health effects of fluoride (doc.#'s 106 and109). One paper (#101) was a journal article of a rat neurotoxicity study on sulfuryl fluoride submitted by the registrant, which was already reviewed and considered by HED as part of the registration process. The remaining papers (doc. #'s 83, 88, 99, 103, 105) are full journal articles. However, an initial look indicates that these studies evaluated doses above the drinking water MCLs. Paper #86 (Calvert et al.) on the health effects of sulfuryl fluoride and methyl bromide in fumigation workers contained no exposure measures. But, given that these are occupational exposures, the levels are likely to be higher than environmental exposures. Furthermore, as stated by the authors, the peripheral neurological effects reported for sulfuryl fluoride were likely caused by ergonomic stresses experienced by the fumigation workers, and for CNS effects, there was no wide spread pattern of cognitive deficits observed. Lastly, this study is unable to distinguish between methyl bromide and sulfuryl fluoride effects.

Based on this preliminary review, we find that these papers would not alter the conclusion contained in our November 18, 2003 report that the articles cited by the Fluoride Action Network do not provide a compelling basis to depart from the EPA's current MCLs.

Attachment

SULFURYL FLUORIDE - SUPPLEMENTARY REFERENCES

Doc. #	STUDY TITLE
83	Bhatnagar M, et al. (2002). Neurotoxicity of fluoride: neurodegeneration in hippocampus of female mice. Indian Journal of Experimental Biology 40: 546-54.
86	Calvert GM, et al. (1998). Health effects associated with sulfuryl fluoride and methyl bromide exposure among structural fumigation workers. American Journal of Public Health 88(12):1774-80.
88	Ekambaram P, Paul V. (2001). Calcium preventing locomotor behavioral and dental toxicities of fluoride by decreasing serum fluoride level in rats. Environmental Toxicology and Pharmacology 9(4):141-146.
97	Li Y, et al. (1994). [Effect of excessive fluoride intake on mental work capacity of children and a preliminary study of its mechanism] Hua Hsi I Ko Ta Hsueh Hsueh Pao. 25(2):188-91. (See abstract)
98	Lin Fa-Fu; et al (1991). The relationship of a low-iodine and high-fluoride environment to subclinical cretinism in Xinjiang. Iodine Deficiency Disorder Newsletter Vol. 7. No. 3.
99	Long YG, et al. (2002). Chronic fluoride toxicity decreases the number of nicotinic acetylcholine receptors in rat brain. Neurotoxicology and Teratology 24(6):751-7.
101	Mattsson JL, et al. (1988). Subchronic neurotoxicity in rats of the structural fumigant, sulfuryl fluoride. Neurotoxicology and Teratology 10(2):127-33.
103	Paul V, et al. (1998). Effects of sodium fluoride on locomotor behavior and a few biochemical parameters in rats. Environmental Toxicology and Pharmacology 6: 187–191.
105	Riggs BL, et al. (1990). Effect of Fluoride treatment on the Fracture Rates in Postmenopausal Women with Osteoporosis. New England Journal of Medicine 322:802-809.
106	Schettler T, et al. (2000). Known and suspected developmental neurotoxicants. pp. 90-92. In: In Harms Way - Toxic Threats to Child Development. Greater Boston Physicians for Social Responsibility: Cambridge, MA. (http://home.earthlink.net/~gmarch1723/chap6.pdf)
109	Spittle B. (2000). Fluoride and Intelligence (Editorial). Fluoride 33: 49-52.
117	Yang Y, et al. (1994). [Effects of high iodine and high fluorine on children's intelligence and the metabolism of iodine and fluorine]. Zhonghua Liu Xing Bing Xue Za Zhi.15(5):296-8. (see abstract)
118	Zhang C, et al. (1999). [Effect of fluoride-arsenic exposure on the neurobehavioral development of rats offspring] Wei Sheng Yan Jiu. 28(6):337-8. (see abstract)

Doc. #	STUDY TITLE
119	Zhang Z, et al. (1999). [Effect of fluoride exposure on synaptic structure of brain areas related to learning-memory in mice] [Article in Chinese]. Wei Sheng Yan Jiu 28(4):210-2. (See abstract)
120	Zhang Z, et al. (2001). [Effects of selenium on the damage of learning-memory ability of mice induced by fluoride]. Wei Sheng Yan Jiu. 30(3):144-6. (See abstract)