Appendix C

EXCESS TOTAL FLUORIDE EXPOSURE/DOSAGE

Mother's milk is 0.004 ppm (NRC 2006) and is a good indication of nature's protection of the infant from fluoride. To protect our most vulnerable, the American Dental Association, Centers for Disease Control, and many state health departments recommend fluoridated water should not be used to make formula. Without question, fluoridating communities are exposing infants to too much fluoride.[1] [2] [3] [4] [5] [6] Even the highest breast feeding state, Oregon, has three out of four infants receiving water and formula made with water.

When fluoridation was first considered, fluoridated toothpaste, fluoride dental products and treatments, fluoride medical products and treatments, fluoride pesticides, fluoride post-harvest fumigants, and many other fluoride products were not in use or known. There has never been an authorized agency or organization responsible for evaluating the total exposure or dosage people are getting.

I. TOTAL FLUORIDE EXPOSURE:

"Some subpopulations consume much greater quantities of water. . . outdoor workers, athletes, . . . diabetes insipidus. . . infants and young children."[7]

1. There have been recent significant increases in fluoride exposure[8] and dosage from sources other than water, such as EPA increases in fluoride in food products from pesticide residues[9] and post-harvest fumigant residues[10] now permitted in most food products (2004 and 2005). See label and warning[11] below for an example of Profume, a Dow Agro post-harvest fumigant of SF.

Medications and dental products containing fluoride are additional sources of fluoride exposure.[12]

a. "It was found that 42% of the (fruit juice) samples had more than 1 ppm of fluoride."[13] "Children's ingestion of fluoride from juices and juice-flavored drinks can be substantial and a factor in the development of fluorosis."[14]

b. "Fluoride concentrations ranged from 0.01 to 8.38 micrograms of fluoride per gram, (ppm) with the highest fluoride concentrations found in infant foods containing chicken. [15]

c. “Fluoride levels (in carbonated soft drinks) exceeded 0.60 ppm for 71 percent of the products.”[16]

d. “The water-extractable F content of five brands of California raisins varied from 0.83 to 5.20 ppm (mean 2.71 ppm). Elevated F levels in these wines and raisins appear to result from pesticide use of cryolite (Na3AlF6) in the vineyards.”[17]

2. The CDC in one place reports the incidence of dental fluorosis has increased from 22 to 32% in children[18] and more recently suggested approximately 41% of adolescents aged 12 to 15 and 36% aged 16 to 19 years had enamel fluorosis. Moderate and severe fluorosis was observed in less than 4% in both age groups.”[19] “On a per-body-weight basis, infants and young children have approximately three to four times greater exposure than do adults,”[20] a significant sign many are ingesting too much fluoride.

3. NO practical method of removing fluoride from water is available to households, placing everyone at risk. Neither boiling nor home water filters remove fluoride. Bottled water is not labeled for fluoride content, and all contain some fluoride with some exceeding EPA MCL (maximum contaminant level) limits even for adults.

4. The lowest socioeconomic group in fluoridated communities suffer the greatest financial burden as well as the greatest barriers to purchasing, supplying, or transporting non-fluoridated water. In practical terms this represents an unreasonable requirement for low income parents without a car, using public transportation or walking, carrying babies, groceries, and now adding bottled water.

5. Fluoride accumulates over a lifetime, and better lifetime exposure estimates as well as average daily exposure estimates have not been and must be determined.

6. “Fluorosis *(fluoride damage to teeth)* prevalence increased significantly with higher water fluoride levels; however, caries prevalence did not decline significantly.”[21]

II. RECOMMENDED TARGET POPULATION AND DOSAGE:

. The target population for fluoridation is highly confusing. In theory, children up to eight years of age (but not infants) when teeth are developing are the target population for fluoridation.[22] In reality, 100% of the population is administered fluoridated water in an attempt to reach 9% of the population.

There are other methods for dispensing fluoride for ingestion which provide pharmaceutical grade fluoride rather than a contaminated commercial grade product as found in fluoridation water substances.[23] Although violating FDA recommendations, simply swallowing a pea size or two of toothpaste would provide a similar amount of fluoride as water fluoridation.

[1] http://www.ada.org/prof/resources/pubs/adanews/adanewsarticle.asp?articleid=2212
http://www.ada.org/prof/resources/positions/statements/fluoride_infants.asp NRC 2006 p. 36, Pediatrics May 1998 Vol. 95, Number 5 RE9511 CDC and ODHS 12/2006

[2] A major effort should be made to avoid use of fluoridated water for dilution of formula powders."
Ekstrand J. (1996). Fluoride Intake. In: Fejerskov O, Ekstrand J, Burt B, Eds. Fluoride in Dentistry, 2nd Ed. Munksgaard, Denmark. P40-52.

[3] "[I]nfant formulas reconstituted with higher fluoride water can provide 100 to 200 times more fluoride than breastmilk, or cows milk." Levy SM, Guha-Chowdhury N. (1999). Total fluoride intake and implications for dietary fluoride supplementation. J. of Pub Hea Dent 59: 211-23

[4] "[P]arents of children using powdered infant formula should be warned by their medical practioners to use unfluoridated or defluoridated water to reconstitute the formula." Diesendorf M, Diesendorf A. (1997). Suppression by medical journals of a warning about overdosing formula-fed infants with fluoride. Accountability in Research 5:225-237

[5] Our analysis shows that babies who are exclusively formula fed face the highest risk; in Boston, for example, more than 60 percent of the exclusively formula fed babies exceed the safe dose of fluoride on any given day." Environmental Working Group, "EWG Analysis of Government Data Finds Babies Over-Exposed to Fluoride in Most Major U.S. Cities", March 22, 2006

[6] "[M]ore than 50 percent of infants are currently formula fed by 1 month of age, and these infants are likely to be continuously exposed to high intakes of fluoride for 9 or 10 months - a circumstance quite rare in the 1960s and early 1970s." Fomon SJ, Ekstrand J. (1999). Fluoride intake by infants. Journal of Public Health Dentistry 59(4):229-34

[7] NRC 2006 Fluoride in Drinking Water: A Scientific Review of EPA's Standards; Summary p.3.

[8] http://www.slweb.org/bibliography.html#learning; and Levy 1995, 2001

[9] http://www.epa.gov/EPA-PEST/1996/May/Day-08/pr-685.html Cryolite is 54% F-
http://64.177.90.157/pfpc/html/f-_in_food.html
http://www.nal.usda.gov/fnic/foodcomp/Data/Fluoride/fluoride.pdf

[10] In response to industry requests, Dow AgroSciences has developed ProFume gas fumigant (Sulfuryl fluoride) as an alternative to methyl bromide for the control of stored product insect pests in mills, warehouses, storage structures, transportation vehicles, and many commodities and foods stored within them. Sulfuryl fluoride, marketed as Vikane* Specialty Gas Fumigant, has provided over 40 years of effective control of structural insect pests such as termites and wood boring beetles. http://mbao.org/2004/Proceedings04/064%20WelkerJ%20UPDATE%20ON%20THEWelkerJ%20DEVELOPMENT%20AND%20COMMERCIALIZATION%20OF%20PROFUME.pdf
Some examples: **Beef, meat at 40 ppm; Wheat flour 125 ppm; Cheese 5 ppm; Coconut 40 ppm; Egg at 850 ppm; eggs, dried at 900 ppm (Toothpaste 1,000 ppm); Grain . . . group 16 and 17, 130 ppm; ham at 20 ppm; herbs and spices group 19, 50 ppm; milk at 3 ppm; milk, powdered at 5.0 ppm; nut, pine, at 20 ppm; nut, pine at 10 ppm; Peanut 13 ppm; rice flour at 98 ppm; cocoa bean at 20 ppm; Coffee at 15 ppm; cottonseed at 70 ppm; herbs and spices, group 19 at 70 ppm; and vegetables, legume, group 6, at 70 ppm.** http://www.epa.gov/fedrgstr/EPA-PEST/2005/July/Day-15/p13982.htm
Other examples from 1994: **Fluoride in or on the following raw agricultural commodities: Date at 5 parts per million (ppm), fig at 5 ppm, plum, prune, dried at 5 ppm, grape, raisin at 5 ppm, fruit, dried at 5 ppm, almond at 10 ppm, pecan at 23 ppm, pistachio at 18 ppm, walnut at 30 ppm, beechnut; butternut; cashew; chestnut; chinquapin; filbert; nut, brazil; nut, hickory; and nut, macadamia at 30 ppm, barley, grain at 10 ppm, corn, field, grain; and corn, pop, grain at 7 ppm, oat, grain at 17 ppm, rice, grain at 10 ppm, wheat, grain at 25 ppm, millet, grain; rice, wild, grain; sorghum, grain; and triticale, grain at 25 ppm and on the processed products corn, field, flour at 26 ppm, corn, field, grits at 10 ppm, corn, field, meal at 28 ppm, corn, field, oil at 3 ppm, rice, brown at 14 ppm, rice, polished rice at 18 ppm, rice, bran at 31 ppm, rice, hulls at 35 ppm, wheat, bran at 40 ppm, wheat, flour at 10 ppm, wheat, germ at 98 ppm, wheat milled by products at 35 ppm, wheat, shorts at 38 ppm, corn, field, refined oil at 3 ppm.**
http://www.epa.gov/fedrgstr/EPA-PEST/2004/January/Day-23/p1540.htm

[11] **http://www.dowagro.com/profume/us/index.htm**

[12] NRC 2006 p. 4

[13] **Stannard JG et al.** Fluoride levels and fluorides contamination of fruit juices. *Journal of Clinical Pediatric Dentistry*; 16:38-40, 1991. "Forty-three ready-to-drink fruit juices were examined for fluoride ion concentration. The fluoride levels of the juices ranged from 0.15 to 6.80 (Gerber White Grape juice). It was found that 42% of the samples had more than 1 ppm of fluoride. Given that increasing numbers of people are consuming beverages instead of water, fluoride supplementation should not be based solely upon the concentration of the drinking water, but should also consider the amount of different beverages consumed and their fluoride content."

[14] **Kiritsy, MC et al.** Assessing fluoride concentrations of juices and juice-flavored drinks. *Journal American Dental Association;* 127: 895-901, 1996. "In this study, the authors analyzed 532 juices and juice drinks for fluoride. Fluoride ion concentration ranged from 0.02 to 2.80 parts permillion. Children.s ingestion of fluoride from juices and juice-flavored drinks can be substantial and a factor in the development of fluorosis."

[15] **Heilman, JR el al.** Fluoride concentrations of infant foods. *Journal American Dental Association;* 128: 857-63, 1997. In this study, the authors analyzed the fluoride concentration of 238commercially available infant foods. Fluoride concentrations ranged from 0.01 to 8.38 microgramsof fluoride per gram, (ppm) with the highest fluoride concentrations found in infant foods containing chicken.

[16] **Heilman, JR el al.** Assessing fluoride levels of carbonated soft drinks. *Journal American Dental Association;* 130: 1593-99, 1999. The authors examined the fluoride concentrations of 332 soft drinks. The fluoride levels of the products ranged from 0.02 to 1.28 ppm, with a mean level of 0.72. Fluoride levels exceeded 0.60 ppm for 71 percent of the products.

[17] **Burgstahler, AW et al.** Fluoride in California wines and raisins. *Fluoride*; 30: 142-146, 1997.

[18] http://www.cdc.gov/fluoridation/safety/infant_formula.htm

[19] ***Prevalence of Enamel Fluorosis Among 12-19 Year-Olds, U.S., 1999-2004*** http://iadr.confex.com:80/iadr/2007orleans/techprogram/abstract_92598.htm
Table below presents percentages (standard errors) and prevalence of fluorosis, including very mild or higher severity.

Cycle: 1999-2000 2001-2002 2003-2004 1999-2004 Age: 12-15 16-19 12-15 16-19 12-15 16-19 12-15 16-19 Unaffected & questionable 60.63 (4.66) 66.25 (4.32) 65.95 (3.18) 70.57 (3.33) 51.58 (3.78) 55.10 (4.59) 60.12 (2.28) 64.55 (2.40) Very Mild 26.17 (2.99) 21.16 (2.94) 24.82 (2.62) 20.63 (2.32) 34.58 (2.65) 31.96 (3.75) 27.98 (1.61) 24.10 (1.76) Mild 8.67 (1.49) 6.98 (0.84) 6.57 (1.14) 6.47 (1.05) 10.31 (1.57) 9.67 (0.88) 8.34 (0.81) 7.58 (0.53) Moderate & severe 4.53 (1.22) 5.61 (1.44) 2.66 (0.40) 2.33 (0.61) 3.52 (0.85) 3.27 (0.94) 3.56 (0.51) 3.78 (0.64) Prevalence 39.37 (4.66) 33.75 (4.32) 34.05 (3.18) 29.43 (3.33) 48.42 (3.78) 44.90 (4.59) 40.60 (2.23) 36.29 (2.45)

[20] ." NRC 2006 Summary p. 4

[21] Dental caries and fluorosis in relation to water fluoride levels L. HONG1, et al. 1University of Missouri -Kansas City, USA, http://iadr.confex.com/iadr/2006Orld/techprogram/abstract_73811.htm

[22] NRC 2006 ibid

[23] NRC 2006 ibid