National Toxicological Program (NTP) Board of Scientific Counselors (BSC)

David Kennedy DDS

For

The Preventative Dental Health Association
First PDHA members would like to express their appreciation for the tenacity you have displayed on this difficult job and your willingness to follow the science.
Paradigms are not easy things to change: for example
- Asbestos was linked to cancer in the 1930’s
- Asbestos was removed from intra oral bandages in 1980
- Lead was introduced for the model A Ford in 1929
- Lead was removed from automobile fuels in 1980
- Lead remains in Aviation fuels and
- Baby foods, drinking fountains, spices and housing
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• Toxicology has changed
  • The old toxicology before lead was a “lot of a toxin may kill you but a little bit is harmless”
  • The human body is marvelous at removing poisons

  • 1972 Needleman by measuring IQ outcome found the young adults exposed to 50 PPB lead in home drinking water had significantly lower IQ than those drinking 20 PPB

• I tiny bit of data will destroy a perfectly good theory

• It should not take 50 years to discover a toxin is toxic
  • But it does and the reasons are obvious
  • Change takes thought and planning
  • Money is always involved
The Preventive Dental Health Association

• Risk Assessment for Ingested Fluoride 1997
  • 3 day of expert review testimony
  • 1997 The same year the poison control centers reported 10,000 calls annually from ingested fluoride and put a warning on toothpaste
The Preventive Dental Health Association

• Risk Assessment for Ingested Fluoride
  • Conclusion: Increased health risks with increasing fluoride intake
Adverse Health Effects from Fluoride in Drinking Water

Metropolitan Water District
Public Hearing

Los Angeles, California
August 20, 2007

Kathleen M. Thiessen, Ph.D.
SENES Oak Ridge, Inc., Center for Risk Analysis
Range of intake of community water

- Infant <1 yo
  - 28-1,147 mL/day
  - 1,517 mL/day
- Child <1-10
  - 29-1,137 mL/day
  - 1,722 mL/day
- Youth <11-19
  - 59-1,973 mL/day
  - 3,689 mL/day
- Adult 20+
  - 103-2,848 mL/day
  - 4,631 mL/day

Based on water intake from EPA-822-R-00-001 (2004)

Water Intake, mL per day

(includes only consumers of community water)
Range of Intake Community Water

Infants up to 1 year old

28 to 1,147 ml/day

Based on water intake from EPA-822-R-00-001 (2004)

Water Intake, mL per day

(includes only consumers of community water)

1,517 mL/day
Range of Intake of Community Water

1-10 years old

29 to 1,137 ml/day

Based on water intake from EPA-822-R-00-001 (2004)

Data includes only consumers of community water
The diagram illustrates the range of intake of community water, per unit body weight, for different age groups:

- **Infant (<1 yo)**: 3-185 mL/kg/day to 261 mL/kg/day
- **Child (<1-10)**: 1-57 mL/kg/day to 92 mL/kg/day
- **Youth (<11-19)**: 1-34 mL/kg/day to 60 mL/kg/day
- **Adult (20+)**: 1-39 mL/kg/day to 62 mL/kg/day

Based on water intake from EPA-822-R-00-001 (2004)

Water Intake: mL per kg per day

*(includes only consumers of community water)*
Range of fluoride intake from community water, assuming 0.8 ppm fluoride in the water.

- Infant <1 yo: 0.0024-0.15 mg/kg/day
- Child <1-10: 0.0008-0.046 mg/kg/day
- Youth <11-19: 0.0008-0.027 mg/kg/day
- Adult 20+: 0.0008-0.031 mg/kg/day

- EPA’s Reference Dose: 0.06 mg/kg/day
- 0.21 mg/kg/day
- 0.074 mg/kg/day
- 0.048 mg/kg/day
- 0.050 mg/kg/day

Based on water intake from EPA-822-R-00-001 (2004)

Fluoride Intake, mg per kg per day
Estimated “No-effect” levels in humans

- Increased risk of bone fracture
- Neurotoxicity
- Severe dental fluorosis
- Stage II skeletal fluorosis
- Impaired glucose metabolism
- Impaired thyroid function (adequate iodine intake)
- Moderate dental fluorosis
- Impaired thyroid function (iodine deficiency)

Fluoride intake, mg per kg per day

Range of intake of fluoride from community water at 0.8 mg/L (consumers only)

EPA’s Reference Dose (RfD) 0.06 mg/kg/day

Information from sources reviewed by the National Research Council (2006) & Limeback et al. (2007)

- 0.05 mg/kg/d
- 0.05 mg/kg/d
- 0.04 mg/kg/d
- 0.03 mg/kg/d
- 0.03 mg/kg/d
- 0.02 mg/kg/d
- 0.005 mg/kg/d

Infant <1
Child 1-10
Youth 11-19
Adult 20+
Note also that most of these “no-effect” levels are exceeded by many members of the population, of all ages, just from fluoride at 0.8 ppm in community drinking water.
Note also that most of these “no-effect” levels are lower than EPA’s reference dose for fluoride.

In other words, EPA’s reference dose is not protective for most of these health endpoints.
When other fluoride sources are included, even more people are expected to exceed the “no-effect” levels.
This list of adverse health effects does not include cancer. A carcinogenic (cancer-causing) effect of fluoride cannot be ruled out from the available data, and at the very least, a cancer-promoting effect is likely.
For carcinogenic substances, the risk of cancer increases with the amount of exposure, such that even a very low exposure carries with it some cancer risk.
Director of Laboratories, Department of Water Supply, Gas and Electric, City of New York. Presentation made in 1956 but still relevant today:
It is obvious from the knowledge of fluoride toxicity that such factor of safety cannot be established when fluoride is added to the public water supply at the level recommended by the proponents of fluoridation.
It must be concluded that the fluoridation of public water supplies is a hazardous procedure, people are bound to get hurt, it remains to find out how many and when.