

Sodium and Fluoride in Drinking Water

Ray Copes, MD, MSc

Chief, Environmental and
Occupational Health, Public Health
Ontario

Associate Professor, University of
Toronto



PUBLIC HEALTH ONTARIO

- Arm's length agency funded by Province of Ontario.
- Became operational in 2008.
- Provide science and technical advice and support to the health care system (e.g. public health units) and the Government of Ontario.
- Also run the Public Health Labs.
- Environmental monitoring equipment available for loan to HUs.
- Do not have regulatory or statutory powers; do not make policy.
- Role in research and teaching through links to, and appointments at, Ontario universities.

Sodium in water

- Canadian groundwater 6-130 mg/L from Health Canada Cdn DW g.lines technical documents
- Canadian surface water <1- >300mg/L
- Ontario drinking water systems (MOE) 1-261 mg/L
- From 2011 Oxford County report, Ingersoll average 63 mg/L
- Canadian DW guideline. Aesthetic Obj <200mg/L
- According to Health Canada, for those on a sodium restricted diet of 500 mg/ day, sodium in water should be no more than 20 mg/L

Adequate and Upper Limit of Daily Sodium Intake

Healthy...	should aim for the Adequate Intake (AI) of...	without going over the Upper Limit (UL) of..
Infants 0-6 months	120 mg/day	No data
Infants 7-12 months	370 mg/day	No data
Children 1-3 years	1000 mg/day	1500 mg/day
Children 4-8 years	1200 mg/day	1900 mg/day
Teens 9-13 years	1500 mg/day	2200 mg/day
Adults 14-50 years	1500 mg/day	2300 mg/day
Older adults 51-70 years	1300 mg/day	
Older adults over 70 years	1200 mg/day	

Health Canada website,
It's Your Health, June 2012

Adequate and Upper Limit of Daily Sodium Intake

- It is estimated that Canadians one year of age and older eat an average of about 3400 mg/day of sodium. This is more than twice the recommended AI of 1500 mg/day for individuals from 9 to 70 years, and 50% more than the UL for adults of 2300 mg/day. Actual sodium consumption is likely to be even higher because people tend to underestimate how much they eat on self-reported food intake surveys such as those on which this estimate was based.
- Children need less sodium than their parents. However, due to the types of food we choose to eat at home and in restaurants, both children and adults often eat unhealthy levels of sodium.



Fluoride in Water

- Most (about 75%) Ontarians consume fluoridated water.
- Fluoridated water - current Canadian practice targets 0.7 mg/L
- Canadian Drinking Water Guideline max for fluoride 1.5 mg/L
- US EPA has standards of 4 mg/L and 2 mg/L
- World Health Organization – 1.5 mg/L
- European Union directive 1.5 mg/L for unfluoridated water supplies, 1.0 mg/L for fluoridated supplies
- The Canadian guideline of 1.5 mg/L is considered to be protective against all adverse health effects but not completely protective against mild to moderate dental fluorosis which is considered a cosmetic effect.
- Food and dental products (e.g. toothpaste) are also important sources of fluoride exposure

Fluoride in Water

- Naturally occurring levels in Canadian drinking water range from <math><0.05\text{ mg/L}</math> to from Health Canada Cdn DW glines tech document
- MOE drinking water results –
- Ingersoll 2011 report average