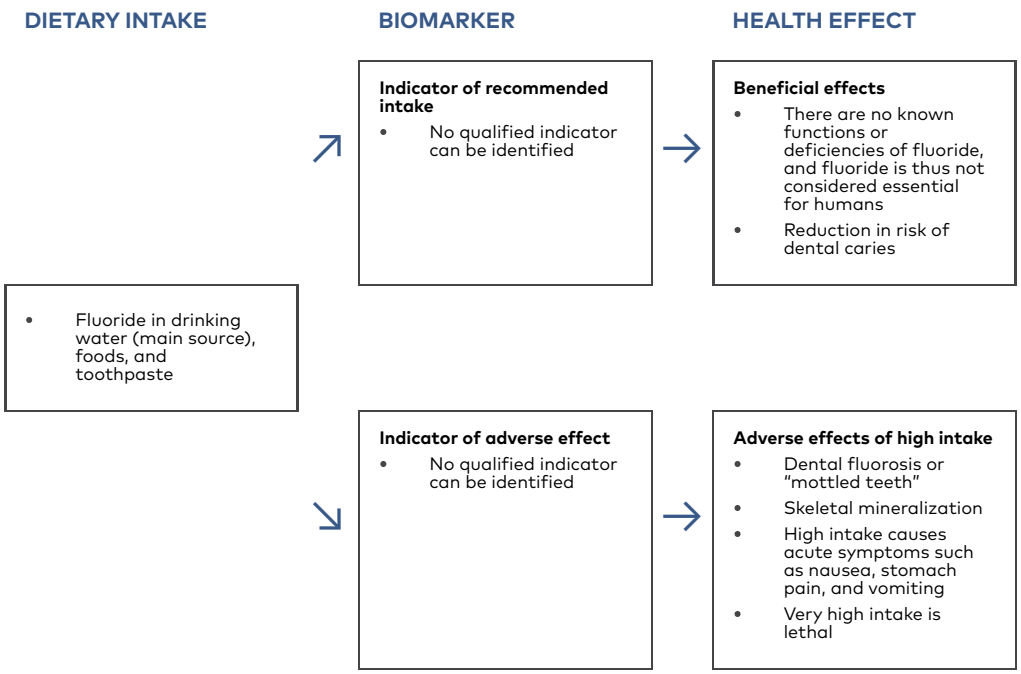
Fluoride



	Females	Males
Provisional AR (mg/d)	2.6	3.0
AI (mg/d)	3.2	3.7

For more information about the health effects, please refer to the background paper by Mariann Kjellevold and Maria Kippler (Kjellevold & Kippler, 2023).

Dietary sources and intake. Drinking water is the dominant source of fluoride. Fluoride levels in foods are low, with a few exceptions, like seafood and tea. There is a lack of fluoride in food composition tables. Toothpaste contributes to fluoride intake in small children. No intake data on fluoride is available from Nordic and Baltic dietary surveys (Lemming & Pitsi, 2022).

Main functions. There are no known functions or deficiencies of fluoride, and fluoride is thus not considered essential for humans (Kjellevold & Kippler, 2023). However, fluoride can bind to calcium in the skeleton and tooth tissues, creating complexes that replace the hydroxyl ions in hydroxyapatite crystals thereby making the crystals less acid-soluble, which prevents dental caries.

Indicator for recommended intake. No indicator was identified for setting AR and RI. For setting AI, the selected indicator was reduction in risk of dental caries (observational studies). An intake of 2.2 g/kg bodyweight is lethal in adults. In children, 15 mg/ kg bodyweight is lethal, and 5 mg/kg bodyweight causes acute symptoms such as nausea, stomach pain, and vomiting. Chronic high intakes of fluoride via drinking water can affect skeletal mineralization. The most common side effect of high fluoride intake is dental fluorosis, or "mottled teeth".

Main data gaps. The main challenges for setting recommended intake in the Nordic and Baltic countries are lack of food composition data reporting fluoride content in food and lack of data on fluoride status in the population.

Deficiency and risk groups. There are no known deficiencies from low/zero fluoride exposure (Kjellevold & Kippler, 2023).

Dietary reference values. IOM set an AI for adults to 3 mg/d and 4 mg/d for females and males, respectively; for infants and children (> 6 months), 0.05 mg/kg/d (IOM, 1997). EFSA set an AI to 0.05 mg/kg/d for both children and adults (EFSA, 2013c). Using reference weights for NNR2023, the AI is set to 3.2 mg/day (females) and 3.7 mg/day for males). Provisional AR is set to 2.6 mg/day (females) and 3 mg/day (males). Values are based on AI from observed dietary intake values set by EFSA (EFSA, 2013c).

Based on EFSA (2018), UL is set at 7 mg/d.