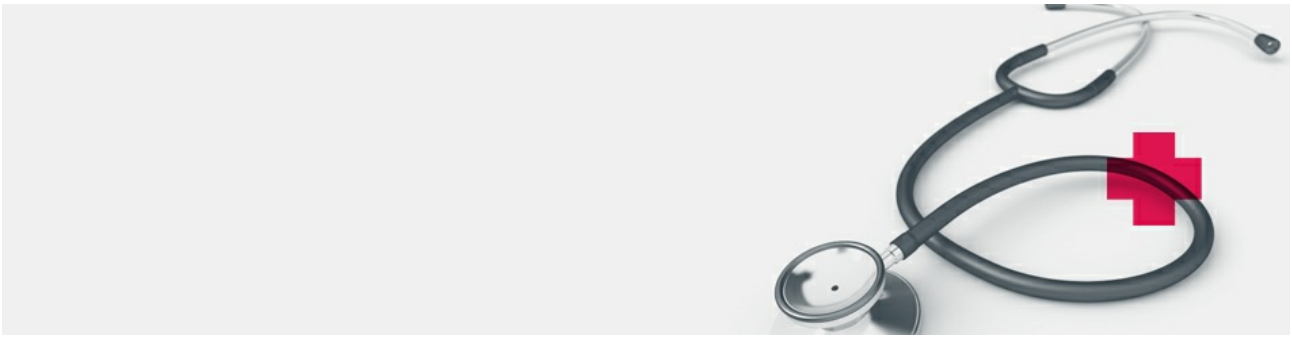
Fluoride Action Network



Fluoride's ability to damage the brain is one of the most active areas of fluoride research today. Over 300 studies have found that fluoride is a neurotoxin (a chemical that can damage the brain). This research includes:

- Over 100 animal studies showing that prolonged exposure to varying levels of fluoride can damage the brain, particularly when coupled with an iodine deficiency, or aluminum excess;
- 53 human studies linking moderately high fluoride exposures with reduced intelligence;
- 45 animal studies reporting that mice or rats ingesting fluoride have an impaired capacity to learn and/or remember;
- 12 studies (7 human, 5 animal) linking fluoride with neurobehavioral deficits (e.g., impaired visual-spatial organization);
- 3 human studies linking fluoride exposure with impaired fetal brain development.

Based on this accumulating body of research, several prestigious reviews — including a report authored by the U.S. National Research Council, a meta-analysis published by a team of Harvard scientists, a review published in The *Lancet*, and a 2017 U.S.-funded 12-year study that found a link between fluoride in the urine of pregnant women and lower measures of intelligence in their children — have raised red flags about the potential for low levels of fluoride to harm brain development in some members of the population.

The NRC Review (2006)

In 2006, the National Research Council (NRC) stated that "it is apparent that fluorides have the ability to interfere with the functions of the brain." In addition to calling for U.S.-based research on fluoride's IQ effects, the NRC expressed concern about fluoride's possible contribution to dementia. According to the NRC:

“Studies of populations exposed to different concentrations of fluoride should be undertaken to evaluate neurochemical changes that may be associated with dementia. Consideration should be given to assessing effects from chronic exposure, effects that might be delayed or occur late-in-life, and individual susceptibility.”

Harvard Review (2012)

In July of 2012, a team of Harvard researchers published a “meta-analysis” of 27 studies that have investigated the relationship between fluoride and human intelligence. (Choi 2012) The overwhelming majority of these studies found that fluoride exposure was associated with reduced IQ in children. In fact, 26 of the 27 studies that met the Harvard team’s inclusion criteria found a relationship between elevated fluoride and reduced IQ. The Harvard team thus concluded that fluoride’s effect on the developing brain of children should be a “high research priority” in countries like the U.S. where, despite mass fluoridation programs, no studies have yet been conducted to investigate the issue.

The Lancet Review (2014)

In March of 2014, the prestigious medical journal The Lancet published a review of “developmental neurotoxicity” which concluded that fluoride is one of only 11 chemicals that is known to damage the developing brain. Developmental neurotoxins are capable of causing widespread brain disorders such as autism, attention deficit hyperactivity disorder, learning disabilities, and other cognitive impairments. The harm is often untreatable and permanent.

The authors of The Lancet review, which included Harvard scientist Philippe Grandjea, write:

“Our very great concern is that children worldwide are being exposed to unrecognized toxic chemicals that are silently eroding intelligence, disrupting behaviors, truncating future achievements, and damaging societies, perhaps most seriously in developing countries.”
In a bulletin posted on the Harvard School of Public Health website, Grandjean notes that:

“Fluoride seems to fit in with lead, mercury, and other poisons that cause chemical brain drain. The effect of each toxicant may seem small, but the combined damage on a population scale can be serious, especially because the brain power of the next generation is crucial to all of us.”