



## BRAIN HEALTH BOOST



### Clean Drinking Water Vital to Health of Developing Brains

*The Brain Health Initiative (BHI) is working to develop brain healthy communities, creating a culture that promotes brain health protective factors and decreases risk factors, thereby improving brain health, optimizing brain performance, and preventing and fighting brain illness across the lifespan for the Florida Suncoast region and beyond. **Today, we take a look at the importance of clean drinking water and its relationship to brain development.***

It is easy to take for granted the water we use every day. Water is all around us and is available to most of us with the flick of a faucet. Bottled drinking water lines entire shelves at the grocery store. But did you know that 99 percent of the usable water in the world is groundwater, defined as water that exists between rock and soil? According to the Centers for Disease Control and Prevention, about 145 million people receive their tap water from groundwater.

But when drinking water is contaminated, there can be dire consequences for the developing brains of children and, in turn, society at large.

Contaminated tap water contains developmental neurotoxins (DNTs), such as lead, arsenic, mercury, manganese, nitric oxide or any of 200 known DNTs. While most lead in drinking water results from water delivery systems, arsenic and manganese can come from groundwater that is in contact with geologic formations. Other DNTs are associated with waste disposal or contact with beverage containers.

These chemicals affect the development of the brain before birth through childhood, creating long-term consequences in motor function, learning, and behavior. Over time, stunted brain development leads to lower graduation rates, crime rate increases, and less lifetime earnings.

Why is the developing brain so susceptible to DNTs? Humans' central nervous system is complex and has evolved over millions of years. That complexity means long periods of molecular events, including cell movement and communication, are needed both before birth and after. This process offers several vulnerabilities for the interruption of developmental sequences by the introduction of harmful chemicals.

In April 2014, Flint, Michigan, changed its water supply from Lake Huron to the Flint River. Inadequate treatment and testing of the water resulted in elevated lead levels in the water. Despite complaints from residents about the water's taste, color, and smell, the Flint government did nothing for 18 months. Lead has been used in water pipes since the Roman period, and its dangers are well-established.

"The problem in Flint is sad and also infuriating because lead is perhaps the most extensively studied pollutant," said Harvard T.H. Chan School of Public Health's Philippe Grandjean, and expert in how environmental pollution impairs brain development. "Thousands of investigations have shown that lead is particularly toxic to the brain, especially in children." Increased exposure to this metal is known to cause an increased risk of intellectual disability, ADHD (Attention Deficit Hyperactivity Disorder), and other serious neurodevelopmental and brain illnesses.

### WHAT YOU CAN DO TODAY TO PROTECT YOUR BRAIN HEALTH

*How much clean water should we drink each day? Is the popular wisdom of eight glasses correct? Keeping in mind that 20 percent of our water intake comes from the food we eat, below is a guide from the National Academy of Medicine for how much water is ideal for each age group.*

- **Age 1-3 years:** 4 cups or 32 ounces.
- **4-8 years:** 5 cups or 40 ounces.
- **9-13 years:** 7-8 cups or 56-64 ounces.
- **14-18 years:** 8-11 cups or 64-88 ounces.
- **Women 19 and older:** 9 cups or 72 ounces.
- **Pregnant women:** 10 cups or 80 ounces.
- **Breastfeeding women:** 13 cups or 104 ounces.
- **Men 19 and older:** 13 cups or 104 ounces.

**All Clams on Deck**, a Suncoast-based organization supporting ecosystem sustainability and resilience, is working to restore clam populations and seagrass meadows that will result in improved water quality and healthier habitats for commercial and recreational fisheries – and people, too! According to Ed Chiles, All Clams on Deck Founding Member says, "Healthy and resilient estuaries and coastal waters don't exist without healthy inland waters. They are the basis of life. These times demand action to protect, preserve and enhance both. Clean healthy water is to our environment what clean healthy water is to our body and our brain. Find your cause to support clean water. Join our cause to promote healthy estuaries. Find out more about their work at [www.AllClamsonDeck.org](http://www.AllClamsonDeck.org).

**BE BRAIN HEALTHY and adopt a lifestyle** that includes thoughts, behaviors, emotions, responses, and language that promote brain health protective factors:

- Stress resilience
- Nutrition

- Physical activity
- Sleep
- Social connection
- Emotional wellbeing
- Meaning and Purpose
- Cognitive stimulation and creativity
- Engaging with nature
- General health
- Positive impacts

**About the Brain Health Initiative ([www.brainhealthinitiative.org](http://www.brainhealthinitiative.org))**

The Brain Health Initiative (BHI), a 501(c)(3) nonprofit, uses a cutting-edge approach to protecting brain health, promoting brain performance, and preventing and fighting brain illness across the lifespan. The BHI is building brain healthy communities, cultures that foster brain health protective factors and address risk factors, thereby improving brain health and optimizing brain performance outcomes for the Florida Suncoast region and beyond. Join the ***Be Brain Healthy*** movement, ***because brain health matters, and lifestyle makes a difference.*** To view all Brain Health Boosts [click here](#).