

## Toxins stunting brain development

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A conversation has started in Canada that could mean a brighter future for our children. And not just by investing in education. This new conversation is about focusing our collective attention on a serious threat to tiny developing brains: toxic exposures.

Since the Second World War, there has been a dramatic increase in the production and use of chemicals, including many that are now known or suspected to be toxic. We have been studying the impact of these toxic chemicals, or toxins, for more than 30 years and reached an inescapable conclusion: little things matter. Toxins can have a lifelong impact on children, and that extremely low levels of neurotoxic chemicals can permanently alter brain development.

Pregnant women and children are regularly exposed to toxins such as mercury, lead, PCBs, bisphenol A and pesticides. Moreover, toxic exposures do not occur in isolation; we are all continually exposed to many toxins and dozens of inadequately tested chemicals.

The amount of toxins in a typical child, which is measured in parts per billion (ppb), is deceptively small. One ppb is about two tablespoons of sugar in an Olympic-size swimming pool. But chemicals can do serious damage, even at very low levels.

Indeed, chemicals designed by drug companies to alter behaviours, such as Ritalin, a drug commonly used to treat children with ADHD, affect the brain at levels about the same or even lower than toxins found in the blood.

In the 1960s, hundreds of children in North America died from lead poisoning every year. Since then, much lower levels of exposure to lead have been shown to result in learning deficits and brain disorders, like ADHD. In fact, the World Health Organization and others agree; there is no safe level of lead exposure.

Other, newer toxins are now regularly shown to decrease children's intellectual abilities. For example, a flurry of recent studies shows that as the level of PBDEs, a type of flame retardant, increases in pregnant women's blood from 10 to 100 ppb, the IQ scores of their children drop by about five points. We see a similar pattern with organophosphate pesticides, which are regularly found in our foods.

The impact of toxic chemicals on the developing brain is permanent. Children who are more heavily exposed to toxins will not reach the same peak intellectual ability as those who have lower exposures.

These studies show that there is no safe level of exposure. They also indicate that the way governments regulate chemicals — which assumes there is a safe level — fails to protect children.

Little shifts in children's IQ scores or behaviours have a big impact on the number of children who are

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