

## A Preventable Tragedy: How Lead Poisoning Affects Children Across Their Life Course

Scientific studies have demonstrated the following effects of childhood lead poisoning over more than three decades.

This is a summary of some of the critical effects that impact health and behavior throughout the lifespan.

Finding	Research study
Lead interferes with the normal development of the brain, resulting in a reduction in volume of the frontal lobe. This is the region of the brain that reasons, judges, solves problems and controls impulses and emotional responses.	<ul style="list-style-type: none"> <li>◆ Decreased brain volume in adults with childhood lead exposure (2008). Cecil KM et al; <i>PLoS Medicine</i> 5(5):e112. doi:10.371/journal.pmed.0050112.</li> </ul>
Lead poisoning affects learning ability as a child ages and is a powerful predictor of school disciplinary problems. Lead poisoning is associated with a greater likelihood of behavior problems like aggression and hyperactivity. A lead-poisoned child is more likely to experience problems in school due to learning difficulties, poor reading skills and shortened attention span. A 2007 study demonstrated that children who were lead poisoned were three times more likely to fail fourth grade reading tests when compared to children with minimal lead exposure.	<ul style="list-style-type: none"> <li>◆ Delinquency and hyperactivity (1979). Offord DR et al; <i>Journal of Nervous Mental Disorders</i>, 167: 734-741.</li> <li>◆ Confirmation and Extension of Association of Blood Lead with Attention-Deficit/Hyperactivity Disorder (ADHD) and ADHD symptom Domains at Population-Typical Exposure Levels (2010). Nigg JT et al; <i>Journal of Child Psychiatry</i>, 51(1): 58-65.</li> <li>◆ Low level exposure and children's IQ: A meta-analysis and search for a threshold (1994). Schwartz J; <i>Environmental Research</i>.</li> <li>◆ The relationship between early childhood blood lead levels and performance on end-of-grade tests (2007). Miranda ML et al; <i>Environmental Health Perspectives</i>, 115(8): 1242-1247.</li> </ul>
Lead exposure can cause higher rates of high school dropout, teen pregnancy, and juvenile delinquency. Studies show that lead exposure causes depression and panic attacks in adolescents.	<ul style="list-style-type: none"> <li>◆ How lead exposure relates to temporal changes in IQ, violent crime, and unwed pregnancy (2000). Nevin R; <i>Environmental Research Section A</i>, 83: 1- 22</li> <li>◆ Blood lead levels and major depressive disorder, panic disorder and generalized anxiety disorder in US young adults (2000). Bouchard MF et al; <i>Archives of General Psychiatry</i>, Vol. 66(12): 1313-9.</li> </ul>
Violent crimes committed by adults are strongly associated with prenatal and childhood lead poisoning; a 2008 study found that for each increase of 5 micrograms per deciliter of lead in blood as a child, an individual's risk of being arrested for a crime as an adult increases by 50%.	<ul style="list-style-type: none"> <li>◆ Association of prenatal and childhood blood lead concentrations with criminal arrests in early adulthood (2008). Wright JP et al; <i>PLoS Medicine</i> 5(5): e101. doi:10.1371/journal.pmed.0050101.</li> </ul>
Lead can cause reproductive problems in both men and women. Adverse birth outcomes such as increased risk of spontaneous abortion, preterm delivery and infant low birth weight and developing hypertension when pregnant as adults are related to childhood lead poisoning.	<ul style="list-style-type: none"> <li>◆ Blood lead levels measured prospectively and risk of spontaneous abortion (1999). Borja-Aburto VH et al; <i>American Journal of Epidemiology</i>, 150(6): 590-7.</li> <li>◆ Effect of magnitude and timing of maternal pregnancy blood lead (Pb) levels on birth outcomes (2006). Jelliffe-Pawlowski LL et al; <i>Journal of Perinatology</i>, 26(3): 154-62.</li> <li>◆ Decrease in birth weight in relation to maternal bone-lead burden (1997). Gonzalez-Cossio T et al; <i>Pediatrics</i>, 100(5): 856-62.</li> <li>◆ Maternal blood lead levels and the risk of pregnancy-induced hypertension: The EDEN cohort study (2009). Yazbeck C et al; <i>Environmental Health Perspectives</i>, 117(10): 1526-30.</li> </ul>

Source: Wisconsin Childhood Lead Poisoning Prevention Program, Division of Public Health, Department of Health Services, September, 2010.