Buffalo Public Schools

*Putting children and families first to ensure high academic achievement for all*

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# INFORMATION CAPSULE

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## Lead Exposure and Impact on Children

**AT A GLANCE**

Nearly 56 million Americans, including 53 million children, spend their days in schools. Recently, lead testing was mandated by the NYS Governor in all NYS schools by October 31. Lead is a toxic material that is extremely harmful to young children and can result in lowered IQ, behavioral problems and brain damage. This Research Capsule identifies the symptoms of lead exposure and provides information about how children are affected by lead. The Capsule also discusses the efficacy of educational interventions for reversing academic problems in children impacted by lead exposure. Finally, a list of resources is provided to assist district and school staff with information regarding the impact of lead exposure for students and adults.

### INTRODUCTION

The fight against lead contamination in children's drinking water continues, as lead poisoning remains a serious public health issue. To ensure water systems are safe for students in New York State, recently Governor Andrew M. Cuomo signed legislation (A.10740/S.8158) requiring all school to test water systems for lead contamination and to take responsive actions. This means that districts are required to test all outlets that are currently or potentially used for drinking and cooking purposes, including drinking fountains and faucets.

Lead is a naturally occurring but highly toxic metal that can be found in all parts of our environment – the air, the soil, the water, and even inside homes. Lead is a known neurotoxicant, especially harmful to

children and development of their nervous systems. This metal is particularly dangerous to children. As children grow, their bodies absorb more lead than adults do and their brains and nervous systems are more sensitive to the damaging effects of lead. Babies and young children are frequently more highly exposed to lead because they often put their hands and other objects with lead from dust or soil on them into their mouths. Children can be exposed to lead by eating and drinking food or water contaminated by lead or from dishes or cups that contain lead. Other sources of exposure can source from inhaling lead dust from paint or soil with lead or from playing with toys coated with lead paint.

The impact of lead exposure on the U.S. population is astonishing. Recent statistics stated that 535,000 children ages 1 to 5 years old have blood lead levels high enough to damage their health. 24 million homes in the US contain deteriorated paint containing lead and elevated levels of lead-contaminated house dust – 4 million of these are homes to young children.

In Western New York, federal data shows that children in the area suffer from the highest rate of lead poisoning in the upstate region, a rate that is three times higher than that in Flint, Michigan. 13 percent of children ages 5 and younger tested in Erie, Niagara, Chautauqua and Cattaraugus counties tested positive for lead poisoning in 2014, according to the Centers for Disease Control (CDC). Out of 4,514 children who were tested in those counties that year, 585 met the federal standard for exposure to lead, which can lead to neurological damage and behavioral disorders.

Preliminary regional data from the state mandated testing program found that lead was present in some of the water sources in school districts, including some buildings in the Buffalo Public Schools.

Exposure to lead can result to serious harm to a child's health, including damage to the brain or nervous system, slowed growth and development, learning and behavior problems, and hearing or speech problems. This can cause a lower IQ, decreased ability to pay attention, or underperformance in school. The symptoms of this medical condition are often confused with symptoms of attention deficit hyperactive disorder (ADHD), resulting in misdiagnosis for children. It is estimated that it can cost $5,600 in medical and special education costs alone for each lead-poisoned child.

Fortunately, lead poisoning is completely preventable. Overall, the lead poisoning prevention effort in the United Stated is seen as a public health success story, due to the rapid and sustained decreases of numbers of people who have been exposed to lead. Unfortunately, hundreds of thousands of children have already experienced blood lead levels known to impair academic performance. Therefore, there is a need to support children who may have been exposed with timely and appropriate educational interventions.

**Lead Exposure in Education**

Even though there are no studies that specifically examine the impact of educational interventions on cognitive or behavioral outcomes for children who have been exposed to lead, research does show that children who experience developmental delays – similar to what children who have experienced lead exposure or poisoning experience – benefit most from interventions that start early. The Center for Disease Control recommends that schools can support improved outcomes for lead-exposed children by:

- Providing access to special education services where warranted and by conducting appropriate tests to identify cognitive and functional deficits in lead-exposed children;
- Consistent interpretation of the Individuals with Disabilities Education Act (IDEA) and Americans with Disabilities Act (ADA) that require provision of assessment and educational interventions, including ways to ensure that children with a history of lead exposure receive the services to which they are entitled; and
- Obtaining technical advice on the implications of the connection between lead exposure and educational results for educators, state and local governments, parents, health care providers, lead poisoning prevention programs, and others who work with young children.

**Symptoms of ADHD and Lead Exposure**

ADHD, the most commonly diagnosed neurobehavioral disorder in children, is characterized by inattention, impulsivity, distractibility, and hyperactivity. The cause of ADHD is complicated, often related to genetics. However, certain environmental factors can play a role in the cause of ADHD, such as lead exposure. Recent studies have associated blood lead levels with medically diagnosed ADHD in children.

Many studies have demonstrated the harmful effects of higher blood lead levels, but a growing body of evidence is showing adverse effects at lower blood lead levels, suggesting there may be no threshold of developmental neurotoxicity, especially for children.

**Conclusion**

Although efforts continue locally and nationally to shrink the incidence of lead exposure, continued vigilance and collaboration are necessary to ensure that children negatively affected by lead exposure receive timely and targeted services designed to compensate for lead's effect on the brain and behavior of children.

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