

Translating the Science: Links Between Neurotoxicants in School Environments and Learning/Developmental Disabilities

Proposal Description:

Learning and developmental disabilities (LDDs) afflict approximately one in six children in the U.S. Exposure to environmental contaminants such as mercury, lead and PCBs adversely affect the developing nervous system contributing to LDDs. This presentation will discuss: the scientific association of neurotoxicants that may lead to LDDs, the LDD and special education community as a vulnerable population to toxic exposures, and initiatives to help prevent and reduce toxic exposure in school environments.

Children and adults may be exposed to toxicants such as pesticides, cleaning chemicals, and poor indoor air quality (IAQ) in schools and vocational training sites. Exhaust from buses can easily travel indoors and be circulated along with other indoor contaminants throughout the school. Toxicants in solvents may be found in paints, model building, furniture refinishing, and auto repair. Potentially harmful art supplies include rubber cement, permanent felt-tip markers, pottery glazes and enamels, and spray fixatives.

The US Government Accountability Office released a report finding that more than half of schools in the United States have IAQ problems in at least some part of their campuses. Poor IAQ in schools can impact the comfort and health of students and staff, which, in turn, can affect concentration, attendance, and student performance. Moreover, if schools fail to respond promptly to poor IAQ, students and staff are at an increased risk of short-term health problems, such as fatigue and nausea, as well as long term problems like asthma. A child with a learning or developmental disability may be especially vulnerable to these outcomes.

Background on School Environments:

Each school day, about 54 million children and nearly 7 million adults —20% of the total U.S. population— spend a full week inside schools. (NCES 2007) Thirteen million preschoolers— 60% of young children—are in child care. (NCES 1996) They enter care as early as six weeks of age and can be in care for as many as 40 hours per week. While there are no data on the conditions of child care centers, many of the nation's 121,000 public and private K-12 school facilities are shoddy or even "sick" buildings whose environmental conditions harm children's health and undermine attendance, achievement, and productivity. Nearly two-thirds of schools have failed building features in need of extensive repair or total replacement. (Kats)

In 1996 GAO reported that more than 13 million children were compelled to be in schools that threatened their health and safety. Up to half of all schools have poor indoor air quality (IAQ). (EPA) Indoor air maybe at least five times more polluted than outdoor air. Poor IAQ can exacerbate asthma, the leading cause of school absenteeism and hospitalization due to chronic illness for children (CDC) as well as a leading *occupational disease* of teachers and custodians. (Mazurek) Other health effects can include respiratory problems, poor concentration, rashes, headaches, gastrointestinal problems, nervous system disorders, and cancers. Other threats can include high-hazard chemicals; poor siting, design, construction, or maintenance; lead in paint or drinking water; radon or vapor intrusion from hazards nearby; friable asbestos; PCBs; dangerous, uncontrolled renovations of occupied facilities; broken plumbing; mold and pest infestations. A review of the 2006 CDC-SHPPS school health survey included environmental factors for the first time; one interesting finding was that education official respondents had poor working knowledge of relevant state environmental laws (Ibata and ELI).

Laura Abulafia, MHS

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