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AAIDD Fact Sheet

Students with Disabilities in Schools

Students with Disabilities¹ are a special “at risk” population for the harmful effects of exposures to environmental hazards at school. This fact sheet describes environmental hazards in schools and the needs of students with disabilities as an especially vulnerable population.

What is the price of childhood exposure to environmental toxins?

Children in general are more vulnerable than adults to toxins due to their smaller body size and faster metabolic rate. Compared to their classmates, children whose immune systems are compromised due to chronic health problems are even more “at risk” immunologically to environmental exposures in the classroom.

Schools have many hazards. When a child with an intellectual or developmental disability (IDD) sits at a desk that has been treated with disinfectants and is in environmental conditions with poor ventilation systems, the child may be more vulnerable to adverse health outcomes. Poor indoor air quality (IAQ) can impact the comfort and health of students and staff, which, in turn, can affect concentration, attendance, and student performance. In addition, 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.² A child with IDD may be especially vulnerable.

Science links exposure to toxic chemicals with childhood illnesses and disabilities that impair children's ability to grow, learn, and play, and eventually to become productive working adults and parents themselves. These illnesses and disabilities can cause children to stay at home, visit doctors, or

¹ A Disability that qualifies a child for Special Education is defined by the Department of Education as: “. . . having mental retardation, a hearing impairment including deafness, a speech or language impairment, a visual impairment including blindness, serious emotional disturbance, an orthopedic impairment, autism, traumatic brain injury, an other health impairment, a specific learning disability, deaf-blindness, or multiple disabilities, and who, by reason thereof, needs *special education* and *related services*.”

34 Code of Federal Regulations §300.7(a)(1)

lie in a hospital bed when they should be in school or at play. They cause parents to miss work days or even give up their jobs. They require special equipment and services. Many disabilities that do not cause episodes of acute illness nonetheless dramatically alter the lives of affected children and their families.^{3, 4}

How might the environment pose a health risk?

Parents often worry about dangers such as drugs and violence but they are not aware of significant hazards such as toxic chemicals. Schools often are—

- ▶ built on contaminated land or near an industrial, commercial, or municipal site (e.g., chemical plant, airport, freeway, or landfill) that releases toxic chemicals into the air and surrounding community daily;
- ▶ routinely sprayed with toxic pesticides to kill pests (e.g., ants, cockroaches, or rodents), contaminating carpets and floors and leaving toxic pesticide residue throughout the sprayed area (e.g., on toys, supplies, and other items children may access);
- ▶ regularly applying weed killer and toxic fertilizers throughout school grounds, exposing children to residues as they play sports, use playground equipment, or traverse the campus;
- ▶ poorly maintained and cleaned, providing habitats for pests, molds, and allergens, and allowing toxic residues to accumulate; and
- ▶ subject to poor air quality, due to overcrowded classrooms, improper ventilation of portable and makeshift classrooms, and outdated, inefficient heating and ventilation systems.⁵

What environmental toxins can students be exposed to in schools?

Potentially toxic chemicals found in many schools to which all students, including those with disabilities, might be exposed include: ^{6, 7}

- *Pesticides*

Headache, weakness, dizziness, restlessness, anxiety, confusion, skin irritation, respiratory problems, central nervous system depression, lowering of the seizure threshold, nausea & numbness in limbs

- *Mold*

Molds produce allergens (substances that can cause allergic reactions), irritants, and in some cases, potentially toxic substances (mycotoxins). Mold may begin growing indoors on wet surfaces such as in carpeting, on walls and floors, etc. Most mold growth results from neglected facilities and leaks.

- *Cleaning Products*

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Asthma and respiratory problems; headaches, eye/lung irritation; shallow breathing, vomiting; fainting, diarrhea, dizziness; liver/kidney damage; skin irritation

*Sources Include: Chlorine bleach, Glass cleaner, Furniture/floor polish, Disinfectants, Spot remover/carpet cleaner, Toilet bowl cleaner

- *Solvents*

Headaches, central nervous system problems, loss of coordination, nausea, skin disease, liver damage, death

*Sources Include: Solvents are found in paint thinner, rubber cement, permanent felt tip markers, pottery glazes, enamels, and spray fixatives

- *Chromated Copper Arsenate (CCA)*

Seizures, nausea, vomiting, abnormal heart rhythm, and blood vessel and permanent nerve damage. Ingestion of a large amount can cause death. Long-term effects include cancer of the lung, bladder, and skin.

*CCA is a wood preservative made with arsenic, chromium and copper that is intended to reduce damage from insects, mildew, and fungi. This pesticide mixture, which is 22% pure arsenic, is forced into the wood under pressure.

- *Fiber Glass*

Eye, nose, and throat irritation; respiratory infections and bronchitis; headaches, nausea, dizziness, insomnia, irritability, depression; asthma-like breathing attacks or constant wheezing; and lung cancer

*Sources Include: Air quality where materials are cut, ground, or sanded; used in insulation

- *Formaldehyde*

Watery eyes, burning eyes and throat, throat swelling, nausea, difficulty breathing, can trigger asthma attacks or severe allergic reactions

*Formaldehyde is a volatile organic compound (VOC) and can be found in pressed wood products such as plywood, particle board, and fiberboard; glues and adhesives; can also be present in fabrics such as carpets

- *Brominated Flame Retardants (PBDEs)*

May harm nervous system; may alter hormonal functions and reproductive organ development, harms thyroid function

*Sources Include: Seat cushions of chairs in many indoor spaces, Food and dust, Styrofoam & carpet padding, TV, cell phone, & computer wire insulation

- *Carbon Monoxide*

Headaches, weakness, nausea, dizziness, dim vision, and changes in heart rhythm; unconsciousness, coma, convulsions, and death

*Main Source: Carbon monoxide comes from car exhaust emissions

Other Sources Include: cigarette smoke, gas appliance leaks such as gas stoves, space heaters, and fireplaces

- *Lead*

Brain and nervous system problems, lower IQ levels, delay physical development, shorten attention spans and increase behavioral problems




*Lead remains a concern in school buildings, especially those dating to the 1970s and earlier. The sources of lead include plumbing, chipped and peeling lead-based interior paint, contaminated soil from exterior paint or vehicle exhaust fumes, and dust that is generated when painted surfaces containing lead rub together, such as windows.





- PCBs (production ceased in 1977)

Problems with memory, attention, verbal ability, information processing; delayed psychomotor development; changes in play behavior; hyperactivity

*Sources Include: Plasticizers in paints, plastics and rubber products; in pigments, dyes and carbonless copy paper

Where in schools are these environmental toxins found?

Indoors:	Environmental toxins found:
<p>The Classroom</p> 	<p><i>Pesticides, Molds, Cleaning Products, Solvents, Formaldehyde, and PBDEs</i> may be found in classrooms. Poor ventilation systems can also allow fiber glass or other pollutants to travel into the room, or conversely be trapped in a room. Desks cleaned with toxic chemicals may directly expose children to these risks. Check with custodial staff and teachers about the quality of environmental health in the classroom.</p>
<p>The Art room</p> 	<p><i>Pesticides, Molds, Cleaning Products, Solvents, Formaldehyde, and PCBs</i> may be found in art rooms. Many art materials say “non-toxic” but still pose health hazards. All materials should be used with caution and stored properly to prevent accidents or unnecessary exposures.</p>
<p>School Offices, Teacher Lounges, and Staff Rooms</p> 	<p><i>Pesticides, Molds, Cleaning Products, Solvents, Formaldehyde, and PBDEs</i> may be found in indoor rooms such as offices, lounges, and staff rooms. Ventilation systems must be monitored and leaking pipes checked for mold. Also, PBDEs found in computer systems and dyes in copy paper can contribute to indoor air quality.</p>
<p>Bathrooms and locker rooms; Gyms and indoor Athletic areas; Hallways and staircases</p>	<p><i>Pesticides, Molds, Cleaning Products, and Solvents</i> may be found in bathrooms and locker rooms. These may also be found in gyms, hallways, and staircases. Follow safe cleaning guides, such as: use trash cans at entrances to reduce litter in the halls; Provide cubbies or</p>

	<p>student lockers for storage of personal items and have regular locker clean-out days Resources on safe cleaning can be found at www.healthyschools.org “Guide to Green Cleaning” or at the EPA Tools for Schools website, www.epa.gov/iaq/schools</p>
<p>Cafeterias, indoor dining areas</p> 	<p><i>Pesticides, Molds, Cleaning Products, and Solvents</i> may be found in eating areas. Ensure the school follows safe practices such as: Restrict all snacks, meals and food storage to one or two designated areas in a building; Have easy-to-find and tightly sealed garbage cans and recycling bins, away from the building’s fresh air intakes; keep cans and dumpsters clean.</p>
<p>Outdoors</p>	
<p>Athletic Fields and Playgrounds</p> 	<p><i>Pesticides, Cleaning Products, Solvents, Fertilizers, Formaldehyde, Carbon Monoxide, and CCA</i> can be found in playgrounds and athletic fields. Outdoor air pollution can include any number of toxins, and school siting issues (ie. The grounds on which the school is built) may pose health threats. Students playing or sitting outdoors should also be protected from too much UV radiation from sun exposure.</p>
<p>Outdoor waiting areas, curb-side pick up, bus stops</p> 	<p><i>Pesticides, Carbon Monoxide, Lead, and CCA</i> can be found outdoors where automobiles or buses are present. *Diesel exhaust has been identified as a likely cause of cancer, and the soot and gases emitted by diesel buses are associated with acute eye, throat, and bronchial irritation; exacerbation of asthma and allergenic responses; and potential interference with proper lung growth and development in children. The majority of school buses transporting students are powered by diesel engines, and school buses idling at schools can produce concentrated exhaust emissions both outside and inside school buses and school buildings. ⁸</p>

So what are the positive steps schools can take to protect the students and other members of school communities?

- *Adopt Integrated Pest Management Practices (IPM):*

IPM seeks to eliminate the use of toxic chemical pesticides altogether, preferring to control pests with methods that have the least toxic impact on human health and the environment. IPM assumes that a pest need not be controlled until it becomes a nuisance or economically significant. This approach requires monitoring and record keeping to identify the presence and

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levels of pests and their natural enemies. When an injury level sufficient to warrant control has been reached, the type of action necessary should be based on the pest population size and other variables such as weather. Appropriate action might include a variety of treatments, including mechanical controls, physical barriers, and chemical controls such as hormones to confuse the pest, arrest its development, or interfere with its breeding. Pesticides should be used only as a last resort, and then only in a manner designed to minimize exposure of people and other non-target organisms.

State agencies could develop guidelines on "least toxic, least impact" pest control (or IPM) guidelines that provide relevant direction to schools. In the absence of such guidance, schools could seek guidance from various other school districts that have implemented IPM, the New York Coalition for Alternatives to Pesticides (NYCAP) in Albany, the Bio-Integral Resource Center (BIRC) in Berkeley, California, and the National Coalition Against the Misuse of Pesticides (NCAMP) in Washington, D.C.⁹

- *Utilize Preferable Purchasing guidelines:*

Environmentally Preferable Purchasing guidelines can be found at the EPA website, at <http://www.epa.gov/epp/>, and other sources include a guide from Green Guardian <http://greenguardian.com/EPPG/> and New American Dream at <http://www.newdream.org/procure/>.

- *Intervening Steps to take*

Speak with the principle of your school, school nurses and other school personnel to ask about products used in and around the school property. Work with facilities managers or the school purchasing person to seek alternatives that are safer than commonly used toxins and pesticides. Write environmental safety protections into school health plans and Individualized Education Programs (IEPs). Utilize EPA's tools for schools program. Get involved!

- *Participate in National Healthy Schools Day:*

For more information on National Healthy Schools Day or ideas on how your school district can help, visit the Healthy Schools Network website at <http://www.healthyschools.org>.¹⁰

Resources:

¹<https://www.ideadata.org/docs/bdatadictionary.pdf>

² <http://www.epa.gov/iaq/schools/>

³ How to Implement a District-Wide IAQ Tools for Schools Program Fact Sheet
http://www.epa.gov/iaq/schools/pdfs/publications/iaq_and_student_performance.pdf

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⁴ Costs of Preventable Childhood Illness: The Price We Pay for Pollution
Rachel Massey, MSc, MPA and Frank Ackerman, PhD
September 2003

© Global Development and Environment Institute (GDAE), Tufts University

⁵ Poisoned Schools: Invisible Threats, Visible Options: A Report of the Child Proofing Our Communities: Poisoned School Campaign

<http://www.childproofing.org/PoisonSchoolsfinalForWeb2-27-01.pdf>

⁶ <http://hpd.nlm.nih.gov/products.htm>

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http://science.education.nih.gov/supplements/nih2/Chemicals/activities/lesson6_database.htm

⁸ http://cfpub.epa.gov/schools/top_sub.cfm?t_id=37&s_id=38

⁹ <http://www.oag.state.ny.us/environment/schools96.html>

¹⁰ http://www.healthyschools.org/nhs_day.html

More Useful Resources:

<http://www.pesticide.org/UnthinkableRisk.html>

<http://www.ldaamerica.org/>

<http://www.cehn.org/>

<http://nces.ed.gov/nationsreportcard/geography/results/acc-permitted-natl-yes.asp>

http://nationsreportcard.gov/science_2005/S0120.asp?tab_id=tab1&subtab_id=Tab_2&printver=#chart

<http://www.childproofing.org/background.html>

<http://www.epa.gov/schools/healthyseat/index.html>

<http://schoolipm.unl.edu/ipmmodules/>

<http://www.asbj.com/2007/06/0607ASBJbuchanan2.pdf>