

IMPROVING KIDS' ENVIRONMENT



ENVIRONMENTAL THREATS TO SUCCESS IN SCHOOL

Lead Poisoning

Studies carried out by the Centers for Disease Control and Prevention (CDC) show blood-lead levels have been falling among U.S. children ever since lead was banned from gasoline, residential paint, and solder used for food cans and water pipes. However, about 310,000 U.S. children between the ages of 1 and 5 years are believed to have blood-lead levels equal or greater than 10 micrograms per deciliter, the level targeted for action.

Children are more sensitive to lead than adults. No safe blood lead level in children has been determined. About 99 percent of the amount of lead taken into the body of an adult will leave in the body's waste within a couple of weeks, but only about 32 percent of the lead taken into the body of a child will leave in the waste.

Lead affects children in different ways depending on how much lead a child swallows. A child who swallows large amounts of lead may develop anemia, kidney damage, colic, muscle weakness, and brain damage, which ultimately can kill the child.

If a child swallows smaller amounts of lead, such as dust containing lead from paint, much less severe but still important effects on the body's development and behavior may occur. Lead can affect a child's mental and physical growth. Exposure in the womb, in infancy, or in early childhood also may slow mental development and cause lower intelligence later in childhood. There is evidence that these effects may persist beyond childhood.

One study (Needleman 2003) found a strong association between elevated bone lead concentrations in teenagers and the risk of being arrested for criminal behavior.

Basic Facts

- Lead poisoning can lower intelligence, slow mental development and affect behavior
- Asthma, which can be triggered by air pollution, is one of the leading causes of school absence in Indiana
- Pesticide exposure has been linked to asthma attacks and impaired memory, coordination and ability to draw

Asthma and School Performance

The lifetime prevalence of asthma in Indiana's children is 13.7 percent, so in the average class of 25 children there are 3 who currently have or have had asthma.

Asthma is one of the leading causes of school absence in Indiana. In the U.S. in 2003 there were 12.8 million reported asthma-related absences from school among children ages 5 - 17.

In a study of over 4000 elementary school children over a period of 4 years, the diagnosis of asthma meant that a child was nine times more likely to be absent from school once per month or more.

A majority (51 percent) of school nurses think that asthma is more disruptive to school routine than other chronic diseases; an additional 38 percent think it is as disruptive as other chronic diseases. On average, the school nurses surveyed felt that students' academic performance was moderately affected by asthma.

IMPROVING KIDS' ENVIRONMENT



Studies have found that children who are able to improve control of their asthma reduce their number of absences from school. Asthma triggers include allergens (pollen, mold, animal dander, insect parts, and some chemicals) and irritants (smoke, dust, gas or diesel fumes, and chlorine).

Pesticides and School Performance

Animal tests link some common pesticides to hyperactivity and permanent changes in the brain.

Studies show common home, lawn and garden pesticides can affect children's health, including asthma, motor skills and brain development.

A study in Mexico by the University of Florida showed impaired memory, coordination and ability to draw in children exposed to pesticides compared to children not exposed.

References

Lead:
U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry (www.atsdr.cdc.gov)
Needleman, NL, C McFarland, RB Ness, SE Fienberg and MJ Tobin. 2003. Bone lead levels in adjudicated delinquents. A case control study. *Neurotoxicology and Teratology* 24:711-717

Asthma:

American Lung Association, & National Association of School Nurses. (2003, September). Report on the results of the asthma awareness survey. Retrieved February 19, 2010, from http://www.dcasthma.org/NASN%20asthma_survey.pdf
Bravata, D. M., Gienger, A. L., Holty, J.-E. C., Sundaram, V., Khazeni, N., Wise, P. H., et al. (2009). Quality improvement strategies for children with asthma: A systematic review. *Archives of Pediatrics and Adolescent Medicine*, 163(6), 572-581.
Centers for Disease Control and Prevention. (2007, August). Featured data & statistics: Statistics on asthma-related absences. Retrieved February 19, 2010, from <http://www.cdc.gov/datastatistics/archive/asthma-absences.html>
Evans, D., Clark, N. M., Feldman, C. H., Rips, J. L., Kaplan, K. L., Levison, M. J., et al. (1987). A school asthma health education program for children aged 8-11 years. *Health Education Quarterly*, 14, 267-289.
Freeman, N. C. G., Schneider, D., & McGarvey, P. (2003). Household exposure factors, asthma, and school absenteeism in a predominantly Hispanic community. *Journal of Exposure Analysis and Environmental Epidemiology*, 13, 169-176.
Indiana State Department of Health. (2008, March). The burden of asthma in Indiana: Second edition.
Indiana State Department of Health. (n.d.). Asthma in children fact sheet. Retrieved September 23, 2009, from <http://www.in.gov/isdh/19589.htm>

Pesticides:

Greater Boston Physicians for Social Responsibility, *In Harm's Way*, 2000.
Guillette, E.A., Meza, M.M., Aquilar, M.G., Soto, A.D., Enequina, I. (1998). An anthropological approach to the evaluation of preschool children exposed to pesticides in Mexico. *Environmental Health Perspectives*, 106, 347-353.
Karr, C. J., Solomon, G. M., Brock-Utne, A. C., Karr, C. J., Solomon, G. M., & Brock-Utne, A. C. (2007). Health effects of common home, lawn, and garden pesticides. [Review]. *Pediatric Clinics of North America*, 54(1), 63-80.

What You Can Do to Protect Kids from Environmental Threats

Improving
Kids' 
Environment

1111 E. 54th Street, Ste. 212
Indianapolis IN 46220
317-677-4760

- If you live in a home built before 1978, have your child and home tested for lead and learn about lead-safe renovation practices.
- Don't let your engine idle. Encourage schools to prevent vehicle idling in the parking lot and to join the Smart Schools Don't Idle program.
- Reduce pesticide use. Encourage schools to adopt Integrated Pest Management practices, which use chemical pesticides as a last resort.
- Stay informed by becoming a supporter of Improving Kids' Environment at www.ikecoalition.org