

FACT SHEET

Children's Unique Vulnerabilities

In recent years, scientists have gained a far better understanding of children's special vulnerabilities to chemical exposures. Environmental toxins affect entire communities, but children are especially susceptible for a variety of reasons:

Children are more exposed to toxins than adults

- Children consume more calories, drink more water, and breathe more air per pound of body weight than adults.
- Children's natural curiosity, tendency to explore, and inclination to place their hands in their mouths opens them to health risks adults might avoid, such as increased exposure to contaminated dust and soil, pesticide and fertilizer residues, chemicals used to disinfect or clean, and other potentially hazardous substances.

Children are still developing

- Through adolescence, their reproductive, endocrine, respiratory and other crucial systems mature as well as full development of the insulation of brain nerve fibers and lung air sacs.
- As structures and vital connections develop during these critical years, body systems are not suited to repair damage caused by toxins, therefore damage and dysfunction from chemical exposures is likely permanent and irreversible. Depending on the organ damaged, the consequences can include lowered intelligence, immune dysfunction, or reproductive impairment.
- Children are not little adults. Because organ systems are still developing, children absorb, metabolize, detoxify, and excrete poisons differently from adults. For example, children absorb 50 % of the lead to which they are exposed, while adults absorb 10–15 %.

Children have more time to develop chronic diseases that may be triggered by early environmental exposures

- Children's longer remaining life span provides more time for diseases to express themselves. Of particular concern are cancers, which can take decades to develop.
- Children are exposed to more chemicals now than ever before. In one British study, children as young as nine had on average 25% more manufactured chemicals in their blood than their living grandparents. The children also had higher concentrations of some of these chemicals, which are suspected of inhibiting neurological and endocrine system development.

How Exposure to Chemicals Impacts Children's Health

Routes of children's exposure to cleaning chemicals include inhalation, skin absorption and ingestion. Health impacts from traditional cleaning products used in schools can result from either acute or chronic exposures. Acute exposures (significant one-time exposures) may burn the eyes or skin, cause blindness, poisoning, headaches and respiratory and gastrointestinal ailments. Chronic exposures (frequent low-dose exposures over a longer period of time) can lead to asthma, allergies, certain types of cancer (including brain cancer, leukemia, testicular cancer), learning and behavioral disorders, endocrine disruption (including early puberty), chemical sensitivity, and kidney or liver damage.

Emphasize Prevention

Science has limits in determining if children's health problems result from environmental because the tools that assess impact are often too crude to provide certainty of cause and effect. Also, almost no research addresses the cumulative health effects from exposure to low dose chemicals over many years. This lack of knowledge combined with a "business as usual" approach create a dangerous combination, one that will lead to a generation of children living with environmental toxin-induced diseases.

Available least toxic alternatives to chemicals should be adopted for use in all the places where children play, pray, learn and live. For more information, contact the Florida Alliance for Healthy Indoor Environments today.

Sources: Needleman, H.L. and Landrigan, P.J. (1994) *Raising Children Toxic Free*, New York, NY: Farrar, Straus, and Giroux; Landrigan, P.J., Carlson, J.E., Bearer, C.F., Cranmer, J.S., Bullard, R.D., Etzel, R.A., Groopman, J., McLachlan, J.A., Perera, F.P., Reigart, J.R., Lobixon, L., Schell, L., and Suk, W.A. (1998); "Children's health and the environment: A new agenda for preventive research." *Environmental Health Perspectives* 106 (Supplement 3): 787-794, June; WWF-UK Chemicals and Health campaign and The Co-operative Bank (2004) *Contaminated: the next generation*, October; Healthy Schools Network (HSN) (1999) *Why Worry When You Send Your Child To School*, A Healthy Schools Network Report to Parents, Educators, and Public Officials, Albany, NY, March.



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