



CHILDREN'S ENVIRONMENTAL HEALTH FACT SHEET

Our World is a Toxic Soup

- Approximately **80,000 synthetic chemicals** have been developed for use in the marketplace, a great majority of which did not exist before the 1940s. (1)
- More than **1500** new chemicals are introduced annually. (2)
- The Toxics Release Inventory for 1997 reveals that a total of **2.58 billion** pounds of toxic chemicals were released in the U.S. by facilities required to report. This does not include toxic chemicals incorporated into products, or pesticides, which amounted to another **4.5 billion** pounds. (3)
- **Of the 15,000** of the chemicals registered for commercial use with the Environmental Protection Agency had moderate to high potential for human exposure. Less than half of these had been tested for toxicity at all, and fewer than 20% had been tested for toxicity in developing organisms. (4)
- Complete tests for developmental neurotoxicity have been submitted to the EPA **for only 12 chemicals** as of December 1998 and testing for developmental neurotoxicity is not required. (5)
- **None have been tested so far for their human health effects** when they interact with one another and we are all exposed to dozens if not hundreds of chemicals in any given day. (6)
- As testing procedures become more sophisticated, **we are learning that lower and lower doses can be harmful**, particularly to vulnerable populations like children. For example, the "safe" blood lead level has gone from 60 micrograms/deciliter (ug/dl) in 1960, to 10 ug/d/ in 1990, to current studies which suggest that lead may have no identifiable exposure level that is safe to the developing brain. (7)

Children are Uniquely Vulnerable to Toxins

- Proportional to body weight, children eat, breathe, and drink more than adults, and thus take in far higher concentrations of the toxins in our environment. For example, proportionally they drink seven times more water and take in twice as much air as adults on average. (8)
- As children's bodies and biological systems develop—especially in the womb and as newborns—they are uniquely vulnerable to damage from toxic substances. (9)
- For example, **small single doses of certain pesticides on critical days of a child's development** can cause lifelong impacts on brain and body function, from learning disabilities such as Attention Deficit Hyperactivity Disorder (ADHD) to reproductive problems. (10)
- Many neurotoxicants, such as mercury, dioxin and PCBs, bioaccumulate in body fat and are passed on **from mother to child in utero or through breast milk**. (11)

Chronic Childhood Illness is on a Dramatic Rise

- The incidence of **cancer** in children jumped 26% between 1975 and 1998. (12)

- The incidence of **testicular cancer** in young men has increased by 60% and the incidence of **hypospadias** (abnormal positioning of the opening of the urethra on the penis) in newborn boys doubled from 1968 to 1993. (13)
- The percentage of U.S. children with **asthma** doubled from 3.6% to 7.5% between 1980 and 1995. In 2001, 8.7% (6.3 million) of all U.S. children had asthma. (14)
- It is estimated that nearly 12 million U.S. children (17%) under the age of 18 suffer from one or more **learning, developmental, or behavioral disabilities**. (15)
- **Autism** in the U.S. doubled between 1966 and 1997. (16)
- In 1997 to 2000, 6.7% of children ages 5 to 17 were reported to have been diagnosed with **ADHD**. (17)
- **One million** children in the US **exceed 10 ug/dl blood lead level** exposure that affects behavior and cognition and 36% of those children are African-American and live in inner cities. (18)

Health-affected Children Have a Huge Social Impact

- The impact of children's learning and developmental disorders on children and families is immense. Parents, teachers, school administrators, and communities spend increasing amounts of time, money and energy trying to help children acquire skills that once came more naturally. For example, **providing special education services to students with disabilities amounted to \$77.3 billion**, or an average of \$12,474 per student in 1999-2000, which is almost 22 percent of the 1999-2000 total spending on all elementary and secondary educational services in the U.S. The total expenditure per regular education student is only \$6,556. (19)
- Children with these disorders are more likely to engage in substance abuse, become delinquent, commit crimes as adults, and have higher rates of suicide and mental illness. **Thirty-one percent of adolescents with learning disabilities will be arrested 3 to 5 years after leaving high school.** Fifty percent of juvenile delinquents tested were found to have undetected learning disabilities. The cost of juvenile incarceration is between \$35,000 and \$60,000 per year per person. (20)
- Overall, **economic costs for society of neurodevelopmental** deficits amount to \$81.5 billion to \$167 billion per year (*Environmental Health Perspectives* 109 (supplement 6):885-903. 2001. (21)

We Need To Take Action Now

- Protecting our children from preventable and potentially harmful exposures requires a **precautionary policy that can only occur with basic changes in the regulatory process.** Remaining scientific uncertainties should not delay precautionary actions.
- We need to take preventative actions by **developing and using alternatives** to the substances known to contribute to learning disabilities, asthma, cancer and other childhood diseases. These actions can start at home!
- We need more mandated support for **research on environmental contributors** to these chronic childhood diseases.

Compiled 2003 by the Institute for Children's Environmental Health; www.iceh.org; 360-331-7904

Sources for Children's Environmental Health Fact Sheet

1. **Approximately 80,000 synthetic chemicals are in use in the U.S. marketplace, a great majority of which did not exist before the 1940s.** U.S. EPA. Office of Prevention, Pesticides and Toxic Substances. Endocrine Disruptor Screening and Testing Advisory Committee. Final Report. Washington DC. 1998.
2. **As many as 1500 new chemicals are introduced annually.** Oleskey, Christopher, PhD and McCally, Michael, MD, *A Guide to Biomonitoring and Body Burdens of Industrial Chemicals*, Center for Children's Health and the Environment, Mt. Sinai School of Medicine, New York, NY 2001.
3. **The EPA Toxics Release Inventory for 1997 reveals that a total of 2.58 billion pounds of toxic chemicals were released in the U.S. by facilities required to report. U.S. EPA, 1997 Toxics Release Inventory Public Data Release, May 13, 1999. This does not include toxic chemicals incorporated into products, or pesticides, which amounted to another 4.5 billion pounds.** *In Harm's Way: Toxic Threats to Child Development, 2000*; Greater Boston Physicians for Social Responsibility. Pages 105-6.
4. **15,000 of the chemicals registered for commercial use with the Environmental Protection Agency had moderate to high potential for human exposure. Less than half of these had been tested for toxicity at all, and fewer than 20% had been tested for toxicity in developing organisms.** Commission on Life Sciences, National Academy of Sciences, Toxicity Testing: Strategies to Determine Needs and Priorities. National Academy Press, Washington DC 1984.
5. **Complete tests for developmental neurotoxicity had been submitted to the EPA for only 12 chemicals as of December 1998 and testing for developmental neurotoxicity is not required.** U.S. EPA. Office of Prevention, Pesticides and Toxic Substances. Endocrine Disruptor Screening and Testing Advisory Committee. Final Report. Washington DC. 1998.
6. **None have been tested for their health effects as they interact with one another.** "Oleskey, Christopher, PhD and McCally, Michael, MD, *A Guide to Biomonitoring and Body Burdens of Industrial Chemicals*, Center for Children's Health and the Environment, Mt. Sinai School of Medicine, New York, NY 2001.
7. **As testing procedures advance, we learn that lower and lower doses are harmful. For example, the initial "safe" blood lead level was set at 60 micrograms/deciliter (ug/dl) in 1960. This was revised down to 10 ug/dl in 1990. Current studies suggest that lead may have no identifiable exposure level that is safe to the developing brain.** U.S. Environmental Protection Agency. 1997. Integrated Risk Information System (IRIS) Risk Information for Lead and Compounds (Inorganic). Washington, DC: National Center for Environmental Assessment. <http://www.epa.gov/iris/subst/0277.htm#reforal>. And: Centers for Disease Control and Prevention. 1991. Preventing Lead Poisoning in Young Children. Atlanta, GA. http://www.cdc.gov/nceh/lead/publications/pub_Reas.htm. CDC report references: Schwartz J. Low-level lead exposure and children's IQ: a meta-analysis and search for a threshold. *Environ* 1994;65:42--55.
8. **Proportional to body weight, children eat, breathe, and drink more than adults, and thus take in far higher concentrations of the toxins in our environment.** National Academy of Sciences: *Pesticides in the Diets of Infants and Children*. Washington, DC: National Academy Press, 1993. Landrigan, PJ, Carlson JE: Environmental policy and children's health. *The Future of Children* 1995;5:34-52.
9. **As children's bodies and biological systems develop—especially in the womb and as newborns—they are uniquely vulnerable to damage from toxic substances. For example, according to EPA estimates, about 1.16 million women in the U.S. of childbearing years eat sufficient amounts of mercury-contaminated fish to risk damaging their children's brain development.** EPA. Mercury Study Report to Congress. Volume 1, p.3-39. EPA-452/R-97-003. 12/97.
10. **For example, small single doses of certain pesticides on critical days of a child's development can cause lifelong impacts on brain and body function, from learning disabilities such as Attention Deficit Hyperactivity Disorder (ADHD) to reproductive problems.** Guillette, E.A. et al. "An Anthropological Approach to the Evaluation of Preschool Children Exposed to Pesticides in Mexico," *Environmental Health Perspectives* (1998) 106:347-353.

11. **Many neurotoxicants, such as mercury, dioxin and PCBs, bioaccumulate in body fat and are passed on from mother to child in utero or through breast milk.** Rogan, W.J. et al. "Pollutants in Breast Milk," *New England J. Med.* (1980) 302:1450-1453. Labreche, F.P. and M.S. Goldberg. "Exposure to Organic Solvents and Breast Cancer in Women: A Hypothesis," *Am. J. Industrial Med.* (1997) 32:1-14. Schreiber, J.S. "Predicted Infant Exposure to Tetrachloroethylene in Human Breast Milk," *Risk Analysis* (1993) 13:515-524.
12. **The incidence of cancer in children jumped 26% between 1975 and 1998.** *America's Children and the Environment: Measures of Contaminants, Body Burdens, and Illnesses*, 2003, U.S. EPA, Pages 13 and 77. <http://yosemite.epa.gov/ochp/ochpweb.nsf/content/publications.htm>.
13. **The incidence of testicular cancer in young men has increased by 60% and the incidence of hypospadias (abnormal positioning of the urethra on the penis) in newborn boys doubled from 1968 to 1993.** *Environmental Health Threats to Children: A Look at the Facts*; Dr. Phillip J. Landrigan, http://www.informinc.org/fact_children.php from information under the auspices of the Office of Children's Health Protection of the US Environmental Protection Agency.
14. **The percentage of U.S. children with asthma doubled from 3.6% to 7.5% between 1980 and 1995.** *America's Children and the Environment: Measures of Contaminants, Body Burdens, and Illnesses*, 2003, U.S. EPA, Pages 13 and 69. **In 2001, 8.7% (6.3 million) of all U.S. children had asthma.** *America's Children and the Environment: Measures of Contaminants, Body Burdens, and Illnesses*, 2003, U.S. EPA, Pages 13 and 69.
15. **It is estimated that nearly 12 million U.S. children (17%) under the age of 18 suffer from one or more learning, developmental, or behavioral disabilities.** Boyle CA, Decoufle P, Yeargin-Allsopp M. Prevalence and health impact of developmental disabilities in US children. - *Pediatrics* March 93(3):399-403, 1994; and U.S. Census Bureau Population Estimates Program, Washington DC. www.census.gov/population/estimate/nation/inttfile2-1.txt.
16. **Autism in the U.S. doubled between 1966 and 1997.** Gillberg C, Wing L, *Autism: not an extremely rare disorder.* *Acta Psychiatrica Scand* 99(6):339-406, 1999.
17. **In 1997 to 2000, 6.7% of children ages 5 to 17 were reported to have been diagnosed with ADHD.** *America's Children and the Environment: Measures of Contaminants, Body Burdens, and Illnesses*, 2003, U.S. EPA, Pages 14 and 96.
18. **One million children in the US exceed 10 ug/dl blood lead level exposure that affects behavior and cognition.** Centers for Disease Control and Prevention. Update: Blood lead levels-United States, 1991-1994. *MMWR* 1997; 46(07):141-146.
19. **The impact of children's learning and developmental disorders on children and families is immense. Parents, teachers, school administrators, and communities spend increasing amounts of time, money and energy trying to help children acquire skills that once came more naturally. For example, providing special education services to students with disabilities amounted to \$77.3 billion, or an average of \$12,474 per student in 1999-2000, which is almost 22 percent of the 1999-2000 total spending on all elementary and secondary educational services in the U.S. The total expenditure per regular education student is only \$6,556.** U.S. Department of Education 1999-2000 Report, American Institutes for Research. March 2002.
20. **Children with these disorders are more likely to engage in substance abuse, become delinquent, commit crimes as adults, and have higher rates of suicide and mental illness. Thirty-one percent of adolescents with learning disabilities will be arrested 3 to 5 years after leaving high school. Fifty percent of juvenile delinquents tested were found to have undetected learning disabilities. The cost of juvenile incarceration is between \$35,000 and \$60,000 per year per person.** Dickman GE. *The link between learning disabilities and behavior.* In Cramer SC, Ellis E (eds.). *Learning disabilities: Lifelong issues.* Paul H. Brookes Publishing Company, Inc., Baltimore, 1996. Pgs. 215-228. Wagner M, Newman L et. al. In Cramer SC, Ellis E (eds.). *Learning disabilities: Lifelong issues.* Paul H. Brookes Publishing company, Inc., Baltimore; 1996. P.xxx (introduction); McGee TP. *Reducing school behavior and preventing criminal behavior,* In Cramer SC, Ellis E (eds.). *Learning disabilities: Lifelong issues.* Paul H. Brookes Publishing company, Inc., Baltimore; 1996. Pgs. 229-233.
21. **Overall, economic costs for society of neurodevelopmental deficits amount to \$81.5 billion to \$167 billion per year.** *Environmental Health Perspectives* 109 (supplement 6):885-903 (2001).