

PROTECTING CHILDREN FROM HARMFUL CHEMICAL EXPOSURE

The Problem

'Approximately 3 million children under the age of five die every year, due to environmental hazards'
World Health Organisation 2003



Since World War II, approximately 80,000 new synthetic chemicals have been manufactured and released into the environment, with 1500 new chemicals being introduced each year. The vast majority of these have not been adequately tested for their impacts on human health or their particular impacts on children and the developing foetus. There are no tests to assess the combined impacts of the 'chemical soup' we are all exposed too. Children are exposed to hazardous chemicals through residues in their food, indoor and outdoor air pollution, and through household products and contaminated house dust.

Many of these synthetic chemicals are persistent and bioaccumulative, remaining in the human body long after exposure. The developing foetus may take in synthetic chemicals that have bioaccumulated in the mother's body and that readily cross over placental barrier. Babies today are born with many synthetic chemicals already present in their small bodies. A newborn takes in chemicals through breastmilk, or formula. Other exposures related to the parent's occupation are possible. For example, the breath of a child may carry those toxic chemicals carried on the clothing or the breath of a father who works in a paint factory or as a pesticide sprayer.

A recent World Health Organization (WHO) and the United Nations' (UN) review identified a growing number of children's health impacts caused by exposure to hazardous chemical. These include asthma, birth defects, hypospadias, behavioural disorders, learning disabilities, autism, cancer, dysfunctional immune systems, neurological impairments, and reproductive disorders. Recent research has shown that if exposures occur during critical times ('developmental windows') in the life of the foetus or young child, these can contribute to health problems much later in life. For example, early exposure to endocrine disruptors can affect an individual's immune function, his or her neurological systems, or ability to reproduce. Exposure to heavy metals in early childhood may produce life long learning disabilities.

Who Is Affected ?

The WHO has stated that approximately 3 million children under the age of five die every year, due to environmental hazards.

This is not limited to developing countries. In 2004, the EU Ministerial Conference on Children's Environmental Health identified air pollution, unsafe water conditions and lead exposure as the main culprits in the death and disabling of children in Europe. By reducing exposure to hazardous chemicals, the death of approximately 100,000 children could be avoided in Europe, alone.

All children, both in the developing and developed world are affected by exposure to hazardous chemicals. The unique vulnerability of children to hazardous chemicals is well recognised by the UN and the WHO. Children are not simply 'little adults'. Their bodies are still developing and their detoxification systems are immature. They react to hazardous chemicals differently from adults. They are also more at risk because they eat and drink more per bodyweight, they live life closer to the ground, crawling, digging in dirt and putting objects in their mouths. Being unaware of the risks, children are less able to protect themselves from exposures.

What You Can Do

Parents can do a lot to protect their children from chemical hazards simply by changing their own personal behavior and consumption patterns. Some simple steps include:

1. Adopt a precautionary approach to children's environmental health by reducing chemical use in your home, including eliminating unwanted or unnecessary cleaning products, personal products, garden pesticides, pet care and household insect control.

2. Become a conscientious purchaser when buying household goods, children's toys and clothing. This can help avoid the toxic products used in stain protection and non stick cookware. Before purchase, check all computers and household white goods to ensure they do not contain hazardous brominated flame retardants.
3. Review the family's diet to include more foods that are low on the food chain and do not include as many animal fats, as well as increasing the quantity of organic and home grown produce consumed.
4. Try to ensure your child's day care center or school is free of toxic cleaning agents and pesticides.
5. Join with other parents and community organizations to:
 - raise the awareness of decision-makers about the risks to children's health and development associated with chemical use and encourage policies that take into account children's special vulnerability to chemicals;
 - lobby for appropriate strategies to prevent children's exposure to unsafe chemicals; in particular those chemicals that are classified as carcinogens, hormone disruptors, or endocrine disruptors or that interfere with neurodevelopment;
 - help educate health professionals about children's unique vulnerability to certain chemicals and the risk of chemical exposures in different settings;
 - help educate parents, children, teachers, and communities about types and routes of exposure and how to recognize and avoid unsafe exposure, e.g., safe chemical use and distribution, proper disposal of chemicals, and appropriate alternatives; and
 - encourage the establishment of national specialist offices for Children's Environmental Health supported by Child Environment Protection Acts.

Chemical contaminants affecting children include:

- **Dioxins** - by-products of PVC, industrial bleaching, and incineration, cause cancer and toxic to hormone system
- **PCBs** - once used in industrial insulators, accumulate up food chain, cause cancer and nervous system problems
- **Organochlorine pesticides** - include the persistent organic pollutants; DDT, dieldrin, aldrin, endrin, heptachlor, chlordane and mirex, accumulate up food chain, cause cancer and reproductive effects
- **Polybrominated diphenylethers (PBDEs) a form of brominated flame retardants** - found in plastics for computer casings, white goods, car interiors, carpets, polyurethane foams in furniture and bedding, disrupt thyroid hormones, linked with cancer and reproductive damage
- **Perfluorochemicals** - perfluorooctane sulfonate (PFOS) / perfluorooctanoic acids (PFOA) found in clothing, cosmetics, non-stick coatings for cookware, also form as degradation products of small polymers ('telomers') used in fire fighting foams, and in soil, stain and grease resistant coatings on carpets, textiles, paper, and leather, linked with developmental and reproductive effects and cancer
- **Organophosphate insecticide metabolites**- breakdown products of organophosphate pesticides like chlorpyrifos and malathion, nervous system poisons
- **Phthalates** - used as plasticizers and in personal products, such as perfumes, lotions, babies teething rings and tubing used in hospitals to deliver medications, reproductive effects
- **Metals** - lead, organomercury, organotin from industrial emissions, food residues, lead in paint and leaded petrol, can cause mental retardation, learning disabilities
- **Volatile and semi-volatile organic chemicals (VOCs)** - industrial solvents in petrol, paints and household products, toxic to nervous system toxic, some like benzene cause cancer

To find out more about how toxic chemicals and other environmental hazards affect children, contact:

- Institute for Children's Environmental Health (www.iceh.org)
- Center for Health, Environment and Justice's project (www.childproofing.org)
- Center for Children's Health and the Environment, (www.childenvironment.org)
- International POPs (www.ipen.org)

