

Approximately 100,000 synthetic chemicals are being commercially produced with 1500 new chemicals introduced each year (www.rcep.uk.org). The majority of these chemicals have not been adequately tested for their effects on human adult health much less tested for their impact on children and the developing fetus. We are exposed to many of these in our homes in the form of consumer products such as TVs & computers, children's toys, furniture, carpets & other types of flooring, cosmetics, fragrances etc.

It is no longer in doubt that these chemicals in our environment are adversely affecting the health and development of children. In 2002, the World Health Organisation (WHO) and United Nations Environment Program (UNEP) reviewed the impact of the environment on children's health and estimated that 'approximately 3 million children under the age of five die every year, due to environmental hazards'.

What are the health effects in children

In the US it is estimated that nearly 17% (12 million) children under age 18 suffer one or more learning, developmental, or behavioural disabilities. It is becoming increasingly evident that low level exposures to environmental toxins are linked with less obvious symptoms of toxicity such as intellectual impairment, behavioural problems, spontaneous abortions and preterm births. Existing toxicological testing that uses endpoints such as death, body weight or organ dysfunction, may miss less obvious effects such as mood changes, impulsive behaviours and attention problems that are becoming associated with exposure to environmental toxins.

The health impact on children from exposure to hazardous chemicals in the environment is increasing and includes.

- Asthma. The 2nd most prevalent chronic condition among children.
- Birth defects
- Hypospadias (displaced urethral opening)
- Behavioural disorders
- Learning disabilities
- Autism
- Cancer
- Dysfunctional immune system
- Neurological impairments
- Reproductive disorders
- ADHD. Most commonly diagnosed childhood psychiatric disorder in the US,

prevalence maybe 17% for all school age children

- Changes in sexual maturation and fertility
- Girls in US entering puberty earlier than standard age in textbooks
- Decline in sperm counts over 2nd half of 20th century

What chemicals are we talking about?

Best Documented Chemicals

- Methyl mercury
- Tobacco
- Lead, Mercury, Nitrates, Arsenic and fluoride
- Persistent Organic Pollutants (POPs) including PCBs and DDT
- Pesticides

Other man made synthetic chemicals that are being increasingly used in a wide number of applications include

- Phthalates
- Alkylphenols
- Organotins
- Brominated Flame Retardants
- Synthetic Musks
- Volatile Organic Compounds. These account for the largest source of variability in exposures.

They are additives in consumer products that are bought and used everyday such as

- Textiles
- Carpets and curtains
- Computer and other electronic equipment
- Personal Care Products
- Baby Care Products
- Household Cleaning Products
- Toys

Where else are the chemicals found?

- Breast Milk
- Infant cord blood
- Blood and urine of adults and children
- Food
- Soil

- Water
- House dust
- Air

The chemicals identified in US and UK House Dust Studies - phthalates, alkylphenols, pesticides, polybrominated flame retardants, organotins & perfluorinated surfactants all are endocrine or hormone disruptors that can cause adverse health effects in humans and animals or their offspring.

Why are Children more vulnerable to chemical pollutants?

There are stages throughout a child's life where they are particularly vulnerable to the harmful effect of chemicals. A child's exposure to environmental chemicals is insidious and may begin during the prenatal phase (pregnancy) and continue during infancy from direct ingestion of breast milk and other dietary sources, as well as house dust and soil. Chemicals have a high affinity for fatty tissues resulting in significant exposure through food. A child's 'dose' per body weight is likely to be much higher than adults.

A child's lifecycle progresses through the following stages

1. Pregnancy (Fetal development)
2. Infancy and Early childhood,
3. School Age
4. Adolescence.

Children are not uniformly exposed to environmental risk factors. During each of these stages children will be in contact with and exposed to a vast array of chemicals. Different chemicals or chemical classes can affect different organs, hormonal systems and biochemical pathways. Those chemicals that act as endocrine disruptors will have a variable effect depending on the age and stage of hormonal development.

A mother's exposure to chemicals can affect the development of the child dependent on the stage of the pregnancy. Exposure to certain chemicals during the early months of pregnancy is associated with an increased risk of mental retardation and learning disorders. Toxins of special

concern to women of child bearing age include industrial pollutants such as mercury (primary source fish consumption) and common ingredients in Personal Care Products.

What you can do.

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

- 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.
- 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.
- Review the family's diet to include more foods that are low in the food chain and do not include as many animal fats, as well as increasing the quantity of organic and home grown produce consumed. Avoid processed foods i.e. packets, cans, frozen and fast foods.
- Try to ensure your child's day care center or school is free of toxic cleaning agents and pesticides.

More Information

National Toxics Network website www.oztoxics.org.au

Working Together to Clear The Air: How the chemical cocktail inside our homes is poisoning our children. Jo Immig. Total Environment Centre. www.tec.org.au

Chemical regulation in Australia. Australia industrial chemicals regulator, the National Chemicals Notification and Assessment Scheme (NICNAS) www.nicnas.gov.au

Chemical Legacy: Contamination of the Child. Catherine N. Dorey PhD. Greenpeace 2005. [Greenpeace Chemical Legacy Report](#)

Sick of Dust: Chemicals in Common Products – A Needless Health Risk in Our Homes. Costner P, Thorpe B, and McPherson A. March 2005. A Project of Clean Production Action. Health Care Without Harm. www.noharm.org

'Children in the New Millennium: Environmental Impact on Health. 2002. United Nations Environment Programme (UNEP), United Nations Children's Fund (UNICEF) and World Health Organisation (WHO). www.unep.org , www.unicef.org and www.who.int

Hazardous Chemicals in House Dust: Consuming Chemicals. May2003 [Greenpeace Hazardous Chemical in House Dust](#)

Bruce P. Lanphear*, Charles V. Vorhees, David C. Bellinger. Protecting Children from Environmental Toxins. Toxicity testing of pesticides and industrial chemicals is a crucial step. PLoS Medicine | www.plosmedicine.org March 2005 | Volume 2 | Issue 3 | e61

Environmental Working Group Report 'Skin Deep' [Skin Deep Report](#)

UK RCEP 24th report on chemicals in consumer products. www.rcep.uk.org

The European Commission. Enterprise Directorate-General, Chemicals. The New EU Chemicals Legislation. REACH. [EU Whitepaper - Reach](#)

Zwi KJ & Henry RL. 2005. Children in Australian Society. MJA 183(3) [MJA, Zwi & Henry, 2005](#)

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