

# New WHO Report Focuses on Children's Susceptibility to Chemicals

(*Beyond Pesticides*, August 8, 2007) For the first time, the World Health Organization (WHO) released a report in July on children's heightened vulnerability to chemical exposures at different periods of their growth and development. The organization cites over 30% of the global burden of disease in children can be attributed to environmental factors, including pesticides.

The report, *Principles for Evaluating Health Risks in Children Associated with Exposure to Chemicals*, is a new volume of the WHO's Environmental Health Criteria series. It highlights the fact that for children, the stage of their development when chemical exposure occurs may be just as important as the magnitude of the exposure. In respect to pesticides, the report cites several studies that tie pesticide exposure during key periods of development to neurobehavioral problems, Parkinson's disease, and immunotoxicity, including respiratory diseases.

"Children are not just small adults," said Dr. Terri Damstra, Ph.D., WHO's team leader for the Interregional Research Unit, in WHO's [press release](#). "Children are especially vulnerable and respond differently from adults when exposed to environmental factors, and this response may differ according to the different periods of development they are going through."

Air and water contaminants, pesticides in food, lead in soil, as well as many other environmental threats may cause or worsen disease and induce developmental problems. The report notes that children have different susceptibilities during different life stages, referred to as "critical windows for exposure" or "critical windows of development," due to their dynamic growth and developmental processes, as well as physiological, metabolic, and behavioral differences. Exposure can occur:

- . In utero through transplacental transfer of environmental agents from mother to fetus or in nursing infants via breast milk.
- . Through diet - children consume more food and beverages per kilogram of body weight than do adults, and their dietary patterns are different and often less variable during different developmental stages.
- . Through inhalation and absorption - children have a higher inhalation rate and a higher body surface area to body weight ratio, which may lead to increased exposures.
- . Through behavior - children's normal behaviors, such as crawling on the ground and putting their hands in their mouths, can result in exposures not faced by adults.
- . Other physical factors - children's metabolic pathways may differ from those of adults, and children have more years of future life and thus more time to develop chronic diseases that take decades to appear and that may be triggered by early environmental exposures.
- . Also, children are often unaware of environmental risks and generally have no voice in decision-making.

Some examples of health effects resulting from developmental exposures prenatally and at birth include miscarriage, still birth, low birth weight and birth defects; in young children, infant

or delayed puberty. Evidence also suggests that an increased risk of certain diseases in adults such as cancer, chronic respiratory disease and heart disease can result in part from exposures to certain environmental chemicals during childhood.

Traditional risk assessment approaches and environmental health policies have focused mainly on adults and adult exposure scenarios, utilizing data from adult humans or adult animals. The report highlights there is a need to expand risk assessment paradigms to evaluate exposures relevant to children from preconception to adolescence, acknowledging each developmental stage.

The study, while pointing out risk assessment is flawed and encouraging new and improved research, also states “A lack of full proof for causal associations should not prevent efforts to reduce exposures or implement intervention and prevention strategies.”

Real world exposure is indeed complicated and makes it difficult to conclusively draw causal associations, especially taking into account synergistic effects, etc., leaving a clear and vital need to exercise the precautionary principle. The easiest and safest solution regardless of risk assessment methods is to avoid chemical use and exposure by using **alternative, non- and least-toxic management methods** for species that can cause economic and health problems, being more tolerant of species that are solely a nuisance or aesthetically displeasing, and using **organic** products, especially foods.

Due to the large amount of time children spend in schools, Beyond Pesticides’ *Healthy Schools Project* aims to minimize and eliminate the risks posed by pesticides through the adoption of school pest management policies and programs at the local, state, and federal level, thereby creating a healthier learning environment. Central to this effort are activities aimed at public education on pesticide hazards and efficacy of alternatives, and the continued development of model communities that serve as examples.

**TAKE ACTION:** Find out what laws your **state** has enacted to protect children from pesticide exposure. Learn about **model policies** your state and community can work toward adopting.

This entry was posted on Wednesday, August 8th, 2007 at 8:55 am and is filed under [Disease/Health Effects](#), [Children/Schools](#), [International](#). You can follow any responses to this entry through the [RSS 2.0](#) feed. You can [leave a response](#), or [trackback](#) from your own site.

-----

## One Response to “New WHO Report Focuses on Children’s Susceptibility to Chemicals”

. 1

. **[Ahmad Mahdavi](#)** Says:

. Pesticide residues More threat to children: According to my calculation many years ago during my Ms research working on pesticide residue analysis in apples a particular amount of insecticide residue in apples that may be tolerated by an adult is harmful for a child and this depends on the body weight. This fact could be generalized for all food products and particularly for vegetables and fruits. These calculations were based on Acceptable Daily Intake and Maximum Residue Limits determined by food codex Committee In Rome. The body tolerance of a 20 Kg child is quite different than a 80 Kg adult. The other reason for lower tolerance

threshold for children as compared to adults is using less diverse food by children. According to my findings during PhD research in Canada at the university of Guelph and also finding by others consuming more diverse food and particularly more diverse vegetables and fruits inducts a higher level more diverse metabolizing detoxifying enzymes in body. These metabolizing enzymes are developed more and more in the liver as age increases. Best regards\_Ahmad Mahdavi,\_Insect and environmental toxicologist, Guelph Ontario Canada.

August 19th, 2007 at 1:12 pm

/\*\*\*/\*\*\*/

<http://www.who.int/mediacentre/news/notes/2007/np27/en/index.html>

## WHO report tackles children's environmental health

27 JULY 2007 | GENEVA -- The World Health Organization (WHO) is today releasing the first ever report highlighting children's special susceptibility to harmful chemical exposures at different periods of their growth. This new volume of the Environmental Health Criteria series, *Principles for Evaluating Health Risks in Children Associated with Exposure to Chemicals*, is the **most comprehensive work yet undertaken on the scientific principles to be considered in assessing health risks in children**. It highlights the fact **that in children, the stage in their development when exposure occurs may be just as important as the magnitude of the exposure**.

---

### Related links

∴ [Principles for evaluating health risks in children associated with exposure to chemicals \[pdf 3.2Mb\]](#) ∴ [Health topic: environmental health](#) ∴ [International Programme on Chemical Safety](#)

---

The scientific principles proposed in the document for evaluating environmental health risks in children will help the health sector, researchers and policy makers to protect children of all ages through improved risk assessments, appropriate interventions and focused research to become healthy adults.

"Children are not just small adults" said Dr Terri Damstra, WHO's team leader for the Interregional Research Unit. "Children are especially vulnerable and respond differently from adults when exposed to environmental factors, and this response may differ according to the different periods of development they are going through. For example, **their lungs are not fully developed at birth, or even at the age of eight, and lung maturation may be altered by air pollutants that induce acute respiratory effects in childhood and may be the origin of chronic respiratory disease later in life.**"

Air and water contaminants, pesticides in food, lead in soil, as well many other environmental threats which alter the delicate organism of a growing child may cause or worsen disease and induce developmental problems. Over 30% of the global burden of disease in children can be attributed to environmental factors.

Children have different susceptibilities during different life stages, due to their dynamic growth and developmental processes. Some examples of health effects resulting from developmental exposures prenatally and at birth include miscarriage, still birth, low birth weight and birth defects; in young children, infant mortality, asthma, neurobehavioural and immune impairment; and in adolescents, precocious or delayed puberty. **Emerging evidence suggests that an increased risk of certain diseases in adults such as cancer and heart disease can result in part from exposures to certain environmental chemicals during childhood.**

The vulnerability of children is increased in degraded and poor environments. Neglected and malnourished children suffer the most. These children often live in unhealthy housing, lack clean water and sanitation services, and have limited access to health care and education. For example, lead is known to be more toxic to children whose diets are deficient in calories, iron and calcium. One in five children in the poorest parts of the world will not live longer than their fifth birthday, mainly because of environment-related diseases.

This central focus of this new study is on the child including developing embryo, fetus, infant and adolescent, and on the need to have a good understanding of the interactions between exposure, biological susceptibility, and socioeconomic and nutritional factors at each stage of a child's development.

The work was undertaken by an Advisory group of 24 scientific experts, representing 18 countries, and convened to provide insight, expertise, and guidance, and to ensure scientific accuracy and objectivity. Once the text was finalized, it was then sent to over 100 contact points throughout the world for review and comment, and also made available on WHO's International Programme of Chemical Safety (IPCS) web site for external review and comment for a period of 2 months.

**For further information contact:**

Ms. Nada Osseiran\_Communications and Advocacy officer\_Public Health and the Environment\_WHO, Geneva\_Tel.: +41 22 791 4475\_Fax: +41 22 791 4127\_E-mail: [osseirann@who.int](mailto:osseirann@who.int)

Gregory Hartl\_Communications Advisor\_Health and Sustainable Development\_WHO, Geneva\_Mobile: +41 79 20 36 715\_E-mail: [hartlg@who.int](mailto:hartlg@who.int)

(Red/bold in above article are mine)