

The Health of Canada's Children: A CICH Profile

CHILDREN'S ENVIRONMENTAL HEALTH

The *Health of Canada's Children: A CICH Profile, 3rd Edition*, is based on a comprehensive review of national and provincial data sources and extensive consultations with experts from many fields, including many representatives of Aboriginal peoples. The *CICH Profile* contains ten chapters and 398 charts pertaining to the health and well-being of children and youth. It provides a relevant and clear picture of where our children are today, and gives some direction for where we might assist them as they explore their futures.

Introduction

- Although exposures to some environmental hazards have decreased because of improved health and environmental standards – such as the elimination of lead from gasoline – children continue to be exposed to toxic chemicals in air, water and food. Current standards were developed to protect adults, not children, and fail to reflect new information on children's environmental health.
- There is an urgent need for more and better environmental health indicators and measures. Traditional health indicators, such as life expectancy at birth, do not take into account the changing physical environment of the last fifty years, or recognize its potential implications for human health and longevity. Without this information, it is difficult to assess the extent to which environmental factors are impacting the health of Canada's children and how best to address these through necessary policy changes.
- To protect the health of Canada's children today, the Precautionary Principle needs to be applied, leading to action on developing environmental targets through enforceable legislation.

Children are Different

- Children have heightened vulnerability to a variety of exposures as a consequence of their developmental, behavioural and physiological characteristics.
- Children receive greater exposures per unit of body weight than adults because – for their size – they eat more food, drink more liquids, and breathe more air than adults. Depending on their age, children's ability to metabolize, detoxify and excrete many toxicants is different from that of adults.

- Exposures at critical periods of development can result in irreversible damage to the growing nervous system, affect emerging behaviour patterns, cause immune dysfunction and have serious reproductive effects.
- Children's behaviour often places them at higher risk than adults to certain environmental hazards, because of their exploratory behaviour, frequent hand-to-mouth activity, and proximity to the ground - all of which result in greater contact with sources of contamination.

Vulnerable Children

- Some populations of children are clearly at increased risk from high levels of contaminants in the environments where they grow, raising issues of environmental justice.
- Children living in poverty may be at disproportionate risk for exposure to environmental hazards. Poor nutrition can worsen their risks from exposures to contaminants like lead and pesticides. Those living in low income apartments are more likely to be exposed to pesticides applied in the home (e.g., to control cockroach infestations).
- Low income neighbourhoods are also more often in closest proximity to sources of environmental contaminants such as landfills, urban industry and roadways.
- Some aboriginal communities with a closer relationship to the land and traditional subsistence practices may experience exposure to contaminants in the environment. Some First Nations communities in Canada consume wild game and fish from contaminated lakes and rivers. Children may be exposed prenatally and through their diet.

Respiratory Illness is Increasing

- A variety of contaminants, in both indoor and outdoor air, are associated with respiratory problems in children.
- Childhood asthma is the most common chronic childhood illness in Canada and the United States. Statistics Canada reported a four-fold increase in childhood asthma over a 20- year period, with hospital admission data reflecting this increase. While there is debate over the role of over-diagnosis in this increase, there are a number of international studies which suggest that changes in the environment may be contributing to the increase.

Endocrine Disruptors

- A number of synthetic and naturally occurring organic chemicals, such as phytoestrogens, dioxins, PCBs, phthalate esters, and DDT, are referred to as endocrine disruptors.
- Human health effects believed to be linked to early life exposures to endocrine-disrupting contaminants include difficulties in fertilizing and conceiving, birth defects of the reproductive organs, lower sperm counts, cryptorchidism and hypospadias, testicular cancer in young men, breast cancer, and premature puberty in girls.
- Endocrine disruptors interfere primarily with three hormonal systems - estrogen, androgen, and thyroid - which are critical in the development and function of the brain, immune system, and the reproductive system. Exposure to environmental contaminants has adversely affected reproduction in several wildlife species, fuelling concern that a number of adverse trends in human reproductive health may also be associated to such exposure.
- The fetus and young child may be at a particularly high risk from even very low levels of endocrine-disrupting chemicals because of the importance of the endocrine system in development. Research has indicated that early exposure to these chemicals can interfere with the developing nervous system.
- While there is strong evidence of reproductive health effects associated with endocrine disruptors from a number of epidemiological studies, most of the direct evidence has come primarily from wildlife studies. While data have led to a biologically plausible model of effects on human reproductive development even at low exposure levels, the significance of the findings for humans has yet to be established.

Environmental Neurotoxins

- Neurotoxic chemicals belong principally to three groups: heavy metals and metal compounds, solvents and other simple organic compounds, and pesticides, especially the organophosphates and carbamates.
- Developmental and behavioural neurotoxic effects are of particular concern as more is learned about the potential for subtle degrees of impairment at even low levels of exposure. The various phases in early brain development create "windows of susceptibility" to hazardous agents that might otherwise be innocuous to the mature brain.
- Prenatal and early childhood damage to the brain's "wiring" process is thought to underlie many developmental disabilities. The extent of developmental disabilities is not accurately known in Canada, but it is likely to parallel the statistics in the US where, for example, 12% of school children received special education services for one or more developmental disability, and about 2% of them had a serious developmental disability, indicating a significant public health problem.

For information about the sources of the data, please refer to *The Health of Canada's Children: A CICH Profile, 3rd Edition*. To order your copy of the *CICH Profile*, please contact:



Canadian Institute of Child Health
384 Bank Street, Suite 300
Ottawa, Ontario, K2P 1Y4
Tel: (613) 230-8838 Fax: (613) 230-6654
E-mail: cich@cich.ca Internet: www.cich.ca