

# **TORONTO** STAFF REPORT

---

September 9, 2005

To: Board of Health

From: Dr. David McKeown, Medical Officer of Health

Subject: Environmental Threats to Children: Understanding the Risks, Enabling Prevention

Purpose:

To report on critical environmental threats to the health of Toronto children and to identify strategic actions to address these issues.

Financial Implications and Impact Statement:

There are no financial implications for Toronto Public Health arising from this report.

Recommendations:

It is recommended that the Board of Health:

- (1) request the federal Minister of Health and the Premier of Ontario to take a leadership role in protecting children from environmental threats to health by:
  - (a) at the federal level, establishing a comprehensive Children's Environmental Health Program to oversee federal resources, research and surveillance initiatives, and to propose new policies and regulations;
  - (b) at the provincial level, creating a new Children's Environmental Health Initiative to strengthen provincial legislation and regulations, establish comprehensive surveillance programs to better understand exposure trends and health risks, and expand public education and outreach;
- (2) request the federal Minister of Health to improve research and surveillance on environmental threats to children's health in Canada by:

- (a) funding a Canadian arm of the U.S. National Longitudinal Children's Study that will assess exposures and health of a cohort of children from birth through to the end of adolescence;
  - (b) requesting the Canadian Institutes of Health Research (CIHR) to support independent research on environmental threats to children's health in Canada by:
    - (i) consideration of a separate research institute or integrating mechanisms devoted to children's environmental health; and
    - (ii) placing a high priority on funding research into environmental impacts on brain and nervous system development, including longitudinal studies;
  - (c) in collaboration with appropriate federal government departments (such as Statistics Canada, Health Canada and Environment Canada), ensuring that:
    - (i) the biological sampling component of the Canada Health Measures Survey is implemented;
    - (ii) biological samples are tested for the full range of contaminants proposed by Statistics Canada; and
    - (iii) sampling is further expanded into an ongoing, comprehensive biomonitoring program mirroring that conducted by the US Centers of Disease Control and Prevention;
  - (d) working with the Ontario Minister of Health and Long-Term Care to ensure that targeted testing for blood lead among children ages 0 to 10 is implemented; and
  - (e) requesting the Public Health Agency of Canada to expand the Canadian Integrated Public Health Surveillance Program (CIPHS) to include data collection and analysis of trends in neurodevelopmental and neurobehavioural outcomes in Canadian children;
- (3) request that the Ontario Minister of Children and Youth Services, through the Best Start Plan, explore the possibility that the information gathered from the enhanced developmental assessments of every 18-month old child in Ontario be centrally collected and analysed for trends in developmental abilities as an additional way to improve surveillance of children's exposures and health impacts;
- (4) request the federal Ministers of Health and Environment to implement reforms to federal legislation by:
- (a) ensuring final proclamation of the Pest Control Products Act (PCPA) by the end of 2005; and
  - (b) ensuring that the forthcoming review of the Canadian Environmental Protection Act incorporates legislative amendments that provide a similar level of

precautionary and mandatory child-protective measures as found in the revised PCPA;

- (5) request the federal Minister of Health to implement further reform to federal legislation by:
  - (a) revising the Hazardous Products Act and associated regulations to incorporate a similar level of precautionary and mandatory child-protective measures as found in the revised Pest Control Products Act (PCPA) such that:
    - (i) children's exposure to toxic substances used in consumer products is prevented and;
    - (ii) requirements for labeling and disclosure of ingredients in consumer products are improved; and
  - (b) requiring that testing for developmental neurotoxicity be included within the mandatory core testing requirements for evaluations of all chemical substances, including pesticides;
- (6) request the federal Ministers of Health and Environment to implement reforms to Canada's international commitments by:
  - (a) supporting the addition of newly identified persistent toxic substances including octa and penta forms of the polybrominated diphenyl ethers (PBDEs), perfluorooctane sulfonate (PFOS) and its salt, lindane, hexachlorobutadiene, polychlorinated naphthalenes and short-chained chlorinated paraffins, to the list of substances targeted for global phase out and ban under the Stockholm Convention on Persistent Organic Pollutants;
  - (b) strengthening Canada's National Implementation Plan under the Stockholm Convention through a commitment to identify, on a separate list, all substances on the Domestic Substances List that meet the Convention criteria of persistence or bioaccumulation and inherent toxicity, and nominate these for consideration by the POPs Review Committee established under the Stockholm Convention; and
  - (c) ensuring that such substances are made subject to control under CEPA;
- (7) request the Ontario Minister of Health and Long-Term Care to improve provincial and local public health programs to better address environmental threats to preconception, prenatal and children's health by:
  - (a) revising the Mandatory Health Programs and Services Guidelines to include Environmental Health as a separate, expanded program area that replaces the Health Hazard Investigation Program; and

- (b) ensuring that there is enhancement of other Mandatory Health Programs, such as Child Health and Reproductive Health, to include strategies for protecting preconception, prenatal and children's health from environmental threats;
- (8) request the Medical Officer of Health to continue to improve public health programs and to minimize environmental threats to children in Toronto by:
- (a) continuing to pursue opportunities within existing Toronto Public Health programs for integrating environmental awareness and supportive, preventive practices for parents-to-be, pregnant and nursing women, infants and children with particular emphasis on those with increased risk;
  - (b) continuing to work with the Canadian Partnership for Children's Health and Environment to create, as needed, new educational resources directed to parents, caregivers, and practitioners in different settings such as child care facilities, and recreational facilities, that identify and provide preventive advice on environmental threats to children's health;
  - (c) continuing to identify opportunities within the City of Toronto to disseminate educational resources, such as through Parks, Forestry and Recreation, Toronto Public Libraries and Children's Services; and
  - (d) continuing to identify opportunities to disseminate educational resources through key organizations involved in promoting the health of children including school-based parent groups, environmental and community groups and health-care practitioners and organizations, particularly Community Health Centres;
- (9) request the Toronto District School Board, Toronto Catholic District School Board, Conseil scolaire de district catholiques, Conseil scolaire de district du Centre-Sud-Ouest and, where appropriate, independent/private schools in the City, to continue to address environmental threats to children's health in Toronto schools by:
- (a) committing to a process of detailed evaluation and prioritization of policies, procedures and pilot projects that address indoor and outdoor environmental exposure risks in the school environment;
  - (b) choosing strategic investments, when applying the new provincial monies under the Good Places to Learn Initiative, to the maintenance, renovation or reconstruction of Toronto's schools to address indoor air quality problems and to achieve important benefits such as energy efficiency gains and provision of shade in school grounds; and
  - (c) continuing to work in partnership with Toronto Public Health to increase awareness about measures to protect children from environmental threats in the school environment;

- (10) forward this report for information and appropriate action to the Federal Minister of State for Public Health; Ontario Public Health Association, Toronto District School Board (TDSB), Toronto Catholic District School Board (TCDSB), Conseil scolaire de district catholiques and Conseil scolaire de district du Centre-Sud-Ouest, the Ontario Healthy Schools Coalition; the Association of Local Public Health Agencies, and all Ontario Public Health Units; and
- (11) the appropriate City Officials be authorized and directed to take the necessary action to give effect thereto.

Background:

Toronto Public Health (TPH) has a longstanding interest in how the City's biophysical and built environment affects the health of its children. The determinants of child health are complex and include factors such as safe and nutritious food, adequate shelter, education, financial resources, peace, equity, social support and social justice. A sustainable ecosystem in which children are protected from environmental threats stands among these factors as a compelling influence on children's health and indeed, lifelong health. As a result, Toronto Public Health embarked on studies to understand the gaps in information and knowledge, and to chart strategic directions and actions for better protecting the environmental health of children in Toronto.

The attached summary report (see Attachment 1) is derived from the larger technical study entitled, "Environmental Threats to Children: Understanding Risks, Enabling Prevention" available on the Toronto Public Health website ([www.toronto.ca/health](http://www.toronto.ca/health)). The summary report briefly summarizes the large and growing field of research on children's health and the environment. Three major topics are covered: the special vulnerability of children; health outcomes of concern; and exposure sources and settings. In addition, the report describes the findings of a survey implemented in 2002 to assess the knowledge, attitudes and practices of Toronto parents regarding various environmental hazards. The report also covers the relevant policy context, discussing national, provincial and local initiatives on children's health and the environment. Lastly, the report lays out the rationale for the specific recommendations for future action and strategic directions in policy, research and education to reduce and prevent children's exposure to harmful substances in the environment in Toronto.

The technical report was prepared in consultation with project advisors representing the provincial Ministries of Environment and Health and Long-Term Care, the Motherisk program at the Hospital for Sick Children, the Environmental Health Clinic of Sunnybrook & Women's College Hospitals, South Riverdale Community Health Centre, Access Alliance Community Health Centre, Toronto Children's Services and the Toronto District School Board. A draft of the technical report was peer reviewed by Dr. Donald T. Wigle, an academic expert from the R. Samuel McLaughlin Centre for Population Health Risk Assessment, Institute of Population Health, University of Ottawa.

## Comments:

### Overview of Environmental Threats to Children's Health:

Toronto's children, like other children in Canada, are at risk from environmental threats. There is scientific consensus that the developing fetus and infants up to age three years can experience greater exposure and are more vulnerable than adults to substances in the environment. These early life stages represent critical periods where reducing exposure is likely to prevent permanent, lifelong or latent health impacts.

Children's lungs and brains are particularly susceptible to the longterm impact of environmental exposures because of the lengthy period of development they undergo. Increased risks for a variety of health outcomes such as asthma and other respiratory conditions, neurodevelopmental delays and impairment, cancer, immune system effects and reproductive and developmental effects have been associated with exposure to various environmental contaminants. Data on many of these diseases and conditions among children in Toronto, and indeed in Canada, are notably limited.

The report covers two broad categories of environmentally linked child health outcomes: 1) those observable in relatively large numbers of children in Toronto including respiratory conditions, particularly asthma and conditions related to cognitive and neurobehavioural functioning; and 2) rarer, and quite severe outcomes such as childhood cancers, reproductive and developmental effects.

Among the key types of contaminants discussed are heavy metals such as lead and mercury, indoor and outdoor air pollutants, some pesticides, organic solvents, and persistent organic pollutants (POPs) such as dioxins, polychlorinated biphenyls (PCBs) and polybrominated diphenyl ethers (PBDEs). The report discusses children's exposures according to sources and settings, focussing on those where the scientific knowledge is most advanced. Emphasis is placed on the sources or settings where the largest exposures occur, and they are grouped broadly into outdoor and indoor exposures. The report concludes that an increasing number of indoor exposures originate directly from the routine use of consumer products containing substances of emerging or increasing concern.

It is well established that many biological, social and physical factors are implicated in causing these same health outcomes of concern. Many of these same factors figure into a description of environmental threats to children's health in Toronto. For example, poverty, a known risk factor for poor health overall, heightens both susceptibility and exposure to environmental contaminants. The disproportionately higher rates of child poverty in Toronto compared to neighbouring regions reinforces the need to continue efforts to address child poverty in the City.

### Toronto Parents Knowledge, Awareness and Practices:

Toronto parents who participated in the survey have high awareness of the environmental threats to children that are publicized by the media or are already well covered in TPH health promotion work (e.g. air pollution, water contaminants, pesticides). Parents feel these threats should be

acted on by the City through policies, by-laws or other measures that protect environmental quality, as well as through education activities. Many parents or caregivers report that they are already taking practical measures that may reduce environmental exposures in and around the home, such as shoe removal, frequent floor cleaning and hand-washing, attention to sources of drinking water and the use of sunscreen. They widely report precautionary household practices that help minimize children's exposure to potentially harmful substances. The survey also identified the need to increase the proportion of parents who undertake these protective and precautionary measures.

#### Recommendations and Strategic Actions:

Based on a review of key policies and initiatives in Canada, the report concludes that some progress has occurred in terms of revised federal and provincial regulatory approaches to take children's health into account. However, much remains to be done at the federal, provincial and local levels. The recommendations in this report include specific measures that will enhance protection of children's health from environmental threats in Canada and that will ultimately assist the City of Toronto in reducing and preventing exposure to harmful environmental substances among Toronto's children.

The strategic actions recommended address the gaps that are identified from the review of literature in the areas of research, policy and education. Priorities for action are guided by the need to address exposure risks that are preventable; have the potential to affect large numbers of children, including children whose health status is compromised by other circumstances such as poverty; and that are associated with serious or irreversible health effects, or with long-term consequences. To that end, this report makes recommendations that are organized into six strategic action areas as outlined below. Given that the authority, responsibility and mandate for the key issues relevant to minimizing environmental threats to children's health in Toronto do not fall solely under one government jurisdiction, recommendations are directed at federal, provincial and local authorities as indicated.

#### (1) Improving Integration and Coordination of Activities in Canada

There is an urgent need for strong political leadership and clear accountability and resources for children's environmental health federally and provincially. There must be greater integration of activities across departments where policies and programs can minimize exposure to environmental hazards.

Specifically, TPH is calling for the establishment of a Children's Environmental Health Program at the federal level, modeled after the US EPA's Office of Child Health Protection. This program should oversee and coordinate federal resources and initiatives (such as a national agenda for children's environmental health). It should propose new policies and regulations and support research that improves understanding of environmental impacts on children's health (such as by establishing national Centres of Excellence). It should also support local and community action to protect children from environmental threats. A federal Children's Environmental Health Program would serve an important outreach function by acting as a central hub for transferring knowledge that facilitates broader protective action for children.

In addition, it is recommended that the Premier of Ontario create a new Children's Environmental Health Initiative to strengthen provincial legislation and regulations, establish comprehensive surveillance programs to better understand exposure trends and health risks, and expand public education and outreach in Ontario. Particular attention needs to be directed at coordinating the activities of the Ministries of Environment, Health and Long-Term Care, and Children and Youth Services into a comprehensive cross-cutting provincial program.

## (2) Improving Research on Environmental Threats to Children's Health

There is an overall need to enhance research into environmental threats to children's health in Canada. Specific recommendations for mechanisms to support and enhance such research are identified in this report.

A Canadian arm of the National Children's Study, a long-term cohort study already underway in the United States (U.S.), would gather valuable data and benefit from the collaboration with U.S. researchers. This effort to study and understand the long-term impacts of the environment on the health of a representative cohort of Canadian children is a unique opportunity and should be supported by the Federal government.

The federal government must also, through agencies such as the Canadian Institutes of Health Research support independent, investigator-driven research that expands knowledge of children's environmental exposures and associated health outcomes in Canada. This might best be achieved by establishment of a separate Research Institute or other integrating mechanisms devoted to impacts of the physical environment on children's health. Particularly lacking is research to better understand the types of exposures affecting brain and nervous system development and the long-term impact of such exposures. In addition, there is a need for research focussed on how other factors, such as poverty, interact to heighten susceptibility and exposure to environmental contaminants.

## (3) Improving Surveillance of Children's Exposures and Health Impacts

There is an urgent need for information on exposures of Canadian children. Key is the recommendation that the Federal government support a national biomonitoring program, similar to that conducted regularly in the U.S. by the Centers for Disease Control and Prevention (U.S. CDC). These data would provide a baseline of Canadian information to better understand the nature of children's exposure, help identify subpopulations with elevated exposures and, if conducted over the long-term, provide the ability to track trends in exposure. Funding for the upcoming Canada Health Measures Survey, a one-time survey, currently allows for analysis of only four heavy metals (lead, mercury, cadmium and manganese). Statistics Canada researchers report that the survey is to include testing of blood samples from children but only those 6 years of age or older. There are no current data on exposure of young Canadian children (younger than age 6) to known developmental neurotoxins such as lead or mercury. Therefore this report also recommends targeted blood lead testing among children ages 0 to 10. Because the potential for prenatal exposure to mercury is a particular concern, the report further recommends that the

proportion of Canadian women of childbearing age with unacceptable exposure to mercury be assessed using results from the Canada Health Measures Survey.

Research and surveillance data are also required on the prevalence and trends in environmentally-linked health outcomes, particularly, neurodevelopmental and neurobehavioural outcomes among children in Canada. At the national level, the Canadian Integrated Public Health Surveillance Program (CIPHS) is an existing program that could fulfill this function. The enhanced developmental assessments of each 18-month-old child in Ontario, proposed through the Best Start Plan, represent another potential mechanism for surveillance of developmental abilities among young children in this province.

#### (4) Reform to Legislation, International Commitments and Local Policy

The policy recommendations in this report are founded on a core need to better account for children's vulnerabilities. Risks to prenatal and child health must be addressed proactively rather than reactively. There is also a particular need for a precautionary approach in specific legislation at the Federal level. The revised Pest Control Products Act (PCPA), which received royal assent in 2002, serves as a positive example, but government proclamation of the new Pest Control Products Act needs to be expedited. Specific legislation identified as needing greater precaution and child-protective measures include the Hazardous Products Act (HPA) and the Canadian Environmental Protection Act (CEPA). A revised Hazardous Products Act should ensure that children's exposure to toxic substances in consumer products is prevented instead of the current approach of responding to contamination or exposure problems, or other harmful circumstances, after they become apparent.

Other policy recommendations encompass improvements to testing requirements, labeling, public disclosure and support for proposed additions to the Stockholm Convention, the international effort to phase out and ultimately ban priority persistent organic pollutants (POPs).

#### (5) Improving Public Health Programs and Education

Public Health programming can also be enhanced to better address environmental threats to children's health. In a 2004 resolution "Building Environmental Health Capacity Within Public Health", the Ontario Public Health Association proposed that the Ontario Mandatory Health Programs and Services Guidelines be revised to include Environmental Health as a separate program area that includes and broadens the current Health Hazard Investigation Program. As well, existing program areas such as Child Health and Reproductive Health should be revised to specifically address environmental threats to preconception, prenatal and/or children's health. TPH requested these changes in 2003.

Specific topics covered under many of these program areas are determined at the local level. It is recommended that Toronto Public Health continue to identify opportunities to integrate preventive practices and increase awareness of environmental threats to preconception, prenatal and children's health in its program work with parents-to-be, pregnant and nursing women, infants, children and families, with particular focus on those at increased risk such as low-income families.

To address the need for education, recommendations are aimed at ways that Toronto Public Health can better leverage its resources by working in partnership. Internal and external partnerships are highly effective ways to develop and to disseminate educational materials, extending the reach and capacity of all partners. There is also a need to expand education resources specifically designed for important settings, such as child care facilities, and for key audiences including health care and child care professionals.

(6) Addressing Environmental Threats to Children's Health in Toronto Schools

School boards in Toronto, have made modest progress in addressing environmental threats to children. They could make much greater gains by committing to a process of detailed evaluation and prioritization of policies, procedures and specific actions that seek to improve environmental conditions in schools. To address indoor air quality, it is recommended that school boards make strategic investments in the maintenance, renovation or reconstruction of Toronto schools taking into account results of their evaluations and prioritization exercises. School boards can also continue to work in partnership, including with TPH, to help effectively address environmental threats to children as they arise.

Conclusions:

Protecting children from environmental threats is an important public health priority in Toronto. The life stages for which there is the greatest imperative to prevent harmful environmental exposures are the prenatal period, infancy and early childhood. The windows of vulnerability for the developing lungs, and particularly the developing brain and nervous system, require enhanced efforts to better protect children from harmful exposures in Toronto to avoid long-term health consequences. The range of potentially harmful exposures is great. The impact on child health from some contaminants is well characterized, but for many more, there is emerging but still inadequate evidence to prove cause and effect relationships. Too often knowledge of harm is gained only after children are exposed and impacts can be measured and confirmed. A precautionary approach to reduce the risks to prenatal and child health before they occur is recommended as a core guiding principle.

In recent years, some progress has been made in Canada toward improved understanding of the environmental threats to child health through research, policy and education. However, there is still much room for improvement. This report contains specific recommendations to federal, provincial and local authorities and school boards that address the gaps identified in research, policy and education.

Contact:

Dr. Monica Campbell  
Manager, Environmental Protection Office  
Planning & Policy  
Toronto Public Health  
Tel: 416-338-8091  
Fax: 416-392-7418  
Email: [mcampbe2@toronto.ca](mailto:mcampbe2@toronto.ca)

Dr. Fran Scott  
Director, Planning & Policy and  
Associate Medical Officer of Health  
Toronto Public Health  
Tel: 416-392-7463  
Fax: 416-392-0712  
Email: [fscott@toronto.ca](mailto:fscott@toronto.ca)

Dr. Loren Vanderlinden  
Supervisor, Environmental Health Assessment and Policy  
Toronto Public Health  
Tel: 416-338-8094  
Fax: 416-392-7418  
Email: [lvander@toronto.ca](mailto:lvander@toronto.ca)

Dr. David McKeown  
Medical Officer of Health

List of Attachments:

Attachment 1: Environmental Threats to Children: Understanding the Risks, Enabling Prevention Summary Report – September 6, 2005