



PLAYING IT SAFE:

Service Provider Strategies to Reduce Environmental Risks to Preconception, Prenatal and Child Health

A collaborative project of:
**Best Start: Ontario's Maternal, Newborn and
Early Child Development Resource Centre**
and the
Canadian Partnership for Children's Health and Environment

best start
meilleur départ)
by/par health *nexus* santé

creating a
safer, healthier environment for kids.ca

canadian partnership for
children's
health & environment

2013



Acknowledgements

The Best Start Resource Centre would like to thank **Kathleen Cooper**, Senior Researcher at the Canadian Environmental Law Association for her work in researching and writing this publication as well as the many other individuals who contributed their time and expertise. In particular, production of this *Playing it Safe* manual was guided by a team of advisors, many of whom also served as key informants. This manual also benefited from the experts who contributed to the development of the companion document, *Child Health and the Environment – A Primer* and the more comprehensive report: *Environmental Threats to Children: Understanding the Risks, Enabling Prevention*, published by Toronto Public Health. **Wendy Burgoyne** was the project lead from the Best Start Resource Centre for the development of the *Playing It Safe* manual.

The **advisory group** included:

Nancy Bradshaw, Environmental Health Clinic,
The New Women's College Hospital, Toronto
Susanne Burkhardt, Environmental Working
Group, Ontario Public Health Association
Dianne Chopping, Toronto Public Health
Paul Filteau, Ontario Healthy Communities
Coalition, Thunder Bay
Laurie Fraser, Sudbury & District Health Unit
Ann Phillips, South Riverdale Community Health
Centre, Toronto
Tonya Surman, Canadian Partnership for
Children's Health and Environment
Kim Tytler, Canadian Child Care Federation
Loren Vanderlinden, Toronto Public Health

Key informants generously shared their wealth of experience. Examples of their work and ideas appear throughout this manual. Many thanks to:

Nancy Bradshaw, Environmental Health Clinic,
The New Women's College Hospital, Toronto
Susanne Burkhardt, Environmental Working
Group, Ontario Public Health Association
Dianne Chopping, Toronto Public Health

Heather Ferries, Ontario Regional Poison
Information Centre, Sick Children's Hospital,
Toronto
Paul Filteau, Ontario Healthy Communities
Coalition, Thunder Bay
Karon Foster, Invest in Kids
Andrea Gingras, Child Care Providers Resource
Network of Ottawa-Carleton
Hinda Goldberg, North Lanark County
Community Health Centre
Dorothy Goldin Rosenberg, Women's Healthy
Environments Network
Robin Kealey, Canadian Child Care Federation
Cheryl Nash, eco-Perth
Tim Paquette, My Daddy Matters Because...
Ann Phillips, South Riverdale Community Health
Centre, Toronto
Anne Marie Ramsay, Region of Waterloo Public
Health
Carrie Regenstreif, Junction Creek Stewardship
Committee, Sudbury
Paul Steeves, Success By 6 Ottawa
Tonya Surman, Canadian Partnership for
Children's Health and Environment

Kara Symbolic, Ontario Healthy Communities Coalition, Eastern Region
Loren Vanderlinden, Toronto Public Health
Sue Weststrate, Best Start Resource Centre

Many thanks to Kim Tytler for her assistance with editing, and to Krista Friesen at Pollution Probe for design and layout. Cover photos were kindly provided by Mark Surman.

Grateful thanks are extended as well to the following individuals for additional **critical review**:

- Louise Aubin, Marie Traynor, Connie Uetrecht and Franca Ursitti with the Environmental Working Group, Ontario Public Health Association
- Monica Campbell, Jill McDowell, Rita Paul-Sengupta, Carol Mee and Dr. Fran Scott of Toronto Public Health

This **Best Start** manual was developed in collaboration with the **Canadian Partnership for Children's Health and Environment (CPCHE)**. CPCHE is a multi-sectoral collaboration of organizations that are working to protect children's health from environmental exposures and toxic chemicals by moving children's environmental health issues into the minds of decision-makers, service provider organizations, individual practitioners and the public. For more information, see www.healthyenvironmentforkids.ca.



Best Start: Ontario's Maternal, Newborn and Early Child Development Resource Centre

c/o Nexus Santé

180 Dundas Street West, Suite 301

Toronto, ON M5G 1Z8

Phone: 416-408-2249 or 1-800-397-9567, Fax: 416-408-2122

email: beststart@beststart.org, www.beststart.org

best start
meilleur départ

by/par health **nexus** santé

This document was developed primarily through funds provided by the Government of Ontario. Funding from the Public Health Agency of Canada supported some aspects of project development. The information herein reflects the views of the author and is not officially endorsed by the Government of Ontario or the Public Health Agency of Canada.

Table of Contents

Chapter One: Introduction	1	Chapter Four: Planning Steps	32
An Important Issue	1	Summary of Key Points	33
Who is This For?	2	Getting Started	34
Building Your Skills and Comfort Level	2	Sources of Information to Guide Planning	34
Methods	4	Working in Partnership	34
		Audience Analysis	37
Chapter Two: Overview of Environmental Risks to Preconception, Prenatal and Child Health	5	Selecting Objectives	41
Summary of Key Points	6	Developing Your Content	41
Children are at Risk – Overview	7	Testing Messages and Products	44
Children are More Vulnerable	9	Chapter Five: Implementation and Evaluation	48
Health Effects and Trends	12	Summary of Key Points	49
Understanding Exposure	13	An “Accordion” Approach	50
Exposure Sources and Settings	15	Staff Training Activities	51
Prevention	20	Strategies for Building New Information into Existing Programs	52
Chapter Three: Context and Overarching Considerations	21	Working Directly with Children	53
Summary of Key Points	22	Workshops – Options to Consider	54
Health Promotion	23	Interactive Tools to Prompt Discussion and Creative Thinking	56
The Precautionary Approach	24	Using the Media	61
Participatory Approaches	25	Evaluation	63
Integrating into Existing Programming	29	References	65
The Need for Consistency	29	Glossary	67
The Role of the Messenger	30	Appendix A: Useful Resources	72
Fundamentals of Adult Education	30	Appendix B: Environmental Health Childproofing Checklist	79



Introduction

An Important Issue

Environmental contaminants can have serious and long-term impacts on reproductive and child health. Information about these risks, and how to address them, is new to many service providers. As awareness increases, information about

environmental risks will become an accepted part of standard care for preconception, prenatal and child health. This manual focuses on how to prevent or reduce environmental exposures via actions that can be taken at the community or societal level. It shares strategies that can be used to increase awareness and change behaviour and reflects on underlying conditions that create harmful exposures in the first place.

Who is This For?

There are many opportunities to address environmental risks to child health within the work that you already do. Your work may focus on preconception, prenatal and/or early child development, or it may look at broader community level health factors. You could be a health care provider, health promoter, environmentalist, community animator, prenatal educator or early learning and child care practitioner. You may be involved in raising awareness, conducting public education, working on policy, talking to parents, facilitating prenatal groups or caring for young children. If you work in any of these areas, you are well-placed to offer precautionary advice and to help prevent potentially harmful environmental exposures.

There are various reasons to address environment and child health, either as a large or small part of your work. Motivation may arise from:

- New research
- A growing level of awareness and desire to know more
- Recognition that your education/training did not include sufficient environmental health information
- Questions from clients, parents or co-workers that you were unable to answer
- Issues arising from a community needs assessment or survey
- Concerns about environmental issues
- Concerns about children's health issues
- Program mandates or funding guidelines

Building Your Skills and Comfort Level

Given the wide range of interests, skills and knowledge levels of the audience for this manual, some sections may not be relevant for you. Some service providers are very familiar with the language and techniques of health promotion and/or have a solid understanding of environmental risks to child health. For other service providers, this information may be new or less familiar. Basic information about environmental health risks and context for health promotion work in this field is provided in this manual, as well as more advanced information about specific strategies. Use the table of contents to choose sections of greatest relevance to your work.



photo credit: Mark Surman

The topic of children's environmental health covers a lot of ground. At issue are health concerns that can arise prior to conception, during pregnancy, or during childhood as a result of many different exposures. Initiatives can be designed for specific populations such as children, women and men of child-bearing age, pregnant women and their partners, parents and grandparents, or specific service providers, as well as a range of stakeholders with interests or concerns about children.

It is worth recognizing that this topic is enormous and complex. It is also an area of emerging science and considerable uncertainty, all of which can generate fear, denial and feelings of helplessness. Given the breadth of this topic, both in terms of the wide range of possible exposures and the many life stages of interest, this manual is intended to help build your awareness, comfort level and skills. It is focused on how to do the work and provides practical tools and links to more resources and information.

The area of child health and the environment is still relatively new. There are no best practices or widely accepted approaches to address this issue. This resource shares background information about the risks, and the context of this work. It provides helpful information to guide planning, implementation and evaluation of strategies. It also shares stories and step-by-step instructions for promising approaches to raising awareness and decreasing the environmental risks to preconception, prenatal and child health. Information in this resource will help service providers consider and direct their work to strategies that are more likely

to be successful, however, we need to continue to be innovative, to test and to evaluate, in order to move towards best practices.

A Focus on Prevention

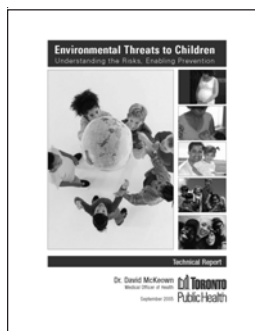
In creating awareness about environmental risks to prenatal and child health, we are dealing with uncertain but potentially serious risks. The prudent response is prevention, a precautionary approach. People, especially as parents, are practical. They tend to care less about the scientific debates than about what they can do – immediately – to prevent possible harm. Your job is two-fold: to convey the nature of environmental risks, and to provide practical tools for reducing or avoiding those risks. As well, since many environmental problems are beyond the control of individuals, a preventive, precautionary approach often includes strategies to address underlying factors and sources of environmental contaminants.

This manual is not designed to help service providers to assess, diagnose or attempt to find causes for illness or conditions in individual children, or in relation to individual concerns about fertility and pregnancy. Individuals with questions of this nature should be referred to their family physician.

Companion Resources

This manual is a companion to *Child Health and the Environment – A Primer* and the brochure *Playing it Safe: Childproofing for Environmental Health*, produced by the Canadian Partnership for Children's Health and Environment (CPCHE). The *Primer* was developed for a wide range of service providers, including the media and policy makers. It addresses the same life stages – preconception, prenatal and child development. Service providers are encouraged to use the *Primer* to access current background information, tips and simple action steps. The *Playing it Safe* brochure further summarizes key environmental childproofing strategies for individuals in an easy-to-read format. These resources complement the information provided in this manual. They focus primarily on individual actions, while this manual addresses service provider strategies.

The *Primer* is based on a larger technical report prepared by Toronto Public Health (TPH) entitled, *Environmental Threats to Children: Understanding the Risks, Enabling Prevention*.



Methods

The research focus for this manual was on strategies and activities employed by service providers to prevent and reduce environmental risks to preconception, prenatal and early child development. The advisory committee involved representatives from the fields of early learning and child care, public health, environmental protection and community development. Key informants included individuals working in these fields as well as environmental organizations, community health centres and other community-based and/or community health-focused organizations. Key informants were asked a range of questions within the thematic areas of planning, population of interest, messages, products, activities and evaluation techniques. Common themes and approaches were identified across key informant interviews, as well as from the research and/or direct experience of the author.

The *Primer* and the technical report upon which it is based (summarized in Chapter 2) provide the supporting literature review for the environmental health information in this manual. Throughout this manual, cross-references are provided to specific pages in the *Primer* for more detailed information.

CPCHE's *Child Health and the Environment – A Primer* and other children's environmental health resources for services providers and the public are available in print and online. To purchase or freely download these resources, see www.healthyeenvironmentforkids.ca. Watch this website for additional new resources on this topic.



photo credit: Mark Surman

chapter two

Overview of Environmental Risks to Preconception, Prenatal and Child Health

This chapter summarizes important information about environmental risks to preconception, prenatal and child health. The information is adapted from the Executive Summary to *Environmental Threats to Children: Understanding the Risks, Enabling Prevention and Child Health and the Environment – A Primer*. For unfamiliar terms, please consult the Glossary. If you are already familiar with this topic, you may want to skim this chapter or move directly to Chapter Three.

Note: Cross-references are provided to specific pages in the Primer, for more detailed reading.

Summary of Key Points – Environmental Risks

The environment is a determinant of health.

- Exposure to environmental hazards can create consequences during preconception and pregnancy, and can directly impact on child health.
- Precautionary advice about environmental risks builds on traditional information about supporting healthy child development (such as ensuring folic acid intake or avoiding exposure to kitty litter).

Children are more vulnerable to harm from environmental exposures.

- Kilogram for kilogram, children eat, drink and breathe more than adults.
- Children behave differently than adults, contributing to greater exposure.
- Children's developing systems are more vulnerable to contaminants.
- The time of greatest risk is likely in the womb.

Health impacts from prenatal or childhood environmental exposures:

- Are inherently complex and difficult to verify with scientific certainty.
- Are most commonly measured following widespread exposure of the child population.
- Are increasingly apparent at the population level but are subtle and hard to isolate from other contributing factors.
- Can include chronic conditions, such as asthma and impacts on brain functioning and behaviour.
- Can include lifelong impacts such as birth defects, effects on learning and/or behaviour, or development of later life cancers.

Exposure to contaminants:

- Can occur from many sources, indoors and outdoors, including via air and dust, soil, pesticides, food, water and consumer products.
- Varies in significance with some exposures being more serious than others.
- Is of greatest significance for substances that are known or suspected of being associated with multiple effects, such as lead, mercury and PCBs.

Preventing harm to children:

- Requires action and behaviour change by individuals alongside change at the community and broader societal level.
- Is prudent and precautionary when there is incomplete information about complex environmental risks.
- Is a shared responsibility.

Children are at Risk – Overview

(Primer: Chapters 1–4)

The developing fetus, infants and children up to age three years can experience greater exposure than adults to substances in the environment. Risks continue throughout childhood to the end of adolescence as the respiratory, nervous and reproductive systems continue to develop and mature. The degree of risk arising from environmental exposures is often poorly understood because the evidence may be lacking, incomplete or inconsistent. Risks vary across different contaminants, age groups and individual circumstances. The period of prenatal development appears to be the most sensitive. In addition, parental exposure to environmental contaminants, prior to conception, can have reproductive consequences.

There are associations between environmental hazards and asthma, cancer, learning, behavioural and developmental effects, low birth weight and birth defects. There is also emerging evidence for additional health consequences such as impaired functioning of the immune system and interference with the hormones of the endocrine system.

In our environment, there are many thousands of contaminants. Hundreds are suspected of contributing to negative child health outcomes although only a small number have been fully evaluated for their effects on preconception, prenatal and child development. Nevertheless, multiple exposures continue to women during pregnancy and throughout the early years of a child's development. Exposures that occur to men

and women prior to conception are also of concern. There is an urgent need for more research into the consequences of environmental exposures on children. We need a better understanding of these consequences before widespread exposure is allowed to occur. *(Primer: Chapter 1, Table 1)*

The strongest scientific evidence has come from population health studies, where widespread exposure to lead from gasoline or old paint, have demonstrated negative effects on brain development. Likewise, there is strong evidence that air pollution triggers asthma attacks in people with asthma and there is now suggestive evidence that some outdoor air pollutants can cause the onset of asthma. There is increasing evidence of many other serious effects from air pollution in the developing fetus and child.



photo credit: Mark Surman

Environment as a Determinant of Health

Figure 2.1 shows the twelve determinants of health, including the physical environment, as identified by Health Canada. These factors are understood to interact in complex ways to influence the health of everyone, including children. (*Primer: Chapter 1*)

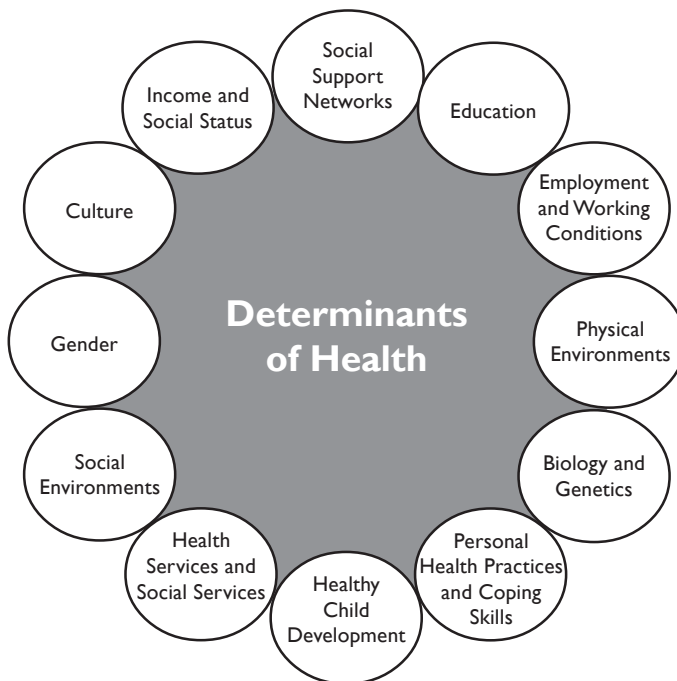
Environmental influences on children's health need to be considered alongside other risks to preconception, prenatal and child health. For example, it is standard practice to advise pregnant

women to take prenatal vitamins, in part to ensure adequate folic acid intake. They are also told to avoid contact with kitty litter which can contain the toxoplasma parasite. This advice derives from an understanding that folic acid helps to prevent neural tube defects (birth defects of the spine and brain) and that a toxoplasmosis infection can cause miscarriage, stillbirth or neonatal death. Precautionary advice is provided since there is a greater risk of health consequences when prenatal vitamins are not taken or if contact occurs with kitty litter.

In the field of children's environmental health, similar precautionary advice is prudent. For example:

- Fish is a nutritious source of protein and omega-3 fatty acids, important for healthy fetal and child brain development as well as brain functioning in all humans. Fish is contaminated with methylmercury to varying degrees, which can be toxic to the developing brain. Pregnant women who eat fish need good precautionary information about choosing fish species wisely.
- Risks to a developing fetus can arise from the mother's exposure to common household products including pesticides, solvents, and the contaminants in household dust. Renovation activities may lead to maternal exposures that present significant risks to the fetus. Although expectant parents often plan home renovations in preparation for a baby's arrival, pregnant women should not be doing renovations and should not be exposed to dust from renovations.

Figure 2.1: Determinants of Health



Source: World Health Organization, undated.

Relating environmental health information to pregnant women should be as commonplace as the advice about prenatal vitamins and avoiding kitty litter. (*Primer: Methylmercury Poisoning*, page 25; *Fish Advisories: Limiting Methylmercury Exposure*, pages 60–61; *Safe Renovations*, pages 108–109)

Children are More Vulnerable

(*Primer: Chapter 2*)

Differences between children and adults combine to explain a child's greater vulnerability to environmental exposures. Experts note that children are not "little adults." They are conceived, born and grow up in a world that is vastly different from that of their grandparents. Their rapid growth and development occurs while they are exposed to contaminants and synthetic chemicals. We know that growth and development is mediated by natural chemical processes. There is concern that toxic exposures may be interfering with these natural developmental processes or otherwise harming immature or delicate structures and systems in a fetus or growing child.

Children are proportionally different from adults. Because of their smaller size, kilogram for kilogram, children eat, drink and breathe more than adults. Their metabolism is also faster. To support their rapid growth, the baseline rate of breathing is faster. Activity levels are often much greater. A child's digestive system is more efficient at absorbing food and therefore any associated contaminants. As a result, children are exposed to proportionally more contaminants in food, water or air.

Children behave differently than adults.

Children are closer to the ground where some contaminants tend to concentrate. They are in greater contact with the ground, touching potentially contaminated surfaces. Their hand-to-mouth and exploratory behaviour can greatly increase contaminant exposure and intake. They also have a longer life expectancy than their parents and grandparents, providing more opportunity for latent effects of some contaminants, such as carcinogens, to manifest.

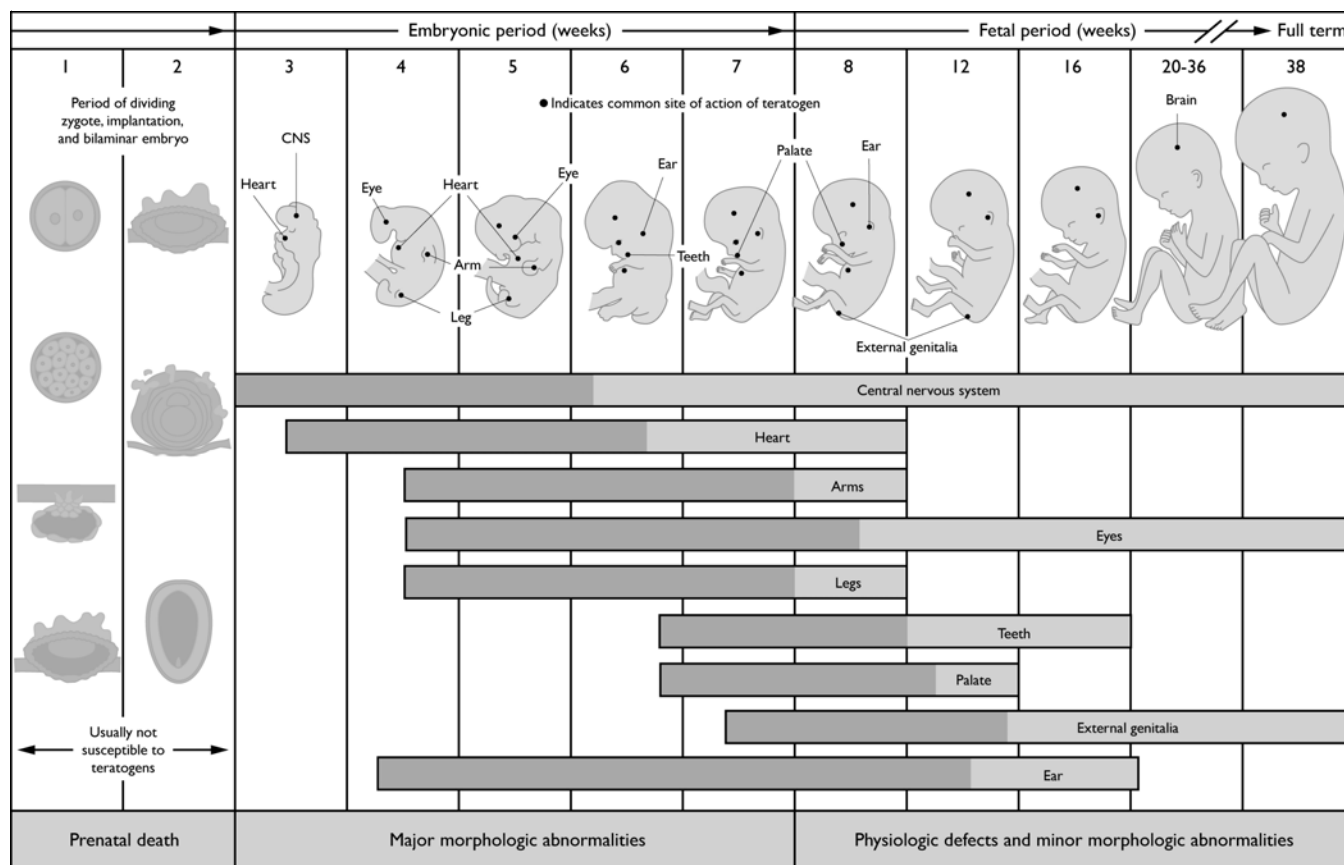
Children's bodies are still developing. An infant's skin is more permeable than in later life. The lungs continue to develop until the teen years. Air pollution exposure during a child's long period of lung development can cause temporary or even permanent lung deficits. At birth, a child's immune, digestive and nervous systems are immature. The brain continues to develop until the end of adolescence and the reproductive system develops from late childhood into the teen years. During the reproductive years, men and women may be exposed to contaminants that can affect their ability to conceive or carry a healthy pregnancy. (*Primer: The Body Protects Itself*, pages 21–22; *Building the Human Brain*, page 38)

Risk is greatest in the womb. The time of greatest sensitivity to environmental contaminants is likely in the womb (see Figure 2.2). Numerous periods of vulnerability exist during pregnancy when the major organs and systems are developing. In general, toxic exposures during early pregnancy are more likely to create structural impacts such as birth defects, since this is the time when the form and structure of the body develops.

Toxic exposures during late pregnancy are more likely to result in functional impacts, such as learning difficulties resulting from impacts on

fetal brain development. The impacts of toxic exposures will vary depending on which developing body system is affected.

Figure 2.2: Critical Windows of Vulnerability. This figure shows critical periods of fetal vulnerability. The dark grey bars denote highly sensitive periods; light grey bars indicate stages that are less sensitive to teratogens. The concept of vulnerability is complex, and this figure does not provide sufficient information to attribute causes of a particular health outcome such as stillbirth or cancer.



Reprinted from *The Developing Human: Clinically Oriented Embryology*, Moore and Persaud, page 98, Copyright (1973), with permission from Elsevier.

Some Children are at Greater Risk Than Others

Finally, some children are at greater risk than others. Children living in poverty can be especially affected since poverty is a known risk factor for both poor health and greater exposure to environmental contaminants. Poor nutrition, often associated with low income, can also result in a greater uptake of contaminants. For example, lead uptake is greater when calcium levels are insufficient. (*Primer: Chapter 2, pages 28–30*)

When children are exposed to environmental tobacco smoke they are at significant risk for respiratory impacts. Environmental tobacco smoke is also associated with impacts on brain development and contains over 40 known carcinogens. Since environmental tobacco smoke is explored fully in numerous other resources, it is not addressed in this manual. See the resources listed in Appendix A.

Parental occupations can place some children at greater risk. Before conception and during pregnancy, there can be reproductive and fetal developmental risks associated with occupational settings where workers can be exposed to organic solvents or other toxic substances. Some occupations can result in “take-home” exposures that are of concern for children and parents. Examples include use of pesticides on farms or in the nursery, horticultural or landscaping trades. Pesticides can be carried home on skin, hair, clothing, shoes and equipment. Parents involved

in renovation activities, particularly where demolition work includes older buildings, can bring home lead and other toxic substances. For additional information on workplace reproductive risks, see Appendix A.

There are also differences in vulnerability across the child population due to natural genetic variability.



photo credit: Mark Surman

Health Effects and Trends

(Primer: Chapter 3)

Patterns of disease among children have changed dramatically in the last 100 to 200 years. Infant mortality is substantially lower and the historically common illnesses of early childhood are very rare in the developed world. Life expectancy has nearly doubled. However, chronic diseases and other debilitating conditions are on the rise among children. Several of these conditions have suspected or known associations with environmental exposures.

Health outcomes seen in large numbers of children include respiratory conditions, particularly asthma, and a range of conditions related to cognitive and neurobehavioural functioning. Respiratory effects are linked to indoor and outdoor air pollutants. There are associations between increased air pollution and increased respiratory illness among vulnerable populations including children. We are a long way from understanding the impact of most contaminants on the developing nervous system. Effects are well documented for some of the more extensively studied substances, including lead, mercury, dioxins, PCBs and some solvents. Increasing concern exists about the effects on the nervous system as a result of exposure to organophosphate insecticides and polyhalogenated compounds such as the flame retardants (polybrominated diphenyl ethers or PBDEs). As well, there is mounting evidence of neurological development concerns from early life exposure to environmental tobacco smoke.

(Primer: Chapter 3, pages 34–40)

For each of the major health concerns with known or suspected links to environmental exposures, it is possible to assemble some data on health outcome trends. However, drawing a direct relationship between these outcomes, and exposures to environmental contaminants, is difficult. It is well known that multiple factors contribute to most health outcomes. It is challenging to establish the relative contribution of each. Understanding of the contribution of environmental factors to health outcomes is hampered by lack of good data and an inherently complex set of variables to consider.

In Canada:

- Child asthma rates have increased dramatically in Canada.
- National data from the mid-1990s indicates that for children aged 6 to 11 years, 26% have one or more learning or behavioural problems.
- Birth defects are the leading cause of infant death, followed by premature birth and sudden infant death syndrome.
- Low birth weight and birth defects may result in long-term disability.
- Childhood cancer is very rare but is the leading cause of illness-related death in children over 1 year.
- Several cancers are rising among adults aged 20 to 44 years. The causes for these increased cancer rates are unknown, but researchers hypothesize that early childhood, prenatal or parental preconceptional exposures, could be contributing factors.

(Primer: Moulds, page 34; Asthma, page 35; Learning and Developmental Disorders and Disabilities, page 36; Chapter 3, Table 2)

When describing the trends in chronic disease or other conditions in children, it is important to recognize that not all children are affected. Rather, there is an array of chronic conditions in the child population that may have been influenced by the environment. Many factors contribute to these conditions. Also, data are limited, making it difficult to know if the incidence and prevalence of these conditions is increasing over time. The asthma prevalence data show a clear increase. However, data are insufficient to know if other conditions are on the rise. Researchers look for associations between specific exposures and health outcomes in individual children, as well as population-wide effects.



photo credit: Mark Surman

Understanding Exposure

(Primer: Chapter 4)

It is challenging to describe the range of substances to which children are exposed. There are many exposures of concern and numerous sources or settings where exposure can occur (see Figure 2.3). The gaps in information are even more profound for exposure data than for the scientific investigation of possible health effects. Moreover, many of the substances of greatest concern are known or suspected of being associated with multiple effects. The dose or amount of exposure is important. The timing of exposure is also considered critically important given our knowledge of the many windows of vulnerability during prenatal development and the stages of childhood.

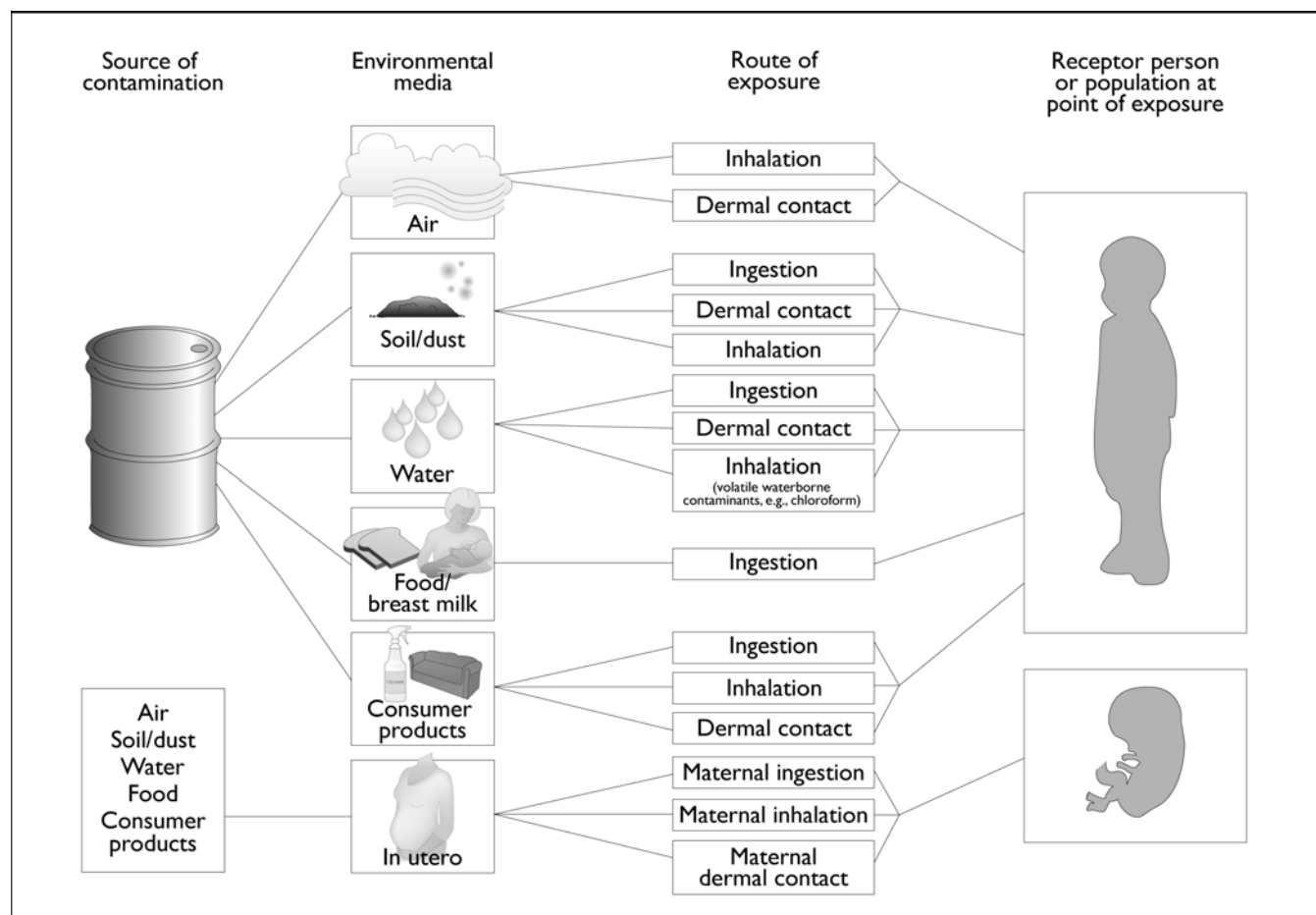
Measurement of exposure to most pollutants is limited. Since exposure can occur via several possible pathways, measurement should include various sampling techniques. Sampling should be done through a survey of a large group of people, over an extended period of time and across different media. Measurement would need to include levels of contaminants in environmental media (such as air, food, water, soil or dust) as well as in people (such as in their urine or blood).

Biomonitoring is one way to measure exposure. It involves measuring and analyzing chemicals or other substances in blood or urine. Biomonitoring can help evaluate trends in exposures over time and assess differences in exposures among groups of people. Individual tests are considered with specific exposures or illnesses such as lead

poisoning. Biomonitoring studies in the US indicate that most people are currently being exposed to a cocktail of environmental contaminants. These studies also give an idea of a person's body burden from lifetime exposure to

contaminants that accumulate in body tissues. The health significance of most of these exposures is unclear. Biomonitoring studies indicate the pervasiveness of environmental contamination. (Primer: Chapter 2, Results of Biomonitoring, page 23)

Figure 2.3: Major Pathways of Human Exposure to Environmental Contaminants



Adapted from Health Canada. 1998. *The Health and Environment Handbook for Health Professionals*. Ottawa: Health Canada.

Exposure Sources and Settings

(Primer: Chapter 3, *Health Effects of Concern*; Chapter 4: *Children's Exposures*)

Air and Dust

(Primer: *Organic Solvents*, page 49; *Indoor Dust*, page 65; *Carpeting*, page 66; *Volatile Organic Compounds*, page 67; *Riding in Cars and Buses*, page 68; *Urban Air Contaminants of Concern*, page 70; *Atlanta Olympics*, page 71)

Air – indoors and outdoors – remains one of the most significant media for environmental exposures. Alongside the range of pollutants that make up smog, other toxic air pollutants are also a concern. For example, volatile organic compounds (VOCs) and mercury are emitted by vehicles and coal-fired power plants.

Children are exposed to outdoor air pollution while travelling and playing outdoors. The air inside cars and buses is its own microenvironment and can be more contaminated than outdoors, particularly the air inside diesel-fuelled school buses.

Indoor air is a largely unregulated source of exposure to a variety of contaminants. Children's exposures in schools, child care and indoor recreational facilities are as much a part of the indoor exposure picture as the home environment. Indoor air contaminants of concern for children include environmental tobacco smoke, inhalable particles from combustion

products (from woodstoves and wood-burning fireplaces), nitrogen dioxide (from poorly vented gas furnaces or stoves), VOCs (from building materials, floor coverings and furniture) and biological allergens (moulds, pet dander, house dust mites and cockroach feces). In addition, contaminant levels in indoor dust are of increasing concern and present a significant exposure pathway for children. Exposure to various indoor air contaminants is believed to increase the risks of developing asthma or other respiratory health problems.

Pesticides

(Primer: *Pesticide-exposed Children in Mexico*, page 37; *Arsenic in Pressure-treated Wood*, page 41; *Dealing with Pests*, page 50; *Children Eating Organic Food Less Exposed to Pesticides*, page 72; *Pesticide By-laws – Blazing a Trail in Hudson, Quebec*, page 83; *Pest Management in Schools*, page 84; *Personal Insect Repellents*, page 105)

Home and garden use of pesticides creates an exposure risk for children from direct contact with treated lawns and plants or with treated wood surfaces. In addition, residues can be tracked inside where they persist longer. In agricultural communities, pesticide exposure can occur from drift or overspray during farming applications. Indoor use of pesticides is of particular concern for children's exposure. The concern for potentially exposing children from home and garden uses of pesticides has led to greater restrictions on the use of pesticides in areas frequented by children.

Food

(Primer: Chapter 2: Nutrition, page 28; Methylmercury Poisoning, page 25; Phthalates, page 54; PBDEs – The New PCBs, page 56; Children Eating Organic Food Less Exposed to Pesticides, page 72; Multimedia Exposure: PBDEs in Food, Air and Dust)

Children's exposure via food includes trace levels of pesticides, heavy metals and persistent organic pollutants (POPs) such as PCBs, dioxins, organochlorine pesticides or their breakdown products. Such contaminants are all at very low levels and long-term downward trends are evident. For example, there is a long-term downward trend of PCB levels in breastmilk since these chemicals were phased out in the late 1970s. Other contaminants in food, of uncertain health significance, include phthalates from plastic food packaging or bisphenol A from hard plastic containers or the lining of cans. Food is also contaminated with trace levels of PBDEs (flame retardants) and levels of these chemicals are increasing in food and breastmilk.

Most of these contaminants are lipophilic, meaning "fat-loving." They bind to fat molecules and migrate from plastic packaging into fatty foods. Likewise, levels of these contaminants bind to fat in organisms and can concentrate up the food chain reaching their highest levels in high fat foods such as milk, cheese, fatty meats and oily fish. Precautionary advice for avoiding these food exposures includes following a diet low in fatty foods. Low fat does not mean no fat. A low fat diet as understood by many adults, is not appropriate for children. A balanced diet that includes



photo credit: Mark Surman

necessary fat levels from a variety of foods would include 2% milk after two years of age, a variety of lower fat cheeses, fish from the lower risk varieties and meat and poultry trimmed of excess fat/skin. For more information on nutrition guidelines for very young children, see Appendix A.

Methylmercury contamination is of particular concern. This substance is not lipophilic but it does concentrate up the food chain in animal flesh, particularly in fish. Because water-based food chains can support more levels than land-based food chains, fish can be more highly contaminated than land-based animals.

Minimizing exposure to methylmercury from fish is important for children and women in their childbearing years. Health Canada guidelines for fish consumption recommend that pregnant women, women of child-bearing age and young children limit their consumption of certain high mercury species of fish, such as shark, swordfish and fresh or frozen tuna, to no more than one meal per month. Advisories from the US Environmental Protection Agency (EPA) recommend that this group completely avoid shark, swordfish, king mackerel and tilefish but the EPA limit is less precautionary about fresh or frozen tuna, at one meal per week.

Canned tuna is an affordable, widely available form of fish. Although on average canned tuna does not exceed the Health Canada guidelines, it may contribute substantially to mercury intake, particularly for children who can be frequent consumers. Canned white tuna (also known as albacore tuna) has substantially higher amounts of methylmercury than is found in light tuna and therefore should be limited for children and women in their childbearing years. The US EPA and US Food and Drug Administration recommend eating up to one meal per week of albacore tuna and no more than two meals per week of light tuna. In fact, the US consumption guidelines state that even low mercury fish (such as light tuna, salmon, shrimp and many others) should be consumed within an overall limit of two meals of fish per week. Because of these differences in advisories, some local public health departments give more detailed and more precautionary advice to the public than is included

in Health Canada's guidelines. For more information on fish advisories, see Appendix A. (*Primer: Fish Advisories – Limiting Methylmercury Exposure, pages 60–61*)

No data are available to characterize exposure to mercury among Canadians. Information on fish consumption patterns is limited, however fish consumption is higher among certain cultures, particularly Asian-Canadians, and in Aboriginal and northern communities. If fish advisory limits are exceeded, these populations can receive a relatively high exposure to methylmercury.

Water

(*Primer: Lead in Drinking Water, page 74; Drinking Water – Risks and Benefits, page 75*)

Chemical contaminants such as pesticides, metals and industrial chemicals can be present in drinking water, although they are generally at very low or non-detectable levels. Lead can enter drinking water from lead service lines, from solder containing lead or from brass fixtures. In older city or town neighbourhoods with homes built in the early part of the 20th century, older lead supply lines (i.e., from the street, not in the home) are gradually being replaced. Homes built prior to the 1950s may, rarely, include lead pipes. The use of lead solder for incoming water pipes was banned in Ontario in 1989. If you have solder-based plumbing or plumbing that includes brass fixtures, the risk of lead exposure can be minimized by "flushing out" the water standing in the pipes. Let the water run for a full minute or until it runs very cold first thing in the morning or if the home is

vacant all day. Toilet flushing and other non-consumptive water uses also help to flush the system. Water from the hot water tank should not be used to prepare food or drinks.

The Ontario Regulation 173/03 under the *Safe Drinking Water Act* requires public schools, private schools and day nurseries to flush the water in their system on a weekly basis and to keep a log of all flushing events. Local health units check these logs. The Ontario Public Health Association recommends daily flushing, instead of weekly flushing.

Across Canada, chlorine treatment is the most common method of treating drinking water to remove infectious microbes that can be of serious concern to child health. Disinfection by-products (DBPs) are substances created by the reaction of chlorine with naturally-occurring organic material in raw water. Where the water source has a low level of organic material, DBPs will be at very low levels. Some DBPs are suspected of associations with spontaneous abortion, low birth weight and certain birth defects.

Consumer Products

(Primer: Arsenic in Pressure-treated Wood, page 41; Organic Solvents, page 49; Phthalates, page 54; PBDEs – The New PCBs, page 56; Indoor Dust, page 65; Carpeting, page 66; Volatile Organic Compounds, page 67; Personal Insect Repellents, page 105; Lead in Consumer Products, page 107)

An increasing number of indoor exposures originate directly from the routine use of a wide range of consumer products. For many of these substances, there is emerging or increasing concern about health consequences, persistence and bioaccumulation.

For example, several chemicals within the group of substances called polybrominated diphenyl ethers (PBDEs) are widely used as flame retardants in consumer products such as computers, hand tools, furniture, mattresses and carpets. They are suspected of contributing to health concerns including cancer, and impacting on reproductive health and the developing nervous system. These substances are released during normal use and have been measured at high levels in indoor dust. They are also measurable in indoor air and on the organic film collected from window surfaces. PBDE levels in indoor dust account for the largest contribution to exposure among toddlers and most life stages except infancy. PBDE levels in breast milk have been rising dramatically in recent decades and the highest levels are found in North American women.

Phthalates are another example of chemicals originating indoors from consumer products. These chemicals are used to soften PVC plastic and are found in many soft vinyl products such as shower curtains, flooring and toys. They are also used in some personal care products and cosmetics. Laboratory or animal research indicates effects on development or reproduction that may result from endocrine-mediated changes with exposure to phthalates. Levels are slightly higher among children compared to adults and are higher among women compared to men.

Overall, there is not enough evidence to fully understand the potential for harm in humans from these and other chemicals in the indoor environment. Indoor air or dust is not subject to environmental regulation and there are no legal requirements in Canada to provide information about these substances on product labels.

Multimedia Exposures

(Primer: Chapter 1, Table 1; Multiple Health Effects, page 57; Multimedia Exposure: PBDEs in Food, Air and Dust, page 73; The Stockholm Convention on Persistent Organic Pollutants, page 81; Risk Assessment of Toxic Substances, page 91; Assessing Multiple Effects and Multiple Exposures, page 93; Definitions for “Real-World” Exposures, page 93)

Exposures to toxic substances often occur through several media. For example, pesticide exposure can occur through house dust, in water or in food depending on its origin and specific chemical characteristics. A child may be exposed to pesticide residue through direct contact with treated surfaces or tracked-in contamination (on shoes, pets, stroller wheels) in homes, schools or

recreational facilities. Children may ingest minute amounts of pesticides via the residues that remain in food and, to a lesser extent, in drinking water.

Some exposure sources are more significant than others, underlining the need for public awareness about where risks are greatest, and the necessary precautionary response. For example, lead exposure can occur via water, food, soil or air. However, exposure to lead in indoor dust now appears to be the single greatest exposure pathway for children due to its greater presence in dust than in other media and because of children’s exploratory and hand-to-mouth behaviour. There is a need for greater awareness of dust as an important exposure pathway for children alongside information about how to minimize exposure.



photo credit: Mark Surman

Prevention

(Primer: Chapter 5)

For most environmental exposures, control measures occur after-the-fact. Demands for solid proof of harm often result in unnecessary delays or opposition. Delays can also occur because the activities in question, such as automobile use, are part of entrenched societal patterns that are difficult to change.

Some progress has occurred in terms of revising regulatory approaches to take into account child health concerns. However, widespread exposure to thousands of potentially hazardous substances continues. There are an enormous number of substances that have never been fully evaluated for toxicity in pregnancy and childhood. These substances may be in commercial use, or may result from industrial emissions. It can be far more difficult to address environmental problems after the fact compared to preventing their occurrence in the first place. There is a need for increased political efforts to regulate substances suspected or known to cause child health concerns.

There is much to learn from past experience. Waiting until there is absolute proof of harm can result in unnecessary exposure and health impacts.

The lesson from well-studied toxic substances, such as lead in gasoline, is the need to act sooner when serious risks are suspected, such as permanent health impacts on children. Taking action earlier, despite scientific uncertainty, is an approach that seeks to prevent harm. (Primer: *Lead – The Cautionary Tale*, pages 87–89)

There will never be full scientific certainty in environmental debates. The approach of waiting for proof of harm before controlling or eliminating harmful exposures will continue to place the developing fetus and child at unnecessary and avoidable risk. This precautionary approach speaks directly to the reality of forever having incomplete information. It denotes a duty, on all members of society, to prevent harm, even when the evidence is uncertain or unattainable.

In making recommendations for policy change to address children's environmental health issues, the overarching objective is to choose an effective course of action in the face of uncertainty and to apply a precautionary approach. A related objective is to evaluate the policy or interventions to ensure they are protective of children by preventing or reducing harm, in both the short- and long-term. (Primer: *The Precautionary Principle: Better Safe than Sorry*, pages 94–95)

Context and Overarching Considerations



photo credit: Mark Surman

When addressing environmental risks to child health, there are background issues and considerations to take into account.

Work on this topic is founded in the principles of health promotion and the precautionary approach. It is helpful to spend time thinking about how this topic fits with your current work and about your role as a messenger. Before starting to plan your initiatives, consider the underlying factors for environmental exposures and how best to involve and engage the population of interest on this complex, emotionally charged topic. This chapter covers information that can help guide your work, even before you start to plan your initiatives. These discussions are introductory and relevant to many health promotion activities. For guidance that is specific to planning and implementing environment and child health initiatives, see Chapters Four and Five.

Summary of Key Points – Context and Overarching Considerations

Health promotion includes:

- A holistic view of health with a focus on the determinants of health, participatory approaches, prevention of harm and building upon existing strengths and assets.
- The use of multiple strategies and supports to enable education and behaviour change.

The precautionary approach focuses on:

- Prevention of harm and participatory decision-making.
- An examination of the full range of alternatives, including no action, choosing safer alternatives or lower-risk options.

Participatory approaches:

- Embrace the values of empowerment, social justice, equity and inclusion.
- Recognize and respect differences and diversity.
- Are sensitive to the impact of poverty.

Messages about child health and the environment should be built into existing programs because:

- Building on existing work makes good use of limited opportunities, time and resources.
- There is a need for and value in consistency across services.

The messenger is as important as the message.

- Environmental health is a controversial and emotionally-charged topic.
- A trustworthy source of information is important.
- Retain passion in your topic but don't overdo it.
- Vary your style to suit the needs of different audiences.

Adult education techniques are used in addressing environmental health.

- Recognise that adults have their own experience, knowledge, beliefs, values, opinions and learning goals.
- Successful adult learning results in knowledge being retained, transferred and applied to new situations and ultimately results in changes in behaviour.

Health Promotion

Strategies for addressing environmental risks to child health can occur within the framework of health promotion. Health promotion is focused on ensuring the health and well-being of individuals and communities. Health promotion approaches include:

- A holistic view of health
- Use of participatory approaches
- A focus on the determinants of health (the social, behavioural, economic and environmental conditions that are the root causes of health and illness)
- Building on existing strengths and assets, not just addressing health problems and deficits
- Using multiple, complementary strategies to promote health at the level of the individual and the community

The Ottawa Charter for Health Promotion (1986) emphasises the need to strengthen community action and develop healthy public policies. In the Charter, traditional individual-oriented approaches to illness prevention are still seen as important but are supported by policy approaches oriented to the larger community. Health promotion activities seek behaviour change among individuals, and through policy-makers, in addition to addressing the underlying factors for health concerns, for example, poverty, low literacy etc. Health promotion requires cooperation and collaboration among health professionals and other sectors (Campbell, 1998).

Attempts to inject health promotion advocacy into public policy discussions on the environment occurs within such groups as the Ontario College of Family Physicians, the Ontario Public Health Association and the Canadian Association of Physicians for the Environment (CAPE). Public health experts describe the “prevention-treatment” continuum that exists for healthcare professionals (Campbell, 1998). Broadly, this continuum can include medical treatment, health protection, local collective action, policy and regulatory reform and global action. This continuum mirrors the range and scale of issues at play within most environmental problems.

The Ottawa Charter for Health Promotion identifies five action areas where multiple strategies can be employed to:

- Build healthy public policy
- Create supportive environments
- Strengthen community action
- Develop personal skills
- Re-orient health services

These five action areas are approached via multiple, complementary strategies. These strategies are explored further in Chapter 5. The strategies include:

- Health Communication
- Health Education
- Self-Help/Mutual Aid
- Organizational Change
- Community Development and Mobilization
- Advocacy
- Policy Development

Program Example: A Health Promotion Response to the Risks of PBDEs

The example of PBDEs (flame retardant chemicals) illustrates an environmental issue in need of a health promotion response. PBDE levels reflect the mother's body burden, and are rising in breast milk in North American women. The fetus and nursing infant are exposed through the mother. Multiple health impacts on fetal and early child development, particularly healthy brain development, are suspected. Women can follow a wide range of precautionary actions to reduce exposure including dust control measures, a low-fat diet, or purchasing PBDE-free products. These actions alone are insufficient. Levels of these persistent and toxic substances continue to rise in the environment and in breast milk. Viewed within the framework of health promotion, more players and activities are needed to prevent or reduce PBDE exposure via policy and regulatory action. It should not be the exclusive role of breastfeeding women to take precautionary actions to avoid exposure to chemicals that may cause reproductive or developmental health effects. (*Primer: pages 56, 62–65 and 73*)

For additional sources of information on health promotion practices, the Ottawa Charter and the prevention-treatment continuum, see Appendix A.

The Precautionary Approach

An overarching message running through all of the work on the topic of child health and environment is the precautionary approach. This approach speaks directly to the uncertain but troubling nature of the information base. It fully acknowledges statements such as:

- We aren't sure.
- The science is incomplete.
- The risks are not fully measured or measurable.

Like health promotion, the precautionary approach is holistic and focuses on prevention of harm and participatory decision-making. (*Primer: pages 16 and 94–95*)

The precautionary approach confronts the ever-present scientific uncertainty of environmental risks. In decisions about whether environmental risks are present, the precautionary approach states that the proponent of an activity, rather than the public, should bear the burden of proof. Under a precautionary approach, the safety of chemical or other exposures would have to be demonstrated *before* widespread exposure was allowed to occur.

A precautionary approach demands the evaluation of environmental risks within an open, informed and democratic process, involving affected parties.

When determining if an environmental exposure can cause harm, openness is important because:

- There are many uncertainties.
- Value judgements may be placed on the risks and the benefits of the environmental issue.
- There is an uneven distribution of risks and benefits resulting from decisions about whether or not an exposure is harmful.

Equally important, the precautionary approach requires an examination of the full range of effective alternatives, including no action. It is important to select an alternative that reduces the risk of specific harmful exposures and does not inadvertently create additional unforeseen risks. For example, if alternatives to chlorine disinfection of drinking water do not adequately kill harmful bacteria or micro-organisms, then children would be at risk of harm from water-borne diseases.

The precautionary approach is fundamental to health promotion messages about preventing harm from environmental contaminants. You can use strategies (discussed further in Chapter 5) to educate people about uncertain risks and enable them to reduce or prevent exposure.

For additional sources of information on the precautionary approach, see Appendix A.

Participatory Approaches

Health promotion and the precautionary approach both use participatory approaches. Health promoters are focused on addressing health issues by doing things with people rather than doing things for them. Participatory approaches enable people to take greater control over the conditions affecting their health. They embrace the values of:

- Empowerment
- Social justice and equity
- Inclusion
- Respect

Respecting Diversity

To increase awareness and enable behaviour and/or policy change, health promotion work starts with an understanding and respect for what people know, what they are ready for, and what actions they may be prepared to take.

When planning child health and the environment initiatives, we need to take into account factors such as:

- Socio-economic status
- Rural versus urban realities
- Northern versus southern norms
- Cultural considerations
- Gender issues
- Levels of education
- Literacy skills
- Personal motivations
- Optimistic versus pessimistic outlooks
- Variations in how people learn

In health promotion work, it is important that cultural diversity be considered. Respecting the diversity of families is also important. Family structures include single parent families, children cared for by extended family, pregnant women with non-male partners, parents of the same gender, etc. You can be inclusive of diversity when choosing illustrative examples or selecting images for resources, presentations or campaigns.

There can also be specific cultural considerations that affect levels of risk. For example, eating fish is an important part of Asian cultural heritage and diet. Likewise, eating fish and other country foods is extremely important among Canada's Aboriginal population. All pregnant women need to know about fish advisories. Information needs to be conveyed in a manner that is respectful of traditional ways of life and acknowledges the cultural significance and prevalence of these practices.

In rural or remote areas, issues of importance can be different than in an urban environment. Health promotion and outreach work needs to recognize the physical differences in how people and communities are organized. It must also be reflective of issues that are important and relevant in these settings.

Here are some examples that are specific to northern communities:

- Local industries in northern or remote communities can be significant polluters but may also be the single largest employer or provide the best paying jobs in an area. Raising awareness about these environmental risks must address this economic reality directly.



photo credit: BoAnne Tran

- Homes built in northern Ontario prior to the 1960s were often sided with asbestos shingles. In a fire-dominated landscape with homes built in or near forests, these shingles help to prevent fire losses. If asbestos shingles are undisturbed, they are low risk. However, if they are broken up or sanded, they can become a significant asbestos hazard.
- Homes built on bedrock, especially if they have basements, can have problems with water movement and drainage, contributing to indoor mould growth. This is a serious problem in many Aboriginal communities.

In rural and northern communities there is a saying: “Use it up, wear it out, do without, before you throw it out.” Community members tend to fix their own vehicles and make, build or rebuild all kinds of things out of recycled materials. They also tend to burn their garbage. This approach to life can be highly creative, economical and self-sufficient. However, in some cases it can also result in toxic exposures or emissions. Children can be exposed to toxic substances through vehicle repairs, making lead fishing sinkers, reusing pressure-treated wood or old painted wood. Toxic substances can enter the home on footwear, hair and work clothes. Burning waste oil, scrap pressure-treated wood, old painted wood or mixed garbage, especially any garbage containing plastic, can result in highly toxic emissions in the smoke. Farming communities have concerns about the use and storage of pesticides. In the north, tailing ponds around mine sites or other industrial facilities can present significant exposure risks. In any health promotion work in rural or northern communities, it is important to be knowledgeable about unique exposure risks and to incorporate these issues into communications about avoiding exposures and adopting alternative practices.

People working in health promotion, or related fields, particularly in rural areas, often have many different responsibilities and may be employed part-time. As a result, they may have limited time to work on environmental health issues. Some respond to this constraint through use of networks with other service providers.

Poverty and Ability to Act

The effect of poverty or limited income on pregnant women and families is an extremely important consideration for environment and child health. Very large numbers of children in Canada live in poverty (more than one million children or about one in every six). Poverty is also a known risk factor for greater exposure to environmental contaminants both indoors and outdoors. Children who live in poverty can be doubly impacted by environmental contaminants since they may be the most seriously exposed and their parents may be the least able to respond or adapt. These parents can also be an audience that is hard to reach. Families living in poverty or with limited incomes should be given high priority in health promotion efforts on this topic. (*Primer: pages 28–29*)

Practical measures to reach this audience include:

- Focus on cost-saving or revenue-neutral alternatives and highlight these features when conducting outreach to attract this audience. Be sensitive to the cost implications of recommended changes in behaviour (i.e. changes in purchasing or changes in health practices).
- Bring messages and activities to existing local gathering places. All audiences appreciate the convenience and comfort of familiar surroundings but this can be particularly important for those with limited mobility and/or who may experience social isolation.
- During planning, ask this audience, or service providers familiar with this audience, about their needs for obtaining information,

implementing change, barriers to action, etc. and tailor your activities accordingly.

- Offer to provide child care for parents who attend workshops or other sessions.
- Provide transit tickets, pay for gas or arrange for car-pooling or other transportation options to enable attendance at your activities.

Poverty can result in living conditions that are impossible or very difficult to change. Sensitivity is required in raising issues or suggesting changes that are beyond a person's control. If suggestions are not feasible, they may create anxiety, frustration or even anger. For example, a standard message about childproofing indoors includes avoiding mould growth and taking precautions during renovations to prevent lead exposure. Where families are living in a damp basement or have several people sleeping in a room with old peeling paint, such messages are not appropriate. The situation needs to be addressed in terms of areas where it is feasible for families to make changes. Where living conditions cannot be addressed by personal actions alone, the focus can shift to strategies for working together to deal with irresponsible landlords, finding someone to donate a dehumidifier or working with colleagues and other service organizations to help families find better housing. For detailed information on tenants rights in Ontario, see www.ontariotenants.ca. This is an example where the holistic framework of health promotion comes into play. Strategies for addressing such situations must expand to include policy changes at a broader societal level.

Literacy and Language

Literacy issues are important to consider when seeking to attract and engage any audience. Among your audience, there could be people whose literacy skills are very limited even in their own language. With a large immigrant population in Canada, English is a second language for many people. Literacy levels for written materials in public educational work need to be at about a grade five reading level. Consider using radio or TV public service announcements to reach individuals with literacy challenges.

If you are translating materials into other languages, remember that translation often results in text that is overly formal in the second language. It is helpful if a second translator, or someone fluent in the second language, reviews the translated text for accuracy and readability and to ensure that they obtain the same meaning from the translated text as exists in the original. Also, consider the population of interest when translating resources. It may be helpful to adapt the text to suit the learning styles, interests and knowledge levels of specific groups.

Integration into Existing Programming

Most service providers are able to take on a specific role within a broader comprehensive approach to environment and child health, such as raising awareness, working on advocacy or policy change. For practical reasons, it makes sense to integrate environmental health into existing programs. Everyone is very busy and there are many conflicting demands on our time and attention. Health promotion programs that reach expectant and new parents are already in place and reach broad audiences or specific higher risk groups such as teen mothers or low income families. The existing range of services is the most logical and practical mechanism for providing information about environmental health risks.

The Need for Consistency

Environmental health messages also need to be integrated across existing programs to ensure consistency of messages. For example, if expectant parents are told in a prenatal class about fish advisories and this information is conveyed differently by a columnist in a newspaper or dismissed as unimportant by a health care provider, the result can be dismay and confusion. Women may continue to eat high risk types or amounts of fish, or may choose to avoid fish entirely, thus losing out on the nutritional benefits of eating fish (Oken, et al, 2003).

While many organizations offer both prenatal and postnatal services, parents will likely interact with different service providers after the baby is born. If environmental health messages across these two educational settings are not consistent or coordinated, parents can be confused or miss out on useful information.

Program Example: CPCHE as a Trusted Source of Information

The issue of trust in the messenger has been central to the Canadian Partnership for Children's Health and Environment (CPCHE) in the development of educational materials. CPCHE brings together key organizations from health, environmental and child care settings that agree to work together on environment and child health projects. They ensure that all of their health promotion strategies and advocacy messages arise from work that has scientific integrity. The issues of integrity and trusted sources of information continue to arise in response to the release of the CPCHE *Primer* and the associated *Playing it Safe* brochure. Focus groups, media coverage and feedback from many people across the country who have read these resources confirm that people are open to the information for many reasons but key among them is their trust in the messenger. The messages about health risks and childproofing are considered trustworthy because they originate from reliable health-focused organizations that are working together to provide consistent messages.

The Role of the Messenger

Children's environmental health can be, for parents in particular, an emotionally-charged topic. New and surprising information can generate scepticism or fear. The messenger can be as important as the message in terms of trust and credibility, both of which can be influenced by the style or format of message delivery.

Trust in a messenger arises from different places for different people. In general, people listen to those they already know and trust, either through direct contact or by reputation in their community. Health care providers, (e.g., doctors, nurses, public health departments) are often considered the most trustworthy sources of health information.

Despite the fact that this topic can generate strong feelings, people are rarely receptive to an emotional rant. On the other hand, passion for the topic can make the difference between a dull speaker and one who is engaging and inspiring. The enthusiasm or passion a speaker brings to the work is greatly appreciated by the audience.

Fundamentals of Adult Education

A final overarching issue to consider in planning for health promotion strategies is adult learning and education. While some of your health promotion work on this topic will include children, more often your audience will be adults. The adults may be parents, expectant couples, couples planning a pregnancy, service providers, business owners, municipal staff, politicians, etc.

Adult learning styles vary. The Canadian Child Care Federation (CCCCF) *Guide to Successful Facilitation* provides an excellent summary of how adults learn (www.cccf-fcsge.ca/subsites/familytp/english/toolbox_en.htm). This guide provides the following points to consider when planning and running activities that enable adult learning:

- Adults have their own experience and knowledge and will relate new information to their existing experience and knowledge.
- Adults have their own beliefs, values and opinions and they are self-directed in terms of what they choose to learn.
- Adults are goal-oriented, with specific learning goals that tend to be problem-focused. They want to see a reason for learning something.
- Successful adult learning techniques will help adult learners retain or remember the knowledge or skills being taught, make them able to transfer or apply the information to new situations, and motivate them to change practice.

In order to meet the needs of adult learners:

- Use many different modes of teaching
- Vary the pace
- Encourage questions
- Discuss and respect values
- Listen and try to understand needs and motivations
- Emphasize the practical
- Link to past experiences of learners
- Share your own experiences
- Discuss real-life problems
- Use real-life stories to illustrate points

- Be sensitive to anxiety and pride
- Promote self-confidence
- Learn from your students and help them learn from each other
- Make it clear what is most important, and why it is most important
- Laugh and celebrate

Try to Avoid:

- Lecturing too much
- Trying to have all the answers
- Judging others' ideas or values



photo credit: Mark Surman



photo credit: Mark Surman

chapter four

Planning Steps

The planning stage is critical, whether you are beginning or expanding your work on this topic. Service providers need to be innovative and conscientious in developing strategies to address this complex, frightening and uncertain topic. Additional time is required in the planning stages, as there are few models to follow. As you

repeat or expand your work, your subsequent planning efforts will become closely tied into the results of previous evaluations. This chapter provides basic information about planning for your environment and child health initiatives, in order to maximize the chances of success. It shares recommendations about where to find relevant information to guide your work, forming successful partnerships, selecting a population of interest, choosing objectives, developing the content and testing messages and materials.

Summary of Key Points – Planning Steps

Planning considerations:

- Research the topic.
- Recognize that research will be ongoing in both the topic area itself and your health promotion strategies.
- Take the time to understand the complexity and uncertainty in this field and the arguments for responding with a precautionary approach.
- Work with like-minded partners to create efficiencies, share the work, and extend your reach, credibility and consistency across health promotion messages.

Audience considerations:

- Know your audience.
- Match your objectives and messages to knowledge about your audience.
- Consider issues of literacy, poverty, cultural and family diversity.
- Find out about barriers to reaching and engaging your audience.
- Use existing gathering places and educational venues for reaching parent/family audiences.
- Consider gender differences in information needs, and how the information should be delivered.

Messages and products:

- Test your messages, products and approaches with the population of interest as well as experts in the field.
- Add information to what people already know. If the information is new, put it in an understandable context.
- Place new, alarming information in the context of the precautionary principle (that is, we can respond to uncertain risks by taking positive actions to reduce risks).
- Be solution-focused. Point out where progress has been made.
- Be positive and non-judgemental in delivering this information. Be part of a process of knowledge exchange not just knowledge transfer.
- Let the experts debate the science, while encouraging the public, parents and policy-makers to focus on lower risk alternatives.

Getting Started

The planning stage involves many steps that are critical to the success of the project, such as accessing funding, creating a budget, deciding how to share the work, gathering relevant information and deciding what you want to accomplish and the details of the strategies that you will use. It can be helpful to list the planning steps that you need to accomplish, add timelines, and check them off as they are accomplished.

Service providers are encouraged to familiarize themselves with the health promotion and communication planning steps defined by the Health Communication Unit (see Appendix A). These processes can be viewed as the “gold standard” approach. The steps of the health communications campaign planning process are useful to the development of a range of health promotion materials beyond campaigns. These planning details may be more than you need or can accommodate. Where your capacity, timeframe, mandate or budget are more modest, the framework remains helpful for organizing your thinking and applying it to a wide range of strategies.

Sources of Information to Guide Planning

Information is power. It can help direct your work, access funding, empower and involve partners, the media and the community. Here are a few sources to consider:

- Study other events, activities and campaigns to help you choose your own model and recognize pitfalls you want to avoid.
- Research existing resources and consider their use in your program. For each, consider their SWOT – strengths, weaknesses, opportunities and threats – for achieving your objectives and reaching your audience. Sometimes it is more cost effective to use or adapt an existing resource, instead of developing a new resource.
- Gather data about levels of awareness. Look at the results of existing surveys or ask about community interests, needs, concerns, existing services and the views of colleagues.
- Gather data about groups at higher risk such as families with low incomes or living near point source pollutant emissions.
- Access public health research databases such as the Rapid Risk Factor Surveillance System: www.rrfss.ca.

Working in Partnership

There are valuable and logical reasons for building environmental health messages into existing work around preconception, prenatal and child health. Working in partnership on children’s environmental health issues adds value to your work.

Partnerships can:

- Enhance ability to raise money
- Save time when workload is shared
- Share expertise, reach, and strategies across different people and agencies
- Increase consistency across messages
- Improve credibility
- Help to ensure sustainability, continuation, or evolution of a project
- Expand the reach and impact of messages and activities

Within your own work environment or community, many potential partners exist. The multiple objectives of health promotion can be most effectively achieved by creating partnerships across diverse communities of practice. For example, a public health nurse could partner with:

- Colleagues (prenatal educators, postnatal home visitors, registered dietitians, public health inspectors, occupational health specialists, municipal property standards and/or by-law enforcement staff, etc.)
- Organizations focused on various aspects of healthy child development
- Environmental organizations
- Child care centres, either local licensed facilities or family child care settings
- Social justice organizations
- Groups that offer community programming related to parents and children
- Local businesses (e.g., businesses that offer cooking classes or home renovation workshops)
- Funding agencies or foundations

For additional sources of information on building partnerships, see Appendix A.

Program Example: Working in Partnership – Canadian Child Care Federation

The Canadian Child Care Federation (CCCCF) considers working in partnership as part of its mandate. CCCCCF has long recognized the value in building teams of people and resources to support both child care workers and parents. In this model, the “team” addressing the needs of an individual child could include a child care practitioner, social worker, speech therapist, dietician, public health nurse, and of course, parents. CCCCCF has this varied audience in mind when planning for the development of resources that might support the needs of children.

When CCCCCF chose to be part of the Canadian Partnership for Children’s Health and Environment (CPCHE) it was a logical extension of this purposeful approach. The members of CPCHE benefit from CCCCCF’s extensive publishing reach. The CCCCCF quarterly magazine *Interaction* reaches 11,000 subscribers across Canada, and CCCCCF estimates that readership is in excess of 50,000. CCCCCF does not conduct research on environmental health issues. However, working in partnership, CCCCCF draws upon research capacity from experts in various fields, including environmental health. CCCCCF is also highly effective in considering both small and large opportunities. Through its Children’s Environmental Health Learning Kit, developed in partnership with many other organizations, CCCCCF provides early learning and child care practitioners with extensive resources. They provide a wide range of educational and outreach work for child care settings in a flexible format that is supportive of the needs of practitioners and parents alike. For more information on CCCCCF, see www.cccf-fcsge.ca.

Program Example: South Riverdale – Experience Born of History

At the South Riverdale Community Health Centre in Toronto's east end, an innovative and award-winning educational program called *Hidden Exposures* arose from a long history of environmental consciousness and some very practical questions posed by pregnant women in the community.

South Riverdale spent nearly thirty years addressing the local smelter emissions and broader issues of lead in gasoline, lead in paint, etc. The community health centre was a constant partner with community leaders in this effort. By the mid 1990s, the community had a high degree of awareness about lead and other environmental health issues. Their experiences laid a strong foundation for understanding the “hidden” nature of environmental risks. Lead in the air, soil, dust, etc., was invisible but could harm children. This community, and the South Riverdale CHC in particular, became a leader in Canada in the production of educational workshops, written materials and advocacy about the hazards of lead exposure and the means of avoiding it.

Building on these experiences, the health centre staff recognized the need for greater awareness in the community about other hidden exposures. Initially the Environmental Health Promoter worked directly with

residents in social housing. They focused on increasing awareness about the potential hazards in some cleaning products. At the same time, broader issues related to both outdoor and indoor air quality were in the news and receiving a lot of attention in Toronto. Many additional questions came up during this work including how to address problems of mould and pests. These concerns were linked to sub-standard housing and the inability to afford necessary housing maintenance.

The health centre, in partnership with Toronto Public Health, conducted a needs assessment with pregnant women and prenatal educators. Both groups were asked to identify common questions on environmental exposures. Using the results of this needs assessment to guide the work, the Hidden Exposure project was developed. Details are discussed later in this chapter. Several motivations and information streams guided these planning efforts including:

- Knowledge of the community
- Needs assessment of prenatal educators and pregnant women
- The knowledge base and research efforts of colleagues and emerging partners in the environmental health community of practice

Audience Analysis

The topic of children's environmental health is immense, and at times, daunting. It is concerned with possible health risks prior to conception, during pregnancy, throughout childhood, and as a result of many different exposures. As such, your work can include many topics and many different audiences. A few priority populations include women and men who are planning a pregnancy, pregnant women and their partners, parents and service providers who work on areas of preconception, prenatal and child health.

It is helpful to identify and focus on specific populations of interest and their needs. Audience analysis provides guidance in changing your style and approach to suit a specific population of interest. For example, an audience of civil servants, policy-makers and other professionals would expect a technical presentation providing reasoned arguments supported by data and references. Even though much the same material would be presented to an audience of parents, it would be done with less technical detail, incorporating hands-on learning opportunities, and illustrated with examples that are directly relevant to their daily lives. The two groups will have different interests and learning opportunities and will apply the information in different contexts.

Once you have selected your population of interest, you will want to gather information to help guide the selection of objectives, messages and strategies. Collect existing information about your population of interest and conduct any necessary needs assessments to fill in the gaps.

Program Example: Share the Warmth – Working Across Different Sectors

Your outreach work in health promotion can benefit from seeking advice from other sectors. Useful advice and partnership opportunities are available when you seek help beyond your traditional frame of reference. For example Share the Warmth is an organization that draws upon multiple perspectives and services to strengthen its activities and accomplishments. This non-governmental organization focuses on people who are vulnerable to homelessness. For several years this group has worked in partnership with multiple social service agencies and community-based relief agencies. They have helped over 29,000 people across the province eligible for direct assistance with energy costs. The need for services such as food, counselling, etc., is assessed, and the clients are linked with services that meet their needs. This occurs through the coordinated efforts of many agencies. During 2004, Share the Warmth's advocacy was instrumental in the creation of a \$2 million energy assistance fund by the provincial government. The group recognized that inadequate access to affordable energy is one of the root causes of homelessness. Effective solutions for low-income households focus on energy conservation measures. Share the Warmth has designed and delivered these programs via collaborative work with environmental organizations and others with expertise in energy conservation. For more information on Share the Warmth, see www.sharethewarmth.org.

Program Example: Laying the Foundation for a Pesticide By-law

Two activities were organized by eco-Perth to achieve a policy reform objective – a pesticide by-law. To get a better understanding of the issues, the group attended a large public forum on this topic in another municipality. Two strong impressions resulted. The group was inspired to support a by-law approach as a precautionary response to uncertainty about children's health risks from pesticides. Second, they did not find it helpful to have the issue presented as a highly polarized debate over the science behind the possible health risks. To address the issue in Perth and Lanark County, eco-Perth chose to hold two events: a day-long workshop for municipal staff and politicians in eastern Ontario and an evening public forum. Planning for each event incorporated and accommodated the differences between these audiences.

Eco-Perth's objectives for the first event were focused on providing municipal staff with the information they needed to address this policy reform issue. They asked staff and politicians in Perth and neighbouring municipalities what they were facing in the pesticide by-law debate. This research showed that municipal staff needed information to figure out how and when to address this issue (i.e., understanding their legal authority, seeing other approaches and reviewing sample by-laws). Eco-Perth understood small town realities. Municipal staff and politicians needed the opportunity to ask their own questions, see other models, review background information and to be

prepared to handle this complex issue in the context of limited staff resources. The municipal staff balance widely varied tasks such as the pesticide by-law issue and managing the local arena. The workshop offered staff and politicians an opportunity to calmly discuss the issue among their peers in a non-confrontational environment. Eco-Perth created a very practical session with a diverse set of speakers and written/electronic resources. Key messages included information about pesticide risks and alternatives, provided within an overall focus on practical information relevant to decisions concerning a pesticide by-law.

The public forum held in Perth had a slightly different set of objectives and messages. The forum provided a brief summary of the health concerns about pesticides and a review of the legal tools available to municipalities. It focused mainly on how to achieve healthy lawns and gardens without the use of pesticides. Prior research revealed this information was of primary interest to their public audience. The messenger for this information about alternatives was Ed Lawrence, a well-known and trusted expert. His credibility and expertise provided necessary reassurance for those uneasy about not using pesticides.

To find out more about eco-Perth, see www.ecoperth.on.ca.

Learn about your population of interest:

- Where are they?
- What do they care about?
- What do they know already?
- What stage of change are they in? Are they committed, involved, interested, unconcerned?
- How do you effectively reach them and engage their participation?
- Have you considered issues of poverty, literacy and any barriers to action?
- Are there cultural issues to consider?
- Are there geographic considerations? Is this a rural, remote or urban population?
- Is your population male, female or both? Do the men and the women in your population of interest need different types information, or different approaches?

Spending time on audience analysis can help you select effective and appropriate interventions. The more you know about your population of interest, the more likely you are to tailor your work to meet their needs. For additional sources of information about audience analysis, see Appendix A.

Thinking About Fathers

Within the varied set of possible audiences for an environmental health message about children, fathers are a distinct segment. While our understanding of how to create and run effective programs for fathers is increasing, many services are still not designed to meet their needs and interests. With the exception of prenatal groups, men rarely participate in workshops or other educational activities about children, including children's environmental health. Fathers today are generally very different from their own fathers in



photo credit: Mark Surman

terms of much greater involvement in caring for their children. They are attending the birth of their children, some are taking parental leave, and some are staying home in the early years to raise their children. However, we need to continue to work to understand and apply strategies that meet the needs of fathers.

Ten or fifteen years ago most separations or divorces in Canada occurred when children were in their teen years. Statistics reveal that today, many couples end their relationship when children are very young. This reality has implications for the situations and conditions in which children grow up. The level of child poverty in Canada is very high. One in six children lives in poverty and most of these children live in single parent families. Poverty is a known factor for increased environmental exposure. After a

Program Example: Issues to Consider in Reaching Fathers

Tim Paquette, a leading advocate for the growing fathering movement in Canada raises important issues about health promotion for fathers. He describes the “chicken and egg” scenario:

- Are fathers reluctant or uninterested in participating in programs about children?
- Or, is there a lack of programs relevant or inclusive of fathers which makes them reluctant to participate or to appear uninterested?

In his experience, the vast majority of programs for “parents and children” are geared to mothers and children. It is very common that the experience of fathers trying to participate in such programs is challenging and isolating. These programs are designed to encourage social interaction among the adults. Men may feel excluded by the women in these settings, both the female service providers and the mothers. For the men who choose to be stay-at-home dads in their children’s early years, this isolation can also come from the attitudes of other men who devalue or denigrate the choice made by such fathers. Hence, the social isolation can be doubled.

separation, most fathers continue to be involved in their children’s lives. There are many different shared custody arrangements. Children of separated parents may be living part-time in more than one household and local community and they may be travelling more than other children. Both the indoor environment (where children spend over 80% of their time) and travelling can significantly affect a child’s exposure to environmental contaminants. (*Primer: pages 20–22, 28–30, 34, 65–69 and 73–75*)

Ask yourself:

- When you talk to or write educational materials for “parents” are you including fathers?
- Can you be sure your message is reaching fathers? That is, reaching them directly, and not just through their partners?
- Do you ask fathers about their information needs?
- Do you know how men like to receive their information?
- Do you think about ways to involve men in delivering your messages?

When fathers see programs that are offered for “parents” their experience tells them that the programs do not necessarily meet the needs of fathers. However, if they see the word “fathers” or “fathering” it makes a big difference.

For additional sources of information on involving fathers, see Appendix A.

Selecting Objectives

Objectives for health promotion work can arise from organizational mandates, community demands, or funding requirements. Objectives will reflect the type of work that is being planned, and what you want to achieve in your work. The objective may be to increase awareness, change policy or reduce the pollutants coming from a local industry.

For some strategies, the ultimate desired change is behavioural. However, people don't easily change their behaviours. They may live and work within complex settings that can be difficult to change. Objectives should address factors that mediate behaviour change including existing knowledge, beliefs and behaviours of others. Initial objectives may relate to changing awareness, while later objectives may relate to advocacy or policy change. All objectives should be S.M.A.R.T. i.e. specific, measurable, attainable, realistic and time-limited.

For more information on setting objectives, see Appendix A.

Developing Your Content

Three simple steps can be used to develop message content for a range of strategies, such as large-scale awareness campaigns, workshops or media events:

- Key information (the "What").
- Relevance to the audience (the "So What").
- A call to action (the "Now What").

For planning purposes, these three steps provide a useful framework for making decisions about messages and products, tailored to specific audiences as necessary. Decisions also need to be made about tone, appeal, the messenger, etc.

Program Example: Clean and Green Workshops

A staff member in the local Community Health Centre worked as a Community Developer in the Early Years program. She wanted to add environmental awareness to her programming. With only a general awareness about environmental issues, she consulted with a local environmental group, eco-Perth, to better understand the issues and choose where to focus her attention. Working together, these two groups combined their expertise and resources. They decided to focus initial efforts on a practical activity for families. They started with a topic that was manageable and non-threatening and presented a range of issues of direct relevance to children's health. They developed a workshop called Clean and Green to share practical ways to find or make economical home cleaning products that were less toxic. Their objectives focused on increasing awareness about risks and sharing practical information about safer alternatives. Key messages flowing from these objectives included information and awareness about risks from toxic substances in cleaning products and the means to enable behaviour change (by providing practical information and materials to make or purchase safer, non-toxic alternatives). To find out more about the Clean and Green Workshops, see www.ecoperth.on.ca.

Table 4.1 provides several examples of applying this framework to exposure issues of concern to child health. Options in the “Now What” column could vary with different audiences. See the glossary for unfamiliar terms.

For additional sources of information on message development, see Appendix A.

Table 4.1: Examples of Content Development

The “What”	The “So What”	The “Now What”
Exposure to phthalates from consumer products, via food packaging, soft vinyl products and numerous cosmetics and personal care products (<i>Primer: pages 51–56, 54, 99–100 and 106–107</i>)	<ul style="list-style-type: none"> • Lipophilic chemicals that migrate from plastics into fatty foods appear to be persistent in the environment. • There is widespread exposure and uptake in people with higher levels in children. • Multiple health effects are suspected, including endocrine disruption, resulting in effects on male reproduction. 	<p>Examples of personal choices/behaviour.</p> <p>Avoid:</p> <ul style="list-style-type: none"> • Oven-baking or microwaving foods in plastic containers or with plastic lids or covers. • Soft plastic toys for children. <p>Choose:</p> <ul style="list-style-type: none"> • Fabric shower curtains, backpacks, lunch boxes, etc., instead of soft vinyl. <p>Examples of policy choices.</p> <p>Advocacy for:</p> <ul style="list-style-type: none"> • Banning phthalates in products that allow fetal or childhood exposure. • Safer alternatives (from industry and retailers).
Exposure to lead from consumer products (mini-blinds, inexpensive jewellery, vinyl lunch boxes, etc.) (<i>Primer: pages 36–40 and 106–107</i>)	<ul style="list-style-type: none"> • Lead is known to be highly toxic and unsafe for young children at any exposure level. • Lead impacts on brain development from fetal and early life exposure. • Some consumer products such as plastic mini-blinds (purchased before 1997) and a wide range of inexpensive jewellery can contain dangerous levels of lead. 	<p>Examples of personal choices/behaviour:</p> <ul style="list-style-type: none"> • Carefully discard plastic mini-blinds bought before 1997 (or old blinds of uncertain age) avoiding highly-contaminated surface dust. • Search toy and jewellery boxes, birthday party favour bags, and clothing zipper pulls. Discard items that are a dull grey colour, heavy for their size and that, in some cases, will “draw” a grey line on paper. • Avoid inexpensive vinyl lunch boxes. <p>Examples of policy choices:</p> <ul style="list-style-type: none"> • Advocacy for a federal “materials use” policy to strictly limit lead to essential uses and disallowing use in consumer products.

Table 4.1: Examples of Content Development (continued)

The “What”	The “So What”	The “Now What”
Exposure to organic solvents during pregnancy (<i>Primer: pages 46–50, 49, 102, 104–105, 108–109 and 111–112</i>)	<ul style="list-style-type: none"> Organic solvents are readily absorbed, tend to accumulate in fatty tissue and will cross the placenta. Prenatal exposure is linked to effects on reproduction and the developing nervous system. Occupational exposures of greatest concern (e.g., dry cleaning, hair salons, floor and tile cleaners, glue and laboratory reagents). Home renovation exposure risks — paint removers, paint thinners, oil-based paints and finishes. 	<p>Examples of personal choices/behaviour:</p> <ul style="list-style-type: none"> Avoid occupational prenatal exposure. Ensure plenty of ventilation in hair salons and dry-cleaning operations. Seek alternative, low-solvent cosmetics, cleaning and home renovation products. Ensure attached garages are well-sealed from rest of home and externally-ventilated. Ensure products containing solvents are tightly closed, spillage is carefully controlled and excess product is disposed as hazardous waste. Avoid home renovation activities during pregnancy. <p>Examples of policy choices:</p> <ul style="list-style-type: none"> Education of construction trades (at high school and college level and via information at retail outlets) about prenatal risks of solvent exposure. Incorporate information about prenatal solvent exposure and home renovation risks across public health and occupational health programs.
Exposure to arsenic in pressure-treated wood (<i>Primer: pages 41, 106–107 and 108–110</i>)	<ul style="list-style-type: none"> Arsenic is a known human carcinogen and is associated with toxic effects on the nervous and cardiovascular systems. Exposure for children can occur from contact with green-tinged wood treated with chromated copper arsenate (CCA) purchased prior to January 2004. Despite the CCA phase-out, all pressure-treated wood contains some type of pesticide. Similar precautions are necessary. 	<p>Examples of personal choices/behaviour:</p> <ul style="list-style-type: none"> Wash children’s hands after contact with CCA-treated wood. Cover picnic tables made from pressure-treated wood. Never burn pressure-treated wood. Saw, sand and machine pressure-treated wood outdoors. Wear a dust mask, goggles and gloves. Clean up the sawdust to avoid tracking-in on shoes or pets. Do not mulch or compost the sawdust or wood chips. Coat the surface with a penetrating wood sealant (not paint). Reapply regularly. <p>Examples of policy choices:</p> <ul style="list-style-type: none"> Advocacy to apply surface sealants on playground structures built with CCA-treated wood.

Table 4.1: Examples of Content Development (continued)

The “What”	The “So What”	The “Now What”
<p>Exposure to contaminants in indoor dust (<i>Primer, pages, 56, 65–69, 73, 83, 101, 104–105, 106–107, 108–109, 110, 111–112</i>)</p>	<ul style="list-style-type: none"> House dust is one of the most significant exposure media for children. It can contain trace amounts of a wide range of environmental contaminants including metals, pesticides, PAHs, PCBs, phthalates, brominated chemicals (fire retardants), organotin compounds, short-chained chlorinated paraffins, and more. Contaminants originate from multiple indoor and outdoor sources: old paint, consumer products and tracked-in on shoes, wheels or pets. When tracked-in they are no longer subject to outdoor weathering and can remain in dust, on carpets and furniture longer than would occur outdoors. These contaminants are suspected in a wide range of health impacts of concern to preconception, prenatal and child health. 	<p>Examples of personal choices/behaviour:</p> <ul style="list-style-type: none"> Frequent hand washing, especially before eating or preparing food. Wet mopping instead of dry dusting, or use a vacuum cleaner. Washable floor mats at entry doors; wash separately from other laundry. Children and pregnant women should avoid emptying a vacuum bag. Careful disposal of vacuum cleaner bags; don’t compost them. Dispose of dust rags carefully or wash separately. Apply same precautions with dryer lint (don’t use it for children’s crafts) and dust and dirt inside vehicles. Control “take-home” exposures: Keep work shoes and boots separate from children’s footwear and common household areas. Keep work clothes separate from other laundry, wash separately as well. <p>Examples of policy choices:</p> <ul style="list-style-type: none"> Multiple policy reforms to achieve toxic use reduction in consumer products. Support municipal pesticide by-laws. Ask industry and retailers for non-toxic alternatives.

Testing Messages and Products

A key step in any message development is expert review. It can confirm accuracy of information and help avoid inconsistent or conflicting messages across this multi-disciplinary field. Piloting your messages and products with your chosen audience is equally important.

Reviewing, testing or piloting your materials can be accomplished in many ways. You can use:

- In-house expertise
- Existing partnerships
- External expert review
- Formal or informal focus groups
- Less formal settings

For example, take a draft pamphlet or workshop idea to a prenatal group or parenting program. Ask a few short questions about what they like, don't like, does it meet their information needs, population of interest and main messages.

Readability and appropriate literacy levels are also important. Include a literacy review when testing draft resources.

For message review tools, and tools for testing literacy levels, see Appendix A.

In addition to expert review, input from the population of interest and literacy levels, consider the following chart during reviews of draft materials.

Table 4.2: Examples of Issues to Consider in Review of Materials

Issue	Examples
Respect for cultural differences about body image.	<ul style="list-style-type: none"> • Photographs of a bare pregnant belly can make some people uncomfortable or may be culturally unacceptable. When possible, use images that do not include a large amount of exposed skin.
The use of images such as baby bottles.	<ul style="list-style-type: none"> • When an environmental group used an image of a plastic baby bottle, the intention was to recommend that parents avoid using plastic containers in the microwave (to reduce exposure to phthalates, bisphenol A, etc.). Partners in the local public health department asked for a different container to be used since they saw this image as conflicting with their messages about promoting breastfeeding.
Recognition of the needs of fathers.	<ul style="list-style-type: none"> • Men want programs that are designed for fathers. • Men want information that is directly relevant to their role. • Men may prefer the internet as a source of information because it is a place where they can be anonymous, private and in control of the information. They may appreciate interactive websites as well as interactive, hands-on workshops on very specific, practical topics.
Issues of cost.	<ul style="list-style-type: none"> • Categorize your information about alternatives into approaches that are expensive, low cost, revenue-neutral or that can save money. • Some recommended alternative approaches, such as buying organic food, can be more expensive, but this is not always the case. Food buying clubs can help to cut costs. For information on setting up food buying clubs, see Appendix A. Locally grown food, where available, can be a lower cost alternative to organic food.

Program Example: Helping People Deal with New or Alarming Information

Susanne Burkhardt of the Ontario Public Health Association's Environmental Working Group has several techniques for addressing these challenges. She uses a photograph of her son wearing roller blades, a helmet, knee pads and elbow pads. She points out that 30 years ago, this kind of preventive approach to child safety would have looked surprising and even ridiculous. Times have changed. With greater awareness about head and other injuries from this sport, this kind of protective gear has become more commonplace. She then points out that much of the information she is about to discuss about environmental risks to child health may seem unusual or extreme but it will introduce a new and important topic. She incorporates as many familiar touchstones as possible in her presentation, often using personal stories/images and motivations. She encourages people to ask questions, which is helpful when the information is very new (but can create challenges to getting through all of your material). People want to talk about these issues, tell their own stories and ask questions. Good adult education processes make room for this interaction.

Susanne makes sure that her audience knows where she is going with her presentation. She prefaces her

remarks by noting that she will be covering a lot of troubling information but also points out that she intends to spend the majority of the time focusing on what can be done in response. This message is reinforced as she proceeds. Susanne has discovered that managing the energy in a room is important when you need to introduce and spend some time explaining complex and frightening information. Everyone needs to start from a basic level of information and often the mood in the room descends. It is helpful to use humour, draw upon personal experience, and consistently remind people that the emphasis will ultimately shift to solutions. In so doing, most participants can leave the session feeling informed and motivated to take action.

Another way that Susanne puts this information into context is to point to where progress has been made, especially at the international policy level. She notes that modest progress has been made in Canada but much work remains to be done. She feels that people find reassurance in taking steps towards change when they are aware that the issue is being taken seriously in a much larger context.

For information on fear based appeals, see Appendix A.

Recognizing the Impact of the Message

Information about children's environmental health is often totally new to people. It can be frightening and depressing. It is also based on emerging and incomplete science and it can be highly complex. These factors present significant challenges to communicating this information.

We must constantly confront issues of fear and powerlessness that can be created by this information. Here are some suggestions:

- Be up front. Tell people that we have a lot to learn.
- Discuss the uncertainty and troubling nature of the information in the context of the precautionary principle. We can respond to uncertain risks by taking positive actions that reduce risks or provide lower risk alternatives.
- Focus at least half or more of your discussion and activities on solutions, including problem-solving approaches that are practical and empowering and can be applied in varied circumstances. (*Primer: Chapter 6*)
- Send the message that individuals can take on manageable changes at a pace they can handle (e.g., one change per month is twelve changes per year).
- Point out areas where progress has been made. Examples include the high levels of public awareness of the risks of alcohol and tobacco on the developing fetus and similarly high levels of awareness about the many benefits of breastfeeding. More recently, growing numbers of municipalities have enacted pesticide by-laws to prevent pesticide exposure to children.
- Point out the benefits of what people do already and/or know to be beneficial. For



photo credit: Mark Surman

example, good nutrition via a balanced diet high in whole grains, fruits and vegetables, breastfeeding, regular hand washing, etc., are all practices known to help promote good health. They are also part of childproofing for environmental health.

- Be positive and non-judgemental in delivering this information. Be part of a process of knowledge exchange not just knowledge transfer. Emphasize that we can all learn from each other. Be supportive and empowering of parents.
- **Let the experts debate the science, while encouraging the public, parents and policy-makers to focus on lower risk alternatives.**



photo credit: BoAnne Tran

Implementation and Evaluation

There is an increasing level of concern about environmental risks and service providers are considering ways to incorporate information about these risks into their work on preconception, prenatal and child health. There is a thirst for specific, well-designed and well-tested strategies for child care, public health,

community and other settings. In Ontario, a few groups are doing excellent work on this topic, and many others are preparing to address this issue. In a few years there will be sufficient carefully evaluated projects to establish best practices. This chapter shares information about specific promising initiatives, and about approaches that appear to strengthen work on this topic.

Summary of Key Points – Implementation and Evaluation

Overall considerations in choosing your strategy:

- Develop a flexible approach. Start small or large, depending on opportunities, funding, your skills, and the readiness of your community.
- Build on previous initiatives.

Work with colleagues and partners to:

- Raise awareness among service providers and managers.
- Develop strategies for building new information into existing programs.
- Conduct an audit or checklist of facilities where pregnant women or children spend their time.

For effective workshops on children's environmental health issues:

- Include an introduction and overview of the entire topic.
- Focus on a specific topic or audience (e.g., prenatal educators or those attending prenatal groups).
- Avoid too many sub-topics and overwhelming the audience.
- Apply interactive techniques that are engaging, creative and solutions-focused.
- Ensure that at least half of the information is focused on solutions or lower risk alternatives.

Evaluation is:

- A necessary and useful part of the work, throughout planning and implementation.
- Helpful for improving future planning. Think about what you want to learn from the evaluation, before you design the evaluation format and questions.

An “Accordion” Approach

It is more effective to apply multiple, complementary strategies, than to use a single approach. If you are just getting started, or are expanding your work to address environmental health, it can be helpful to think of this work using an “accordion” approach.

You can start small or large, depending on opportunities, funding, your skills, and the readiness of your community. You can stretch or reduce your research, objectives, messages and health promotion activities across different circumstances. For example, in terms of face-to-face opportunities, you might have a few minutes or several days.

Table 5.1: Environmental Strategies to Fit Different Time Periods

Amount of Time	Strategy
2 minutes	<ul style="list-style-type: none"> a media interview that may be further condensed into a 45 second “sound-bite”
5 minutes	<ul style="list-style-type: none"> share brief information during a prenatal or postpartum visit include brief information in the agenda for a prenatal class talk to parents at the door of a child care centre when they are picking up or dropping off children raise the issue during a busy meeting with other staff or supervisors speak to the media
10 to 15 minutes	<ul style="list-style-type: none"> part of a panel discussion about issues related to prenatal and child health one topic in an evening session with parents at a child care facility or in a prenatal group
30 to 45 minutes	<ul style="list-style-type: none"> a brief presentation with time for discussion and questions
2 hours	<ul style="list-style-type: none"> a workshop to introduce the topic and address some key issues in an interactive format
Two half-days or a full day	<ul style="list-style-type: none"> a workshop to introduce the topic, provide opportunities for more interaction and to address key issues of interest to your audience
Several days or half days	<ul style="list-style-type: none"> a workshop series to address a range of issues of interest to your colleagues and/or clients, the topics for which you have determined through your own research or a needs assessment



photo credit: Mark Surman

Once you have developed content for one face-to-face event, the information can be re-purposed for other strategies, by expanding, shortening, adding or removing information. The same flexibility in approach can be applied to written materials or displays. The type of resource will vary, according to the population of interest and your opportunities, and may include brochures, posters, articles, briefing notes, research papers or summary presentations. Similarly, when you have limited time or space to engage people directly, your messages can be supported with written materials such as workshop handouts, flyers, newsletter articles, newspaper ads or displays.

In any learning, it is important to put sub-topics such as lead into the broader context of

environmental risks to child health. Given the breadth and complexity of this topic, providing this context can be challenging. A clear focus on your specific audience and their needs can help avoid information overload.

Staff Training Activities

An important first step towards integrating new or expanded information into existing programs is to address information needs of colleagues and managers.

Some points to keep in mind include:

- Staff may feel like they already have too many priorities, and not enough time. Talk about simple ways to incorporate this topic into existing programming.
- Staff may be reluctant to address the issue because of the lack of solid evidence. Talk about the value of the precautionary approach.
- This is a large issue. It may be difficult to figure out where to start, and how you can make a difference. Discuss priority concerns for your community.

It may be helpful to start with an overview presentation by a knowledgeable and trustworthy speaker. Ask the speaker to illustrate some key points with reasonably well-known issues such as asthma and air pollution, child concerns about lead or pesticides or on topics of local interest. For larger groups, use a keynote presentation and ensure participants know how and where they can get more information. For small group activities, use interactive techniques.

Think ahead to next steps. It is likely that an introductory workshop will need to be followed up with more in-depth training for smaller groups of service providers. Subsequent sessions can be tailored to groups who are ready to make changes in service delivery. For example:

- Think about coordination between those doing prenatal health work and those who do postnatal home visits.
- Find out if the occupational health specialists include information about home renovations or take-home exposures by contractors involved in renovations.
- Find out if the dieticians are addressing the dual issues of the nutritional benefits of fish and the risks of excess methylmercury exposure.
- Ask if service providers have received difficult questions they could not answer. See if you can find answers to these questions.

Strategies for Building New Information into Existing Programs

There are many community locations and activities where parents or families gather or obtain resources or services. These are important places for providing written information and for advertising upcoming workshops. The Thunder Bay District Health Unit has developed a "Home Environment checklist" that can be used as a public display in a variety of venues or used online. See www.tbdhu.com/gateways/homeenvironment.htm.

It can be helpful to organize events in downtown locations or near large workplaces during the early morning or "breakfast hour" to accommodate work schedules. You can also include information in company health fairs, or arrange for a lunch hour speaker in a workplace. In one example, the New Brunswick Lung Association held a "Free Noon-time Session for Busy People." Four speakers discussed the topic of child health and the environment, a voluntary donation was taken and lunch and bus tickets were provided.

As a service provider, you have a lot to cover when you are supporting and educating expectant and new parents. Environmental health messages can be embedded into regular practice by many different practitioners: family doctors, public health nurses, midwives, prenatal educators, public health dieticians, occupational health specialists, public health inspectors, health promoters, community developers, social workers, environmental educators, early learning and child care workers, home child care operators, etc. For example, during a well-baby visit, a family doctor or nurse practitioner can inquire about the age of the home including the condition of any older paint. If he/she suspects a lead exposure risk, educational material can be provided and additional follow-up may be necessary such as a blood-lead test, sibling follow-up, and interventions to prevent exposure. During pregnancy, a doctor or prenatal educator can ask about any renovation plans. Since so many parents renovate to prepare for a new baby's arrival, the possible exposure risks, particularly organic solvents and lead, are an extremely important



photo credit: Mark Surman

issue. Expectant parents need to be informed about risks to the developing fetus.

Environmental exposures to men and women prior to conception present one of the most compelling reasons for embedding these messages into clinical health services and across health promotion programs. Some environmental health risks to children require awareness by men and women of child-bearing age before they even think about having children. For example, preconception exposures to lead, some pesticides, methylmercury and other contaminants can affect reproductive health or contribute to developmental concerns in future children. For more information on preconception health, see Appendix A.

Audits of Existing Facilities

Consider running an audit of settings where children spend their time. Appendix B contains a sample audit checklist developed for early learning and child care practitioners. The checklist is accompanied by a detailed table that discusses each of the questions and provides corresponding childproofing tips.

The technical report from Toronto Public Health, upon which the *Primer* is based, contains a similar appendix about addressing environmental health issues in schools (see Appendix A). In this example, the action steps are focused on school policies and procedures to reduce environmental risks. This useful template summarises a range of potential exposures and related action steps that can be taken in the school environment. The information in this template can also be applied to other settings.

Working Directly With Children

Caregivers and children can learn about avoiding or reducing exposure risks through activities that raise environmental awareness. See for example, the Evergreen Foundation “Learning Grounds” program at: www.evergreen.ca. Throughout the day, children can also learn about many environmental health issues during regular routines such as:

- Hand washing
- Shoes off at the door
- Eating nutritious food
- Regular exercise

- Walking instead of driving to school. For example see, Active and Safe Routes to Schools at: www.saferoutestoschool.ca
- Monitoring smog alert information and public health recommendations for modifying activity levels
- Ensuring sun protection
- Eliminating standing water from mosquito-breeding habitat
- Avoiding being outside at dawn and dusk when insect populations are active
- Reading labels if applying insect repellents

Awareness of environmental issues can be increased through the involvement of school-aged children. A wide variety of environmental topics have been covered including waste reduction and recycling, water and energy conservation, and various efforts at toxic use reduction. The Tools of Change website (www.toolsofchange.com) is a valuable resource profiling case studies of many such projects.

Workshops – Options to Consider

Tailor workshop topics to specific audiences. Sometimes it makes sense to introduce the entire topic. At other times you may want to provide an overview and then focus on a particular sub-topic.

An **introductory workshop** (or keynote talk to introduce more focused workshops) can introduce the entire field of children's environmental health. It could cover the topic areas described in the *Primer* including:

- Recognition of the full range of life stages at issue (preconception, prenatal, early years, adolescence)

Activity – Hand Washing with Petroleum Jelly and Cinnamon

Andrea Gingras is a retired registered nurse by training and the president of the Child Care Providers Resource Network of Ottawa-Carleton. To reinforce the importance of hand washing, Andrea has children spread petroleum jelly on their hands and then sprinkles their hands with cinnamon. Only the most thorough hand washing techniques, with lots of soap and water, can remove the cinnamon. Children can have a lot of fun with this activity. They can learn about and experience the properties of greasy substances. They can smell the cinnamon and recall familiar items (cinnamon hearts, spicy cookies). The point of the exercise is also to talk about how the petroleum jelly and the cinnamon are being used to make something that is normally invisible (germs, dirt or contaminants) into something they can see and smell. Call it a magic trick. It is a fun way to learn about the importance of thorough hand washing. They will also remember the activity. If later hand washing is not done or not done thoroughly, they can be reminded that the petroleum jelly and cinnamon showed them what it takes to remove the “invisible” stuff (germs or contaminants).

- The reasons children are uniquely vulnerable to environmental contaminants
- The health effects of concern
- Exposures of concern
- Policy issues that arise
- Precautionary advice and childproofing tips

Program Example: Hidden Exposures – Workshops for Prenatal Educators

During the 1990s, women in the South Riverdale community were asking the Community Health Centre (CHC) about environmental risks during pregnancy and childhood. This community had a long history of responding proactively to the hazards of lead exposure. Women wanted information about other possible risks. As a first step, the CHC developed *Hidden Exposures – A Practical Guide to Creating a Healthy Environment for You and Your Children*. Published in 1997, this user-friendly print resource focused on many positive actions parents could take to prevent or reduce toxic exposures in the indoor and outdoor environment. They soon recognized that educational work and precautionary action was necessary sooner, specifically during pregnancy, and so decided to focus their attention on the prenatal stage.

The CHC partnered with Toronto Public Health and developed relationships with environmental and public health teams that were expanding their knowledge and activities in the area of children's environmental health. The work began with a needs assessment of pregnant women in the community as well as prenatal educators. What were their information needs and how could they best be met?

Initially a binder of information was developed as a reference resource for prenatal educators. Pilot testing with prenatal educators identified that the binder contained too much information and that a more user-friendly approach was needed to effectively reach health care providers. Reviewers recommended a series of fact sheets written at a fairly high literacy level and a single pamphlet written at about a grade five level. In response the group developed a series of fact sheets, with topics drawn from the needs assessment. The fact sheets were intended to help prenatal educators incorporate environmental information into their prenatal classes.

Using the fact sheets and associated resources, three partners (South Riverdale CHC, Toronto Public Health and the Environmental Health Clinic) developed a series of workshops for prenatal educators. They held two-part "Hidden Exposure" workshops. The first workshop provided everyone with a basic level of information via a single presentation or a series of presentations. The second half was much more interactive. These workshops continue to evolve to meet the needs of different groups.

When you **tailor a workshop to service providers or the public** you would use key elements of the introductory workshop and add information that meets the needs of your audience, such as:

- prenatal educators
- early learning and child care practitioners
- parents
- members of an environmental group

A variation on the above would be to **tailor a workshop to specific topic areas**, generally focused on specific exposures and the means to reduce or avoid them. Again, you would retain key elements of the introductory workshop and then focus on a single topic area. Workshop topics could include:

- Air quality
- Consumer products
- Pesticides
- Cleaning products
- Renovation activities

Complementary objectives are served by providing both the topic overview and the more focused information. The overview provides necessary context. The broader introduction to the topic prompts a lot of discussion. Make time for this discussion. Remind participants that they will be focusing on the specific topic but keep in mind that people will appreciate an opportunity to talk and learn more about the broader issues. For example, they may have first hand experience of children with asthma or learning disabilities. With an opportunity to discuss these experiences and concerns, you will enable workshop participants to place their concerns into a broader context.

For more information on giving presentations, see Appendix A.

Interactive Tools to Prompt Discussion and Creative Thinking

Effective adult education techniques are interactive. The following examples can be tailored to many different circumstances. The overall objective is to get people talking to each other, having fun and especially seeing the workshop content as practical, relevant and interesting to their daily lives.

Activity – Quiz

Participants in the Ontario Regional Poison Information Centre train-the-trainer workshops start with a multiple choice quiz. Marking the quiz and discussing the answers can occur in various ways. The workshop facilitator can mark them or the participants can review each other's answers. In both cases, the quiz can be used as a discussion and learning tool. Multiple choice answers are a useful way to demonstrate common misconceptions about some issues. Discussion about the answers can tease out misunderstandings or subtle differences in interpreting information. The discussion can reveal the depth of issues that arise from a single topic. The checklist in Appendix B can also be used as a quiz in a group setting.

Activity – To-Do List

During the Hidden Exposures workshop (described previously) participants write a to-do list. They are encouraged to get “beyond the blue box” and think about additional behaviour changes to avoid environmental risks. Change becomes a choice that is up to each person in the room and according to their own situation. For example, pregnant women could choose to start phasing out the use of plastic containers in the microwave or a child care provider could choose to look at the purchasing choices made in their centre. The possibilities for each list are varied and will depend on the workshop audience and context. Introductory information provided in the workshop helps participants to develop their lists. After the participants finish their lists, they discuss their priorities and identify additional creative solutions. It is helpful to recommend a phased-in approach such as one change per month so that change is manageable and steadily adds up. One change per month is twelve changes per year.

Activity – Making Alternative Cleaning Products

It can be helpful to provide participants with recipes for alternative cleaning products. It is even better to make the alternative cleaning products during a workshop, providing participants with samples to take home. In the Clean and Green workshop organized by eco-Perth and the North Lanark County Community Health Centre, participants were given an introduction to the overall topic of children’s environmental health. They had time to talk about the issues and had a lot to say about children in the community with asthma and other breathing problems. However, the bulk of the time was spent on the very practical choice of changing household practices to reduce children’s exposures to toxic substances in cleaning products.

Instead of simply providing recipe cards for making cleaning products, participants made their own products, tried them out at the workshop and then took them home. Before the workshop, eco-Perth had found several recipes on-line and prepared and tested them for their effectiveness. For recipes for low-cost environmentally friendly cleaning products, see Appendix A. Workshop participants were able to learn about the process, take samples home and start to use them immediately. This workshop is an excellent example of interactive adult education techniques. Although it was focused on a single practical activity, the discussion that occurred was much more wide-ranging while also directly meeting the needs and interests of the participants.

Activity – Discussion Grab Bag

Another tried and true interactive technique is the grab bag of familiar items. This simple idea can be used in many different ways. Gather together a selection of items that are representative of a topic, and put them in a bag. In a small group, pass the bag around and ask everyone to take an item. Ask each person to describe what they have taken from the bag and how it fits with environmental health. Prepare a checklist of issues that you want raised for each item. If the discussion does not include these issues, raise them directly or try to prompt others to work out what is intended/represented. The discussion can be interesting and entertaining for the entire group as each person takes an item from the bag and provides their initial response on what it represents. Others join in and the facilitator may only need to monitor the discussion and add information as necessary. This technique is best suited to a group of 10 to 15 people. In a larger group, modify the approach by simply taking items from the bag yourself.

As “props” for discussion, the items in the bag can bring your messages alive, and can promote questions and group discussion. This technique also helps to avoid information overload and is directly relevant to people’s lives. Dianne Chopping at Toronto Public Health creates grab bags for workshops on various topics and tailors them to different audiences such as teen mothers or prenatal groups.

The items in the bag can be directly or indirectly representative of various issues. They can be simple drawings or specific items. They can

represent hazards or healthy alternatives. Beware of creating a grab bag that prompts far more discussion topics than you can handle! Make sure any potentially dangerous products are packaged safely. For example, you may want to use empty chemical containers, rather than full containers.

For a prenatal group, a grab bag on environmental hazards during pregnancy could include:

(discussion topics in brackets)

- drawing of a mercury thermometer (dangerous vapours if broken, encouraging replacement with non-mercury alternatives, often leads to further discussion of fish advisories, dental fillings)
- drawing of a roach (pesticides)
- asthma puffer (children with asthma, indoor and outdoor air quality)
- vacuum cleaner bag (contaminants in house dust)
- baggy of dryer lint (dust contaminants; don’t use for children’s crafts)
- old cell phone (exposure to EMFs – electromagnetic fields)
- paint brush (renovations, lead in old paint)
- renovation products containing solvents (birth defects, fetal brain development)
- soft vinyl toys and products (plastic shower curtain, soft toys)
- non-stick cookware (exposure at high heat to perfluoro chemicals)
- plastic products (reduce use in storing and especially heating foods)

...continued on next page

Activity – Discussion Grab Bag *continued*

- can of tuna or salmon (nutritional benefit of omega-3s and need to know about methylmercury)

You may also want to include healthy items. For example:

- non-mercury thermometer
- fabric shower curtains and back-packs
- Canada’s Food Guide to Healthy Eating, www.hc-sc.gc.ca/fn-an/food-guide-aliment/fg_rainbow-arc_en_ciel_ga_e.html
- pamphlets about fish advisory information, <http://action.web.ca/home/nutritio/attach/fish-facts-for-families-feb05.pdf>

- non-toxic household cleaners such as vinegar and baking soda, see www.lesstoxicguide.ca
- non-toxic pest control products or tips (*Primer: pages 50, 83, 84 and 104–105*)

You can add environmental content to the topic areas that you already cover in prenatal or parenting classes. Since the environmental topics cover a lot of ground, you may want to focus on a sub-set of topics, such as pesticides or cleaning products. In each of these you would discuss exposure sources and pathways, alternatives and action steps. In most cases you will also want to address important information about reading labels.

Activity – Who Ya Gonna Call?

Another interactive technique is “Who Ya Gonna Call?” Designed by the Ontario Regional Poison Information Centre to train service providers about poison prevention, this exercise addresses situations where parents or service providers might not be entirely sure who to call about a problem. The following description of the Poison Information Centre activity is adapted to suggest environmental examples. For this activity you will need to prepare two sets of cards and a summary sheet for the facilitator.

Resource Cards – The first set of cards concerns relevant service organizations. On the front of each card is the name of a service. On the back of the card there is a description of the service. For example, one card could be Telehealth Ontario, a toll-free number in Ontario that provides free medical advice from a registered nurse. Another card could be for Motherisk, a service that provides information and counselling services on the safety of drugs, chemicals, radiation and infection during pregnancy and lactation. Additional cards could be for 911, the family doctor, the Poison Control Centre, etc. Include one resource card for the Canadian Partnership for Children’s Health and Environment website, www.healthyenvironmentforkids.ca. See also,

...continued on next page

Activity – Who Ya Gonna Call? *continued*

Canadian Mother Resource for a list of services that could be identified on your cards:

www.thecmr.com/resources/links-180.htm.

Situation Cards – On each Situation Card there is a brief scenario. For example:

- A 3 year old girl receives a necklace from her aunt that was purchased in South America. The mother wants to know how to find out if it is safe for her daughter to wear.
- A teacher is concerned about pesticide use in the school, and wants to know about risks and safer alternatives.
- A pregnant woman wants to paint the baby's room, and is looking for advice on safety in pregnancy.
- A family is living in a basement with peeling paint on the walls, and mould in the cupboards. They want to know if this is a health concern, and if so, what they can do about it.

Summary Sheet – The facilitator would have a Summary Sheet of all scenarios that also indicates the most appropriate place to call for help or information.

Planning and running this exercise would proceed as follows:

Step 1: Make up about 10 cards to describe services (Resource Cards). Put the name of the

service on the front and a brief description on the back. Have extra blank cards at the workshop in case participants suggest additional services.

Step 2: Make up about 10 cards that describe situations of environmental risk (Situation Cards).

Step 3: Set up resource “stations” around the room by taping Resource Cards on the wall. As the stations are set up, participants can discuss the mandate of the resource.

Step 4: Ask participants to suggest additional resources. Additional resources can be suggested throughout the exercise.

Step 5: Participants take turns choosing a Situation Card. Each participant states the service they consider to be most relevant to their scenario and explains their choice to the group.

Step 6: Facilitator notes any pros and cons of the selection and encourages discussion. In doing so, the facilitator provides further information on the mandate of the service. The facilitator prompts discussion around factors that would affect the decision to call one resource versus another. In some scenarios, there may be more than one appropriate answer.

This technique is well-suited to novel or complex situations, and can be designed for parents, service providers and other groups. This exercise can also be reframed as a written exercise if it is not practical to use a group activity.

Activity – Using Film as an Educational Tool

Film can be a very useful educational tool for audiences and service providers alike. There is a long tradition of independent film production in Canada that seeks to accomplish public awareness and social change. For example, the “Challenge for Change” project at the National Film Board began shortly after World War II and brought to light the dangers of nuclear weapons and, since that time, many other important issues. Film is a medium that can hold up a mirror to society, place an issue in broad context and connect people with ideas and images deeply and profoundly. When done well, it can connect people to new information in the context of their own lives, communities or work experience.

As a teaching tool, film can be helpful to service providers who are new to the topic as they can rely on the expertise used to make the film. It can be used to introduce a broad topic before getting into specific areas. As educational tools, films are often accompanied by supporting information, suggestions for educational and outreach approaches and references for more detailed information. A brief list of relevant videos can be found in Appendix A.

Using the Media

The news media, including print, radio, TV and the internet, can be one of your more powerful tools. They can also be an effective way to reach audiences that face barriers in accessing information due to language, literacy level or isolation. With media coverage, you can increase your effectiveness in:

- Advertising your events
- Raising community awareness about your health promotion messages
- Reaching people who will play a role in implementing policy measures

Remember that the news media is in the business of covering issues with brevity and brief sound bites. Attention spans are short and competing priorities are plentiful. Think about short, simple messages that you want to share with the media. Frame your issue as important new information or a personal interest story, to help engage the attention of the media.

When you are seeking the attention of the media on complex issues, recognize that issues can be misrepresented and/or misinterpreted by both the media and the public. You cannot control the outcome in terms of media coverage but you can avoid problems by keeping your messages and interview statements simple and clear. If you are uncomfortable talking to the media, especially on contentious issues, you can always refer them to others. Reporters may want to talk to several different people. You can help them and your own efforts by directing reporters to experts you know and trust.

For tips on working with the media, see Appendix A.

Media Coverage as an Educational Tool

There will be times when you need to respond to media coverage about environmental health issues. You could get calls from media or the public seeking your interpretation on stories in the news. If the issue is controversial or alarming, as can be the case with children's environmental health issues, you need to be careful. Speak to what you know, including your understanding of the nature of the controversy or uncertainty. You don't need to have the answers to all questions that arise in your field. Make referrals to experts who may know more.

Part of your work with prospective or new parents will be to help them interpret alarming or conflicting media messages. Fish advisories are a good example. Media reports have alerted parents to methylmercury (and other contaminants) in fish. They discuss lack of regulatory controls, government advisories about methylmercury and the need to limit fish consumption, and the issue of higher levels of contaminants in farmed fish species, particularly salmon. A nutrition columnist may also share information about the many nutritional benefits of eating fish. For methylmercury in fish, parents will hear the following conflicting messages, many of which raise more questions (denoted in brackets):

- Fish are contaminated with mercury (which fish? all fish? some more than others? why are fish advisories different in different countries?)
- Mercury can harm the developing brain in a fetus and child (how much mercury? what about other sources like fish oil supplements or dental fillings?)
- Fish are nutritious sources of low-fat protein and omega-3 fatty acids (what about the other contaminants in fish – PCBs, etc.? does chicken or beef have a similar contaminant load?)
- Omega-3 fatty acids are good for healthy brain development in a fetus and child and brain functioning throughout your lifetime (what if I never eat fish? can I get the omega-3s from other sources?)

Media coverage creates greater awareness, even if that awareness arises from confusing or conflicting information. You can use media coverage of the mercury in fish issue to your advantage in a teaching setting. Pick the stories apart in order to answer common questions. Where the answers are unclear, discuss how and why the response should be a precautionary approach.

Complex issues require careful, direct, targeted and clear responses. For methylmercury in fish, the best advice for at-risk populations (women of child-bearing age, children and pregnant women) who eat fish is to continue eating it, but to choose fish wisely. They need to understand and carefully follow fish advisories. Provide the media with clear information about the risks, and the advisories. For more information on fish advisories, see Appendix A.

This example is a good illustration of the complexity and range of issues that can arise from a single media issue – contaminants in fish. There is a wide spectrum of complexities related to children's environmental health. Digging into the details of one topic can illustrate themes that are common to other areas.

Evaluation

Children's environmental health is a complex and rapidly evolving topic and evaluation is critical to learning about strategies to make your work as effective as possible. Evaluation results often provide important information that is useful in planning future events. Most peoples' work includes an evaluation component, due to funding guidelines, organization mandates, or because of the inherent value of this process. Evaluation most frequently occurs following an initiative, for example, through a review of evaluation forms completed by workshop participants. Evaluation can also be part of your planning stages (for example testing of draft resources), and/or the implementation stages (for example, tracking media reach, or number of events and participants).

During planning and implementation, gather information so that your evaluation can be:

- **Quantitative:** numbers of people attending, people reached, materials distributed, website hits, media coverage, policy change, etc.
- **Qualitative:** via feedback or written responses on workshop evaluation forms, direct observation and documentation of group mood, questions asked, etc.

Keep track of activities and decisions so that you can assess your success in terms of:

- **Formative evaluation** (e.g., was testing/piloting of resources successful?)
- **Process evaluation** (e.g., did issues arise that affected your steps along the way or the final results?)
- **Outcome evaluation** (e.g., via pre and post surveys).



photo credit: Mark Surman

Here are a few questions to consider during evaluation of your activities:

- Did you meet your stated objectives?
- What was the community/audience reaction?
- What went well?
- What aspects/activities could be changed or improved?
- What do you need to do next?

Workshop evaluation forms can capture both quantitative and qualitative information. To make it as easy as possible for participants to respond, consider the following:

- Keep the evaluation form short – no more than a single page.

- Provide a combination of multiple choice and written answers. If stretched for time, participants can skip the written responses but at least mark the multiple choice check boxes.
- Avoid raising expectations (e.g., for follow-up activities) that you cannot fulfill.
- Ask a few basic demographic questions, e.g., age, gender, number of children or grandchildren, country of origin, etc.
- Ask how they heard about your activity/event/campaign/written or electronic materials.
- Thank participants for their feedback.

Another evaluation approach is to track the amount of follow-up generated by an event. Given the complexity and range of issues within the children's environmental health area, and participants' enthusiasm for more information or continuing activity, follow-up is a common, often very rewarding, part of the overall activity. Participants may request additional information or contacts.

For additional sources of information on evaluation, see Appendix A.



photo credit: Mark Surman

References

- Benevides H and T McClenaghan, 2002. *Implementing Precaution: An NGO Response to the Government of Canada's Discussion Document "A Canadian Perspective on the Precautionary Approach/Principle."* On-line at: www.cela.ca/publications/cardfile.shtml?x=1002
- Best Start Resource Centre, 2001a. *Preconception and Health: research and strategies*. On-line at: www.beststart.org/resources/rep_health/pdf/Preconception.pdf
- Best Start Resource Centre, 2001b. *Workplace Reproductive Health: research and strategies*. On-line at: www.beststart.org/resources/wrkplc_health/pdf/WorkplaceDocum.pdf
- Best Start Resource Centre, 2002. *Reducing the Impact: working with pregnant women who live in difficult life situations*. On-line at: www.beststart.org/resources/anti_poverty/pdf/REDUCE.pdf
- Best Start Resource Centre, 2004. *How to be a Pregnancy Friendly Workplace: Policies and Practices that Make a Difference*. On-line, with related resources, at: www.beststart.org/resources/wrkplc_health/index.html
- Campbell M, 1998. Role of Health Professionals in Protecting Children from Environmental Risks: A Commentary. *Can. J. Publ. Health*, 89: S63–S73. Available online at: www.toronto.ca/health/hphe/pdf/89_S1_e_S6_S72.pdf
- Canadian Association of Physicians for the Environment (CAPE). Children's Health Project, On-line at: www.cape.ca/children/prev.html
- Canadian Child Care Federation, 2005. *Guide to Successful Facilitation*. On-line, with related resources, at: www.cccf-fcsge.ca/subsites/familytp/english/toolbox_en.htm
- Canadian Partnership for Children's Health and Environment (CPCHE), 2005. *Child Health and the Environment – A Primer and Playing it Safe: Childproofing for Environmental Health*. On-line at: www.healthyenvironmentforkids.ca
- European Environment Agency (EEA), 2001. *Late Lessons from Early Warnings: the Precautionary Principle 1896–2000*. Copenhagen. On-line at: reports.eea.eu.int/environmental_issue_report_2001_22/en
- Myers NJ and C Raffensberger (Eds.), 2005. *Precautionary Tools for Reshaping Environmental Policy*. MIT Press: <http://mitpress.mit.edu/catalog/item/default.asp?tttype=2&tid=10642>
- Oken E, Kleinman KP, Berland WE, Simon S, Rich-Edwards JW, Gillman MW, 2003. Decline in fish consumption among pregnant women after a national mercury advisory, *Obstet Gynecol*, 102: 346–351.

- Ontario Health Promotion Resource Centre, on-line. HP-101. Health Promotion On-line Course, at: www.ohprs.ca/hp101/main.htm
- Ontario Ministry of Environment. 2005-2006 *Guide to Eating Ontario Sport Fish*. On-line at: www.ene.gov.on.ca/envision/guide/
- Paquette T, Jones R and Bader E, 2003. *The Prenatal and Postnatal Needs Assessment of Fathers in Ontario CAPC/CPNP Sites*. Prepared for *Buns in the Oven*, Ottawa. On-line at: www.ocfp.on.ca/local/files/CME/Healthy%20Child%20Development/CPNP%20Final%20Report.pdf
- Region of Waterloo Public Health Department, un-dated. *Fish Facts for Families*. On-line at: <http://action.web.ca/home/nutritio/attach/fish-facts-for-families-feb05.pdf>
- South Riverdale Community Health Centre, 1997. *Hidden Exposures — A Practical Guide to Creating a Healthy Environment for you and your children*. On-line at: www.womenshealthmatters.ca/centres/environmental/Healthy-Environments/hidden_exposures.html
- The Health Communication Unit, of the Centre for Health Promotion at the University of Toronto. On-line. www.thcu.ca/index.htm
- The Health Communication Unit, 2000. *Understanding and Using Fear Appeals for Tobacco Control*. On-line at: www.thcu.ca/infoandresources/publications/fear%20appeals%20-%20web%20version.pdf
- Toronto Public Health (TPH), 2005. *Environmental Threats to Children: Understanding the Risks; Enabling Prevention*. On-line at: www.toronto.ca/health
- US Food and Nutrition Board, 2005. *Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids (Macronutrients)* see: <http://newton.nap.edu/books/0309085373/html/816.html>
- World Health Organization, Ottawa Charter for Health Promotion, 1986. On-line resources at: www.who.int/healthpromotion/conferences/previous/ottawa/en/ and full text of charter: www.who.int/hpr/NPH/docs/ottawa_charter_hp.pdf

Glossary

(Adapted from *Child Health and the Environment – A Primer*, Canadian Partnership for Children’s Health and Environment, September, 2005).

Association: The relationship between an exposure and a disease. Such a relationship does not necessarily demonstrate a cause–effect relationship.

Birth defect: Any defect present in a baby at birth, irrespective of whether it is caused by a genetic factor or by non-genetic prenatal events. Common birth defects include heart defects, cleft lip or palate, Down syndrome, spina bifida and limb defects. Birth defects are the leading cause of infant mortality in Canada.

Bioaccumulation: Some pollutants are excreted more slowly than they are absorbed and are thus stored in the body for long periods of time. Total pollutants in the body (the “body burden”) may increase if the organism is repeatedly exposed to bioaccumulating substances for a long period of time.

Biomagnification: Pollutants “biomagnify” when their concentration increases as animals eat contaminated plants or other animals. For example, when pollutants in plants are passed on to animals repeatedly feeding on the plants, the animals may accumulate higher levels of contaminants in their own bodies than were originally found in the plants. This is because the animals eat many plants and do not excrete most of the absorbed pollutants. Levels of contaminants can increase up the food chain.

Biomonitoring: Biomonitoring involves measuring and analyzing chemicals, hormone levels or other substances in biological materials (e.g., blood, urine, breath) to estimate exposure, or to detect biochemical changes in the exposed subject before or during the onset of adverse health effects. Biomonitoring sometimes refers to a specific indicator for a particular disease/functional disturbance (e.g., a blood test for lead).

Body burden: The total amount of a chemical in the body. Some chemicals build up in the body because they are stored in fat or bone and/or are eliminated very slowly.

Carcinogen: A substance (e.g., a chemical) or an agent (e.g., ionizing radiation) that causes cancer.

Childhood cancer: Among all age groups, the most common childhood cancers are leukemia, lymphoma and brain cancer. As children enter their teen years, the incidence of osteosarcoma (bone cancer) increases. Sites affected are different for each type of cancer, as are treatment and cure rates. In almost all cases, childhood cancer appears to arise from non-inherited mutations in the genes of growing cells.

Children: For the purposes of this manual, references to children refer to life stages encompassing prenatal through to end of adolescence. Early childhood refers to children aged 0–6.

Cognition/cognitive: The act or faculty of knowing or perceiving. Pertaining to or having the power of cognition, knowing.

Contaminants: Substances foreign to a natural system or present at unnatural concentrations; unwanted substances that have entered the air, food, water or soil. Contaminants may be chemicals, living things (e.g., bacteria or viruses) or the products of radioactivity. Some contaminants are created by human (e.g., industrial) activities while others are the result of natural processes.

DDT: Dichloro-diphenyl-trichloroethane. A persistent insecticide used worldwide until it was banned in most countries in the 1970s.

Developmental toxicants: Agents that cause adverse effects to the developing embryo, fetus or child. These effects usually result from maternal exposure to toxic chemicals before or during pregnancy, but can also result from paternal exposures. Early postnatal contact with developmental toxicants can also affect normal development.

Dioxins and furans: Among the most toxic chemicals known. There are numerous types in each group. These chemicals are by-products of combustion, degradation of other chemicals and some industrial processes.

Endocrine disruptors (also called hormonally active agents): Synthetic chemicals and natural plant compounds (and some pharmaceutical drugs) that may affect the functioning of the endocrine system (the communication system of glands, hormones and cellular receptors that

control the body's internal functions). Many of these substances have been associated with developmental, reproductive and other health problems in wildlife and laboratory animals. There is concern that they could affect humans in similar ways.

Epidemiology: The study of the frequency, distribution and determinants of disease risk in human populations. Also the field of medicine concerned with determining the specific causes of localized outbreaks of infection (such as hepatitis), toxic disorders (such as lead poisoning), or any other disease of known cause.

ETS (Environmental Tobacco Smoke) (second-hand smoke): The smoke released by idling lit tobacco products (cigarettes, cigars, pipes), and smoke exhaled by smokers after puffs. ETS contains hundreds of toxic chemicals, including over 40 cancer-causing chemicals.

Fish advisories: Public notices issued by local, provincial or national environmental or health agencies that warn about the need to limit or avoid consumption of certain fresh or salt water species, generally those that are predator species at the top of aquatic food chains. Most advisories are directed at pregnant or nursing women and young children, as well as women of child-bearing age.

Food chain: The food chain is a series of organisms, each consuming the organism below them in the chain, and being consumed by the next higher organism. Green (chlorophyll-containing) plants are at the bottom of every food chain; green plants convert sunlight into food energy for the rest of the organisms in the food

chain. Because organisms at each level of the food chain use up most of the energy they consume, energy is lost at each level, limiting the length of the chain. There are more levels in aquatic food chains. With more levels, contaminants can continue to concentrate (biomagnify). Hence the greater contamination of fish by methylmercury and the need for fish advisories. In nature, food chains usually combine to form food webs.

Food web: Found in any natural community, a food web contains many interlinked food chains. Humans are at the highest level of many food webs and their breastfed infants are higher still.

Incidence: The number of new cases of a disease occurring in a defined population within a specified period of time. Frequently presented as the number of new cases per 1,000 or 100,000 people per year.

Inorganic chemicals: Chemicals that do not contain carbon. Examples include metals like lead, mercury and cadmium, as well as salt and asbestos.

Ionizing radiation: A physical agent – ions – released during the spontaneous radioactive decay into small elements of radionuclides emitted during medical X-rays, the regular operation of nuclear power plants, and, in potentially massive amounts, as a result of nuclear accidents and the testing or use of atomic weapons.

Latency period: The period of time between exposure to a disease-causing agent and the first appearance of signs or symptoms of the disease.

Learning disabilities: Refers to a number of disorders that may affect the acquisition, retention, understanding or use of verbal or nonverbal information. These disorders affect learning in individuals who otherwise demonstrate at least average abilities essential for thinking and/or reasoning. Learning disabilities result from impairments in one or more processes related to perceiving, thinking, remembering or learning. They range in severity and may interfere with the acquisition and use of one or more of the following:

- oral language (e.g., listening, speaking and understanding)
- reading (e.g., decoding, phonetic knowledge, word recognition, comprehension)
- written language (e.g., spelling and written expression)
- mathematics (e.g., computation, problem solving)

Lipophilic/hydrophobic: Literally “fat-loving” or “water-averse.” Used to refer to substances that bind to fat molecules, and as a result often concentrate up the food chain and reach their highest levels in high fat foods, such as whole milk, cheese, fatty meats and oily fish.

Lipophobic/hydrophilic: Literally “fat-averse” or “water-loving.” Used to refer to substances that stay in solution in water and tend not to bind to either particles or fatty molecules.

Low birth weight: An infant that weighs less than 2,500 grams at birth.

Methylmercury: Organic mercury compound formed by moulds and bacteria.

Neurotoxicants: A biological or chemical substance or agent that has an adverse effect on the structure or function of the central (including the brain) and/or peripheral nervous system. Toxicants that exert adverse effects on the developing brain or nervous system are called developmental neurotoxicants.

Organic chemicals: Chemicals containing carbon, usually combined with hydrogen and other elements, such as oxygen, nitrogen, or chlorine. Vegetable matter, petroleum and plastics are examples of organic materials, as are PCBs, DDT, and polyvinyl chloride.

Organochlorine compounds: A wide variety of synthetic organic compounds containing chlorine particularly notable for their persistence and stability. Some have been deliberately manufactured (e.g., several pesticides, including DDT, PCBs, though these are now banned or greatly restricted in use). Others are breakdown or reaction products, such as dioxins formed from incineration of products like PVC plastic. All are now widely distributed in the environment.

PBDEs (Polybrominated diphenyl ethers): Widely used in consumer products as flame retardants.

PCBs (Polychlorinated biphenyls): Manufactured for transformer cooling oil and numerous other applications. No longer manufactured and use is restricted because of carcinogenic properties and persistence in the environment.

Persistence: Refers to chemicals or agents that remain a long time in the environment. For example, lead and mercury persist in the

environment because they are stable elements; PCBs are chemically stable compounds that resist degradation. Mercury and PCBs cycle between environmental media, including air, water and food chains.

Pesticides: Chemicals, devices or organisms used to control pests (e.g. weeds, insects, algae, fungus, etc.). Sub-categories can include: herbicides, insecticides, fungicides, rodenticides, antimicrobial agents, pool chemicals, microbials, material and wood preservatives, repellents, and insect- and rodent-controlling devices.

Phthalates: Compounds used to make some plastics soft and flexible. A plasticizer compound.

POPs (Persistent organic pollutants): Chlorinated organic compounds characterized by resistance to natural breakdown, consequent persistence and bioaccumulation in the environment. Also often highly toxic.

Prevalence: The number of events (e.g. instances of a given disease or other condition in a given population at a designated time). Note, this is a number not a rate. See also Rate and Incidence.

Rate: In epidemiology, an expression of the frequency with which a certain circumstance (e.g. asthma incidence in children) occurs in relation to a certain period of time, a fixed population, or some other fixed standard. The use of rates, rather than raw numbers, is essential for comparison of experience between populations at different times or different places.

Reproductive toxicants: Chemical substances or agents that cause adverse effects on the male and female reproductive systems. Toxicity may be expressed as alterations of sexual behaviour, decreases in fertility, loss of the fetus or abnormal fetal genital development during pregnancy. Interference with sexual function may occur from puberty through adulthood.

Service Providers: For the purposes of this manual, service provider is intended to broadly include anyone who works with, or whose work impacts on preconception, prenatal and/or child health.

SIDS (Sudden Infant Death Syndrome) (also called Crib Death): Refers to the sudden and unexpected death of apparently healthy babies. Exact cause is unknown, but risk factors include exposure to environmental tobacco smoke (during pregnancy or after birth) and sleeping on the stomach.

Teratogen: Any substance or factor that can cause structural or functional malformations of an embryo or fetus, which are also known as congenital malformations or birth defects. Known teratogens include certain chemicals, viruses and ionizing radiation.

Toxic substances: Substances capable of causing harm to humans, animals or other living things. In common usage, the term refers to chemical substances that are capable of causing harm at very low levels of exposure, while providing little or no benefit.

VOCs (Volatile Organic Compounds): Organic gases and vapours in the air. Examples of sources include the burning of fuels, dry cleaning operations, and the evaporation of organic compounds from solvents, paints and other coatings.

Selected Glossary Sources

Dr. Graham Chance, Paediatrician, Chair, Advisory Council, Canadian Institute of Child Health, Professor Emeritus, University of Western Ontario.

Dorland's Illustrated Medical Dictionary, 2003. 30th Ed. Philadelphia: WB Saunders. www.dorlands.com/wsearch.jsp

Health Canada, 1998. *Health and Environment Handbook for Health Professionals*. Ottawa: Health Canada.

Last JM, 2001. *A Dictionary of Epidemiology*, 4th Ed. Oxford University Press.

The Health Communication Unit, of the Centre for Health Promotion at the University of Toronto. On-line. www.thcu.ca/index.htm

Wigle DT, 2003. *Child Health and the Environment*. Oxford: Oxford University Press, and personal communication.

Appendix A: Useful Resources

Books/Manuals/Print Resources

Environmental Health/Healthy Child Development

Child Health and the Environment – A Primer

Canadian Partnership for Children's Health and Environment (CPCHE), August, 2005

The *Primer* is a full-colour, 130-page introduction to this large and vitally important issue. The intended audience is service providers in the area of reproductive and child health, child care, as well as decision makers in government, the media and parents with a reasonably high level of education. Available in French and English. On-line at: www.healthyenvironmentforkids.ca

Playing it Safe, Childproofing for Environmental Health

Canadian Partnership for Children's Health and Environment (CPCHE), September, 2005

This plain language brochure summarizes key content and childproofing messages. It is suitable for parents, and a range of service providers. Available in French and English. On-line at: www.healthyenvironmentforkids.ca

Environmental Threats to Children: Understanding the Risks, Enabling Prevention

Toronto Public Health, September, 2005

A comprehensive scientific report reviewing the special vulnerabilities and exposure circumstances of children to environmental contaminants,

health effects of concern, a summary of a parent survey of attitudes and awareness, and policy recommendations for the federal and provincial governments and the City of Toronto. Available in English. Full Technical Report (241 pages) or Summary Report (58 pages) available on-line at: www.toronto.ca/health

Hidden Exposures – Reproduction and Pregnancy Project (Fact Sheet Series)

South Riverdale Community Health Centre, Toronto Public Health and Environmental Health Clinic, Sunnybrook and Women's College Health Sciences Centre, 2001 (revised, 2003)

Series of eight fact sheets prepared for prenatal educators and other health professionals. Topics include an overview of environmental risks to reproduction and pregnancy and 7 thematic areas: pesticides, lead, paints and solvents, plastics, cleaning products, electromagnetic fields, asbestos and mercury. An additional fact sheet summarizing the entire topic is also available. Fact sheets are being updated during 2006. Available in English, French, Spanish, Chinese, Urdu, Hindi and Tamil. Available in English only on the Women's Health Matters website at: www.womenshealthmatters.ca/centres/environmental/Healthy-Environments/hidden_exposures.html. Additional internet availability, including in more languages, is planned for 2006.

Making Environmental Health Happen in the Community! The Story of South Riverdale Community Health Centre's Environmental Health Program – A Resource Manual

Nita Chaudhuri, South Riverdale Community Health Centre, undated.

One of the first manuals produced in Canada providing a framework to assist people working in community settings to integrate environmental health into their activities. Available in English. Print copies available from the South Riverdale Community Health Centre – call 416-461-1925.

***Child Health and the Environment*, 2003**

This is the first text book on the topic by Canadian physician and scientist Don Wigle. This one is for the serious researcher and is backed up by a superb on-line collection of tables of reference lists that update the evidentiary basis for each of the chapters in the book. Available at: www.mclaughlincentre.ca/programs/child.shtml

Pediatric Environmental Health, 2nd Edition, 2003
Compiled by the American Academy of Pediatrics, this is a useful text for health care providers. It is more comprehensive and useful than the first edition. Available at: www.aap.org/bst/showdetl.cfm?&DID=15&Product_ID=1697

Facilitation and Literacy

Guide to Successful Facilitation

Canadian Child Care Federation, 2005

Guide is part of the CCCF "Toolbox of Resources for Trainers;" part a series of very useful resources for your own professional development or training others in presentation and facilitation skills. Available in French and English. On-line, with

related resources, at: www.cccf-fcsge.ca/subsites/familytp/english/toolbox_en.htm

Canadian Public Health Association National Literacy and Health Program

On-line resources and materials available for purchase. Available in French and English.

On-line at: www.nlhp.cpha.ca

National Adult Literacy Database

On-line at: www.nald.ca/index.htm

Clear Writing and Literacy

Ruth Baldwin for the Ontario Literacy Coalition, 2000. On-line at: www.on.literacy.ca/pubs/clear/cover.htm

Selected Websites

In Canada

Sites with an Environmental Health Focus

Canadian Partnership on Children's Health and Environment (CPCHE) –

www.healthyenvironmentforkids.ca

This website provides information about the work done by CPCHE partners as well as summary and detailed information on the issue of child health and the environment. The website is still developing and will ultimately be a portal site providing access to a common database of resources generated by CPCHE partners. It is also building capacity for email networking for the rapidly growing number of people working on this issue in Canada.

Websites of individual CPCHE Partners:

Canadian Association of Physicians for the Environment – www.cape.ca

Canadian Child Care Federation – www.cccf-fcsge.ca

Canadian Environmental Law Association – www.cela.ca

Canadian Institute of Child Health – www.cich.ca

Environmental Health Clinic – www.womenscollegehospital.ca/index.asp?navid=76

Learning Disabilities Association of Canada – www.ldac-taac.ca

Ontario College of Family Physicians – www.ocfp.on.ca

Ontario Public Health Association – www.opha.on.ca

Pollution Probe – www.pollutionprobe.org

South Riverdale Community Health Centre
(website under development)

Toronto Public Health – www.toronto.ca/health

All CPCHE partners websites are linked to the CPCHE site. Two of the partners have large on-line collections focused on children. See:

Canadian Association of Physicians for the Environment (CAPE), Children's Health Project – www.cape.ca/children.html

This site introduces clinicians (and their patients) to the fundamentals and broad context of children's environmental health issues and is presented in a systems approach. The site also provides information on how to approach Environmental History taking.

Canadian Child Care Federation (CCCF), Healthy Spaces – www.cfc-efc.ca/healthy-spaces

This interactive website is designed to provide parents, caregivers and practitioners who work with young children and their families with

information about specific environmental hazards that children may encounter in homes and early learning and child care settings.

The Lung Association: Your Healthy Home – www.yourhealthyhome.ca

Interactive website loaded with well-researched and well-written summary information about how to improve indoor air quality.

Nova Scotia Allergy and Environmental Health Association – www.lesstoxicguide.ca

This Canadian website provides information about health risks of products that are commonly used in the home. It also helps to identify less toxic alternatives for personal care, household cleaning, baby care and household pesticide control.

Motherisk – www.motherisk.org

A joint project of the Hospital for Sick Children and the University of Toronto, Motherisk conducts research and provides information and counselling services on a Canada-wide basis for women, their families, and health professionals on the safety/risk of exposure to drugs, chemicals, radiation and infection during pregnancy and lactation.

Occupational Health Clinics for Ontario Workers Inc (OHCOW) – www.ohcow.on.ca

OHCOW is a pro-active team of health professionals committed to promoting the highest degree of physical, mental and social well being for workers and their communities. At five clinics in Ontario a team of nurses, hygienists, ergonomists and physicians see patients and identify work-related illness and injuries, promote

awareness of health and safety issues, and develop prevention strategies.

Sites with a Focus on Healthy Child Development

Best Start: Ontario's Maternal, Newborn and Early Child Development Resource Centre – www.beststart.org

Best Start supports service providers across the province of Ontario working on health promotion initiatives to enhance the health of expectant and new parents, newborns and young children.

Ontario Early Years Centres – www.ontarioearlyyears.ca/oeyc/oeyc.htm

Portal website to enable access to on-line information and resources as well as the location of Early Years Centres in communities across the province.

Child Care Providers Resource Network: Ottawa Carleton – www.ccprn.com/pages/main.html

A non-profit, charitable organization committed to providing support, information, training and resources to individuals who offer child care in a home setting. Funding is provided by the Ministry of Community and Social Services and the City of Ottawa.

Canadian Health Network – www.canadianhealthnetwork.ca

Very large website sponsored by the Public Health Agency of Canada. See in particular, thematic areas on "Children" and "Environment and Health."

Invest in Kids

National not-for-profit foundation established to promote the healthy development of children aged zero to five.

Fathering Websites

Dads Today – www.dadstoday.org

Website designed to help fathers create deeper connections with their children. Focus is on nurturing, commitment, and the bond that can exist between father and child to help children become healthy, active people who benefit the culture to which they belong. Created as a project of the LAMP Early Years Services at the LAMP Community Health Centre (in Toronto).

My Daddy Matters Because... – www.mydad.ca

Website created as part of "My Daddy Matters Because...", also known as the National Project Fund on Fathering, funded by Health Canada's National Project Fund. The primary purpose is to provide information for people who are developing and managing Fathering programs in their communities.

Canadian Father Involvement Initiative – www.cfii.ca

See this site for more links to programs across Canada.

In the United States

Children's Health Environmental Coalition – <http://checnet.org>

This American non-profit organization educates the public about issues of children's environmental health. Of particular interest on this site is the HealthHouse [sic], an interactive resource on how to reduce environmental health risks to children in the home environment.

Greater Boston Physicians for Social Responsibility: Healthy Environment, Healthy Child Internet Resource Guide for Parents – <http://psr.igc.org/ped-env-hlth-toolkit-resource-guide-parents.htm>

Website provides good selection of categorized, useful information for parents about children's environmental health.

Greater Boston Physicians for Social Responsibility: Pediatric Environmental Health Toolkit – <http://psr.igc.org/ped-env-hlth-toolkit-project.htm>

Website provides extensive tools and links to additional resources for physicians and other health care providers.

Caring for our Children – National Health and Safety Performance Standards: Guidelines for Out-of-Home Child Care – <http://nrc.uchsc.edu/CFOC/index.html>

This extensive resource was developed by the National Resource Center for Health and Safety in Child Care, American Public Health Association, American Academy of Pediatrics and the Maternal and Child Health Bureau of the U.S. Department of Health and Human Services. It was developed

to promote health and safety in child care settings and contains a lot of relevant information on environmental health.

Additional Web-based Information

Adult Learning Principles – www.cccf-fcsge.ca/subsites/familytp/english/toolbox_en.htm

Audience Analysis – www.thcu.ca/infoandresources/Step3AudienceAnalysis.htm; www.thcu.ca/infoandresources/publications/StepThreeAudienceAnalysisSegmentationForWebOct9-03.pdf

Determinants of Health – www.phac-aspc.gc.ca/ph-sp/phdd/determinants/index.html

Canada Food Guide – www.hc-sc.gc.ca/fn-an/food-guide-aliment/fg_rainbow-arc_en_ciel_ga_e.html

Evaluation – www.thcu.ca/workshops/w4-eval_programs.htm; http://ctb.ku.edu/tools/tk/en/tools_tk_12.jsp

Environmental Tobacco Smoke – www.ptcc-cfc.on.ca

Fear-based Appeals – www.ptcc-cfc.on.ca/pubs/RDS_0059.pdf

Fish Advisories – <http://action.web.ca/home/nutritio/attach/fish-facts-for-families-feb05.pdf>; www.ene.gov.on.ca/envision/guide/

Health Communication Campaigns –

www.thcu.ca/infoandresources/health_communication.htm

Health Promotion Planning – www.thcu.ca/infoandresources/planning.htm; www.ohprs.ca/hp101/main.htm; www.toolsofchange.com

Media Advocacy – www.thcu.ca/infoandresources/media_advocacy.htm

Message Development – www.thcu.ca/infoandresources/Step8MessageDevelopment.htm

Message Review Tool – www.thcu.ca/infoandresources/publications/Complete%20Message%20ReviewTool%20March20-03.pdf

Nutrition, Pregnancy, Young Children –
www.hc-sc.gc.ca/fn-an/pubs/infant-nourrisson/nut_infant_nourrisson_term_e.html;
www.beststart.org/resources/nutrition/index.html

Objectives – www.thcu.ca/infoandresources/publications/StepFiveSettingObjectivesForWebOct9-03.pdf

Ontario Health Promotion Resource System –
www.ohprs.ca

Ottawa Charter on Health Promotion –
www.who.int/hpr/NPH/docs/ottawa_charter_hp.pdf

Partnerships – www.healthycommunities.on.ca

Physical Activity – www.saferoutestoschool.ca

Poverty – www.beststart.org/resources/anti_poverty/pdf/REDUCE.pdf;
www.campaign2000.ca; www.sharethewarmth.org;
www.ontariotenants.ca

Precautionary Approach – www.sehn.org/ppfaqs.html

Preconception – www.beststart.org/resources/rep_health/pdf/Preconception.pdf

Presentation Techniques – www.thcu.ca/infoandresources/Step8MessageDevelopment.htm

Prevention-treatment Continuum –
www.cape.ca/children/prev.html

Rapid Risk Factor Surveillance System –
www.rrfss.ca

Recipes for low-cost environmentally friendly cleaning products – www.lesstoxicguide.ca;
www.ces.ncsu.edu/depts/fcs/housing/pubs/fcs3682r.html

Social Inclusion – www.healthycommunities.on.ca/publications/ICO/index.html

The Health Communications Unit – www.thcu.ca

Workplace Reproductive Risks –
www.beststart.org/resources/wrkplc_health/index.html

Videos

Children Breathe Easy

South Riverdale Community Health Centre,
Toronto

Video is a 22-minute production about steps taken to improve indoor air quality in a school community in downtown Toronto — the Blake/EAST Indoor Air Quality project. Video is designed to assist other communities in creating healthier learning environments for children and safe and healthy working environments for teachers and staff. Available from the South Riverdale Community Health Centre. tel: 416-461-1925 x246.

Lawn and Garden Pesticides: Reducing Harm

Canadian Association of Physicians for the Environment (CAPE), 2005

Approximately 10 minute video about child health concerns with respect to the cosmetic use of pesticides. Available from CAPE at www.cape.ca (\$15 for individuals, \$25–50 for organizations, cost proportional to annual budget).

Not Under My Roof: Protecting Your Baby From Toxins at Home

Children's Health Coalition (17 min)

The film is quite useful but service providers should know in advance that it presents the issues in the context of an entirely white, middle class setting. Available on-line at: www.checnet.org/prodres_myroof.asp

Toxic Trespass – Children's Health and the Environment

(working title, film in production)

This documentary film will be a co-production of the Women's Healthy Environments Network and the National Film Board of Canada. It will identify and explain risks of environmental exposures to children and future generations, mobilize knowledge and opinion for personal, social and structural change, and offer positive strategies for personal and societal action in response. Completion date is anticipated in late 2006.

Appendix B: Environmental Health Childproofing Checklist

Childproofing Checklist for Early Learning and Child Care Facilities

Is your facility environmentally safe for pregnant women and/or children? This checklist (and the answers) will give you a sense of how environmentally safe your facility is, identify some key prenatal and children's environmental health issues, help you to recognize the questions to ask yourself and others and provide you with some information to help you to environmentally childproof your facility. Please check every box for which the answer is yes:

The Facility

- ☐ Is your facility located near an industrial area?
- ☐ Are any renovations being done?
- ☐ Is your facility or program located in a building that was built before 1977?
- ☐ Is there any peeling or chipping paint in your facility?
- ☐ Do you store cleaning products, paints, solvents or pesticides in your facility?

In the Activity/Learning Area

- ☐ Do staff and/or children leave outdoor footwear on while indoors?
- ☐ Do children use arts and crafts materials that give off strong odours?
- ☐ Are soft plastic toys available to infants and young children?
- ☐ Does your facility accept donated, used toys?
- ☐ Are large areas of your facility carpeted?

In the Bathroom/Change Area

- ☐ Is a deodorizer used to cover odours?
- ☐ Are commercial chemical toilet bowl cleaners, tile/grout cleaners used?
- ☐ Do children use anti-bacterial hand soap?
- ☐ Is there any mould on the ceiling, walls, grout or underneath the sink?
- ☐ Is a mercury thermometer used to take children's temperatures?

In the Kitchen

- ☐ Is a gas stove used for cooking?
- ☐ Do you use commercial chemical oven cleaners?
- ☐ Do you have a pest (ants, cockroaches, mice) problem?
- ☐ Do you serve tuna fish on a regular basis?
- ☐ Do you regularly serve foods high in animal fat?

Outdoors

- ☐ Do children play on equipment made of wood treated with chromated copper arsenic (CCA), also known as pressure treated wood?
- ☐ Do school buses idle near areas where children congregate or play?
- ☐ Do children play outdoors on days when air quality is poor?
- ☐ Do children play in green spaces that are treated with pesticides?
- ☐ Are children's play areas located beside buildings or fences with peeling paint?

Checklist Issues Raised and Childproofing Tips

The Facility

<p>Is your facility located near an industrial area?</p> <p>Not all industries release harmful pollutants or create conditions that can affect health. But some industries do release pollutants that reduce air quality or contaminate ground water. Other issues associated with being near industrial areas are loud or constant noise and heavy traffic. Historical land use is also something to consider. Sites that were used for industrial purposes in the past are more likely to be contaminated than those not used by industry.</p>	<p>Childproofing Tips</p> <ul style="list-style-type: none">• All facilities should have good ventilation systems that are regularly maintained by a qualified professional.• Test well water regularly for chemical contaminants according to Ministry of the Environment guidelines.• If you know or suspect that air quality problems are an issue in your community, get active. Voice concerns to the local health department and/or join others who share your concern to advocate for improved air quality.• When choosing a new site, consider its proximity to obvious sources of air pollution, noise and traffic.
<p>Are any renovations being done?</p> <p>Removing floors, walls, and fixtures can release dust, asbestos, mineral fibres, lead from paint, pesticide residues and mould into the air. Rebuilding and installing new materials can also release potentially harmful substances, including volatile organic compounds (VOCs), dust and fungicides. The good news is that renovation is also an opportunity to create a healthy indoor environment by choosing safe materials and products and by having work done safely.</p>	<p>Childproofing Tips</p> <ul style="list-style-type: none">• Pregnant women and young children should be kept out of spaces being renovated until the work is completed and the space has been well cleaned and ventilated.• Schedule renovations so that windows can be open for ventilation and control dust very carefully.• Choose natural, durable building materials that require minimal finishing and maintenance. This conserves natural resources and reduces pollutants in indoor air.• For more information see Safe Renovations in the <i>Primer</i>, pages 108–109.

<p>Is your facility or program located in a building that was built before 1977?</p> <p>Lead levels in indoor paints sold in Canada were lowered in 1976. Hence, any paint in buildings built before 1976 very likely contains lead. Outdoor paint used before the 1950s was as much as 70% lead by weight. Lead paint becomes a problem only when it is in poor condition (peeling or chipping) or is disturbed, for example by sanding or demolition.</p> <p>Is there any peeling or chipping paint?</p> <p>People can be exposed to lead through paint chips, flakes and dust. Children are at highest risk because they are more likely than adults to eat paint chips, put their hands in contact with contaminated dust and put their hands in their mouths. They are also more sensitive to the negative effects of lead which can affect brain development and function in fetuses, infants and children. Scientists agree that there is probably no safe level of lead for the fetus or child.</p>	<p>Childproofing Tips</p> <ul style="list-style-type: none"> • Lead paint in good condition should be left undisturbed. Paint in poor condition should be contained by sealing it or covering it with drywall or paneling. Never sand, scrape or use a heat gun to strip lead paint. • Keep pregnant women and children away during renovations and until clean-up is complete. Control dust well throughout. • Control dust by wiping window sills and trim and other surfaces regularly with a damp cloth and damp mopping floors. • For more information, see Canada Mortgage and Housing Corporation on-line resources at www.cmhc-schl.gc.ca or the Health Canada factsheet at www.hc-sc.gc.ca/english/iyh/products/leadpaint.html. • To learn about guidelines for lead in U.S. child care programs see Chapter 5 of the <i>National Health and Safety Performance Standards</i> at http://nrc.uchsc.edu/CFOC/index.html.
<p>Do you use and/or store cleaning products, paints, solvents or pesticides in your facility?</p> <p>Many household and institutional products contain potentially toxic substances. Children can be exposed when these substances are released into the air as products are used. Even products stored in closed containers can sometimes release chemicals into the air over time. These can build up in unventilated spaces such as cupboards. Another major risk from household chemical products is accidental poisoning. Using and storing fewer potentially toxic products is a good way to protect children's health.</p>	<p>Childproofing Tips</p> <ul style="list-style-type: none"> • Read the label and avoid products that list multiple hazard symbols (corrosive, explosive, etc.). • Choose "green" or non-toxic products. If you need a toxic product, buy as little as you need for the job and follow instructions carefully. • Ventilate well when using any product. Keep children out of areas until product odours are gone. • Store products in sealed, labeled containers in locked storage. Dispose of excess chemical products as hazardous waste. • For more information see <i>Toxic Use Reduction in the Primer</i>, pages 104–105.

In the Activity/Learning Area

<p>Do staff and/or children leave outdoor footwear on while indoors?</p> <p>Many substances are tracked into indoor spaces on shoes, pets and wheels on strollers or shopping carts. Examples are metals, pesticides and animal droppings. Once indoors these substances settle in dust, on floors and other surfaces and in carpets. Young children spend a lot of time at ground level and are more highly exposed to these substances. Keeping outdoor dirt and dust out of indoor spaces goes a long way in preventing child exposure to harmful substances.</p>	<p>Childproofing Tips</p> <ul style="list-style-type: none"> • Have people remove outdoor shoes at all entry points. Providing seating and floor mats can make this easier. • Doormats keep dirt and dust out of indoor spaces. Use doormats that can be washed. Wash them frequently and separately from other laundry. • Promote the use of “indoor” shoes or socks. • Design facilities so that parents do not have to walk through the facility to drop off and pick up their children. • For more information, see Handwashing and Dustbusting in the <i>Primer</i>, page 101.
<p>Are soft plastic toys available to infants and young children?</p> <p>Some soft plastic toys are made of polyvinylchloride (known as PVC or vinyl). PVC may be softened with phthalates, chemicals that children can be exposed to when the toys are mouthed. Phthalates are also found in other plastic products, nail polish, cosmetics, plastic food packaging and indoor air. They are suspected in various negative health effects, particularly impacts on the developing reproductive system in males. Some manufacturers have switched to other plastics because of government action and consumer pressure. Health Canada advises that people get rid of soft vinyl teething toys and rattles. Canadian regulatory action has not occurred unlike in the European Union where phthalates in toys are banned as a precautionary measure.</p>	<p>Childproofing Tips</p> <ul style="list-style-type: none"> • The recycling code (the number inside the three arrows) for PVC is “3”, but not all PVC toys are labeled. As a precaution avoid toys made of what appears to be soft vinyl, particularly those for teething babies. • If buying plastic toys or children’s products look for labels that say that a product is PVC or phthalate-free. Do not hesitate to contact manufacturers and ask about PVC/phthalate content in children’s products. • Heat foods and milk in glass, ceramic or stainless steel containers instead of plastics. Heat makes phthalates more likely to leach out of plastics into food. • Where possible, choose alternatives to soft vinyl products e.g. raincoats, shower curtains, stroller covers, etc.

<p>Do children use arts and crafts materials that give off strong odours?</p> <p>Some arts and crafts materials contain ingredients that can be harmful to children. For example lead has been found in some crayons, paints and sidewalk chalk. Solvents in glues and markers can release volatile organic compounds (VOCs). The term “non-toxic” means that a material or product will not cause an immediate (acute) poisoning. It does not necessarily mean that a product has been evaluated for long-term health effects.</p> <p>Labels provide important clues about product safety. Look for:</p> <ul style="list-style-type: none"> • “Non-toxic” products. • Labels that do not include hazard symbols. • Products that do not warn of specific health hazards (e.g. “harmful if swallowed”). • The “AP” and “CL” seals from the American Arts and Creative Materials Institute (ACMI) Products that “conform with ASTM D-4236.” • Country of manufacture — be careful if considering foreign-made arts and crafts materials because different countries can have insufficient or even non-existent health, environmental or occupational health standards. 	<p>Childproofing Tips</p> <ul style="list-style-type: none"> • Read the label and follow instructions closely. If the label does not have enough information to determine if a product is safe, contact the manufacturer to ask about the use of the product with young children. • Choose liquids, gels and pastes over powders and sprays that are easily inhaled. If powders are mixed with water, do so in ventilated areas when children are not present. • Do not use dryer lint for making home-made paper or other crafts as it can be a concentrated source of contaminants. • Choose water-based instead of solvent-based products (e.g. avoid rubber cement and solvent-based markers). • Ventilate the area, supervise children, do not allow eating or drinking when children are doing arts and crafts and ensure that staff and children wash hands afterwards. • Clean up thoroughly after doing arts and crafts and damp mop rather than sweep to reduce dust. Store materials away from children and in original containers. • For more information see Safe at Play in the <i>Primer</i>, pages 106–107, the Canadian Child Care Federation fact sheet at www.cfc-efc.ca/docs/cccf/rs021_en.htm, or the Children’s Health Environmental Coalition Healthhouse at www.chechnet.org/healthhouse/virtualhouse/index.asp.
<p>Does your facility accept donated or used toys?</p> <p>Donated toys may not come with packaging or original labels. Labels are important sources of safety information. They indicate the appropriate age range, may list ingredients and provide the manufacturer’s contact information. Older painted toys made before the 1970s can contain lead or other toxic chemicals. Many older toys, for example teething toys that contain phthalates, are not be considered “safe” by today’s standards. Plush or stuffed toys can carry dust, dust mites and other allergens. They can also harbour mould that may not be visible. The same is true for books.</p>	<p>Childproofing Tips</p> <ul style="list-style-type: none"> • Carefully check used or donated materials, especially if the original packaging does not accompany the item. • Be particularly careful to avoid older or used soft plastic toys for very young children. • Do not use painted toys (toy chests, furniture, etc.) that were likely made before the 1970s. • Consider developing a policy regarding toy donations.

<p>Are large areas of your facility carpeted?</p> <p>The smell of new carpet is a sign that VOCs (volatile organic compounds) or other chemicals that readily evaporate into air are being emitted. These chemicals can build up in unventilated spaces and are associated with a variety of health effects including eye, throat and lung irritation. Some VOCs have been linked to more serious health effects such as impaired brain function. Over time, carpeting becomes a repository for dust, chemicals that settle out of the air and provides a site for mould growth. The amount of dust in a square metre of old carpet may be 400 times greater than on a bare floor in the same house. Rather than help the situation, commercial carpet cleaners can contain chemicals associated with respiratory symptoms and eye irritation.</p>	<p>Childproofing Tips</p> <ul style="list-style-type: none"> • Reconsider the use of carpets in children's play areas. Choose hard floor surfaces and use area rugs that can be shaken out or washed easily. • Place washable floor mats at doors where people enter the facility and wash them regularly. • When removing carpeting, prioritize areas in which children spend a lot of time. • Vacuum existing carpeting frequently and ventilate well. When cleaning carpets, use environmentally friendly products, which are generally less toxic to people. • If you want carpeting, consider natural fibre, air it out before installation, avoid toxic adhesives, ventilate well and avoid using the space until the odour is gone.
---	--

In the Bathroom/Change Area

<p>Is a deodorizer used to cover odours?</p> <p>Most deodorizers rely on chemicals to cover up an odour, overpower an odour with a different odour, deactivate an odour or even to block the nerves in people's nasal passages so that they simply cannot smell the odour. Deodorizers can contain a range of chemicals that affect health. Instead of relying on chemicals, the key to dealing with odours is to remove the source of the odour or to dilute it.</p>	<p>Childproofing Tips</p> <ul style="list-style-type: none"> • Use a garbage can with a tight fitting lid and empty it as often as needed. • Ensure that the bathroom is well ventilated. • Use an open container of baking soda placed out of the reach of children to absorb odours. Another option is zeolite, a mineral that absorbs odours.
<p>Are commercial chemical toilet bowl cleaners, tile/grout cleaners used?</p> <p>Labels with hazard symbols and words like "danger" "warning" or "caution" are a sure sign that cleaning products contain strong, often toxic chemicals. Exposure occurs during use by breathing or by touching cleaned surfaces and picking up chemical residues on hands. Toilets are easy to clean without using toxic chemicals. Grout on the other hand is more difficult to clean, making prevention of obvious mould and mildew stains the best option.</p>	<p>Childproofing Tips</p> <ul style="list-style-type: none"> • Prevent mould and mildew growth with good ventilation. • Try alternative, safer cleaning products. • Baking soda and a brush can clean a whole bathroom. • If using a harsh commercial product follow instructions, ventilate well and keep children out of the space. • When re-tiling, opt for darker grout that will not show mould and mildew stains.

<p>Do children use anti-bacterial hand soap?</p> <p>Anti-bacterial soaps do little to protect against viral illnesses like colds and flus. Whether or not they really protect people from bacterial illness is also not clear. In most cases, anti-bacterial soaps are “overkill”. Proper handwashing with plain soap and water removes most germs. Overuse of anti-bacterial agents may contribute to the development of “super-germs”, bacteria that are resistant to the chemicals designed to kill them.</p>	<p>Childproofing Tips</p> <ul style="list-style-type: none"> • Staff and children should wash their hands after outdoor play, arts and crafts, use of the washroom, handling pets or garbage, coughing or sneezing or blowing their nose, before and after meals and whenever else contamination may have occurred. • Using warm running water and soap, rub hands vigorously for at least 15 seconds. Wash all surfaces, rinse well under running water and dry well. • Leave anti-bacterial soaps for situations in which they are really necessary, for example in some medical settings. • Have children sing a song while washing their hands to ensure that they wash for long enough.
<p>Is there any mould on the ceiling, walls, grout or underneath the sink?</p> <p>The combination of moisture and food debris can create ideal conditions for the growth of mould. Moulds damage materials such as wood, paper and textiles. They also release spores that travel through air and can trigger allergies, asthma and other health problems. The key to dealing with mould is controlling moisture levels. For more information, see the <i>Primer</i>, page 34.</p>	<p>Childproofing Tips</p> <ul style="list-style-type: none"> • Prevent conditions that promote mould. Keep all areas of the room dry and clean. Address plumbing problems promptly. • Install and use a fan that is vented to the outdoors. • Scrub mould with detergent (not bleach) and water, rinse with a wet rag and dry to remove surface mould. The detergent solution should be unscented. Wear rubber gloves and a mask, and keep infants, children and anyone with asthma or allergies out of the space. If there is a lot of mould or the mould keeps returning, get professional help. • For more extensive mould, or for certain types of mould, contact appropriate specialists. For more information see www.toronto.ca/health/mould.htm#4. • Get rid of mouldy items that can't be cleaned and dried. • Visit the Canada Mortgage and Housing Corporation website for more specific information on how to deal with mould www.cmhc-schl.gc.ca.

Is a mercury thermometer used to take children's temperatures?

Mercury is a dangerous metal that can affect brain development and functioning. A broken mercury thermometer releases mercury vapour than can be inhaled. If a space is poorly ventilated, exposure will be greater. Mercury thermometers are only one piece of a much larger issue of environmental mercury pollution. Mercury in the environment poses an ongoing risk to health, in large part due to its ability to work its way up aquatic food chains.

Childproofing Tips

- Dispose of mercury thermometers as hazardous waste.
- Choose alternatives such as digital electronic and infrared tympanic (ear) thermometers.
- If a mercury thermometer is broken, remove children from the area, turn off the ventilation system and contact your local health department for instructions on how to clean up a mercury spill. Do not vacuum or sweep up mercury.

In the Kitchen**Do you use commercial chemical oven cleaners?**

Most commercial oven cleaners have a lot of warning symbols on their labels and come with a long list of instructions and emergency procedures. This is because they are among the most toxic household cleaning products available. Usually sprays, sometime as aerosols, they disperse into the air when used and can be easily inhaled into the lungs. Fortunately there are a number of ways to avoid or reduce the use of these harsh chemicals to clean ovens.

Childproofing Tips

- Try one of the alternative, safer oven cleaning products that are increasingly available at environmental, health food and other stores.
- Clean ovens more frequently. This makes the use of harsh chemicals less necessary.
- A paste of baking soda and water left on overnight and scrubbed off is an effective, non-toxic option.
- If using commercial oven cleaners, follow instructions, ventilate well and keep children out of the space.

Do you have a pest (ants, cockroaches, mice) problem?

Pests are unpleasant and the fur, skins and droppings that insects and rodents leave behind can worsen allergy symptoms and asthma. The presence of pests also increases the likelihood that commercial chemical pesticides will be used. Pesticides used indoors tend to break down more slowly than those used outdoors. Indoor pesticide use can be a significant source of pesticide exposure for children, much greater than residues on food. The presence of stored pesticides that children could come into contact with also makes accidental poisoning possible.

Childproofing Tips

- Prevent pests by eliminating the conditions they need to grow e.g., deal with moisture problems, keep counters clean and store food in sealed containers.
- If possible use traps, not poisons. Choose pastes and gels over powders and sprays that are dispersed into air.
- If a pesticide is necessary choose the least toxic option and follow label instructions carefully. Notify staff and parents before pesticides are used and never apply pesticides in the presence of children.
- For more information visit Health Canada's Pest Management Regulatory Agency at www.pmr-arla.gc.ca or the Pesticide Action Network of North America at www.panna.org/panna.

<p>Is a gas stove used for cooking?</p> <p>Poorly maintained gas stoves can release particles and toxic gases such as carbon monoxide and nitrogen dioxide into the air. At high levels these can irritate the eyes and lungs and cause other symptoms such as headache, nausea, and drowsiness. Exposure to extremely high levels of carbon monoxide can be fatal.</p>	<p>Childproofing Tips</p> <ul style="list-style-type: none"> • Use an overhead fan vented outdoors or ventilate by opening a window when cooking. • Have gas stoves inspected annually and as soon as you suspect a problem. • Never use a gas stove to heat a room.
<p>Do you serve tuna fish on a regular basis?</p> <p>Fish, including canned tuna, is a great source of protein and contains beneficial omega-3 fatty acids. However, all fish is contaminated with methylmercury to varying degrees. Mercury is toxic to the developing brain. Not all tuna is the same. Methylmercury levels are lowest in canned light tuna and higher in white or “albacore” tuna and in fresh or frozen tuna. Recommendations about how much canned tuna children and pregnant women should eat vary by jurisdiction. The most precautionary advice is to limit consumption of all fish to two meals per week. Within this limit, canned light tuna can comprise both meals but canned white (albacore or bluefin) tuna should be eaten only once a month.</p>	<p>Childproofing Tips</p> <ul style="list-style-type: none"> • Pregnant women, breastfeeding women and children under 15 can eat fish but should choose it carefully. Avoid high mercury fish like swordfish, shark, king mackerel and fresh tuna. Choose low mercury fish or shellfish like canned light tuna, shrimp, salmon, pollock, catfish, haddock, farmed trout, tilapia and flounder. • When buying canned tuna, opt for flaked or light tuna over white or albacore tuna. • For more information, see the <i>Primer</i>, pages 60–61, Fish Facts for Families at: http://action.web.ca/home/nutritio/attach/fish-facts-for-families-feb05.pdf and Health Canada’s fish guidance at: www.hc-sc.gc.ca/ahc-asc/media/advisories-avis/2002/2002_41_e.html.
<p>Do you regularly serve foods high in animal fat?</p> <p>Foods high in animal fat can contain chemicals known as POPs (persistent organic pollutants). POPs can include older banned pesticides like DDT and industrial chemicals like PCBs (also banned but still circulating in the environment). POPs also include dioxins (the most toxic substances known) as well as dioxin-like substances like PBDEs (flame retardants widely used in consumer products). POPs are known or suspected to be linked with numerous health effects and the fetus and child are more vulnerable than adults. They concentrate in animal fat with the highest levels in animals at the top of the food chain.</p>	<p>Childproofing Tips</p> <ul style="list-style-type: none"> • It is a good idea to minimize children’s intake of animal fat. Choose low fat meat and dairy products where possible (recognizing however the nutritional need for whole milk in children under two years of age). • Cook meat, fish and poultry in such a way that the fat drips off of it. Trim the fat from meats to reduce their fat content. Do not offer children the skins of fish and poultry. • Serve foods low on the food chain. There are many sources of vegetable protein, such as tofu and beans. • If the facility has a policy to purchase organic food, prioritize foods high in the food chain like meat, poultry, eggs and dairy.

Outdoors

<p>Do children play on equipment made of wood treated with chromated copper arsenic (CCA), also known as pressure treated wood?</p> <p>CCA is a chemical wood preservative containing arsenic, a known human carcinogen. A voluntary phase-out for residential use began in January 2004 and it is now banned for non-industrial use in Canada. Structures built with CCA-treated wood (purchased prior to January 2004) can have arsenic on the surface to which children can be directly exposed. Arsenic can also build up in soil underneath the structure. Young children, with high levels of hand-to-mouth activity, are at risk. For more information, see the <i>Primer</i>, page 41.</p>	<p>Childproofing Tips</p> <ul style="list-style-type: none"> • Wash children's hands after contact with CCA-treated wood. Cover picnic tables made from CCA-treated wood. • Removal or replacement of CCA-treated structures is generally not recommended by regulatory agencies. Coating the surface with a penetrating wood sealant (not paint) reduces available arsenic. It should be re-applied regularly (likely every 1–2 years). Ensure that your facility follows this procedure for any CCA-treated structures. • Locate play areas away from CCA-treated wood. Plant shrubs or dense groundcovers around structures to discourage play in the soil underneath or beside them. • Despite the CCA phase-out, all pressure-treated wood contains a pesticide. Use the same precautions.
<p>Do children play outdoors on days when air quality is poor?</p> <p>Along with spending more time outdoors, children tend to be more active than adults. They breathe more heavily and quickly and often through their mouths. Their exposure to air pollution is greater and it can affect the development and health of their lungs. Smog advisories are issued when the air quality is going to be poor. Advisories include advice about measures to prevent or minimize exposure to air pollutants.</p>	<p>Childproofing Tips</p> <ul style="list-style-type: none"> • Do a daily check for smog conditions. If a smog advisory has been issued, choose less vigorous outdoor activities or reduce their duration. Monitor children's comfort regularly, especially those with asthma. Provide them with plenty of water and rest breaks. • To reduce exposure to air pollutants, avoid busy streets when walking with children or pushing strollers. Time children's outings during periods of low traffic activity. • Take steps to reduce air pollution, both personally and in your facility. For example drive less and conserve energy. • For more information see www.toronto.ca/health/smog/pdf/smog_playing_outdoors_fact_sheet.pdf.

<p>Do school buses or other vehicles idle near areas where children congregate or play?</p> <p>Most school buses in Canada run on diesel fuel. Riding in a school bus can cause exposure to diesel exhaust, a mixture of chemicals known to affect the respiratory system and a probable human carcinogen. Exposure is highest in and around idling buses. Inside the bus, exposure is higher at the back of the bus than the front and when windows are closed.</p>	<p>Childproofing Tips</p> <ul style="list-style-type: none"> • Discourage, and if possible prohibit idling by all vehicles. • Drop-off and parking areas should not be near outdoor play areas or air intake vents for your facility. • Advocate for use of cleaner fuel by school buses and for better technologies in the long run.
<p>Do children play in green spaces that may be treated with pesticides?</p> <p>Many municipalities have passed by-laws restricting the outdoor use of pesticides. However, the outdoor use of pesticides continues in many areas. Children are at greater risk of exposure to pesticides applied to lawns and gardens than adults because they spend more time playing outside, are more likely to play at ground level, put their hands in their mouths more often and may not wash their hands as consistently.</p> <p>Pesticides can “drift” to nearby properties as well as indoors. They can also be tracked indoors on shoes, pets and strollers.</p>	<p>Childproofing Tips</p> <ul style="list-style-type: none"> • Use non-toxic pest control measures to maintain healthy and attractive lawns and gardens. For information on this see Toronto Public Health’s Pesticide Free: Guide to Natural Lawn and Garden Care available at www.toronto.ca/health/pesticides/natural_lawn_guide.htm. • Always wash children’s hands after playing outdoors and before eating. • Work with your community to reduce pesticide use in your area. • Advocate for measures to protect children from exposure to pesticides.
<p>Are play areas located beside buildings or fences with peeling paint?</p> <p>Until 1976, high levels of lead were added to paint to help it last longer. Outdoor paints generally contained higher levels of lead than indoor paints. Flaking, peeling paint, and dust from past maintenance of the surface can deposit lead and other metals into sand, soil and grassy areas around and under painted structures. Children are at risk of exposure to this lead mainly by putting their hands in their mouth during and after play. In most cases dealing with this type of situation is not difficult or expensive. The key is to prevent children from accessing these areas.</p>	<p>Childproofing Tips</p> <ul style="list-style-type: none"> • Keep children out of areas beside or under painted surfaces (known as the “drip line”), particularly around structures built 20 or more years ago. Barriers can include fencing or planting dense groundcovers and shrubs. • Properly maintain all painted exterior surfaces to prevent paint from deteriorating. • Control dust carefully during all repairs and renovations to prevent soil contamination. • Do not grow vegetables or herbs in soil beside a painted structure.

Adapted from workshop materials developed by Susanne Burkhardt, Ontario Public Health Association, Environmental Working Group and from the Primer.

**Best Start: Ontario's Maternal, Newborn and
Early Child Development Resource Centre**

c/o Health Nexus

180 Dundas Street West, Suite 301

Toronto ON M5G 1Z8

Tel: 416.408.2249 / 1.800.397.9567

Fax: 416.408.2122

Email: beststart@beststart.org

Website: www.beststart.org



*your health promotion specialist
votre spécialiste en promotion de la santé*

About Best Start: Ontario's Maternal, Newborn and Early Child Development Resource Centre

The Best Start Resource Centre supports service providers across the province of Ontario who work on health promotion initiatives to improve the health of expectant parents and their young children. Best Start is a key program of the Ontario Prevention Clearinghouse, funded by the government of Ontario to undertake activities in these areas: consultation, training, information and resource development and dissemination. The Resource Centre addresses a range of topics from health before pregnancy, pregnancy, maternal health and issues related to child health.