



CANADIAN ENVIRONMENTAL LAW ASSOCIATION
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Media Backgrounder

Toxic Substances — Focus on Children Project
Prepared by Canadian Environmental Law Association/Pollution Probe

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Toxic chemicals affecting children's lungs, brain development *Air, food and consumer goods appear to be key exposure sources*

The greatest risk to children from toxic chemicals in the environment appears to be to their lungs and their developing brains, a new report has found.

This is the primary finding of a 14-month study conducted for the Canadian Environmental Law Association (CELA) and Pollution Probe.

The Report

The report *Toxic Substances — Focus on Children*, reviewed the literature and gathered and analyzed dozens of lists containing thousands of substances. These lists are created by regulatory agencies and other organizations around the world, but they are rarely collated and coordinated.

“We had a hunch that all these lists of chemicals could be gathered together and mined for useful information,” said Kathleen Cooper, senior researcher at CELA and the study author. “We used these lists to come up with uniquely Canadian shortlists of substances of concern.”

Objective

A key research objective was to decide where to focus the work on child health and environment — which health effects, which substances, which exposures. Other health effects, like cancer and birth defects, are also of concern but these results point to the need to focus immediate attention on toxins that are suspected in harming children's lungs and developing nervous systems.

Scope of the Study

There is a possible list of over 23,000 substances in commercial use in Canada and another 500 active ingredients in pesticides. This research was scoped to exclude consideration of pesticides. However, pesticides are noted in the results since a list of substances of concern to children could not exclude pesticides.

Of the over 23,000 substances in commerce, our collective ignorance about health effects is profound. Full toxicological evaluations have been conducted on a tiny fraction of these substances and groups of substances. Effects on a child's developing brain are the most poorly investigated. We have very little good information about exposure. Yet, suspected health concerns are very serious and exposure continues.

Research Gaps That Need Attention

In making choices about where to focus efforts, the questions needing answers include:

Which substances? Because of ongoing limitations in the information sources, the research results summarized in this report include several "shortlists" and narrow the field to between 600 and 1,200 substances, including groups of substances, for further detailed scrutiny.

Which health effects? Toxic substances are suspected or associated with effects on the lungs, the developing brain, as carcinogens, as agents causing birth defects and other effects on reproduction and development, and as toxins affecting the immune system and endocrine system.

The worst substances are suspected or associated with several of these effects. This report found a "Dirty Six Dozen" of substances associated with four or more of these effects. Many of these are already the subject of regulatory action. However, these findings point to the need for detailed scrutiny of the effectiveness of these actions.

"These research results tell us to focus on substances that are suspected respiratory toxins and suspected neurotoxins. These are the health effects seen in very large numbers of Canadian children. They are also the health effects most often suspected in the substances we found to be of concern," Cooper said. The scientific evidence is not available to draw a direct relationship between the increasing trends in these health effects in children and exposure to these substances. Nevertheless, these results are provocative and should prompt immediate research and policy action, particularly on suspected neurotoxins.

Which life stage? Children can be affected by toxic substances before conception, through many highly sensitive stages during pregnancy, infancy and throughout childhood and adolescence. Exposures in the womb and the first six months of life appear to be the most important. Hence the life stages of interest must also include women of childbearing age and all pregnant women.

Which exposure sources? Exposures occur in the air, water, food, breast milk, soil, dust, consumer products and both indoors and outdoors. Our understanding about exposure is also very limited. Parents, child-care providers and pregnant women need good information to understand or be aware of risks, their relative importance, and the means of avoiding exposure, taking precautions, and knowing about safer alternatives.

The research results point in the direction of exposures via air pollution and particularly indoors, to indoor air and dust and to substances being released by consumer products. "It is very important to have a better picture of which substances are of concern, where

and how exposure occurs, and whether safer alternatives exist,” Cooper said. These are the questions parents ask and this research provides us with better information to be able to respond.

Summary of Key Findings

- Fortunately, Canadian children are generally quite healthy. However, trends in a range of health effects suspected or associated with toxic substances deserve much more detailed scrutiny and precautionary responses.
- Large numbers of Canadian children have either respiratory health problems or neurodevelopmental problems. Over 900,000 (12 per cent) of Canadian children (aged 0–19) have asthma. Nearly 2.3 million (29 per cent) have one or more learning or behavioural problem. Nearly 800,000 (10 per cent) have learning disabilities.
- Additional health effects of concern, suspected or associated with toxic substances in the environment or used in consumer products, include cancer, birth defects, other reproductive or developmental problems, immune system and endocrine system effects.
- Life stages of greatest concern are the developing fetus and early infancy. Hence, women of child bearing age and pregnant and breastfeeding women are among the at-risk population.
- Of the substances short-listed in this report, up to half are suspected respiratory toxins or suspected neurotoxins, or both.
- The research results point to a clear need to focus on respiratory toxins and neurotoxins in research and regulatory responses.
- Among the substances short-listed in this report are metals, pesticides, persistent organic pollutants, dozens of outdoor and indoor air pollutants, phthalates, radiation, flame retardants, perfluorochemicals, drinking water disinfection by-products and environmental (second-hand) tobacco smoke.
- The results provide information about the need to focus on specific substances and often, entire groups of substances.
- Next steps can include targeted efforts at specific facilities or specific consumer products releasing these substances.
- The resulting shortlists of substances of concern are often found on lists of high production volume chemicals, many are considered hazardous air pollutants, many appear on lists of hazardous waste and a very large number are in the Nordic Countries database of substances in products and in European Economic Community lists of hazardous substances.
- Health concerns are suspected or associated with over 300 substances that were supposedly evaluated within more stringent requirements established in recent years.

The Regulatory Response

The report also includes a brief survey of regulatory responses to the threat of toxic substances on children’s health. Cooper stated that, “while modest progress has been made in recent years, the regulatory response in Canada, as elsewhere, still suffers from “analysis paralysis.”

Regulators, and industry, insist upon separate, detailed evaluations of individual substances, and occasionally groups of substances, and a high degree of proof of harm before taking regulatory action. This approach is reckless in the face of so many thousands of substances and it also results in undue exposure to pregnant women and children.”

“We need to learn from, and stop repeating, the mistakes of the past,” said Cooper. “Are we repeating the mistakes of thalidomide and diethylstilbesterol (DES) with toxins capable of interfering with human development and reproduction? After poisoning millions of children with lead, in gasoline and paint, we still are not adequately regulating new sources of lead in consumer products. More ominously, history is repeating itself with mercury. With increasing evidence of harm, the “safe” level of mercury is continually revised downwards as we urge pregnant women and children to avoid or limit eating certain fish, an otherwise very nutritious food.”

The report recommends that regulatory responses to the huge backlog of unregulated substances should include the efficiency of phasing out entire groups of hazardous substances.

Eliminating groups of hazards can be done on the basis of what is known about the toxic effects of similar substances. This approach is essentially what has been done in the international Treaty on Persistent Organic Pollutants. Although often described as applying to a “dirty dozen” substances, in fact, it applies to four major groups of substances — PCBs, dioxins, furans, and organochlorine pesticides.

The same efficiencies can be applied to flame retardants, known to be doubling in breastmilk every three years. Hence, the entire group of flame-retardants (or PBDEs) should be phased out and banned on the basis of what is known about the chemistry and environmental fate of these substances.

“We know enough to get around the “analysis paralysis” that focuses on individual substances and instead make choices that ensure we avoid entire groups of substances. We need to send the scientists back to the lab to apply this knowledge about how certain chemicals result in toxicity and to choose safer alternatives. That won’t happen until our regulation of these substances speeds up and we become more efficient in tackling this enormous backlog,” Cooper said.

The full report and the executive summary are available on-line at www.cela.ca and www.pollutionprobe.org/Publications/Childrens.htm.

For more information:

Kathleen Cooper, Senior Researcher
Canadian Environmental Law Association
416-960-2284 x221
kcooper@cela.ca