

Children's Health and the Environment: *Current Activities and Health Promotion Strategies*

Presentation to Making the Links: Environmental Health, Equity and the Law Workshop
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Session Outline

- Introduction to CELA and CPCHE
- Overview of CEH issues and activities
- Current Activities:
 - Healthy Retrofits project
 - Early Exposures and Chronic Disease
- Personal and policy responses



CELA's Initial Work on Children's Env'l Health

- CELA is a legal aid clinic within Legal Aid Ontario – poverty law mandate including legal representation and public interest law reform
- CELA-OCFP Collaboration: Review of scientific evidence of greater vulnerability of children, focus on lead and pesticides
- Overall conclusion – law is not protective of children
- Large policy reform agenda
- Helped change federal pesticide law and bylaw efforts
- Limited effect on chemicals regulation (overwhelming to public audience)



CHILDREN'S
HEALTH
PROJECT



Environmental Standard Setting and Children's Health

May 25, 2000

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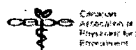
CPCHE At a Glance



Canadian Partnership for Children's Health and Environment

...an affiliation of twelve organizations working
together since 2001 to protect children from
toxic chemicals and pollutants.

CPCHE PARTNERS



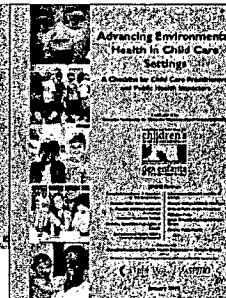
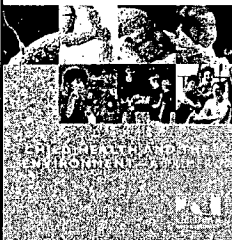
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Selection of CPCHE Resources

Comprehensive review
of the evidence

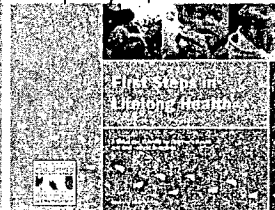
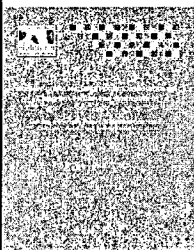
Raising public awareness and
empowering personal action

Building capacity among service providers



Fostering dialogue

Advocating for research
and policy improvements

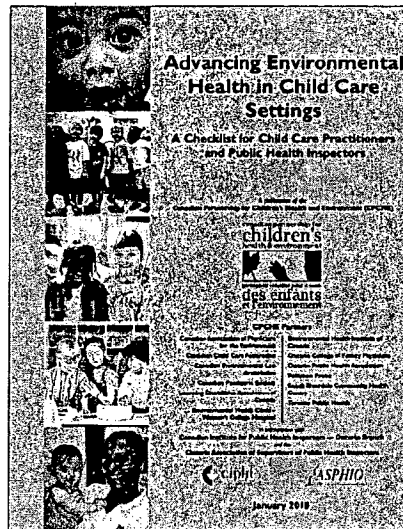


Multiple fact sheets and additional
health promotion resources at
www.healthyenvironmentforkids.ca

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Shared Resource for Child Care Centres and Public Health Inspectors

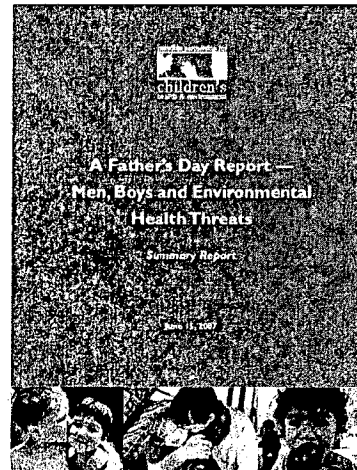
- Most recent publication – January 2010
- CPCHE, Canadian Institute of Public Health Inspectors (Ontario Branch) and Assoc. of Supervisors of Public Health Inspectors of Ontario
- Checklist, with detailed guidance and resources
- Practical info with focus on actions to prevent/reduce children's exposures to toxic substances/pollutants in the child care environment.



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The "weaker sex?" - Boys appear to be at greater risk than girls

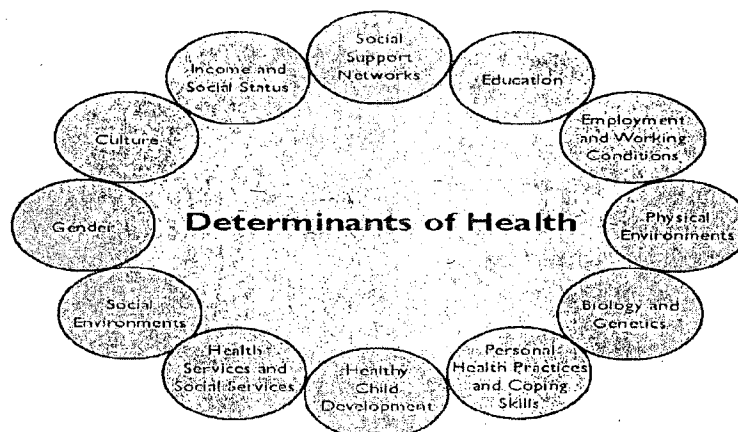
- Disproportionately affected by asthma, cancer, learning and behavioural problems and birth defects.
- E.g., Four times more boys than girls are affected by autism and ADHD.
- TDS: hypospadias, undescended testis, poor semen quality and testicular cancer as symptoms of an underlying syndrome – ED while in the womb
- Need for greater public awareness, especially among fathers, to reduce or prevent environmental or occupational exposures that can affect a fetus or child.



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Context is Crucial – Any Health Outcome Situated Within the Multiple Determinants of Health

Figure 1: Determinants of Health



Source: World Health Organization, undated.

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Multiple Risk Factors But Strong Evidence for Primacy of the Social Determinants of Health

- Well understood risk factors for poor health and chronic disease
 - the “Big 3” – diet, exercise, smoking
- Literature: worldwide, health follows SES gradient.
- SDOH: “Causes of the causes”
- WHO re SDOH: ethical imperative to address social justice and health inequities
- Cdn Medical Assoc’n President-elect in November, 2009:
 - poverty is the greatest predictor of health
 - poverty and housing: human rights issues
 - doctors should call for poverty reduction strategies for sake of protecting most vulnerable citizens
 - See also: Inaugural address in August, 2010

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Today’s Reality

Large numbers of children potentially affected:

- Respiratory effects (asthma: 1 in 10 kids)
- Neurodevelopmental effects (~25%? of kids)

and at increased risk:

- 20% of children in Canada live in poverty
- ~25% in housing with high lead in paint

Rare but severe outcomes:

- Cancer - leading cause of illness-related death in children over one year; several cancers rising among young adults (aged 20-44 yrs)
- ♂ birth defects (on the rise) and low birth weight (with implications for chronic disease)

Concern about endocrine disruption in the womb with permanent effects via epigenetic changes:

- Testicular Dysgenesis Syndrome? Rising cancer rates? Obesogenic substances? Links to other chronic diseases?

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Environmental exposures are linked to increased risks of....

In children:

- Asthma and Respiratory Problems
- Impacts on Brain Development and Brain Functioning
- Cancer
- Impacts on Reproduction, Fetal and Child Development
- Impacts on the Endocrine System and Immune System



Adults: Increasing evidence of associations with multiple chronic diseases or chronic disease risk factors including obesity, diabetes, several cancers, cardiovascular disease, Parkinson's and Alzheimer's Diseases

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Current Activity – Early Exposures and Links to Chronic Disease

- Network-to-network collaboration of the Canadian Partnership for Children's Health and Environment (CPCHE) and the Ontario Chronic Disease Prevention Alliance (OCDPA)
- 2-year project funded by the Ontario Trillium Foundation's Future Fund
- 35+ organizations involved with a shared emphasis on prevention
- Large report in preparation



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“Developmental” Diseases (Heindel, 2010)

Reproductive/Endocrine:

- Breast/prostate cancer, endometriosis, polycystic ovary syndrome; reduced fertility; diabetes/metabolic syndrome; early puberty; obesity

Brain/Nervous System:

- Alzheimer’s Disease; Parkinson’s Disease, ADHD/learning disabilities

Pulmonocardiovascular:

- Atherosclerosis; asthma; chronic obstructive pulmonary disease; heart disease/hypertension

Immune/Autoimmune:

- Systemic/tissue specific autoimmune disease; immunosuppression

Heindel: Developmental basis of disease changes focus from cure to prevention and intervention strategies. Perinatal period as a window of opportunity. Epigenetic research can provide sensitive biomarkers of developmental exposures to aid in development of prevention and intervention strategies.

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**Table 4: Summary of Early Exposures (*in utero* or childhood) Associated with Chronic Diseases Addressed in CPCHE-OCDPA Review
(INCOMPLETE: DO NOT CITE)**

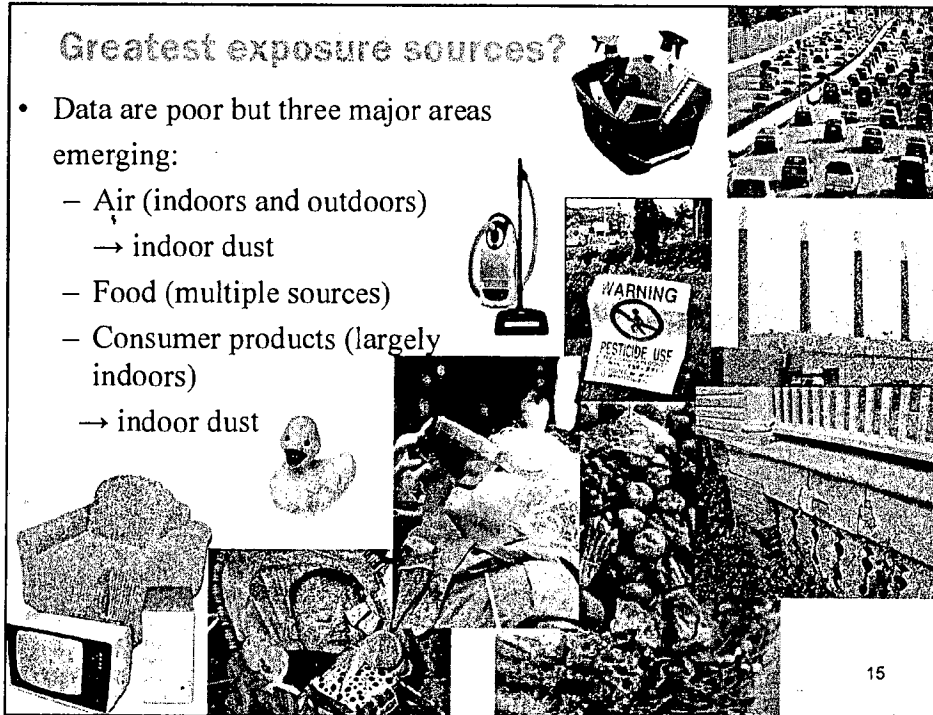
Cancer	Solvents, pesticides (esp. organochlorines), air pollution, bisphenol A, Environmental Tobacco Smoke, radon, PCBs, PBDEs, TCE, lead, benzene, arsenic
Resp.	Air pollution (CACs), ETS, Biological Factors, metal dust, VOCs, solvents, DEHP, some pesticides, formaldehyde, aldehydes, isocyanates, anhydrides, cadmium, hexavalent chromium, manganese, nickel, benzene, dibutyl phthalate
Diabetes T2	Suspected obesogens (bisphenol A, phthalates, organotins, POPs, perfluorinated compounds)
CVD	Lead, substances associated with low birth weight, substances associated with congenital heart defects
PD	Air pollution, pesticides (rotenone, paraquat, maneb, dieldrin, pyrethroids), PCBs, solvents (TCE, carbon disulfide, methanol, n-hexane)
AD	Air pollution, lead, other neurotoxicants
DNT	Lead, mercury, PCBs, PBDEs, solvents

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Greatest exposure sources?

- Data are poor but three major areas emerging:

- Air (indoors and outdoors)
→ indoor dust
- Food (multiple sources)
- Consumer products (largely indoors)
→ indoor dust



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Potential exposure tally for one day: The Enormity of "tiny-ness"

Air (outdoor and indoor): "Criteria" air pollutants (SO_2 , NO_2 , CO , Ozone, PM_{10} , $\text{PM}_{2.5}$, PM_{10}); Volatile Organic Compounds, Polyaromatic Hydrocarbons, solvents, formaldehyde, etc.

Food: metals; pesticide residues, Persistent Organic Pollutants (incl. PBDEs), phthalates, Bisphenol A, etc.

Consumer Products (incl. containers and packaging): metals; PBDEs, perfluorinated compounds, pesticides, phthalates, Bisphenol A, Volatile Organic Compounds, solvents, Persistent Organic Pollutants, Short Chain Chlorinated Paraffins, alkylphenols, nonyl phenol ethoxylates

Water and Steam: Trihalomethanes

(Biomonitoring – confirms this reality of multiple exposures, with consequences as yet uncertain)

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Purpose of Estimated Tally of Multiple Exposures

- Not meant to overwhelm but to state the obvious – context matters
- In the context of multiple exposures, potential for multiple effects, vast complexity, uncertainty and high stakes risks: **we should exercise precaution**
- *In a world of multiple exposures, we should reduce exposures whenever possible.*

Calls for a more precautionary approach in environmental policy come most frequently when findings point to environmental risks to prenatal or child health. More recent research → links to several chronic diseases.

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Additional Current Activity Healthy Retrofits - Project Overview

- CPCHE project, with CELA as lead partner
- 2-year, \$300K project funded by Ontario Trillium Foundation
- Multi-sectoral project Advisory Committee
- Emphasis on needs of low-income residents
- Phase 1 – Baseline report, survey of energy auditors, key informants and stakeholder gathering
- Phase 2 – Develop and pilot outreach materials
- Phase 3 – Promote uptake/adoption of project outputs including policy recommendations



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Outreach Activities: Current and Planned

1. CPCHE project, with CELA as lead partner
 - Development of workshop curriculum for First Nations and Aboriginal service providers
2. PHAC-funded Needs Assessment of CEH information needs among CAPC-CPNP programs
 - Phase 1 complete
 - Bridge to phase 2: publish results; trainers' retreat in January to address outreach challenges
 - Phase 2 – develop information resources to meet needs identified in Phase 1
3. CPCHE project with OPHA as lead partner
 - MOE funding for development of outreach materials

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Examples of Strategies – Boiling down the complexity (our biggest challenge)

- With prenatal classes or parents: Quiz, Grab bag
- With children: cinnamon and vaseline
- With prenatal classes or other service providers: Determinants of Health Game and Worksheet

On-line collections:

Playing it Safe Workshops:

<http://www.healthyenvironmentforkids.ca/collections/playing-it-safe-workshops>

Resources for Local Champions:

<http://www.healthyenvironmentforkids.ca/collections/resources-local-champions>

Resources for the Child Care Sector:

<http://www.healthyenvironmentforkids.ca/collections/resources-child-care-sector>

CPCHE Fact Sheets: <http://www.healthyenvironmentforkids.ca/collections/cpche-fact-sheets-feuillets-dinformation-pcsee>

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Policy Reform: Part of Health Promotion Strategies

- We can't shop our way out of these problems
- Awareness, Education, Personal Responses and Choices – all important
- Long experience shows that voluntary action is often inadequate, especially for “legacy” issues where large commercial interests are at stake.

Some examples of necessary policy reforms:

Ban the cosmetic use of pesticides

Better regulation of international trade/product safety

Evolve from the simplistic approach of evaluating and regulating each chemical one at a time, in isolation from others

Require substitution of toxic substances with safe alternatives

See socio-economic factors as intertwined with environmental factors and the necessity of upstream strategies (job creation, living wage, just transition, healthy housing, changes in land use planning)

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Thank you!

Acknowledgements:

- CELA and CPCHE Colleagues
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