

# ***Canadian Strategy for Cancer Control***

***Recommendations to governments  
and institutions for action on cancer  
prevention in Canada***

***May 2005***

***National Committee on Environmental & Occupational Exposures  
Primary Prevention Action Group***

# Introduction

- The NCEOE has endorsed the *Precautionary Principle*. This approach underpins the key recommendations for future activities.
  - “Whenever reliable scientific evidence is available that a substance may have an adverse impact on human health and the environment but there is still scientific uncertainty about the precise nature or the magnitude of the potential damage, decision-making must be based on precaution in order to prevent damage to human health and the environment.” – *Resolution of the European Council of Nice, December 2000*
- The NCEOE has also focused on confirmed and probable human carcinogens as classified by the International Agency for Research on Cancer (IARC).

The results of a recent review undertaken by the NCEOE indicate that it is necessary to take action in the following key areas:

- It is necessary to raise the profile of the primary prevention of the environmental and occupational exposures as a priority issue within provincial cancer control agencies/programs.
- Disclosure of the presence, use and release of classified carcinogens is a necessary prerequisite to primary prevention in workplaces, the environment and the home.
- Further legislative, regulatory and policy development processes are required in primary prevention.

# Table 7 -IARC Confirmed and Probable Occupational and Environmental Human Carcinogens\*

## Group 1: Carcinogenic to humans

- 4-Aminobiphenyl
- Arsenic & arsenic compounds
- Asbestos
- Benzene
- Benzidine
- Beryllium & beryllium compounds
- Bis(chloromethyl)ether & chloromethyl methyl ether
- Cadmium & cadmium compounds
- Chromium[VI] compounds
- Coal-tar pitches
- Coal-tars
- Erionite
- Ethylene oxide
- Formaldehyde
- Gallium arsenide
- Mineral oils, untreated & mildly treated
- 2-Naphthylamine
- Neutrons
- Nickel compounds
- Phosphorus-32, as phosphate
- Plutonium-239 & its decay products
- Radioiodines, short-lived isotopes, incl. iodine-131
- Radionuclides, a- & b-particle-emitting
- Radium-224, 226 & 228 & decay products
- Radon-222 & its decay products
- Shale-oils
- Silica, crystalline
- Involuntary smoking
- Solar radiation
- Soots
- Talc containing asbestiform fibres
- 2,3,7,8-Tetrachlorodibenzo-para-dioxin
- Vinyl chloride
- Wood dust
- X- & Gamma (γ)-Radiation

## Group 2A: Probably carcinogenic to humans

- Acrylamide
- Benz[a]anthracene
- Benzidine-based dyes
- Benzo[a]pyrene
- 1,3-Butadiene
- Captafol
- a-Chlorinated toluenes
- 4-Chloro-ortho-toluidine
- Creosotes (from coal-tars)
- Dibenz[a,h]anthracene
- Diesel engine exhaust
- Diethyl sulfate
- Dimethylcarbamoyl chloride
- 1,2-Dimethylhydrazine
- Dimethyl sulfate
- Epichlorohydrin
- Ethylene dibromide
- Glycidol
- Indium phosphide
- Lead compounds, inorganic
- 4,4'-Methylene bis(2-chloroaniline)(MOCA)
- Methyl methanesulfonate
- N-Nitrosodiethylamine
- N-Nitrosodimethylamine
- Non-arsenical insecticides (spraying and application)
- Polychlorinated biphenyls
- Styrene-7,8-oxide
- Tetrachloroethylene
- ortho-Toluidine
- Trichloroethylene
- 1,2,3-Trichloropropane
- Tris(2,3-dibromopropyl) phosphate
- Ultraviolet radiation A, B & C
- Vinyl bromide
- Vinyl fluoride

\* As of November, 2004. An up-to-date list can be found at <http://www.iarc.fr>. This table excludes pharmaceuticals and infectious agents that may be encountered by health care and pharmaceutical workers. Work place exposures to health care workers also needs to be specifically addressed.

- Table 7 of IARC listings are confirmed and presumed human carcinogens. Our recommendations seek to address both ***occupational and environmental exposures*** to these substances.
  
- Occupational exposures are targeted through a number of recommendations:
  - The application of ALARA occupational exposure limits to these substances.
  - Surveillance recommendations which seek to begin to profile current occupational exposures to these substances .
  - Worksite audits conducted by prevention agencies and employers
  - Regulatory action including MSDS audits, exposure notification (CAREX is one program being piloted now)
  - Occupational histories
  
- Environmental exposures are targeted through:
  - Linkage to CEPA NPRI data
  - Pollution prevention programming through CEPA; Provincial and Municipal governments
  - Control of cosmetic pesticide use and exposures through municipal bylaw; purchasing policies; public education
  - Labelling of consumer products containing known class 1/2A carcinogens

# Summary

## ■ Priority Recommendations: 7\*

- Surveillance (2)
- Information Disclosure (1)
- Community Action (1)
- Government Intervention (3)

\*proposed future activities include a series of additional recommendations appended to the committee report

# *Surveillance*

- In order to properly identify individual cases of environmental and occupational cancer it is necessary to collect a thorough occupational and environmental history. Provincial cancer control agencies/ programs should actively promote the collection of this information.

# Surveillance

- Encourage the development and application of an Information System on Occupational Exposure to Carcinogens (CAREX) and carcinogen exposure worker registry program in Canadian jurisdictions.
  - 2.1 Workplace monitoring and collection of data should be required by regulators for all Class 1 and 2A carcinogens listed in Table 1, in use or produced.
  - 2.2 There should be a harmonization of exposure limits for Class 1 and 2A carcinogens (listed in Table 7) in workplaces throughout Canada. The ALARA principle\* should be applied.

\*As Low As Reasonably Achievable (ALARA)

## *Information Disclosure*

- Health Canada's WHMIS Division should develop a national program for auditing the accuracy and completeness of MSDS in collaboration with HMIRC and the provinces.
  - 1.1 Regulators must look at better enforcement of WHMIS requirements for accurate MSDS, and training of the workforce regarding the significance of MSDS disclosure information pertaining to classified carcinogens.

# *Community Action*

- Municipalities should develop and implement primary prevention activities, such as:
- Community exposure profiles should be developed in collaboration with NPRI and community organizations.
- Support for collaborations such as that between the Toronto Department of Health and the Toronto Cancer Prevention Coalition should be encouraged.
- Community pollution prevention bylaws should be encouraged, and BP examples disseminated.

# *Government Intervention*

- Federal legislation should require disclosure of all Class 1 and 2A carcinogens (listed in Table 7) through labeling on all consumer products, including pesticides.
- Use of standard hazard phrase and symbols should be adopted which indicate a product contains classified carcinogens, as recommended by the GHS\*. The use of a standard symbol to indicate a product does not contain classified carcinogens should be explored . There should be an expansion of the environmental choice program of Environment Canada and its application in the consumer field.

\*Globally Harmonized System for the Classification and Labeling of Chemicals (GHS)

# *Government Intervention*

- CEPA 1999 should be updated and require pollution prevention programs for federally regulated sites using or producing classified 1 and 2A carcinogens.

# *Government Intervention*

- The Federal government should pursue international harmonization concerning disclosure, use, registration, authorization, and prohibition of classified carcinogens. There should be a public review and gap analysis of the EU Directives and proposed REACH\* legislation with ongoing Canadian activities.

\*  
the registration, evaluation and authorization of chemicals (REACH)

## *Conclusion*

- Primary prevention of exposures to occupational and environmental carcinogens requires more focused and active efforts nationally and provincially.
- Elimination of exposure should be an objective pursued by primary stakeholders, and governments for class 1 & 2A carcinogens.
- Opportunities for inter-sectoral collaboration should be exploited in order to maximize our effectiveness and focus activity on primary prevention strategies

## *Future Activities: Surveillance*

- Creation of both health surveillance and hazard surveillance data should be encouraged and be available through a centrally managed network/clearinghouse.
- In order to properly identify individual cases of environmental cancer it is necessary to begin collecting environmental exposure data and to investigate the development of pilot projects linking environmental exposure data with environmental health surveillance

## *Future Activity: Information Disclosure*

- Statutes should be amended so that Communities and First Responders have access to hazardous materials data.

## *Future Activities: Community Action*

- Priority list of carcinogens, based on exposure data collected, should be developed and widely disseminated.
- The Canadian Cancer Society and its provincial organizations should be encouraged in their efforts to increase emphasis on primary prevention activities in this field.

## *Future Activities: Worker Education and Action*

- Information bulletins should be developed to address cancer prevention and toxic use exposure/ reduction (TUR), substitution arrangements and best available technology.
- The Mass. Toxic Use Exposure/Reduction model should be further investigated and funding for a Canadian Federal or Provincial counterpart considered.

## *Future Activity:Employer/Industry*

- Employer/Industry should audit MSDS for Class 1 and 2A carcinogens to ensure they comply with WHMIS information disclosure requirements.
- Employer/Industry should audit their procedures/policies regarding the handling of carcinogens.
- Incentives for Toxic Use Reporting Programs at all three levels of government should be investigated.

**Canadian  
Strategy for  
Cancer Control** *Background to  
Recommendations*

*Best Practice Review:  
Primary prevention of exposures  
to occupational and  
environmental carcinogens*

# *Members of the National Committee on Environmental and Occupational Exposures*

- Mr. Larry Stoffman (**Chair**), CLC & United Food and Commercial Workers Union
- Dr. Roch Bernier, Fondation Lucie & André Chagnon
- Dr. Dave Bennett, Canadian Labour Congress
- Ms. Anna Maria Boscaino, Canadian Strategy for Cancer Control
- Dr. Jim Brophy, Occupational Health Clinic for Ontario Workers
- Ms. Mae Burrows, Labour Environmental Alliance Society
- Dr. Paul Demers, University of BC
- Dr. David Halton, Workplace Safety and Insurance Board
- Dr. Roland Hosein, GE Canada
- Barbara Kaminsky, Canadian Cancer Society - BC & Yukon Division
- Mr. Andrew King, United Steel Workers of America
- Dr. Gary Liss, Ontario Ministry of Labour
- Ms. Heather Logan, Canadian Cancer Society
- Mr. Paul Muldoon, Canadian Environmental Law Association
- Dr. Jennifer Payne, Cancer Care Ontario

# *Purpose of Project*

- Generate a report describing best practices in primary environmental and occupational cancer prevention and which identifies needs and gaps in current prevention activities in Canada.
- The document will serve as a background for the development and dissemination of recommendations by the National Committee on Environmental and Occupational Exposures (NCEOE), to governments and institutions for action in Canada.
- The NCEOE is a sub-committee of the Primary Prevention Action Group of the Canadian Strategy for Cancer Control (PP-AG, CSCC – [www.cancercontrol.org](http://www.cancercontrol.org))

# *Defining Primary Prevention of Environmental & Occupational Exposures*

- Primary prevention of environmental and occupational exposures is activity that support the reduction or elimination of exposures to prevent cancer.

In general, these include:

- Eliminating exposure;
- Reducing exposure through engineering or administrative controls;
- Regulation;
- Educational efforts; and
- Identification of exposed populations through surveillance for the purpose of prevention

- Primary prevention activities may be carried out by:
  - Federal, provincial, territorial, or municipal government
    - i.e. Health, Environment, Agriculture, and Labour-related Departments and Agencies
  - Crown corporations such as; cancer agencies/centers/institutes, workers' compensation agencies, university research community, and public utilities
  - Non-governmental advocacy and support organizations such as the Canadian and provincial Cancer Societies and the Lung Associations
  - Private industry, labour, environmental and community groups

## *Problem*

- The prevention of occupational and environmental exposures associated with cancer has received limited attention in the arenas of research and public policy, relative to other exposures such as tobacco, exercise, and nutrition.
- Although the exact proportion of all cancers due to environmental and occupational exposures is the subject of debate, it is clear that there is increased risk among people who are exposed to these carcinogens, and therefore these cancers are preventable.

# *Methods*

- Conducted extensive research on the internet, and more than 100 key informant interviews with experts in Canada, the United States and Europe, to determine the current status of prevention practices in Canada with respect to:
  - Pollution Prevention Programs;
  - Public Policy, including legislation and regulation;
  - Surveillance activity and Stakeholder Actions
- Based on results, identified the best current practices in Canada and elsewhere (primarily EU and USA).
- Identified needs and gaps in Canada

# *Results*

- Best Practices and Gaps in the areas of
  - Surveillance
  - Information Disclosure
  - Community Action
  - Labour Education and Action
  - Employer/Industry Action
  - Government Intervention:  
Legislation/Regulation/Policy

# *Surveillance: Best Practices(Canada)*

## Cancer Surveillance

- **The British Columbia Cancer Agency's Cancer Control Research Program**
- **Windsor Occupational Health Clinic & Windsor Regional Cancer Care Centre: CROME /LOHR**
- **CCO& WSIB Cancer Surveillance Program**  
( proposed)

## Hazard Surveillance

- **Health Canada: National Dose Registry**
- **CCO/UBC :CAREX Pilot**
- **Northern Contaminants Program**
- **Environment Canada: NPRI, DSC**
- **NDSH, CFIA**

# *Hazard Surveillance: Best Practices*

## *(U.S. & EU)*

- Finland: ASA
- EU/Finland: CAREX
- Britain: THOR
- CDC (U.S.):  
National Report on  
Human Exposure to  
Environmental  
Chemicals
- NIOSH: (SENSOR)  
(Cancer excluded)

## *Surveillance: Gaps*

- Limited funding for occupational and environmental cancer/carcinogen research
- Provincial cancer treatment centres do not routinely record information about the occupational histories or environmental exposures
- No central agency responsible for disseminating information to affected occupational groups and communities
- There is no systematically collected publicly available information on current occupational exposures to classified carcinogens in Canadian workplaces
- No registry of chemical carcinogens in the workplace comparable to the national dose registry for radiation or the Finnish ASA
- Federal/provincial responsibilities vary

# *Information Disclosure: Best Practices*

## Canada

- WHMIS/HMIRC MSDS review
- CEPA/NPRI Annual report of releases; CEPA Toxics List
- Ontario Safe Drinking Water Act
- Environment Canada : Environmental Choice program  
(screen for IARC carcinogens)
- PBT

## U.S.

- NJ Worker/Community Right to Know Act 1983
- (EPCRA):community right to know)
- EPA TRI 650
- California Safe Drinking Water & Toxic Enforcement Act 1986(P-65)

# *Information Disclosure: Best Practices*

- Denmark: “List of Undesirable Substances”
- Sweden: Prio “Observation List”
- EU “Dangerous Substances Directive” (consumer labels: carcinogens)

# *Information Disclosure: Gaps*

- No Federal or Provincial carcinogen focus/list
  - Consumer Chemical Regulations do not require carcinogen disclosure
  - No central repository or audit for workplace MSDS
  - No community and limited first responder right to know
  - Limited NPRI data (Thresholds, exemptions (pesticides, transport, maintenance))

# *Community Action: Best Practices (Canada)*

- 1990 Hudson Pesticide Bylaw (followed by 66 other Canadian communities)
- Labour Environmental Alliance & Nova Scotia Environmental Health Association:community education
- Ontario College of Family Physicians ( Pesticide campaign)
- Citizens for Safe Learning environment
- Canadian Cancer Society ((Precautionary principle and community action strategy (pesticides and treated lumber)
- Breast cancer Prevention Coalition Toronto/Montreal)
- Women's Healthy Environments Network
- Toronto Cancer Prevention Coalition & Toronto Board of Health
- Coalition for Green Health care
- Reach for Unbleached

# *Community Action: Best Practices*

*(Other jurisdictions)*

- Breast Cancer Fund/Breast cancer Action: Action cards, Safe Cosmetics Campaign
- Mass. Breast Cancer Coalition: Proposed “Act: Safer Alternatives to Toxic Chemicals”
- Environmental Working Group: Personal Care products; Pesticides in Food
- Environmental Defense Fund: Scorecard: citizens access to toxic chemical data , use profiles, msds, links to IARC and P-65.
- Chemsec: EU coalition (Swedish funding). Chemical hazard classification and labeling legislation (lobby)

## *Community Education & Action: Gaps*

- Lack of infrastructure and linkage between community organizations
- Few expert resources and funding sources
- Secondary focus on primary cancer prevention: multiple issues, weak priority setting
- Little media attention and poor linkage between “health care crisis” and primary prevention

# *Labour Education and Action: Best Practices*

- CLC & CAW Prevent Cancer Campaign
- DEEP ( Diesel emissions evaluation and elimination) (USWA)
- Substitutions: solvents; metalworking fluid; low grade diesel fuel; VOC's in paints;
- LEAS & BC Federation of Labour: Workplace Toxins Project; product education and substitution; schools; long term care facilities; BC Buildings Corp.
- Negotiated elimination and exposure limits (carcinogens) (CAW)
- EU: Asbestos ban; implementation of Occupational Carcinogens Directive

## *Labour Education and Action: Gaps*

- Lack of resources and technical expertise to evaluate chemicals in use and to find information on safer substitutes
- Little knowledge of best practices in Canada and EU and lack of harmonization across provinces
- Different regulatory regimes prevent common prevention efforts
- Most collective agreements do not address primary prevention and occupational cancer controls.
- Poor coordination of resources

# *Employer/Industry Action: Best Practices (Canada)*

- Novopharm: dichloromethane elimination(550 tonnes/annum)
- Placer Dome: Autoclave system reduction of arsenic discharge ( 99%)
- Ottawa Hospital: hydroclave system eliminates incineration and production of dioxins And furans
- Carriage Trade Cleaning : elimination of dry methods using perchloroethylene
- Pluricapital Industries QC:wood treatment with heat as substitute for CCA or chlorophenates

(Small sample. Refer to report)

# *Employer/Industry Action: Gaps*

- Limited focus by employer/industry associations
- Limited information sharing regarding alternatives and substitutes
- Limited technical assistance programs to assist companies to make substitutions for particular chemicals or processes.
- Weak coordination with OSH agencies or Ministries of the Environment: elimination and substitution
- Limited financial incentives or fiscal policies promoting pollution prevention for carcinogens

# *Government Legislation, Regulation & Policy: Best Practices (Canada)*

## Environmental(Federal)

- CEPA 1999:Prohibition of certain toxic substances  
Regulations:dioxins/furans;s olvent degreasing; benzene in gas; (significant reductions in carcinogen use and discharge)
- Canadian Nuclear Safety Commission Limits
- Hazardous Products Act
- Provincial: Quebec Pesticide Management Code restricts public and private sale/use of pesticides with carcinogens

## Municipal:

- Toronto Sewer Use Bylaw: targets and reduces arsenic, cadmium, benzene, hexavalent chromium. Significant reductions through PPP

## Substitution: Workplace

- Part 5 BC OHR (5.57 )
- Part X CLCode (10.16)

# *Government Legislation, Regulation & Policy: Best Practices (EU/US)*

## Eu

Bans: Asbestos; trichloroethylene;  
MTBE; IARC carcinogens in  
cosmetics

### EU REACH(Proposed)

Registration, Evaluation and  
Authorization of Chemicals.  
Would Establish European  
Chemicals Agency. All  
category 1&2 carcinogens  
would require prior  
authorization for use.  
( import and manufacture)

- Eu Directives:  
Occupational  
carcinogens; Electronic  
Equipment; Biocidal  
Products:  
restricted/prohibited use  
of carcinogens in all  
product categories
- Mass. Toxics Use  
Reduction Act and  
Institute: Primary  
Prevention Plans and  
Resources for  
Alternatives Research

# *Government Legislation, Regulation & Policy: Gaps*

- Substitution and ALARA requirements lacking in most jurisdictions
- No harmonization of exposure limits and implementation of the precautionary principle in establishing Canadian limits for carcinogens
- No registration and evaluation prior to import or sale (PMRA exception)
- No requirement to report and audit workplace use of carcinogens
- Toxic Use Reduction Planning is not mandatory
- CEPA enforcement and regulatory tools unclear or voluntary
- No requirement to disclose carcinogens in consumer products labeling or domestic use pesticides