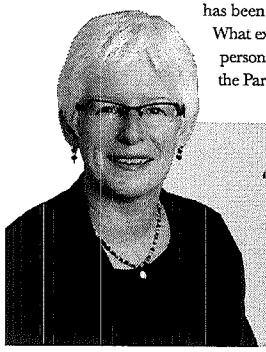
# Building momentum through partnership

## CEO Jessica Hill discusses the Partnership's first year

***What is the highlight for you since joining the Partnership in October?***
**Jessica Hill:** Meeting all the people in the cancer community is the greatest highlight. My background is in provincial and federal public service in health and post-secondary social services, so getting to know the people in the cancer arena and starting to build those relationships has been terrific. What excites me personally about the Partnership is the chance we have to advance cancer control nationally. This is the first cancer organization empowered to be the engine of cancer control across Canada. Our mandate reaches across the whole spectrum of cancer control, bridging jurisdictions and bringing organizations and people together in a new way. That is very motivating.

My sense of commitment comes from the belief that we must make things better for individual patients, survivors, and people in their communities.



'This is the first organization empowered to be the engine of cancer control across Canada.'

– Jessica Hill, CEO

***If you flash-forward to five years from now, what achievements do you hope to see?***
**JH:** I'd very much want to see that our projects and initiatives – which emerged from several years of preparatory work – are penetrating nationally. I'm not naïve; it's going to take time. But in five years I'd hope to see that we've got depth and momentum in those initiatives. This will come from the relationships that we build with partners across Canada.

***What do you see as the biggest potential barrier?***
**JH:** The biggest barrier is actually the fragmentary nature of health care and cancer control in Canada to date. In our federated system, we have a mosaic of hundreds of care, research, and advocacy organizations across the provinces. What we have lacked – until now – is a forum or platform where all can come together for initiatives that advance cancer control nationally. That's why the Partnership is really a platform and an opportunity for all our partners.

***We refer to the Canadian Partnership Against Cancer as "the Partnership." What does "partner" mean in this context?***
**JH:** Partnership takes different forms and processes that can be formal or informal.

For instance, we have many formal partnerships with the individuals who sit on expert panels, advisory groups, the Board of Directors, or one of our eight Action Groups (see page 4). These relationships are extremely important, because the groups propose, plan and deliver many of our projects and programs.

In another stream of activity we can partner with organizations in specific projects. Here, we try to ensure clarity about the relative roles and responsibilities of all parties.

Our partnership relationships will not all look the same, and they won't all develop at the same pace. It's an incremental, iterative process.

***You spent an hour with the late Dr. Sheela Basrur in early May. Would you care to comment on that discussion?***
**JH:** I saw incredible generosity of spirit. The fact that Sheela took the time with me is one small example of her capacity for giving. As a health professional, she very much wanted to share what she learned on her own cancer journey.

'Our partnership relationships will not look all the same or develop at the same pace.'

Sheela spoke about how much she appreciated Wellspring and other support groups. She made particular mention of the excellent pamphlets from Canadian Cancer Society.

She also spoke with great passion and clarity about the opportunity that hospitals have to ask patients for feedback. She mentioned that in her experience, cancer patients are not systematically asked for feedback at the hospitals and labs.

Finally, she mentioned that at the regional cancer centre where she received most of her treatment, she felt that patients came first, and that made a huge difference to her.

It was a privilege to have that conversation. ■

### Canadian Partnership for Tomorrow Project

- 300,000 participants aged 35-69 will be selected at random.
- Data will be collected through analysis of blood and other specimens, and written surveys.
- Participants' privacy will be ensured throughout the life of the study by a secure, privacy-protected numbering protocol.
- Life of the study will be at least 20-30 years.
- Elements of cancer risk and prevention to be captured include geography, occupation, ethnicity, lifestyle, diet, and others.
- Research goals in the short term include evaluating data on how Canadians are responding to public health and prevention programs. Over time we can observe patterns among people who develop cancer, and test theories about cancer risk as well as cardiovascular disease, diabetes, and other chronic diseases.
- Canadian Partnership Against Cancer funding is $42 million, plus regional commitments of $41 million. These funds will be leveraged to trigger further investment, with a goal of more than $100 million by mid-2009.

## *Canadian landmark...*

*(continued from page 1)*

"The study will have a sustained, powerful impact on cancer control efforts across Canada," says Heather Bryant, MD, VP of Cancer Control. "The data and analysis that will emerge will help to create a road map for cancer organizations and governments in this country in the years ahead. Finally, we'll have good Canadian data at hand."

The official announcement on June 11 in Montreal garnered extensive print and broadcast media coverage across Canada. "This is a landmark moment for Canada," says Jeff Lozon, Chair of the Board of Directors. "The project will build an enormous bank of information that Canadian and international researchers can draw upon in the short term, and create a legacy for future generations." ■



Left: Dr. Louis Dionne*, Jeff Lozon*, Alberta Partnership for Tomorrow Project participant Mary O'Neill, Dr. Philip Branton*, Dr. Antoine Louth*, Dr. Benoit Lussier*, Dr. Terry Sullivan* (*Canadian Partnership Against Cancer)

PARTNERSHIP MOMENTUM = PROGRESS

VOLUME 1 • ISSUE 1 • SUMMER 2008 A Report from Canadian Partnership Against Cancer

# Study of cancer risk is Canadian landmark

## 300,000 adults to take part in 20-30 year project

The launch in June of a prospective cohort study involving 300,000 Canadians is more than a Canadian "first."

*The Canadian Partnership for Tomorrow Project* demonstrates the core rationale for the Canadian Partnership Against Cancer, as the national body with the capacity to undertake a study on this scale.



A prospective cohort study follows a group of people forward in real time; in big enough numbers, it tracks associations between diseases, risk factors, and preventive factors.

"Launching the Partnership study is a great moment for us because of the picture it will paint of cancer risk and prevention across the country," says CEO Jessica Hill. "As well, it shows that we can bring partners together from around the country for a study that is quantitatively and qualitatively bigger than anything they could achieve on their own. That collective effort leverages every partner into a leadership position, illustrating the Canadian Partnership Against Cancer's role as a catalyst," she adds.

> 'This study will lay out our roadmap for cancer control initiatives for two and three generations'
> – Dr. Heather Bryant, *VP of Cancer Control*

The project has already enrolled 30,000 Canadians in Alberta, where Alberta Cancer Board developed the study. Other partnering organizations are BC Cancer Agency, Cancer Care Ontario with the Ontario Institute for Cancer Research, Cancer Care Nova Scotia with Dalhousie University, and the CARTaGENE project in Quebec.

*(continued on page 2)*

### Our Mandate

### The Engine for Cancer Control in Canada

The Canadian Partnership Against Cancer's mandate is to reduce the numbers of new cancer cases and cancer deaths in Canada, while improving the quality of life of those living with cancer.

*'Cancer control aims to prevent cancer, cure cancer, and increase survival and quality of life for those who develop cancer, by converting the knowledge gained through research, surveillance and outcome evaluation into strategies and actions.' – Canadian Strategy for Cancer Control, 2001*




Dr. Louis Dionne, a Partnership Board member, with a reporter at the June launch event.

CANADIAN PARTNERSHIP AGAINST CANCER / PARTENARIAT CANADIEN CONTRE LE CANCER

Courses

Courses

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Benefits of e-Learning

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Related Products & Services

The following sources of related information are also available from CCOHS.

Courses:

WHMIS for Workers

WHMIS: Understanding MSDSs

Publications:

MSDS Publications

Databases:

CHEMINFO

CHEMpendium

MSDS (Material Safety Data Sheets)

WHMIS Classifications

Contact Client Services
1-800-668-4284
(Canada and USA)
1-905-570-8094
Fax: 1-905-572-2206

# Occupational and Environmental Can Recognition and Prevention

This free course is designed for primary healthcare providers and anyone recognizing and preventing occupational and environmental cancer.



Format: e-Course
Duration: 1-1.5 hrs
Price: ***FREE!***

***Register***

VIE

(opens i

## Course Details

**Format:** e-Course
**Duration:** 1-1.5 hrs
**Language:** English

## Course Description

Many Canadians encounter carcinogens in their workplace or environment. exposure will cause cancer. Recognition of cancer from occupational or env difficult because, in most cases, these cancers cannot be distinguished fro

This course teaches primary health care providers how to recognize occup environmental cancers and how to respond to this finding. Insights are pro recognition of occupational and environmental cancer risks can lead to pre will highlight key points and allow participants to apply lessons learned.

Access to numerous free resources including online occupational and envir and Screening and Detailed Exposure History Questionnaires, is also provic

This e-course was developed by members of the National Committee on Er Occupational Exposures (NCEOE) in cooperation with CCOHS and funded b Partnership Against Cancer (CPAC) through the Primary Prevention Action

**Topics include:**

- Definition and incidence of occupational and environmental cancer
- Importance of recognizing occupational or environmental cancer and carcinogen exposures
- Types of scientific research used to identify carcinogens
- Authoritative carcinogen lists, by chemical, occupation and cancer si
- Components of an exposure history
- How to interpret an exposure history
- How to follow up on your conclusions
- Radon and asbestos case studies

- Cancer clusters

**Upon completion of this course, the participant will be able to:**

- Name common types of occupational and environmental cancer
- Describe how carcinogens are identified
- Find and use published lists of carcinogens
- Take and interpret an exposure history
- Identify steps to take if an occupational or environmental cancer is s patient is being exposed to a carcinogen
- Assess a cancer cluster report
- Apply the recognition process to other occupational and environmen

Average time to complete this course is approximately 1 - 1.5 hours.

## Target Audience

- Family physicians
- Medical specialists
- Nurses
- Nurse-practitioners
- Other primary healthcare providers
- Anyone with an interest in learning about the recognition and prevel occupational and environmental cancer

## Prerequisite

None

## Pricing

This course is offered free of charge.

## Delivery Method

This course is delivered as an on-line e-learning course. All you need is a c to the Internet - and you are ready to go! This e-learning course is designe learn at your own pace and in your own environment at your own convenie

---

## Review Process

CCOHS courses are unique in that they are developed by subject specialist reviewed by representatives from labour, employers and government to er and approach are unbiased and credible.

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## VuBiz Partnership

We partnered with Vubiz - an international leader in e-learning developmer e-course.

Vubiz offers other related e-learning courses that may also be of interest t about them in the Vubiz Catalogue of e-learning courses.

## Related Products & Services

The following sources of related information are also available from CCOHS.

**Courses:**

WHMIS for Workers

WHMIS: Understanding MSDSs

**Publications:**

MSDS Publications

**Databases:**

CHEMINFO

CHEMpendium

MSDS (Material Safety Data Sheets)

WHMIS Classifications

Important Notices and Disclaimers
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# Asbestos Registry Project
# 2008-2009

**Long term Outcomes**
A reduction in exposure to asbestos with a reduction in asbestos related disease in Canada as recommended by the World Health Organization Assembly Resolution and the thirteen session of the joint ILO/WHO Committee on Occupational Health[1].

**Goal of the Asbestos Registry Project**
To establish the feasibility of a uniform asbestos related disease and/or asbestos exposure registry in Canada based on learnings from national and international practice

**Objectives**
To understand the components of national and international asbestos related disease and asbestos exposure registries
To identify gaps in asbestos related disease and asbestos exposure registries in Canada
To provide recommendations on the feasibility of a uniform asbestos related disease registry and/or an asbestos exposure registry for Canada

**Deliverables**

1. **National Roundtable** with Research , Surveillance and Program Experts including representation from provincial, federal and international programs

Discussion will include
What's happening in Canada and elsewhere?
Where are the gaps in Canada?
Recommendations on the feasibility a uniform asbestos related disease registry and/or a asbestos exposure registry for Canada

2. **Final Report** outlining proceedings of the Roundtable including recommendations on feasibility for a coordinated registry and next steps

[1], World Health Organization, Elimination of Asbestos Related- Disease, September 2006, www.who.int/entity/occupational_health/publications/asbestosrelateddisease, World Health Organization, Geneva, Switzerland

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**Databases:**

CHEMINFO

CHEMpendium

MSDS (Material Safety Data Sheets)

WHMIS Classifications

Important Notices and Disclaimers
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RECEIVED AUG 2 8 2008

# MEMORANDUM

**TO:** SARAH MILLER

**FROM:** MICHELLE ZHENG ON BEHALF OF CPACC

**SUBJECT:** ADJUSTMENT TO EXPENSE CLAIM

**DATE:** AUGUST 21, 2008

Please see attached a copy of your Travel Expense Claim. The Travel Expense Claim has been adjusted due to the following.

( ) Original receipts are missing. ( ) Parking ( ) Taxi ( ) Airfare

( ) Calculation error.

( x ) New per diem is applied. (See attached rates)

( ) New mileage rate is applied. (See attached rates)

( ) Meals will only be reimbursed up to the per diem rate.

( ) No reimbursement is allowed when a meal is provided by CPACC.

( ) Alcoholic beverages are not reimbursable.

( ) Amount is covered as part of incidental allowance.

( ) GST amount was not included.

( ) Expense double claimed.

( ) Cost of converting funds to foreign currencies.

( ) Others – See the copy of your expense claim for the details.

Please call me at 416-673-6524 if you have any questions.

# Canadian Partnership Against Cancer

## Travel Expense Claim

RECEIVED JUL 2 2 2008

### Action Group

**Name of Event** NCEOE Meeting **Date of Event** Thursday, July 10, 2008

**Name** Sarah Miller
**Address** Canadian Environmental Law Assoc.
130 Spadina Ave. Suite 301
Toronto, ON M5V 2L4

**Mail Cheque to:** payable to CELA please

**Section 1: Travel (mode of transportation, mileage, parking)**

| Date | Transportation | #Kilometers | Cost | Sub Total | GST | Total |
|---|---|---|---|---|---|---|
| June 5&6, 2008 | return airfare | | | | | $ 528.50 |
| Cancellation credit | | | | | | $ (486.50) |
| July 9&10, 2008 | return airfare | | | | 12.58 | $ 507.50 |
| ground transport | Pearson/downtown return | | | | | $ 29.95 |
| | | | | | | |
| | | | | | | $ 579.45 |

IIO REC'D AUG 2 0 2008

**Section 2: Hotel Accommodation and Meals**

| Date | Hotel | Food | Cost | Sub Total | GST | Total |
|---|---|---|---|---|---|---|
| 09-Jul-08 | | dinner | | | 36.30 | $ 35.00 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | $ 35.00 |

**Section 3: Other**

36.30

| Date | Item | Amount | Cost | Sub Total | GST | Total |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

**Total Amount Claimed** 615.75 S 614.45

Date Submitted: 15-Jul-08

Claimant Signature: Sarah Miller

Date Approved:

Approved by:

*** Verified by (CPAC Office):**

*** CPAC will verify the claim comforms to Treasury Board or Board Approved Guidelines**

**Accounting Use Only**

Date Received:

Receipts Attached: ☐ Check Box

Date Cheque Issued

Cheque No:

Charge to: Cost Centre #31109

Account # 5321 5322

Amount 579.45 35 36.30

**CPAC Approval**

*Signing Authority of Cost Centre*

Please mail this form (please attach original receipts) to:

Primary Prevention Action Group
2708-83 Garry Street
Winnipeg, MB R3C 4J9

*For questions, contact by phone at 204 942 7444

# Canadian Partnership Against Cancer
# Approved Levels of Travel Reimbursement
# Effective April 1, 2008

| Travel Expense | Level of Reimbursement |
|---|---|

**Meals Allowances**

Per diem allowances: (no receipts required)

| | Provinces & USA | Yukon & Alaska | NWT | Nunavut |
|---|---|---|---|---|
| **Breakfast** | 13.60 | 15.20 | 16.10 | 19.90 |
| **Lunch** | 12.85 | 15.20 | 16.65 | 26.95 |
| **Dinner** | 36.30 | 45.75 | 52.25 | 57.10 |
| **Total Meal Allowance** | 62.75 | 76.15 | 85.00 | 103.95 |

Meal per diems to be adjusted for meals included as part of attendance at meetings or airline/railway travel

| | | | | |
|---|---|---|---|---|
| **Incidental Allowance** | 17.30 | 17.30 | 17.30 | 17.30 |

Incidental expenses include gratuities (except for meals, which are included in the meal allowance)

**Air Travel**
must submit ticket

Economy class
Airport fees
If traveler chooses to stay over Saturday or Sunday for a lower fare - additional meal, accommodation, etc. expenses are covered to extent extended stay results in net savings to the Partnership
May participate in frequent flier programs as long as all decisions regarding carriers are first made based on best available flight prices and times

**Rail Travel**
must submit ticket

Next higher class after full economy class

**Car Rental**

Mid-size unless circumstances warrant otherwise (# of travelers, etc.)

**Personal Vehicle Use**

Kilometerage rate covers all costs, including gas, insurance, etc. No receipt required
Vehicle owner is responsible to carry adequate insurance coverage for driver and any passengers

| Location | Rate / km | Location | Rate / km |
|---|---|---|---|
| Alberta | 50.5 | Nunavut | 58.0 |
| British Columbia | 50.5 | Ontario | 52.5 |
| Manitoba | 48.0 | Prince Edward Island | 49.5 |
| New Brunswick | 49.0 | Quebec | 55.5 |
| Newfoundland & Labrador | 53.0 | Saskatchewan | 46.5 |
| Northwest Territories | 58.0 | Yukon | 61.0 |
| Nova Scotia | 50.0 | | |

**Other Ground Transportation Costs**

Parking fees paid while on Partnership business, highway tolls,
Taxi, airport limousine

**Accommodation**

Single room with private bath in a moderately priced business class hotel or motel (Holiday Inn, Delta Hotel or equivalent)
Tokens of appreciation up to $50 for friends/relatives providing accommodation

**Caregiver Expenses Allowance**

Available to sole caregiver of a dependant under 18 yrs or with mental/physical disability

Up to $35 per day with a list of expenses; Up to $75 per day with receipts

**Currency Exchange**

Costs of converting funds to foreign currencies (and back again).

**Travel Insurance**

Cost of insurance premiums (excluding for personal use vehicles) related to travel

**Note: unless otherwise specified, original receipts must be obtained and submitted with expense claims.**

# AGENDA- Minutes

## National Committee on Environmental and Occupational Exposures

October 28, 2008 Meeting in Toronto
The Fairmont Royal York Hotel, 100 Front Street West, Toronto

**Attendees in-person:**
Larry Stoffman (chair), Jon Kerner, Sarah Miller, Alan Abelsohn, Corey Parker, Deb Keen, Mae Burrows, Paul Demers, Jim Brophy, Andrea Peart, Andrew King(afternoon arrival), Kamila Lenartowicz(taking minutes).

**Attendees by teleconference:**
Larbi El Bilali

**Regrets:**
Roland Hosein, Barbara Kaminsky, Gary Liss, Sue Milburn-Hopwood, Heather Logan, Alice Peter

**Objectives:**
To introduce the new Chair of the Primary Prevention Action Group (PP-AG)
To discuss future direction of the PP-AG
To provide a status report on NCEOE projects
To discuss NCEOE priority issues for 2009-2010

**8:30-9:00am**
**Breakfast**

**9:00-9:20am**
**Welcome and Introductions**

**Action:**
Introductions are made

**9:20-10:00am**
**Future Directions for the PP-AG:**
**Comprehensive Cancer Prevention**

**Action:**
Jon Kerner presents his slide deck 'clasp' and opens the room for discussions and questions. What is clasp really about?

***CLASP Overview***

The importance of building bridges at PP-AG is stressed. A discussion regarding which communities might be useful and not as important to make alliance with primary prevention in order to create these synergies. Discussion regarding focus on E&O partnerships and collaborations with a focus on this area of exposure

**Responsibility:**

All NCEOE members are responsible for identifying people who should be invited to clasp meeting-comprehensive primary prevention meetings which will be held in February and March 2009.

**10:00-10:15 am**
**Break**

**10:15-11:15am**
**Update on CAREX**

**Action:**
Paul Demers presents an update on CAREX and its' quarterly milestones for 2008/2009.

*** CAREX for NCEOE***

By March 31, 2009, other provincially focussed projects in Alberta and Ontario will be initiated.
CAREX is a project which will last 4 years.
Questions are posed regarding the graphs which are presented on the CAREX slide deck.
Discussion on use of CAREX data to supplement and underscore other nceoe projects

**Hand-outs are given out by Paul Demers entitled:**

***See attachment: Formaldehyde***
***See attachment: Asbestos***
***See attachment: 2-4-D***

**Responsibility:**
When more data on CAREX is available, it will be distributed by Paul Demers

**11:15-12:15 am**
**Update on the Environment and Occupational Exposure Online Course**

**Action:**
Alan Abelson presents on the E & O History On-line course.

***See attachment: E & O***

Deb Keen presents on the different projects which relate to NCEOE and discusses MD Briefcase's role.

Discussions occur regarding what the priorities in attaining NCEOE's goals are and who the target audiences might be.
It is suggested that in addition toxmedical practitioners, nurses, medical students, xand labour and industry occupational health representatives , would find the informationx useful. Further discussion regarding updating and additional information for the course material ensued. CCOHS has discussed sharing the material wixth PAHO, who will translate the course into Spanish. A French translation is underway through ccohs.

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**12:15-1:15 pm**
**Lunch**

**1:15-1:50pm**
**Update on the Environment and Occupational Exposure Online Courses(Continued)**
**Update on Right To Know Labelling**

**Action:**
A suggestion is made to dedicate someone to work a few hours/week, in the future, to figure out how to reach out to certain target audiences. Alan , as NCEOE lead, does not have further time to volunteer, and will need reimbursement should he carry out this work.

Mae Burrows gives a descriptive analysis on the consultation from 'Right To Know Labelling' consultation which occurred on Monday, Oct. 27th 2008 .

***See attachment: Final Labelling Systems***

Key points from meeting are discussed such as; what should hazard-based labelling look like, Follow-up with stakeholder organizations, consumer focus groups, and the publishing of a final report.

**Responsibility:**
Summary for individuals who could not attend the meeting will be done by Kamila Lenartowicz

Kamila Lenartowicz to set up a 1hr. teleconference to discuss further next steps (with Larry, Anne Wordsworth, Heather Logan, Mae, Deb, Jon) and to allocate people who will be responsible

**1:50-2:45 pm**
**Update on Toxic Use Reduction**

**Action:**
Larry Stoffman presents an update on what needs to be done.

***See attachment: Toxic Use Reduction Project Description***
***See attachment: Toxic Use Reduction Logic Model***

Steps to toxic use reduction are brought forward. It is important to allocate someone to create a RFP.

It is also important to gain support for toxic use reduction and the need to create strategies on corporate and community levels are spoken about. One possibility would be to focus on certain locations and allocate individuals to focus on reducing toxic use strategies in some of the high toxic areas.

A proposition to outline a series of activities which can reduce toxic use in Canada is spoken about. This can be done by making use of the resources that we currently have and to gather all the resources of people who might help achieve this goal.

Two areas of activity are discussed:

Deleted: success stories are proposed

1) To develop an environmental scan to identify which policies are already in place for toxic use reduction and to engage these people together for toxic use reduction strategies and
2) To gather people to come up with a strategy on their own

Deleted: or

A discussion on what is going on in Alberta and its' strategies to reduce toxic use. Ontario is also ahead compared to other provinces.

An Environmental Scan will be completed by the end of fiscal year; March, 2009.

**Responsibility:**

Corey Parker will show results of environmental scan from Alberta when it is released. Larry to discuss the final RFP with Deb, finalize and have posted.

**2:45-3:00 pm**
**Break**

**3:00-3:15 pm**
**Committee Membership**

**Action:**
A description of the new Terms of Reference is outlined by Larry Stoffman and Jon Kerner

***See attachment: Terms of Reference***

**3:15-3:30 pm**
**Update on Asbestos Registry**

**Action:**
An open discussion occurs regarding Asbestos Registries in the different regions.

***See attachment: Asbestos Registry Project***

Paul and Larry proposed that funding be obtained to develop a discussion paper for use in a national roundtable to be organized for the next fiscal year. A paper regarding Asbestos Registry before the fiscal year is over.

Deleted: a

**Responsibility:**
Kamila Lenartowicz to set up an 1 hr. teleconference with Paul Demers, Larry Stoffman Deb Keen and Jon Kerner to discuss hiring a third party and possible PHD student to work on this initiative/paper.

**3:30-4:30 pm**
**Priorities for 2009-2010 and Beyond:**
**Based on our current projects' status what we will accomplish this year what will next year's work plan look like? What opportunixties are there to link and coordinate the various projects?**
**What are the cross-cutting, big picture NCEOE issues for comprehensive cancer prevention?**

Deleted: opportuni9ties

**Action:**

A discussion occurs regarding the clasp meetings and how NCEOE will attract the different key players. The issue that there are some limitations to all the projects is discussed and that all members must be realistic about the limitations of the NCEOE initiatives.

In fostering partnerships, clasp coalitions will be fostering important relationships. The importance of getting resources in the hands of people who are willing to collaborate and to work together on coalitions is brought forward- This is also what CPAC is about.

A balance of the budget is discussed to try and build projects which are larger in scale but do not eliminate smaller initiatives.

**Responsibility:**

Deb Keen and Jon Kerner to send an e-mail out to all members regarding concept mapping and nominating people to take part in the behavioural, clinical and environmental meetings.

All NCEOE members are responsible for e-mailing Jon Kerner their suggestions regarding language changes.

An e-mail will go out to all NCEOE members to try and set up a second meeting in January 2009. As well, the next PP-AG meeting will be on Friday, January the 16th.

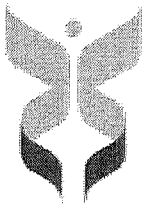
**4:30 pm**
**Adjourn**

# Primary Prevention Action Group
# Past, Present, & Future

## NCEOE Meeting
## Toronto, Ontario
## October 28, 2008

Jon F. Kerner, Ph.D.
Chair-Primary Prevention Action Group (PP-AG),
Senior Scientific Advisor
for Cancer Control & Knowledge Translation

CANADIAN **PARTNERSHIP** AGAINST **CANCER**



**PARTENARIAT** CANADIEN CONTRE LE **CANCER**

# PP-AG Priorities*

- All cancer control organizations advance primary prevention
- Work with other chronic disease organizations to promote health & reduce common risk factors
- Facilitate progress towards communities of practice to decrease skin cancer burden, reduce & prevent exposure to Environmental & Occupational carcinogens and cancer causing infectious agents
- Work with primary care providers to enhance role of prevention in primary care settings
- Public education & media communication approaches to primary prevention

*PP-AG Planning Session – Winnipeg, July 11, 2008

# Five Year Long Range Vision of PP-AG*

- Improved Healthy Social Norms
- An Integrated Prevention System
- Evidence Driven Practice
- Healthy Public Policy
- An Action-oriented, Mobilized Public
- PP-AG as a Credible Source of Information

*PP-AG Planning Session – Winnipeg, July 11, 2008

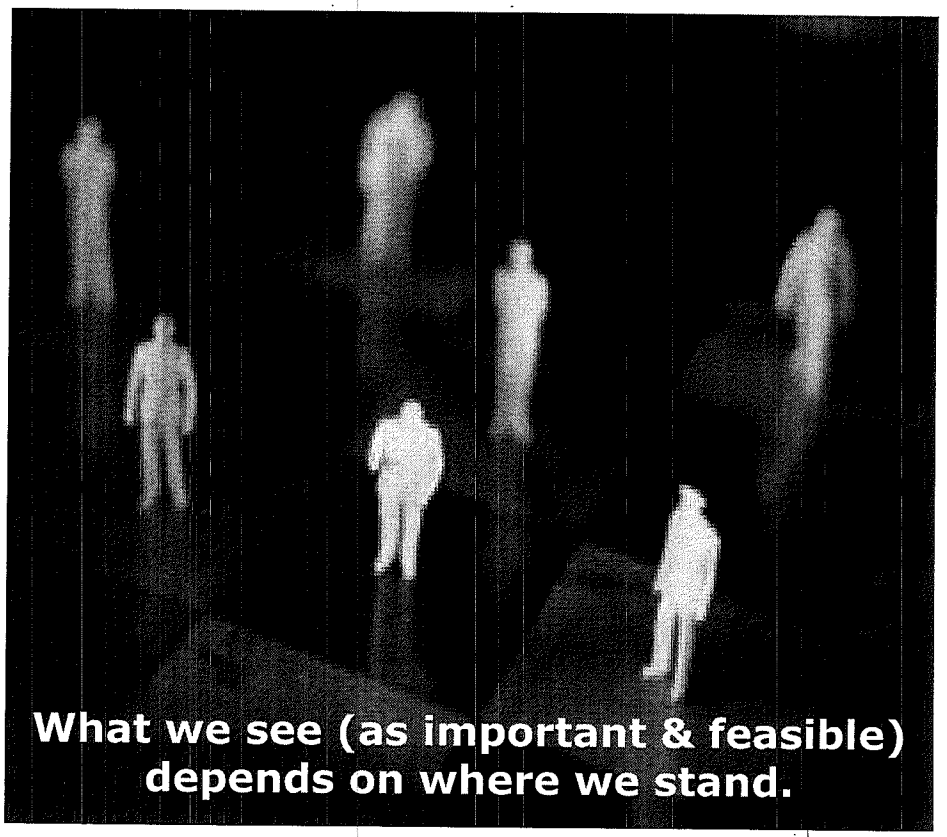
# What Needs to be Done*

- PP-AG role in Common Risks of Nutrition, Physical Activity, Tobacco
- Developing Provincial Territorial Linkages and Key Partners
- Changing Knowledge Base
- Standard Internal Communication
- Two-Way External Communication
- Partnership Implementation Infrastructure

*PP-AG Planning Session – Winnipeg, July 11, 2008

# Existing Strategic Foci for PP-AG

- Primary Care
- Nutrition and Physical Activity
- Occupational and Environmental Exposure
- Sun safety
- Infectious Agents



# PP-AG Opportunities: Now and in the Future

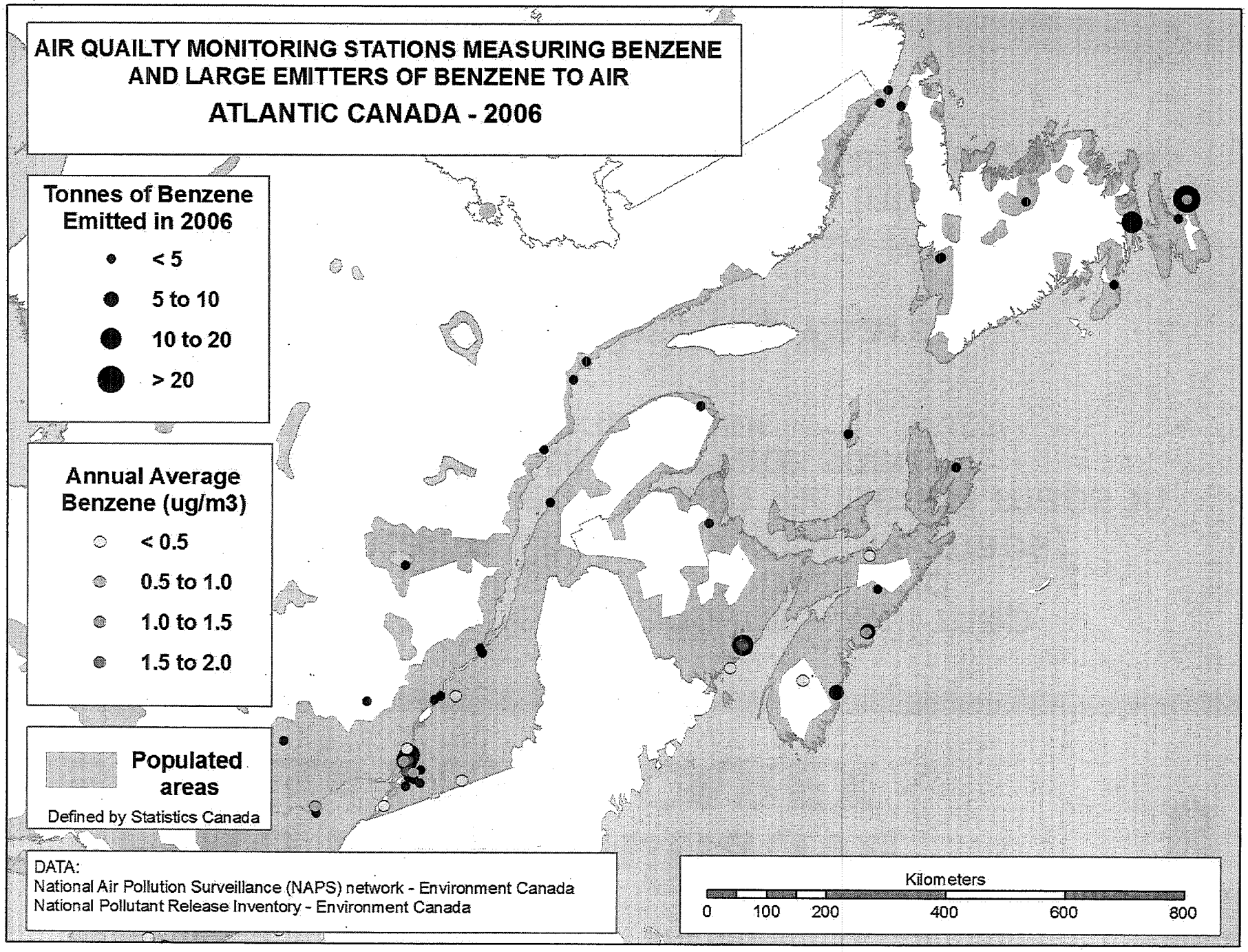
- Presently 17 projects in primary prevention for 2008-2009
  - Too many projects, too little time
- Transition to new & broader strategic approach focused on a smaller set of larger, and more comprehensive, primary prevention program and policy initiatives in three areas: behavioural, clinical, environmental

# PP-AG Large Initiative Success Story: CAREX

- **CAREX**: Carcinogen Exposure – will map known carcinogens, occupational and environmental in Canada (exposure maps)
- These could be overlaid with incidence maps in the future in order to generate solid hypotheses about cancer risk

- **Anticipated Results in Five Years:**

- An environmental exposures map that can be tied to population-based data to inform policy decisions and planning by governments, NGOs and other partners


AIR QUAILTY MONITORING STATIONS MEASURING BENZENE AND LARGE EMITTERS OF BENZENE TO AIR
ATLANTIC CANADA - 2006
Tonnes of Benzene Emitted in 2006
< 5
5 to 10
10 to 20
> 20
Annual Average Benzene (ug/m3)
< 0.5
0.5 to 1.0
1.0 to 1.5
1.5 to 2.0
Populated areas
Defined by Statistics Canada
DATA:
National Air Pollution Surveillance (NAPS) network - Environment Canada
National Pollutant Release Inventory - Environment Canada
Kilometers
0
100
200
400
600
800

# PP-AG Large Initiative Success Story: CAREX

http://www.carexcanada.ca/

# Building a More Comprehensive Approach to Primary Prevention of Cancer (& other major chronic diseases) – Key Question #1:

- What risk factor reduction and chronic disease prevention programs and policies, **if better integrated and evidence-based,** would have a greater positive impact on the health of Canadians than if maintained as separate foci for action?

# Building a More Comprehensive Approach to Primary Prevention of Cancer (& other chronic diseases) – Key Question #2:

- Who are the partners (organizations, agencies, and ministries) that, **if they combined resources and worked together** focusing on multiple risk factors and/or chronic diseases, would have a greater positive impact on the health of Canadians than if they continue to work alone on a single risk factor or chronic disease?

# A New Approach to Comprehensive Primary Prevention: Coalitions Linking Action & Science for Prevention (CLASP)



- Step 1: Identify the potential national, provincial, and metropolitan partner organizations, agencies, and ministries already focused on risk factor reduction or the primary prevention of cancer, diabetes, lung and heart disease.
- Step 2: Identify the researchers, practitioners, and policy staff involved in the above.

# A New Approach to Comprehensive Primary Prevention (CLASP)

- Step 3: Invite 30 researchers, 30 public health or clinical practitioners, and 30 policy leaders, focused on behavioural (n=90), clinical (n=90), or environmental (n=90) prevention, to participate in an online concept mapping (CM) exercise to brainstorm, organize, and rate the importance and feasibility of answers to the two key questions.
- Step 4: Invite concept mapping participants to one (or more) of three results review meetings focused on behavioural, clinical, and environmental risk factor reduction and primary prevention of cancer, diabetes, lung and heart disease.

# A New Approach to Comprehensive Primary Prevention (CLASP)

- Step 5: Use behavioral, clinical, and environmental meetings to share CM data to identify key large multiple risk factor reduction and primary prevention of chronic disease initiatives where an integrated approach is rated as high in importance and feasibility
- Step 6: Identify groups of researchers, practitioners, and policy staff, representing different organizations, agencies, and ministries, who have rated working together across provinces, municipalities, and/or Canada as highly important and feasible.

# A New Approach to Comprehensive Primary Prevention (CLASP)

- Step 7: Use the meetings to encourage the formation of Canadian coalitions ready to work together to link action and science for comprehensive primary prevention of cancer, diabetes, lung and heart disease.
- Steps 1-7 to be completed by March 31, 2009.

# Coalition Action Continuum*



- Networking
- Coordinating
- Cooperating
- Collaborating

- Exchange Information
- EI + Alter Activities
- EI+AA+ Share Resources
- EI+AA+SR+ Enhance each other's capacities + Share risks, responsibilities, and rewards

**Can the whole be greater than the sum of its parts?**

*Definitions from Arthur Himmelman's "Working Together" Strategies

# A New Approach to Comprehensive Primary Prevention (CLASP)

- Step 8: Invite Canadian coalitions formed before, at, or after behavioural, clinical, and environmental meetings to work together to apply for 32 month CLASP cooperative funding agreements with CPAC.
- Step 9: Invite other potential funding partners (e.g. CCS, CDA, CLA, CHSF, PHAC) to co-fund CLASP cooperative funding agreements where cross-cutting approaches to common risk factor reduction and/or chronic disease prevention program and policy approaches are proposed relevant to their priorities.

# A New Approach to Comprehensive Primary Prevention (CLASP)

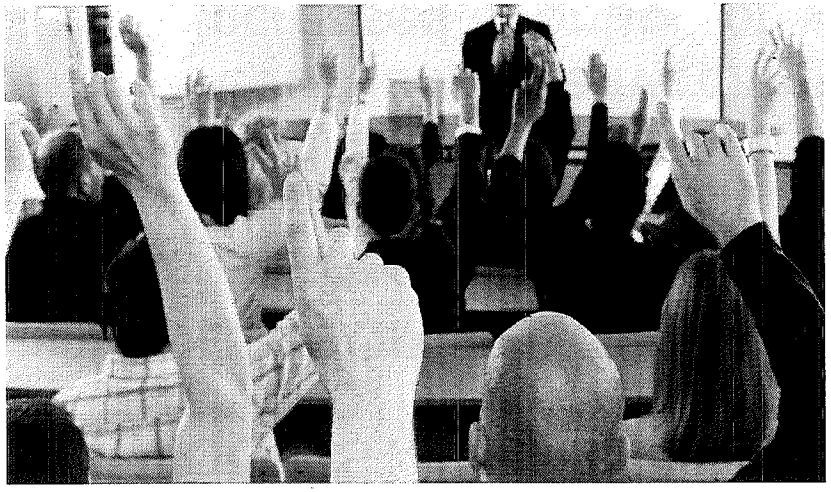
- Step 10: Link CLASP cooperative funding agreements to CPAC Knowledge to Action and **Action to Knowledge** evaluation metrics being developed for intervention and policy approaches to risk factor reduction and primary prevention of cancer, diabetes, lung and heart disease .
- Steps 8-10 to be initiated by August 2009 and completed by March 2012.

# Key Metrics of CLASP Success

- Process: Coalitions that are collaborations moving beyond networking, communication, and coordination
- Outcomes:
  - Demonstrable positive changes in risk factor behaviours & conditions;
  - reductions in environmental and occupational exposures;
  - increased adoption of evidence-based public health and clinical practices and policies
- Sustainability: Coalitions that continue to collaborate (e.g., share risks, responsibilities, and rewards) on prevention after CLASP funding ends
- New action to knowledge evaluation tools

# Questions & Discussion







# CAREX Milestones for 2008/2009

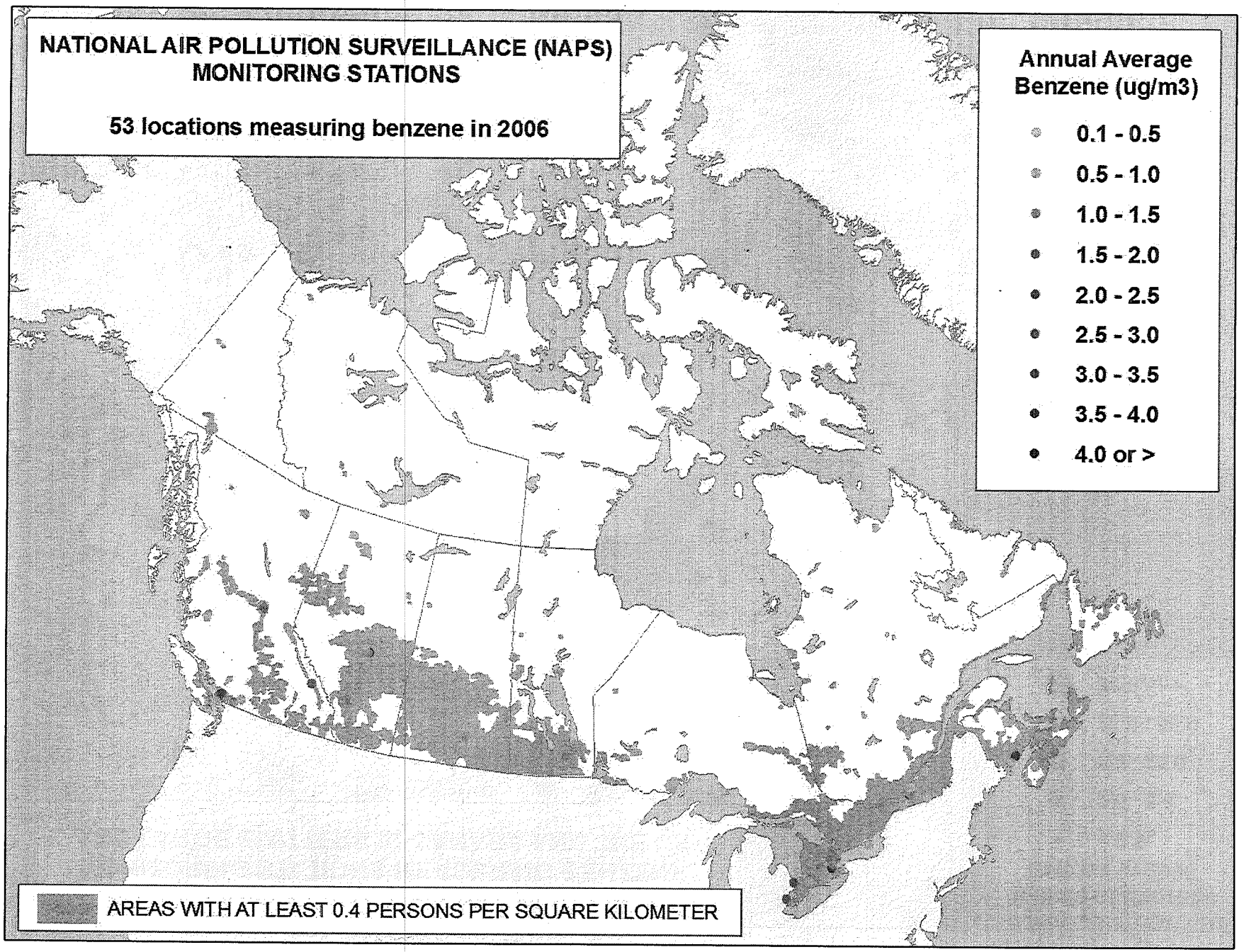
- Workplace Exposure Surveillance Project
  - Identified key data sources – 12/08
  - Set up infrastructure for exposure database & begin negotiations for release of other data – 12/08
  - Assess feasibility of priority carcinogens – 12/08
  - Generated preliminary industry prevalence estimates for selected feasible carcinogens – 3/09
- Knowledge Transfer & Exchange
  - Carcinogen Exposure Resource Centre – 12/08
  - National Collaborative Network established – 3/09

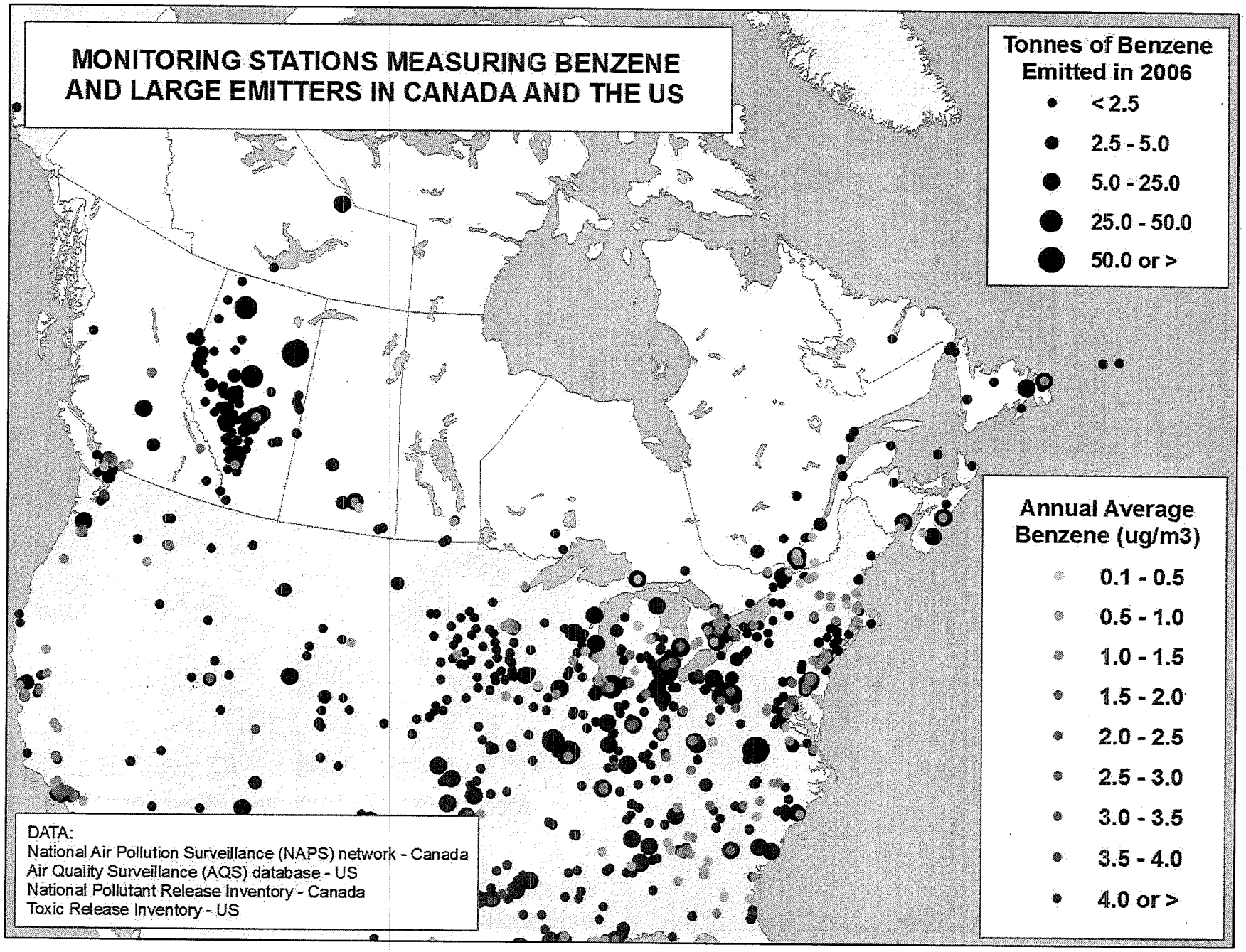
CAREX CANADA

# CAREX Milestones for 2008/2009

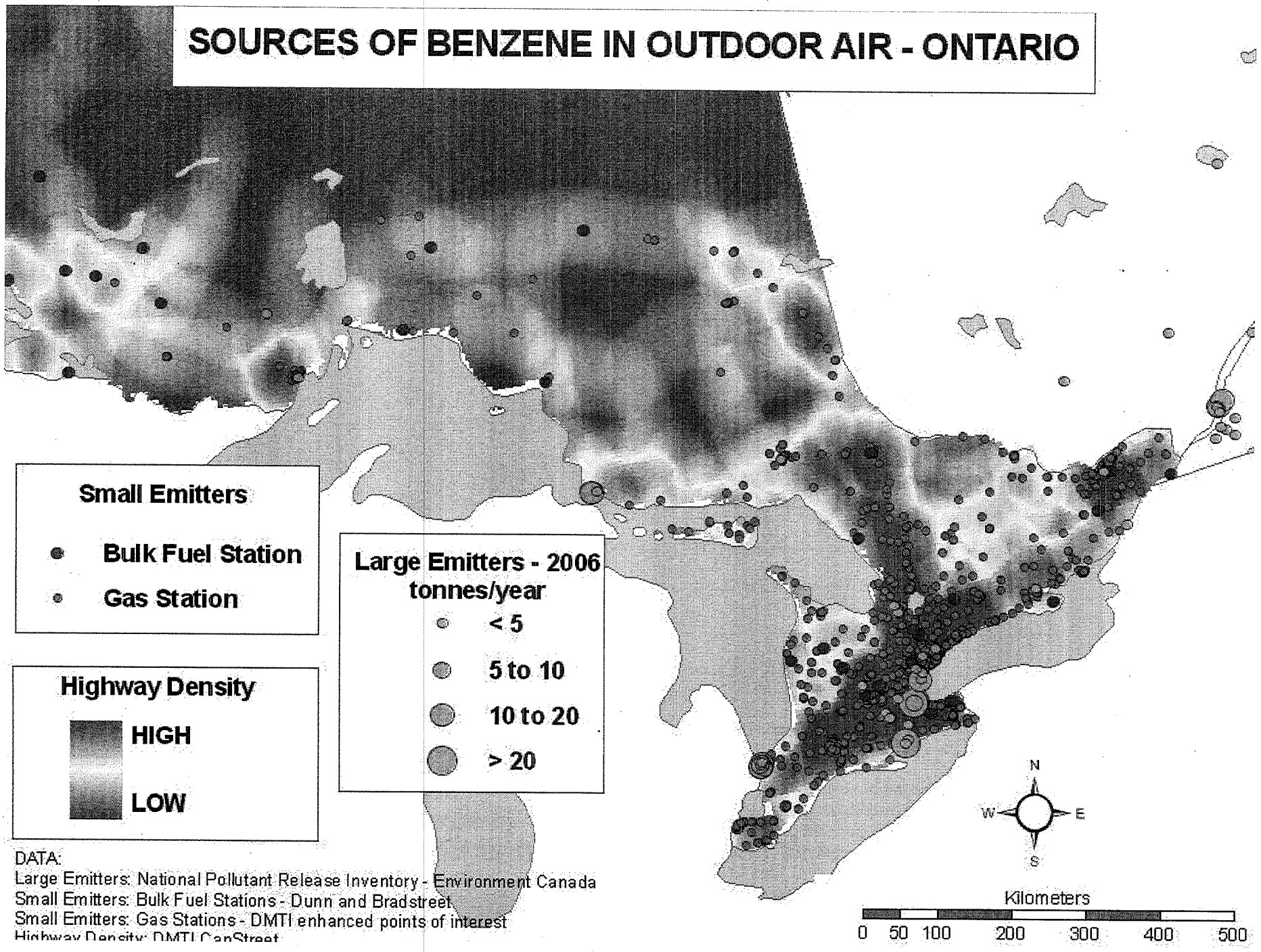
- Environmental Exposure Surveillance Project
  - Identified key data sources – 9/08
  - Acquire publicly available national datasets & begin negotiations for release of other data – 12/08
  - Assess feasibility of priority carcinogens – 12/08
  - Generated preliminary geographic/demographic estimates for selected feasible carcinogens – 3/09

CAREX CANADA


NATIONAL AIR POLLUTION SURVEILLANCE (NAPS)
MONITORING STATIONS
53 locations measuring benzene in 2006
Annual Average
Benzene (ug/m3)
0.1 - 0.5
0.5 - 1.0
1.0 - 1.5
1.5 - 2.0
2.0 - 2.5
2.5 - 3.0
3.0 - 3.5
3.5 - 4.0
4.0 or >
AREAS WITH AT LEAST 0.4 PERSONS PER SQUARE KILOMETER

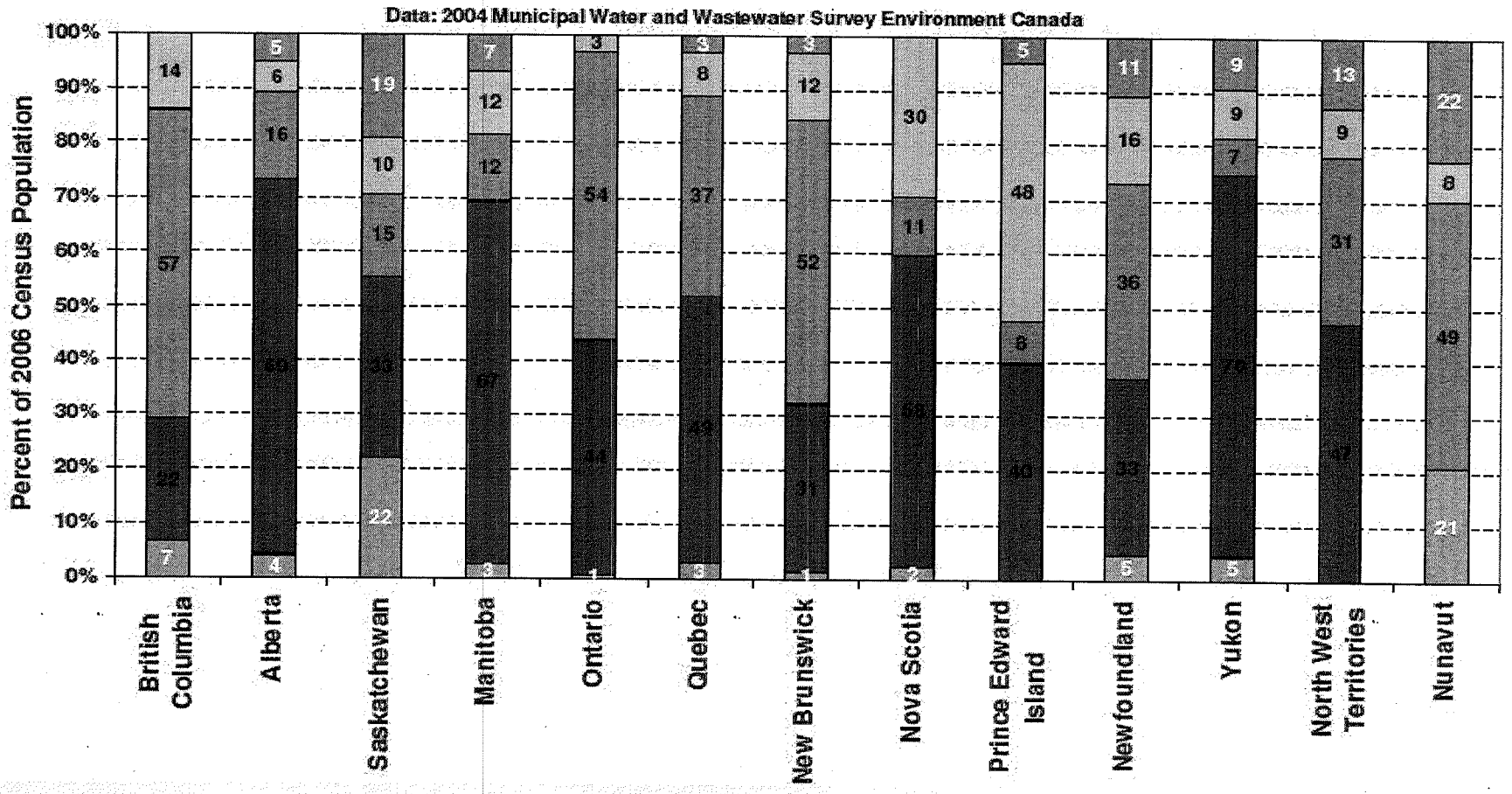

MONITORING STATIONS MEASURING BENZENE AND LARGE EMITTERS IN CANADA AND THE US
Tonnes of Benzene Emitted in 2006
< 2.5
2.5 - 5.0
5.0 - 25.0
25.0 - 50.0
50.0 or >
Annual Average Benzene (ug/m3)
0.1 - 0.5
0.5 - 1.0
1.0 - 1.5
1.5 - 2.0
2.0 - 2.5
2.5 - 3.0
3.0 - 3.5
3.5 - 4.0
4.0 or >
DATA:
National Air Pollution Surveillance (NAPS) network - Canada
Air Quality Surveillance (AQS) database - US
National Pollutant Release Inventory - Canada
Toxic Release Inventory - US

# SOURCES OF BENZENE IN OUTDOOR AIR - ONTARIO




DATA:
Large Emitters: National Pollutant Release Inventory - Environment Canada
Small Emitters: Bulk Fuel Stations - Dunn and Bradstreet
Small Emitters: Gas Stations - DMTI enhanced points of interest
Highway Density: DMTI CanStreet

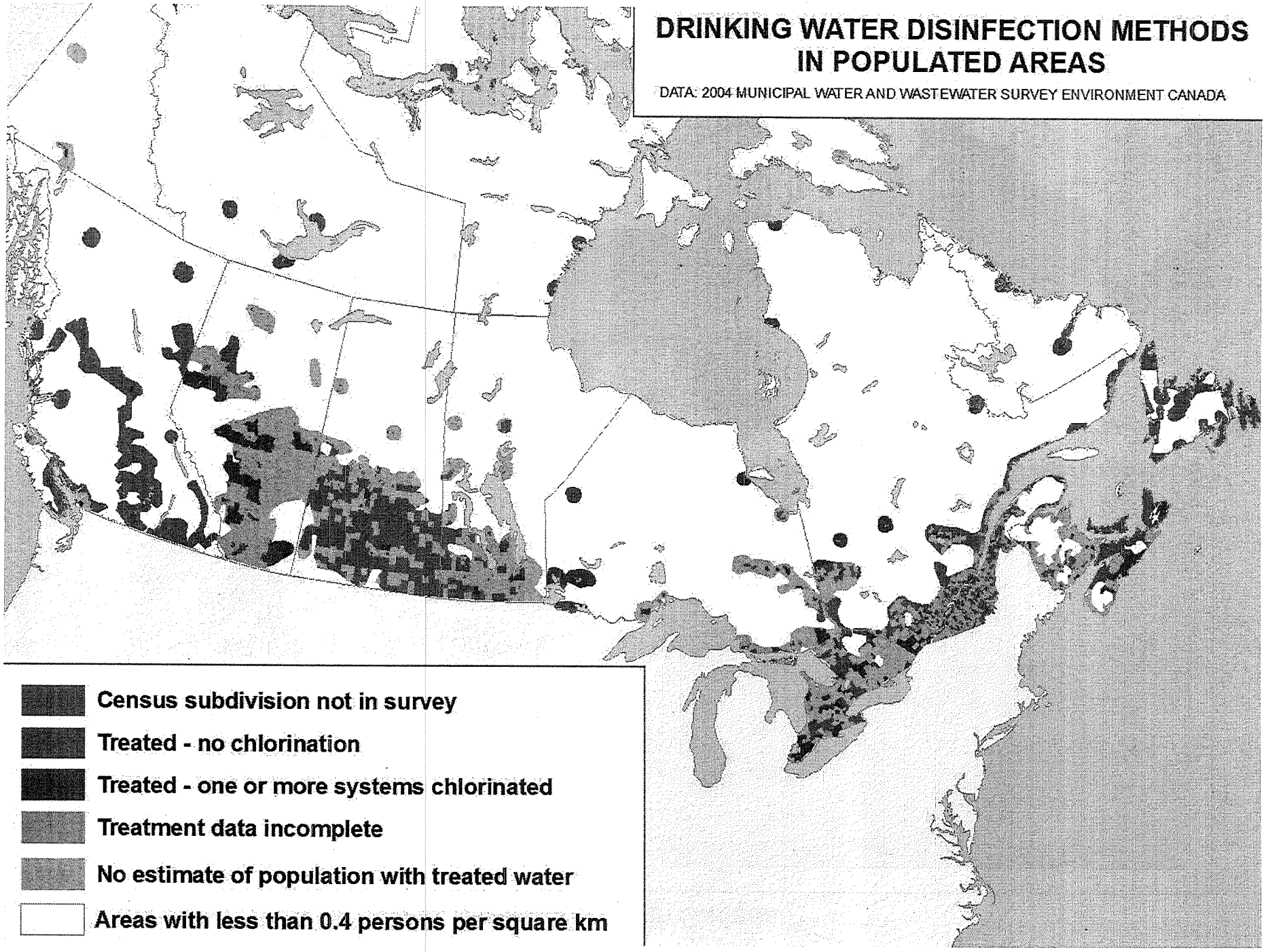
## DRINKING WATER DISINFECTION METHODS
### survey results as percentage of provincial population



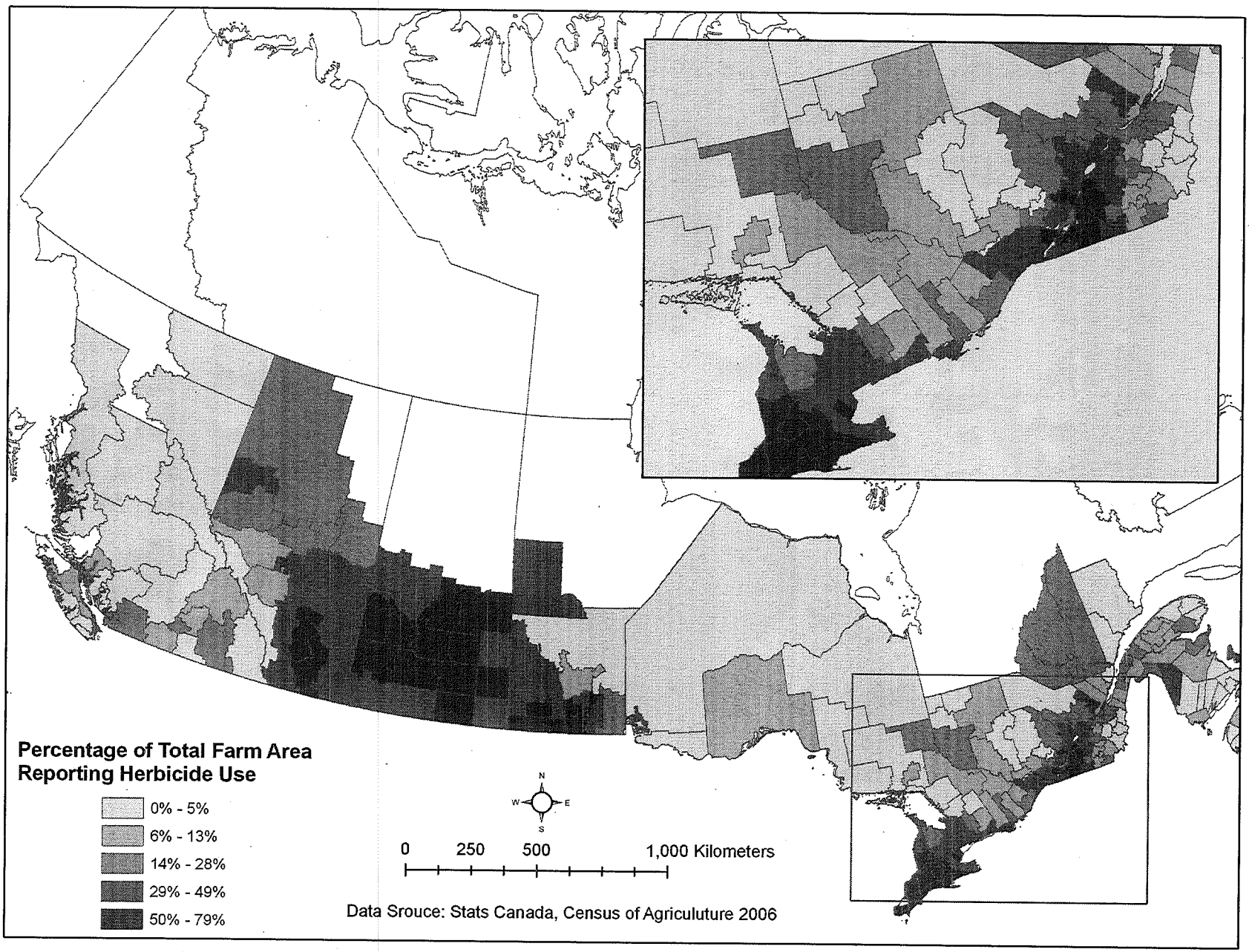

CAREX CANADA

# DRINKING WATER DISINFECTION METHODS IN POPULATED AREAS

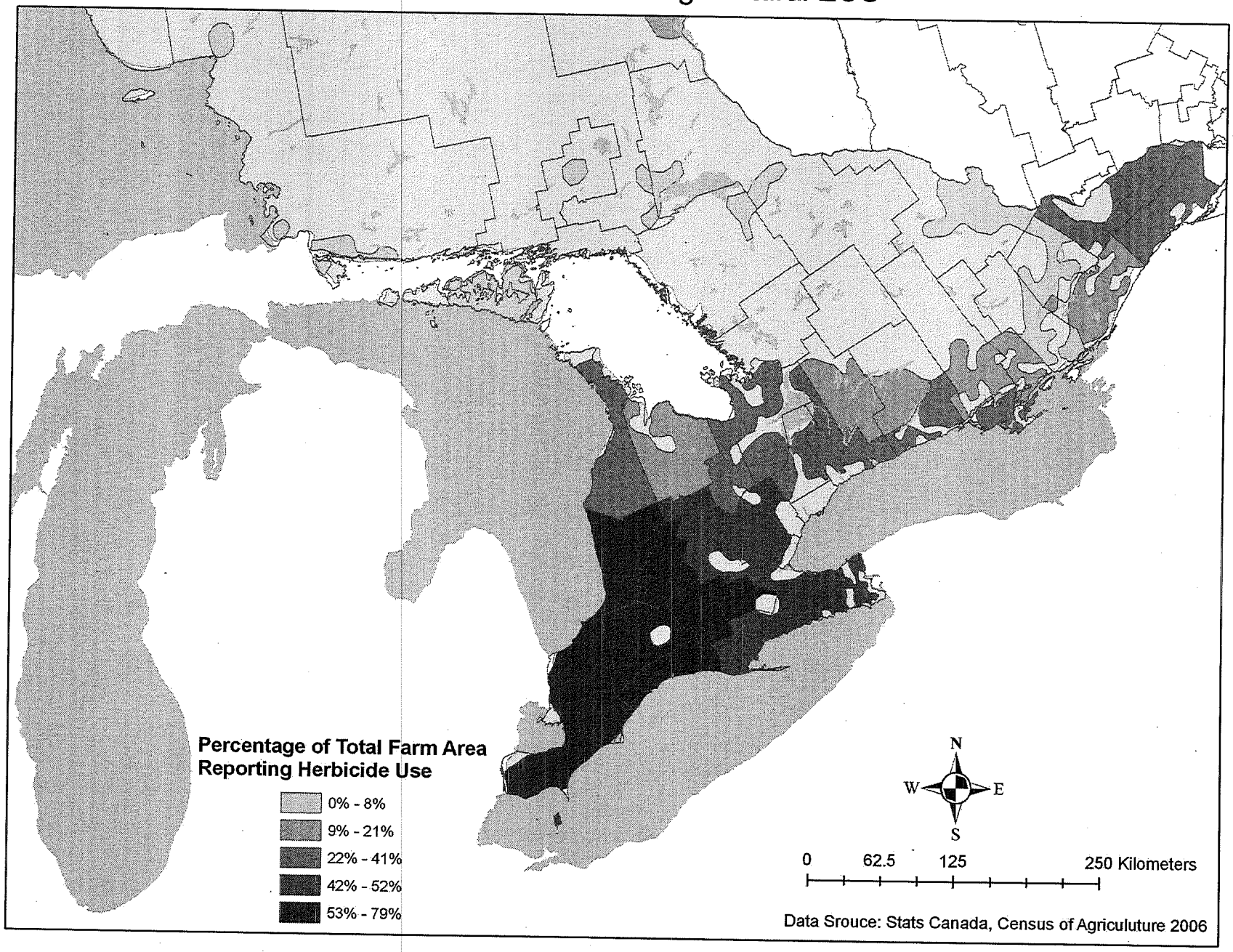
DATA: 2004 MUNICIPAL WATER AND WASTEWATER SURVEY ENVIRONMENT CANADA



# Herbicide Use in Canada



# Herbicide Use - Ontario - Agricultural ECU



# Application of Approach:

## Step 4: Estimated Range of Agricultural Workers in Ontario exposed to 2,4-D by Crop Production Industry

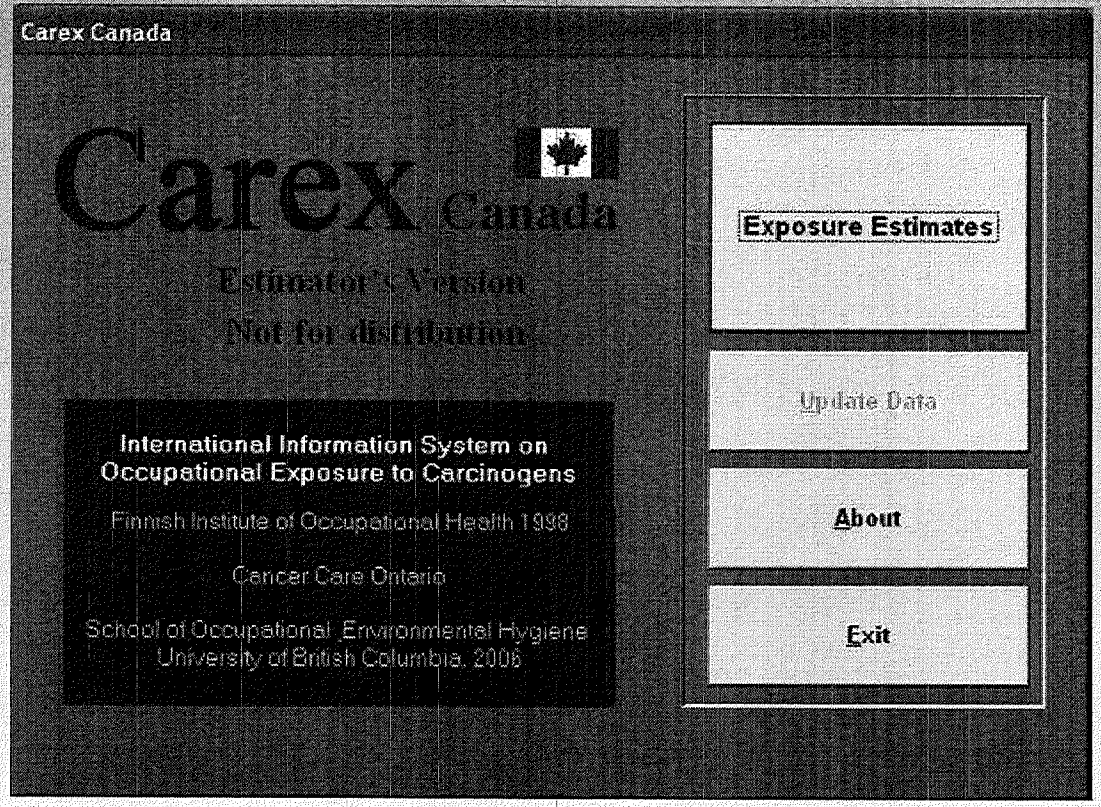
2006 Census of Population Estimate of Ontario Workers in Farm Industry N = 97,565

*Lower estimate assumes 48% of workers on "suspected" farms are exposed; Upper estimate assumes 100% of workers on "suspected" farms using direct proportionality from step 3.

| **Total Estimated Agricultural Workers (n) by Crop Production Industry Group** | **Estimated Range of <u>Exposed</u> Agricultural Workers** (Lower Estimate – Upper Estimate)* |
|---|---|
| Oilseed & Grain Farming: n = 20,771 | 9,950 - 20,730 |
| Vegetable & Melon Farming: n = 3,072 | 1,276 - 2,664 |
| Fruit & Tree Nut Farming: n = 3,356 | 0 |
| Greenhouse, Nursery & Floriculture: n = 4,996 | 1,182 - 2,463 |
| Other Crop Farming: n = 14,485 | 6,296 - 13,118 |
| **As many as 39,000 agricultural workers in Ontario's Crop Production Farm Industries may be exposed to 2,4-D.** | |

CANADA

# CAREX Canada: Pilot projects in British Columbia and Ontario




- Diesel exhaust
- PAH's
- Silica
- Benzene
- Wood dust
- Formaldehyde
- Chromium
- Lead
- Ionizing Radiation

CAREX CANADA

# Shiftwork, Circadian Disruption & Cancer: IARC Evaluation, October 2007

- Shiftwork that involved circadian disruption was classified as probably carcinogenic to humans by IARC
- This evaluation was based on:
  - *Limited evidence* in humans for the carcinogenicity of shiftwork that involves night work
  - *Sufficient evidence* in experimental animals for the carcinogenicity of light during the daily dark period (biological night)

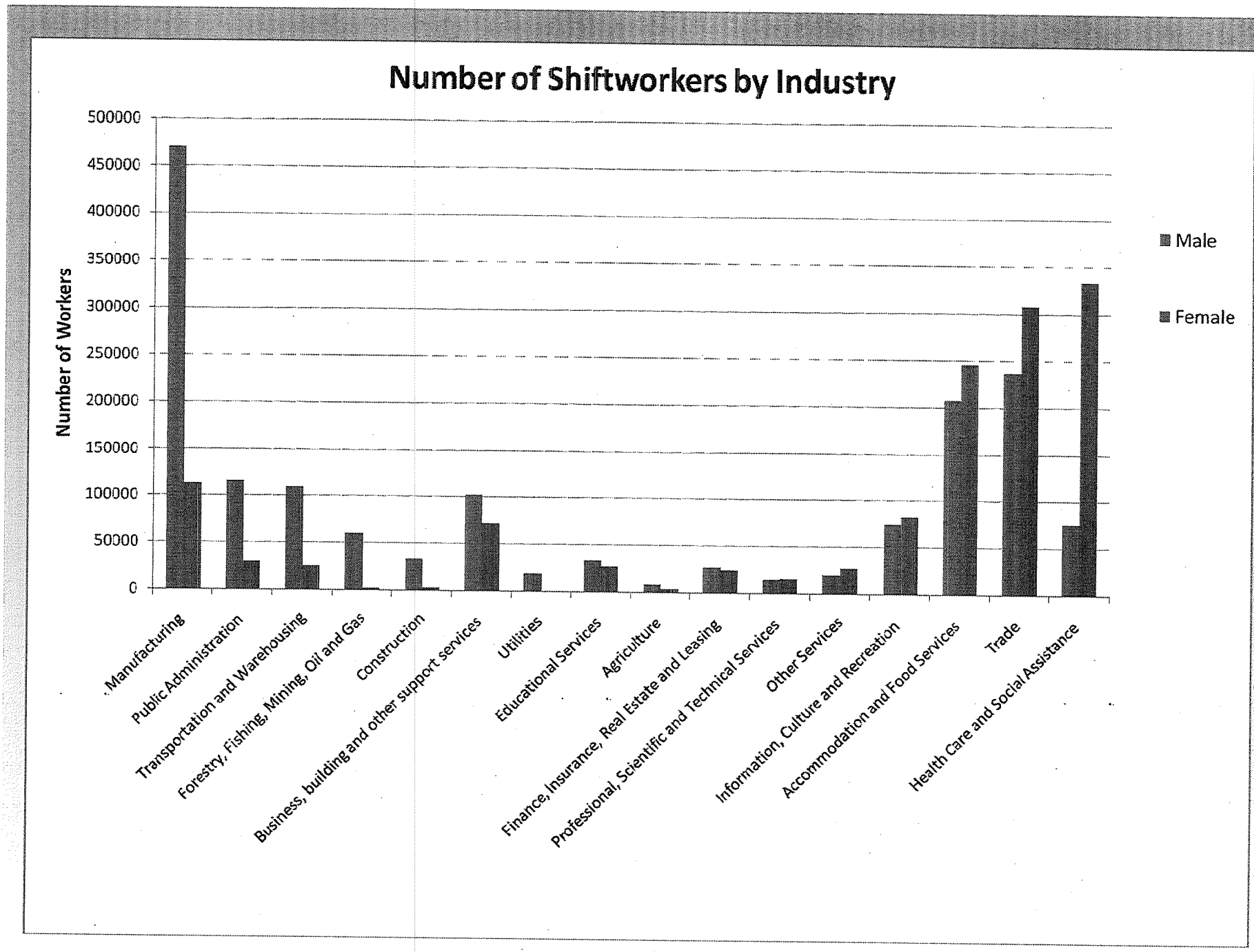
CAREX CANADA

# Shiftwork in Canada

| | |
|---|---|
| Regular daytime schedule | 66.4% |
| Rotating shift | 11.9% |
| Irregular schedule | 9.0% |
| Regular evening schedule | 6.0% |
| Regular night or graveyard shift | 2.3% |
| On call | 2.2% |
| Split shift | 0.8% |
| Other | 1.4% |

- Survey of Labour and Income Dynamics, Statistics Canada, 2005.

CAREX CANADA


Number of Shiftworkers by Industry
Number of Workers
500000
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
Male
Female
Manufacturing
Public Administration
Transportation and Warehousing
Forestry, Fishing, Mining, Oil and Gas
Construction
Business, building and other support services
Utilities
Educational Services
Agriculture
Finance, Insurance, Real Estate and Leasing
Professional, Scientific and Technical Services
Other Services
Information, Culture and Recreation
Accommodation and Food Services
Trade
Health Care and Social Assistance

# Relationship with Other CPAC Efforts

- Surveillance and Research
  - Provide exposure data for linkage with tumour registries
  - Provide exposure data for linkage with the new cancer cohorts
  - Provide data to promote the importance of environmental and occupational exposures

CAREX CANADA

# Relationship with other efforts: NCEOE

- Toxic use reduction
  - Data to set priorities
- Asbestos registries
  - Identify exposed populations & levels
- Environmental & occupational exposure online course
  - Provide Canadian examples
- Other: CEPA, pesticides, …

CAREX CANADA

# Questions?

CAREX
CANADA



Funded by Health Canada through the
Canadian Partnership Against Cancer

**National Committee on Environmental and Occupational Exposures**
**October 28, 2008**
**8:30-4:30 pm**
**Royal York Hotel**
**Room: Confederation 3**
**100 Front Street West**
**Toronto, Ontario**
**M5J 1E3**

Attendees: Leanne Kitchen-Clarke, Sarah Miller, Alan Abelsohn, Corey Parker, Alice Peter, Heather Logan, Larbi El Bilali, Deb Keen, Larry Stoffman, Mae Burrows, Paul Demers, Jim Brophy

Regrets: Alan Katz, Roland Hosein, Barbara Kaminsky, Andrew King, Gary Liss, Sue Milburn-Hopwood

Objectives:
To introduce the new Chair of the Primary Prevention Action Group (PP-AG)
To discuss future direction of the PP-AG
To provide a status report on NCEOE projects
To discuss NCEOE priority issues for 2009-2010
Agenda

| Time | Item | Lead | Resources |
|---|---|---|---|
| 8:30- 9:00 am | BREAKFAST | | |
| 9:00- 9:20 | Welcome and Introductions | Larry Stoffman | |
| 9:20-10:00 | Future Directions for the PP-AG: Comprehensive Cancer Prevention | Jon Kerner | Slide deck to be provided at meeting |
| 10:00-10:15 | BREAK | | |
| 10:15- 11:15 | Update on CAREX | Paul Demers | Slide deck to be provided at meeting |
| 11:15- 12:00 | Update on Toxic Use Reduction | Larry Stoffman/ Andy King | Project Description |
| 12:00- 12:45 | LUNCH | | |
| 12:45- 1:15 | Update on the Environment and Occupational Exposure Online Course | Alan Abelson | Knowledge Exchange Plan |
| 1:15-2:00 | Update on Right to Know Labeling | Heather Logan/Mae Burrows | Descriptive Analysis of Labeling |
| 2:00-2:30 | Update on Asbestos Registry | Larry Stoffman | Project Description |
| 2:30- 2:45 | BREAK | | |
| 2:45- 3:15 | Committee Membership | Larry Stoffman | Terms of Reference |
| 3:15- 4:30pm | Priorities for 2009-2010 and Beyond: Based on our current projects' status what we will accomplish this year | Larry Stoffman and full | |

| | | | |
|---|---|---|---|
| | what will next year's work plan look like? What opportuni9ties are there to link and coordinate the various projects?<br>What are the cross-cutting, big picture NCEOE issues for comprehensive cancer prevention? | committee | |
| 4:30pm | Adjourn | | |

CANADIAN PARTNERSHIP AGAINST CANCER | PARTENARIAT CANADIEN CONTRE LE CANCER

# TERMS OF REFERENCE
## Action Groups

**Purpose:**

Action groups are a mechanism for advising and executing on strategic priorities for the Partnership's strategy for cancer control. Other mechanisms may also be adopted such as Expert Panels and ad hoc working groups or Advisory Committees.

**Role of Action Group Chair:**

The Chair of an Action Group is an expert leader from the cancer control community who will devote approximately 40% of his or her time to providing leadership to the work of the action group. These duties include active membership on the Action Council and the Advisory Council on Cancer Control. The term of the Chair will be negotiated with the VP Cancer Control and the individual Chair, but will normally be four years and renewable once.

To recruit a Chair, the position will be posted and advertised broadly. The team reviewing the candidates, and making the recommendation for a new AG chair will include the responsible VP, and two or three other members, appointed by Senior Management of CPACC after discussion with the incumbent Chair and Program Director.

The successful candidate will be approved and appointed by the CEO in consultation with the Action Group regarding search criteria.

**Membership:**

Members of the action groups should reflect provincial or regional representation, expertise across the breadth of the field, and patients/survivors and/or their families.

The role of members includes bringing knowledge of the particular priority area from the sector, communicating to their broader networks and constituencies, and advising on the work of the action groups. Members will be selected in cooperation with the AG chair and the VP lead and in some instances be done through solicitation to organizations in the system. Final approval of Action Group membership categories, and of the individuals, rests with the responsible VP.

The size of Action Groups is to be approximately 8-12 members, including Ad Hoc members.



The term of appointment should be three years Appointments can be renewed once, on recommendation of the AG chair, and with the approval of the respective VP. April 1, 2009 is the end of the first term.

**Action Group Roles**:

Each action group should develop a multi-year plan that demonstrates how their work and recommended investments will impact the cancer control goals. These work plans should have measurable initiatives that are focused and can have impact within our current mandate.

The work plan should be reviewed on an annual basis to determine if it requires adjustments. Part of the review should include an environmental scan to establish ongoing relevance.

The Action Council and other mechanisms should be used to address cross-cutting linkages and integration of plans across the action groups.

Action groups may be retired, merged or changed to adapt to CPACC strategies and plans, or changes in the cancer control context. This will be done in consultation with the Action Council, with final decisions to be made by the CEO.

*Date of Approval: August 22, 2008*

# A Review of Recognized Labelling Practices: The Potential for Improving Health and Environmental Standards

October 2008

Prepared for the National Committee on Environmental and Occupational Exposures by:
Anne Wordsworth
Environmental Consultant
76 First Avenue
Toronto, Ontario M4M 1W8
416 466 3634
Email: anwords@cela.ca

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## I. INTRODUCTION

The mandate of the National Committee on Environmental and Occupational Exposures (NCEOE) is to develop and promote activities and public policy that will assist in eliminating or minimizing exposures of Canadians to environmental and occupational carcinogens.[1] The purpose of this report is, first, to review nationally-recognized models of labelling and, second, to identify effective practices that could be used to inform people when products *do* or *do not* contain cancer-causing substances.

The types of labelling that will be discussed in this report are the major labelling systems in Canada, the United States and Europe that provide people with information displayed on the packaging of food, tobacco and consumer products. These include full ingredients labelling, nutrition information, hazard labelling of products that are dangerous or contain dangerous substances, and preferred product labelling, including ecolabelling. Consistent with the Committee's mandate, special attention is taken in the discussion of different labelling systems to identify the way in which carcinogens, in particular, are labelled.

Package labelling is a direct and critical link to the public for both companies and government. Research on tobacco labelling has shown that graphic health warnings are among the most prominent and cost-effective health communications available.[2] Therefore, as a means of communicating health information, package labelling can be a key component of strategies aimed at reducing disease in our society.

The objective of examining different labelling systems is to develop made-in-Canada solutions that would address the growing public interest in full ingredient disclosure and the identification of toxic substances in consumer products.

This report focuses on the potential for labelling systems to improve public health by reducing toxic exposures, and to improve the environmental and health profile of consumer products. Evaluations of the impacts of labelling systems after their introduction have not been done in all cases. However, where available, they have been included.

The scope of this report does not include a discussion or comparison of the design and effectiveness of label formats, although some information is offered in Appendix III. The main sources used in this report are listed in Appendix IV.

---

[1] The NCEOE is a committee of the Primary Prevention Action Group of the Canadian Partnership Against Cancer.

[2] Hammond, David, "Tobacco Packaging and Labelling: A Review of the Evidence", November 2007.

## II. INFORMATION LABELLING SYSTEMS

Labelling systems can simply provide information that enables people to make an informed choice. This type of labelling does not promote one product over another. However, the information can assist the consumer in purchasing products that may lead to the avoidance of health problems, and can, on a broader scale, promote the reduction of injuries and disease in society.

The three types of package labelling that will be discussed in this section are food labelling, both ingredients and nutrition information, and cosmetics labelling. The labelling of food and cosmetics under Canadian law are both good examples of full ingredient disclosure. With respect to nutrition labelling, Canada was one of the first countries to make it mandatory, and its nutrition tables illustrate how health information can influence people's choices, promote better products and improve public health.

### 1. Food Labelling

There is currently renewed public interest in food labelling both in North America and Europe.[3] Evidence from the United States suggests that people are increasingly reading product labels "as part of a general lifestyle move towards health".[4] This not only reflects the interest in health, but also arises out of concerns about obesity and highly-publicized food contamination incidents such as the 2006 U.S. spinach recall.[5]

#### 1.1 Canada's Food Labelling

Food labels in Canada must display basic product information that includes a full list of ingredients *and* information on health-related nutrients. In addition, labels must show important information such as durable life dates, countries of origin and the name of the manufacturer.

The Canadian Food Inspection Agency, a federal government agency which shares responsibility for food with Health Canada, describes the food label as

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[3] Food Directorate, Health Products and Food Branch, Health Canada, "Managing Health Claims for Foods in Canada: Towards a Modernized Framework: Discussion Paper", November 2007.

[4] Food Navigator, "Labeling on the agenda for Codex", March 14, 2008. Accessible at http://www.foodnavigator-usa.com/layout/set/print/content/view/print/115330.

[5] U.S. Food and Drug Administration, "FDA finalizes report on 2006 Spinach Outbreak", FDA News, March 23, 2007. Accessible at www.fda.gov/bbs/topics/NEWS/2007/NEW01593.html

"one of the primary means by which consumers differentiate between individual foods and brands to make informed purchasing choices".[6]

The requirements for the labelling of ingredients, which have been in place for many years, are set out in the Food and Drug Regulations of the federal *Food and Drugs Act*. Under these regulations, all packaged food products for sale in Canada must contain a list of ingredients in descending order of their proportion of the product, or as a percentage of the product.[7] The size of the text and its position on the label are also regulated.

Bran Cereal, from Health Canada's "Interactive Nutrition Label: Get the Facts"

**Ingredients:** Whole wheat, wheat bran, sugar/glucose-fructose, salt, malt (corn flour, malted barley), vitamins (thiamine hydrochloride, pyridoxine hydrochloride, folic acid, d-calcium pantothenate), minerals (iron, zinc oxide).

Nutrition Labelling

Nutrition labelling is a more recent addition to food packaging. As of December 2005, nutrition labelling became mandatory for all packaged foods sold in Canada under the Food and Drug Regulations.[8] Canada followed the lead of the United States where nutrition labelling was made mandatory in 1993.

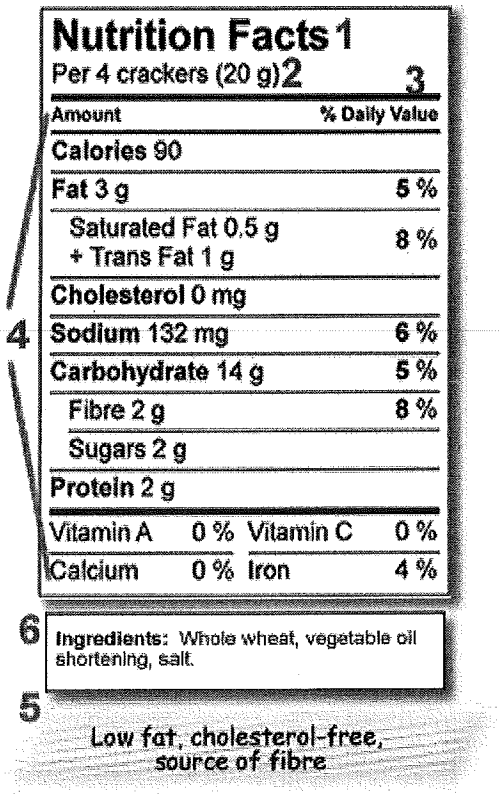
Before the introduction of nutrition labelling, the Canadian government did considerable research on nutrition trends and consumer preferences. A 1996 plan for Canada, "Nutrition for Health: An Agenda for Action", suggested that dietary practices that help reduce the risk of developing chronic diseases would be strengthened if food were labelled to allow for informed choice.[9]

One of the government's objectives in regulating the disclosure of nutrition information was to reduce the risk of chronic disease, and permit the dietary management of chronic diseases of public health significance.[10] The regulations also were meant to encourage companies to develop products with better nutritional values.

Health Canada estimated that nutrition labelling would result in significant cost savings. It calculated that labelling could save more than $5 billion in 20 years

[6] Canadian Food Inspection Agency, "Guide to Food Labelling and Advertising", Chapter 1. Accessible at www.inspection.gc.ca/english/fssa/labeti/guide/ch1e.shtml#1.4
[7] Food and Drug Act, Food and Drug Regulations, Part B, Division 1, B.01.008.
[8] Health Canada, Nutrition Labelling. Accessible at www.hc-sc.gc.ca/fn-an/label-etiquet/nutrition/index_e.html
[9] Joint Steering Committee Responsible for the Development of a National Nutrition Plan for Canada, Nutrition for Health: An Agenda for Action, Ottawa, 1996.
[10] Canada Gazette, Regulatory Impact Analysis Statement, Regulations Amending the Food and Drug Regulations (Nutrition Labelling, Nutrient Content Claims and Health Claims, Vol. 137, No. 1, January 1, 2003.

in direct and indirect costs, compared to the $300 million cost to industry. The savings included the reduced costs of treating certain cancers, diabetes, coronary heart disease and stroke, and the broader costs associated with loss of productivity.[11]




The nutrient labelling regulations cover three different types of nutrition information appearing on food labels.[12] They are:

- Nutrition Facts table: This table is a required element of all labelling for packaged food. It has a consistent format and provides information on calories and 13 nutrients – fat, saturated fat, trans fat, cholesterol, sodium, carbohydrate, fibre, sugars, protein, vitamin A, vitamin C, calcium and iron;

- Nutrient content claims: The regulations impose specific requirements for acceptable science-based nutrient content claims such as "low sodium" and "free of transfat"; and,

- Health claims: The regulations permit five claims for foods that indicate certain foods, as part of a healthy diet, may reduce the risk of high blood pressure, heart disease, some types of cancer and osteoporosis.

Nutrition Tables

The nutrients that appear on food labels were chosen for health reasons. For example, saturated and transfats increase the risk of heart disease, while sodium contributes to high blood pressure. Nutrition information allows people buying packaged foods to compare products, to determine the nutritional value of the food and to better manage special diets.[13]

Before the introduction of these regulations, nutrition labelling was not consistent, was offered for only a few nutrients, and the criteria for some claims did not reflect the latest science. By introducing mandatory nutrition labelling, consumers were provided with accurate information in a consistent format that enabled them to judge the health value of the product.

[11] World Health Organization, "Nutrition labels and health claims: the global regulatory environment", 2004, p. 36.
[12] Health Canada, "Frequently Asked Questions About Nutrition Labelling".
[13] Ibid.

In Canada as in the United States, nutrition information is presented in the form of a table. Nutrients are expressed in the Nutrient Facts table as a % Daily Value, or the percentage of a particular nutrient in the product that would be part of the recommended daily intake.

Research into the presentation of nutrition labelling information indicated that the standard (vertical) format was the "easiest and fastest to read and use".[14] A linear format was considered to be the most difficult. As a result, the Regulations have criteria to maximize the use of the standard vertical format wherever the available display space on the package allows. The Regulations also include minimum specifications for type size (8 point font) and spacing for several possible formats.[15]

Where packages have more than 100 square centimetres of display space, nutrition tables must be at least 15% of the packaging. When packages do not have 100 square centimetres, they do not have to display the table, but they must provide consumers with a way of obtaining the information through a toll-free number or postal address.

Health Claims

Health claims, such as Canada's, are regulated in only a few countries, and their use is more controversial than nutrition information.[16] The allowable claim for cancer reads "a healthy diet rich in vegetables and fruit may help reduce the risk of some types of cancer". This claim is part of the government's broader strategy to reduce cancer.

Canada, along with many other countries, is currently reviewing the regulatory framework for health claims on food.[17] Regulation is generally thought to reduce the number of confusing or misleading claims by companies. However, nutrition label message testing, done with focus groups by Health Canada, found that multiple sources of nutrition information are confusing, and that many people did not trust health claims.[18] Nutrition facts and the list of ingredients were viewed as providing more complete information.

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[14] Canada Gazette Vol. 137, No. 1, Regulatory Impact Analysis, Regulations Amending the Food and Drug Regulations (Nutrition Labelling, nutrient content claims and health claims), January 1, 2003.
[15] Schedule L, Regulations Amending the Food and Drug Regulations (Nutrition Labelling, nutrient content claims and health claims),
[16] COI Communications on behalf of the Food Standards Agency (U.K.), "Review and analysis of current literature on consumer understanding of nutrition and health claims made on food", April 20, 2007.
[17] Food Directorate, Health Products and Food Branch, Health Canada, "Managing Health Claims for Foods in Canada: Towards a Modernized Framework: Discussion Paper", November 2007.
[18] Health Canada, "Research: Nutrition Label Message Testing", September 12-18, 2000.

## 1.2 European Union Food Labelling

Food labelling is governed in the European Union by the Labelling, Presentation and Advertising of Foodstuffs Directive, passed in March 2000.[19] It requires that packaged foods be labelled with the name of the product, the list of ingredients in descending order of weight, the use-by date and any special conditions of use. It also requires compulsory labelling of use-by dates and places of origin, similar to Canadian packaging requirements.

The European Union has been slower than North America to introduce nutrition labelling. A proposal to make nutrition labelling mandatory for packaged foods was proposed in January 2008, but has not yet been approved. Two reasons for proposing mandatory labelling (with a print size of at least 3 millimetres) are to address the problems consumers have in finding essential information on food labels, and to promote healthier diets by providing consumers with clear, accurate and relevant information.[20]

There are two other important differences between European and North American food packaging legislation.

One important difference is the percentage labelling of the major ingredient in a packaged food. The EU's Labelling Directive requires that the quantity of an ingredient or category of ingredients that is emphasized in the food must be identified and shown as a percentage of the quantity of the product.[21]

Known as a "quantitative ingredient declaration", this information can help consumers identify the relative quantities of healthful and less healthful components of a food product.[22] It means, for example, that a package of frozen breaded fish fillets would be labelled according to the amount of fish in the product. The International Association of Consumer Food Organizations found that a U.S. brand of fish fillets sold in Australia contained only 55% fish while a local store brand contained 70% fish.[23]

A second major difference in food labelling between Canada and the United States and the European Union is the requirement Europe-wide that genetically

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[19] Directive 90/496/EEC, as amended by Directive 2000/13/EC.

[20] European Commission, "Commission proposal to overhaul EU food labelling rules", Brussels, January 30, 2008.

[21] Article 7, Labelling, Presentation and Advertising of Foodstuffs Directive, states that the quantity of an ingredient or category of ingredients must be stated where the ingredient appears in the name of the food, where it appears in the name of the product, where it is emphasized on the labelling in words, pictures or graphics, or where it is essential to characterize a food.

[22] World Health Organization, "Nutrition labels and health claims: the global regulatory environment", 2004, p. v.

[23] Comments from the International Association of Consumer Food Organizations to the Joint FAO/WHO Food Standards Programme Codex Committee on Food Labelling, 31st Session, Ottawa, Canada, April 28- May 2, 2003.

modified foods, or foods containing genetically modified ingredients, be identified on food labels.[24] The Directive on the Traceability and Labelling of Genetically Modified Food is designed to ensure that consumers are "fully and reliably informed about GMOs" to allow them to make an informed choice about the product.[25]

## 2. Cosmetic Labelling

Another example of full ingredient disclosure is the labelling of cosmetics and personal care products.

### 2.1 Canada's Cosmetic Regulations

As of November 2006, Canada's Cosmetic Regulations, regulated under the *Food and Drugs Act*, required a list of all ingredients contained in a cosmetic on the outer label of a product in descending order of predominance, in their concentration by weight.[26] The information must be "clearly legible" throughout the useful life of the cosmetic. The definition of cosmetics – "a product which cleanses, improves or alters the complexion, skin, hair or teeth" -- includes personal care products.

The purpose of these regulations was to "strengthen the protection of the health and safety of the Canadian public with regard to the use of cosmetic products".[27] The disclosure of ingredients on cosmetic packaging was intended to help people avoid ingredients that could cause problems such as allergic reactions.

Voluntary labelling was judged to be "insufficient to address health needs". Health Canada estimated that between 2 and 5% of the adult population using these products experienced reactions. Because products generally did not have ingredient labels, there was, according to Health Canada, a higher than necessary risk of adverse reactions for people using these products.

The revised Cosmetic Regulations brought Canada's requirements for labelling into line with regulations that have been in effect in both the United States and

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[24] Regulation (EC) No 1830/2003 of the European Parliament and of the Council of 22 September 2003 concerning the traceability and labelling of genetically modified organisms and the traceability of food and feed products produced from genetically modified organisms and amending Directive 2001/18/EC.

[25] Regulation (EC) No 1830/2003 of the European Parliament and of the Council of 22 September 2003 concerning the traceability and labelling of genetically modified organisms and the traceability of food and feed products produced from genetically modified organisms and amending Directive 2001/18/EC, (11).

[26] Sections 21.1 to 21.5, List of Ingredients, Cosmetic Regulations, Food and Drugs Act.

[27] Canada Gazette, Regulatory Impact Analysis Statement, Regulations Amending the Cosmetic Regulations, Vol. 138, No. 24, December 1, 2004.

the European Union for many years. The labelled ingredients use the International Nomenclature of Cosmetic Ingredients (INCI names), also used in the United States and Europe. These regulations are administered by the Cosmetics Division of the Consumer Product Safety Bureau of Health Canada.

The ingredient lists, however, do not cover all ingredients present in cosmetics and personal care products. Ingredients used for the purpose of fragrance or flavouring are identified only by the general headings of "parfum" (meaning fragrance) or "aroma" (meaning flavour).[28] This is an important omission because as many as 300 chemicals are used as perfumes and flavourings, some of which have toxic effects. Because of this, a recent directive of the European Union has made it mandatory that cosmetic companies identify on product labels 26 perfume ingredients with known allergenic effects.

The revised Cosmetic Regulations have been in place for 2 years now, and, according to Health Canada, no impact evaluation has been done since their introduction.[29]

Hazard Warnings on Cosmetics

In addition to ingredients listing, there are some hazard warnings required for cosmetic labels. Under Canada's Cosmetic Regulations, hair dyes containing paraphenylenediamine or other coal tar dye bases or intermediates must carry a warning that says:

> CAUTION: This product contains ingredients that may cause skin irritation on certain individuals....This product must not be used for dyeing the eyelashes or eyebrows. To do so may cause blindness.

Special cautionary statements are also advised under Health Canada's list of prohibited and restricted cosmetic ingredients (the Hotlist) for chemicals such as alpha hydroxy acids, talc, and triclosan.[30] However, it is unclear whether companies use the recommended warnings in the Hotlist, or whether Health Canada enforces their use.

In addition to concerns about allergies or other problems, consumers are also able to use ingredient lists to avoid certain chemicals, such as carcinogens. Although manufacturers are responsible for ensuring the safety of cosmetics,

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[28] Section 21.4 (3), Cosmetic Regulations, Food and Drugs Act.
[29] Personal Communication with Angela Richardson, Scientific Regulatory Officer, Cosmetics Division, Consumer Product Safety Bureau, Health Canada, July 30, 2008.
[30] Health Canada, List of Prohibited and Restricted Cosmetic Ingredients. Accessible at http://www.hc-sc.gc.ca/cps-spc/person/cosmet/info-ind-prof/_hot-list-critique/prohibited-eng.php

Canada's legislation does not require safety testing prior to products being placed on the market. In the last ten years, there has been growing public concern about the presence of carcinogens and other toxic chemicals in these products. For example, formaldehyde, an IARC Group 1 (known human) carcinogen, is permitted in nail hardeners.[31]

2.2 European Union Cosmetics Directive

The framework of the European Union's cosmetics legislation is similar in many respects to Canada's, but improves on Canada's labelling requirements by requiring the labelling of certain fragrance ingredients.

As a result of a major amendment to the Cosmetics Directive in 2003, 26 fragrance ingredients that cause contact-allergy reactions in fragrance-sensitive consumers must now be identified in the list of ingredients for cosmetic products.[32] The purpose of identifying these fragrances is to allow people to avoid the use of cosmetic products which they do not tolerate, and to improve the diagnosis of contact allergies.

Under the same amendment, substances classified in the EU as carcinogenic, mutagenic or toxic to reproduction (CMRs) Classes 1 and 2, known and probable carcinogens, were prohibited from use in cosmetics based solely on these properties, rather than on risk assessment.[33] Class 3 CMRs, which are only possible carcinogens, cannot be intentionally added to cosmetics unless companies can show that the levels do not pose any threat to human health.[34]

3. Lessons Learned from Information Labelling

- Labelling can contribute to public health goals and reduce health care costs.

For both full ingredient disclosure and nutrition labelling, labelling requirements provide people with important health-related information. A full list of ingredients displayed on packaged food or personal care products helps

[31] Ibid., under "formaldehyde".
[32] Article 6, Directive 76/768/EEC, as amended by the Seventh Amendment, Directive 2003/15/EC.27 February 2003. These ingredients are listed in Annex III.
[33] Article 4b, Cosmetics Directive. The list of chemicals defined as carcinogens, mutagens and reproductive toxicants (CMRs) Classes 1, 2 and 3 are found in Annex I of the Dangerous Substances Directive (67/548/EEC).
[34] Section 13 of the introduction to Directive 2001/15/EC states that: "Given the special risks that substances classified as carcinogenic, mutagenic or toxic for reproduction, category 1, 2 and 3, pursuant to Directive 67/548/EEC may entail for human health, their use in cosmetic products should be prohibited. A substance classified in category 3 may be used in cosmetics if the substance has been evaluated by the SCCNFP

adults and children with allergies or other sensitivities to avoid specific substances.

In the case of ingredient labelling for cosmetics, public benefits were found to be the reduction of specific adverse health effects, uncertain adverse health events, nuisance risks and other benefits.[35] The Regulatory Impact Analysis Statement found that the lack of ingredient labelling had "contributed to a higher than necessary risk of adverse reactions to cosmetics because users were unable to avoid products containing substances to which they were sensitive".[36]

Another benefit was the ready access of medical professionals to the names of ingredients in products that enabled them to provide more effective care. Health Canada, in its analysis, found that companies would benefit from reduced customer service costs and improved competitiveness in both Canadian and foreign markets.

One of the government's objectives in the case of nutrition labelling was to provide people with information about the nutritional properties of foods in order to reduce their "risk of developing chronic diseases and permitting dietary management of chronic diseases of public health significance".[37] Health Canada estimated that more than $5 billion in benefits, including reducing diseases such as cancer, would be realized from nutrition labelling regulations.

- Mandatory labelling results in more reliable and consistent labelling than voluntary initiatives.

Before food and cosmetics required ingredients labelling, many companies voluntarily provided some kind of ingredients listing. In Canada, the legal requirements for full ingredient disclosure and nutrition labelling replaced voluntary declarations by companies, and put in place a uniform format that allows people to compare products.

With respect to cosmetics, Health Canada found voluntary ingredient listing was not adequate for health needs.[38] Ingredient listing was designed to provide "the Canadian public with information that allows them to avoid products that contain an ingredient that may cause an adverse reaction".[39] Regulated ingredient listing ensured that individuals with allergies or sensitivities to particular ingredients had access to consistent information, and provided medical practitioners with information helpful for treating their patients.

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[35] Canada Gazette, Vol. 138, No. 24, Regulatory Impact Analysis Statement, Regulations Amending the Cosmetic Regulations, December 1, 2004.
[36] Ibid.
[37] Canada Gazette, Vol. 137, No. 1, Regulatory Impact Analysis, Regulations Amending the Food and Drug Regulations, January 1, 2003.
[38] Canada Gazette, Vol. 138, No. 24, Regulatory Impact Analysis Statement, Regulations Amending the Cosmetic Regulations, December 1, 2004.
[39] Ibid.

Similarly, for adverse reactions or illnesses in the workplace, medical practitioners have access to ingredients information in material safety data sheets. This information is not available for hazardous consumer products.

Mandatory labelling also results in increased use of label information. With the introduction of U.S. regulations which replaced voluntary nutrient declarations, the use of labels increased by 8.5% by women and 11.3% by men.[40]

- Labelling can be confusing if the information is not presented in an easily understandable format.

Some surveys of nutrition labelling indicate that people may have trouble understanding the information when presented in certain formats. In a survey of Canadians' use and understanding of the nutrition tables before they were regulated, researchers found that the barriers for some groups of people included the effort required to read and understand the information, the poor legibility from the density of information and the small print size, the inconsistent way in which information was presented and the lack of availability of information on some products.[41]

Recent surveys of Canadians found that consumers, although they welcome health and nutrition information, are confused about health claims. In addition, some people lack the level of literacy needed to handle the complexity of information about diet and health needed to make informed choices.[42]

- Labels provide valuable information at the point-of-purchase.

Nutrition information builds on the full disclosure of ingredients on food packaging by providing health-related information that can influence people's food choices at the point of purchase. In 1997 before nutrition labelling was regulated, the National Institute of Nutrition in Ottawa found that 71 per cent of Canadians reported using food labels as a source of nutrition information, up from 64 per cent in 1991.[43] This information played an important role in food purchasing.

A further study in 1999 found that a majority of Canadians use food labels to:

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[40] Kristal, A.R. et al (1998) Trends in Food Label Use Associated with New Nutrition Labelling Regulations, American Journal of Public Health 88(8): 1212-15.
[41] National Institute of Nutrition, "Nutrition Labelling: Preferences and Preferences of Canadians", June 1999, p. 9.
[42] Food Directorate, Health Products and Food Branch, Health Canada, "Managing Health Claims for Foods in Canada: Towards a Modernized Framework: Discussion Paper", November 2007.
[43] National Institute of Nutrition, "Tracking Nutrition Trends 1989-1994-1997", Ottawa, April 1997.

- see whether a product is rich in nutrients or ingredients they were trying to eat more of;
- determine whether a product contains nutrients or ingredients they are trying to avoid;
- assess the calorie content; and,
- compare similar or different types of food.[44]

Similarly, surveys in the United States have shown that a significant proportion of American consumers use nutrition labels, and suggest that label use does affect the choices of consumers.[45] As well as food choice, U.S. evidence also shows that mandatory nutrition labelling has affected diet. For example, consumers who use nutrition labels obtain a lower percentage of their total calories from fat, and have a higher daily dietary fibre intake.[46]

- There is generally strong public support for information on labels.

Before nutrition labelling became mandatory, Canadian surveys showed that 93% of the population wanted to see widespread nutrition labelling.[47] A more recent study of consumers in Australia and New Zealand, done in 2007, showed that 33% of Australians and 25% of New Zealanders always referred to the labelling information when purchasing a product for the first time.[48] The survey showed "there was a clear positive relationship between consumers' health consciousness and dietary concerns and their frequency of referring to label information".

A U.S. report, Label Reading from a Consumer Perspective, found that in 2007 28% of American consumers were reading food labels "much more frequently" than one year before. Half of the people surveyed considered the nutrition facts panel, while 47% checked the ingredient lists.[49]

With respect to consumer products where ingredient labelling is *not* mandatory, surveys conducted by the Canadian Cancer Society show that many Canadians would also like to see full ingredients disclosure of consumer products.

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[44] National Institute of Nutrition, "Nutrition Labelling: Perceptions and Preferences of Canadians", Ottawa, 1999.
[45] World Health Organization, "Nutrition Labels and health claims: the global regulatory environment", 2004.
[46] Ibid, p. 41. See also Neuhauser, ML, AR Kristal & RE Patterson (1999) Use of Food Nutrition Labels is Associated with Lower Fat Intake, American Dietetic Association 99(1): 45-53.
[47] National Institute of Nutrition, "Nutrition Labelling: Perceptions and Preferences of Canadians", Ottawa, 1999.
[48] Food Standards Australia New Zealand, "Consumer Attitudes Survey 2007: A benchmark survey of consumers' attitudes to food issues", January 2008.
[49] Food Navigator, "Report examines label reading priorities and obstacles", December 20, 2007. Accessible at www.foodnavigator-usa.com/layout/set/print/content/view/print/175414

An Ipsos Reid Survey for the Canadian Cancer Society, Saskatchewan, conducted in February 2008, found "virtually all Saskatchewan residents agree that consumers have the right to know the ingredients that are contained in the products they purchase", and that "the vast majority would support their provincial government passing legislation that would require companies and manufacturers to clearly label all of their products that contain substances that have been linked to an increased risk of some cancers". A Canadian Cancer Society poll, released in April 2008, had the same findings.

The President of the Canadian Consumer Specialty Products Association acknowledged that companies "have seen an increase in consumer interest about the particular ingredients in the products".[50] In response to this interest, in April 2008 the Canadian Consumer Specialty Products Association proposed a voluntary industry-led initiative to disclose ingredients present in concentrations greater than 1% in their products.[51]

The proposed products include air care, automotive, cleaning and floor maintenance products and polishes. Ingredient information would be made available either through labels, toll-free numbers, on company websites or other non-electronic means by January 2010.

- Labelling can lead to improvements in the formulation of the product.

After the introduction of mandatory nutrition labelling in the U.S. in 1990, data showed that some manufacturers reformulated food products to improve the information in the nutrition facts tables and to market more nutritious products which could meet nutritional criteria and the criteria for health claims.[52]

- Labelling may display many types of information helpful to the consumer.

Labelling on the package of a single product does not have to be restricted to a single message. Labelling may provide for many different types of information. For example, in addition to full ingredient disclosure, the labels of packaged foods display best before dates, countries of origin and highly visible nutrition tables and health claims. Similarly, Canadian cosmetic labels not only display their ingredients but, in some instances, are also required to display hazard warnings.

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[50] The Globe and Mail, "New product ingredient lists fall short, critics say", April 4, 2008.
[51] Media Release, "Industry provides ingredient information to Canadians", Canadian Consumer Specialty Products Association, April 2, 2008. Accessible at www.ccspa.org/
[52] Canada Gazette, Vol. 137, No. 1, Regulatory Impact Statement, Regulations amending the Food and Drug Regulations Nutrition Labelling, nutrient content claims and health claims, January 1, 2003.

## III. Hazard Warning Systems

Where there is a potential exposure to a hazardous product or hazardous ingredient in a product, warnings on labels can be used to draw attention to a potential health risk. These warnings also help governments fulfill their responsibility as a regulator to warn people.[53]

Well-established examples of hazard warnings that will be discussed in this section include tobacco packaging, labelling that identifies hazards in consumer products including the international Globally Harmonized System, the identification and labelling of hazardous materials in the workplace, and California's consumer product warnings developed under Proposition 65.

### 4. Tobacco Labelling

Tobacco labelling is of particular interest because both tobacco and cigarette smoke contain recognized carcinogens, and tobacco use is a preventable cause of cancer. It is also a useful example because its labelling strategy is based on an extensive body of consumer research conducted by the federal government.[54] There is considerable evidence from the regulation of tobacco products demonstrating the effectiveness of hazard labelling.

Canada has been an international leader in tobacco control, and was the first country in the world to introduce picture warnings. Under the *Tobacco Act*, and the Tobacco Products Information Regulations adopted in 2000, tobacco packaging in Canada focuses messages in three key areas:

- graphic health warnings, which are found on the principal display surfaces;

- a toxic emissions statement, found on the sides of packages; and,

- health information messages, which describe the hazards of tobacco use such as lung cancer or second hand smoke, or provide tips on quitting smoking, found on the slide panels.

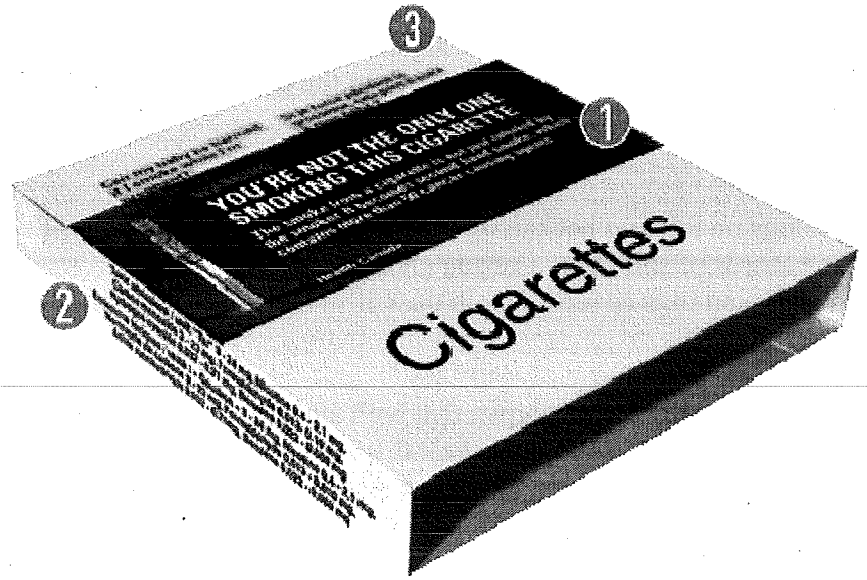
The Tobacco Products Information Regulations set out the graphics, size, location and content requirements for each of the three elements. Messages

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[53] Hammond, David, Tobacco Packaging and Labelling: A Review of Evidence, November 2007, p. 4.

[54] Since 2000, the Tobacco Control Programme of Health Canada, which administers health warnings on tobacco packaging, has been monitoring and evaluating their impact on consumer awareness, knowledge and behaviour using surveys, presented as Waves 1 to 12.

were to employ colour and graphics, be increased in size from previous warnings, contain concrete facts and statistics and address issues of concern to product users.




The Tobacco Act requires that certain information be displayed on packages of all tobacco products: 1) Graphic health warnings; 2) Toxic emissions statement; and, 3) Health information messages

The benefits and costs of the Tobacco Products Information Regulations were anticipated to be reduced mortality and illness, reduced health care costs and reduced employer costs. It was estimated that the regulations, at a minimum, would result in a long term 1% reduction in tobacco use and an eventual 1% reduction in tobacco-related deaths.

Tobacco products in Canada carry more prominent warnings on packages than in the United States or Europe. However, both the United States and Europe, like Canada, have signed the international Framework Convention on Tobacco Control and will be moving to meet standards already in place here, including health warnings and labelling of emissions.

Tobacco warnings have been shown to influence smoker's decisions to quite or reduce smoking. Government research leading up to the 2000 Regulations showed that "the display of important facts on the package directly assists users in their decision not to smoke". [55] In addition, an independent study of adult smokers in Ontario, interviewed before and after the introduction of tobacco warning labels, found that a high proportion (91%) remembered the warning

[55] Canada Gazette, Vol. 134, No. 14, Regulatory Impact Analysis Statement, Tobacco Products Information Regulations, April 1, 2000.

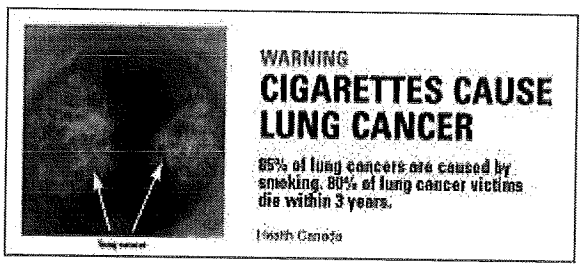
labels and were aware of their content. The study also found that the smokers, who recalled the labels well were most likely to have stopped smoking, attempted to stop smoking or reduced their smoking.[56]

Since the introduction of the tobacco labelling regulations in 2000, Health Canada has done considerable research on their impact on consumers, and, based on this research, has recently proposed changes to the current framework.

Graphic Health Warnings

Graphic health warnings on tobacco packaging have been extremely effective in communicating the hazards of smoking. Canada's tobacco packages feature 1 of 16 full-colour health warnings covering more than 50% of the front and back of cigarette packages.

Health Canada's extensive research has shown that both smokers and non-smokers of all ages strongly support the prominent display of graphic health warnings.[57] According to Health Canada, they are considered "noticeable, serve as a major...source of information on the health effects of tobacco use, and are seen as both credible and informative".[58]




Studies also show that pictures are more effective than text-only messages for warning people, and that they are important for reaching low-literacy smokers and children.[59]

An international survey of data from Canada, the United States, Britain and Australia, published by the University of Waterloo, found that the two main components of an effective warning system were using pictures that

[56] Hammond, David et al. (2003) Impact of the graphic Canadian warning labels on adult smoking behaviour, Tobacco Control 12(4): 391-5.
[57] Environics, Canadian Adult and Youth Opinions on the Sizing of Health Warning Messages, October 1999. Accessible at www.hc-sc.gc.ca/hl-vs/tobac-tabac/research-recherche/por-rop/label-etiquet-eng.php
[58] Health Canada, "A Proposal for new health-related Information on Tobacco Product Labels, Building on Success: A Consultation Paper", August 2004. Accessible at www.hc-sc.gc.ca/hl-vs/pubs/tobac-tabac/advert-publicite/index_e.html
[59] Ibid, p. iii.

communicate health risks, and refreshing the messages.[60] Health messages in the United States that had not been changed since 1984 were found to be the least effective.

In their proposal for regulatory changes, Health Canada has suggested creating a new series of health warnings that would be rotated every two years, and would include a variety of approaches and methods. The government particularly wants to tailor the messages to adults with low literacy skills that have not been able to readily understand the health warnings and toxics emissions statements currently on the packages.

David Hammond, a researcher at the University of Waterloo, summed up the effectiveness of Canada's graphic health warnings:

> All evidence suggests graphic warnings are (i) a prominent source of health information, second only to television in many jurisdictions; (ii) more likely to be noticed and discussed than text warnings; (iii) associated with greater health knowledge; (iv) associated with increased cessation behaviour, and (v) enjoy high credibility and support from smokers themselves.[61]

Emissions Labelling

In addition to graphic warnings, the tobacco regulations require a statement of the levels of 6 different toxins and the range of their levels present in tobacco smoke. The 6 toxins are tar, nicotine, carbon monoxide, formaldehyde, hydrogen cyanide and benzene. Formaldehyde and benzene are both classified as IARC Group 1 (known human) carcinogens.

Research has shown that these emissions statements are not well understood by consumers. In focus groups, smokers indicated that they were aware that nicotine and tar could cause health problems, but only a small percentage mentioned the other four substances. Even so, some smokers were still encouraged to quit or smoke less as a result of this information.

Smokers also indicated that they wanted direct, easy-to-understand information about toxic emissions.[62] They were most supportive of texts that presented only one substance with information on the impact of that substance on health. They generally felt that information should be given to people who smoke.

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[60] Hammond, David et al. (2007) Text and Graphic Warnings on Cigarette Packages: Findings from the International Tobacco Control Four Country Study, American Journal of Preventive Medicine, 32(3): 210-217.

[61] Hammond, David et al., Letter to the Editor, "Showing leads to doing: Graphic cigarette warning labels are an effective public health policy", European Journal of Public Health, Vol. 16 (2): 223-4.

[62] Phoenix Strategic Perspectives Inc., "Final Report: Qualitative Testing of Toxic Emissions Statements prepared for Health Canada", November 2007.

Health Canada originally proposed that toxic emissions statements be replaced with a series of statements that would present clear and concise information about the toxicity of eight substances found in tobacco smoke including their health effects and range of toxic emission values. [63] However, the government has instead proposed retaining the list of the 6 toxic emissions ingredients but without any numerical toxic emissions values.[64]

Health Information Messages

Of all the packaging elements, health information messages are the least successful in attracting attention and influencing behaviour. Health Canada's research showed that few Canadians read or notice health information messages, which are located either on the back panel of a slide pack or on a stand-alone leaflet.

These messages describe the hazards of smoking and provide tips on quitting. They can be anywhere on the package, except on the principal display surface or the bottom and must occupy between 60% and 70% of the side on which it is displayed. Health Canada has proposed that these messages be presented more clearly and simply.

## 5. Hazardous Consumer Product Labelling

### 5.1. Globally Harmonized System of Classification and Labelling of Chemicals

Any discussion of consumer product labelling requires an understanding of the proposed Globally Harmonized System of Classification and Labelling of Chemicals, known as GHS. All countries discussed in this report are currently in the process of deciding when and how to implement this system.

In every country, the GHS will affect four major sectors – consumer products, pesticides, the transportation of dangerous goods and workplace chemicals. It does *not* cover pharmaceuticals, food additives, cosmetics and pesticide residues in food at point of purchase.[65]

The GHS, as it is described here, applies to labelling of hazards in consumer products, particularly carcinogens, and the status of its implementation in Canada, the EU and the United States. The GHS will also result in changes to

[63] Health Canada, "Building on Success: A Proposal for New Health-related Information on Tobacco Product Labels", August 2004.
[64] Canada Gazette, Vol. 142, No. 22, Regulations Amending the Tobacco Products Information Regulations, May 31, 2008.
[65] Health Canada, The Globally Harmonized System for the Classification and Labelling (the GHS) – Implementation of the GHS in Canada. Accessible at: www.hc-sc.gc.ca/ahc-asc/intactiv/ghs-sgh/index-eng.php

Canada's Workplace Hazardous Materials Information System (WHMIS). Consensus has already been reached by a tripartite committee coordinated through the National WHMIS Office to adopt all GHS classification and labelling elements, including symbols and hazard statements, as part of WHMIS. However, the label design and some discretionary aspects of the labels have not yet been finalized.

Under the direction of the United Nations, a system for classifying chemical hazards and communicating this information through labels and safety data sheets has been developed. It can be used internationally to facilitate the safe use of chemicals and to reduce barriers to trade.[66] For example, it can resolve differences where one country labels a product or substance as flammable or carcinogenic while another doesn't.

The GHS allows countries to use a "building block" approach in implementing the system.[67] This means that after adopting the core classification and labelling requirements of the GHS, countries can decide which additional elements of the GHS they will adopt. Ultimately, the objective of the GHS is the international harmonization of classification and labelling, and all countries are strongly urged to adopt GHS in its entirety.

If the GHS is applied to consumer products in Canada, the most visible outcome of the GHS will be product labelling. Labelling is determined by the classification of the product or the ingredients in the product, according to the health, environmental and physical hazards.

Under the GHS labelling proposals, there are 3 main label elements that relate to potential hazards in the product:

- Symbols: 9 different symbols indicate hazards, including a flame, flame over circle, exploding bomb, corrosion, skull and crossbones, exclamation mark, environment, and health hazard. The symbol for a health hazard, depicted by a human head and torso with a central radiating light in the torso, would be used for a number of health hazards, including carcinogens.

- Signal words: 2 different signal words on the label, "danger" and "warning", indicate the relative level of severity of hazard, with danger being used for more severe hazard categories.

- Hazard statements: phrases that describe the nature of the hazard, and, in some cases, the degree of hazard. For example, a hazard statement displayed on a mixture containing a carcinogen, known to cause cancer,

[66] Health Canada, "The Globally Harmonized System for the Classification and Labelling of Chemicals (GHS): Overview".
[67] Ibid.

would say: "May cause cancer". The route of exposure would be stated on the label if it is conclusively proven that no other routes of exposure cause the hazard.

The UN encouraged countries to implement the GHS quickly, and it was hoped that many would have it in place by 2008. Canada is committed to implementing the GHS for workplace chemicals, but is still conducting economic analyses and finalizing recommendations for the implementation of GHS for consumer products.

## 5.2 Labelling of Hazardous Products in Canada

At the present time, the labelling of hazardous consumer products in Canada is governed by the Consumer Chemicals & Containers Regulations of the *Hazardous Products Act* (Part I), administered by Health Canada's Consumer Product Safety Bureau.

The Consumer Chemicals and Containers Regulations, 2001, (CCCR, 2001), set out classification criteria, labelling and packaging requirements for consumer products. Like the GHS system, labels on hazardous consumer products are required to include 3 standardized elements – 1) symbols, 2) signal words, and 3) hazard statements.

The size and location of the information required on containers is proscribed in the Regulations. The hazard symbol, the signal word ("extreme danger", "danger" or "caution") and the primary hazard statement must be displayed on the main display panel.[68] Specific hazard statements, negative and positive instructions, and first aid statements may be displayed on any part of the container.

When CCCR, 2001 were introduced in 2001, the social losses from injuries and deaths associated with consumer chemical products was estimated to be $627 million annually.[69] The changes to the regulations were expected to save $9.9 million annually beginning in the second year. Regulatory measures were considered necessary to protect consumers because of the increasingly large percentage of imported products and to create a level playing field for producers of consumer products by introducing regulations that covered all products.[70]

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[68] , Sections 25 and 26, Consumer Chemicals and Containers Regulations, 2001.

[69] Canada Gazette, Part II, Vol. 135, No. 17, Regulatory Impact Analysis Statement, Consumer Chemicals and Containers Regulations, 2001, August 1, 2001. The costs and benefits were based on a detailed economic study carried out in 1995 entitled "Costs and Benefits of Proposed Changes to the Consumer Chemicals and Containers Regulations". The total costs to industry and government over 25 years were estimated at $49.1 million over 25 years.

[70] Ibid. p. 1618.

Differences with the GHS

With respect to labelling of consumer products, there are major differences between CCCR, 2001 and the proposed GHS system that must be resolved prior to implementation.

The most important difference is that Canadian regulations do not include classification and labelling provisions for repeated and chronic health hazards. The hazards not covered under the CCCR, 2001 but included in the GHS, are: skin or respiratory sensitization, mutagenicity, carcinogenicity, reproductive toxicity, effects on or via lactation, single or repeated exposure target organ toxicity.[71]

The focus of CCCR, 2001 is acute hazards – toxicity, corrosivity, flammability, quick skin bonding characteristics and pressurized containers. The following hazard symbols are used on Canadian consumer products. There are only 4 symbols because there is no hazard symbol for quick skin bonding.

HAZARD SYMBOLS[72]

| Item | Column 1<br>Description | Column 2<br>Symbol |
|---|---|---|
| 1. | TOXIC |  |
| 2. | CORROSIVE |  |
| 3. | FLAMMABLE |  |
| 4. | EXPLOSIVE | |

[71] Health Canada, "The Globally Harmonized System for the Classification and Labelling (the GHS) – Implementation of the GHS in Canada", Annex I, Table 1.
[72] Schedule 2 (Subsection 1(1) and section 21), Consumer Chemicals and Containers Regulations 2001.

| Item | Column 1<br>Description | Column 2<br>Symbol |
|---|---|---|
| | |  |

In its analysis of the GHS in comparison with Canadian regulations, Health Canada says that classifying and labelling substances according to carcinogenicity, reproductive toxicity and other health endpoints, which are included in the GHS, will *likely* be adopted by CCCR, 2001 as part of the GHS implementation. This was confirmed by a spokesperson from Health Canada.[73] Health Canada is also considering proposing that Category 1 carcinogens, known human carcinogens, be prohibited from use in consumer products.

If the GHS is adopted for carcinogenicity, it would introduce the classification and labelling of chemicals or substances as Category 1A, 1B or Category 2 carcinogens (known, probable and suspected, respectively).

These would be identified on the label as, for example, "Category 1A: known human carcinogen". The label would include a signal word – "danger", and a hazard statement -- "may cause cancer". In addition, the route of exposure would be included if it is proven that no other routes of exposure cause the hazard.

The following table, taken from Health Canada's *Comparison of Sector Interim Recommendations or Preferred Options*, illustrates the GHS labelling to indicate the presence of a carcinogen in a product that could be adopted in Canada.

[73] Personal communication with Claude Chartrand, GHS Project Office, Consumer Product Safety Bureau, Chemical and Flammability Division, Health Canada, April 15, 2008.

| GHS | Category 1A | Category 1B | Category 2 |
|---|---|---|---|
| | Known human carcinogen  **Danger** **May cause cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)** | Presumed human carcinogen  **Danger** **May cause cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)** | Suspected human carcinogen  **Warning** **Suspected of causing cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)** |
| **CC** | Pending discussion of ad hoc Expert Group on Chronic Hazards | Pending discussion of ad hoc Expert Group on Chronic Hazards | Pending discussion of ad hoc Expert Group on Chronic Hazards |
| **PCP*** | **Yes** | **Yes** | **Yes** |
| **TDG** | **No** | **No** | **No** |
| **WHMIS**** | **Yes, adopt 1A , 1B as Category 1** | | **Yes** |

One of the issues concerning the implementation of the GHS in Canada is how consumer products should be labelled for chronic hazards. Non-governmental organization support chronic hazard labelling that indicates the presence of a known hazardous chemical in a product, as proposed by the GHS. However, industry has argued that chronic hazard labelling should be done on the basis of a risk assessment. A hazard-based approach would require a product to be labelled according to the hazardous properties of the substance or an ingredient in the product, while the risk assessment approach would be based on the expected exposure and magnitude of risk to the user.

Although a risk assessment approach would be consistent with the present U.S. consumer product labelling, it would not implement a key element of the GHS system. Risk-based labelling would also be inconsistent with Canada's current system of labelling of hazardous products in the workplace under WHMIS.

## 5.3 European Union's Classification and Labelling Directives

The classification and labelling of hazardous consumer products in the European Union is governed by two directives – the Dangerous Substances Directive (67/548/EEC), and the Dangerous Preparations Directive (1999/45/EC).[74]

The current EU classification and labelling framework for dangerous substances and preparations applies not only to hazardous consumer products but covers the workplace as well. EU labelling, unlike the Canadian system, includes warnings not only for immediate hazards but also for long-term effects. For example, where a product in the EU contains a substance known to cause cancer, consumers or workers are warned on the label by the display of a hazard word and a clear, concise risk phrase. The EU framework is similar, but not identical, to the proposed GHS labelling.

Substances or preparations are classified as dangerous if they are: explosive (E), oxidizing (O), highly flammable (F), extremely flammable (F+), toxic (T), very toxic (T+), corrosive (C), harmful (Xn), irritant (Xi), and dangerous for the environment (N). Carcinogens are classified as "toxic".

Each classification is assigned a chemical hazard symbol, a hazard term, and a risk phrase. For example, products, which contain carcinogens classified by the EU as Category 1 or 2 (known and probable human carcinogens) must display the word "toxic", the symbol of a skull and crossbones, and the risk phrases:[75]

| May cause cancer<br>Or,<br>May cause cancer by inhalation |
|---|

Labels for products containing Category 3 carcinogens – suspected of causing cancer -- must display the hazard term "harmful", the symbol of the St. Andrew's cross, and the risk phrase:

| Limited evidence of a carcinogenic effect |
|---|

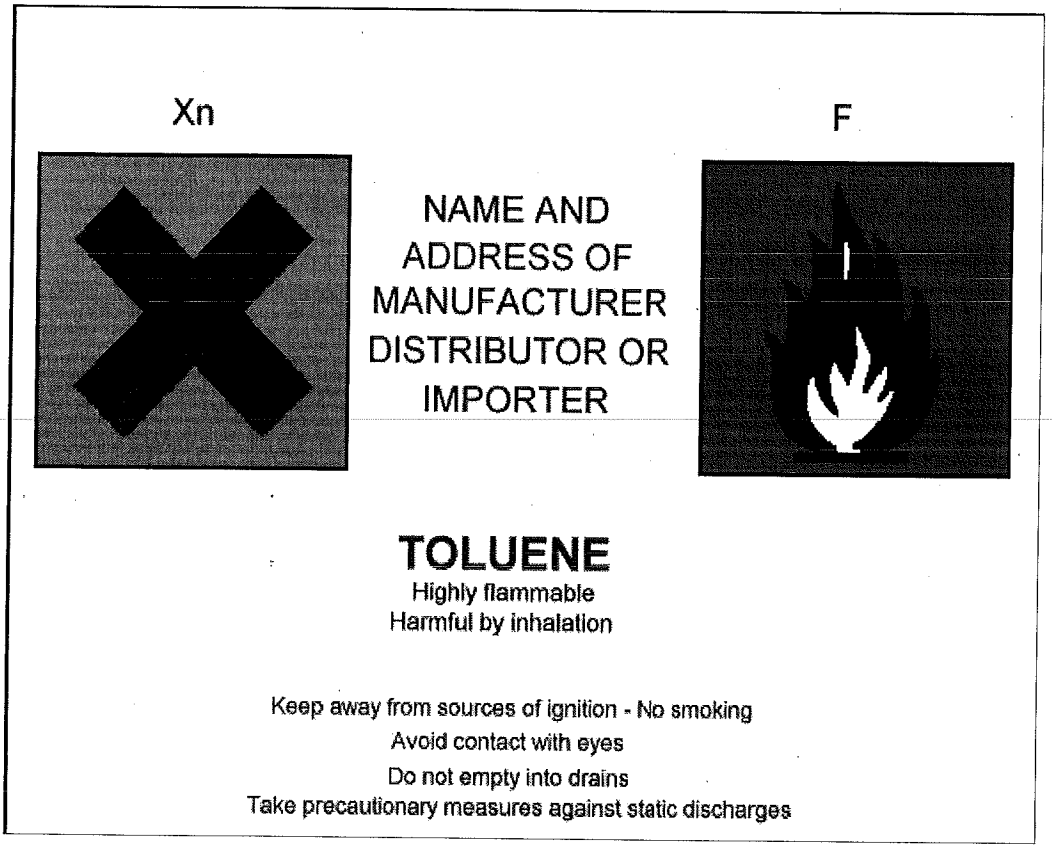
The sample label for toluene, shown below, displays the letters Xn for harmful and F for highly flammable, both characteristics of toluene, along with the appropriate symbols.[76] It also includes the corresponding risk phrases, "harmful

[74] A preparation in the European Union would be a mixture in Canada.

[75] Note that the EU classification of carcinogens is not identical to IARC's classifications. Category 1 carcinogens are known human carcinogens, and Category 2 are probable human carcinogens, as classified by the EU Health Canada, Substances Assessed for Accessible at www.hc-sc.gc.ca/ewh-semt/occup-travail/whmis-simdut/carcinogenesis-carcinogenese_e.html

[76] The Canadian Centre for Occupational Health and Safety, "Report on the Effectiveness of Label Format", prepared for the National Office of the Workplace Hazardous Materials Information System of Health Canada, March 21, 2007. This sample label was Figure 2.

for inhalation", and "highly flammable", in addition to safety precautions that should be taken.




GHS in Europe

Europe is also in the process of implementing the GHS system. A new Regulation was proposed in June 2007 that would incorporate the GHS classification and labelling system into the recently enacted European chemicals regulation, REACH. REACH -- the Registration, Evaluation and Authorization of Chemicals Regulation -- came into effect in June 2007. [77]

If adopted by the European Council and Parliament, the proposed regulation would bring the EU system of classification and labelling into line with the GHS system.[78] An analysis of the differences between the GHS system and the EU's current system of classification and labelling of substances found that they were "conceptually similar and cover the same structural elements".[79] However,

[77] Regulation (EC) No. 1907/2006.
[78] European Commission, "Proposal for a Regulation of the European Parliament and of the Council on the classification, labelling and packaging of substances and mixtures, and amending Directive 67/548/EEC and Regulation (EC) No 1907/2006".
[79] Okopol Institute for Environmental Strategies, "Final Report: Technical Assistance to the Commission on the implementation of the GHS", June 2004.

not all GHS hazard categories have been included within the EU proposal. As well, the hazard terms used in the EU would be replaced with signal words "danger" and "warning", and EU risk phrases would in some cases be replaced with new hazard phrases.

The following is an example of the way in which EU labels would be changed by the GHS.[80] The skull & crossbones pictogram with the signal word "danger" would replace the danger term "toxic". The GHS hazard statement would replace the risk phrase, R24, which is the same for acute toxicity (oral, skin and inhalation) under the EU framework and the GHS.

| **EU Label** | **GHS Label** |
|---|---|
|  |  |
| Toxic | Danger |
| Toxic in contact with skin | Toxic in contact with skin |

5.4 The United States Labelling of Hazardous Products

The United States position on the adoption of the GHS has not been made clear yet, and little progress has been made in comparison to Canada.

In the U.S, the Consumer Product Safety Commission (CPSC) is responsible for labelling hazardous products under the *Federal Hazardous Products Act of 1960*. In the U.S. as in Canada, the labelling for hazardous consumer products is directed at acute toxicity. Currently, some baseline labelling is required for consumer products that include the signal word "danger" for substances which are extremely flammable, corrosive, or highly toxic, and the signal words "warning" or "caution" on all other substances deemed to be hazardous.[81] Labels also require a hazard statement for the principal hazard such as "flammable", "combustible", "vapor harmful", "causes burns", or "absorbed through skin".

However, except for acutely hazardous products, the labelling of U.S. consumer products is based on a risk assessment of the likely exposure of the consumer to

[80] Health and Safety Authority, Ireland, Frequently Asked Questions: Globally Harmonized System (GHS). Accessible at http://www.hsa.ie/eng/FAQs/Chemical/Globally_Harmonised_System_GHS.html#examples

[81] 15 U.S.C. SS 1261(p), 1262, Federal Hazardous Substances Act.

the substance and the potential for harm. This means, in practice, few products containing toxic chemicals require labelling.[82]

## 6. Hazardous Product Labelling in the Workplace

### 6.1 Canada's Workplace Hazardous Materials Information System

Legislation and regulations governing the labelling of substances used in the workplace — generally known as the Workplace Hazardous Materials Information System, or WHMIS — represent the most developed system of hazardous product labelling in Canada.

The mission of WHMIS is "to prevent death, illness and injury related to workplace chemicals through the communication of relevant information".[83] After its introduction in 1988, WHMIS provided for important reductions in occupational exposure levels, and improved workplace safety programs.[84]

Under the provisions of WHMIS, workers have access to information on hazardous materials through the labelling of containers of "controlled products", through material safety data sheets, and through worker education and training programs.

The provisions of WHMIS are outlined in Part II, Controlled Products, of the federal *Hazardous Products Act* and in the Controlled Product Regulations under the Act. In addition to the federal legislation, each province and territory has established enabling legislation to incorporate WHMIS into provincial occupational health and safety legislation and regulations.

The key element in the WHMIS regulations is the concept of the "controlled product." "Controlled products" are either products containing a single hazardous substance or a mixture containing a hazardous substance. All hazardous, or "controlled products" as they are called in the legislation, must be labelled with a hazard symbol and a risk phrase which describes the main hazard of the product.

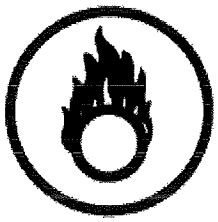
There is no list of controlled products, but any product meeting one of the 8 criteria must be labelled under WHMIS.[85] The 8 different classes of controlled products are:

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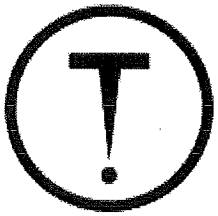
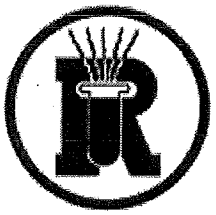
[82] Lowell Center for Sustainable Production, "Presumption of Safety: Limits of Federal Policies on Toxic Substances in Consumer Products", February 2008, p.11.
[83] Health Canada, "Environmental and Workplace Health, Application – Workplace Hazardous Materials Information System".
[84] Abbey Klugerman, National Office of WHMIS, Health Canada, "An Update on GHS Implementation Planning in WHMIS", April 8, 2008.
[85] Part IV, Controlled Products Regulations.

1) Class A: compressed gases, which may explode if heated or dropped;
2) Class B: Flammable and combustible materials, which include gases, liquids, aerosols or solids;
3) Class C: Oxidizing materials;
4) Class D: Comprises three divisions,
    1. materials with immediate and serious toxic effects;
    2. materials with other toxic effects (including chronic effects);[86] and,
    3. biohazardous infectious materials;
5) Class E: Corrosive materials;
6) Class F: Dangerously reactive materials, including those that can emit toxic gases when exposed to water.

The WHMIS symbols for the 8 classes of controlled products are shown below as they would appear on a label, with the appropriate risk phrase in the third column.[87] The label must contain at least one hazard symbol indicating the class of controlled product. In the case of a product that meets two of the criteria -- flammable and toxic, it would be identified with two hazard symbols.

| | | |
|---|---|---|
|  | Class A - Compressed Gas | Contents under high pressure. Cylinder may explode or burst when heated, dropped or damaged. |
|  | Class B - Flammable and Combustible Material | May catch fire when exposed to heat, spark or flame. May burst into flames. |
|  | Class C - Oxidizing Material | May cause fire or explosion when in contact with wood, fuels or other combustible material. |

[86] For each division of Class C, there is a unique label. Carcinogens are Class C, Division 2.
[87] Canadian Centre for Occupational Health and Safety, WHMIS Labelling Requirements. Accessible at www.ccohs.ca/oshanswers/legisl/msds_lab.html

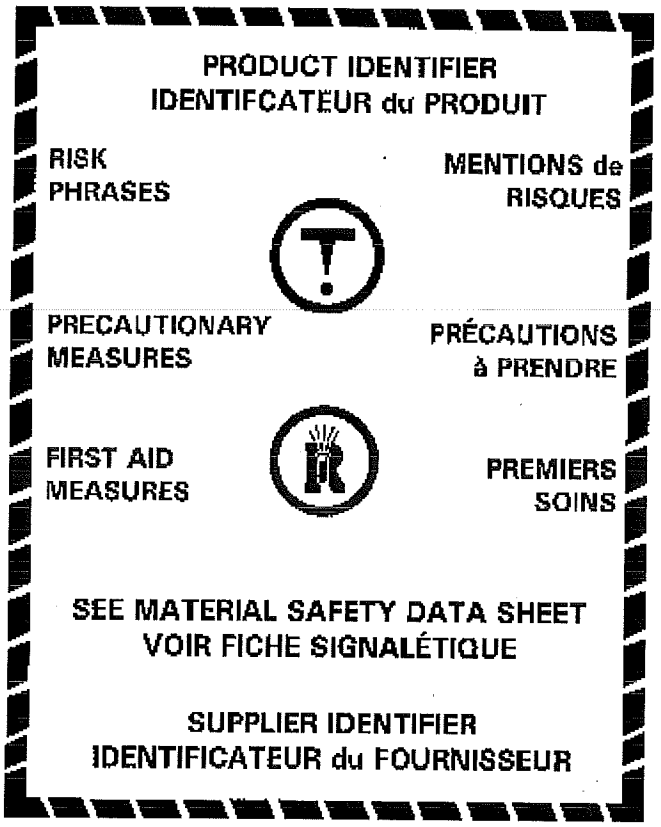
| | | |
|---|---|---|
|  | Class D, Division 1 Poisonous and Infectious Material: Immediate and serious toxic effects | Poisonous substance. A single exposure may be fatal or cause serious or permanent damage to health. |
|  | Class D, Division 2 Poisonous and Infectious Material: Other toxic effects | Poisonous substance. May cause irritation. Repeated exposure may cause cancer, birth defects, or other permanent damage. |
|  | Class D, Division 3 Poisonous and Infectious Material: Biohazardous infectious materials | May cause disease or serious illness. Drastic exposures may result in death. |
|  | Class E - Corrosive Material | Can cause burns to eyes, skin or respiratory system. |
|  | Class F - Dangerously Reactive Material | May react violently causing explosion, fire or release of toxic gases, when exposed to light, heat, vibration or extreme temperatures. |

The complete list of information that must be on WHMIS labels includes:

- Product identification;
- The hazard symbol, based on the eight classes of controlled products;
- Risk phrases associated with the hazard class;
- Precautionary statements relating to product use (such as personal protective equipment);
- First aid measures;
- Supplier identification; and,

- Reference to the availability of a MSDS.[88]

In addition, the label information must be within a hatched border in a colour that contrasts with the background.[89] The size of the label is not prescribed as it is for consumer products.




WHMIS is based on the full disclosure of hazards, including chronic hazards, such as carcinogenicity, determined by the hazardous properties of the chemical. As a result, workers have the right to know both the immediate and chronic effects of any products they may be exposed to in the workplace through standardized information labels and material safety data sheets.

The WHMIS label will be revised to comply with the GHS requirements, which will result in additional disclosure of ingredients on WHMIS labels. Ongoing discussions will determine whether all ingredients or only the main contributing ingredients responsible for the hazard classification will be listed on the label.

[88] Section 19(1), Controlled Product Regulations.
[89] Section 20(1), Controlled Product Regulations. Schedule III of the Regulations illustrates how the label should appear.

Material Safety Data Sheets

The label and the Material Safety Data Sheet (MSDS) provide the right-to-know information that is basic to the WHMIS system. The label, however, plays a secondary role in the information reporting system. The main role is played by the MSDS, which must include comprehensive information on the hazards associated with use of the controlled product. Under the *Hazardous Products Act*, no controlled product may be sold for use in a workplace in Canada unless the supplier provides to the seller an MSDS.

To be WHMIS-compliant, an MSDS must have been issued within the last three years and is required to contain 54 items of information. The information that must be reported includes:

- the WHMIS class of the product;
- a listing of hazardous ingredients and their percentage concentration in the product; and,
- the toxicological properties of any hazardous ingredients, including acute health effects as well as chronic effects of long-term exposure.

Known human health effects of both acute and chronic exposure must be reported, and there are specific categories of potential health effects that must be addressed. They are: sensitization, reproductive toxicity, mutagenicity, irritancy, carcinogenicity, teratogenicity, and synergistic effects.

In some cases, such as carcinogenicity, the Controlled Product Regulations define how the category should be reported. For example, if an ingredient in a product is listed as a Group 1 or 2 carcinogen by the International Agency for Research on Cancer, that information must be reported on the MSDS.

The Controlled Product Regulations include an Ingredient Disclosure List. This List includes more than 1,700 ingredients that must be disclosed in Material Safety Data Sheets, including the threshold for reporting each one. For most ingredients on the list, the threshold for reporting is 1% (percentage by weight in a mixture or product); for carcinogens and certain other toxic substances it is 0.1%. However, the Ingredient Disclosure List has not been updated since WHMIS was adopted in 1988.

7. California's *Safe Drinking Water and Toxic Enforcement Act*

California's *Safe Drinking Water and Toxic Enforcement Act*, better known as Proposition 65, is a unique law for alerting consumers to the presence of carcinogens or reproductive toxins in products as well as to other potential exposures from air, water, drinking water or food. Warnings may be given in a number of ways – labelling a consumer product, posting signs at a workplace or a facility, or by publishing notices in a newspaper.

Proposition 65 has been in place for more than 20 years now. It is administered by the Office of Environmental Health Hazard Assessment (OEHHA), part of the California Environmental Protection Agency. Stemming from a voter initiative in 1986 and the growing concerns of citizens about toxic chemicals, Proposition 65 requires the Governor of California to publish a list of chemicals known to cause cancer, birth defects or other reproductive hazards.[90] The list must be published at least once a year. Additions are determined by two committees of the OEHHA's Science Advisory Board.

In addition to the list, the law has two other simple requirements:

> 1) it bans the discharge of chemicals on the Governor's list into any source of drinking water; and,
>
> 2) it requires businesses operating in California to provide clear and reasonable warnings prior to exposing individuals to chemicals that cause cancer or reproductive harm (the listed chemicals).[91]

Title 22 of the California Code of Regulations, Article 6, Clear and Reasonable Warnings, sets out the way in which warning messages must be communicated. For consumer products containing a listed chemical, the label or sign displayed at the retail outlet must carry a warning such as:

| |
|---|
| WARNING: This product contains a chemical known to the State of California to cause cancer, |
| *or,* |
| WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. |

However, warnings are not required if a listed chemical is below an established regulatory threshold. These limits are known as "safe harbor" numbers. Companies can still use listed chemicals in products without having to provide warnings if they can demonstrate that exposure to the amount of chemical "poses no significant risk". In order to do this, the companies must prove that the risk of cancer over a lifetime of exposure is less than 1 in 100,000 for the particular listed substance being used. More than 250 of California's listed chemicals now have safe harbor numbers. This is why very small amounts of some carcinogenic chemicals may still be present in products, such as cosmetics, without warnings.

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[90] Office of Environmental Health Hazard Assessment, "Proposition 65 in Plain Language". Accessible at www.oehha.ca.gov/prop65.html

[91] Rechtschaffen, Clifford and Patrick Williams (2005) The Continued Success of Proposition 65 in Reducing Toxic Exposures, Environmental Law Reporter, Vol. 35: 10850-10856.

One of the notable features of Proposition 65 is its enforcement provisions. The law is primarily enforced by the California Attorney General's Office. However, it can also be enforced by different agencies such as district or city attorneys where the population of the city is over 700,000, and individuals acting in the public interest, consumer advocacy groups and law firms.

Fines up to $2,500 a day for failing to provide warnings can be levied by the Courts. The fines are distributed between:

- the Hazardous Substances Account General Fund (50 per cent),
- the office of the district attorney, Attorney General, or person bringing the action (25 per cent), and,
- the local health officer to pay for enforcement activities (25 per cent).

The enforcement of this law has been the subject of considerable criticism and public discussion. Because the enforcement is carried out by the Attorney General or citizens rather than an agency such as the California Department of Health, there is no systematic application of the law, and it is enforced through lawsuits. Lawsuits may be brought against companies alleged to be violating the law, and several have led to protracted court battles and accusations that lawyers who specialize in Proposition 65 actions are profiteering.

In the magazine, Trends, published by the American Bar Association, a lawyer critical of the law, wrote, "Today even supporters admit that true benefits are few and abuses many".[92] She argues that most enforcement actions involve "unlikely" or ubiquitous exposures, and that the law does not differentiate between chemicals that are present as trace impurities and those that are intentionally used. She suggests that "most defendants settle even meritless claims", rather than face the prospect of years in court. The author also says that there is some evidence that Californians are reaching "warning saturation", and may ignore even the necessary and desirable warnings.

In answer to her criticisms, another lawyer found that the law's impact over the past twenty years had been "far-reaching and significant in scientific, health policy and legal terms".[93] He offered an analysis of the published data from the OEHHA, the California Attorney General's records and reporting in Prop 65 News, noting that Proposition 65 regulated 767 chemicals, including 494 as carcinogens, 269 as reproductive toxins, and 4 as both. In addition, standards that establish risk levels or allowable daily levels have also been set for many substances. These constitute "more chemical health risk standards for carcinogens and reproductive toxicants than virtually any other law in the world".

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[92] Brophy, Carol Rene, "Proposition 65 at 20 years", Trends 38.3 (Jan/Feb 2007), p.4 (2).
[93] Carrick, Roger Lane, "California's Proposition 65 – a blunt but powerful tool", Trends, May-June 2007, p.4 (1).

The analysis also showed that more than 2,561 Proposition 65-related lawsuits had been filed. There have been only 8 trials, which resulted in 5 defense verdicts and 3 plaintiff wins. At least 970 have been settled, most with citizen enforcers. The author estimated that more than $1 billion had been spent on product reformulations, product changes, relabelling, or warning campaigns to achieve Proposition 65 compliance.

The law has also been criticized by non-governmental organizations because warnings do not have to identify the specific chemical that gives rise to a warning. For example, a landlord could post a sign in an apartment that gives tenants "clear and reasonable" warning, but this blanket warning can cover exposures from pesticide spraying to lead in the paint or asbestos in insulation. It does not provide enough information for tenants to take precautions or avoid exposures. Similarly, products can carry general warnings that do not identify the carcinogenic ingredient in the product. This has led to consumer confusion.[94]

Despite some problems with the law, however, it remains popular in California, particularly with health and environmental activists, and is generally viewed as almost impossible to overturn.[95] To change the law would require another voter initiative, and even critics of the law recognize that Californians "take pride in leading the world in environmental protection" and would not likely agree to repeal or modify Proposition 65.[96]

8. Lessons Learned from Hazard Labelling

- Labelling of hazardous products can reduce the number of injuries and deaths that result from their use.

Labelling of hazardous products, both consumer and workplace products, has been legislated in Canada in order to reduce the number of injuries and deaths that can result from exposures to them. The identification and labelling of chronic hazards, including carcinogens, is a well-accepted practice for products in the workplace in Canada and for consumer products in the European Union. If adopted in Canada, the GHS has the potential to further reduce disease and death.

Labelling on tobacco packaging was also introduced to reduce the number of tobacco-related deaths and disease, and reduce the substantial economic costs of tobacco use.

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[94] Personal communication with Sharon Muraoka, California Director of Policy and Government Relations, American Cancer Society, April 21, 2008.
[95] Personal Communication with Gretchen Lee, Breast Cancer Fund, California.
[96] Brophy, Carol Rene, "Proposition 65 at 20 years", Trends 38.3 (Jan/Feb 2007): p4 (2).

- Pictorial warnings are more effective in communicating health risks than text messages.

Canada was one of the first countries to introduce graphic cigarette warnings, and has now become a model for other countries. The vivid graphic warnings are more noticeable, more likely to be discussed than text warnings, and more associated with smoking cessation. They are also better for reaching children and people with low literacy skills. Concerns were raised before their introduction that the vivid graphics would cause unnecessary emotional distress, or that smokers would avoid or react negatively to them. However, research shows that smokers regard the government-mandated cigarette warnings as a credible source of health information.[97]

- Hazard labelling can influence behaviour and discourage use of products damaging to health.

Studies of smokers in Ontario showed that smokers who recalled warning modified their smoking habits – either by stopping, trying to stop or reducing their smoking. Similarly in California, information has enabled people to avoid exposures to carcinogens and reproductive toxins which have not been federally regulated. The use of alcoholic beverages during pregnancy is one example of awareness that has increased as a result of Proposition 65 warnings.[98]

Another example is mercury in fish. Highly visible warnings about the possible dangers of fish consumption during pregnancy have also resulted from Proposition 65 warnings. Although the Food and Drug Administration issued advisories telling women not to eat certain fish because of the high mercury levels, the information was not provided to pregnant women at the point of sale – in grocery stores or restaurants.[99] After the California Attorney General initiated lawsuits against major grocery chains for failure to warn about mercury exposure in fish, grocery stores in California posted signs near fresh and frozen seafood sections warning customers that certain types of fish contain mercury, a listed reproductive toxin.

- The public strongly supports hazard warnings.

Focus groups done to review the effectiveness of tobacco labelling in Canada show public support for hazard warnings on tobacco products, even among smokers.

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[97] Hammond, David, Geoffrey T Fong, Paul W McDonald, Stephen Brown, Roy Cameron (2004) Graphic Canadian Cigarette Warning Labels and Adverse Outcomes: Evidence from Canadian Smokers, American Journal of Public Health. Vol. 97: 8, p. 1442-1445.

[98] Office of Environmental Health Hazard Assessment, "Proposition 65 in Plain Language", February 2003.

[99] Rechtschaffen, Clifford and Patrick Williams (2005) The Continued Success of Proposition 65 in Reducing Toxic Exposures, Environmental Law Reporter, Vol. 35: 10850-10856.

- Labels that warn people of the hazardous properties of a product lose their effectiveness over time and need to be refreshed.

Health Canada has proposed that warnings on tobacco packaging be changed every two years so that people do not become accustomed to the messages and begin to ignore them. Research on U.S. tobacco labelling shows that messages that have been in place over several years appear to have lost their effectiveness.

- Labelling promotes the reduction or elimination of toxic substances from products.

One of the most important effects of Proposition 65 has been the reduction or elimination of carcinogens or reproductive toxins from consumer products by manufacturers or producers wishing to avoid warning labels.[100] For example, after its introduction, makers of fine china cut the amount of lead leaching from their glazes by half.[101] Major plumbing supply manufacturers agreed to produce brass faucets that were virtually lead-free, and a national brand of car wax and carburetor cleaner was reformulated to eliminate carcinogens.[102]

More recently, a number of cases have been settled against companies using lead in the manufacture of polyvinyl chloride products, such as hand tools and exercise weights, plastic raincoats and children's bicycle handlebars. More than 300 companies have been involved, and in the 75% of the cases that have been settled, generally products have been reformulated to reduce the lead content in the product significantly. In a few cases, companies agreed to give warnings.[103] Dandruff shampoos have also been reformulated to eliminate coal tar as a result of actions filed by the California Attorney General and a private enforcer.

- Labels or warnings should be clear about identifying the toxic substance or the carcinogen for which the warning is issued.

There has been criticism in California of the generality of the warnings that indicate a product contains a substance that may cause cancer, where the particular substance is not identified. This has led to confusion and scepticism about the warnings.

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[100] Randolph Smith, Wall Street Journal, "California Spurs Reformulated Products", Thursday, November 1, 1990. See also Note 102.

[101] Clifford Rechtschaffen, "How to Reduce Lead Exposures With One Simple Statute: The Experience of Proposition 65", Environmental Law Reports 29, 10581-10591, documents the significant reductions of lead in calcium supplements, brass kitchen faucets, water well pumps, ceramics, hair dyes, wine capsules and factory emissions in response to Proposition 65.

[102] Mary Graham, "Regulation by Shaming", The Atlantic Monthly, April 2000, p.36

[103] Reschtschaffen, Clifford & Patrick Williams (2005) The Continued Success of Proposition 65 in Reducing Toxic Exposures, Environmental Law Reporter 35: 10850-10856.

Similarly, emissions statements on tobacco products were found in focus groups to be confusing. Research into statements of toxic emissions on tobacco packages show that descriptive information on the health impacts of harmful ingredients are more important than quantities in terms of consumer understanding. Those involved in the surveys indicated that they would prefer a clearer statement about the presence of a particular substance and its health effects.

## IV. Preferred Product Labelling Systems

Preferred product labelling is another way of influencing people's choices, and encouraging manufacturers to improve their products.

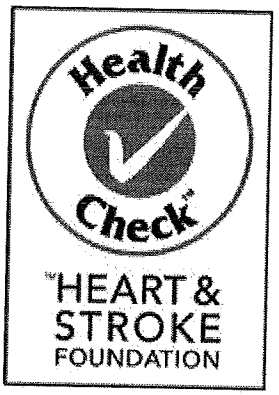
As the interest in health and environment grows, governments and independent third-party groups have established certification programs to guide consumers to preferable products. In contrast to warnings, labels display logos that indicate the product has met certain health or environmental criteria.

The preferred product labelling systems discussed in this section are, first, the Health Check program of the Heart & Stroke Foundation, which helps consumers identify foods based on health criteria. The second type is the ecologo, which identifies products with a lower environmental impact. Two examples are the Environmental Choice program in Canada, and the European Union's Ecologo.

### 9. Health Check

Health Check is a 10 year old labelling program administered by the Canadian Heart & Stroke Foundation. It is a recognized model of preferred product labelling, used not only in Canada but in the United States, Australia and New Zealand. Introduced in Canada in 1999 before nutrition labelling became mandatory, it is the only non-governmental food information program in the country.

Approved products display a logo with a check mark inside a circle anywhere on the package, and a short statement on the side or back panel that explains why the product is part of a healthy diet.[104] The logo must be presented as it is shown, and the height should not be less than one inch. The placement on the package is up to the manufacturer.[105]




[104] Heart & Stroke Foundation, Packaging Information. Accessible at www.healthcheck.org
[105] Personal Communication with Carol Dombrow, Health Check, August 28, 2008.

The purpose of the Health Check program is to help people identify foods that meet specific nutrition criteria.[106] Nutrition criteria are based on Canada's Food Guide and Health Canada's health claims. The program is operated on a not-for-profit cost-recovery basis from fees paid by companies whose products are evaluated and approved under the Health Check program. In 2007, there were 1500 products bearing the Health Check logo on the market out of about 20,000 products available in the stores.

The program is intended to promote healthy eating and reduce incidence of all chronic disease, not just heart and stroke. The Heart &Stroke Foundation's strategy is to try to create an understanding of the concept, build awareness of the logo over several years, and change the behaviour of both consumers and food manufacturers.

Surveys generally indicate that people are in favour of food information programs. In an early survey conducted for the Heart and Stroke Foundation, 88% of people interviewed found the Health Check logo was useful. [107] The credibility was generally improved by the endorsement of the Heart & Stroke Foundation, which is a recognized health association. However, the credibility ratings dropped when participants learned that food manufacturers paid for the endorsement.[108]

No evaluation of the impact of the Health Check program has been carried out in Canada, although the Heart & Stroke Foundation plans to do this in the future.[109] Currently, the only link documented by the Heart & Stroke Foundation is that for 73% of Canadians recently surveyed the awareness of Health Check products was linked with sales.[110]

Studies in other countries, however, have shown that the Health Check program has led to an improvement in food products. Australia's popular Pick the Tick program, on which Health Check was modelled, was also adopted in New Zealand. A New Zealand study of the impact of Pick the Tick on food companies found that over a one year period, from July 1998 to June 1999, companies had reduced the amount of salt in their food products by 33 tonnes through the reformulation of breads, breakfast cereals and margarines.[111]

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[106] Smith, Shannon C., Alison Stephen, Carol Dombrow and Doug MacQuarrie (2002) Food Information Programs: A Review of the Literature, Canadian Journal of Dietetic Practice and Research, 63 (2): 55-60.
[107] Ibid. p. 57.
[108] Op. cit. p. 57.
[109] Personal Communication with Terry Dean, Director, Health Check Program, March 6, 2008.
[110] Personal communication with Terry Dean, unpublished survey done for Health Check.
[111] Young, Leanne & Boyd Swinburn (2002) Impact of the Pick the Tick food information programme on the salt content of food in New Zealand, Health Promotion International, 17(1): 13-19.

Similarly, an Australian study found that one breakfast cereal company reduced salt levels in their products to meet Pick the Tick targets, and concluded that the effects of Pick the Tick extended to products beyond those in the program.[112] In Canada, the Health Check program has also influenced companies, such as Campbell's Soup, to reformulate their products and reduce salt levels.[113]

A 2002 article written by the Canadian Heart & Stroke Foundation and Cantox, reviewed the published literature and examined the criticisms of food information programs.

In response to the criticism that food information programs oversimplify the concept of healthy eating, the review found that the majority of people understood food information program labels and interpreted the logos correctly. For example, people did not assume that labelled foods were "good" and unlabelled foods "bad". Also, people generally did not believe that these foods could be eaten in unlimited quantities.

However, for some other criticisms of food information programs, there was not enough research to draw conclusions about their validity. The other criticisms were:

- there is not enough scientific evidence to support the nutritional criteria;
- eligible foods are not part of the program because of voluntary participation;
- licensing fees prevent small companies from participating;
- accepting money from food companies compromises the credibility of the administering organization; and,
- the influence of the program is limited to food purchases and does not have on impact on preparation or intake.[114]

Concerns similar to these have been raised in Canada with respect to Health Check. Government changes to the nutritional criteria, for example, resulted in problems for the Health Check program. When Health Canada revised Canada's Food Guide in January 2008, many foods displaying the Health Check logo no longer met the nutrition criteria. Health Check has given participating companies two years to make changes in their products to meet the more rigorous criteria.

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[112] Williams, Peter, Anne McMahon & Rebecca Boustead (2003) A case study of sodium reduction in breakfast cereals and the impact of the Pick the Tick food information program in Australia, Health Promotion International, 18 (1): 51-56.

[113] Heart & Stroke Foundation, Health Check: Frequently Asked Questions. Accessible at www.healthcheck.org

[114] Op cit.

[114] Smith, Shannon C., Alison Stephen, Carol Dombrow and Doug MacQuarrie (2002) Food Information Programs: A Review of the Literature, Canadian Journal of Dietetic Practice and Research, 63 (2): p. 57.

In January 2008, the nationally televised CBC show, Marketplace, criticized the Health Check program because many foods bearing the Health Check logo contained high levels of sugar.[115] Health Check was unfavourably compared with two other ratings systems in the United States. Because Canada's Food Guide did not set nutritional criteria for sugar or recommend limiting sugar intake until recently, the Health Check program also did not have criteria for sugar until the Food Guide was revised.[116]

Similarly, an article in the Canadian Medical Association Journal discussed high levels of sugar and salt in approved Health Check products. Follow-up letters to the Journal criticized the program for weak nutrition criteria and for endorsing products that are "only relatively nutritious among non-nutritious products in the same category".[117]

## 10. Ecolabelling

Ecolabels create an incentive for manufacturers to develop "greener" products, and help direct consumers and professional purchasers towards more environmentally sound purchasing. Ecolabels generally designate products that consume less energy, pollute less or create less waste than other products in the same use category.[118]

They are often awarded by impartial third-party groups that set criteria for products and services that must be met before the logo is approved for use. For manufacturers and retailers, ecologos are intended to give added value to a product and demonstrate the company's commitment to the environment.

### 10.1 Canada's Environmental Choice

The Environmental Choice Program in Canada was established in 1988 by Environment Canada, but transferred in 1995 to an independent certifying body, TerraChoice Environmental Services, in Ottawa.[119] The purpose of the Environmental Choice program is to use market forces for behavioural change and environmental benefits.

The Environmental Choice program assesses products against established criteria, verifies company claims and approves the use of the Environmental Choice logo so that companies, which have developed more environmentally-

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[115] CBC Marketplace, "Hyping Health", January 23, 2008. Accessible at www.cbc.ca/marketplace/hyping_health/

[116] Heart & Stroke Foundation, Health Check: Frequently Asked Questions.

[117] Bill Jeffery, National Coordinator, Centre for Science in the Public Interest, Letter to the Canadian Medical Association Journal, February 26, 2008.

[118] Information on the eco-labels of many countries is accessible through the website of the Global Ecolabelling Network at www.gen.gr.jp/

[119] Environmental Choice Program Certification Overview. Accessible at: www.ecologo.org/

friendly products, can turn their investments into a market advantage. The criteria for categories of products are established by TerraChoice through a Panel Review process. The Panel includes representatives from industry, government, universities, consumer and environmental groups.

The Environmental Choice logo is represented by three doves intertwined to outline a maple leaf. Approved products display the logo and a criteria statement which clarifies why the product was certified. There is no standard size for the ecologo but the guidelines require that it be in "good proportion to the rest of the material on the collateral or label" and not overwhelm it, that it be legible in all sizes and that it be surrounded by a buffer zone. No embellishments, alterations or additions are to be used.[120]



Like other certification systems, TerraChoice requires manufacturers to submit their products for certification and pay a fee for the service. In addition, companies also pay annual licence fees based on the sales of the product. In some sectors, a majority of companies will apply for certification in order to qualify their products and benefit from strict institutional procurement policies. More than 7,000 products are part of the Environmental Choice program. However, the use of the Environmental Choice logo for products marketed to consumers has been considerably less than its use by governments and institutions.

Criteria for many Environmental Choice products include prohibitions on the use of certain toxic substances. One important criterion is that approved products contain *no* IARC-listed carcinogens. For example, the criteria for hard surface cleaners require that they "not be formulated or manufactured with any chemicals that are included in the IARC lists for proven, probable, or possible carcinogens".[121]

An example of a criteria statement is:

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[120] TerraChoice, "Guide to Proper Use of the Ecologo".
[121] Environmental Choice Program, Certification Criteria Document CCD-146, Product: Hard Surface Cleaners, Prohibited and restricted components, Section 6(g).

Cleaning Product with Low Potential for Environmental Illness and Endocrine Disruption

There is little research on the impact of ecologos on purchasing behaviour. However, a comprehensive survey of the attitudes and practices of North American buyers towards environmental purchasing was done in 2006 and 2007 by TerraChoice in collaboration with other groups.[122] The survey, Ecomarkets 2007, supported by the North American Commission for Environmental Cooperation, found that there is considerable interest among the public, corporations and institutions in the environment and sustainability, and found that the large market for environmental products is growing.

The survey also showed:

- 70% of respondents said that their organization had instituted either a formal or informal environmental policy – a 6% increase from 2006;
- in Canada 76% of government departments or agencies have green purchasing policies;
- for approximately 60% of organizations in Canada and the United States, up to 40% of annual spending is actually influenced by environmental factors;
- a strong majority of respondents would *not* pay a premium for environmentally preferred products;
- of all the environmental issues, those related to human health and toxics were ranked as the most important by procurement professionals; and,
- the most important factors necessary to advance green purchasing are better information, better selection and price.

In 2008, TerraChoice plans to focus on raising consumer awareness of the Environmental Choice logo. Although they have not studied the consumer market for ecolabelled products in Canada, TerraChoice reports that Environmental Choice-approved products are now being offered by major retailers such as Loblaws and Home Depot.

In the United States, Green Seal is the most recognized non-profit third-party certification and ecolabelling program. Its program and its goals are similar to Environmental Choice, and both are cooperating to enable companies to receive certification through a single process.

With the current interest in environmental issues, many companies are using environmental claims to promote their products. TerraChoice did a study of such claims, "The Six Sins of Greenwashing", which identified trends in

[122] TerraChoice Environmental Marketing, Ecomarkets 2007: Summary Report.

exaggerated or false advertising of products. In recognition of this problem, Canada's Competition Bureau has just introduced voluntary guidelines for companies to protect consumers from false advertising. However, some critics believe that environmental claims on labels should be subject to mandated government standards similar to those in place for food labels.[123]

## 10.2 European Union Ecolabel

Many European countries, such as Germany, Sweden and the Nordic countries, have their own well-established ecolabels. Germany has the Blue Angel label, the Nordic countries' the Swan and the Swedish Society for Nature Conservation has the Good Environmental Choice label. However, the European Union's ecolabel – the Flower – is the one that is used throughout Europe, and is the one that will be discussed here.

Although it is a voluntary program, the EU ecolabel was established by the Ecolabel Regulation (EC) 1980/2000, which originally came into force in 1992. The Regulation sets the criteria for the use of the Ecolabel flower logo on products and in advertising. In 2000, the regulation was revised and the ecolabel was extended to cover services as well as products. It currently covers 24 product groups, including tourist accommodation and campsites.[124] Its purpose is to "provide guidance to consumers on products with a potential for reducing environmental impact..." [125]

The logo, displayed on approved products, is a flower whose petals are formed by the star symbol used by the EU.



[123] The Globe and Mail, "New green labelling rules too lax, critics say", June 26, 2008.
[124] European Commission, Report on the Public Consultation: Revision of the EU Ecolabel Regulation (EC) No 1980/2000.
[125] Regulation (EC) no 1980/2000 of the European Parliament and of the Council of 17 July 20000 on a revised Community eco-label award scheme.

It is administered by the European Eco-Labelling Board (EUEB), supported by the European Commission. The Board includes representatives from member states, industry, unions, environmental groups and consumer organizations. The EUEB sets and reviews ecolabel criteria for product groups, working with the Commission. The EUEB is also responsible for the assessment and verification of products.

The Ecolabel is directed at consumers, and identifies approved products that have a reduced impact on the environment compared to other products marketed for the same purposes. Although the focus of most ecolabels is primarily to reduce environmental impacts rather than to improve health, labelling criteria usually include limits on hazardous substances used in the product.

To use the Ecolabel, a company submits its application for product approval to the member state in which the product originates.[126] If the product is approved, companies pay an initial fee and an annual licence fee based on the value of sales of the approved product. Criteria are valid for a period of 3 years.

A review of the 2000 EU Ecolabel Regulation is currently underway. The European Commission is planning major changes to complement the EU's broader action plans on sustainable industrial and consumption policies.

As part of the review process, an evaluation of the Ecolabel was conducted in 2005. It found that "in general...systematic assessments of the market impact of ecolabelled products are not available".[127]

However, some of the benefits of the most successful ecolabels such as the Swan and the Good Environmental Choice have been calculated. It has been estimated, for example, that the Good Environmental Choice and Swan labels have considerably reduced chlorinated compounds and other pollutants from the Swedish forest industry through the purchase of ecolabelled paper products.[128] They have also been credited with reducing the volume and toxicity of household chemicals, particularly laundry detergents.

The Ecolabel review process included a literature survey, interviews and an online public consultation. This review identified positive aspects of the Ecolabel, such as:

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[126] Article 7.3.

[127] EVER: Evaluation of EMAS and Eco-Label for their Revision, "Report 2: Research Findings", December 26, 2005 (citing Rubik and Frankel 2005).

[128] Dietz, Thomas and Paul C. Stern, Editors, New Tools for Environmental Protection: Education, Information and Voluntary Measures, National Academy Press, Washington, D.C., 2002, p. 87-88. Accessible at www.books.nap.edu

- The Ecolabel had contributed to setting targets for better environmental product performance;
- It has influenced the demand for suppliers to meet high environmental standards;
- Participating companies use the Ecolabel in their marketing campaigns; and,
- Neither users nor non-users of the Ecolabel want to see it abolished.[129]

On the other hand, the survey also identified problems with the Ecologo:

- There was still low awareness and uneven geographic take-up of the label;
- There were insufficient product group categories;
- It suffered from cumbersome procedures and organizational structures;
- The fees and cost of getting the label were perceived as barriers; and,
- There was a lack of perceived public purchasing benefits.

The public consultation found that there was continuing strong support for labelling products that are less environmentally harmful, and that the majority supported an independent 'third' party verification of the Ecolabel.

As with Health Check, the Ecolabel has also been criticized by groups concerned about the criteria used to determine which products are approved. The European Environmental Bureau (EEB), Europe's largest federation of environment and citizens' groups, opposes the most recent proposals of the European Commission to approve specific product groups.[130]

The European Commission's criteria for 5 product groups, including textiles, bed mattresses and furniture, would allow flame retardants and pesticides in textiles and mattresses, and polyvinyl chloride in wooden furniture. The EEB is concerned that the European Commission is weakening the criteria for the Ecolabel by accepting products that meet, but do not exceed, current regulations.

11. Single Issue Preferred Product Labelling

In addition to ecologos, there are many other single-issue preferred product labels that direct consumers to products with higher health or environmental standards.

One example is the international Forest Stewardship Council, which has been in place since 1993 and is designed to promote sustainable forestry. Forest

[129] European Commission, Report on the Public Consultation: Revision of the EU Ecolabel Regulation (EC) No 1980/2000, p.3.
[130] Media Release, "European Ecolabel in Danger of Weakening", European Environmental Bureau, Brussels, April 22, 2008.

products bearing its logo (a tree that is also a check mark) or its name, have been approved by the Council and certify that they have been created in "an environmentally responsible, socially beneficial and economically viable way".[131] Companies like Kinko's use this certification as part of their environmental marketing.

Many of the newest labelling systems are designed to reduce carbon emissions to the atmosphere. Japan, for example, has announced its plans to introduce carbon footprint labelling for food and consumer products.[132]Another example is the United Kingdom's Low Carbon Vehicle Partnership, under which the auto industry will voluntarily introduce a consumer-friendly fuel economy label starting in 2006.

Although these labelling schemes are also of interest, it is beyond the reach of this discussion to describe all of them. However, the most common ones are briefly outlined in Appendix I.

12. Lessons Learned from Preferred Product Labelling

- Consumers and professional buyers support preferred product labelling as a way of identifying products with a better environmental and health profile.

Although there is little documentation to show the impact of preferred product labelling on public health or the environment, surveys show that people support these programs.[133] Surveys done for Health Check and by TerraChoice show that there is public support and interest in preferred product labelling. Similarly, the European Union's review of The Flower found that more than 60 per cent of respondents supported ecolabelling.

- The credibility of preferred product labelling depends on a valid third-party certification process and publicly available criteria.

Companies have used environmental and health claims, which are false or misleading, to promote products. This can mislead well-intentioned consumers and lead to cynicism. It can also eliminate market-based financial incentives for product innovation.[134] Health Check logos and ecolabels, certified by qualified and independent third-parties, on the other hand, serve to direct consumers to products that do meet publicly available criteria.

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[131] Forestry Stewardship Council, "What is FSC-US". Accessible at www.fscus.org/faqs/what_is_fsc.php

[132] The Guardian, "Japan to launch carbon footprint labelling scheme", August 20, 2008.

[133] Smith, Shannon C. et al (2002) Food Information Programs: A Review of the Literature, Canadian Journal of Dietetic Practice and Research, 63:2, p.59.

[134] TerraChoice Environmental Marketing, "The Six Sins of Greenwashing: A Study of environmental Claims in North American Consumer Markets", November 2007.

- Preferred product labelling can help to raise health and environmental standards.

As a result of companies wanting to cooperate with the Health Check program, food products have been reformulated in Australia, New Zealand and Canada to reduce the levels of salt. Significant reductions in the salt content of popular packaged foods can have population-wide effects on blood pressure levels, and lead to a lower incidence of stroke and heart disease.[135]

Ecolabel programs also establish strict environmental and health criteria for products. TerraChoice has found that many companies develop products to meet strict environmental criteria and become eligible for environmentally preferred purchasing programs.

In Europe, ecolabels have resulted in significant reductions in pollution related to household products. In Sweden in 1996, 60% of the chemical ingredients used in soap, shampoo, detergents and cleaners had been replaced with less harmful substances.[136] In 1997, ecolabelled detergents had a market share of more than 90% in Sweden. In Germany, the Blue Angel label was credited with reducing the amount of solvents emitted from pain and varnishes into the environment by 40,000 tonnes.[137]

- Preferred product labelling is more credible when it is based on criteria that exceed government regulation or guidelines.

There has been criticism of both the Health Check criteria and recent proposals by the European Commission to use government-approved standards or guidelines as the basis of preferred product labelling. In this case, companies that meet government standards or guidelines may have their products certified although they are not necessarily the highest performing products. This approach makes it difficult for consumers to identify the products with the best health and environmental profiles.

- Voluntary programs may leave out smaller companies and other companies that may have superior products but do not choose to apply for certification.

If companies do not apply for certification of their products, consumers may not be directed to superior products offered by these companies. Many healthier products in the same food groups may not have a Health Check logo because the companies have not elected to apply for the approval. Similarly, many

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[135] Stamler, R. (1991) Implications of the Intersalt Study, Hypertension 17 (S1): 16-20.
[136] Dietz, Thomas and Paul C. Stern, Editors, New Tools for Environmental Protection: Education, Information and Voluntary Measures, National Academy Press, Washington, D.C., 2002, p. 87-88. Accessible at www.books.nap.edu
[137] Ibid.

products with environmental benefits may be overlooked by consumers because companies have not applied for logos.

- The public is more sceptical about preferred product labels when they know companies are paying to display the logo.

Although the Heart & Stroke Foundation accepts money from food companies only for the costs of running the Health Check program, its own research found that consumers find the endorsements less credible when they learn that food companies pay a fee to participate in the program.

## V. Conclusion

Labelling provides multiple opportunities for informing people at the point of purchase about the products they are buying. Labels can simply state the contents of the product; they can warn people of the presence of particular carcinogens or other toxic substances in products; or, they can indicate that a product is free of chemicals of concern.

The public generally support all forms of right to know labelling systems. In addition, this review shows that all types of labelling systems have the potential to raise health and environmental standards, to promote public health goals and to reduce the costs of injuries, disease and deaths.

## Appendix I – Environmental Accreditations and Logos

United Kingdom Green Procurement Guide (June 2006)

| | |
|---|---|
| **ISO 14001** | **ISO 14001** - A supplier operating an environmental management system may seek certification to ISO 14001. This standard specifies the requirements for an environmental management system in terms of an organisation's environmental commitment to a policy, compliance with applicable legislation and regulations and to continual improvement in its overall performance. For more information see Web site: http://www.iso14000.com |

**EMAS (The EU Eco-Management and Audit Scheme)** is a management tool for companies and other organisations to evaluate, report and improve their environmental performance. EMAS was strengthened by the integration of EN/ISO 14001 as the environmental management system required by EMAS. Organisations certified to EMAS have to publish an externally verified Environmental Report. For more information see: www.emas.org.uk

**PEFC (Programme for the Endorsement of Forest Certification schemes)** is an independent organisation whose label certifies wood has been independently audited as coming from sustainably managed forests. For more information see Web site: www.pefc.org

**The Forest Stewardship Council** evaluates, accredits and monitors certification organisations which inspect forest operations and grant labels certifying that timber has been produced from well managed forests. Once certified, timber and timber-based products originating from that forest or woodland are eligible to carry the FSC Trademark. For additional information, check out their Web site: http://www.fsc-uk.demon.co.uk/index.html

**The Nordic Swan** - The Swan logo demonstrates that a product is a good environmental choice. The green symbol is available for around 60 product groups for which it is felt that ecolabelling is needed and will be beneficial. These days, everything from washing-up liquid to furniture and hotels can carry the Swan label. For more information on the Nordic Swan go to - http://www.svanen.nu/Eng.com

**The Rainforest Alliance** works with foresters, farmers and tour operators to ensure that their goods and services are environmentally and socially responsible. For additional information, check out their Web site: www.rainforest-alliance.org

**Ecolabel** - This is an official Europe-wide award for non-food products that minimise impacts on the environment. Products must be independently certified and have to meet strict criteria for all the main environmental impacts across their whole life cycle. DEFRA runs the scheme in the UK where products with the flower include kitchen rolls, toilet tissue, paints and clothing. For additional information, check out their Website: www.europa.eu.int/ecolabel

**VOC Content** - These labels indicate the relative content of VOCs (Volatile Organic Compounds) in paints and associated products. VOCs cause air pollution and may be harmful to human health. The industry and retailers have agreed wording and standards for the use of this voluntary label. More information is available from the British Coatings Federation. There is no standard logo, but many retailers have adopted the form of logo shown here, which was developed by B&Q. For more information check out the Website: www.coatings.org.uk

**Blue Angel** – This standard is for digital multi-function devices. To obtain the Blue Angel strict standards for hazardous substances, emissions, waste minimisation, energy efficiency during usage and the utilisation of used products have to be met. Machines are tested in a controlled climate where criteria such as dust / ozone / styrene and noise levels are tested to ensure they do not exceed set limits. For more information on the Blue Angel go to - http://www.blauer-engel.de/willkommen/willkommen.htm

**NAPM Recycled Mark** - This mark is awarded to those papers which contain a minimum of 75% genuine waste. Genuine waste is defined as: Converters' waste - paper which has left the mill and has become waste during a converting process such as cutting or slitting to meet a specific commercial order. Printers' waste - printed or unprinted waste collected from a printing operation (trimmings, overs or rejects). Domestic or Office waste - collected from homes and offices, printed or unprinted.

**The Mobius Loop** simply means that a product or part of it can be recycled where facilities are available. The inclusion of a figure shows the percentage of recycled material that has been used to make the product. For more information visit the website: www.biffa.co.uk/getrecycling/symbols.php

**The Energy Star** logo means that the energy consumption of the appliance is below an agreed level in stand-by mode. The logo appears on some types of office equipment, such as computers, monitors, printers and fax machines. Within the EU, the Energy Star is a voluntary labelling scheme and its use is controlled by an agreement between the USA and European Community. For more information see Web site : www.energystar.gov

**The energy saving logo** endorses products that are amongst the most energy efficient available, the scheme is managed by the energy saving trust. The wide range of products covered includes appliances like washing machines and refrigeration, light fittings, gas and oil boilers, insulation, hot water cylinders and glazing. There is a good online product database. For more information see Web site : www.est.org.uk/recommended

**Energy Efficiency** - All European manufacturers and retailers must tell you about the energy efficiency of electrical household appliances such as freezers, washing machines, tumble dryers, washer-dryers, dishwashers, air conditioners, ovens and light bulbs. Products are generally rated from 'A' to 'G' with 'A' being the most efficient ('A'+ and 'A++' for the most efficient fridges and freezers). For more information see Web Site:
www.defra.gov.uk/environment/consunerprod/mtp

**Fuel Economy** – There is a similar label that shows how much carbon dioxide a car emits. The label also gives estimated fuel costs for 12,000 miles and the vehicle excise duty for 12 months so you can see how much these will cost before you buy. Lower carbon dioxide emissions mean lower road tax and lower running costs. For more information see:
www.admin.cam.ac.uk/offices/environment/guidance/vehicle.html

## Appendix II – Designing Hazardous Warning Labels

Although this report has focussed on discussing recognized labelling systems, other information in the published literature came to light in the course of researching this report that may be useful to the Committee in understanding the impact of the actual design of a hazard label. Examples include:

- Research at the University of Idaho looked at the way signal words and colours interact on warning labels.[138] The study found that the level of hazard varied as a function of the signal word and the colour in which it was presented. Red conveyed the highest level of perceived hazard followed by orange, black, green and blue. Signal words such as "deadly" were perceived to be less of a hazard when printed in green rather than red ink. Furthermore, test subjects were more likely to follow directions in a warning statement printed in red than in green and black.

- Experimental research at North Carolina State University was done on warnings, signal words and a signal icon on the perceived hazard of consumer products.[139] The study found that the presence of a signal word increased the perceived product hazard. Without the signal words, the product was perceived to be less hazardous. Significant differences were noted between extreme terms used as signal words, such as "note" and "danger", but not between terms usually recommended for warnings such as "caution" and "warning". Also, the signal icon showed no significant effect on hazard perception.

- Another study done at North Carolina on alternative product-label design and compliance with warnings, found that, for small containers, a tag design produced significantly greater compliance with warning instructions than a wing design or conventional small print warnings.[140]

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[138] Braun, CC & NC Silver (1995) Interaction of signal word and colour on warning labels: differences in perceived hazard and behavioural compliance, Ergonomics 38 (11): 2207-20.
[139] Wogalter, MS, SW Jarrard & SN Simpson (1994) Influencing of warning label signal words on perceived hazard level, Human Factors 36 (3): 547-56.
[140] Wogalter, MS & SL Young (1994) The effect of alternative product-label design on warning compliance, Applied Ergonomics 25 (1): 53-57.

## Appendix III - Key Informants

Terry Dean, Director, Health Check, Heart & Stroke Foundation

David Hammond, Department of Health Studies, University of Waterloo

Christine Belle-Isle, Manager, Regulations Division, Tobacco Control Program, Health Canada

Claude Chartrand, Project Officer, Consumer Product Safety Bureau, Chemical and Flammability Division, Health Canada

Assunta Ritieri, Occupational Health Division, California Department of Health

Gretchen Lee, Senior Policy Coordinator, Breast Cancer Fund, California

Todd Shannon, Research Analyst, TerraChoice Environmental Marketing, Ottawa

## Appendix IV – Data Sources

National Institute of Nutrition, "Tracking Nutrition Trends 1989-1994-1997", Ottawa, April 1997.

National Institute of Nutrition, "Nutrition Labelling in Canada, The Nutrition Panel: A Consumer Focus", Ottawa, 1998.

National Institute of Nutrition, "Nutrition Labelling: Perceptions and Preferences of Canadians", Ottawa, 1999.

World Health Organization, "Nutrition Labels and health claims: the global regulatory environment", 2004.

Kristal, A.R. et al (1998) Trends in Food Label Use Associated with New Nutrition Labelling Regulations, American Journal of Public Health 88(8): 1212-15

Review and Analysis of Current literature on consumer understanding of nutrition and health claims made on food, prepared for COI Communications on behalf of the Food Standards Agency, April 20, 2007.

European Heart Network, "Review of 'front of pack' nutrition schemes", February 2007.

Food Standards Australia New Zealand, "Consumer Attitudes Survey 2007: A benchmark survey of consumers' attitudes to food issues", January 2008.

Hammond, David, Tobacco Packaging and Labelling: A Review of Evidence, November 2007

Phoenix Strategic Perspectives Inc., "Final Report: Qualitative Testing of Toxic Emissions Statements prepared for Health Canada", November 2007

Young, Leanne & Boyd Swinburn (2002) Impact of the Pick the Tick food information programme on the salt content of food in New Zealand, Health Promotion International, 17(1): 13-19.

Smith, Shannon C., Alison Stephen, Carol Dombrow and Doug MacQuarrie (2002) Food Information Programs: A Review of the Literature, Canadian Journal of Dietetic Practice and Research, 63 (2): p. 57.

TerraChoice Environmental Marketing, Ecomarkets 2007: Summary Report.

European Commission, Report on the Public Consultation: Revision of the EU Ecolabel Regulation (EC) No 1980/2000.

EVER: Evaluation of EMAS and Eco-Label for their Revision, "Report 2: Research Findings", December 26, 2005

**Occupational and Environmental Cancer: Recognition and Prevention**
**DRAFT Knowledge Transfer/Dissemination Plan**

## Background

*Occupational and Environmental Cancer: Recognition and Prevention* is a free online course. It was developed by members of the National Committee on Environmental and Occupational Exposures in cooperation with the Canadian Centre for Occupational Health & Safety. It was funded by the Canadian Partnership Against Cancer (CPAC) through the Primary Prevention Action Group.

The hour-long course teaches primary health care providers how to recognize occupational and environmental cancers, how to respond, and the relationship to cancer prevention.

A link to the course is currently available on a landing page of the CCOHS website. The actual course is hosted by Vubiz, an e-learning company which hosts thousands of online courses. Accompanying the course is an online exam, as well as a feedback survey.

## Course audience

The *primary audience* for the course is primary health care providers:

- Family physicians
- Nurses
- Nurse practitioners
- Occupational health physicians & nurses
- Primary health care trainees
- Academic programs offering courses in occupational & environmental health programs & medical sciences

*Secondary audiences* for the course may include:

- Medical specialists
- Occupational health and safety organizations
- Anyone interested in this subject matter, e.g.:
    - Labour and employees
    - Employer groups
    - Students/academics

## Objectives of disseminating this course

This course addresses:

- Limited resources and information about the evidentiary link between carcinogens found in the environment and the workplace and cancer
- A low level of awareness among health professionals about occupational and environmental carcinogens
- How appropriate history taking in this area can prevent cancer
- General public concern about occupational and environmental carcinogens

## What do we know about course participation to date?

The course was launched in early March 2008. As of June 24th, 2008, 252 people visited the course site. Visitors interested in the course to date represent many different organizations in Canada and internationally including:

- universities
- health care delivery organizations
- occupational health and safety organizations and boards
- etc.

Out of the 252 participants, 33 (13%) have completed a participant feedback survey developed by the CCOHS and the NCEOE. The ratings from the survey are very favourable. However, the low response rate may indicate a low rate of course completion (vs. simply visiting the course site), and/or a need to encourage more participants to complete the survey following course completion.

Although the course is provided free of charge, it is currently not accredited. The NCEOE recognizes that certification of the course is the first step to attracting primary health care providers to take the course.

**The Knowledge Transfer Plan**

Although the subject matter of this course may be broadly of interest across public and professional audiences, the format is targeted to practicing primary health care providers who take patient histories.

Other related products with key messages to raise general awareness about occupational and environmental carcinogens may be better suited to the secondary audiences identified. The course will continue to be free and publicly accessible to anyone interested however, the main objective of this plan is to reach the primary audiences.

| What | Why | Responsible | Timing (depends on accreditation) |
|---|---|---|---|
| 1. Course **accreditation** | ▪ To attract physicians | CPAC – KM group | ASAP |
| 2. Develop comprehensive **stakeholders list** representing primary audiences (identify **key champions**, identify French-language users) | ▪ To disseminate course<br>▪ To reuse for other primary care and/or occupational/ environmental carcinogen initiatives | CPAC – KM group compiled from NCEOE members' lists, key organizations | July-Aug 2008 |
| 3. Shorten and refine **key messages blurb** for targeted dissemination | ▪ Clarify to potential attendees why this should matter to them | CPAC – PP-AG + KM group | Aug 2008 |
| 4. **Plan the migration to the CPAC Portal** of the landing page for the course | ▪ Increase course visibility in addition to CCOHS landing page | CPAC – KM group | By March 31, 2009 (go live date for Portal) |
| 5. **Targeted dissemination** to come from identified champions | ▪ Ensure it reaches those most in need of this information and likely to complete a 1-hour course | CPAC – PP-AG + KM group | As soon as accreditation in place |
| 6. **French translation** | ▪ Accessibility<br>▪ CPAC mandate | CCOHS subcontract, funded by CPAC | Sept-Oct (targeted date for completion of translation) |
| 7. **Disseminate to French-language audiences** as appropriate | ▪ Ensure accessibility to French stakeholders | CPAC – PP-AG + KM group | (Depends on completion of translation) |
| 8. **Analyze course survey results** (consider modifying survey questions | ▪ To measure utility of course<br>▪ To refine/update course | CPAC – PP-AG + KM group | |

| What | Why | Responsible | Timing (depends on accreditation) |
|---|---|---|---|
| based on analysis to date) | ▪ To inform future products/initiatives | | |
| 9. **Identify conferences** suitable for showcasing the course | ▪ Get the word out in forums that attract primary audiences | CPAC – PP-AG | Ongoing |
| 10. **Review course content for updating** | ▪ To reflect new knowledge, resources | CPAC- PP-AG, NCEOE | As needed (annual review?) |

**List of primary stakeholder sources**

1. CAPCA Primary Care group
    a. Chair: Jeff Sisler
    b. Members: Cancer Agency primary care leads
2. Provincial nursing associations
3. College of Family Physicians
4. Provincial associations for occupational health providers
5. Provincial occupational & environmental health organizations
6. NCEOE members' contacts
7. Academic programs offering courses in occupational & environmental health programs & medical sciences

**Toxic Use Reduction Project (31209)**
**National Committee on Environmental and Occupational Exposure**

## 1. Background

More than 23,000 different chemicals and substances are available for use in consumer goods and industrial processes in Canada.[1]Toxics use reduction is an overall tactic that focuses on using less toxic substances, and ensures that carcinogenic substances are not replaced with other substances of concern.

## 2. Long Term Outcome

A reduction in exposure to environmental carcinogens in Canada.

## 3. Goal

To develop models for toxic use reduction focused on environmental carcinogens with the identification of federal, provincial and regional stakeholders and a proposed plan for future capacity building.

## 4. Objectives 2008-2009

4.1 To identify key environmental carcinogens and access to data across Canada

4.2 To develop an inventory of toxic use reduction activities in Canada at the federal, provincial and regional levels

4.3 To identify key partners to prepare a proposal for a 3 year plan to reduce or eliminate exposures to environmental carcinogens through toxic use reduction in relation to other environmental (eg. U.V. exposures) or occupational carcinogen exposures.

4.4 To develop a knowledge exchange plan for sharing the results of the inventory of toxic use reduction activities in Canada

## 5. Deliverables 2008-2009

5.1 Carex
Access to data on key environmental carcinogens across Canada

5.2 Inventory of Toxic Use Reduction Activities
An inventory of activities at the national, provincial and regional level including the identification of stakeholders

5.3 Partnership Development
Partnership opportunities identified to prepare a proposal for a 3 year plan to reduce exposure to environmental carcinogens in relation to other environmental (eg. U.V. exposures) or occupational carcinogen exposures

5.5 Knowledge Exchange Plan
Development of a knowledge exchange plan for sharing the results of the inventory of toxic use reduction activities in Canada

---

[1]Health Canada, **Human Health and the *Canadian Environmental Protection Act* (CEPA): An Overview,** January 2004, ISBN # H50-3/9-2003E-PDF, Catalogue # 0-662-35529-6, Her Majesty the Queen in Right of Canada, represented by the Minister of Health, 2004

**6. Governance**

The Toxic Use Reduction Project is a deliverable of the National Committee for Environmental and Occupational Carcinogens (NCEOE) a subcommittee of the Primary Prevention Action Group (PP-AG). A small advisory committee including identified NCEOE members and federal, provincial and municipal representatives will advise the project.

# Toxic Use Reduction Logic Model 2008- 2011

**Client Group :** Provincial Cancer Programs, NGOS and other National and Provincial and Regional Stakeholders, Federal and Provincial and Regional Government

| Component | Surveillance | Program and Policy | Capacity Building |
|---|---|---|---|
| Process/Activity Objectives | Linkages with CAREX as it develops a data base and monitor the key carcinogens for toxic use reduction in Canada | To develop models for toxic use reduction with a focus on carcinogens in Canada. | Build capacity nationally, provincially and regionally to utilize the models for toxic use reduction and implement evidence based activities |
| Process/Activity Indicators 2008-2009 | Identification of key carcinogens for toxic use reduction in Canada<br><br>Identification of data bases across Canada to access and monitor | Development of an inventory of toxic use reduction activities in Canada at the federal, provincial and regional levels | Identification of key national, provincial and federal partners in toxic use reduction<br><br>Partnership opportunities identified to prepare a proposal for a 3 year plan to reduce or eliminate exposures to toxics in the environment and workplace with a focus on carcinogens<br><br>Development of a knowledge exchange plan for sharing the results of the inventory of toxic use reduction activities in Canada and data on key carcinogens |
| Short- Term Objective: to increase knowledge and skills of the client group to utilize evidence in program and policy development for toxic use reduction | | | |
| Long-Term Objective: a reduction in exposure to environmental & occupational carcinogens in Canada | | | |
| Goal: Reduce the incidence of preventable cancers in Canada, and ultimately reduce morbidity and mortality from this disease.(PP-AG) | | | |

## SCHEDULE B - Services and Deliverables

Deliverables include

Canadians may be exposed to cancer-causing substances in their environment through pollution from factories, businesses and vehicles, and through consumer products such as household cleaning products. The project includes an environmental scan of present programs, policies and legislations at the national, provincial and municipal levels for toxic use reduction with a focus on environmental carcinogens. In addition, the project includes the development of a toxic use reduction federal, provincial and municipal stakeholder list.

Deleted: Canadian

### 1. Environmental Scan Requirements

The scan will explore programs, policies and legislation for:

- 
- 
- public education about the presence of cancer-causing substances in their community
- supporting warning labels on consumer products that contain cancer-causing substances
- supporting ingredient disclosure and ingredient labeling
-

Comment [U3]: This is not the primary focus,...we want to explore legislation, policies and programs that encourage toxic use reduction. This means the el9mkinatiobn or minimization of the use of carcinogens .through substitution of less hazardous materials. The consumer product labelli9ng and ingredient disclosure issue i9s not part of this project.

Formatted: Bullets and Numbering

**Programs**

The scan should include public and provider education, communication/social marketing campaigns at the federal, provincial and municipal level.

**Policies and Legislation**

The scan will include international needs to be added. Essentially we want to use the Mass. legislation as the model and best practice out there--.It needs to be part of the scan, national and provincial legislation and policies which have come into force or approved and not yet commenced. In addition, the scan will also include municipal bylaws which have come into force or approved and not yet commenced.

Comment [U4]: What i9s this....do not see this as part of this project

Comment [L5]: In the time allowed it will be a challenge to complete a full scan on all legislation in even though Canada. Ontario and Alberta have already been done.

**Funding**

The scan should include government and non-governmental organizational sources of program funding this makes no sense to me in the context of this project

### 2. Data Base Requirements

The scan should provide information on source, title, program/policy/legislation description (goals and objectives), evaluation, contact individual and URL.

The organization of the above data into an excel format that can be readily transferred to an open-access, searchable database (e.g. Microsoft Excel or Access

**3 Environmental Toxic Use Reduction Stakeholder List Requirements**

The development of a toxic use reduction federal, provincial and municipal stakeholder list including individuals, organization, accountability and contact information

**Comment [U6]:** Change to the identification of active stakeholders i9nvolved in tur initiatives, and identification of strategic networking opportunities

**4. Final Report Requirements**

A final report analyzing what if any links exist between federal, provincial and municipal programs, policies and legislation for toxic use reduction with a focus on environmental carcinogens.

**Comment [L7]:** While mention of toxics occurs in many pieces of legislation little of it translates into programs OR INTO ENFORCEMENT. It would also be valuable to gage how many Occupational claims there are for exposures to carcinogens in each Province. This will promote dialogue on links between environmental and occupational exposure. Carex could make a valuable contribution here.

## SCHEDULE C - Form of Offer

The Proponent must not amend this Form in any way other than by providing the requested information. This form must be completed, signed and submitted as part of the Proponent's Proposal.

**To the Canadian Partnership Against Cancer:**

**1. Proponent Information**

(a) The full legal name of the Proponent is: _____.

(b) Any other relevant name under which the Proponent carries on business is: _____.

(c) The jurisdiction under which the Proponent is governed is: _____.

(d) The name, address, telephone, facsimile number and e-mail address of the contact person for the Proponent is: _____.

(e) The Proponent is **[the Proponent must chose the applicable one of the following: an individual, a sole proprietorship, a corporation, a partnership, a joint venture, an incorporated consortium or a consortium that is a partnership or other legally recognized entity]**: _____.

**2. Offer**

The Proponent has carefully examined the RFP documents and has a clear and comprehensive knowledge of the Deliverables required under the RFP. By submitting the Proposal, the Proponent agrees and consents to the terms, conditions and

# Primary Prevention Action Group
# Past, Present, & Future

NCEOE Meeting
Toronto, Ontario
October 28, 2008

Jon F. Kerner, Ph.D.
Chair-Primary Prevention Action Group (PP-AG),
Senior Scientific Advisor
for Cancer Control & Knowledge Translation

CANADIAN PARTNERSHIP AGAINST CANCER | PARTENARIAT CANADIEN CONTRE LE CANCER

## PP-AG Priorities*

- All cancer control organizations advance primary prevention
- Work with other chronic disease organizations to promote health & reduce common risk factors
- Facilitate progress towards communities of practice to decrease skin cancer burden, reduce & prevent exposure to Environmental & Occupational carcinogens and cancer causing infectious agents
- Work with primary care providers to enhance role of prevention in primary care settings
- Public education & media communication approaches to primary prevention

*PP-AG Planning Session – Winnipeg, July 11, 2008

## Five Year Long Range Vision of PP-AG*

- Improved Healthy Social Norms
- An Integrated Prevention System
- Evidence Driven Practice
- Healthy Public Policy
- An Action-oriented, Mobilized Public
- PP-AG as a Credible Source of Information

*PP-AG Planning Session – Winnipeg, July 11, 2008



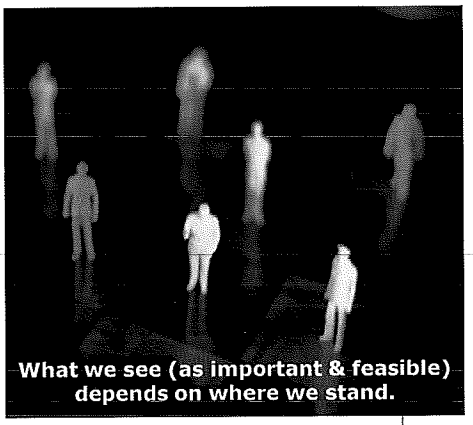
## What Needs to be Done*

- PP-AG role in Common Risks of Nutrition, Physical Activity, Tobacco
- Developing Provincial Territorial Linkages and Key Partners
- Changing Knowledge Base
- Standard Internal Communication
- Two-Way External Communication
- Partnership Implementation Infrastructure

*PP-AG Planning Session – Winnipeg, July 11, 2008

## Existing Strategic Foci for PP-AG

- Primary Care
- Nutrition and Physical Activity
- Occupational and Environmental Exposure
- Sun safety
- Infectious Agents





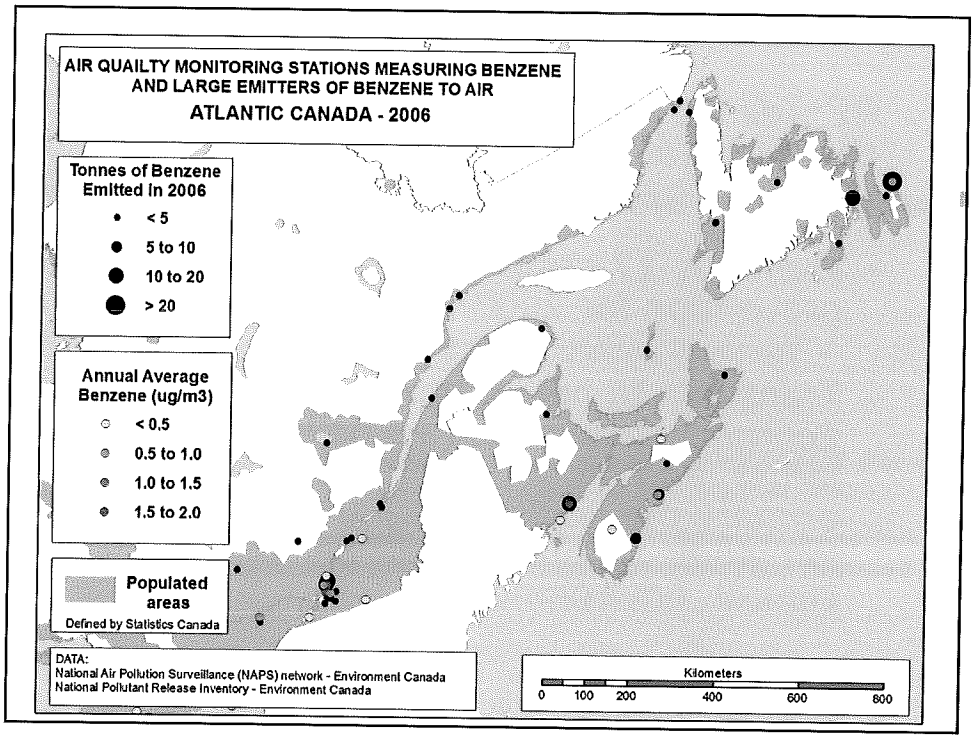

## PP-AG Opportunities: Now and in the Future

- Presently 17 projects in primary prevention for 2008-2009
  - Too many projects, too little time
- Transition to new & broader strategic approach focused on a smaller set of larger, and more comprehensive, primary prevention program and policy initiatives in three areas: behavioural, clinical, environmental

# PP-AG Large Initiative Success Story: CAREX

- **CAREX**: Carcinogen Exposure – will map known carcinogens, occupational and environmental in Canada (exposure maps)
- These could be overlaid with incidence maps in the future in order to generate solid hypotheses about cancer risk
- **Anticipated Results in Five Years:**
- An environmental exposures map that can be tied to population-based data to inform policy decisions and planning by governments, NGOs and other partners





## PP-AG Large Initiative Success Story: CAREX

http://www.carexcanada.ca/



## Building a More Comprehensive Approach to Primary Prevention of Cancer (& other major chronic diseases) – Key Question #1:

- What risk factor reduction and chronic disease prevention programs and policies, **if better integrated and evidence-based,** would have a greater positive impact on the health of Canadians than if maintained as separate foci for action?

## Building a More Comprehensive Approach to Primary Prevention of Cancer (& other chronic diseases) – Key Question #2:

- Who are the partners (organizations, agencies, and ministries) that, **if they combined resources and worked together** focusing on multiple risk factors and/or chronic diseases, would have a greater positive impact on the health of Canadians than if they continue to work alone on a single risk factor or chronic disease?



## A New Approach to Comprehensive Primary Prevention: *C*oalitions *L*inking *A*ction & *S*cience for *P*revention (CLASP)



- Step 1: Identify the potential national, provincial, and metropolitan partner organizations, agencies, and ministries already focused on risk factor reduction or the primary prevention of cancer, diabetes, lung and heart disease.
- Step 2: Identify the researchers, practitioners, and policy staff involved in the above.

## A New Approach to Comprehensive Primary Prevention (CLASP)

- Step 3: Invite 30 researchers, 30 public health or clinical practitioners, and 30 policy leaders, focused on behavioural (n=90), clinical (n=90), or environmental (n=90) prevention, to participate in an online concept mapping (CM) exercise to brainstorm, organize, and rate the importance and feasibility of answers to the two key questions.
- Step 4: Invite concept mapping participants to one (or more) of three results review meetings focused on behavioural, clinical, and environmental risk factor reduction and primary prevention of cancer, diabetes, lung and heart disease.



## A New Approach to Comprehensive Primary Prevention (CLASP)

- Step 5: Use behavioral, clinical, and environmental meetings to share CM data to identify key large multiple risk factor reduction and primary prevention of chronic disease initiatives where an integrated approach is rated as high in importance and feasibility
- Step 6: Identify groups of researchers, practitioners, and policy staff, representing different organizations, agencies, and ministries, who have rated working together across provinces, municipalities, and/or Canada as highly important and feasible.

## A New Approach to Comprehensive Primary Prevention (CLASP)

- Step 7: Use the meetings to encourage the formation of Canadian coalitions ready to work together to link action and science for comprehensive primary prevention of cancer, diabetes, lung and heart disease.
- Steps 1-7 to be completed by March 31, 2009.



## Coalition Action Continuum*

- Networking
- Coordinating
- Cooperating
- Collaborating
- Exchange Information
- EI + Alter Activities
- EI+AA+ Share Resources
- EI+AA+SR+ Enhance each other's capacities + Share risks, responsibilities, and rewards

**Can the whole be greater than the sum of its parts?**

*Definitions from Arthur Himmelman's "Working Together" Strategies

## A New Approach to Comprehensive Primary Prevention (CLASP)

- Step 8: Invite Canadian coalitions formed before, at, or after behavioural, clinical, and environmental meetings to work together to apply for 32 month CLASP cooperative funding agreements with CPAC.
- Step 9: Invite other potential funding partners (e.g. CCS, CDA, CLA, CHSF, PHAC) to co-fund CLASP cooperative funding agreements where cross-cutting approaches to common risk factor reduction and/or chronic disease prevention program and policy approaches are proposed relevant to their priorities.



## A New Approach to Comprehensive Primary Prevention (CLASP)

- Step 10: Link CLASP cooperative funding agreements to CPAC Knowledge to Action and **Action to Knowledge** evaluation metrics being developed for intervention and policy approaches to risk factor reduction and primary prevention of cancer, diabetes, lung and heart disease .
- Steps 8-10 to be initiated by August 2009 and completed by March 2012.

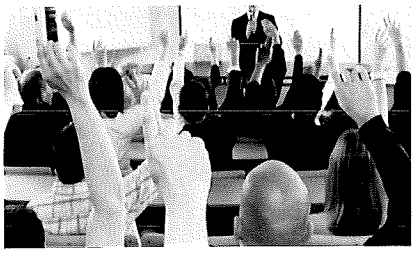
## Key Metrics of CLASP Success

- Process: Coalitions that are collaborations moving beyond networking, communication, and coordination
- Outcomes:
  - Demonstrable positive changes in risk factor behaviours & conditions;
  - reductions in environmental and occupational exposures;
  - increased adoption of evidence-based public health and clinical practices and policies
- Sustainability: Coalitions that continue to collaborate (e.g., share risks, responsibilities, and rewards) on prevention after CLASP funding ends
- New action to knowledge evaluation tools



## Questions & Discussion







**Occupational and Environmental Cancer: Recognition and Prevention**
**DRAFT Knowledge Transfer/Dissemination Plan**

## Background

*Occupational and Environmental Cancer: Recognition and Prevention* is a free online course. It was developed by members of the National Committee on Environmental and Occupational Exposures in cooperation with the Canadian Centre for Occupational Health & Safety. It was funded by the Canadian Partnership Against Cancer (CPAC) through the Primary Prevention Action Group.

The hour-long course teaches primary health care providers how to recognize occupational and environmental cancers, how to respond, and the relationship to cancer prevention.

A link to the course is currently available on a landing page of the CCOHS website. The actual course is hosted by Vubiz, an e-learning company which hosts thousands of online courses. Accompanying the course is an online exam, as well as a feedback survey.

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## Objectives of disseminating this course

This course addresses:

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## What do we know about course participation to date?

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|---|---|---|---|
| based on analysis to date) | ▪ To inform future products/initiatives | | |
| 9. **Identify conferences** suitable for showcasing the course | ▪ Get the word out in forums that attract primary audiences | CPAC – PP-AG | Ongoing |
| 10. **Review course content for updating** | ▪ To reflect new knowledge, resources | CPAC- PP-AG, NCEOE | As needed (annual review?) |

**List of primary stakeholder sources**

1. CAPCA Primary Care group
    a. Chair: Jeff Sisler
    b. Members: Cancer Agency primary care leads
2. Provincial nursing associations
3. College of Family Physicians
4. Provincial associations for occupational health providers
5. Provincial occupational & environmental health organizations
6. NCEOE members' contacts
7. Academic programs offering courses in occupational & environmental health programs & medical sciences

# Asbestos Registry Project
# 2008-2009

**Long term Outcomes**
A reduction in exposure to asbestos with a reduction in asbestos related disease in Canada as recommended by the World Health Organization Assembly Resolution and the thirteen session of the joint ILO/WHO Committee on Occupational Health[1].

**Goal of the Asbestos Registry Project**
To establish the feasibility of a uniform asbestos related disease and/or asbestos exposure registry in Canada based on learnings from national and international practice

**Objectives**
To understand the components of national and international asbestos related disease and asbestos exposure registries
To identify gaps in asbestos related disease and asbestos exposure registries in Canada
To provide recommendations on the feasibility of a uniform asbestos related disease registry and/or an asbestos exposure registry for Canada

**Deliverables**

1. **National Roundtable** with Research , Surveillance and Program Experts including representation from provincial, federal and international programs

Discussion will include
What's happening in Canada and elsewhere?
Where are the gaps in Canada?
Recommendations on the feasibility a uniform asbestos related disease registry and/or a asbestos exposure registry for Canada

2. **Final Report** outlining proceedings of the Roundtable including recommendations on feasibility for a coordinated registry and next steps

[1], World Health Organization, Elimination of Asbestos Related- Disease, September 2006, www.who.int/entity/occupational_health/publications/asbestosrelateddisease, World Health Organization, Geneva, Switzerland

**National Committee on Environmental and Occupational Exposures**
**October 28, 2008**
**8:30-4:30 pm**
**Royal York Hotel**
**Room: Confederation 3**
**100 Front Street West**
**Toronto, Ontario**
**M5J 1E3**

Attendees: Jon Kerner, Sarah Miller, Alan Abelsohn, Corey Parker, Alice Peter, Heather Logan, Larbi El Bilali, Deb Keen, Larry Stoffman, Mae Burrows, Paul Demers, Jim Brophy, Andrew King

Regrets: Alan Katz, Roland Hosein, Barbara Kaminsky, Gary Liss, Sue Milburn-Hopwood

Objectives:
To introduce the new Chair of the Primary Prevention Action Group (PP-AG)
To discuss future direction of the PP-AG
To provide a status report on NCEOE projects
To discuss NCEOE priority issues for 2009-2010

Agenda

| Time | Item | Lead | Resources |
|---|---|---|---|
| 8:30- 9:00 am | **BREAKFAST** | | |
| 9:00- 9:20 | Welcome and Introductions | Larry Stoffman | |
| 9:20-10:00 | Future Directions for the PP-AG: Comprehensive Cancer Prevention | Jon Kerner | Slide deck |
| 10:00-10:15 | **BREAK** | | |
| 10:15- 11:15 | Update on CAREX | Paul Demers | Slide deck to be provided at meeting |
| 11:15- 12:00 | Update on Toxic Use Reduction | Larry Stoffman/ Andy King | Project Description |
| 12:00- 12:45 | **LUNCH** | | |
| 12:45- 1:15 | Update on the Environment and Occupational Exposure Online Course | Alan Abelson | Knowledge Exchange Plan |
| 1:15-2:00 | Update on Right to Know Labelling | Heather Logan/Mae Burrows | Descriptive Analysis of Labelling |
| 2:00-2:30 | Update on Asbestos Registry | Larry Stoffman | Project Description |
| 2:30- 2:45 | **BREAK** | | |
| 2:45- 3:15 | Committee Membership | Larry Stoffman | Terms of Reference |
| 3:15- 4:30pm | Priorities for 2009-2010 and Beyond: Based on our current projects' status | Larry Stoffman | |

| | | | |
|---|---|---|---|
| | what we will accomplish this year what will next year's work plan look like? What opportuni9ties are there to link and coordinate the various projects? What are the cross-cutting, big picture NCEOE issues for comprehensive cancer prevention? | and full committee | |
| 4:30pm | Adjourn | | |

CANADIAN PARTNERSHIP AGAINST CANCER | PARTENARIAT CANADIEN CONTRE LE CANCER

# TERMS OF REFERENCE
## Action Groups

**Purpose:**

Action groups are a mechanism for advising and executing on strategic priorities for the Partnership's strategy for cancer control. Other mechanisms may also be adopted such as Expert Panels and ad hoc working groups or Advisory Committees.

**Role of Action Group Chair:**

The Chair of an Action Group is an expert leader from the cancer control community who will devote approximately 40% of his or her time to providing leadership to the work of the action group. These duties include active membership on the Action Council and the Advisory Council on Cancer Control. The term of the Chair will be negotiated with the VP Cancer Control and the individual Chair, but will normally be four years and renewable once.

To recruit a Chair, the position will be posted and advertised broadly. The team reviewing the candidates, and making the recommendation for a new AG chair will include the responsible VP, and two or three other members, appointed by Senior Management of CPACC after discussion with the incumbent Chair and Program Director.

The successful candidate will be approved and appointed by the CEO in consultation with the Action Group regarding search criteria.

**Membership:**

Members of the action groups should reflect provincial or regional representation, expertise across the breadth of the field, and patients/survivors and/or their families.

The role of members includes bringing knowledge of the particular priority area from the sector, communicating to their broader networks and constituencies, and advising on the work of the action groups. Members will be selected in cooperation with the AG chair and the VP lead and in some instances be done through solicitation to organizations in the system. Final approval of Action Group membership categories, and of the individuals, rests with the responsible VP.

The size of Action Groups is to be approximately 8-12 members, including Ad Hoc members.



The term of appointment should be three years Appointments can be renewed once, on recommendation of the AG chair, and with the approval of the respective VP. April 1, 2009 is the end of the first term.

**Action Group Roles**:

Each action group should develop a multi-year plan that demonstrates how their work and recommended investments will impact the cancer control goals. These work plans should have measurable initiatives that are focused and can have impact within our current mandate.

The work plan should be reviewed on an annual basis to determine if it requires adjustments. Part of the review should include an environmental scan to establish ongoing relevance.

The Action Council and other mechanisms should be used to address cross-cutting linkages and integration of plans across the action groups.

Action groups may be retired, merged or changed to adapt to CPACC strategies and plans, or changes in the cancer control context. This will be done in consultation with the Action Council, with final decisions to be made by the CEO.

*Date of Approval: August 22, 2008*

**Toxic Use Reduction Project (31209)**
**National Committee on Environmental and Occupational Exposure**

## 1. Background

More than 23,000 different chemicals and substances are available for use in consumer goods and industrial processes in Canada.[1] Toxics use reduction is an overall tactic that focuses on using less toxic substances, and ensures that carcinogenic substances are not replaced with other substances of concern.

## 2. Long Term Outcome

A reduction in exposure to environmental carcinogens in Canada.

## 3. Goal

To develop models for toxic use reduction focused on environmental carcinogens with the identification of federal, provincial and regional stakeholders and a proposed plan for future capacity building.

## 4. Objectives 2008-2009

4.1 To identify key environmental carcinogens and access to data across Canada

4.2 To develop an inventory of toxic use reduction activities in Canada at the federal, provincial and regional levels

4.3 To identify key partners to prepare a proposal for a 3 year plan to reduce or eliminate exposures to environmental carcinogens through toxic use reduction in relation to other environmental (eg. U.V. exposures) or occupational carcinogen exposures.

4.4 To develop a knowledge exchange plan for sharing the results of the inventory of toxic use reduction activities in Canada

## 5. Deliverables 2008-2009

5.1 Carex
Access to data on key environmental carcinogens across Canada

5.2 Inventory of Toxic Use Reduction Activities
An inventory of activities at the national, provincial and regional level including the identification of stakeholders

5.3 Partnership Development
Partnership opportunities identified to prepare a proposal for a 3 year plan to reduce exposure to environmental carcinogens in relation to other environmental (eg. U.V. exposures) or occupational carcinogen exposures

5.5 Knowledge Exchange Plan
Development of a knowledge exchange plan for sharing the results of the inventory of toxic use reduction activities in Canada

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[1] Health Canada, **Human Health and the *Canadian Environmental Protection Act* (CEPA): An Overview,** January 2004, ISBN # H50-3/9-2003E-PDF, Catalogue # 0-662-35529-6, Her Majesty the Queen in Right of Canada, represented by the Minister of Health, 2004

**6. Governance**

The Toxic Use Reduction Project is a deliverable of the National Committee for Environmental and Occupational Carcinogens (NCEOE) a subcommittee of the Primary Prevention Action Group (PP-AG). A small advisory committee including identified NCEOE members and federal, provincial and municipal representatives will advise the project.

## Toxic Use Reduction Logic Model 2008- 2011

| **Client Group** : Provincial Cancer Programs, NGOS and other National and Provincial and Regional Stakeholders, Federal and Provincial and Regional Government | | | |
|---|---|---|---|
| **Component** | **Surveillance** | **Program and Policy** | **Capacity Building** |
| Process/Activity Objectives | Linkages with CAREX as it develops a data base and monitor the key carcinogens for toxic use reduction in Canada | To develop models for toxic use reduction with a focus on carcinogens in Canada. | Build capacity nationally, provincially and regionally to utilize the models for toxic use reduction and implement evidence based activities |
| Process/Activity Indicators 2008-2009 | Identification of key carcinogens for toxic use reduction in Canada<br><br>Identification of data bases across Canada to access and monitor | Development of an inventory of toxic use reduction activities in Canada at the federal, provincial and regional levels | Identification of key national, provincial and federal partners in toxic use reduction<br><br>Partnership opportunities identified to prepare a proposal for a 3 year plan to reduce or eliminate exposures to toxics in the environment and workplace with a focus on carcinogens<br><br>Development of a knowledge exchange plan for sharing the results of the inventory of toxic use reduction activities in Canada and data on key carcinogens |
| Short- Term Objective: to increase knowledge and skills of the client group to utilize evidence in program and policy development for toxic use reduction | | | |
| Long-Term Objective: a reduction in exposure to environmental & occupational carcinogens in Canada | | | |
| Goal: Reduce the incidence of preventable cancers in Canada, and ultimately reduce morbidity and mortality from this disease.(PP-AG) | | | |

# Canadian Strategy for Cancer Control

## National Committee on Environmental and Occupational Exposures: A Strategic Plan

Larry Stoffman
Chair
National Committee on Environmental and Occupational Exposures

October 2006



## *Initiatives*

1. Carcinogen Exposure (CAREX) Unit
2. Community Networks
3. National Symposia
4. Patient History
5. Toxic Use Reduction Strategy
6. Policy Development

Canadian Strategy for Cancer Control

# 1. CAREX Unit

## Description

**This unit will increase E/O surveillance and research capacity. Its national occupational and environmental CAREX projects, National Workplace Exposure Database, and clearing house of environmental carcinogen exposure data that will become a national resource for monitoring policy setting and research.**

## Budget

| | | |
|---|---|---|
| •Year 1 | 2006/2007 | $421,300 |
| •Year 2 | 2007/2008 | $716,800 |
| •Year 3 | 2008/2009 | $734,932 |
| •Year 4 | 2009/2010 | $750,789 |
| •Year 5 | 2010/2011 | $764,574 |
| **Total** | | **$3,388,395** |

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Canadian Strategy for Cancer Control

# 2. Community Networks

## Description

**Enhance PP-AG contact with existing networks established by NGOs in the field. Help these organizations disseminate PP-AG messaging and evidence based information. Assist these NGOs in their ongoing community education work. Funding based on annual grants awarded through a competitive process; multi year activities preferred.**

## Budget

| | | |
|---|---|---|
| •Year 1 | 2006/2007 | $48,750 |
| •Year 2 | 2007/2008 | $355,000 |
| •Year 3 | 2008/2009 | $605,000 |
| •Year 4 | 2009/2010 | $855,000 |
| •Year 5 | 2010/2011 | $1,105,000 |
| **Total** | | **$2,968,750** |

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Canadian Strategy for Cancer Control

# 3. National Symposia

## Description

Biannual symposia to report on key findings regarding environmental and occupational carcinogen exposures, develop monographs for dissemination, and policy recommendations. Based on a "summit" format with key stakeholders and decision makers invited. Note: 2006/207 includes funding for an NCEOE internal planning meeting.

## Budget

| | | |
|---|---|---|
| •Year 1 | 2006/2007 | $38,750 |
| •Year 2 | 2007/2008 | $337,500 |
| •Year 3 | 2008/2009 | $337,500 |
| •Year 4 | 2009/2010 | $337,500 |
| •Year 5 | 2010/2011 | $337,500 |
| **Total** | | **$1,388,750** |

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Canadian Strategy for Cancer Control

# 4. Patient History

## Description

Develop best practice template for community health practitioners and family physicians. Establish curricula in medical community; assist physicians in implementing pilot projects

## Budget

| | | |
|---|---|---|
| •Year 1 | 2006/2007 | $37,500 |
| •Year 2 | 2007/2008 | $275,000 |
| •Year 3 | 2008/2009 | $275,000 |
| •Year 4 | 2009/2010 | $275,000 |
| •Year 5 | 2010/2011 | $275,000 |
| **Total** | | **$1,137,500** |

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Canadian Strategy for Cancer Control

# 5. *Toxic Use Reduction Strategy*

## Description

**Support for a feasibility Study regarding the establishment of a Toxic Use Reduction centre. Partner with existing initiatives (e.g. the Canadian Centre for Pollution Prevention) and support the development of a municipal demonstration project through multi-year funding. Include funds for smaller grants for other initiatives identified.**

## Budget

| | | |
|---|---|---|
| •Year 1 | 2006/2007 | $68,750 |
| •Year 2 | 2007/2008 | $118,750 |
| •Year 3 | 2008/2009 | $118,750 |
| •Year 4 | 2009/2010 | $118,750 |
| •Year 5 | 2010/2011 | $118,750 |
| **Total** | | **$543,750** |

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Canadian Strategy for Cancer Control

# 6. *Policy Development*

## Description

**Policy review and review of activity results. Includes a biannual meeting of the full National Committee on Environmental and Occupational Exposures as well as quarterly meetings of project liaisons.**

## Budget

| | | |
|---|---|---|
| •Year 1 | 2006/2007 | $58,750 |
| •Year 2 | 2007/2008 | $117,500 |
| •Year 3 | 2008/2009 | $117,500 |
| •Year 4 | 2009/2010 | $117,500 |
| •Year 5 | 2010/2011 | $117,500 |
| **Total** | | **$528,750** |

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DRAFT C.

# National Occupational and Environmental Carcinogen Surveillance Unit Proposal

Paul Demers and Anne-Marie-Nicol

UBC School of Occupational and Environmental Hygiene
and Centre for Health and Environment research

Many cancers linked to environmental or workplace exposures can take decades to develop, so primary prevention efforts for these cancers must take place 10 to 40 years before a potential diagnosis. For example, despite over 30 years of effort to reduce and restrict people's exposure to asbestos, the rates of cancer related to this carcinogen continue to increase. Many occupational and environmental carcinogens are widely recognized because of the efforts of organizations such as the International Agency for Research on Cancer (IARC) and the U.S. National Toxicology Program. However, a lack of data on who is exposed to these carcinogens may hamper efforts to prevent related cancers. By systematically identifying who is exposed to these known carcinogens, we can develop effective strategies to prevent carcinogen-related cancers in workplace and community environments. This process of carcinogen surveillance can be used to set priorities for policy or prevention-related activities, monitor trends in exposure, set research priorities, and share research findings with policy makers and the public.

CAREX, the International Information System on Occupational Exposure to Carcinogens, was developed by the Finnish Institute for Occupational Health (FIOH) as part of a European Union effort to estimate the burden of occupational cancer [Kauppinen et al, 2000]. Its purpose was to produce estimates of the number of people with potential workplace exposure to definite (Category 1), probable (Category 2A), and selected possible (Category 2B) workplace carcinogens, as classified by the International Agency for Research on Cancer in 1995. Initially, CAREX was only used to develop and store exposure estimates for the European Union and the United States. More recently, it has been used to estimate the number of workers exposed to carcinogens in the Baltic countries, the Czech Republic, and Costa Rica, and to aid in estimating the global burden of exposure to occupational carcinogens.

In the late 1990s, we started a pilot project that used the CAREX model to estimate exposure to workplace carcinogens in British Columbia, and were subsequently funded by WorkSafe BC to continue the project. Several years later a similar initiative received funding from the Ontario Workplace Safety Insurance Board. We supported this project by assisting with exposure assessment. These projects have received considerable attention from advocates of cancer prevention. The Canadian Strategy for Cancer Control recognized the need for a national program like CAREX. There has also been interest in the development of a similar program focused on environmental carcinogens. We are therefore proposing the creation of a National Occupational and Environmental Carcinogen Surveillance Unit (NOECSU).

The proposal to create NOECSU is still under development, but this document is being written to provide individuals and groups who will be associated with it, either as advisors or partners, with a summary of the proposal as it currently stands. The primary objective of NOECSU is to develop robust estimates of the number of Canadians exposed to carcinogens in the workplace or the community environment. The unit will have 4 primary projects, briefly discussed below.

## Canadian Workplace Carcinogen Exposure Surveillance Project (CWCESP)

Objective: to develop robust estimates of the number of Canadians exposed to workplace carcinogens.

Design: CWCESP will be based generally on the modified CAREX model from the BC and Ontario CAREX projects. The information system will provide estimates of the number of people

occupationally exposed by province and industry sector. Where possible, these estimates will be based directly on Canadian data sources such as the CWED (see below) and any data indicating level of exposure will be summarized. In the absence of hard data, experts in exposure will make estimates. Additional IARC Category 1 and 2A carcinogens with a potential for occupational exposure that have been identified after CAREX was originally created will be added. We are also considering expansion of the original list to include IARC 2B (possible) carcinogens that are common in Canada.

**Canadian Workplace Exposure Database (CWED)**

Objective: to develop a national database with all workplace exposure data collected by public agencies and other organizations (data from WorkSafe BC and the Ontario Ministry of Labour is available now, but public agencies and other organizations with substantial exposure databases will also be approached to contribute).

Design: Apart from feeding quantitative data to the CWCESP, CWED will also act as a surveillance and research tool. In combination with CWCESP, it will help identify groups in need of exposure assessment or high priority groups for prevention activities. Data from CWED may also be used for assessing exposure for epidemiologic studies and risk assessment. To facilitate outside access and use of this database, we will make it available in aggregate form over the web and allow access to the underlying data, with the data providers' permission, through the UBC Population Health Learning Observatory (http://www.phlo.ubc.ca), funded by the Canadian Foundation for Innovation.

**Canadian Environmental Carcinogen Exposure Surveillance Project (CECESP)**

Objective: to develop robust estimates of the number of Canadians exposed to environmental carcinogens by province and, where possible and appropriate, by Census Division.

Design: Unlike CAREX, we do not have an established model to follow and the approach may need to evolve based on the data available and the nature of the carcinogens. Many exposures may be appropriate to present geographically (such as particulate air pollution, chlorination by-products, radon, and arsenic in drinking water). Other primary exposure routes such as food or consumer products may be assessed differently and an alternative model focusing on the identification of high-risk sub-groups may be used. As with CWCESP, estimates will be based directly on Canadian data sources when possible, any data indicating level of exposure summarized, and in the absence of hard data, experts in exposure will make estimates. Initially, we will begin with a relatively short list of environmental carcinogens that are common in Canada. Efforts are currently underway to identify priority carcinogens that also represent the diversity of environmental exposures in terms of routes of exposure (i.e. air, water, soil, food, and consumer products).

**Canadian Carcinogen Exposure Resource Centre (CCERC)**

Objective: to identify and store sources of exposure information used by both the environmental and occupational projects.

Design: The resources will include publications, publicly available reports, web-based resources, and actual data sets referenced in the CWCESP and CECESP. In the case of datasets we will provide a full description including data available, time and geographic coverage, and access information. In addition to providing transparency to the CWCESP and CECESP, the resources could be used by others for public education, surveillance, risk assessment, and research.

**Knowledge Transfer and Exchange (KTE)**

Objective: to develop a collaborative network that facilitates KTE at the provincial and national levels and supports the overarching goal of NOECSU to provide data to policy makers essential for developing prevention strategies.

We have begun developing this network already and to date have confirmed participation from the WorkSafeBC/UBC-CHSPR Partnership (http://www.soeh.ubc.ca/research/worksafebc) and the Occupational Cancer Research and Surveillance Project of Cancer Care Ontario (http://www.cancercare.on.ca/documents/Occupreport2006.pdf). Other organizations we will be approaching to participate in our KTE network include the PHAC National Collaborating Centre for Environmental Health and the provincial CSCC environmental or occupational committees. While we focus on KT at the policy level, we are also committed to making NOECSU available to the public. To support public access to our data and the many data sources that we draw from, we will be developing a Resource Centre within NOECSU that will be accessible through a number of formats including the Internet.

**NOECSU Structure**

NOECSU will be based in the School of Occupational and Environmental Hygiene at the University of British Columbia (http://www.soeh.ubc.ca). Paul Demers will be the Scientific Director. The staff will include an executive director with expertise in KTE, an occupational hygienist, an environmental scientist, a database manager, an occupational hygiene technician, a GIS technician, and a communications assistant. In addition, we will recruit new students to the area of cancer prevention by providing funding for up to 3 candidates to develop innovative projects that further the objectives of the unit. To maintain strong ties with the Canadian Strategy for Cancer Control we are proposing the National Environmental and Occupational Exposures Committee of the CSCC act as the National Advisory Committee for NOECSU. We will also create a Scientific Advisory Panel consisting of national experts in occupational and environmental exposures who will provide input regarding the validity of the exposure assessment approaches and priorities.

**Table 1: IARC Human Carcinogens (Group 1)**

| Category | Agents, groups of agents, mixtures, exposure circumstances |
|---|---|
| Industrial Chemical | 4-Aminobiphenyl (Vol. 1, Suppl. 7; 1987) |
| Metals | Arsenic and arsenic compounds (Vol. 23, Suppl. 7; 1987) |
| Fibres Dust | Asbestos (Vol. 14, Suppl. 7; 1987) |
| Pharmacological | Azathioprine (Vol. 26, Suppl. 7; 1987) |
| Industrial Chemical | Benzene (Vol. 29, Suppl. 7; 1987) |
| Industrial Chemical | Benzidine (Vol. 29, Suppl. 7; 1987) |
| Combustion Product | Benzo[a]pyrene (Vol. 32, Suppl. 7, Vol. 92; in preparation) |
| Metals | Beryllium and beryllium compounds (Vol. 58; 1993) |
| Pharmacological | N,N-Bis(2-chloroethyl)-2-naphthylamine (Chlornaphazine) (Vol. 4, Suppl. 7; 1987) |
| Industrial Chemical | Bis(chloromethyl)ether and chloromethyl methyl ether (technical-grade)(Vol. 4, Suppl. 7; 1987) |
| Pharmacological | 1,4-Butanediol dimethanesulfonate (Busulphan; Myleran) (Vol. 4, Suppl. 7; 1987) |
| Metals | Cadmium and cadmium compounds (Vol. 58; 1993) |
| Pharmacological | Chlorambucil (Vol. 26, Suppl. 7; 1987) |
| Pharmacological | 1-(2-Chloroethyl)-3-(4-methylcyclohexyl)-1-nitrosourea (Methyl-CCNU; Semustine) (Suppl. 7; 1987) |
| Metals | Chromium[VI] (Vol. 49; 1990) |
| Pharmacological | Ciclosporin (Vol. 50; 1990) |
| Pharmacological | Cyclophosphamide (Vol. 26, Suppl. 7; 1987) |
| Hormone | Diethylstilboestrol (Vol. 21, Suppl. 7; 1987) |
| Microbiological | Epstein-Barr virus (Vol. 70; 1997) |
| Mineral | Erionite (Vol. 42, Suppl. 7; 1987) |
| Hormone | Estrogen-progestogen menopausal therapy (combined) (Vol. 72, Vol. 91; in preparation) |
| Hormone | Estrogen-progestogen oral contraceptives (combined) (Vol. 72, Vol. 91; in preparation) |
| Hormone | Estrogens, nonsteroidal (Suppl. 7; 1987) |
| Hormone | Estrogens, steroidal (Suppl. 7; 1987) |
| Hormone | Estrogen therapy, postmenopausal (Vol. 72; 1999) |
| Industrial Chemical | Ethylene oxide (Vol. 60; 1994) |
| Pharmacological | Etoposide in combination with cisplatin and bleomycin (Vol. 76; 2000) |
| Industrial Chemical | Formaldehyde (Vol. 88; in preparation) |
| Metals | Gallium arsenide (Vol. 86; 2006) |
| Microbiological | Helicobacter pylori (infection with) (Vol. 61; 1994) |
| Microbiological | Hepatitis B virus (chronic infection with) (Vol. 59; 1994) |
| Microbiological | Hepatitis C virus (chronic infection with) (Vol. 59; 1994) |
| Microbiological | Human immunodeficiency virus type 1 (infection with) (Vol. 67; 1996) |
| Microbiological | Human papillomavirus types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59 and 66 (Vol. 64, Vol. 90; in preparation) |
| Microbiological | Human T-cell lymphotropic virus type I (Vol. 67; 1996) |
| Pharmacological | Melphalan (Vol. 9, Suppl. 7; 1987) |
| Pharmacological | 8-Methoxypsoralen (Methoxsalen) plus ultraviolet A radiation (Vol. 24, Suppl. 7; 1987) |
| Pharmacological | MOPP and other combined chemotherapy including alkylating agents (Suppl. 7; 1987) |
| Pharmacological | Mustard gas (Sulfur mustard) (Vol. 9, Suppl. 7; 1987) |
| Industrial Chemical | 2-Naphthylamine (Vol. 4, Suppl. 7; 1987) |
| Radiation | Neutrons (Vol. 75; 2000) |
| Metals | Nickel compounds (Vol. 49; 1990) |
| Diet | N'-Nitrosonornicotine (NNN) & 4-(N-Nitrosomethylamino)-1-(3-pyridyl)-1-butanone (NNK) (Vol. 37, Suppl. 7, Vol. 89; in preparation) |
| Microbiological | Opisthorchis viverrini (infection with) (Vol. 61; 1994) |
| Hormone | Oral contraceptives, sequential (Suppl. 7; 1987) |
| Radiation | Phosphorus-32, as phosphate (Vol. 78; 2001) |
| Radiation | Plutonium-239 and its decay products (may contain plutonium-240 and other isotopes), as aerosols (Vol. 78; 2001) |
| Radiation | Radioiodines, short-lived isotopes, including iodine-131, from atomic reactor accidents and nuclear weapons detonation (exposure during childhood) (Vol. 78; 2001) |
| Radiation | Radionuclides, a-particle-emitting, internally deposited (Vol. 78; 2001) |
| Radiation | Radionuclides, b-particle-emitting, internally deposited (Vol. 78; 2001) |
| Radiation | Radium-224 and its decay products (Vol. 78; 2001) |
| Radiation | Radium-226 and its decay products (Vol. 78; 2001) |
| Radiation | Radium-228 and its decay products (Vol. 78; 2001) |
| Radiation | Radon-222 and its decay products (Vol. 43, Vol. 78; 2001) |
| Microbiological | Schistosoma haematobium (infection with) (Vol. 61; 1994) |
| Fibres Dust | Silica, crystalline (inhaled in the form of quartz or cristobalite from occupational sources) (Vol. 68; 1997) |
| Radiation | Solar radiation (Vol. 55; 1992) |

**Table 1: IARC Human Carcinogens (Group 1, cont.)**

| Category | Agents, groups of agents, mixtures, exposure circumstances |
|---|---|
| Fibres Dust | Talc containing asbestiform fibres (Vol. 42, Suppl. 7; 1987) |
| Pharmacological | Tamoxifen (Vol. 66; 1996) |
| Industrial Chemical | 2,3,7,8-Tetrachlorodibenzo-para-dioxin [1746-01-6] (Vol. 69; 1997) |
| Pharmacological | Thiotepa (Vol. 50; 1990) |
| Pharmacological | Thorium-232 and its decay products, administered intravenously as a colloidal dispersion of thorium-232 dioxide (Vol. 78; 2001) |
| Pharmacological | Treosulfan (Vol. 26, Suppl. 7; 1987) |
| Industrial Chemical | Vinyl chloride (Vol. 19, Suppl. 7; 1987) |
| Radiation | X- and Gamma (g)-Radiation (Vol. 75; 2000) |
| Microbiological | Aflatoxins (naturally occurring mixtures of) (Vol. 56, Vol. 82; 2002) |
| Diet | Alcoholic beverages (Vol. 44; 1988) |
| Diet | Areca nut (Vol. 85; 2004) |
| Diet | Betel quid without tobacco (Vol. 85; 2004) |
| Industrial Chemical | Coal-tar pitches (Vol. 35, Suppl. 7; 1987) |
| Industrial Chemical | Coal-tars (Vol. 35, Suppl. 7; 1987) |
| Pharmacological | Herbal remedies containing plant species of the genus Aristolochia (Vol. 82; 2002) |
| Industrial Chemical | Mineral oils, untreated and mildly treated (Vol. 33, Suppl. 7; 1987) |
| Pharmacological | Phenacetin, analgesic mixtures containing (Suppl. 7; 1987) |
| Diet | Salted fish (Chinese-style) (Vol. 56; 1993) |
| Industrial Chemical | Shale-oils (Vol. 35, Suppl. 7; 1987) |
| Combustion Product | Soots (Vol. 35, Suppl. 7; 1987) |
| Diet | Tobacco, smokeless (Vol. 37, Suppl. 7, Vol. 89; in preparation) |
| Fibres Dust | Wood dust (Vol. 62; 1995) |
| Exposure Circumstance | Aluminium production (Vol. 34, Suppl. 7; 1987) |
| Metals | Arsenic in drinking-water (Vol. 84; 2004) |
| Exposure Circumstance | Auramine, manufacture of (Suppl. 7; 1987) |
| Exposure Circumstance | Boot and shoe manufacture and repair (Vol. 25, Suppl. 7; 1987) |
| Exposure Circumstance | Chimney sweeping (Vol. 92; in preparation) |
| Exposure Circumstance | Coal gasification (Vol. 34, Suppl. 7, Vol. 92; in preparation) |
| Exposure Circumstance | Coal-tar distillation (Vol. 92; in preparation) |
| Exposure Circumstance | Coke production (Vol. 34, Suppl. 7, Vol. 92; in preparation) |
| Exposure Circumstance | Furniture and cabinet making (Vol. 25, Suppl. 7; 1987) |
| Exposure Circumstance | Haematite mining (underground) with exposure to radon (Vol. 1, Suppl. 7; 1987) |
| Combustion Product | Involuntary smoking (exposure to secondhand or 'environmental' tobacco smoke) (Vol. 83; 2004) |
| Exposure Circumstance | Iron and steel founding (Vol. 34, Suppl. 7; 1987) |
| Exposure Circumstance | Isopropyl alcohol manufacture (strong-acid process) (Suppl. 7; 1987) |
| Exposure Circumstance | Magenta, manufacture of (Vol. 57; 1993) |
| Exposure Circumstance | Painter (occupational exposure as a) (Vol. 47; 1989) |
| Exposure Circumstance | Paving and roofing with coal-tar pitch (Vol. 92; in preparation) |
| Exposure Circumstance | Rubber industry (Vol. 28, Suppl. 7; 1987) |
| Exposure Circumstance | Strong-inorganic-acid mists containing sulfuric acid (occupational exposure to) (Vol. 54; 1992) |
| Combustion Product | Tobacco smoking and tobacco smoke (Vol. 83; 2004) |

**Table 2: IARC Probable Human Carcinogens (Group 2A)**

| Category | Agents and groups of agents |
|---|---|
| Industrial Chemical | Acrylamide (Vol. 60; 1994) |
| Diet | Adriamycin (Vol. 10, Suppl. 7; 1987) |
| Hormone | Androgenic (anabolic) steroids (Suppl. 7; 1987) |
| Pharmacological | Aristolochic acids (naturally occurring mixtures of) (Vol. 82; 2002) |
| Pharmacological | Azacitidine (Vol. 50; 1990) |
| Industrial Chemical | Benzidine-based dyes (Suppl. 7; 1987) |
| Pharmacological | Bischloroethyl nitrosourea (BCNU) (Vol. 26, Suppl.7; 1987) |
| Industrial Chemical | 1,3-Butadiene (Vol. 71; 1999) |
| Pesticide | Captafol (Vol. 53; 1991) |
| Pharmacological | Chloramphenicol (Vol. 50; 1990) |
| Industrial Chemical | a-Chlorinated toluenes (benzal chloride, benzotrichloride, benzyl chloride) and benzoyl chloride (combined exposures) (Vol. 29, Suppl. 7, Vol. 71; 1999) |
| Pharmacological | 1-(2-Chloroethyl)-3-cyclohexyl-1-nitrosourea (CCNU) (Vol. 26, Suppl. 7; 1987) |
| Industrial Chemical | 4-Chloro-*ortho*-toluidine (Vol. 77; 2000) |
| Pharmacological | Chlorozotocin (Vol. 50; 1990) |
| Pharmacological | Cisplatin (Vol. 26, Suppl. 7; 1987) |

## Table 2: IARC Probable Human Carcinogens (Group 2A, cont)

| Category | Agents and groups of agents |
|---|---|
| Microbiological | *Clonorchis sinensis* (infection with) (Vol. 61; 1994) |
| Combustion Product | Cyclopenta[*cd*]pyrene (Vol. 32, Suppl. 7, Vol. 92; in preparation) |
| Combustion Product | Dibenz[*a,h*]anthracene (Vol. 32, Suppl. 7, Vol. 92; in preparation) |
| Combustion Product | Dibenzo[*a,l*]pyrene (Vol. 32, Suppl. 7, Vol. 92; in preparation) |
| Industrial Chemical | Diethyl sulfate (Vol. 54, Vol. 71; 1999) |
| Industrial Chemical | Dimethylcarbamoyl chloride (Vol. 12, Suppl. 7, Vol. 71; 1999) |
| Industrial Chemical | 1,2-Dimethylhydrazine (Vol. 4, Suppl. 7, Vol. 71; 1999) |
| Industrial Chemical | Dimethyl sulfate (Vol. 4, Suppl. 7, Vol. 71; 1999) |
| Industrial Chemical | Epichlorohydrin (Vol. 11, Suppl. 7, Vol. 71; 1999) |
| Pesticide | Ethylene dibromide (Vol. 15, Suppl. 7, Vol. 71; 1999) |
| Industrial Chemical | *N*-Ethyl-*N*-nitrosourea (Vol. 17; 1987) |
| Pharmacological | Etoposide (Vol. 76; 2000) |
| Industrial Chemical | Glycidol (Vol. 77; 2000) |
| Metals | Indium phosphide (Vol. 86; 2006) |
| Diet | IQ (2-Amino-3-methylimidazo[4,5-*f*]quinoline) (Vol. 56; 1993) |
| Microbiological | Kaposi's sarcoma herpesvirus/human herpesvirus 8 (Vol. 70; 1997) |
| Metals | Lead compounds, inorganic (Vol. 87; 2006) |
| Pharmacological | 5-Methoxypsoralen (Vol. 40, Suppl. 7; 1987) |
| Industrial Chemical | 4,4´-Methylene bis(2-chloroaniline) (MOCA) (Vol.57; 1993) |
| Industrial Chemical | Methyl methanesulfonate (Vol. 7, Suppl. 7, Vol. 71; 1999) |
| Pharmacological | *N*-Methyl-*N*´-nitro-*N*-nitrosoguanidine(MNNG) (Vol. 4, Suppl. 7; 1987) |
| Industrial Chemical | *N*-Methyl-*N*-nitrosourea (Vol. 17; 1987) |
| Diet | Nitrate or nitrite (ingested) under conditions that result in endogenous nitrosation (Vol. 94; in preparation) |
| Pharmacological | Nitrogen mustard (Vol. 9, Suppl. 7; 1987) |
| Industrial Chemical | *N*-Nitrosodiethylamine (Vol. 17; 1987) |
| Industrial Chemical | *N*-Nitrosodimethylamine (Vol. 17; 1987) |
| Pharmacological | Phenacetin (Vol. 24, Suppl. 7; 1987) |
| Pharmacological | Procarbazine hydrochloride (Vol. 26, Suppl. 7; 1987) |
| Industrial Chemical | Styrene-7,8-oxide (Vol. 60; 1994) |
| Pharmacological | Teniposide (Vol. 76; 2000) |
| Industrial Chemical | Tetrachloroethylene (Vol. 63; 1995) |
| Industrial Chemical | *ortho*-Toluidine (Vol. 77; 2000) |
| Industrial Chemical | Trichloroethylene (Vol. 63; 1995) |
| Industrial Chemical | 1,2,3-Trichloropropane (Vol. 63; 1995) |
| Industrial Chemical | Tris(2,3-dibromopropyl) phosphate (Vol. 20, Suppl. 7, Vol. 71;1999) |
| Radiation | Ultraviolet radiation A (Vol. 55; 1992) |
| Radiation | Ultraviolet radiation B (Vol. 55; 1992) |
| Radiation | Ultraviolet radiation C (Vol. 55; 1992) |
| Ind Chem | Vinyl bromide (Vol. 39, Suppl. 7, Vol. 71; 1999) |
| Ind Chem | Vinyl fluoride (Vol. 63; 1995) |
| Ind Chem | Creosotes (Vol. 35, Suppl. 7, Vol. 92; in preparation) |
| Combustion Product | Diesel engine exhaust (Vol. 46; 1989) |
| Diet | Hot mate (Vol. 51; 1991) |
| Pesticide | Non-arsenical insecticides (occupational exposures in spraying and application of) (Vol. 53; 1991) |
| Industrial Chemical | Polychlorinated biphenyls (Vol. 18, Suppl. 7; 1987) |
| Exposure Circumstance | Art glass, glass containers and pressed ware (manufacture of) (Vol. 58; 1993) |
| Exposure Circumstance | Carbon electrode manufacture (Vol. 92; in preparation) |
| Metals | Cobalt Metals with tungsten carbide (Vol. 86; 2006) |
| Exposure Circumstance | Hairdresser or barber (occupational exposure as a) (Vol. 57; 1993) |
| Exposure Circumstance | Petroleum refining (occupational exposures in) (Vol. 45; 1989) |
| Radiation | Sunlamps and sunbeds (use of) (Vol. 55; 1992) |

## Table 3: IARC Possible Human Carcinogens (Group 2B)

| Category | Agents and groups of agents |
|---|---|
| Diet | A-alpha-C (2-Amino-9*H*-pyrido[2,3-*b*]indole) (Vol. 40, Suppl. 7; 1987) |
| Industrial Chemical | Acetaldehyde (Vol. 36, Suppl. 7, Vol. 71; 1999) |
| Industrial Chemical | Acetamide (Vol. 7, Suppl. 7, Vol. 71; 1999) |
| Industrial Chemical | Acrylonitrile (Vol. 71; 1999) |
| Diet | AF-2 [2-(2-Furyl)-3-(5-nitro-2-furyl)acrylamide] (Vol.31, Suppl. 7; 1987) |
| Microbiological | Aflatoxin M1 (Vol. 56; 1993) |
| Industrial Chemical | *para*-Aminoazobenzene (Vol. 8, Suppl. 7; 1987) |
| Industrial Chemical | *ortho*-Aminoazotoluene (Vol. 8, Suppl. 7; 1987) |
| Pharmacological | 2-Amino-5-(5-nitro-2-furyl)-1,3,4-thiadiazole (Vol. 7, Suppl. 7; 1987) |
| Pharmacological | Amsacrine (Vol. 76; 2000) |
| Industrial Chemical | *ortho*-Anisidine (Vol. 73; 1999) |
| Metals | Antimony trioxide (Vol. 47; 1989) |
| Pesticide | Aramite® (Vol. 5, Suppl. 7; 1987) |
| Industrial Chemical | Auramine (technical-grade) (Vol. 1, Suppl. 7; 1987) |
| Diet | Azaserine (Vol. 10, Suppl. 7; 1987) |
| Industrial Chemical | Aziridine (Vol. 9, Suppl. 7, Vol. 71; 1999) |
| Combustion Product | Benz[*j*]aceanthrylene (Vol. 92; in preparation) |
| Combustion Product | Benz[*a*]anthracene (Vol. 32, Suppl. 7, Vol. 92; in preparation) |
| Combustion Product | Benzo[*b*]fluoranthene (Vol. 32, Suppl. 7, Vol. 92; in preparation) |
| Combustion Product | Benzo[*j*]fluoranthene (Vol. 32, Suppl. 7, Vol. 92; in preparation) |
| Combustion Product | Benzo[*k*]fluoranthene (Vol. 32, Suppl. 7, Vol. 92; in preparation) |
| Industrial Chemical | Benzofuran (Vol. 63; 1995) |
| Combustion Product | Benzo[*c*]phenanthrene (Vol. 32, Suppl. 7, Vol. 92; in preparation) |
| Industrial Chemical | Benzyl violet 4B (Vol. 16, Suppl. 7; 1987) |
| Industrial Chemical | 2,2-Bis(bromomethyl)propane-1,3-diol (Vol. 77; 2000) |
| Pharmacological | Bleomycins (Vol. 26, Suppl. 7; 1987) |
| Diet | Bracken fern (Vol. 40, Suppl. 7; 1987) |
| Industrial Chemical | Bromodichloromethane (Vol. 52, Vol. 71; 1999) |
| Diet | Butylated hydroxyanisole (BHA) (Vol. 40, Suppl. 7;1987) |
| Industrial Chemical | beta-Butyrolactone (Vol. 11, Suppl. 7, Vol. 71; 1999) |
| Diet | Caffeic acid (Vol. 56; 1993) |
| Industrial Chemical | Carbon black (Vol. 65, Vol. 93; in preparation) |
| Industrial Chemical | Carbon tetrachloride (Vol. 20, Suppl. 7, Vol. 71; 1999) |
| Industrial Chemical | Catechol (Vol. 15, Suppl. 7, Vol. 71; 1999) |
| Pesticide | Chlordane (Vol. 79; 2001) |
| Pesticide | Chlordecone (Kepone) (Vol. 20, Suppl. 7; 1987) |
| Industrial Chemical | Chlorendic acid (Vol. 48; 1990) |
| Industrial Chemical | *para*-Chloroaniline (Vol. 57; 1993) |
| Industrial Chemical | 3-Chloro-4-(dichloromethyl)-5-hydroxy-2(5*H*)-furanone (Vol. 84; 2004) |
| Industrial Chemical | Chloroform (Vol. 73; 1999) |
| Industrial Chemical | 1-Chloro-2-methylpropene [513-37-1] (Vol. 63; 1995) |
| Pesticide | Chlorophenoxy herbicides (Vol. 41, Suppl. 7; 1987) |
| Industrial Chemical | 4-Chloro-*ortho*-phenylenediamine (Vol. 27, Suppl.7; 1987) |
| Industrial Chemical | Chloroprene (Vol. 71; 1999) |
| Pesticide | Chlorothalonil (Vol. 73; 1999) |
| Combustion Product | Chrysene (Vol. 32, Suppl. 7, Vol. 92; in preparation) |
| Industrial Chemical | CI Acid Red 114 (Vol. 57; 1993) |
| Industrial Chemical | CI Basic Red 9 (Vol. 57; 1993) |
| Industrial Chemical | CI Direct Blue 15 (Vol. 57; 1993) |
| Industrial Chemical | Citrus Red No. 2 (Vol. 8, Suppl. 7; 1987) |
| Metals | Cobalt and cobalt compounds (Vol. 52; 1991) |
| Metals | Cobalt sulfate and other soluble cobalt(II) salts (Vol. 86; 2006) |
| Industrial Chemical | *para*-Cresidine (Vol. 27, Suppl. 7; 1987) |
| Diet | Cycasin (Vol. 10, Suppl. 7; 1987) |
| Pharmacological | Dacarbazine (Vol. 26, Suppl. 7; 1987) |
| Pharmacological | Dantron (Chrysazin; 1,8-Dihydroxyanthraquinone) (Vol. 50; 1990) |
| Diet | Daunomycin (Vol. 10, Suppl. 7; 1987) |
| Pesticide | DDT [*p,p'*-DDT, 50-29-3] (Vol. 53; 1991) |
| Industrial Chemical | *N,N'*-Diacetylbenzidine (Vol. 16, Suppl.7; 1987) |
| Industrial Chemical | 2,4-Diaminoanisole (Vol. 79; 2001) |
| Industrial Chemical | 4,4'-Diaminodiphenyl ether (Vol. 29, Suppl. 7; 1987) |
| Industrial Chemical | 2,4-Diaminotoluene (Vol. 16, Suppl. 7; 1987) |
| Combustion Product | Dibenz[*a,h*]acridine (Vol. 32, Suppl. 7; 1987) |

## Table 3: IARC Possible Human Carcinogens (Group 2B, cont)

| Category | Agents and groups of agents |
|---|---|
| Combustion Product | Dibenz[*a,j*]acridine (Vol. 32, Suppl. 7; 1987) |
| Combustion Product | 7*H*-Dibenzo[*c,g*]carbazole (Vol. 32, Suppl.7; 1987) |
| Combustion Product | Dibenzo[*a,h*]pyrene (Vol. 32, Suppl. 7, Vol. 92; in preparation) |
| Combustion Product | Dibenzo[*a,i*]pyrene (Vol. 32, Suppl. 7, Vol. 92; in preparation) |
| Pesticide | 1,2-Dibromo-3-chloropropane (Vol. 20, Suppl. 7, Vol. 71; 1999) |
| Industrial Chemical | 2,3-Dibromopropan-1-ol (Vol. 77; 2000) |
| Industrial Chemical | Dichloroacetic acid (Vol. 84; 2004) |
| Pesticide | *para*-Dichlorobenzene (Vol. 73; 1999) |
| Industrial Chemical | 3,3'-Dichlorobenzidine (Vol. 29, Suppl. 7; 1987) |
| Industrial Chemical | 3,3'-Dichloro-4,4'-diaminodiphenyl ether (Vol. 16,Suppl. 7; 1987) |
| Industrial Chemical | 1,2-Dichloroethane (Vol. 20, Suppl. 7, Vol. 71; 1999) |
| Industrial Chemical | Dichloromethane (methylene chloride) (Vol. 71; 1999) |
| Industrial Chemical | 1,3-Dichloropropene (technical-grade) (Vol. 41, Suppl.7, Vol. 71; 1999) |
| Pesticide | Dichlorvos (Vol. 53; 1991) |
| Industrial Chemical | 1,2-Diethylhydrazine (Vol. 4, Suppl. 7, Vol. 71; 1999) |
| Industrial Chemical | Diglycidyl resorcinol ether (Vol. 36, Suppl. 7, Vol. 71; 1999) |
| Diet | Dihydrosafrole (Vol. 10, Suppl. 7; 1987) |
| Industrial Chemical | Diisopropyl sulfate (Vol. 54, Vol. 71; 1999) |
| Industrial Chemical | 3,3'-Dimethoxybenzidine (*ortho*-Dianisidine) (Vol. 4, Suppl. 7; 1987) |
| Industrial Chemical | *para*-Dimethylaminoazobenzene (Vol. 8, Suppl. 7; 1987) |
| Pharmacological | *trans*-2-[(Dimethylamino)methylimino]-5-[2-(5-nitro-2-furyl)-vinyl]-1,3,4-oxadiazole (Vol. 7, Suppl. 7; 1987) |
| Industrial Chemical | 2,6-Dimethylaniline (2,6-Xylidine) (Vol. 57; 1993) |
| Industrial Chemical | 3,3'-Dimethylbenzidine (*ortho*-Tolidine) (Vol.1, Suppl. 7; 1987) |
| Industrial Chemical | 1,1-Dimethylhydrazine (Vol. 4, Suppl. 7, Vol. 71; 1999) |
| Industrial Chemical | 3,7-Dinitrofluoranthene (Vol. 65; 1996) |
| Industrial Chemical | 3,9-Dinitrofluoranthene (Vol. 65; 1996) |
| Combustion Product | 1,6-Dinitropyrene (Vol. 46; 1989) |
| Combustion Product | 1,8-Dinitropyrene (Vol. 46; 1989) |
| Industrial Chemical | 2,4-Dinitrotoluene (Vol. 65; 1996) |
| Industrial Chemical | 2,6-Dinitrotoluene (Vol. 65; 1996) |
| Industrial Chemical | 1,4-Dioxane (Vol. 11, Suppl. 7, Vol. 71; 1999) |
| Industrial Chemical | Disperse Blue 1 (Vol. 48; 1990) |
| Industrial Chemical | 1,2-Epoxybutane (Vol. 47, Vol. 71; 1999) |
| Industrial Chemical | Ethyl acrylate (Vol. 39, Suppl. 7, Vol. 71; 1999) |
| Industrial Chemical | Ethylbenzene (Vol. 77; 2000) |
| Pharmacological | Ethyl methanesulfonate (Vol. 7, Suppl. 7; 1987) |
| Pharmacological | 2-(2-Formylhydrazino)-4-(5-nitro-2-furyl)thiazole (Vol. 7, Suppl. 7; 1987) |
| Microbiological | Fumonisin $B_1$ (Vol. 82; 2002) |
| Industrial Chemical | Furan (Vol. 63; 1995) |
| Diet | Glu-P-1 (2-Amino-6-methyldipyrido[1,2-*a*:3',2'-*d*]imidazole) (Vol. 40, Suppl. 7; 1987) |
| Diet | Glu-P-2 (2-Aminodipyrido[1,2-*a*:3',2'-*d*]imidazole) (Vol. 40, Suppl. 7; 1987) |
| Industrial Chemical | Glycidaldehyde [765-34-4] (Vol. 11, Suppl. 7, Vol. 71; 1999) |
| Pharmacological | Griseofulvin [126-07-8] (Vol. 79; 2001) |
| Industrial Chemical | HC Blue No. 1 [2784-94-3] (Vol. 57; 1993) |
| Pesticide | Heptachlor (Vol. 79; 2001) |
| Pesticide | Hexachlorobenzene (Vol. 79; 2001) |
| Industrial Chemical | Hexachloroethane (Vol. 73; 1999) |
| Pesticide | Hexachlorocyclohexanes (Lindane) (Vol. 20, Suppl. 7; 1987) |
| Industrial Chemical | Hexamethylphosphoramide (Vol. 15, Suppl. 7, Vol. 71; 1999) |
| Microbiological | Human immunodeficiency virus type 2 (infection with) (Vol. 67; 1996) |
| Microbiological | Human papillomavirus types 6 and 11 (Vol. 90; in preparation) |
| Microbiological | Human papillomavirus genus beta (some types) (Vol. 90; in preparation) |
| Industrial Chemical | Hydrazine (Vol. 4, Suppl. 7, Vol. 71; 1999) |
| Pharmacological | 1-Hydroxyanthraquinone (Vol. 82; 2002) |
| Combustion Product | Indeno[1,2,3-*cd*]pyrene (Vol. 32, Suppl. 7, Vol. 92; in preparation) |
| Diet | Iron-dextran complex (Vol. 2, Suppl. 7; 1987) |
| Industrial Chemical | Isoprene (Vol. 60, Vol. 71; 1999) |
| Diet | Lasiocarpine (Vol. 10, Suppl. 7; 1987) |
| Metals | Lead (Vol. 23, Suppl. 7; 1987) |
| Industrial Chemical | Magenta (containing CI Basic Red 9) (Vol. 57; 1993) |
| Radiation | Magnetic fields (extremely low-frequency) (Vol. 80; 2002) |
| Diet | MeA-alpha-C (2-Amino-3-methyl-9*H*-pyrido[2,3-*b*]indole) (Vol. 40, Suppl. 7; 1987) |
| Hormone | Medroxyprogesterone acetate (Vol. 21, Suppl. 7; 1987) |

## Table 3: IARC Possible Human Carcinogens (Group 2B)

| Category | Agents and groups of agents |
|---|---|
| Diet | MeIQ (2-Amino-3,4-dimethylimidazo[4,5-*f*]quinoline) (Vol. 56; 1993) |
| Diet | MeIQx (2-Amino-3,8-dimethylimidazo[4,5-*f*]quinoxaline) (Vol. 56; 1993) |
| Pharmacological | Merphalan (Vol. 9, Suppl. 7; 1987) |
| Pharmacological | 2-Methylaziridine (Propyleneimine) (Vol. 9, Suppl. 7, Vol. 71; 1999) |
| Diet | Methylazoxymethanol acetate (Vol. 10, Suppl. 7; 1987) |
| Combustion Product | 5-Methylchrysene (Vol. 32, Suppl. 7, Vol. 92; in preparation) |
| Industrial Chemical | 4,4'-Methylene bis(2-methylaniline) (Vol. 4, Suppl.7; 1987) |
| Industrial Chemical | 4,4'-Methylenedianiline (Vol. 39, Suppl. 7; 1987) |
| Metals | Methylmercury compounds (Vol. 58; 1993) |
| Industrial Chemical | 2-Methyl-1-nitroanthraquinone (uncertain purity) (Vol.27, Suppl. 7; 1987) |
| Industrial Chemical | *N*-Methyl-*N*-nitrosourethane (Vol. 4, Suppl.7; 1987) |
| Pharmacological | Methylthiouracil (Vol. 79; 2001) |
| Pharmacological | Metronidazole (Vol. 13, Suppl. 7; 1987) |
| Microbiological | Microcystin-LR (Vol. 94; in preparation) |
| Pesticide | Mirex (Vol. 20, Suppl. 7; 1987) |
| Diet | Mitomycin C (Vol. 10, Suppl. 7; 1987) |
| Pharmacological | Mitoxantrone (Vol. 76; 2000) |
| Diet | Monocrotaline (Vol. 10, Suppl. 7; 1987) |
| Pharmacological | 5-(Morpholinomethyl)-3-[(5-nitrofurfurylidene)amino]-2-oxazolidinone [3795-88-8] (Vol. 7, Suppl. 7; 1987) |
| Pharmacological | Nafenopin (Vol. 24, Suppl. 7; 1987) |
| Industrial Chemical | Naphthalene (Vol. 82; 2002) |
| Metals | Nickel, Metalslic and alloys (Vol. 49; 1990) |
| Pharmacological | Niridazole (Vol. 13, Suppl. 7; 1987) |
| Industrial Chemical | Nitrilotriacetic acid and its salts (Vol. 73; 1999) |
| Industrial Chemical | 5-Nitroacenaphthene (Vol. 16, Suppl. 7; 1987) |
| Industrial Chemical | 2-Nitroanisole (Vol. 65; 1996) |
| Industrial Chemical | Nitrobenzene (Vol. 65; 1996) |
| Combustion Product | 6-Nitrochrysene (Vol. 46; 1989) |
| Pesticide | Nitrofen (technical-grade) (Vol. 30, Suppl. 7; 1987) |
| Combustion Product | 2-Nitrofluorene (Vol. 46; 1989) |
| Pharmacological | 1-[(5-Nitrofurfurylidene)amino]-2-imidazolidinone (Vol.7, Suppl. 7; 1987) |
| Pharmacological | *N*-[4-(5-Nitro-2-furyl)-2-thiazolyl]acetamide (Vol. 7, Suppl. 7; 1987) |
| Pharmacological | Nitrogen mustard *N*-oxide (Vol. 9, Suppl. 7;1987) |
| Industrial Chemical | Nitromethane (Vol. 77; 2000) |
| Industrial Chemical | 2-Nitropropane (Vol. 29, Suppl. 7, Vol. 71; 1999) |
| Combustion Product | 1-Nitropyrene (Vol. 46; 1989) |
| Combustion Product | 4-Nitropyrene (Vol. 46; 1989) |
| Industrial Chemical | *N*-Nitrosodi-*n*-butylamine (Vol. 17, Suppl.7; 1987) |
| Industrial Chemical | *N*-Nitrosodiethanolamine (Vol. 17, Suppl. 7, Vol. 77; 2000) |
| Industrial Chemical | *N*-Nitrosodi-*n*-propylamine (Vol. 17, Suppl.7; 1987) |
| Diet | 3-(*N*-Nitrosomethylamino)propionitrile (Vol. 85; 2004) |
| Industrial Chemical | *N*-Nitrosomethylethylamine (Vol. 17, Suppl. 7; 1987) |
| Industrial Chemical | *N*-Nitrosomethylvinylamine (Vol. 17, Suppl. 7; 1987) |
| Industrial Chemical | *N*-Nitrosomorpholine (Vol. 17, Suppl. 7; 1987) |
| Industrial Chemical | *N*-Nitrosopiperidine (Vol. 17, Suppl. 7; 1987) |
| Industrial Chemical | *N*-Nitrosopyrrolidine (Vol. 17, Suppl. 7; 1987) |
| Industrial Chemical | *N*-Nitrososarcosine (Vol. 17, Suppl. 7; 1987) |
| Microbiological | Ochratoxin A (Vol. 56; 1993) |
| Industrial Chemical | Oil Orange SS (Vol. 8, Suppl. 7; 1987) |
| Pharmacological | Oxazepam (Vol. 66; 1996) |
| Fibres Dust | Palygorskite (attapulgite)(long fibres, > 5 micrometres)(Vol. 68; 1997) |
| Pharmacological | Panfuran S [794-93-4] (containing dihydroxymethylfuratrizine) (Vol. 24, Suppl. 7; 1987) |
| Pharmacological | Phenazopyridine hydrochloride (Vol. 24, Suppl. 7; 1987) |
| Pharmacological | Phenobarbital (Vol. 79; 2001) |
| Pharmacological | Phenolphthalein (Vol. 76; 2000) |
| Pharmacological | Phenoxybenzamine hydrochloride (Vol. 24, Suppl. 7; 1987) |
| Industrial Chemical | Phenyl glycidyl ether (Vol. 47, Vol. 71; 1999) |
| Pharmacological | Phenytoin (Vol. 66; 1996) |
| Diet | PhIP (2-Amino-1-methyl-6-phenylimidazo[4,5-*b*]pyridine) (Vol. 56; 1993) |
| Pesticide | Polychlorophenols and their sodium salts (mixed expo.) (Vol. 41, Suppl. 7, Vol. 53, Vol. 71; 1999) |
| Industrial Chemical | Ponceau MX (Vol. 8, Suppl. 7; 1987) |
| Industrial Chemical | Ponceau 3R (Vol. 8, Suppl. 7; 1987) |

## Table 3: IARC Possible Human Carcinogens (Group 2B)

| Category | Agents and groups of agents |
|---|---|
| Industrial Chemical | Potassium bromate (Vol. 73; 1999) |
| Hormone | Progestins (Suppl. 7; 1987) |
| Hormone | Progestogen-only contraceptives (Vol. 72; 1999) |
| Industrial Chemical | 1,3-Propane sultone (Vol. 4, Suppl. 7, Vol. 71; 1999) |
| Industrial Chemical | beta-Propiolactone (Vol. 4, Suppl. 7, Vol. 71; 1999) |
| Industrial Chemical | Propylene oxide (Vol. 60; 1994) |
| Pharmacological | Propylthiouracil (Vol. 79; 2001) |
| Fibres Dust | Refractory ceramic fibres (Vol. 43, Vol. 81; 2002) |
| Pharmacological | Riddelliine (Vol. 10, Suppl. 7, Vol. 82; 2002) |
| Diet | Safrole (Vol. 10, Suppl. 7; 1987) |
| Microbiological | *Schistosoma japonicum* (infection with) (Vol. 61; 1994) |
| Pesticide | Sodium *ortho*-phenylphenate (Vol. 73; 1999) |
| Fibres Dust | Special-purpose fibres such as E-glass & '475' glass fibres (Vol. 81; 2002) |
| Diet | Sterigmatocystin (Vol. 10, Suppl. 7; 1987) |
| Pharmacological | Streptozotocin (Vol. 17, Suppl. 7; 1987) |
| Industrial Chemical | Styrene (Vol. 60, 82; 2002) |
| Pesticide | Sulfallate (Vol. 30, Suppl. 7; 1987) |
| Pharmacological | Surgical implants and other foreign bodies (Vol. 74; 1999): |
| Industrial Chemical | Tetrafluoroethylene (Vol. 19, Suppl. 7, Vol. 71; 1999) |
| Industrial Chemical | Tetranitromethane (Vol. 65; 1996) |
| Pharmacological | Thioacetamide (Vol. 7, Suppl. 7; 1987) |
| Industrial Chemical | 4,4'-Thiodianiline (Vol. 27, Suppl. 7; 1987) |
| Industrial Chemical | Titanium dioxide (Vol. 47, Vol. 93; in preparation) |
| Pharmacological | Thiouracil (Vol. 79; 2001) |
| Industrial Chemical | Toluene diisocyanates (Vol. 39, Suppl. 7, Vol. 71; 1999) |
| Pharmacological | Trichlormethine (Trimustine hydrochloride) (Vol. 50; 1990) |
| Diet | Trp-P-1 (3-Amino-1,4-dimethyl-5*H*-pyrido[4,3-*b*]indole) (Vol. 31, Suppl. 7; 1987) |
| Diet | Trp-P-2 (3-Amino-1-methyl-5*H*-pyrido[4,3-*b*]indole) (Vol. 31, Suppl. 7; 1987) |
| Industrial Chemical | Trypan blue (Vol. 8, Suppl. 7; 1987) |
| Pharmacological | Uracil mustard (Vol. 9, Suppl. 7; 1987) |
| Industrial Chemical | Urethane (Vol. 7, Suppl. 7; 1987) |
| Metals | Vanadium pentoxide (Vol. 86; in preparation) |
| Industrial Chemical | Vinyl acetate (Vol. 63; 1995) |
| Industrial Chemical | 4-Vinylcyclohexene (Vol. 60; 1994) |
| Industrial Chemical | 4-Vinylcyclohexene diepoxide (Vol. 60; 1994) |
| Pharmacological | Zalcitabine (Vol. 76; 2000) |
| Pharmacological | Zidovudine (AZT) (Vol. 76; 2000) |
| Industrial Chemical | Bitumens, extracts of steam-refined and air-refined (Vol. 35, Suppl. 7; 1987) |
| Diet | Carrageenan, degraded (Vol. 31, Suppl. 7; 1987) |
| Industrial Chemical | Chlorinated paraffins of average carbon chain length C12 and average degree of chlorination approximately 60% (Vol. 48; 1990) |
| Diet | Coffee (Vol. 51; 1991) |
| Industrial Chemical | Diesel fuel, marine (Vol. 45; 1989) |
| Combustion Product | Engine exhaust, gasoline (Vol. 46; 1989) |
| Industrial Chemical | Fuel oils, residual (heavy) (Vol. 45; 1989) |
| Industrial Chemical | Gasoline (Vol. 45; 1989) |
| Diet | Pickled vegetables (traditional in Asia) (Vol. 56; 1993) |
| Industrial Chemical | Polybrominated biphenyls (Vol. 41, Suppl. 7; 1987) |
| Pesticide | Toxaphene (Polychlorinated camphenes) (Vol. 79; 2001) |
| Microbiological | Toxins derived from *Fusarium moniliforme* (Vol. 56; 1993) |
| Metals | Welding fumes (Vol. 49; 1990) |
| Exposure Circumstance | Carpentry and joinery (Vol. 25, Suppl. 7; 1987) |
| Exposure Circumstance | Cobalt Metals without tungsten carbide (Vol. 86; 2006) |
| Exposure Circumstance | Dry cleaning (occupational exposures in) (Vol. 63; 1995) |
| Exposure Circumstance | Printing processes (occupational exposures in) (Vol. 65; 1996) |
| Pharmacological | Talc-based body powder (perineal use of) (Vol. 93; in preparation) |
| Exposure Circumstance | Textile manufacturing industry (work in) (Vol. 48; 1990) |

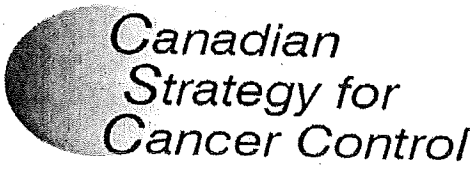
**Notes on categories**
Diet: Dietary agents and naturally occurring contaminants (excludes pesticides)
Industrial Chemical: Industrial chemicals and related contaminants or by-products (excludes pesticides)

**Meeting of the National Committee on Environmental and Occupational Exposures (NCEOE) – December 11th, 2006 (8:00am-5:00pmEST) - Ottawa**
**South Way Inn** – *Capital Room*

# Agenda

**Chair: Mr. Larry Stoffman**

| | |
|---|---|
| 8:00am | **Refreshments** |
| 8:30am | **1.0 Welcome & Review of Agenda –Larry Stoffman** |
| 8:45am | **2.0 Update on the PP-AG & CSCC – Barb K/Larry** |
| **Strategic Planning - NCEOE Budget and Proposed Core Activities** | |
| 9:15am | **3.0 Overview- Larry Stoffman**<br>**4.0 CAREX O and E – Paul Demers, Larry, and committee discussion** |
| 10:15am | **Health Break** |
| 10:30am | **5.0 TUR Conference and Follow-Up – Larry, Paul, Andy King, Alan Abelsohn and all** |
| 11:00am | **6.0 WHMIS and MSDS Project – Larbi, Larry and all** |
| 12:00pm | **LUNCH** |
| 1:00pm | **7.0 NGO Support** |
| 2:00pm | **Health Break** |
| 2:30pm | **8.0 Occupational History & Medical Education - Jim, Gary, Paul, all** |
| 3:30pm | **9.0 Communications strategy: all** ONTARIO RIGHT-TO KNOW CCS LABELING |
| 4:30pm | **10.0 Other Business**<br>• **Chemicals policy REACH and CEPA gap analysis : Conference Update - Sarah Miller** |
| 5:00pm | **11.0 Adjournment** |




# The Revised Strategic Plan of the Primary Prevention Action Group of the Canadian Strategy for Cancer Control 2006-2010

DRAFT

November 17, 2006

# CANADIAN STRATEGY FOR CANCER CONTROL
# Primary Prevention Action Group (PP-AG)

## *Revised Strategic Plan (2006-2010)*

### A. MANDATE of PP-AG

- Reduce the incidence of preventable cancers in Canada, and ultimately reduce morbidity and mortality from this disease.
- Play a leadership role in promoting major change in the cancer control and health care paradigms, whereby primary prevention/health promotion obtains the appropriate increased priority and resource allocation, and this increase is sustained in the future.

### B. BACKGROUND

#### 1. What is Primary Prevention of Cancer?

The primary prevention of cancer means removing the exposure or risk factors that give rise to cancer or improving the ability of the body to resist cancer. This includes activities designed to eliminate/reduce environmental, occupational, and lifestyle causes of cancer (such as environmental or occupational exposure to classified carcinogens and smoking) and actions to strengthen resistance against cancer (such as improved nutrition).

Cancer primary prevention is directed to individual behaviour change, implementation of health-promoting public policy, and mobilization of communities so as to create environments where healthy choices become easier choices.

The underlying social determinants of health also need to be addressed, emphasizing the importance of considering areas beyond the traditional health sector. (Note that our action group is focused on primary prevention. Another CSCC action group is addressing screening – the testing and early detection of disease among apparently healthy individuals in the population).

## 2. Why is Primary Prevention a Priority in the CSCC?

- **Cancer is growing** – In 2006, some 153,100 Canadians will be diagnosed with cancer, and about 70,400 will die as a result of the disease. Two in five of us will be diagnosed with cancer at some point in our lives. One in two diagnosed will die of cancer, making it the most dreaded disease in the country. While cancer *rates* are not changing dramatically from year to year, the *number* of people being diagnosed and dying from cancer continues to rise inexorably, due in part to an increasing population, but mostly due to an aging population. If current rates continue, over the next 30 years more than 2.4 million Canadians will be diagnosed with cancer, and some 872,000 will die. *Direct* costs to the health care system will exceed $175 billion.

  Cancer is currently the largest cause of PYLL (potential years of life lost), and, by 2010, will be the greatest cause of deaths in the country (overtaking heart disease). In 1997, cancer was responsible for more Canadian deaths than strokes, chronic obstructive pulmonary disease, respiratory disease, pneumonia, diabetes, suicides, unintentional injuries, liver disease and HIV/AIDS *combined*.

- **At least 50% of cancer is due to preventable factors** – It comes as a surprise to many people to learn that only about 10 percent of cancers are due to heredity. Behaviours such as smoking, poor diet, inactivity, and obesity have the greatest bearing – not only on cancer – but on a number of other 'chronic' diseases. Other risk factors/behaviours are cancer-specific, including sun/UV exposure and occupational and environmental exposure to carcinogens. The recent development of a vaccine to prevent HPV (and in turn, prevent cervical cancer) opens up further opportunities for prevention. As noted in *The Strategic Framework for the CSCC* (2005), "primary prevention has the potential to have the greatest beneficial impact on the burden of cancer in Canada."

- **Cancer primary prevention has not had the priority it deserves** – Provincial cancer agencies have focused on diagnosis and treatment, with primary prevention typically receiving only approximately 1% in budget allocations. The Canadian Cancer Society has been assuming a heightened role in this area, but there are limits to what can be expected of NGOs and donor dollars. The concept that primary prevention is a wise investment, rather than an incremental expense, has been slow to take hold. The CSCC, however, has demonstrated its commitment to this area by allocating some 16% of its budget (more than $41 million) to prevention efforts over five years.

## 3. How do we need to approach primary prevention?

- **Primary prevention of cancer cannot happen in isolation** – No one cancer organization can address the full scope of primary prevention needs, and cancer primary prevention cannot be done in isolation. Both a common risk factor approach (addressing smoking, poor diet, inactivity, and obesity) and a cancer-specific approach (addressing UV, occupational and environmental exposure and certain infectious agents) are necessary.

- **Partnerships are key** – Partnerships increase both the opportunity for collaboration between different stakeholders in the world of prevention and health promotion, and the possibility of focusing limited resources to achieve the greatest benefit. The fact that a remarkably short list of major risk factors relates to an array of serious chronic diseases multiplies the potential for such initiatives.

- **There is no 'magic bullet'** – A focus on one risk factor, and one intervention will not do the job required. Change agency at both individual and population levels are needed on multiple fronts. Most risk factors do not exist in isolation in an individual; further, each risk tends to have a significant *independent* effect on mortality and morbidity. Thus to make the most population health gains, sometimes the factors need to be addressed in combination. The synergistic benefits of reducing multiple risk factors are potentially enormous. As well, a combination of effective approaches is needed to address each risk factor.

- **We need to enhance the evidence base in primary prevention** – A basic principle of the CSCC is that we continue to build a platform of knowledge in cancer control, such that evidence/best practices will inform policy and practice. There is a need for improved surveillance, program evaluation, data collection and analysis to identify and disseminate existing and emerging information.

- **But cancer can't wait for full evidence** – While we have a responsibility to be evidence-based, we also need to act before all the evidence is in. For example, lessons learned in tobacco control should be adaptable to other risk factors. Also, the CSCC has approved the precautionary principle – 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 magnitude of the potential effect, decision-making must be based on precaution.

- **The importance of "early primary" or exposure prevention** – Exposure prevention involves the adoption of strategies to enable people to avoid getting risk factors in the first place. It is seen to be superior to later forms of prevention because it is often easier, for example, to never gain a kilogram of weight than it is to lose that same kilogram after it has been gained. This example underscores the clear strategic value of targeting prevention efforts early in life, before risk factors develop.

- **Small changes can make a big difference** – Generally speaking, our focus is on "shifting the curve" – helping large numbers of people make relatively small changes that eventually have a significant impact at the population health level.

- **Primary prevention should not be positioned to 'blame the victim"** – Focusing on lifestyle "choices" alone demonstrates a lack of understanding of the social determinants of health. Healthy choices are not easy choices for all groups of people. We must strive to create environments where more people make such choices. Ultimately, the personal and the environmental perspective on health change must be seen as complementary 'dancing partners' rather than forces that are ideologically opposed.

- **Health inequities must be addressed** – Traditionally, public health/prevention programs have assisted those who are *already* quite healthy to remain so, or even to increase their wellness. Hence, health inequities between the advantaged and the disadvantaged can inadvertently be exacerbated by universal programs, underlining the importance of targeting specific populations. Thus, the CSCC has recognized the need to develop a distinct approach for First Nations/Aboriginal/Inuit people. Other groups will also require special attention.

- **A long-term perspective is essential** – A sustained campaign is crucial. The war on tobacco has made substantial gains in developed nations, but it took a concerted effort over a 40-year period. The famous North Karelia project in Finland saw dietary changes and reduced cardiovascular disease after a 30-year program. A general societal attitude shift often needs to precede individual behavioural improvements; such shifts usually take a great deal of time and effort.

## C. ACCOMPLISHMENTS TO DATE

Despite a modest amount of funding to date, the PP-AG has worked hard since 2003 and seen a number of accomplishments. These accomplishments are outlined below.

### 1. Risk Factors or Conditions Common to a number of "Chronic" Diseases

These risk factors include smoking, poor diet, inactivity and overweight/obesity.

PP-AG has accomplished the following:

- **Two surveys of provincial cancer agencies and divisions of the Canadian Cancer Society.** These surveys provided an environmental scan, offered ideas for further development, and implicitly advanced the primary prevention agenda in both organizations in a complementary manner.

- **A national symposium on cancer prevention.** This served to clarify issues regarding the primary prevention of cancer and its relationship with chronic diseases, and was the launch for formalizing the PP-AG.

- **A pilot project on cancer primary prevention.** The BC Cancer Agency and the BC/Yukon Division of the Canadian Cancer Society developed a report on the effectiveness of risk factor interventions and combined this with an economic analysis, culminating in recommendations for a province-wide program aimed at reducing risk factors and preventing chronic disease. The BC government has embraced this "Winning Legacy" and some $25 million has been granted to the BC Healthy Living Alliance to begin the implementation of these recommendations.

- **Family Physician Chronic Disease Prevention Survey.** This survey has been distributed to 4500 physicians throughout the country. The purpose of the survey is to identify

  a) what primary prevention practices family care physicians are involved in,

  b)wh at kinds of information they need or would be helpful to have when counselling patients about prevention, and

  c) what their perceived role in cancer prevention is.

- **A Synthesis Paper on national and international nutrition strategies and initiatives and the Strategic Framework for a pan-Canadian nutrition strategy.** With support from the PP-AG, in 2004 an inter-sectoral Nutrition Planning Group (NPG) was struck to oversee the development of a comprehensive evidence-based nutrition framework for policies and programs at the national, provincial and local levels. The report will assist those already active, and those who can potentially be active, for further areas of collaboration, coordination and new developmental efforts within Canada. The framework and report were validated at a follow-up meeting held in March 2005 with the same nutrition stakeholders who participated in the initial planning meeting. Next steps for the NPG include developing a mobilization plan for national action on nutrition and chronic disease prevention in Canada.

- **Linkages with the prevention research community and with CDPAC.** Membership on PP-AG from these constituencies facilitated communication and coordination.

**2. Sun Exposure**

This cancer specific risk factor was one of the "incubated" areas in PP-AG.

There have been two specific deliverables in this area under the oversight of the National Sun Safety Committee of the PP-AG:

i. **A report on strategic directions for the primary prevention of skin cancer in Canada.** Building on a comparable report from Australia, the NSSC has identified the following four strategic directions for the primary prevention of skin cancer in Canada:

   a. Improving knowledge, attitudes and behaviours of individuals about skin cancer and ultraviolet (UV) protection;

   b. Achieving healthy settings, organizations, products, policies and practices that promote sun protection;

   c. Strengthening the community's capacity for effective action on skin cancer prevention; and

   d. Strengthening informed decision making to the design, implementation and evaluation of skin prevention cancer strategies.

   The directions, along with the specific objectives and recommended strategies identified for each in the report, have been reviewed by 32 national and international skin cancer control stakeholders (governments, non-governmental organizations,

public health, dermatologists, etc.) at all levels (national, provincial/territorial, regional and local) and by the members of the NSSC.

ii. **Second National Sun Survey.** Funds to conduct a sun behaviour, knowledge, attitude and beliefs survey were secured from NCIC and Ontario Division of the Canadian Cancer Society, with a top-up from the Canadian Strategy for Cancer Control. This survey will permit comparison with a previous survey conducted in 1996, and provide improved information for planning and evaluation of cancer control strategies. Some 2000 adults (aged 16+) across Canada will be interviewed by telephone, using selected questions from the 1996 survey to permit direct comparison. An additional 6,700 adults will be selected according to region of residence (4 provinces and 2 groups of provinces), and with sufficient sample size for each region. These adults will be interviewed using a more detailed questionnaire, which includes questions about 1 randomly selected child aged 1-12 in households with children (about 1500 children expected). The survey is being conducted during the summer of 2006 with a report by 2008.

### 3. Environmental/Occupational Exposure to Carcinogens

Another cancer-specific risk factor, this too was incubated by PP-AG.

With increasing public and media interest in this area, the following was accomplished under the oversight of the National Committee on Environmental and Occupational Exposures (NCEOE):

i. **A report entitled, "Prevention of Occupational and Environmental Cancers in Canada: A Best practices Review".** An extensive internet review and consultation with experts in Canada, the United States and Europe identified the current status and opportunities for improvement in this country regarding:

- Pollution prevention programs
- Public policy (including legislation and regulation)
- Surveillance
- Stakeholder actions

Based on this review a number of priority recommendations were made, targeted towards government, industry, labour and NGOs.

As a result of the development of the "Best Practices" Report, various provinces are taking action on prevention of environmental and occupational carcinogens. For example, the BC Cancer Agency and BC/Yukon Division of the Canadian Cancer Society have identified occupational and environmental carcinogens an

important priority risk factor to address in their 2010 Prevention Plan. The NCEOE and the Alberta Cancer Board hosted a "Symposium on Environmental and Occupational Carcinogens" in Calgary on March 31st, 2006. As part of its Cancer 2020 Plan, Cancer Care Ontario has launched an Environment and Cancer Initiative.

ii. **Input into a variety of other initiatives.** The National Committee on Environmental and Occupational Exposures has provided input into a number of Canadian Cancer Society position statements on environmental and occupational carcinogens. It has also provided advice to the federal government on their review of the Canadian Environmental Protection Act (CEPA), the Children's Health Surveillance Project, and the need for a national study on environmental influences on children's health.

## D. CURRENT FUNDING

### 1. 2006 Federal Budget

In the 2006 Federal Budget, the Government of Canada noted that it is *"committed to doing (its) part to implement the Canadian Strategy for Cancer Control. We will invest $52 million per year over the next five years to improve screening, prevention, and research activities, and to help coordinate efforts with the provinces and with cancer care advocacy groups."*

It is expected that the first of these funds will become available in January 2007.

### 2. CSCC Priority Areas for Action

Given this new funding, the CSCC has identified the following priorities for action:

**Develop national systems**

- Standards system and database
- Clinical practice guidelines system and database
- Prevention system and action in key areas of cancer risk
- Screening recommendations, guidelines and targets
- Human resources workforce planning and management system

**Improve and upgrade**

- Rebalance focus towards supportive, rehabilitative and palliative care
- Enhance surveillance system, including national cancer staging system and database
- Coordination of cancer research

**Establish Canadian cancer leadership platform**

- Networks of experts
- Information exchange platform

## 3. Allocation of CSCC Funds

On July 5th, 2006, the CSCC Council met and approved in principle the general allocation of the $260 million funding commitment to support the priority areas for action indicated below.

**CSCC 5 Year Budget Allocations (in Million$)**

| | $ | % |
|---|---|---|
| Research | 50.8 | 19.5 |
| Surveillance and staging | 50.2 | 19.3 |
| Primary prevention | 41.1 | 15.8 |
| Standards | 17.9 | 6.9 |
| Rebalance focus | 15.5 | 6.0 |
| Human resources | 11.9 | 4.6 |
| Screening | 10.3 | 4.0 |
| Clinical practice guidelines | 10.3 | 4.0 |
| Pan-Canadian coordination | 39.9 | 15.3 |
| Quality / performance assurance | 12.0 | 4.6 |
| **Total** | **260.0** | **100.0** |

Of the $260 million, $41.1 million, or 15.8% of the total, is to be allocated to primary prevention.

According to our current information, the first instalment of funds will likely be released in January of 2007 ($8.22 million for primary prevention), to be utilized in the current (2006/07) federal fiscal year.

While this funding is an important and very welcome start, it should be remembered that the annual dollar amount for the entire CSCC represents approximately a cup of coffee per Canadian ($1.59/year) whereas the amount allocated to prevention represents a local call on a pay phone ($0.25/year).

Direct health care expenditures related to cancer care in 2006 are estimated at $4.87 billion.[1] Five percent of this amount is $244 million, or $7.44 per capita. Ultimately, if a shift in paradigm with an increased emphasis on prevention is to take place, the amount of funding allocated

[1] P. Smetanin, *RiskAnalytica Life at Cancer Risk* (2005), personal communication.

to cancer prevention would need to be in the range of $7-8 per Canadian per year.

PP-AG is considering two principles to guide its budget allocations:

- Approximately 50% of the budget will be allocated to cancer-specific prevention issues (such as occupational/environmental exposures, sun/UV radiation, and infectious agents)
- The remainder of the budget will be allocated to risk areas that cancer shares with other chronic diseases (such as tobacco, overweight/obesity, poor nutrition and inactivity), but within these areas we will focus on the relevant cancer niche.

## E. PRIMARY PREVENTION ACTION GROUP PLANNING PROCESS

### August 15, 2006 - PP-AG Meeting

On August 15 the PP-AG met in Vancouver with key members of the Public Health Agency of Canada (PHAC) and Health Canada (HC). An important purpose of the planning day was to reassess the current PP-AG strategic plan in light of the recent increase in federal funding.

Previously, PP-AG had pursued four strategic directions:

1. Ensure that all cancer control organizations advance a primary prevention agenda (monitoring)
2. Facilitate progress in communities of practice that require infrastructure and capacity building (incubation)
3. Support and add value to all primary prevention components (networking)
4. Assume a public and media communication/education role for primary prevention (communication/education)

The focus on August 15 was on an examination of current Key Results Areas (KRAs), and then modifying and/or adding new KRAs. KRAs represent priorities that help to identify the gaps between where the PP-AG is now and where it needs to be in order to succeed.

In addition to modifying and/or adding new KRAs at the August 15 meeting, the PP-AG also began the process of confirming strategic objectives. A strategic objective is a more precise formulation of a KRA, providing broad direction to achieve results within the area. If the KRA is complex, several objectives may be required. The KRAs and objectives identified at the August 15th meeting were discussed and further modified at the Integrated Cancer Primary Prevention Summit.

**September 12-13, 2006 - Integrated Cancer Primary Prevention Summit**

The Integrated Cancer Primary Prevention Summit, held September 12 -13 in Ottawa, was organized by the Primary Prevention Action Group (PP-AG) and the Public Health Agency of Canada (PHAC) in order to bring together cancer and chronic disease prevention leaders from across Canada.

More than 50 participants representing governmental and non-governmental sectors attended the Summit.

The objectives of the Summit were to:

- Improve the understanding of how cancer prevention links to chronic disease prevention;
- Achieve commitment to enhance collaboration between stakeholders involved in chronic disease prevention in Canada;
- Obtain feedback on the new PP-AG Strategic Plan; and
- Discuss specific ways to stay connected and work collaboratively.

## F. KEY RESULTS AREAS

Based on feedback received at these two meetings, the following five KRAs (and the subsequent objectives) have been developed:

1. *Building Capacity*
2. *Policy Advice*
3. *Communication / Education*
4. *Leveraging Partnerships and Investments*
5. *Monitoring*

In addition, it was noted that *knowledge exchange, evaluation* and *management and administration* would be a component of each KRA.

Further consultation with members of the PP-AG resulted in a series of initiatives to support meeting each of the KRAs and the associated objectives. These 30 initiatives are detailed in a series of attachments at the end of the strategic plan. In the following section, the initiatives are briefly summarized below the objectives they support.

***KRA.1 - Building Capacity***: Identify, support and create (if necessary) communities of practice and assist in building their long-term capacity.

Objective #1.1 - To encourage and build long-term capacity within a national sun safety community of practice.

- Sun safety knowledge transfer and behaviour change (Attachment #19)
- Sun safety healthy settings (Attachment #20)
- Sun safety strengthen community capacity (Attachment #21)
- Sun safety policy development (Attachment #23)

Objective #1.2 - To encourage and build long-term capacity within a national environmental and occupational risk factors community of practice.

- Environmental and occupational carcinogen exposure unit (Attachment #13)
- O&E exposure community networks (Attachment #14)
- O&E exposure national symposia (Attachment #15)
- O&E patient history program (Attachment #16)
- O&E toxic use reduction strategy (Attachment #17)
- O&E policy development (Attachment #18)

Objective #1.3 - To encourage and build long-term capacity within a national infectious agents community of practice.

- Infectious agents national mobilization (Attachment #24)
- Infectious agents national symposia (Attachment #25)
- Infectious agents policy development (Attachment #26)
- Infectious agents literature review (Attachment #27)

Objective #1.4 - To identify our niche in the relationship between cancer prevention and chronic disease risk factors.

- Specific initiatives will be determined based on discussions with CDPAC and other NGOs

***KRA.2 - Policy Advice***: Work at the local, provincial, national and international levels to influence decision makers towards healthier public policies (e.g., supportive environments, including the areas of transportation, urban design, public education, etc.) that in turn move individuals towards healthier behaviours.

Objective #2.1 - To contribute advice towards public discourse and policy formulation.

- Marketing campaign (Attachment #1)
- Public opinion poll (Attachment #8)

- Physician survey (Attachment #11)
- Knowledge translation re: physician survey (Attachment #12)
- Environmental and occupational carcinogen exposure unit (Attachment #13)
- O&E policy development (Attachment #18)
- Sun safety knowledge transfer and behaviour change (Attachment #19)
- Sun safety healthy settings (Attachment #20)
- Sun safety policy development (Attachment #23)
- Sun safety / skin cancer prevention best practices (Attachment #29)
- Infectious agents national mobilization (Attachment #24)
- Infectious agents policy development (Attachment #26)
- Infectious agents literature review (Attachment #27)
- National nutrition mobilization (Attachment #28)
- Systematic review of evidence on Vitamin D, ultraviolet radiation and health (Attachment #30)

Objective #2.2 - To create a policy forum as the platform for public debate and knowledge synthesis.

- O&E exposure national symposia (Attachment #15)
- O&E policy development (Attachment #18)
- Sun safety knowledge transfer and behaviour change (Attachment #19)
- Sun safety healthy settings (Attachment #20)
- Sun safety policy development (Attachment #23)
- Infectious agents national symposia (Attachment #25)
- Infectious agents policy development (Attachment #26)
- Systematic review of evidence on Vitamin D, ultraviolet radiation and health (Attachment #30)

***KRA.3 - Communication/Education***: Identify, create (if necessary) and promote key messages that encourage prevention through healthy living, plus information to be delivered through partners and strategic allies, in order to connect with stakeholders and the public at a local, provincial, national and international level.

Objective #3.1 - To communicate with stakeholders, addressing any gaps in knowledge concerning the importance of primary prevention in reducing the incidence and mortality of cancer.

- Marketing campaign (Attachment #1)
- Update on attributable risk (Attachment #4)
- Primary prevention newsletter (Attachment #5)
- Key messaging on cancer prevention (Attachment #7)

- Public opinion poll (Attachment #8)
- Environmental scan (Attachment #9)
- Physician survey (Attachment #11)
- Knowledge translation re: physician survey (Attachment #12)
- O&E exposure national symposia (Attachment #15)
- O&E patient history program (Attachment #16)
- Sun safety knowledge transfer and behaviour change (Attachment #19)
- Sun safety healthy settings (Attachment #20)
- Sun safety strengthen community capacity (Attachment #21)
- Sun safety / skin cancer prevention best practices (Attachment #29)
- Infectious agents national mobilization (Attachment #24)
- Infectious agents national symposia (Attachment #25)

Objective #3.2 - To create and enhance opportunities for engaging in collaboration and cooperation with the CDPAC.

- Planning for integrated chronic disease prevention (Attachment #6)
- National nutrition mobilization (Attachment #28)

Objective #3.3 - To deliver to the public knowledge about cancer prevention.

- Marketing campaign (Attachment #1)
- Primary prevention newsletter (Attachment #5)
- Key messaging on cancer prevention (Attachment #7)
- Public opinion poll (Attachment #8)
- Sun safety healthy settings (Attachment #20)
- Infectious agents literature review (Attachment #27)
- Sun safety / skin cancer prevention best practices (Attachment #29)
- Systematic review of evidence on Vitamin D, ultraviolet radiation and health (Attachment #30)

Objective #3.4 - To facilitate the creation/enhancement of ways and means to translate knowledge of primary prevention into action.

- Marketing campaign (Attachment #1)
- Primary prevention newsletter (Attachment #5)
- Key messaging on cancer prevention (Attachment #7)
- Public opinion poll (Attachment #8)
- Physician survey (Attachment #11)
- Knowledge translation re: physician survey (Attachment #12)
- O&E exposure community networks (Attachment #14)
- O&E exposure national symposia (Attachment #15)

- Sun safety knowledge transfer and behaviour change (Attachment #19)
- Sun safety healthy settings (Attachment #20)
- Infectious agents national mobilization (Attachment #24)
- Infectious agents national symposia (Attachment #25)
- National nutrition mobilization (Attachment #28)
- Sun safety / skin cancer prevention best practices (Attachment #29)
- Systematic review of evidence on Vitamin D, ultraviolet radiation and health (Attachment #30)

Objective #3.5 - To work with the media to monitor and influence how cancer risk factors and cross-cutting chronic diseases are portrayed in the media.

- Marketing campaign (Attachment #1)
- Key messaging on cancer prevention (Attachment #7)
- Public opinion poll (Attachment #8)

Objective #3.6 - To create an awareness and understanding of the importance of primary prevention programming and concentrated investment for the long-term benefits of reducing cancer incidence.

- Marketing campaign (Attachment #1)
- Key messaging on cancer prevention (Attachment #7)
- Public opinion poll (Attachment #8)
- Physician survey (Attachment #11)
- Knowledge translation re: physician survey (Attachment #12)
- Sun safety knowledge transfer and behaviour change (Attachment #19)
- Sun safety healthy settings (Attachment #20)
- Infectious agents national mobilization (Attachment #24)

Objective #3.7 - To develop strategies and the body of knowledge that support a paradigm shift toward adopting an increased preventative emphasis in cancer control.

- Advocate for healthy living (Attachment #2)
- Status report on cancer prevention (Attachment #3)
- Update on attributable risk (Attachment #4)
- Primary prevention newsletter (Attachment #5)
- Physician survey (Attachment #11)
- Knowledge translation re: physician survey (Attachment #12)
- O&E exposure community networks (Attachment #14)
- O&E exposure national symposia (Attachment #15)
- O&E patient history program (Attachment #16)
- Infectious agents national symposia (Attachment #25)

***KRA.4 - Leveraging Partnerships and Investments***: Networking across the PP-AG community and other chronic disease communities of practice in order to guard against redundancy, create strategic linkages and synergies, share information, optimize resources and collaborate in order to get things done.

Objective #4.1 - To link with existing systems through increased collaboration and cooperation to maximize PP-AG impact and avoid working in isolation.

- Planning for integrated chronic disease prevention (Attachment #6)
- Environmental scan (Attachment #9)
- Physician survey (Attachment #11)
- Knowledge translation re: physician survey (Attachment #12)
- O&E exposure community networks (Attachment #14)
- O&E toxic use reduction strategy (Attachment #17)
- Sun safety strengthen community capacity (Attachment #21)
- Infectious agents national mobilization (Attachment #24)
- National nutrition mobilization (Attachment #28)

***KRA.5 – Monitoring***: The on-going monitoring of primary prevention initiatives in order to document them for analysis and commentary upon risk factor implications, up-take, results and overall success.

Monitoring supports evaluation activities and is a necessary first step in the evaluation process.

Objective #5.1 - To support the development of a system that will monitor progress related to cancer prevention in order to ensure timely analysis and dissemination of results.

- Advocate for healthy living (Attachment #2)
- Status report on cancer prevention (Attachment #3)
- Environmental and occupational carcinogen exposure unit (Attachment #13)
- Sun safety strengthening informed decision making (Attachment #22)
- National nutrition mobilization (Attachment #28)

Objective #5.2 - To advocate for appropriate primary prevention research.

- Update on attributable risk (Attachment #4)
- Environmental and occupational carcinogen exposure unit (Attachment #13)

- Sun safety strengthening informed decision making (Attachment #22)
- Sun safety / skin cancer prevention best practices (Attachment #29)

Objective #5.3 - To survey and assess/analyse/synthesize the current cancer prevention activities of stakeholders and disseminate results.

- Environmental scan (Attachment #9)
- Sun safety strengthening informed decision making (Attachment #22)
- Sun safety / skin cancer prevention best practices (Attachment #29)

## G. FIVE YEAR BUDGET

The following table summarises the estimated financial needs required to achieve each of the 30 proposed initiatives. Note that this is still a work in progress and will no doubt be refined; however, it is meant to provide a sense of the overall priority areas and major initiatives.

**PP-AG 5 Year Strategic Plan - Overview**

*Resource Allocation*

| | Fiscal Year 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 5 Year Total $ | Attach. # |
|---|---|---|---|---|---|---|---|
| ***Chronic Disease*** | | | | | | | |
| **General** | | | | | | | |
| Marketing Campaign | $ 1,247,450 | $ 825,000 | $ 825,000 | $ 825,000 | $ 825,000 | $ 4,547,450 | 1 |
| Key Messaging on Cancer Prevention | $ 100,000 | $ - | $ - | $ - | $ - | $ 100,000 | 7 |
| Public Opinion Poll | $ 125,000 | $ - | $ - | $ - | $ - | $ 125,000 | 8 |
| Advocate for Healthy Living | $ 68,750 | $ 1,075,000 | $ 1,075,000 | $ 1,075,000 | $ 1,075,000 | $ 4,368,750 | 2 |
| Status Report on Cancer Prevention | $ 30,000 | $ 70,000 | $ - | $ - | $ 150,000 | $ 250,000 | 3 |
| Attributable Risk | $ 250,000 | $ - | $ - | $ - | $ - | $ 250,000 | 4 |
| Newsletter | $ 10,000 | $ 40,000 | $ 40,000 | $ 40,000 | $ 40,000 | $ 170,000 | 5 |
| Planning for Integrated Chronic Disease Prevention | $ 100,000 | $ 100,000 | $ 100,000 | $ 100,000 | $ 100,000 | $ 500,000 | 6 |
| Environmental Scan | $ 25,000 | $ 50,000 | $ - | $ - | $ - | $ 75,000 | 9 |
| Infrastructure Support | $ 100,000 | $ 280,000 | $ 280,000 | $ 280,000 | $ 280,000 | $ 1,220,000 | 10 |
| **General Subtotal** | **$ 2,056,200** | **$ 2,440,000** | **$ 2,320,000** | **$ 2,320,000** | **$ 2,470,000** | **$ 11,606,200** | |
| **Primary Care** | | | | | | | |
| Family Physician Survey | $ 25,000 | $ 50,000 | $ - | $ - | $ - | $ 75,000 | 11 |
| Knowledge Translation | $ 59,375 | $ 377,500 | $ 302,500 | $ 100,000 | $ 100,000 | $ 939,375 | 12 |
| **Primary Care Subtotal** | **$ 84,375** | **$ 427,500** | **$ 302,500** | **$ 100,000** | **$ 100,000** | **$ 1,014,375** | |
| **Nutrition / Physical Activity / Tobacco** | | | | | | | |
| National Nutrition Mobilization | $ 118,125 | $ 272,500 | $ 272,500 | $ 272,500 | $ 272,500 | $ 1,208,125 | 28 |
| Response to Emerging Issues | $ 4,210,500 | $ 1,001,450 | $ 968,818 | $ 905,461 | $ 491,676 | $ 7,577,905 | |
| **Nutrition Subtotal** | **$ 4,328,625** | **$ 1,273,950** | **$ 1,241,318** | **$ 1,177,961** | **$ 764,176** | **$ 8,786,030** | |
| **Chronic Disease Total** | $ 6,469,200 | $ 4,141,450 | $ 3,863,818 | $ 3,597,961 | $ 3,334,176 | $ 21,406,605 | |
| ***Cancer Specific*** | | | | | | | |
| **Occupational / Environmental Exposures** | | | | | | | |
| O & E Carcinogen Exposure Unit (CAREX) | $ 421,300 | $ 716,800 | $ 734,932 | $ 750,789 | $ 764,574 | $ 3,388,395 | 13 |
| Community Networks | $ 48,750 | $ 355,000 | $ 605,000 | $ 855,000 | $ 1,105,000 | $ 2,968,750 | 14 |
| National Symposia | $ 38,750 | $ 337,500 | $ 337,500 | $ 337,500 | $ 337,500 | $ 1,388,750 | 15 |
| O & E Patient History Program | $ 37,500 | $ 275,000 | $ 275,000 | $ 275,000 | $ 275,000 | $ 1,137,500 | 16 |
| Toxic Use Reduction Strategy | $ 68,750 | $ 118,750 | $ 118,750 | $ 118,750 | $ 118,750 | $ 543,750 | 17 |
| Policy Development | $ 58,750 | $ 117,500 | $ 117,500 | $ 117,500 | $ 117,500 | $ 528,750 | 18 |
| **O & E Subtotal** | **$ 673,800** | **$ 1,920,550** | **$ 2,188,682** | **$ 2,454,539** | **$ 2,718,324** | **$ 9,955,895** | |
| **Sun Safety** | | | | | | | |
| Knowledge Transfer and Behaviour Change | $ 187,500 | $ 450,000 | $ 450,000 | $ 450,000 | $ 450,000 | $ 1,987,500 | 19 |
| Healthy Settings | $ 137,500 | $ 350,000 | $ 450,000 | $ 450,000 | $ 450,000 | $ 1,837,500 | 20 |
| Strengthen Community Capacity | $ 137,500 | $ 350,000 | $ 450,000 | $ 450,000 | $ 450,000 | $ 1,837,500 | 21 |
| Strengthen Informed Decision Making | $ 100,000 | $ 200,000 | $ 200,000 | $ 200,000 | $ 200,000 | $ 900,000 | 22 |
| Policy Development | $ 58,750 | $ 117,500 | $ 117,500 | $ 117,500 | $ 117,500 | $ 528,750 | 23 |
| Sun Safety/Skin Cancer Prevention Best Practices | $ 50,000 | $ 150,000 | $ - | $ - | $ - | $ 200,000 | 29 |
| Systematic Review - Vitamin D | $ 39,500 | $ 40,500 | $ - | $ - | $ - | $ 80,000 | 30 |
| **Sun Safety Subtotal** | **$ 710,750** | **$ 1,658,000** | **$ 1,667,500** | **$ 1,667,500** | **$ 1,667,500** | **$ 7,371,250** | |
| **Infectious Agents** | | | | | | | |
| National Infectious Agents Mobilization | $ 88,750 | $ 215,000 | $ 215,000 | $ 215,000 | $ 215,000 | $ 948,750 | 24 |
| National Symposia | $ 38,750 | $ 187,500 | $ 187,500 | $ 187,500 | $ 187,500 | $ 788,750 | 25 |
| Policy Development | $ 38,750 | $ 97,500 | $ 97,500 | $ 97,500 | $ 97,500 | $ 428,750 | 26 |
| Literature Review | $ 200,000 | $ - | $ - | $ - | $ - | $ 200,000 | 27 |
| **Infectious Agents Subtotal** | **$ 366,250** | **$ 500,000** | **$ 500,000** | **$ 500,000** | **$ 500,000** | **$ 2,366,250** | |
| **Cancer Specific Total** | $ 1,750,800 | $ 4,078,550 | $ 4,356,182 | $ 4,622,039 | $ 4,885,824 | $ 19,693,395 | |
| **Overall Total** | $ 8,220,000 | $ 8,220,000 | $ 8,220,000 | $ 8,220,000 | $ 8,220,000 | $ 41,100,000 | |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

An important goal of the planning process was to allocate approximately half of the budget to risk areas that cancer shares with other chronic diseases and half to cancer-specific prevention issues.

Of the total $41.1 million, $21.4 million (52%) are allocated to the broader risk factors areas that cancer shares (such as tobacco, overweight/obesity, poor nutrition and inactivity) while $19.7 million are allocated to cancer-specific prevention issues such as occupational/environmental exposures ($9.9 million), sun/UV radiation ($7.4 million), and infectious agents ($2.4 million).

Of the $21.4 million allocated to the broader risk factors, a substantial amount ($7.4 million) has been set aside to respond to emerging issues. This component of the plan will be refined based on further consultation with partners addressing the common risk factors (currently being referred to as "the cube"). A key step forward in this area will be the CDPAC conference in November of 2006 and the integrated chronic disease planning process associated with that conference.

Of the total $41.1 million, $7.5 million are allocated to staffing to support an estimated 24.25 FTEs during the five-year period, $22.1 million to operating costs, $4.1 million to grants and $7.4 million to respond to emerging issues.

As noted earlier, a long-term perspective is essential when addressing the prevention of cancer. Within this long-term perspective, however, there is also the desire for shorter term successes. While these successes may not be in the arena of ultimate goals (a reduced incidence of cancer), they could be in the arena of intermediate outcomes (e.g., reduced smoking, increased physical activity, and healthier eating, and an increased prevalence of healthy body weight) or even process outcomes (e.g., co-ordinated prevention messages, disease-specific agencies working in concert to address key risk factors, greater public knowledge or increased participation in programs).

## H. CONCLUDING REMARKS

For the Primary Prevention Action Group of the Canadian Strategy for Cancer Control, the completion of this five year plan cannot be the end. The importance of primary prevention will need to become "institutionalized" within the cancer control and general health care sectors.

It does, however, constitute a good start.

## PP-AG 5 Year Funding Request - General (Attachment #1)

**Title of the Initiative** *Marketing Campaign*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *KRAs 2, 3*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *2.1; 3.1; 3.3; 3.4; 3.5; 3.6*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Develop and execute an effective, compelling marketing campaign across Canada. This includes the development of a comprehensive marketing plan, build capaicity in the provinces and evaluation of the campaign*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year | | | | | 5 Year |
|---|---|---|---|---|---|---|
| | 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | Total $ |
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Dollars (Assume $75,000 per FTE) | $ 18,750 | $ 75,000 | $ 75,000 | $ 75,000 | $ 75,000 | $ 318,750 |
| Identify Staff Competencies/Levels | | | | | | |
| *Project Manager* | | | | | | |
| **Operating Dollars** Include all costs excluding staffing and grant | $ 1,228,700 | $ 750,000 | $ 750,000 | $ 750,000 | $ 750,000 | $ 4,228,700 |
| **Grants** | | | | | | $ - |
| **Total** Add staffing, operating dollars and grants | **$ 1,247,450** | **$ 825,000** | **$ 825,000** | **$ 825,000** | **$ 825,000** | **$ 4,547,450** |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - General (Attachment #2)

**Title of the Initiative**: *Advocate for Healthy Living*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *KRAs 3 and 5*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *3.7; 5.1*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Educate and encourage municipalities and other non-health organizations to adopt policies/practices which advance healthy living. Develop indicators to measure progress. (Note that many interventions are outside the health sector).*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 5 Year Total $ |
|---|---|---|---|---|---|---|
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Dollars (Assume $75,000 per FTE) | $ 18,750 | $ 75,000 | $ 75,000 | $ 75,000 | $ 75,000 | $ 318,750 |
| Identify Staff Competencies/Levels | *Manager* | | | | | |
| **Operating Dollars** Include all costs excluding staffing and grant | $ 50,000 | $ 1,000,000 | $ 1,000,000 | $ 1,000,000 | $ 1,000,000 | $ 4,050,000 |
| **Grants** | | | | | | $ - |
| **Total** Add staffing, operating dollars and grants | **$ 68,750** | **$ 1,075,000** | **$ 1,075,000** | **$ 1,075,000** | **$ 1,075,000** | **$ 4,368,750** |

* *Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - General (Attachment #3)

**Title of the Initiative** | *Status Report on Cancer Prevention*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? | *KRAs 3 and 5*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? | *3.7; 5.1*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Develop framework for eventual report, i.e. define scope and indicators in consultation with provinces and territories. Collect data and develop report.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year | | | | | 5 Year |
|---|---|---|---|---|---|---|
| | 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | Total $ |
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | | | | | | |
| Dollars (Assume $75,000 per FTE) | $ - | $ - | $ - | $ - | $ - | $ - |
| Identify Staff Competencies/Levels | | | | | | |
| **Operating Dollars** | $ 30,000 | $ 70,000 | | | $ 150,000 | $ 250,000 |
| Include all costs excluding staffing and grant | | | | | | |
| **Grants** | | | | | | $ - |
| **Total** | $ 30,000 | $ 70,000 | $ - | $ - | $ 150,000 | $ 250,000 |
| Add staffing, operating dollars and grants | | | | | | |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - General (Attachment #4)

**Title of the Initiative**: *Attributable Risk*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *KRAs 3 and 5*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *3.1; 3.7; 5.2*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Update the current work on attribuatble risk (e.g. Harvard, Adami et al, and Tony Miller work), including future projections. This would include a comprehensive literature review, modelling future projections based on current information and consensus meetings including experts from the NCIC and PP-AG. The results would be written up as a monograph / book as well as summarized for publication in a peer-reviewed journal. The goal would be for this work to become the definite source cited by Canadian experts on this topic.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 5 Year Total $ |
|---|---|---|---|---|---|---|
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | | | | | | |
| Dollars (Assume $75,000 per FTE) | $ - | $ - | $ - | $ - | $ - | $ - |
| Identify Staff Competencies/Levels | | | | | | |
| **Operating Dollars** Include all costs excluding staffing and grant | $ 250,000 | | | | | $ 250,000 |
| **Grants** | | | | | | $ - |
| **Total** Add staffing, operating dollars and grants | $ 250,000 | $ - | $ - | $ - | $ - | $ 250,000 |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - General (Attachment #5)

**Title of the Initiative** *Primary Prevention Newsletter*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *KRA 3*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *3.1; 3.3; 3.4; 3.7*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Create a quarterly primary prevention newsletter for distribution by email and websites focussing on current knowledge in the primary prevention of cancers and highlighting the work of the PP-AG. To be written in an informative yet entertaining manner for both primary caregivers and the public.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year | | | | | 5 Year |
|---|---|---|---|---|---|---|
| | 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | Total $ |
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | | | | | | |
| Dollars (Assume $75,000 per FTE) | $ - | $ - | $ - | $ - | $ - | $ - |
| Identify Staff Competencies/Levels | | | | | | |
| **Operating Dollars** Include all costs excluding staffing and grant | $ 10,000 | $ 40,000 | $ 40,000 | $ 40,000 | $ 40,000 | $ 170,000 |
| **Grants** | | | | | | $ - |
| **Total** Add staffing, operating dollars and grants | **$ 10,000** | **$ 40,000** | **$ 40,000** | **$ 40,000** | **$ 40,000** | **$ 170,000** |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - General (Attachment #6)

**Title of the Initiative**: *Planning for Integrated Chronic Disease Prevention*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *KRAs 3 and 4*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *3.2; 4.1*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Assist CDPAC is developing a chronic disease prevention cube to support the management of initiatives across Canada in addressing key chronic disease risk factors.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year | | | | | 5 Year |
|---|---|---|---|---|---|---|
| | 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | Total $ |
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | | | | | | |
| Dollars (Assume $75,000 per FTE) | $ - | $ - | $ - | $ - | $ - | $ - |
| Identify Staff Competencies/Levels | | | | | | |
| **Operating Dollars** Include all costs excluding staffing and grant | $ 100,000 | $ 100,000 | $ 100,000 | $ 100,000 | $ 100,000 | $ 500,000 |
| **Grants** | | | | | | $ - |
| **Total** Add staffing, operating dollars and grants | **$ 100,000** | **$ 100,000** | **$ 100,000** | **$ 100,000** | **$ 100,000** | **$ 500,000** |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - General (Attachment #7)

**Title of the Initiative**: *Key Messaging on Cancer Prevention*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *KRA 3*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *3.1; 3.3; 3.4; 3.5; 3.6*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Identify messages currently being used by major cancer control organizations and any evaluation which may have already occurred. Analyze results of survey to clarify commonalities and (apparent) differences. Build consensus where possible. Continue consensus building. Evaluate impact of these messages.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 5 Year Total $ |
|---|---|---|---|---|---|---|
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | | | | | | |
| Dollars (Assume $75,000 per FTE) | $ - | $ - | $ - | $ - | $ - | $ - |
| Identify Staff Competencies/Levels | | | | | | |
| **Operating Dollars** Include all costs excluding staffing and grant | $ 100,000 | | | | | $ 100,000 |
| **Grants** | | | | | | $ - |
| **Total** Add staffing, operating dollars and grants | $ 100,000 | $ - | $ - | $ - | $ - | $ 100,000 |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - General (Attachment #8)

**Title of the Initiative** *Public Opinion Poll*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *KRAs 2, 3*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *2.1; 3.1; 3.3; 3.4; 3.5; 3.6*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Engage a reputable company to ascertain Canadians' knowledge and practices related to cancer prevention. Sample size to be large enough to allow for province or region-specific comparisons.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 5 Year Total $ |
|---|---|---|---|---|---|---|
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | | | | | | |
| Dollars (Assume $75,000 per FTE) | $ - | $ - | $ - | $ - | $ - | $ - |
| Identify Staff Competencies/Levels | | | | | | |
| **Operating Dollars** Include all costs excluding staffing and grant | $ 125,000 | | | | | $ 125,000 |
| **Grants** | | | | | | $ - |
| **Total** Add staffing, operating dollars and grants | **$ 125,000** | **$ -** | **$ -** | **$ -** | **$ -** | **$ 125,000** |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - General (Attachment #9)

**Title of the Initiative**: *Environmental Scan*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *KRAs 3, 4 and 5*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *3.1; 4.1; 5.3*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Update, synthesize, and analyze results of survey of Provincial Cancer Agencies and CCS re: primary prevention activities. Address deficiencies in the PPAG Background Document.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 5 Year Total $ |
|---|---|---|---|---|---|---|
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | | | | | | |
| Dollars (Assume $75,000 per FTE) | $ - | $ - | $ - | $ - | $ - | $ - |
| Identify Staff Competencies/Levels | | | | | | |
| **Operating Dollars** Include all costs excluding staffing and grant | $ 25,000 | $ 50,000 | | | | $ 75,000 |
| **Grants** | | | | | | $ - |
| **Total** Add staffing, operating dollars and grants | $ 25,000 | $ 50,000 | $ - | $ - | $ - | $ 75,000 |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - General (Attachment #10)

**Title of the Initiative** *Infrastructure Support*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *All KRAs*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *All Objectives*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Dedicated professional staff to further develop, coordinate and facilitate implementation of plans. Day-to-day oversight and trouble-shooting.*
*Support to replace the PP-AG Chair's time ($35,000 per year)*
*Three meetings of the PP-AG annually*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year | | | | | 5 Year |
|---|---|---|---|---|---|---|
| | 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | Total $ |
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | | | | | | |
| Dollars (Assume $75,000 per FTE) | $ - | $ - | $ - | $ - | $ - | $ - |
| Identify Staff Competencies/Levels | | | | | | |
| **Operating Dollars** | $ 100,000 | $ 280,000 | $ 280,000 | $ 280,000 | $ 280,000 | $ 1,220,000 |
| Include all costs excluding staffing and grant | | | | | | |
| **Grants** | | | | | | $ - |
| **Total** | **$ 100,000** | **$ 280,000** | **$ 280,000** | **$ 280,000** | **$ 280,000** | **$ 1,220,000** |
| Add staffing, operating dollars and grants | | | | | | |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - Primary Care (Attachment #11)

**Title of the Initiative**: *Canadian Family Physician Cancer and Chronic Disease Prevention Survey*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? KRAs 2, 3 and 4

To Which **Objective** Within That Key Result Area is this Initiative Applicable? 2.1; 3.1; 3.4; 3.6; 3.7; 4.1

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

New knowledge will be generated around the role of family practitioner and chronic disease prevention, including family physician attitudes and current practices. A process for engaging the family physicians communities of practice and other relevant target audiences based on key findings will be suggested.

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 5 Year Total $ |
|---|---|---|---|---|---|---|
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | | | | | | |
| Dollars (Assume $75,000 per FTE) | | | | | | $ - |
| Identify Staff Competencies/Levels | | | | | | |
| **Operating Dollars** Include all costs excluding staffing and grant | $ 25,000 | $ 50,000 | $ - | $ - | $ - | $ 75,000 |
| **Grants** | | | | | | |
| **Total** Add staffing, operating dollars and grants | $ 25,000 | $ 50,000 | $ - | $ - | $ - | $ 75,000 |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - Primary Care (Attachment #12)

| | |
|---|---|
| **Title of the Initiative** | *Knowledge Translation* |
| To Which of the 5 **Key Results Areas** is This Initiative Applicable? | KRAs 2, 3 and 4 |
| To Which **Objective** Within That Key Result Area is this Initiative Applicable? | 2.1; 3.1; 3.4; 3.6; 3.7; 4.1 |

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

Translating the results of the physician survey into practice includes a literature review / synthesis paper of best practices in this area, meetings with the College of Family Physicians of Canada, the Institut national de santé publique du Québec and other relevant primary care groups, and the development of a Continuing Medical Education program for physicians.
It also includes working with the various subgroups of the PP-AG (e.g. sun safety, infectious agents, O&E exposures) to assure an integrated approach.

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 5 Year Total $ |
|---|---|---|---|---|---|---|
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | 0.5 | 0.5 | 0.5 | | | |
| Dollars (Assume $75,000 per FTE) | $ 9,375 | $ 37,500 | $ 37,500 | | | $ 84,375 |
| Identify Staff Competencies/Levels | | | | | | |
| *Manager* | | | | | | |
| **Operating Dollars** | $ 50,000 | $ 340,000 | $ 265,000 | $ 100,000 | $ 100,000 | $ 855,000 |
| Include all costs excluding staffing and grant | | | | | | |
| **Grants** | | | | | | |
| **Total** | **$ 59,375** | **$ 377,500** | **$ 302,500** | **$ 100,000** | **$ 100,000** | **$ 939,375** |
| Add staffing, operating dollars and grants | | | | | | |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - O&E Exposures (Attachment #13)

**Title of the Initiative**: *Environmental & Occupational Carcinogen Exposure (CAREX) Unit*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *KRAs 1, 2 and 5*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *1.2; 2.1; 5.1; 5.2*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*This unit will increase E/O surveillance and research capacity. Its' national occupational and environmental CAREX projects, National Workplace Exposure Database, and clearing house of environmental carcinogen exposure data that will become a national resource for monitoring, policy setting and research.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 5 Year Total $ |
|---|---|---|---|---|---|---|
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 | |
| Dollars (see below) | $ 135,000 | $ 561,600 | $ 572,832 | $ 584,289 | $ 595,974 | $ 2,449,695 |
| Identify Staff Competencies/Levels | *Director (PhD)*<br>*Senior Occupational Hygienist (MSc), Environmental Scientist (MSc),*<br>*Knowledge Translation Coordinator (MSc), Database Manager (5 yrs*<br>*experience), Hygiene Tech, GIS Tech, Administrative Asst* | | | | | |
| **Operating Dollars** | $ 286,300 | $ 155,200 | $ 162,100 | $ 166,500 | $ 168,600 | $ 938,700 |
| Include all costs excluding staffing and grant | | | | | | |
| **Grants** | | | | | | $ - |
| **Total** | **$ 421,300** | **$ 716,800** | **$ 734,932** | **$ 750,789** | **$ 764,574** | **$ 3,388,395** |
| Add staffing, operating dollars and grants | | | | | | |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## Detailed CAREX Budget

| Category | Item | Fiscal Year 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 5 Year Total $ |
|---|---|---|---|---|---|---|---|
| **Set-up Costs** | | | | | | | |
| **Eight workstations** | | | | | | | |
| | Desks/Workstations (8) | $ 10,000 | $ - | $ - | $ - | $ - | $ 10,000 |
| | Chairs task (8) | $ 3,600 | $ - | $ - | $ - | $ - | $ 3,600 |
| | Computers (8) | $ 28,000 | $ - | $ - | $ - | $ - | $ 28,000 |
| | Software (750 per computer) | $ 6,000 | $ - | $ - | $ - | $ - | $ 6,000 |
| | Office Start up Items Misc | $ 4,000 | $ - | $ - | $ - | $ - | $ 4,000 |
| | Chairs - Guest (12) | $ 3,000 | $ - | $ - | $ - | $ - | $ 3,000 |
| | Chairs - Meeting Room (8) | $ 2,000 | $ - | $ - | $ - | $ - | $ 2,000 |
| | Meeting Room Table | $ 600 | $ - | $ - | $ - | $ - | $ 600 |
| | Filing Cabinets (8) | $ 1,600 | $ - | $ - | $ - | $ - | $ 1,600 |
| | **Subtotal** | **$ 58,800** | **$ -** | **$ -** | **$ -** | **$ -** | **$ 58,800** |
| **On-Going Admin** | | | | | | | |
| | Software - Annual Licenses and Upgrades | | $ 3,500 | $ 3,700 | $ 3,900 | $ 4,100 | $ 15,200 |
| | Office Supplies | $ 2,300 | $ 2,400 | $ 2,500 | $ 2,600 | $ 2,700 | $ 12,500 |
| | Filing Cabinets | $ 500 | $ 500 | $ 500 | $ 500 | $ 500 | $ 2,500 |
| | Photocopying | $ 500 | $ 600 | $ 700 | $ 800 | $ 600 | $ 3,200 |
| | Photocopy Rental | $ 4,200 | $ 4,200 | $ 4,200 | $ 4,200 | $ 4,200 | $ 21,000 |
| | Telephones, incl long distance | $ 2,000 | $ 2,000 | $ 2,000 | $ 2,000 | $ 2,000 | $ 10,000 |
| | Computer Upgrades | $ - | $ - | $ 2,500 | $ 2,500 | $ 2,500 | $ 7,500 |
| **Space** | EG: ISPHR Space | $ 40,000 | $ 44,000 | $ 48,000 | $ 52,000 | $ 54,000 | $ 238,000 |
| | **Subtotal** | **$ 49,500** | **$ 57,200** | **$ 64,100** | **$ 68,500** | **$ 70,600** | **$ 309,900** |
| **Staffing** | | | | | | | |
| **Salary** | Director | $ 20,000 | $ 83,200 | $ 84,864 | $ 86,561 | $ 88,293 | $ 362,918 |
| | Occupational Hygienist | $ 15,000 | $ 62,400 | $ 63,648 | $ 64,921 | $ 66,219 | $ 272,188 |
| | Environmental Scientist | $ 15,000 | $ 62,400 | $ 63,648 | $ 64,921 | $ 66,219 | $ 272,188 |
| | Database Manager | $ 13,750 | $ 57,200 | $ 58,344 | $ 59,511 | $ 60,701 | $ 249,506 |
| | Knowledge Translation Specialist | $ 15,000 | $ 62,400 | $ 63,648 | $ 64,921 | $ 66,219 | $ 272,188 |
| | Hygiene Tech | $ 11,250 | $ 46,800 | $ 47,736 | $ 48,691 | $ 49,665 | $ 204,141 |
| | GIS Tech | $ 11,250 | $ 46,800 | $ 47,736 | $ 48,691 | $ 49,665 | $ 204,141 |
| | Administrative Assistant | $ 11,250 | $ 46,800 | $ 47,736 | $ 48,691 | $ 49,665 | $ 204,141 |
| **Benefits** | | | | | | | |
| | All Staff @ 20% Average | $ 22,500 | $ 93,600 | $ 95,472 | $ 97,381 | $ 99,329 | $ 408,283 |
| | **Subtotal** | **$ 135,000** | **$ 561,600** | **$ 572,832** | **$ 584,289** | **$ 595,974** | **$ 2,449,695** |
| **SOEH Admin Support** | | | | | | | |
| | Finance Support | $ 25,000 | $ 25,000 | $ 25,000 | $ 25,000 | $ 25,000 | $ 125,000 |
| | Admin Charges - IT support | $ 8,000 | $ 8,000 | $ 8,000 | $ 8,000 | $ 8,000 | $ 40,000 |
| | Administrative Support - HR etc | $ 25,000 | $ 25,000 | $ 25,000 | $ 25,000 | $ 25,000 | $ 125,000 |
| | **Subtotal** | **$ 58,000** | **$ 58,000** | **$ 58,000** | **$ 58,000** | **$ 58,000** | **$ 290,000** |
| **Other** | | | | | | | |
| | Stats Can Labour Force Data | $ 35,000 | | | | | $ 35,000 |
| | Stipends for scientific consultants | $ 30,000 | | | | | $ 30,000 |
| **Travel** | Meeting of scientific consultants | $ 15,000 | | | | | $ 15,000 |
| | Travel to conferences | $ 20,000 | $ 20,000 | $ 20,000 | $ 20,000 | $ 20,000 | $ 100,000 |
| | Travel to provinces | $ 20,000 | $ 20,000 | $ 20,000 | $ 20,000 | $ 20,000 | $ 100,000 |
| | **Subtotal** | **$ 120,000** | **$ 40,000** | **$ 40,000** | **$ 40,000** | **$ 40,000** | **$ 280,000** |
| **Total** | | **$ 421,300** | **$ 716,800** | **$ 734,932** | **$ 750,789** | **$ 764,574** | **$ 3,388,395** |

## PP-AG 5 Year Funding Request - O&E Exposures (Attachment #14)

**Title of the Initiative**: *Community Networks*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *KRAs 1, 3 and 4*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *1.2; 3.4; 3.7; 4.1*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Enhance PP-AG contact with existing networks established by NGOs in the field. Help these organizations disseminate PP-AG messaging and evidence based information. Assist these NGOs in their ongoing community education work. Funding based on annual grants awarded through a competitive process; multi year activities preferred. Includes $50,000 for CCS staff training on O&E exposures.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 5 Year Total $ |
|---|---|---|---|---|---|---|
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | 0.25 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Dollars (Assume $75,000 per FTE) | $ 18,750 | $ 75,000 | $ 75,000 | $ 75,000 | $ 75,000 | $ 318,750 |
| Identify Staff Competencies/Levels | *Administrator, coordinator* | | | | | |
| **Operating Dollars** Include all costs excluding staffing and grant | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 150,000 |
| **Grants** | | $ 250,000 | $ 500,000 | $ 750,000 | $ 1,000,000 | $ 2,500,000 |
| **Total** Add staffing, operating dollars and grants | **$ 48,750** | **$ 355,000** | **$ 605,000** | **$ 855,000** | **$ 1,105,000** | **$ 2,968,750** |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - O&E Exposures (Attachment #15)

**Title of the Initiative** *National Symposia: NEOEC*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *KRA 1, 2 and 3*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *1.2; 2.2; 3.1; 3.4; 3.7*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Biannual symposia to report on key findings regarding environmental and occupational carcinogen exposures, develop monographs for dissemination, and policy recommendations. Based on a 'summit' format with key stakeholders and decision makers invited. Note: 2006/07 includes funding for an NEOEC internal planning meeting.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 5 Year Total $ |
|---|---|---|---|---|---|---|
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 | |
| Dollars (Assume $75,000 per FTE) | $ 18,750 | $ 37,500 | $ 37,500 | $ 37,500 | $ 37,500 | $ 168,750 |
| Identify Staff Competencies/Levels | | | | | | |
| *Administrator/coordinator* | | | | | | |
| **Operating Dollars** Include all costs excluding staffing and grant | $ 20,000 | $ 300,000 | $ 300,000 | $ 300,000 | $ 300,000 | $ 1,220,000 |
| **Grants** | | | | | | $ - |
| **Total** Add staffing, operating dollars and grants | **$ 38,750** | **$ 337,500** | **$ 337,500** | **$ 337,500** | **$ 337,500** | **$ 1,388,750** |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - O&E Exposures (Attachment #16)

**Title of the Initiative** *Environmental & Occupational Patient History Program*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *KRAs 1 and 3*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *1.2; 3.1; 3.7*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Develop best practice template for community health practitioners and family physicians. Establish curricula in medical community; assist physicians in implementing pilot projects*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 5 Year Total $ |
|---|---|---|---|---|---|---|
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | 0.50 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Dollars (Assume $75,000 per FTE) | $ 37,500 | $ 75,000 | $ 75,000 | $ 75,000 | $ 75,000 | $ 337,500 |
| Identify Staff Competencies/Levels | | | | | | |
| *Senior researcher, or physician* | | | | | | |
| **Operating Dollars** Include all costs excluding staffing and grant | | $ 200,000 | $ 200,000 | $ 200,000 | $ 200,000 | $ 800,000 |
| **Grants** | | | | | | $ |
| **Total** Add staffing, operating dollars and grants | **$ 37,500** | **$ 275,000** | **$ 275,000** | **$ 275,000** | **$ 275,000** | **$ 1,137,500** |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

# PP-AG 5 Year Funding Request - O&E Exposures (Attachment #17)

**Title of the Initiative**: *Toxic Use Reduction Strategy*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *KRA 1 and 4*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *1.2; 4.1*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Support for a feasibility study regarding the establishment of a Toxic Use Reduction centre. Partner with existing initiatives (e.g. the Canadian Centre for Pollution Prevention) and support the development of a municipal demonstration project through multi-year funding. Include funds for smaller grants for other initiatives identified.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 5 Year Total $ |
|---|---|---|---|---|---|---|
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | |
| Dollars (Assume $75,000 per FTE) | $ 18,750 | $ 18,750 | $ 18,750 | $ 18,750 | $ 18,750 | $ 93,750 |
| Identify Staff Competencies/Levels | | | | | | |
| *Senior Researcher with a pollution prevention background (contract)* | | | | | | |
| *Administrator/coordinator (0.25 FTE)* | | | | | | |
| | | | | | | $ - |
| **Operating Dollars** Include all costs excluding staffing and grant | $ 50,000 | $ 100,000 | $ 100,000 | $ 100,000 | $ 100,000 | $ 450,000 |
| **Grants** | | | | | | |
| **Total** Add staffing, operating dollars and grants | **$ 68,750** | **$ 118,750** | **$ 118,750** | **$ 118,750** | **$ 118,750** | **$ 543,750** |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - O&E Exposures (Attachment #18)

**Title of the Initiative**: *Policy Development*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *KRAs 1 and 2*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *1.2; 2.1; 2.2*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Policy review and review of activity results. Includes a biannual meeting of the full National Committee on Environmental and Occupational Exposures as well as quarterly meetings of project liaisons.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 5 Year Total $ |
|---|---|---|---|---|---|---|
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 | |
| Dollars (Assume $75,000 per FTE) | $ 18,750 | $ 37,500 | $ 37,500 | $ 37,500 | $ 37,500 | $ 168,750 |
| Identify Staff Competencies/Levels | | | | | | |
| *Administrator/coordinator* | | | | | | |
| *Committee stakeholders and chair* | | | | | | |
| | | | | | | |
| **Operating Dollars** Include all costs excluding staffing and grant | $ 40,000 | $ 80,000 | $ 80,000 | $ 80,000 | $ 80,000 | $ 360,000 |
| **Grants** | | | | | | $ - |
| **Total** Add staffing, operating dollars and grants | **$ 58,750** | **$ 117,500** | **$ 117,500** | **$ 117,500** | **$ 117,500** | **$ 528,750** |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - Sun Safety (Attachment #19)

**Title of the Initiative** — *Knowledge Transfer and Behaviour Change*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? — *KRAs 1, 2 and 3*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? — *1.1; 2.1; 2.2; 3.1; 3.4; 3.6*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*The goal is to improve knowledge of the harmful effects of solar and non solar UV radiation and the adoption of healthy sun protective behaviours by:*

*a) Revising the 1995 Canadian consensus public education messages for reducing health risks from ultraviolet radiation*

*b) Establishing a national clearinghouse for sun safety educational materials*

*c) Identifying and evaluating materials, programs and strategies to improve knowledge among parents, children and young adults in schools, communities and recreational settings. Develop and test new materials as required.*

*d) Promote the implementation of a sun awareness component in all prenatal programs across Canada and postnatal communication strategies among new parents.*

*e) Develop strategies to improve knowledge in the population about the risks associated with tanning and tanning salons and to decrease the use of these devices.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year | | | | | 5 Year |
|---|---|---|---|---|---|---|
| | 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | Total $ |
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | |
| Dollars (Assume $75,000 per FTE) | $ 37,500 | $ 150,000 | $ 150,000 | $ 150,000 | $ 150,000 | $ 637,500 |
| Identify Staff Competencies/Levels | | | | | | |
| *Researcher / Manager* | | | | | | |
| *Administrative Assistant* | | | | | | |
| **Operating Dollars** | $ 150,000 | $ 300,000 | $ 300,000 | $ 300,000 | $ 300,000 | $ 1,350,000 |
| Include all costs excluding staffing and grant | | | | | | |
| **Grants** | | | | | | $ - |
| **Total** | **$ 187,500** | **$ 450,000** | **$ 450,000** | **$ 450,000** | **$ 450,000** | **$ 1,987,500** |
| Add staffing, operating dollars and grants | | | | | | |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - Sun Safety (Attachment #20)

**Title of the Initiative**: *Healthy Settings*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *KRAs 1, 2 and 3*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *1.1; 2.1; 2.2; 3.1; 3.3; 3.4; 3.6*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Work towards achieving healthy settings, organizations, products, policies and practices that promote sun protection by:*

*Building capacity to support skin cancer prevention policy development and implementation*

*Support a collaborative and participatory approach through the creation of links with diverse organizations – both government agencies and non-governmental organizations - involved in sun safety across Canada.*

*Develop model policies and encourage their adoption.*

*Improving sun protection policies and practices in care and educational settings where infants, children and young adults are concentrated*

*Encourage adoption of sun protection policies and practices by childcare, preschool centres and primary schools across Canada.*

*Facilitate the development, implementation and evaluation of effective sun protection programs for primary and secondary schools across Canada.*

*Increasing the amount of natural or constructed shade in public places*

*Develop shade guidelines in collaboration with Canadian Associations of Engineers and Architects and disseminate in every province and territory.*

*Promote shade creation policy for built and natural shade and building design standards at the municipal level across Canada, including outdoor venues.*

*Promote shade creation policy for daycares and schools.*

*Improving sun protection of players and spectators at outdoor sporting and recreation events*

*Partner with outdoor sporting associations to promote the development of policies and practices to increase sun protection and reduce UV radiation exposure of players and spectators at outdoor sporting and recreational events. (i.e. timing of events, shaded rest areas, shaded spectator areas)*

*Improving sun protection among outdoor workers*

*Encourage development of sun protective policies and practices in relevant labour law at the federal, provincial and territorial level*

*Develop resources to support the implementation of policies and practices for employers of outdoor workers.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 5 Year Total $ |
|---|---|---|---|---|---|---|
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | |
| Dollars (Assume $75,000 per FTE) | $ 37,500 | $ 150,000 | $ 150,000 | $ 150,000 | $ 150,000 | $ 637,500 |
| Identify Staff Competencies/Levels | | | | | | |
| *Researcher / Manager* | | | | | | |
| *Administrative Assistant* | | | | | | |
| **Operating Dollars** Include all costs excluding staffing and grant | $ 100,000 | $ 200,000 | $ 300,000 | $ 300,000 | $ 300,000 | $ 1,200,000 |
| **Grants** | | | | | | $ - |
| Add staffing, operating dollars and grants **Total** | $ 137,500 | $ 350,000 | $ 450,000 | $ 450,000 | $ 450,000 | $ 1,837,500 |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - Sun Safety (Attachment #21)

**Title of the Initiative** *Strengthen Community Capacity*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *KRAs 1, 3 and 4*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *1.1; 3.1; 4.1*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Strengthen the community's capacity for effective action on skin cancer prevention by:*

*Building a community of action for sun safety and skin cancer prevention*

*Promote formation of a network of practitioners, researchers, NGO's and other primary prevention organizations to collectively promote sun safety and skin cancer prevention initiatives*

*Increasing capacity of key professional groups to play a significant role in skin cancer prevention*

*Encourage inclusion of information on the harmful effects of sun exposure and healthy sun protective practices in all relevant education and training programs across Canada related to the medical, teaching, nursing, public health, architecture urban planning professions, etc.*

*Develop special communication strategies and tools for physicians, health care providers and teachers.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year | | | | | 5 Year |
|---|---|---|---|---|---|---|
| | 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | Total $ |
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | |
| Dollars (Assume $75,000 per FTE) | $ 37,500 | $ 150,000 | $ 150,000 | $ 150,000 | $ 150,000 | $ 637,500 |
| Identify Staff Competencies/Levels | | | | | | |
| *Researcher / Manager* | | | | | | |
| *Administrative Assistant* | | | | | | |
| **Operating Dollars** | $ 100,000 | $ 200,000 | $ 300,000 | $ 300,000 | $ 300,000 | $ 1,200,000 |
| Include all costs excluding staffing and grant | | | | | | |
| **Grants** | | | | | | $ - |
| Add staffing, operating dollars and grants | | | | | | |
| **Total** | **$ 137,500** | **$ 350,000** | **$ 450,000** | **$ 450,000** | **$ 450,000** | **$ 1,837,500** |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - Sun Safety (Attachment #22)

**Title of the Initiative**: *Strengthen Informed Decision Making*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *KRA 5*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *5.1; 5.2; 5.3*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Encourage an increase in capacity to monitor trends in the burden of skin cancer (e.g., incidence, mortality, survival, cost) and sun protective behaviours*
*Encourage an increase in capacity to learn what programs/policies are most effective in skin cancer prevention (effectiveness, cost-effectiveness, cost benefit of the interventions and programs)*
*Promote research to improve program development and evaluation on healthy sun protective behaviours and attitudes*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 5 Year Total $ |
|---|---|---|---|---|---|---|
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | | | | | | |
| Dollars (Assume $75,000 per FTE) | | | | | | $ - |
| Identify Staff Competencies/Levels | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| **Operating Dollars** Include all costs excluding staffing and grant | $ 100,000 | $ 200,000 | $ 200,000 | $ 200,000 | $ 200,000 | $ 900,000 |
| **Grants** | | | | | | $ - |
| Add staffing, operating dollars and grants **Total** | **$ 100,000** | **$ 200,000** | **$ 200,000** | **$ 200,000** | **$ 200,000** | **$ 900,000** |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - Sun Safety (Attachment #23)

| | |
|---|---|
| **Title of the Initiative** | *Policy Development* |
| To Which of the 5 **Key Results Areas** is This Initiative Applicable? | *KRAs 1 and 2* |
| To Which **Objective** Within That Key Result Area is this Initiative Applicable? | *1.1; 2.1; 2.2* |

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Policy review and review of activity results. Includes a biannual meeting of the full National Committee on Sun Safety as well as quarterly meetings of project liaisons.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year | | | | | 5 Year |
|---|---|---|---|---|---|---|
| | **2006/07 *** | **2007/08** | **2008/09** | **2009/10** | **2010/11** | **Total $** |
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 | |
| Dollars (Assume $75,000 per FTE) | $ 18,750 | $ 37,500 | $ 37,500 | $ 37,500 | $ 37,500 | $ 168,750 |
| Identify Staff Competencies/Levels | | | | | | |
| | | | | | | |
| *Administrator/coordinator* | | | | | | |
| *Committee stakeholders and chair* | | | | | | |
| | | | | | | |
| **Operating Dollars** | $ 40,000 | $ 80,000 | $ 80,000 | $ 80,000 | $ 80,000 | $ 360,000 |
| Include all costs excluding staffing and grant | | | | | | |
| **Grants** | | | | | | $ - |
| **Total** | **$ 58,750** | **$ 117,500** | **$ 117,500** | **$ 117,500** | **$ 117,500** | **$ 528,750** |
| Add staffing, operating dollars and grants | | | | | | |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - Infectious Agents (Attachment #24)

**Title of the Initiative**: *National Infectious Agents Mobilization*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *KRA 1, 2, 3, 4*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *1.3, 2.1, 3.1, 3.4, 3.6, 4.1*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Currently there is no national group that is exclusively concerned with infections and cancer. An estimated 15% of cancers are due to infectiuos agents. There are several groups that impinge upon this area, but they are separated because of the different infectious agents and cancer types that are involved; Human papillomaviruses (cervix oral and skin cancer), H pylori (stomach cancer), hepatitis B and C viruses (liver cancer), and other viruses (Burkitts lymphoma and perhaps other non-Hodgkin's lymphomas).*

*Further, there are overlapping concerns in relation to another Action Group of the CSCC, the Screening Action Group, over screening for cervical cancer. Both nationally and provincially, control of infectious diseases is typically the responsiblity of the public health community, but with new control measures for some infectious causes of cancer, especially vaccination against HPV types 16 and 18, the cancer community must be involved in setting priorities and determining the correct relationship with screening. For H pylori control, gastroenterologists are the prime clinical contacts, but there needs to be more detailed consideration towards control of such infections. A specific sub-group of the PPAG therefore needs to be established to grapple with these issues.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 5 Year Total $ |
|---|---|---|---|---|---|---|
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Dollars (Assume $75,000 per FTE) | $18,750 | $75,000 | $75,000 | $75,000 | $75,000 | $318,750 |
| Identify Staff Competencies/Levels | | | | | | |
| *Knowledge of policy work at national/provincial level* | | | | | | |
| *Infectious disease expertise* | | | | | | |
| *Group faciliation* | | | | | | |
| *Report writing* | | | | | | |
| **Operating Dollars** Include all costs excluding staffing and grant | $20,000 | $40,000 | $40,000 | $40,000 | $40,000 | $180,000 |
| **Grants** *TBA. Expected to be seed funds to other organizations to initiate control measures* | $50,000 | $100,000 | $100,000 | $100,000 | $100,000 | $450,000 |
| **Total** Add staffing, operating dollars and grants | **$88,750** | **$215,000** | **$215,000** | **$215,000** | **$215,000** | **$948,750** |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - Infectious Agents (Attachment #25)

**Title of the Initiative** *National Symposia: Infectious Agents*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *KRA 1, 2 and 3*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *1.3; 2.2; 3.1; 3.4; 3.7*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Annual symposia to report on key findings regarding infectious agents, develop monographs for dissemination, and policy recommendations. Based on a 'summit' format with key stakeholders and decision makers invited. Note: 2006/07 includes funding for an internal planning meeting.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year | | | | | 5 Year |
|---|---|---|---|---|---|---|
| | 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | Total $ |
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 | |
| Dollars (Assume $75,000 per FTE) | $ 18,750 | $ 37,500 | $ 37,500 | $ 37,500 | $ 37,500 | $ 168,750 |
| Identify Staff Competencies/Levels | | | | | | |
| *Administrator/coordinator* | | | | | | |
| **Operating Dollars** | $ 20,000 | $ 150,000 | $ 150,000 | $ 150,000 | $ 150,000 | $ 620,000 |
| Include all costs excluding staffing and grant | | | | | | |
| **Grants** | | | | | | $ - |
| **Total** | **$ 38,750** | **$ 187,500** | **$ 187,500** | **$ 187,500** | **$ 187,500** | **$ 788,750** |
| Add staffing, operating dollars and grants | | | | | | |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - Infectious Agents (Attachment #26)

**Title of the Initiative** *Policy Development*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *KRA 1 and 2*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *1.3; 2.1; 2.2*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Policy review and review of activity results. Includes a biannual meeting of the full National Committee on Infectious Agents (to be established) as well as quarterly meetings of project liaisons.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 5 Year Total $ |
|---|---|---|---|---|---|---|
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 | |
| Dollars (Assume $75,000 per FTE) | $ 18,750 | $ 37,500 | $ 37,500 | $ 37,500 | $ 37,500 | $ 168,750 |
| Identify Staff Competencies/Levels | | | | | | |
| *Administrator/coordinator* | | | | | | |
| *Committee stakeholders and chair* | | | | | | |
| | | | | | | |
| **Operating Dollars** Include all costs excluding staffing and grant | $ 20,000 | $ 60,000 | $ 60,000 | $ 60,000 | $ 60,000 | $ 260,000 |
| **Grants** | | | | | | $ - |
| **Total** Add staffing, operating dollars and grants | **$ 38,750** | **$ 97,500** | **$ 97,500** | **$ 97,500** | **$ 97,500** | **$ 428,750** |

* *Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - Infectious Agents (Attachment #27)

**Title of the Initiative** *Infectious Agents Literature Review*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? *KRA 1, 2 and 3*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? *1.3; 2.1; 3.3*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Review the current state of knowledge with repect to infectious agents and cancers. Produce monograph / book as well as a summary article for publication in a peer-reviewed journal. Costs include establishing and working with a national sub-committee to oversee this project.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year | | | | | 5 Year |
|---|---|---|---|---|---|---|
| | 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | Total $ |
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | | | | | | |
| Dollars (Assume $75,000 per FTE) | $ - | $ - | $ - | $ - | $ - | $ - |
| Identify Staff Competencies/Levels | | | | | | |
| *Epidemiologist (contract)* | | | | | | |
| **Operating Dollars** | | | | | | $ - |
| Include all costs excluding staffing and grant | | | | | | |
| **Grants** | $ 200,000 | | | | | $ 200,000 |
| **Total** | **$ 200,000** | **$ -** | **$ -** | **$ -** | **$ -** | **$ 200,000** |
| Add staffing, operating dollars and grants | | | | | | |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - Nutrition (Attachment #28)

**Title of the Initiative** — *National Nutrition Mobilization*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? — *KRA 2, 3, 4, 5*

To Which **Objective** Within That Key Result Area is this Initiative Applicable? — *2.1, 3.2, 3.4, 4.1, 5.1*

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*Currently there is no national intersectoral nutrition coalition (unlike physical acitvity). PPAG has been a catalyst for mobilizing action around national evidence based issues and nutrition is one of them. The work on this initiative has begun and a committee, assembled by CDPAC with representation from the PPAG, is in place to continue. The disease specific representatives (heart, diabetes and cancer) who sit around the table have indicated their interest in this initiative and this risk factor and their willingness to collaborate. CDPAC has taken the lead and with resourcing could continue (objective 3.2). The budget is a conservative estimate as the other disease strategies would also contribute funds. The group is ready to proceed with a mobilization plan and get into action now that the ground work has been laid. As in objective 4.1 this initiative links with existing systems and is an excellent example of cooperation and collaboration. In objective 5.1 it would facilitate monitoring progress in this very important area.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year | | | | | 5 Year |
|---|---|---|---|---|---|---|
| | 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | Total $ |
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | |
| Dollars (Assume $75,000 per FTE) | $28,125 | $112,500 | $112,500 | $112,500 | $112,500 | $478,125 |
| Identify Staff Competencies/Levels | | | | | | |
| *Knowledge of policy work at national/provincial level* | | | | | | |
| *Nutrition expertise* | | | | | | |
| *Group facilitation* | | | | | | |
| *Report writing* | | | | | | |
| **Operating Dollars** | $40,000 | $60,000 | $60,000 | $60,000 | $60,000 | $280,000 |
| Include all costs excluding staffing and grant | | | | | | |
| **Grants** | $50,000 | $100,000 | $100,000 | $100,000 | $100,000 | $450,000 |
| *TBA. Expected to be subventions to other organizations for initiation of tasks compatible with the strategy* | | | | | | |
| **Total** | **$118,125** | **$272,500** | **$272,500** | **$272,500** | **$272,500** | **$1,208,125** |
| Add staffing, operating dollars and grants | | | | | | |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - Sun Safety (Attachment #29)

| | |
|---|---|
| **Title of the Initiative** | *Sun Safety/Skin Cancer Prevention Best Practices* |
| To Which of the 5 **Key Results Areas** is This Initiative Applicable? | KRAs 2, 3 and 5 |
| To Which **Objective** Within That Key Result Area is this Initiative Applicable? | 2.1; 3.1; 3.3; 3.4; 5.2; 5.3 |

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*It is known that Ultraviolet radiation is a human carcinogen. Many programs have been developed for public messaging concerning skin cancer prevention. However, many programs have not been evaluated. This study will review the published literature and determine the evidence in support of those programs/projects that have been determined to be effective—the best practices.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year | | | | | 5 Year |
|---|---|---|---|---|---|---|
| | 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | Total $ |
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | | | | | | |
| Dollars (Assume $75,000 per FTE) | | | | | | $ - |
| Identify Staff Competencies/Levels | | | | | | |
| **Operating Dollars** | $ 50,000 | $ 150,000 | | | | $ 200,000 |
| Include all costs excluding staffing and grant | | | | | | |
| **Grants** | | | | | | |
| **Total** | $ 50,000 | $ 150,000 | $ - | $ - | $ - | $ 200,000 |
| Add staffing, operating dollars and grants | | | | | | |

*Literature researcher: Able to search the literature for relevant studies*
*Information synthesizer: To review the literature and determine the best practices available*
*Writer: To write a report concerning best practices*
*Public health/health promotion: To device program/projects based on the data derived from this study.*
*To carry out pilot projects based on best practices*
*To inform the community of practice about the projects and their evaluation*
*To adapt the programs/projects to various areas across Canada*

** Note: the 2006/07 fiscal year is from January to March of 2007.*

## PP-AG 5 Year Funding Request - Sun Safety (Attachment #30)

**Title of the Initiative** *Systematic Review of Evidence on Vitamin D, Ultraviolet Radiation and Health*

To Which of the 5 **Key Results Areas** is This Initiative Applicable? KRAs 2 & 3

To Which **Objective** Within That Key Result Area is this Initiative Applicable? 2.1; 2.2; 3.3; 3.4

Briefly Explain Why This Initiative is Important and How it Will Assist in Meeting the Objective

*There is a great deal of information in the scientific literature concerning the effects of ultraviolet radiation on humans, and on the effects of vitamin D. Ultraviolet radiation is a known carcinogen. However, it does produce vitamin D in the skin. Although this is not the only way to obtain vitamin D, it is significant. It is important to review this vast body of literature and synthesize the information, to understand the relationship between vitamin D and health and disease and ultraviolet radiaton exposure.*

Provide a Five Year (if applicable) Overview of the **Resources Required** to Achieve the Initiative

| | Fiscal Year | | | | | 5 Year |
|---|---|---|---|---|---|---|
| | 2006/07 * | 2007/08 | 2008/09 | 2009/10 | 2010/11 | Total $ |
| **Staffing** | | | | | | |
| # of Full Time Equivalent (FTE) Staff | 0.5 | 0.5 | | | | |
| Dollars (Assume $75,000 per FTE) | 37,500 | 37,500 | | | | $ 75,000 |
| Identify Staff Competencies/Levels | | | | | | |
| *Literature Researcher: literature review* | | | | | | |
| *Synthesizer of knowledge* | | | | | | |
| *Writer: preparation of document* | | | | | | |
| **Operating Dollars** Include all costs excluding staffing and grant | $ 2,000 | $ 3,000 | | | | $ 5,000 |
| **Grants** | | | | | | |
| **Total** Add staffing, operating dollars and grants | $ 39,500 | $ 40,500 | $ - | $ - | $ - | $ 80,000 |

** Note: the 2006/07 fiscal year is from January to March of 2007.*

PTK
Protection Through Knowledge

# REACH: the start is near...

By Andrew Fasey

## 'Agreement' REACHed:

The REACH text was informally 'agreed' at a 'trialogue' meeting (Government of Finland as the Presidency of the EU, the European Parliament (EP) and the European Commission) on Thursday 30 November. The 'agreement' reached was endorsed at a COREPER meeting (the meeting of the 'Ambassadors' to the EU from all the Member States) on 5 December.

## Next Steps:

1. The legal-linguistic experts in Parliament and Council are currently working on all 20 EU language versions of the text to be adopted;

2. A consolidated version of REACH, with the agreed amendments, will be made available to EU governments in all languages on 8 December 2006 with a request for any comments by 11 December;

3. The European Parliament is expected to vote in Plenary on the 'agreement' on 13 December (all political groups have reservations about the agreement but are expected to support it; a 'classical' compromise. The rapporteur, Guido Sacconi (Italy, PES) has the backing of the shadow rapporteurs from the EPP and ALDE groups (Ria Oomen-Ruijten, Netherlands and Chris Davies, UK). They are expected to persuade their respective groups to support the compromise before the plenary vote on 13 December);

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5. Provided that the EP votes in favour (text must fully correspond to the 'agreement'), COREPER will consider again on 13 December in preparation for final adoption by the Council;

6. The Council is expected to adopt the text at the Environment Council on 18 December;

7. After the Council's adoption, the Regulation will be signed by the Presidents of the Council and of the European Parliament. This will be followed by transmission of the texts to the Publication Office in order to have the text published in the Official Journal before the end of the year.

8. **REACH to enter into force on 1 June 2007.**

9. **Pre-registration deadline 1 December 2008.**

10. **First Registration deadline 1 December 2010.**

**What was the basis of the 'agreement'?**

Compromises were found on the registration and confidentiality of data, with slightly longer registration periods for higher tonnages (first Registration deadline 3 ½ years after REACH enters into force) and some extensions to the period over which confidential information is protected (12 years for studies, some information protected for 6 years rather than 3). There was agreement not to extend the requirements for smaller tonnages (i.e. a chemical safety assessment (CSA) is still not required for 1 – 10t Registrations and the information requirements remain unchanged). The 'agreement' includes a number of review clauses which could result in recommendations for change in the future; e.g. CSAs for 1 – 10t to be reviewed after 7 years, methods for reproductive toxicity testing to be reviewed after 12 years, and after 6 years whether endocrine disruptors should be added to the group of substances of very high concern for which the adequate control route is not available for the granting of an

authorisation. The principle of a 'duty of care' is explained and clarified in the recitals without specific requirements being placed on duty holders.

The most problematic area has always been on the authorisation and substitution of substances of very high concern. The 'agreement' makes an authorisation potentially harder to get for substances with certain dangerous properties but does not require mandatory substitution. The possibility for an authorisation on the basis of adequate control is maintained although the scope is not quite as wide as in the Common Position text. An application for authorisation should be accompanied by an analysis of alternative substances - if alternatives are available companies would need to consider how they would move towards them in a substitution plan. If there are no suitable alternatives, companies should make a research and development plan to develop or identify suitable alternatives. If adequate control cannot be demonstrated and no suitable alternatives exist, an authorisation can be granted if the applicant demonstrates that the socio and economic benefits of the use (per substance) are higher than the risks.

**The Changes in Detail** (N.B. this is not necessarily a definitive and exhaustive list):

The main elements of the compromise package are:

1. A recital on **Duty of care** putting emphasis on industry's "*care*" and "*responsibility*"; no specific new duties;

2. The **promotion of alternative test methods** and their development is emphasised through a detailed European Commission Statement on activities and intentions in this area;

3. The text of the Common Position on the **communication of information** as regards the obligations of a manufacturer, importer or downstream user to complete the chemicals safety report (CSR) for uses identified by the downstream user has been retained despite this being raised strongly by the EP;

4. **Comitology** (the EU rules for taking decisions):
    - The publication on the Agency's website of the "*candidate list*" of substances subject to authorisation as set-out in the Common Position has been retained, largely for reasons of practicability;
    - When the Commission takes a decision on a draft authorisation the procedure to be followed shall be the (normal) "*regulatory procedure*";
    - Concerning qualifications required of members of the Board of Appeal as well as operating procedures of the Board, the procedure to be followed shall be the (normal) "*regulatory procedure*";

5. **European Chemicals Agency**:
    - The EP will appoint two independent persons to the Management Board of the Agency;
    - The selected candidate for Executive Director of the Agency shall be invited to make a statement before the EP prior to their appointment;

6. **Registration/data-sharing**:
    - seven years after the entry into force of REACH, the Commission shall review whether or not CMR (carcinogens, mutagens and reproductive toxicants) substances in the 1-10 tonnes band should be covered by the requirement for a Chemical Safety Assessment (CSA);
    - the approach to test methods for reproductive toxicity (Annex VIII, point 8.7), as set-out in the Common Position, has been retained. However, the Commission shall review these testing requirements twelve years after the entry into force of REACH.

7. **Authorisation/substitution**:
    - PBT and vPvB substances identified under Article 56(f) have been excluded from the "*adequate control route*" (Article 59.3) of authorisation (i.e. whilst they should not have been able to go through this route anyway this is now made explicit). Six years after the entry into force of REACH, the Commission shall

review whether or not to extend this exclusion to substances with endocrine disrupting properties (N.B. if a threshold cannot be established for endocrine disruptors they could not follow this route anyway).

- When suitable alternatives are available, taking into account certain elements, a substitution plan shall be a mandatory part of an application for both the "*adequate control*" route and for the "*socio-economic*" route for authorisation;
- The recital (64 in the CP) on methodologies to establish thresholds for CMR substances has been modified slightly with a view to underlining the protection of the environment and human health.

8. **Intellectual property rights** and other issues:
   - studies shall be freely available after 12 years rather than 10;
   - electronic public access to information, the name in the IUPAC Nomenclature for non-phase-in substances which are dangerous (as defined by Directive 67/548/EEC) may, if justified, be exempted from the requirement to make information available to the public, for a period of six years.

2. It would create an Ontario pollution inventory where communities can find out about the level and type of pollutants emited in their vicinity, and the environmental and health impacts of these emissions.

3. It would require business to provide information to fire departments about hazardous materials they have so emergency personnel are better prepared in case of fire and other emergencies.

I have attached for you letters of support from different organizations, the letter we have sent to MPPs, a FAQbackgrounder, and past press clippings about the bill and exposure to toxins via consumer products.

Now, a federal bill could amend the consumer packaging and labelling act. And CEPA revisions to require testing of chemicals in consumer products to determine harm from low level chronic exposure. Environmental Defence's Toxic Nation has the suggestions.

Best for now

Jasmyn Singh <<cscc neoec consumer product labelling ontario MPP Tabuns (3).doc>> <<Toxic tally alarms family - toronto star article.doc>> <<hamilton spectator toxichousehold products article.doc>> <<Proposition 65press article, Toronto Star.doc>> <<FAQs.doc>> <<CBC MARKETPLACE.mht>> <<CELA Bill164LetterOfSupport.doc>>

416-325-3250
EA to Peter Tabuns

# Proposed Ont. labelling law would target carcinogens

**Last Updated: Thursday, November 23, 2006 | 12:04 PM ET**

*CBC News*

Ontario should take the lead in getting cancer-causing chemicals in consumer products off the shelves, the province's NDP environment critic said Thursday.

Peter Tabuns said he is frustrated that the federal government is dragging its heels on labelling consumer products to prevent cancer, saying it's cheaper than treating it.

*Ontario NDP MPP Peter Tabuns wants consumer product labels to list cancer-causing chemicals. (CBC)*

"We have a cancer crisis in our society," said Tabuns. "We need to attack it from a variety of angles, and one angle is to reduce people's exposure to toxic chemicals."

To that end, Tabuns is introducing the community right to know act. The act calls for Ontario to follow California, Vermont and Europe, which require the labelling of carcinogens in products such as laundry detergent, household cleaners and hair dye.

In California, the law has prompted manufacturers to reformulate products to get the cancer-causing agents out and replace them with non-cancerous materials.

If the act passes, it would be a first in Canada. The Canadian Cancer Society has called for this kind of labelling.

The act would require manufacturers to put a label on any product that contains a chemical known or suspected to cause cancer. It would also set up a website listing companies that release cancer-causing pollutants into the air or water.

Examples of chemicals that would require labelling include:

Phthalates, a plastic softener used in nail polish, adhesives, caulking material and paint pigments.

Silica found in household cleansers.

NTA used in laundry detergent.

Formaldehyde used in nail hardeners.

People should know what they're getting and be able to decide whether they want to expose themselves, Tabuns said, since the exposure is to low-levels of chemicals over the long term that may cause cancer and other diseases.

**Opposition expected from manufacturers**

Cancer survivor Fiona Nelson of Toronto has no family history of the disease and believes the rare form that attacked her kidney was environmentally triggered.

As chair of the Toronto Cancer Prevention Coalition, Carter supports initiatives such as Tabuns's bill.

"It just seems to me that information properly presented is people's democratic right to know," said Carter.

Ontario's health minister, George Smitherman, won't say whether he'll support the bill until he sees it, but believes labelling is important.

Carter acknowledged the bill will face opposition from manufacturers, but her response is "tough."

The government already has labelling legislation and bureaucracy to enforce the act, meaning the costs would be negligible, Tabuns said.

**Letter to MPPS**

Dear MPP:

The ***Community Right to Know Act (Disclosure of Toxins and Pollutants) 2006*** that I tabled this past week for the benefit of Ontarians will be debated for second reading this coming Thursday, November 30th. Identified as a best practice in cancer prevention and environmental protection, **Community Right to Know legislation has been a fixture in jurisdictions like California for the past twenty years, and even counts Republican Governor Arnold Schwarzenegger as one its staunchest proponents. In contrast, Ontario lags far behind in making it a part of its suite of environmental policies and strategy for healthy communities.** Moving forward with Bill 164 – an act that is supported by the likes of the Canadian Environmental Law Association, Canadian Strategy for Cancer Control, Toronto Cancer Prevention Coalition - into committee stage and eventual third reading can fill this long standing gap.

Community Right to Know recognizes the inherent right of individuals to know the hazardous substances to which they may be exposed to. It encompasses:

- a community's right to access information on pollutants released into the environment;

- a consumer's right to know about hazardous elements comprising products and services;

- a worker's right to know about the health effects of chemicals he/she is exposed to in the workplace.

The information disclosed to individuals and communities empowers them to take actions to reduce their exposure to toxins. Consumers can make informed decisions about purchases they make. Communities can discern the level and type of pollutants released into their environment, and mobilize to press government and industry to implement

strategies that lower emissions. It encourages businesses and organizations to improve their environmental practices by substituting toxins with safer substances in consumer products, workplace materials, and industrial processes. For example, one of the most reported upon provisions of California's Community Right to Know initiative,. the *Safe Drinking Water and Toxic Enforcement Act of 1986* , aka Proposition 65, is how manufacturers are required to disclose to consumers that a known or suspected toxin comprises a product via information labels. This clause has prompted businesses on several occasions to remove known or suspected carcinogens from commercial goods, such as white out.

Bill 164 ensures consumers are apprised, via information labels, if substances associated with commercial goods are known or suspected carcinogens, and creates a comprehensive provincial pollution inventory. These measures are intra vires, or fall within Ontario's scope of powers. Legal analysis from Health Canada and environmental law experts confer that Ontario can legislate information labels. Both provincial and federal levels of government can stipulate labeling requirements, ,and Ontario has already exercised this power on a number of occasions. Given that federal statutes do not identify for consumers what materials in products are known or suspected carcinogens, Ontario, by moving forward with Bill 164, will be filling a policy vacuum. On a related note, the Supreme Court of Canada has preserved the principle of concurrent jurisdiction, and a jurisdiction's right to make laws that protect the environment and health of local communities, in a range of successive decisions it has made over the past decade.

Attached are letters of support for Bill 164 from prominent environmental groups and health advocacy coalitions, background notes, and related press articles.

If you have any questions, please do not hesitate to call my office at 416-325-3250. I hope you will support this legislation this Thursday.

Yours truly,

Peter Tabuns
MPP Toronto Danforth

**Larry Stoffman**

**From:** "Tabuns - QP, Peter" <tabunsp-qp@ndp.on.ca>
**To:** "Larry Stoffman" <larryst@shaw.ca>
**Sent:** Sunday, December 10, 2006 11:31 AM
**Subject:** RE: background materials take one (again)

## Community Right to Know Act (Disclosure of Toxins and Pollutants), 2006

EXPLANATORY NOTE

The Bill adds a provision to the *Consumer Protection Act, 2002*, that prohibits prescribed suppliers from supplying a consumer with goods or services that expose the consumer to certain toxic chemicals, unless the supplier has first warned the consumer of the possible exposure. It is an offence under the Act to contravene the provision.

The Bill amends the *Environmental Protection Act* to require the Minister of the Environment to establish a pollutant inventory containing a variety of information relating to the release of pollutants into the environment and the environmental and health effects of such pollutants.

The Bill amends the *Occupational Health and Safety Act* to require employers to provide to the local fire department all material safety data sheets required by Part IV of the Act. Currently, the employer must provide the sheets only if requested to do so by the fire department or required to do so by regulation.

**Bill**

**2006**

# An Act to amend the Consumer Protection Act, 2002, the Environmental Protection Act and the Occupational Health and Safety Act

Note: This Act amends or repeals more than one Act. For the legislative history of these Acts, see Public Statutes – Detailed Legislative History on www.e-Laws.gov.on.ca.

Her Majesty, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:

## CONSUMER PROTECTION ACT, 2002

**1. The *Consumer Protection Act, 2002* is amended by adding the following section:**

**Warning before exposure to toxic substances**

**13.1** (1) No **prescribed supplier** shall supply to a consumer goods or services that expose the consumer to a toxic substance described in subsection (2) unless the supplier first warns the consumer of the exposure in the **prescribed manner**.

**Toxic substances**

(2) The following are toxic substances for the purposes of subsection (1):

1. Substances that are identified from time to time as Group 1, Group 2A or Group 2B Agents in the Monographs on the Evaluation of Carcinogenic Risk to Humans, published by the International Agency for Research on Cancer and available at http://www.iarc.fr/

2. Any other substance that is prescribed as a chemical causing cancer or reproductive toxicity.

**Review of list of substances**

(3) The Lieutenant Governor in Council shall appoint a person to review each year any regulation made for the purposes of paragraph 2 of subsection (2) and recommend revisions to it.

**Definition**

(4) For the purposes of this section,

"expose" has the prescribed meaning.

**2. Subclause 116 (1) (b) (i) of the Act is revoked and the following substituted:**

(i) in respect of Part II, Consumer Rights and Warranties, subsection 10 (1), section 12, subsections 13 (2) and (7) and subsection 13.1 (1),

## ENVIRONMENTAL PROTECTION ACT

**3. The *Environmental Protection Act* is amended by adding the following section:**

**Pollutant inventory**

**4.1** (1) The Minister shall establish and maintain a pollutant inventory that contains at least the following information:

1. The alphabetical index record referred to in subsection 19 (9) of the Act.

2. All records that are filed in the Environmental Site Registry established under section 168.3 of the Act.

3. All reports submitted under section 6 of Ontario Regulation 127/01 (Airborne Contaminant Discharge Monitoring and Reporting) made under the Act.

4. All reports supplied to the Director under the following regulations made under the Act:

   i. Ontario Regulation 560/94 (Effluent Monitoring and Effluent Limits — Metal Mining Sector).

   ii. Ontario Regulation 215/95 (Effluent Monitoring and Effluent Limits — Electric Power Generation Sector).

   iii. Ontario Regulation 561/94 (Effluent Monitoring and Effluent Limits — Industrial Minerals Sector).

   iv. Ontario Regulation 64/95 (Effluent Monitoring and Effluent Limits — Inorganic Chemical Sector).

   v. Ontario Regulation 214/95 (Effluent Monitoring and Effluent Limits — Iron and Steel Manufacturing Sector).

   vi. Ontario Regulation 562/94 (Effluent Monitoring and Effluent Limits — Metal Casting Sector).

   vii. Ontario Regulation 63/95 (Effluent Monitoring and Effluent Limits — Organic Chemical Manufacturing Sector).

   viii. Ontario Regulation 537/93 (Effluent Monitoring and Effluent Limits — Petroleum Sector).

ix. Ontario Regulation 760/93 (Effluent Monitoring and Effluent Limits — Pulp and Paper Sector).

5. The alphabetical index record referred to in subsection 13 (9) of the *Ontario Water Resources Act*.

6. All reports required under sections 61 and 81 of the *Clean Water Act, 2006*.

7. All nutrient management plans and strategies approved under section 28 of Ontario Regulation 267/03 (General) made under the *Nutrient Management Act, 2002*.

8. All notices provided to the Director under section 29 of the *Pesticides Act*.

9. The alphabetical index of orders required under section 31 (8) of the *Pesticides Act*.

10. All adverse drinking water test results reported under section 18 of the *Safe Drinking Water Act, 2002*.

11. Prescribed information about the impacts of the prescribed pollutants on the environment and on human health.

**Requirements re publication**

(2) The provincial inventory shall,

(a) be available at the Ministry's website;

(b) be kept up to date; and

(c) include instructions on how to use the inventory.

**Same**

(3) The information in the provincial inventory shall be made searchable by,

(a) the name of a pollutant;

(b) the name of a person;

(c) the geographic region, including the postal code;

(d) the number of the regulation under which the information was filed;

(e) the instrument, as defined in subsection 1 (1) of the *Environmental Bill of Rights, 1993*, to which the information relates;

(f) the type of impact on the environment; and

(g) the type of impact on human health.

**eports**

(4) The website at which the pollution inventory is available shall have a function to allow a user of the

inventory to create reports organized by the criteria listed in subsection (3) and by any other prescribed criteria.

**Public access**

(5) The requirement to publish and maintain the pollution inventory applies,

(a) in addition to any other provisions set out in this Act or any other act or regulation respecting public access to the documents listed in subsection (1); and

(b) despite any other provision in any other act or regulation that would limit the disclosure or use of any information listed in subsection (1).

## OCCUPATIONAL HEALTH AND SAFETY ACT

**4. Clause 38 (1) (d) of the *Occupational Health and Safety Act* is revoked and the following substituted:**

(d) furnished by the employer to the fire department which serves the location in which the workplace is located; and

**Commencement**

**5. This Act comes into force six months after the day it receives Royal Assent.**

**Short title**

**6. The short title of this Act is the *Community Right to Know Act (Disclosure of Toxins and Pollutants), 2006.***

---

**From:** Larry Stoffman [mailto:larryst@shaw.ca]
**Sent:** December 10, 2006 2:25 PM
**To:** Tabuns - QP, Peter
**Subject:** Re: background materials take one (again)

Hi again,

This is helpful, especially thye FAQ doc. However, could you email the Bill itself? That is what I would circulate, along with the FAQ's.

If it is easier to fax it to me in Ottawa, I will be at the Southway Inn, Monday and Tuesday.
Larry
Larry.

----- Original Message -----
**From:** Tabuns - QP, Peter
**To:** Larry Stoffman
**Sent:** Sunday, December 10, 2006 9:33 AM
**Subject:** background materials take one (again)

Our Bill had three sections.

1. It would require consumer products that contain known or suspected carcinogens to have information labels to this effect, similar to what is required in California for the past 20 years, and Vermont.

## *FAQs on Bill 164, Community Right to Know:*

**Q. How do you know if a substance identified on the information label is a carcinogen?**

The schedule of carcinogens will be drawn from the International Agency for Research on Cancer's list of Group 1 and Group 2 Carcinogens.

A few illustrative examples of carcinogens consumer products contain:
-Formaldehyde, which is used in some nail hardeners;
-Crystalline Silicia, which is used in abrasive cleaners;
-Trisodium nitrilotriacetat, which is used in some laundry detergents.

Right now, in the absence of labels that identify known or suspected carcinogens in commercial goods, and an eco-labeling system identifying carcinogen free consumer products, individuals are left to depend on research published by environmental advocacy groups, like the CancerSmart Consumer Guide put out by the Labour Environmental Alliance Society.

Information disclosure required under California's Community Right to Know initiative, Proposition 65, has prompted manufactures to reduce or eliminate carcinogens in numerous consumer products – e.g. ceramics, nail polish removers, white out.

**Q. Is labeling not a federal responsibility?**

**This is an area of shared jurisdiction. Legal opinion attained from Health Canada and environmental law experts confer that Ontario can legislate information labeling.** In fact, Ontario already exercises this power, having implemented labeling requirements for a range of products. By moving forward with Bill 164, Ontario will be filling a vacuum that currently exists in terms of identifying materials that are known or suspected carcinogens in consumer goods.

On a related note, the Supreme Court of Canada has preserved the principle of concurrent jurisdiction, and a jurisdiction's right to make laws that protect the environment and health of local communities, in a range of successive decisions it has made over the past decade. For example, the Supreme Court rejected industry's attempt to appeal the City of Toronto's Pesticide By-Law on the basis that federal and provincial statutes on pesticides exist.

It is often the case that with environmental health initiatives, cities and then states or provinces are the bodies that lead the charge. Recent cases in point: Toronto's Pesticide By-Law, Quebec and Manitoba developing their own climate change plans in the face of successive federal governments failing on Kyoto.

**Q. What about Canadian Consumer Chemicals and Containers regulations under the Hazardous Products Act, the Consumer Packaging and Labeling Act, and Food and Drugs Act?**

They don't require consumers be informed if substances in consumer products are known or suspected carcinogens. **Further, the current focus of the Canadian**

**Consumer Chemicals and Containers regulations under the Hazardous Products Act is on preventing acute injury, explosions, and death. It does not address protecting consumers against chronic, low-level exposure from toxic substances in household products** (Source: Canadian Strategy for Cancer Control, May 2005)..

**Q. Didn't Health Canada just introduce new labeling requirements on cosmetics?**

Yes, but it does not require labels to indicate if the product contains a known or probable carcinogen.

**Q. What about eco-labeling – isn't that suffice?**

Canada's Environmental Choice program, which approves products not formulated with any proven or probable carcinogens, is not directed to consumers. It focuses on procurement practices of businesses and government. In contrast the European Union's eco-labeling program covers consumer products (Source: Canadian Environmental Law Association, *Creating Community Right to Know Opportunities in the City of Toronto*; 2005; Canadian Strategy for Cancer Control, May 2005).

**In addition to introducing information labels apprising the pubic about known or suspected carcinogens being in products, Bill 164 also provides an opportunity for Ontario to develop eco-labeling to identify carcinogen free commercial products.**

**Q. Will this impact retailers?**

We advocate that manufacturers will put on the labels, or provide retailers signs to put on their shelves. Under Vermont's Community Right to Know initiative, signs are put on store shelves to inform buyers that a certain product has a toxin known or suspected to impact human health.

**Q. Are you not creating fear among consumers? Isn't this a disproportionate reaction, especially if someone just uses a product once or twice? Don't these substances have to meet an approval process to be on the shelf?**

The Canadian Cancer Society, Canadian Strategy for Cancer Control, Toronto Cancer Prevention Coalition, Canadian Environmental Law Association, and others support such information labeling as a primary prevention measure.

Chemicals can accumulate following repeat low level exposures over the long term. The Centre for Disease Control in the US found 150 different toxic chemicals, including carcinogens, in the blood and tissue of people it tested. Environmental Defence found the presence of 41 carcinogens in each person it tested as part of carrying out its study on pollution in Canadians, *Toxic Nation*. The report concluded that "toxic chemicals emitted by industry and released through contact with, or use of, consumer products are measurable in Canadians." (Source, *Toxic Nation*, Environmental Defence Canada, 2005)

The Canadian Environmental Protection Act which regulates chemicals in Canada, including determining if they pose a health hazard to humans, does not test consumer products.

Canadian Consumer Chemicals and Containers regulations under the Hazardous Products Act don't require full disclosure of all potentially harmful ingredients such as carcinogens. **Further, the Hazardous Products Act's focus is on preventing acute injury, explosions, and death. It does not address protecting consumers against chronic, low-level exposure from toxic substances in household products** (Source: Canadian Strategy for Cancer Control, May 2005)...

**There is an ever growing body of research suggesting a link between environment and incidence of cancer**. Boston University's School of Public Health and University of Massachusetts Lowell released in September 2005 research titled "*Environmental and Occupational Causes of Cancers*". Its notable findings included:

- "Cancer evolves from a complicated combination of multiple exposures. Attempting to assign certain exposures (i.e. diet, smoking, environment, etc.) certain roles in causing cancer that will total 100% is inappropriate given that no one exposure single-handedly produces cancer and many causes of cancer are still unknown. Comprehensive cancer prevention programs need to reduce exposures from all avoidable sources;"
- 'The sum of the evidence regarding environmental and occupational contributions to cancer justifies urgent acceleration of policy efforts to prevent carcinogenic exposures. By implementing precautionary policies, Europeans are creating a model that can be applied in the U.S. to protect public health and the environment. To ignore the scientific evidence is to knowingly permit tens of thousands of unnecessary illnesses and deaths each year (Source: Environmental and Occupational Causes of Cancer, September 2005, http://www.sustainableproduction.org/cancer-summary.shtml)'

Incidence of cancer in Canada has risen by 54.4% over the 18 years. An aging population can help explain the rising rate, but not completely. After adjusted for age, incidence of cancer of non-Hodgkin's lymphoma, thyroid, testicular cancer, all which have links to environmental contaminants, have risen among Canadians aged 20-44 (Source: Canadian Cancer Society, April 2002).

Cancer now ranks as the most common cause of death by disease for children. Rates of leukemia and cancers of the brain and central nervous system are the most common forms of cancer among children, and their incidence rates have risen the most rapidly among childhood cancers. The risk of leukemia and brain tumors increase dramatically in households using home and garden pesticides, herbicides, and insectides, many which contain known or suspected carcinogens (Source, Children's Health Environmental Coalition, 2002).

Information labels invoke the Precautionary Principle. Lessons from the past demonstrate the consequences of not applying this principle despite a bevy of warning signs. Toxic chemicals like DDT and PCBs were banned only after they wreaked havoc on the environment and human health for decades (Source: *Toxic Nation*, Environmental Defence, 2005)

**Q. How will it be enforced?**

As it falls under the Consumer Protection Act, the standard fine of 250,000 for a corporation would apply.

**Q. What is the Ontario Pollution Inventory? Don't we already have the National Pollution Inventory, and other databases?**

In the absence of a formal Community Right to Know policy, Ontario does not provide a consolidated, comprehensive inventory about emissions to water, land or air. Currently the most common way to obtain data is through freedom of information requests. Information about emissions is scattered on different databases, like the National Pollution Release Inventory, and the MOE's ONAIR database about air emissions. But many firms do not have to report to the NPRI because of reporting thresholds – simply put, the NPRI deals with large emitters and they only have to report emissions above a ten tonne threshold. The MOE ONAir database imposes a time limit on searches. Furthermore, Certificate of Approvals for smaller firms are largely only available through Freedom of Information requests that often prove costly and prone to cost delays. (Source: CELA, *Creating Community Right To Know Opportunities in the City of Toronto*, 2005

The proposed database not only aggregates information about toxins released from a variety of businesses, it will offers information that the NPRI, OnAIR does not provide, like the impact toxins have on the environment and human health.

**Q. Who supports this bill?**

A range of environmental groups and public health advocates have been calling for Community Right to Know initiatives. Bill 164 is being supported by the likes of the Canadian Strategy for Cancer Control,. the Canadian Environmental Law Association, the Toronto Cancer Prevention Coalition, plus others.

# Vida Viva OHS Mapping International Research Project

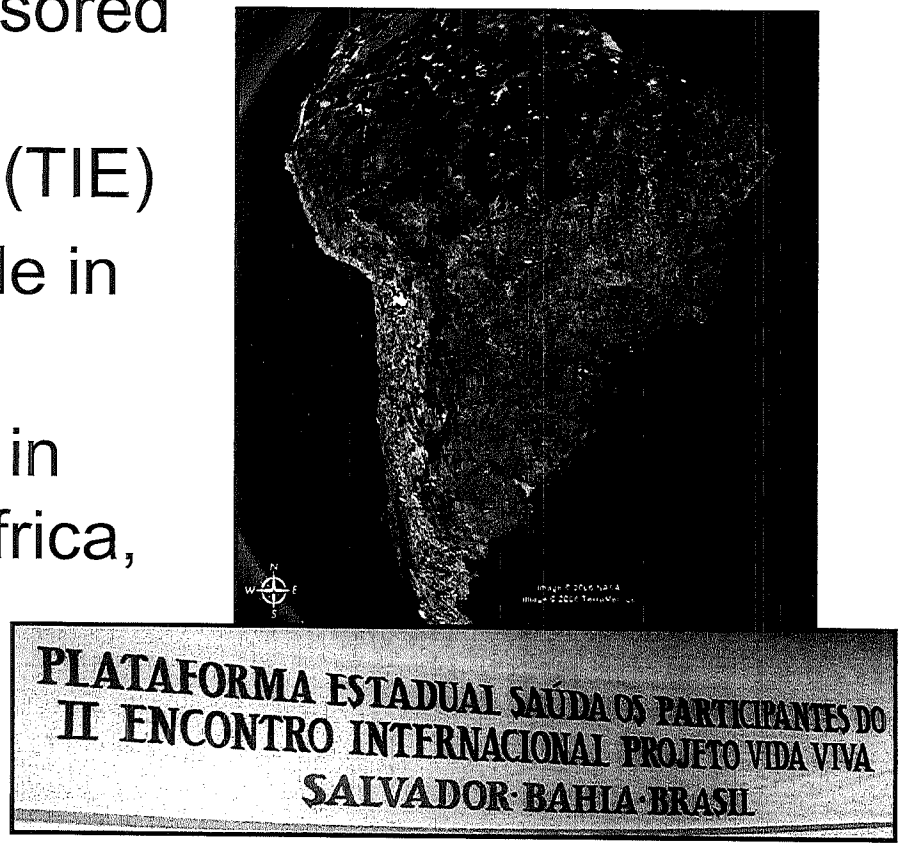



**James Brophy and Margaret Keith**

Occupational Health
Clinics for Ontario
Workers Inc.

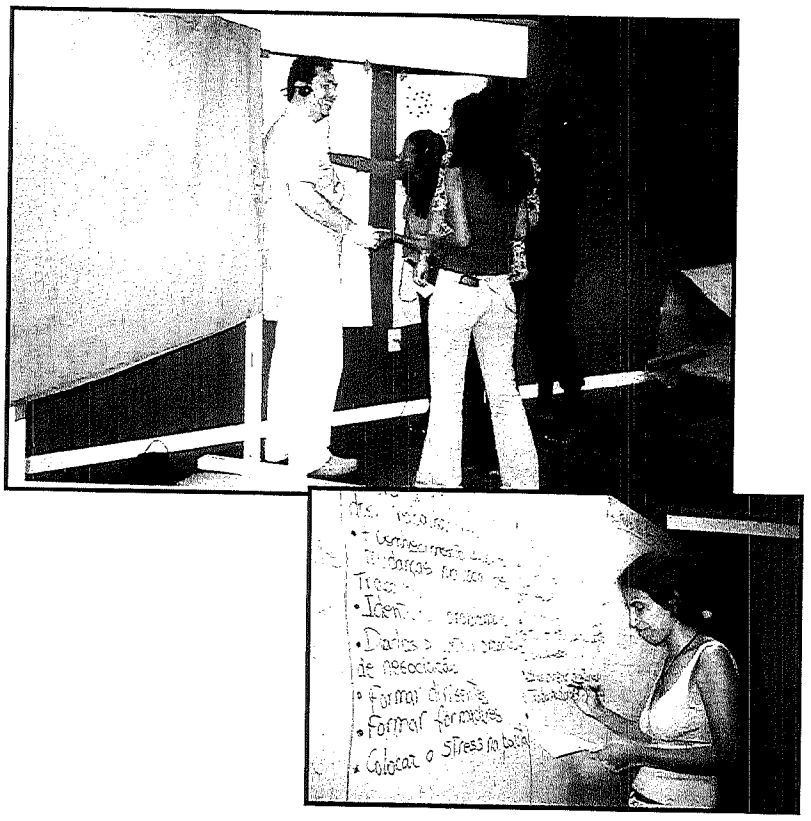
# Worker-based OHS research

- Vida Viva project sponsored by Transnationals Information Exchange (TIE)
- Underway in large scale in Brazil
- Project now beginning in Mozambique, South Africa, Germany, Mexico (Maquiladoras)



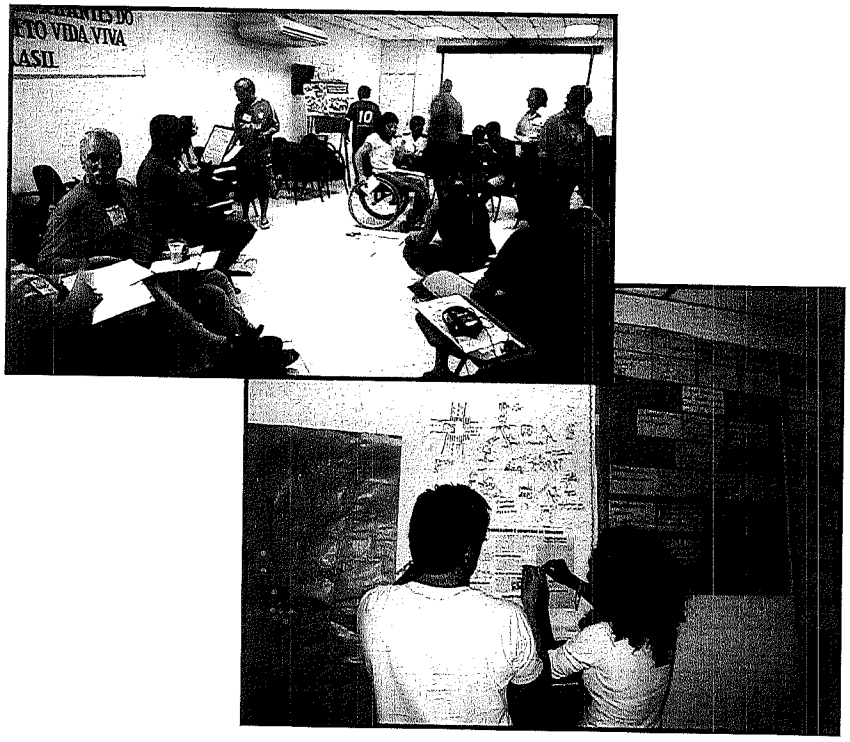
# Background

- Began in Brazil 2003 when unions were exploring various OHS research approaches
- At the invitation of TIE and the unions, we presented our PAR-mapping proposal
- University and medical researchers presented conventional scientific research proposals
- Unions chose PAR-mapping over conventional research approaches
- We returned to Brazil in 2004 to train union facilitators



# Current project status

- International conference held November 2006 in Brazil with approx. 90 union representatives (most from Brazil) to evaluate and plan ahead
- Conference partially funded by Canadian International Development Agency (CIDA)
- Project now includes 114 unions throughout Brazil (industrial, commercial, construction, agricultural, office, etc.)
- 15,000 Brazilian workers have participated to date

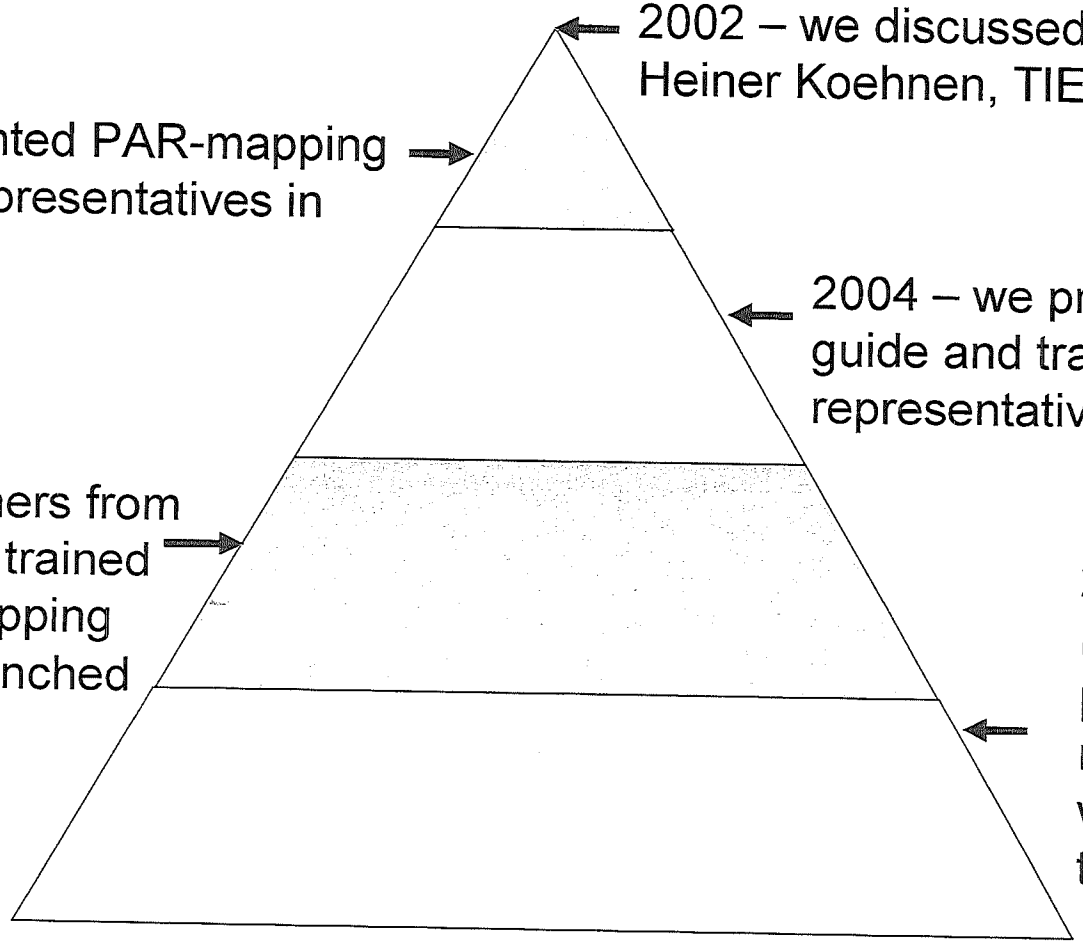


# Our Role

- Produced the mapping materials (translated by TIE into Portuguese)
- Trained facilitators
- Ongoing consultation and international communications
- Canadian partnership



# Exponential growth of project



2002 – we discussed PAR-mapping with Heiner Koehnen, TIE representative

2003 – we presented PAR-mapping with key union representatives in Brazil

2004 – we provided facilitators guide and trained key union representatives

2005 – local trainers from 114 unions were trained and the OHS mapping projects were launched throughout Brazil

2006 – meeting of local trainers and platform members; reported 15,000 worker participants to date

# Role of CIDA

- CIDA providing $20 million from 2005-2010 for development in Brazil
- CIDA funding Ryerson ($2.1 million) to explore OHS in Brazil from industrial employers' point of view *(see attached)*
- CIDA provided $23,000 (Cdn) for the 2006 conference in Brazil

Canadian International Development Agency | Agence canadienne de développement international

CIDA

- Brazil
- Facts at a Glance
- Canada's Cooperation Strategy in Brazil 2005-2010
- The Knowledge Exchange for Equity Promotion Program Brazil/Canada
- Projects

Print Version

Brazil

Regions and Countries - Americas - Countries A-Z Index - the Americas - Brazil - Projects

## Projects

# Knowledge Exchange Equity Fund

**Project number:** 21807
**CIDA contribution:** $20 million
**Project duration:** 2005–2010

This is a responsive development fund that will support a variety of short-, medium-, and long-term and trilateral sub-projects, based on an exchange of knowledge, that contribute to Brazilian efforts to achieve greater equity. In order to maximize results, the fund will have three levels of concentration:

- Sectoral concentration: The fund will primarily concentrate programming in the area of governance. Secondary programming areas will be labour (the work world) and health.
- Regional concentration: The fund will concentrate programming in the northeastern region of Brazil, one of the country's areas of greatest poverty. Secondary areas of concentration will be on projects for disadvantaged outskirts of metropolitan areas and on those with a national impact.
- Institutional concentration: The fund will concentrate its programming at an institutional (meso) level with links to the micro (community) and macro (policy) levels.

If you have comments or questions on this page prepared by Americas Branch, send an e-mail.

Last Updated: 2006-07-24

**Brazil**

Regions and Countries - Americas - Countries A-Z Index - the Americas - Brazil - Enhanced Occupational Health and Safety in Brazilian Industries

**CIDA**

- Brazil
- Facts at a Glance
- Canada's Cooperation Strategy in Brazil 2005-2010
- The Knowledge Exchange for Equity Promotion Program Brazil/Canada
- Projects

Print Version

# Enhanced Occupational Health and Safety in Brazilian Industries

**CIDA contribution:** $2.1 million
**Project duration:** 2004–2008

Ryerson University and its Brazilian partner, Social Service of Industry (SESI), seek to contribute to greater equity for Brazilian industrial workers employed in selected sectors in six Brazilian states in northeast, centre-west and south Brazil. This will be achieved through the transfer of Canadian models and technologies to improve the industrial workers' health and safety in their work environments, and through increased participation in the adoption of effective occupational health and safety (OHS) practices within their industries.

**Canadian partner:**
Ryerson University
Office of International Affairs
350 Victoria Street
Toronto, ON M5B 2K3
tel.: (416) 979-5036
www.ryerson.ca

If you have comments or questions on this page prepared by Americas Branch, send an e-mail.

Last Updated: 2006-11-15

Important Notices

# STRATEGIC PLANNING DOCUMENTS

**OPERATIONAL PLANNING TEMPLATE**

KRA # ___ #: _____ KRA Budget: _____ Achieved by: _____ (year and month)

Strategic Objective #____: _____ Achieved by: _____ (year and month)

% of KRA Budget: _____ Budget Amount: _____

**Goal #____:** _____

Expected Outcome: _____

Goal Leader: _____

Support: _____

Cross Sector Linkage: _____

Goal Budget: $ _____K

Budget Allocation:
(to the nearest $.5K)

| 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011 - 2012 |
|---|---|---|---|---|
| | | | | |

| Task | Task Lead | Deliverable(s) | Deadline | Salary | O&M |
|---|---|---|---|---|---|
| Actions required? | Who leads task? | Products of task? | month / year | | |
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Note: Salary Budget = $2,500 / week, O&M Cost are Contracted Services

Goal #: _____

Page _____ of _____

| Task | Task Lead | Deliverable(s) | Deadline | Salary | O&M |
|---|---|---|---|---|---|
| Actions required? | Who leads task? | Products of task? | month / year | | |
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Note: Salary Budget = $2,500 / week, O&M Cost are Contracted Services

# MEDICAL EDUCATION

# Exposure History for Family Medicine

- Content/ Conceptualization
- Dissemination
- Appropriate for cancer?

## Exposure History
## **CH2OPD2** Mnemonic

- **C**ommunity
- **H**ome
- **H**obbies
- **O**ccupation
- (School)
- **P**ersonal
- **D**iet
- **D**rugs

# Taking an Exposure History

Ontario College of Family Physicians

Full exposure history- 6 page form

http://www.ocfp.on.ca/local/files/EHC/Exposure%20Hx%20Forms%2010Feb2004.pdf

# CMAJ series

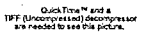
Identifying and managing adverse environmental health effects: 1. **Taking an exposure history.**
CMAJ.2002;166(8):1049-55
Marshall L, Weir E, Abelsohn A, Sanborn MD

- Lead
- Outdoor Air
- POPs
- Carbon Monoxide
- Pesticides

http://www.cmaj.ca/cgi/content/full/166/8/1049

# Curriculum in Environmental Health

A curriculum for teaching and learning environmental health




- Lead
- Outdoor Air
- Indoor Air
- Pesticides
- Investigating a cluster
- POPs

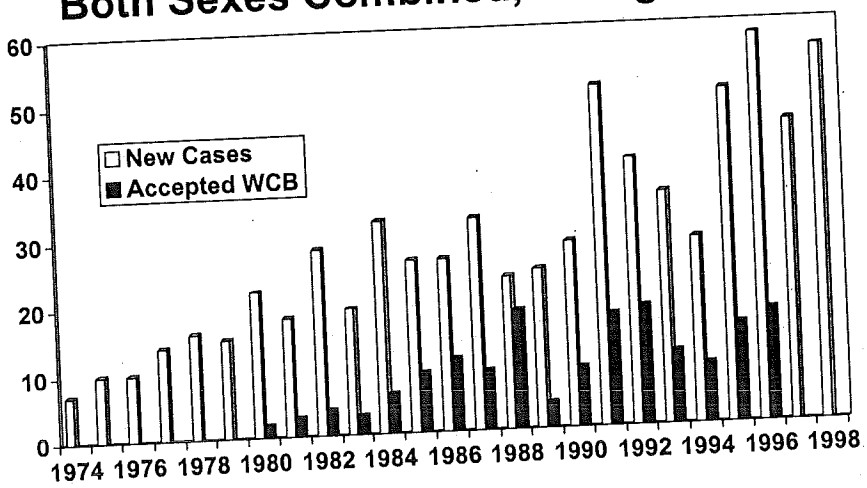
http://www.ijc.org/rel/boards/hptf/modules/content.html

# Dissemination

- Conferences, workshops
- Journal articles
- Environmental Health Scholars
- Success?

## Malignant Mesothelioma Cases

### Both Sexes Combined, All Ages, BC




## Relevance for Primary Prevention of Cancer ?

- Uncertainty in environment-cancer linkage
- Family physicians and cancer-screening
- Effective surveillance?
- Occupational vs Environmental

# *Exposure History*

## COMMUNITY

| For each of the items listed below: | Do you presently live nearby | | | | | If you ever lived nearby, please write the years. |
|---|---|---|---|---|---|---|
| Heavy traffic | ❑ No | ❑ Yes | *(please specify)* | ○ highway | ○ busy street | _____ |
| Vehicle idling area | ❑ No | ❑ Yes | *(please specify)* | ○ auto | ○ bus / truck | _____ |
| Dump site | ❑ No | ❑ Yes | *(please specify type)* | _____ | | _____ |
| Farm(s) | ❑ No | ❑ Yes | *(please specify type)* | _____ | | _____ |
| Industrial plant(s) | ❑ No | ❑ Yes | *(please specify type)* | _____ | | _____ |
| Polluted lake / stream | ❑ No | ❑ Yes | *(please specify type)* | _____ | | _____ |
| Nuclear power plant | ❑ No | ❑ Yes | | | | _____ |
| Hydro towers | ❑ No | ❑ Yes | | | | _____ |
| Other potential hazards | ❑ No | ❑ Yes | *(please specify type)* | _____ | | _____ |

**Do you protect yourself from excess sun exposure?** ❑ rarely ❑ occasionally ❑ often ❑ always

## HOME & HOBBY

**How long have you lived in your present residence?** _____ **How old is it?** _____

**What type of dwelling is your residence?** ❑ house ❑ mobile home
❑ apartment ➟ ○ basement ○ above store ○ highrise ➟ *floor* _____

**Ownership?** ❑ owner occupied ❑ rental ❑ public housing

**How is your home heated?** ❑ forced air ❑ hot water radiators ❑ space heater ❑ baseboard heaters

**What type of fuel is used for heating?** ❑ natural gas ❑ oil ❑ wood ❑ electricity ❑ propane

**Do you use:** ❑ central vacuum? ❑ HEPA filter vacuum? ❑ other vacuum?
_____

**Have you done any renovating?** ❑ No ❑ Yes ➟ When? _____
What? _____

**Do you own / lease a car?** ❑ No ❑ Yes ➟ Age? _____ **Smoking permitted inside?** ○ No ○ Yes

**Do you use pesticides or herbicides (bug or weed killers, flea / tick sprays, collars, powders, pellets, etc.):**

**① in your home?** ❑ No ❑ Yes *(please specify type)* _____

**② on your pets?** ❑ No ❑ Yes *(please specify type)* _____

**③ on your lawn or garden?** ❑ No ❑ Yes *(please specify type)* _____

**What is your water source for bathing?** ❑ city ❑ well ❑ other (*please specify* _____)

Environmental Health Clinic, Sunnybrook & Women's College Health Sciences Centre
Ontario College of Family Physicians

*compiled by Dr. L. M. Marshall*
*print design by Helen Kwan*

| For each of the items listed below: | Do you presently have in your HOME? | If you ever had, please write the years. |
|---|---|---|
| Damp, musty basement or crawl space | ❑ No ❑ Yes ➟ ○ slight ○ severe | |
| Wet windows or outside closet walls (condensation) | ❑ No ❑ Yes ➟ ○ slight ○ severe | |
| Water leaks | ❑ No ❑ Yes ➟ ○ slight ○ severe | |
| Visible mould | ❑ No ❑ Yes ➟ ○ slight ○ severe | |
| Crumbling pipe insulation | ❑ No ❑ Yes ➟ ○ slight ○ severe | |
| Flaking paint | ❑ No ❑ Yes ➟ ○ slight ○ severe | |
| Stagnant stuffy air | ❑ No ❑ Yes ➟ ○ slight ○ severe | |
| Gas or propane stove | ❑ No ❑ Yes | |
| Other gas appliances | ❑ No ❑ Yes *(please specify)* _____ | |
| Wood stove or fireplace | ❑ No ❑ Yes | |
| Carbon monoxide detector(s) | ❑ No ❑ Yes | |
| Air conditioning | ❑ No ❑ Yes ➟ ○ central ○ individual rooms | |
| Electrostatic air cleaner | ❑ No ❑ Yes | |
| Other air cleaner(s) | ❑ No ❑ Yes *(please specify)* _____ | |
| Carpets | ❑ No ❑ Yes ➟ *Where?* _____ | |
| | *How old?* _____ | |
| Old vinyl linoleum | ❑ No ❑ Yes | |
| Photocopier / fax machine / printer | ❑ No ❑ Yes ➟ *Type?* _____ | |
| Garage | ❑ No ❑ Yes ➟ ○ attached ○ underground | |
| Smoker(s) | ❑ No ❑ Yes ➟ *Who?* _____ | |
| Pets | ❑ No ❑ Yes *(please specify)* _____ | |
| Indoor plants | ❑ No ❑ Yes ➟ *How many?* _____ | |

**Do you use an electric blanket?** ❑ No ❑ Yes ➟ *Years* _____

**Do you use dust mite-proof: Pillow cover(s)?** ❑ No ❑ Yes **Mattress cover(s)?** ❑ No ❑ Yes

**What product(s) do you usually use:** *(please specify brands)*

bathroom cleanser _____ floor / wall cleanser _____

laundry detergent _____ fabric softener _____

**What hobbies do you have?** _____

**What hobbies do members of your household have?** _____

**Have you ever personally done any of the following:**

❑ furniture stripping / refinishing Years: _____

❑ home renovating Years: _____ *(please specify type)* _____

❑ art work (e.g. painting, ceramics, stained glass, leather work, etc.) Years: _____ *(please specify type)* _____

❑ other non-occupational activities with exposure to toxic chemicals

Years: _____ *(please specify type)* _____

# OCCUPATION

1. **Do you presently do volunteer work and/or work for pay?**
   - ❑ Volunteer work ➟ *Number of hours per week:* _____ *Type:* _____
   - ❑ Work for pay ➟ *Number of hours per week:* _____
   - ❑ Unable to work for pay due to health problems ➟ *Date stopped work:* _____
     *Reason(s):* _____
   - ❑ On disability benefits ➟ *Type:* _____

2. **Starting with your present or most recent job, please list all of the paying jobs you have ever had.**
   *Please use the back of this page if necessary.*

| Company Name & Work Location | From Mth / Yr | To Mth / Yr | Job Title & Description | Exposures* | Protective Measures / Equipment ** |
|---|---|---|---|---|---|
| 1. | / | / | | | |
| 2. | / | / | | | |
| 3. | / | / | | | |
| 4. | / | / | | | |

* Please list the significant chemicals, dusts, fibres, fumes, radiation, biologic agents (e.g. bacteria, moulds, viruses) and physical agents (e.g. extreme heat, cold, vibration, noise) that you were exposed to at this job.

** Please list any protective measures taken (e.g. showering at work, laundering clothes at work, etc.) or protective equipment used (e.g. gloves, apron, mask, respirator, hearing protectors, etc.).

3. **The following questions are about your present or most recent work environment:**

Age of Building: _____ Number of Floors: _____ Approximate number of occupants: _____

Neighbourhood: ❑ rural ❑ commercial ❑ industrial

**Which of the following are / were on the same floor as your work station in your present or most recent work environment?**

- ❑ bank of computers
- ❑ unvented smoking areas
- ❑ central air conditioning
- ❑ partitions or room dividers
- ❑ carpets ➟ *How old?* _____
- ❑ windows that open
- ❑ unvented copy machines

**Can / could you smell odours from the following in your present or most recent work environment?**

❑ laboratory ❑ cafeteria ❑ manufacturing area ❑ parking garage in or near the building

**Have any of the following occurred in your work environment over the past 12 months or the last 12 months you worked in your most recent job?**

- ❑ use of pesticides ➟ ○ indoors ○ outdoors
- ❑ fire, smoke
- ❑ flood, water leaks
- ❑ carpet cleaning
- ❑ new flooring, furniture, etc. *(please specify)* _____
- ❑ construction
- ❑ renovation
- ❑ painting
- ❑ chemical spill, leak *(please specify)* _____
- ❑ accidents
- ❑ stress

**<u>On average</u>, how would you describe your present or most recent work environment?**

| | | | | |
|---|---|---|---|---|
| **Lighting** | ❑ too much glare | ❑ satisfactory | ❑ too dim | |
| **Temperature** | ❑ too hot | ❑ satisfactory | ❑ too cold | ❑ too variable |
| **Air Movement** | ❑ too stuffy | ❑ satisfactory | ❑ too drafty | |
| **Humidity** | ❑ too dry | ❑ satisfactory | ❑ too humid | |
| **Odour** | ❑ none | ❑ moderate | ❑ strong | *Specify:* _____ |
| **Noise** | ❑ little | ❑ moderate | ❑ a lot | |
| **Your Comfort Overall** | ❑ unsatisfactory | ❑ somewhat satisfactory | ❑ satisfactory | |
| **Co-workers' Comfort Overall** | ❑ unsatisfactory | ❑ somewhat satisfactory | ❑ satisfactory | |

# SCHOOL (if applicable)

How old is your or your child's school? _____ Number of floors: _____ Number of occupants: _____

Have additions been made to the original building? ❑ No ❑ Yes ➟ When? _____

Number of portable classrooms in use: _____

Hours per day you or your child spends in a portable classroom: _____

School neighbourhood: ❑ rural ❑ suburban ❑ urban

**Is your or your child's school located near any of the following:**

| | | | |
|---|---|---|---|
| Heavy traffic | ❑ No | ❑ Yes *(please specify)* | ❍ highway ❍ busy street |
| Vehicle idling area | ❑ No | ❑ Yes *(please specify)* | ❍ auto ❍ bus / truck |
| Dump site | ❑ No | ❑ Yes *(please specify type)* | _____ |
| Farm(s) | ❑ No | ❑ Yes *(please specify type)* | _____ |
| Industrial plant(s) | ❑ No | ❑ Yes *(please specify type)* | _____ |
| Polluted lake / stream | ❑ No | ❑ Yes *(please specify type)* | _____ |
| Nuclear power plant | ❑ No | ❑ Yes | |
| Hydro towers | ❑ No | ❑ Yes | |
| Other potential hazards | ❑ No | ❑ Yes *(please specify type)* | _____ |

**Which of the following does your or your child's school have?** *(Please check all that apply)*

| | | | | |
|---|---|---|---|---|
| ❑ carpeted classrooms | ❑ central air conditioning | ❑ art room – exhaust hood? | ❍ No | ❍ Yes |
| ❑ unvented copy machine(s) | ❑ windows that open | ❑ laboratory – exhaust hood? | ❍ No | ❍ Yes |
| ❑ flaking paints | ❑ mouldy smell | ❑ workshop – exhaust hood? | ❍ No | ❍ Yes |

**Have any of the following occurred in your or your child's school during the current or last school year?**
*(Please check all that apply)*

| | | | |
|---|---|---|---|
| ❑ carpet cleaning | ❑ construction | ❑ renovation | ❑ painting |
| ❑ new flooring or furniture *(please specify)* _____ | | ❑ flood, water leaks | |
| ❑ roof tarring | ❑ use of pesticides / herbicides ➟ | ❍ indoors | ❍ outdoors |

**Are the following products used in your or your child's school during the school year?**
*(Please check all that apply)*

| | | |
|---|---|---|
| ❑ deodorizer strips | ❑ furniture wax or polish | ❑ odourous cleaning products |
| ❑ floor wax | ❑ scented washroom soap | ❑ spray paints |
| ❑ permanent markers | ❑ strong-smelling art supplies | |

**Does your or your child's school have a policy regarding the use of personal scented products by staff and students?**

❑ No ❑ Yes *(please specify)* ➟ ❍ prohibition of scented products ❍ encouragement of unscented products

# *Exposure History*

# PERSONAL

## Natural Inhalant Allergies

**Do you think you are allergic to any seasonal pollens, animal danders, dust, mites, or moulds?**

❑ No ❑ Yes *(please specify)* _____

**Have you ever had allergy tests?** ❑ No ❑ Yes

If YES, please specify:

| Age | Year | Type of Test | Results | Treatments (e.g. avoidance, shots, medications) | Improvement 0 = worse 1 = none 2 = a little 3 = some 4 = a lot |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |

## Synthetic Chemicals

**Have you ever had symptoms you linked with exposure to any synthetic (man-made) chemical at a level that did not seem to bother most people (e.g. paints, perfumes, cosmetics, diesel exhaust, jet fuel, tar, etc.)?**

❑ No ❑ Yes

('***Linked***' means that the symptom started or worsened within 48 hours after you were exposed to something, or the symptom improved or disappeared after you were no longer exposed to it.
'***Exposure***' means being near, touching, smelling, breathing in, eating, drinking, swallowing or injecting something.)

If YES, please specify chemical(s) and symptom(s):

| Man-made Chemical | Symptoms Linked with Low Level Exposure | Presently Affected? 1 = a little 2 = somewhat 3 = a lot | In the Past 1 = a little 2 = somewhat 3 = a lot |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

**How often do you use SCENTED personal products?** *(please check)*

| Scented Products | Soap | Lotion | Cosmetics | Hair permanent | Hair tint | Perfume/aftershave | Other(s) *(please specify)* |
|---|---|---|---|---|---|---|---|
| Never | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ _____ |
| Occasionally | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ _____ |
| Daily | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ _____ |

## Artificial Materials

**How many metal dental fillings / caps do you currently have?** silver / mercury _____ gold _____

**Have you had silver / mercury fillings removed?** ❑ No ❑ Yes ➟ Number removed: _____ Year(s): _____

**Do you have other artificial materials in your body (e.g. pins, screws, plates, meshes, valves, implants, etc.)?**

❑ No ❑ Yes *(please specify)* _____

## Smoking History

**Do you currently use tobacco (daily or almost every day)?**

❑ No ❑ Yes *(please specify)* ➟ ○ cigarettes ○ cigars ○ snuff ○ chewing tobacco

- If YES, average number per day: _____ Number of years: _____
- If NO, have you ever used tobacco (daily or almost every day)? ○ No ○ Yes
  - If YES, number of years you used tobacco: _____ Average number per day: _____
  - Date you last used tobacco regularly: Year _____

**Have you ever experimented with "recreational drugs"?** ❑ No ❑ Yes

## Travel Illnesses

**Have you ever experienced significant symptoms when travelling?** ❑ No ❑ Yes

If YES, please specify:

| Age | Year | Location | Symptoms |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

## Blood Transfusion

Have you had blood transfusion(s)? ❑ No ❑ Yes ➟ *Year(s)* _____

## Living Situation / Supports

**Who lives at home with you?** _____

**Are you:** ❑ single ❑ married / cohabitating ❑ separated ❑ divorced ❑ widowed

**Do you have spiritual beliefs / practices which help you cope?**

❑ No ❑ Yes *(please comment)* _____

**Are you part of a religious community which helps you cope?**

❑ No ❑ Yes *(please estimate the number of contacts in the last 12 months)* _____

**Who backs you up best with your present health problems?** _____

**What other supports do you have?** _____

## Stresses

| Type of Stress | Ever had it? | When? *Please specify Year(s)* | Comments |
|---|---|---|---|
| Loss of someone close | ❑ No ❑ Yes | | |
| Illness in someone close | ❑ No ❑ Yes | | |
| Loss of job | ❑ No ❑ Yes | | |
| Change of job | ❑ No ❑ Yes | | |
| Change of workplace | ❑ No ❑ Yes | | |
| A move | ❑ No ❑ Yes | | |
| Marriage | ❑ No ❑ Yes | | |
| Separation | ❑ No ❑ Yes | | |
| Divorce | ❑ No ❑ Yes | | |
| Pregnancy | ❑ No ❑ Yes | | |
| Alcohol / drug addiction | ❑ No ❑ Yes | | |
| Alcohol / drug addiction in someone close | ❑ No ❑ Yes | | |
| Physical abuse | ❑ No ❑ Yes | | |
| Emotional abuse (being put down, called names) | ❑ No ❑ Yes | | |
| Sexual abuse | ❑ No ❑ Yes | | |
| Other *(please specify)* | ❑ No ❑ Yes | | |

# *Exposure History*

## DIET & DRUG

1. **Who grocery shops for you?** _____
   **Where?** ❑ chain grocery store ❑ health food store ❑ market ❑ others *(please specify)* _____
2. **Who cooks for you?** _____
3. **Please indicate foods and beverages most typically consumed for each of the following meals and the times at which they are most typically eaten.**

| Foods / Snacks | *Please Specify* | Time | Beverage(s) | *Please Specify* | Time |
|---|---|---|---|---|---|
| **Breakfast** | | | **Breakfast** | | |
| Mid-Morning | | | Mid-Morning | | |
| **Lunch** | | | **Lunch** | | |
| Mid-Afternoon | | | Mid-Afternoon | | |
| **Dinner** | | | **Dinner** | | |
| Evening | | | Evening | | |

4. **How much of the following beverages do you consume regularly and have you linked any symptoms with drinking them?**
   ❑ **water** ➟ Number of 8 oz glasses per 24 hours _____ ❍ city ❍ charcoal-filtered ❍ distilled ❍ reverse osmosis ❍ bottled (glass) ❍ bottled (plastic) Any symptoms linked? _____
   ❑ **beer, ale** ➟ Number of 12 oz bottles per week _____ Any symptoms linked? _____
   ❑ **wine** ➟ Number of 6 oz glasses per week _____ Any symptoms linked? _____
   ❑ **spirits** (e.g. whisky, rum) ➟ Number of 1½ oz drinks per week _____ Any symptoms linked? _____
   ❑ **coffee** ➟ Number of 8 oz cups per 24 hours _____ Any symptoms linked? _____
   ❑ **tea** ➟ Number of 8 oz cups per 24 hours _____ Any symptoms linked? _____
   ❑ **cola** ➟ Number of 12 oz drinks per 24 hours _____ ❍ regular ❍ diet Any symptoms linked? _____
   ❑ **other(s)** *(please specify)* _____ Any symptoms linked? _____
5. **Do you eat fish?** ❑ No ❑ Yes ➟ On average, how many days per week? _____ How many times per day? _____
   Type(s) of fish eaten (e.g. tuna, salmon, etc.): _____
6. **Please list foods / beverages that do not agree with you** (e.g. stuffy runny nose, heartburn, bloating, diarrhea, sleepiness, difficulty thinking or concentrating, etc.) **or cause allergic reactions** (e.g. hives, rashes, shortness of breath, wheezing, anaphylaxis, etc.):

| List foods / beverages that are a problem | What problem(s) do they give you? | Approximately how often do you eat / drink them? | | | |
|---|---|---|---|---|---|
| | | Never | Occasionally | Daily | More than once a day |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

7. **Please list any foods / beverages that you crave or that help you to feel better and the time(s) the craving usually occurs:**

| List foods / beverages that you crave or that help you to feel better | Time(s) of craving | What problem(s), if any, do they give you? | Approximately how often do you eat / drink them? | | |
|---|---|---|---|---|---|
| | | | Never | Occasionally | Daily |
| | | | | | |
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| | | | | | |
| | | | | | |

8. **Please list all PRESCRIPTION medications you currently take on a regular basis, including birth control pills and allergy injections: ***

| Name of prescription medication | Dose (e.g. mg, ml, IU) | How often do you take it? | How long have you taken it? | If you have side effects, please specify |
|---|---|---|---|---|
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* *Use additional paper if necessary.*

9. **Please list all NON-PRESCRIPTION medications you currently take on a regular basis, including vitamins, minerals, herbs, remedies, etc.: ***

| Name and brand of non-prescription medication | Dose (e.g. mg, ml, IU) | How often do you take it? | How long have you taken it? | If you have side effects, please specify |
|---|---|---|---|---|
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* *Use additional paper if necessary.*

10. **Drug Adverse Reactions: Please list ANY medication / anesthetics / immunizations you have had to stop taking because of side effects or allergic reactions:**

| Name of medication / immunization | Type of side effects or allergic reaction that caused you to stop it | Age | Year |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

11. **Have you EVER had an emergency injection of adrenaline (epinephrine) for a reaction to any medication, food, insect sting, or other substance?**

❑ No ❑ Yes ➟ What year(s)?_____

To what?_____

# *Exposure History References*


1. American Academy of Environmental Medicine. **Allergy Database and Health History**. AAEM, Inc., Wichita, Kansas, 1992.

2. Anthony Honor, Birtwistle Sybil, Eaton Keith, Maberly Jonathan. **Environmental Medicine in Clinical Practice**. BSAENM Publications (PO Box 28, Totton, Southampton, SO40 27A, Tel: 01 703 81 2124) 1997.

3. Bucsela J, Ed. Agency for Toxic Substances and Disease Registry. **Case Studies in Environmental Medicine: Taking an Exposure History**. US Department of Health and Human Services, October 1992.

4. Marshall LM, Mckeown-Eyssen G, Sokoloff E, Jazmaji V. **University of Toronto Health Survey**. University of Toronto, Department of Public Health Sciences, 1995.

5. Miller CS, Prihoda TJ. **The Environmental Exposure and Sensitivity Inventory (EESI): A standardized approach for measuring chemical intolerances for research and clinical applications,** *Toxicology and Industrial Health* 15:370–385, 1999.

6. Miller CS, Prihoda TJ. **A Controlled Comparison of Symptoms and Chemical Intolerances reported by Gulf War Veterans, Implant Recipients and Persons with Multiple Chemical Sensitivity**, *Toxicology and Industrial Health* 15:386–397, 1999.

7. Quinlan P, Macher JA, Alevantis LE, Cone JE. **Protocol for the Comprehensive Evaluation of Building-Associated Illness** in *Occupational Medicine: State of the Art Reviews*, Vol. 4, No. 4, pp. 771–797, October – December 1989. Philadelphia, Hanley & Belfus, Inc.

8. Raw GJ. **Office Environment Survey**. Construction Research Communications Ltd. Building Research Establishment, Garston, Watford, WE27JR, 1995.

9. Small Bruce M. **Recommendations for Action on Pollution and Education in Toronto: A Report prepared for the Pollution and Education Review Group of the Board of Education, the City of Toronto**, May 1985.

10. Steel R, Belk S, Eds. **Taking an Environmental History** in Handbook of Pediatric Environmental Health, American Academy of Pediatrics, 25–31, 1999.



*Input from the Environmental Health Clinic Staff and Environmental Health Committee of the Ontario College of Family Physicians is gratefully acknowledged.*

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Marshall L, Weir E, Abelsohn A, Sanborn MD. Identifying and managing adverse environmental health effects: 1. Taking an exposure history. *CMAJ* 2002;166(8):1049-55.
http://www.cmaj.ca/cgi/content/full/166/8/1049

Abelsohn A, Stieb D, Sanborn MD, Weir E. Identifying and managing adverse environmental health effects: 2. Outdoor air pollution. *CMAJ* 2002;166(9):1161-7.
http://www.cmaj.ca/cgi/content/abstract/166/9/1161

Sanborn MD, Abelsohn A, Campbell M, Weir E. Identify-ing and managing adverse environmental health effects: 3. Lead exposure. *CMAJ* 2002;166(10):1287-92.
http://www.cmaj.ca/cgi/content/abstract/166/10/1287

Sanborn MD, Cole D, Abelsohn A, Weir E. Identifying and managing adverse environmental health effects: 4. Pesticides. *CMAJ* 2002;166(11):1431-6.
http://www.cmaj.ca/cgi/content/abstract/166/11/1431

Abelsohn A, Gibson BL, Sanborn MD, Weir E. Identifying and managing adverse environmental health effects: 5. Persistent organic pollutants. *CMAJ* 2002;166(12):1549-54.
http://www.cmaj.ca/cgi/content/abstract/166/12/1549

Abelsohn, A., Sanborn, M., Jessiman, B. and Weir, E., 2002. "Identifying and managing adverse environmental health effects: 6. Carbon monoxide poisoning." Canadian Medical Association Journal (CMAJ) June 25, 2002; 166 (13). (http://www.cmaj.ca/cgi/content/full/166/13/1685 )

# Cancer and the Environment Lecture Series

Alan Abelsohn MD FCFP
Riina Bray MD CFPC

Ontario College of Family Physicians
Supported by the
Saunders-Matthey Cancer Prevention Coalition

## Outline

- Incidence
- Causes
- Prevention overview
- Carcinogenesis
- Environmental carcinogens and exposure
- 2 Cases
- Primary prevention of environmental cancer

## Objectives

- To review cancer incidence, morbidity and mortality
- To understand how environmental exposures can lead to the development of cancer
- To become familiar with one of the most prevalent types of cancer and how it relates to the environment
- To understand what is being done with regards to cancer prevention

## Cancer Incidence

## International Cancer Incidence

- Lung cancer is most common cancer worldwide - 1.2 million new cases annually
- Next most common is cancer of the breast - just over 1 million cases
- Colorectal - 940,000
- Stomach - 870,000
- Liver - 560,000
- Cervical - 470,000
- Esophageal - 410,000
- Head and neck - 390,000
- Bladder - 330,000

WHO, 2003

## International Cancer Incidence (cont'd)

- Malignant non-Hodgkin lymphomas - 290,000
- Leukemia - 250,000
- Prostate and testicular – 250,000
- Pancreatic – 216,000
- Ovarian – 190,000
- Kidney – 190,000
- Endometrial – 188,000
- Nervous System – 175,000
- Melanoma – 133,000
- Thyroid – 123,000
- Pharynx – 65,000
- Hodgkin disease – 62,000

WHO, 2003

## Worldwide Cancer Mortality Rates (cont'd)

- Three leading cancer killers are:
  - Lung cancer – 17.8% of all cancer deaths
  - Stomach – 10.4%
  - Liver – 8.8%

WHO, 2003

## Geographic Distribution

- Patterns of high & low mortality may reflect exposure to varying levels of particular carcinogens for
  - **cultural, dietary, occupational or environmental reasons**
- Might illustrate regionalization for
  - racial reasons,
  - a specific genetic predisposition,
  - resistance to particular cancers.
  - Might also display geographical variations in the **quality of health**

## Geographic Distribution

- There are significant differences in the geographic patterns of death resulting from cancer
  - i.e. colon & rectal cancer in both males and females – high mortality rate in NE & urban centers along the Great Lake
  - i.e. USA → East has more cancers; Idaho & New Mexico lowest total cancer mortality; Rode Island Peak

## Numbers of Cancer Deaths and New Cases in the World as Estimated for 2000 and Predicted for 2020[1]

| Year | Region | New cases (millions) | Deaths (millions) |
|---|---|---|---|
| 2000 | More developed countries | 4.7 | 2.6 |
| | Less developed countries | 5.4 | 3.6 |
| | All countries | 10.1 | 6.2 |
| 2020 | More developed countries | 6.0 | 3.5 |
| | Less developed countries | 9.3 | 6.3 |
| | All countries | 15.3 | 9.8 |

[1]Ferlay et al, 2001

## Asian Pacific Journal of Cancer Prevention

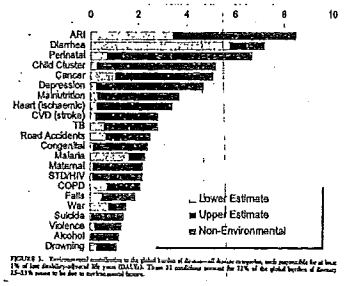
(H. Vainio, 2002)

- Internationally in 2000 there were
  - 10 million new cancer cases
  - 6 million deaths
  - 22 million people living with cancer

→ more in developing countries than developed

(Parkin, 2001, Table 1)

## Percent of Total Lost DALYs



## International Statistics

- Population attributable risk for
  - Tobacco-induced cancers is 30% in Western populations vs 20 over the world as whole
  - Dietary-associated cancers is 30% vs for cancers associated with infection 15%

(Pisani et al., 1997; WHO, 2002)

- **Occupational & environmental carcinogens is 3-9%, depending on prevalence and intensity of exposure**
  - ***Asian Pacific Journal of Cancer Prevention, Vol 3, 2002.***

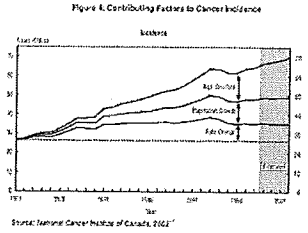
## What is Meant by "Attributable?"

- "Attributable environmental risk"
  - Percentage of a particular disease category that would be eliminated if environmental risk factors were reduced to their lowest feasible values
- "Attributable risk percent (population)"
  - Considers both the prevalence of the exposures and strength of the risks

Smith, Corvalan, Kjellstrom, 1999

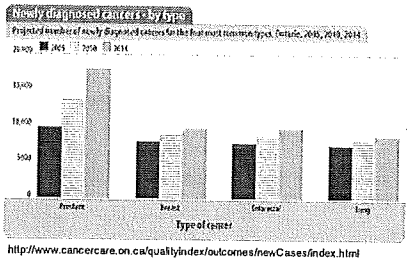
## Cancer Epidemic

A slow epidemic



## Cancer Epidemic

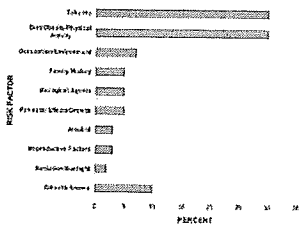
A slow epidemic




http://www.cancercare.on.ca/qualityindex/outcomes/newCases/index.html

## What causes cancer?

## Causes of Cancer

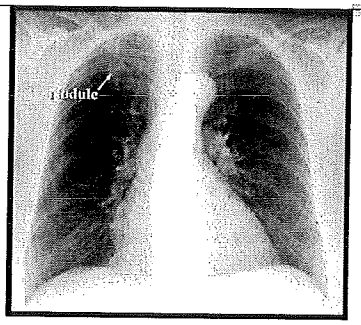



From: Targeting Cancer. An action plan for cancer prevention and detection . Cancer 2020. Cancer Care Ontario. May, 2003

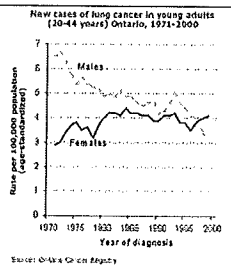
## Asbestos Politics

- 2000: EU Ban on asbestos use
- 2003: UN proposal to ban importation of chrysotile asbestos
- Canada blocked proposal because of strong asbestos lobby

## Case 2: Non-smoker with chronic cough




## Lung Cancer




Cancer Care Ontario

http://www.cancercare.on.ca/index_statistsLung.htm

## Lung Cancer Exposure History

- 60 year old with Ca Lung
- What exposures might be related?
  - $CH_2OPD_2$

## Exposure History $CH_2OPD_2$

- C Community
  - Air
  - Food
  - Soil
  - Water
- $H_2$ Home, Hobbies
- O Occupation
  - Latency period up to 30 years
- P Personal
- $D_2$ Diet, Drugs

## Exposure History: Ca Lung

- C- Community
  - Diesel exhaust
  - Air Pollution PM2
  - Second hand smoke
- H- Home
  - Radon
  - Asbestos insulation
- H- Hobbies ?
- O- Occupation
  - Asbestos
  - Second hand smoke
- P- Personal
  - Smoking
- D2- Diet and Drugs

## Cigarette Smoke and Asbestos

| Group | Mortality Ratio |
|---|---|
| Nonsmokers not exposed | 1.00 |
| Nonsmokers exposed | 5.17 |
| Smokers not exposed | 10.85 |
| Smokers exposed | 53.24 |

Hammond et al, 1979

## Lung Cancer and Asbestos

- All cell types seen
- 5X increase in Lung Ca from asbestos exposure
- Dose-response seen
- Risk multiplicative with cigarettes
- All fibers cause

## Lung Cancer and Air Pollution

Particulate Matter PM 2.5

8% increase lung cancer mortality risk for males for each 10 µg/m3 increase in PM2.5 concentration

Pope CA, Burnett RT, Thun MJ, Calle EE, Krewski D, Ito K & Thurston GD (2002). Lung cancer, cardiopulmonary mortality and long-term exposure to fine particulate air pollution. JAMA. 287: 1132-1141.

## Lung Cancer and Diesel Exhaust

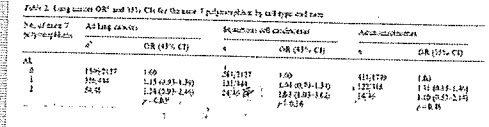
Attributable cancers

| | |
|---|---|
| LA | 16,250 |
| NYC | 10,360 |
| GTA | 2,410 |

**Cancer Risk from Diesel Particulate:**
**National and Metropolitan Area Estimates for the United States**
**Prepared by the State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials**

http://www.4cleanair.org/comments/Cancerriskreport.PDF

## Gene-Environment Interaction

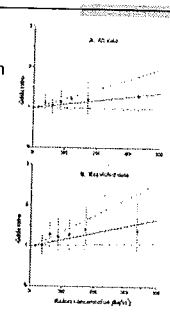


Le Marchand L, Guo C et al. Pooled analysis of the CYP1A1 exon 7 polymorphism and lung cancer (United States). (2003).Cancer Causes and Control; 14: 339-346.

## Lung cancer and radon

Direct evidence of an association between residential radon and lung cancer risk

consistent with
- miner data
- animal
- in vitro studies



A Combined Analysis of 7 North American Case-Control Studies Krewski D Epidemiology 2005

## Radon in homes

**Homes with Radon Daughter Concentration 0.02 WL and Above**

| | Percentage of homes |
|---|---|
| Calgary | 0.8 |
| Charlottetown | 1.2 |
| Fredericton | 6.6 |
| Halifax | 9.3 |
| Montreal | 2.2 |
| Quebec City | 3.1 |
| Saint John | 4.2 |
| Sherbrooke | 8.2 |
| St. John's | 2.1 |
| St. Lawrence, Newfoundland | 6.0 |
| Sudbury | 11.3 |
| Thunder Bay | 3.3 |
| Toronto | 1.7 |
| Vancouver | 0 |

Source: McGregor, R.G. Background concentrations of radon daughters in Canadian homes. Health Physics.1980;39:285-289

## Primary Prevention of Cancer

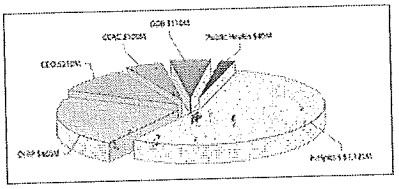
## Primary Prevention of Cancer

- Research is difficult
- Funding (Under-funding)
- Principles
  - Precautionary Principle
  - Pollution Prevention
  - Just Transition
  - Community Right to Know

## Primary Prevention Research

- Funding
- Toxicology
  - Animal models
  - Low dose long term exposures
- Epidemiology:
  - Observational vs Experimental (RCT)
  - Latent period
  - Association vs Causation
  - Multiple exposures
  - Timing of exposure: critical periods

## Funding of Prevention



Ontario 2004/5 estimated expenditures on cancer care: (CCO 2020)
**Public health expenditures 2%**

## Precautionary Principle

When an activity raises threats of harm to human health, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.

Canadian Cancer Society

## Pollution Prevention

- It is **less expensive** and **more effective** to prevent environmental and human health damage, than to manage or cure it.
- Example:
  - Toxic Use Reduction in Mass.

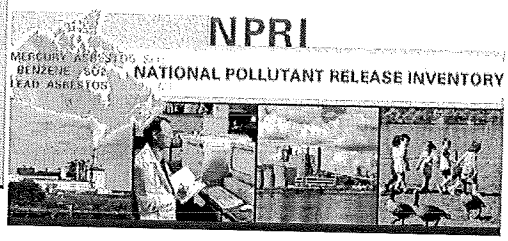
## Just Transition

- Allows workers and communities to choose both **economic security** and a healthy environment

## Community Right to Know

- About environmental risks and exposures
- Participate in decisions affecting health

## National Pollutant Release Inventory




http://www.ec.gc.ca/pdb/npri/npri_home_e.cfm

## NPRI On-Line Data Search

- **Substance - based**
  - Substance
  - Facility, type of industries and location
  - Year
- **Location - based search**
  - National Pollutant Release Inventory (NPRI) and
  - Criteria Air Contaminant (CAC) emissions data
  - in your community using a geographic search

## Pollution Watch

- Get Answers about Pollution in your Community
- Search for facilities in your area using your postal code.
- http://www.pollutionwatch.org/

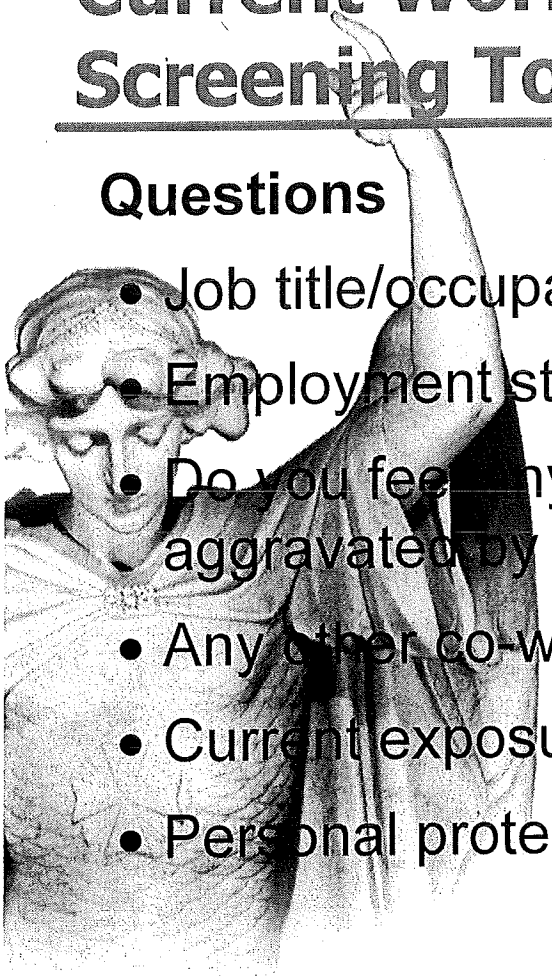
## References


- Taking an Exposure History
  - Ontario College of Family Physicians http://www.ocfp.on.ca/local/files/EHC/Exposure%20Hx%20Forms%2010Feb2004.pdf
  - Marshall L, Weir E, Abelsohn A, Sanborn MD Identifying and managing adverse environmental health effects: 1. Taking an exposure history. CMAJ. 2002 Apr 16;166(8):1049-55.
  - http://www.cmaj.ca/cgi/content/full/166/8/1049
- Toronto Public Health (2002). Ten Key Carcinogens in Toronto Workplaces and Environment: Assessing the Potential for Exposure. Toronto Public Health: Toronto, ON.


## References


- **Environmental and Occupational Causes of Cancer: A Review of Recent Scientific Literature**
  *Clapp RW et al. 2005.*The University of Massachusetts Lowell http://www.cheforhealth.org/resources/cancerpaper.html
- Insight on Cancer. Environmental exposure and cancer.
  Canadian Cancer Society, Cancer Care Ontario. Vol 4, June 2005.
  http://www.cancercare.on.ca/documents/InsightOnCancer-Environmental05.pdf

# Current Work/Health/Exposure Screening Tool



## Questions

- Job title/occupation? Industry sector?
- Employment status?
- Do you feel any aspect of your health is aggravated by work?
- Any other co-workers affected?
- Current exposures?
- Personal protective equipment (PPE)?



Leading with Innovation
Serving with Compassion
ST. MICHAEL'S HOSPITAL
A teaching hospital affiliated with the University of Toronto

# CURRENT WORK/HEALTH/ EXPOSURE SCREENING TOOL

St. Michael's Hospital
Occupational Health Clinic
30 Bond Street
Toronto ON M5B 1W8
Phone: 416.864.5074
Fax: 416.304.1902

| Name: | Date: |
|---|---|

1. **Job title/occupation:** _____

   **Industry sector:** _____

2. **Employment status** ***(check all that apply):***

   ☐ Full-time ☐ Part-time ☐ Shift work
   ☐ Modified duties ☐ Regular duties

3. **Do you feel any aspect of your health is aggravated by work?** ☐ **Yes** ☐ **No**

   *If yes, how?* _____

4. **Are you currently exposed to any of the following?**

| | Yes | No | | Yes | No |
|---|---|---|---|---|---|
| Biologic agents (moulds, viruses) | ☐ | ☐ | Loud noise | ☐ | ☐ |
| Chemicals | ☐ | ☐ | Metal | ☐ | ☐ |
| Dust or fibres | ☐ | ☐ | Psychological stress | ☐ | ☐ |
| Extreme heat/cold | ☐ | ☐ | Radiation | ☐ | ☐ |
| Fumes | ☐ | ☐ | Repetitive movement | ☐ | ☐ |
| Heavy lifting | ☐ | ☐ | Vibration | ☐ | ☐ |

5. **Is personal protective equipment (PPE) worn?** ☐ **Yes** ☐ **No**

   *If yes,* Coveralls ☐ Glove ☐ Hearing Protection ☐ Mask ☐
   Respiratory ☐ Safety Glasses ☐ Safety Shoes ☐

   *Other* _____



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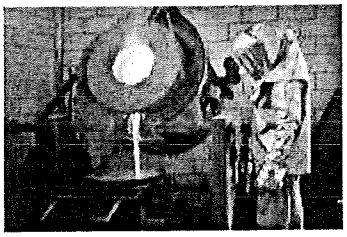
ST. MICHAEL'S HOSPITAL
*A teaching hospital affiliated with the University of Toronto*

# OCCUPATIONAL HEALTH

Fall 2005

# Occupational Medicine Clinical Update

Occupational Health Clinics for Ontario Workers, Sarnia-Lambton



95% - the percentage of lung carcinogens that have been identified by studying occupational groups
77% - the percentage of all carcinogens (minus drugs) identified by studying occupational groups
- Infante

## Occupational Carcinogens - What makes it on the list

Physicians are sometimes faced with patients concerned that working with a substance caused their malignancy. Wouldn't it be nice to know which substances have at least been studied enough to be recognized as culpable?

Apparently Montreal-based Dr. Jack Siemiatycki thought so. He and a cadre of like-minded epidemiologists took on the daunting task of organizing this information, and not just by arcane substances (since there are 85,000 chemicals in use the workplace) but in terms physicians can relate to – by cancer site [Siemiatycki et al 2004].

The material was derived largely through evaluations from the authoritative International Agency for Research on Cancer (IARC). Since 1971 this agency has been selecting substances for evaluation based on two simple criteria: humans are exposed and there is suspicion the substance is carcinogenic.

*(Continued on page 2)*

**Table 1. Occupations/industries evaluated by IARC as definitely (group 1), probably (group 2A), or possibly (group 2B) entailing excess risk of cancer among workers (reproduced with permission from *Environmental Health Perspectives*).**

| Occupation or industry | Suspected substance | *IARC Monograph* Volume (year)[a] | Group | Site(s) |
|---|---|---|---|---|
| Aluminum production | Pitch volatiles, aromatic amines | Suppl. 7 (1987) | 1 | Lung[b], bladder[b] |
| Auramine manufacture | 2-Naphthylamine, auramine, other chemicals, pigments | Suppl. 7 (1987) | 1 | Bladder[b] |
| Boot & shoe manufacture/repair | Leather dust, benzene & other solvents | Suppl. 7 (1987) | 1 | Leukemia[b], nasal[b], paranasal sinuses[b], bladder[b] |
| Carpentry & joinery | Wood dust | Suppl. 7 (1987) | 2B | - |
| Coal gasification | Coal tar, coal-tar fumes, PAHs | Vol.34 (1984) | 1 | Skin (incl. scrotum)[b], bladder[b], lung[b] |
| Coke production | Coal-tar fumes | Suppl. 7 (1987) | 1 | Skin (scrotum)[b], lung[b], bladder[c], kidney[c] |
| Dry cleaning | Solvents & chemicals used in "spotting" | Vol.63 (1995a) | 2B | - |
| Furniture & cabinet making | Wood dust | Suppl. 7 (1987) | 1 | Nose & sinonasal cavities[b] |
| Hairdressers & barbers | Dyes (aromatic amines, amino-phenols with hydrogen peroxide), solvents, propellants, aerosols | Vol.57 (1993b) | 2A | Bladder[c], lung[c], non-Hodgkin lymphoma[c], ovary[c] |
| Hematite mining | Radon daughters, silica | Suppl. 7 (1987) | 1 | Lung[b] |
| Iron & steel founding | PAHs, silica, metal fumes, formaldehyde | Suppl. 7 (1987) | 1 | Lung[b] |
| Isopropanol manufacture, strong-acid process | Diisopropyl sulfate, isopropyl oils, sulfuric acid | Suppl. 7 (1987) | 1 | Paranasal sinuses[b], larynx[b], lung[c] |
| Magenta manufacture | Magenta, *ortho*-toluidine, 4,4′ -methylene bis(2-methylaniline), *ortho*-nitrotoluene | Vol.57 (1993b) | 1 | Bladder[b] |
| Painters | | Vol.47 (1989c) | 1 | Lung[b], bladder[c], stomach[c] |
| Petroleum refining | PAHs | Vol.45 (1989b) | 2A | Bladder[c], brain[c], leukemia[c] |
| Printing processes | Solvents, inks | Vol.65 (1996) | 2B | - |
| Production of art glass, glass containers, and pressed ware | Lead, arsenic, antimony oxides, silica, asbestos, other metal oxides, PAHs | Vol.58 (1993a) | 2A | Lung[c] |
| Rubber industry | Aromatic amines, solvents | Suppl. 7 (1987) | 1 | Bladder[b], stomach[c], larynx[c], leukemia[c], lung[c] |
| Textile manufacturing industry | Textile dust in manufacturing process, dyes and solvents in dyeing and printing operation | Vol. 48 (1990b) | 2B | - |

[a]Most recent IARC evaluation; for those referenced as Supplement 7 (IARC 1987), it is possible that the 1987 review was quite perfunctory and that the essential evidence was accumulated at an earlier date. [b]Authors judged that evidence for an association with this site was strong. [c]Authors judged that evidence for an association with this site was suggestive.

*(Continued from page 1)*

So far (from 1972 to 2003) 880 substances, complex mixtures and industrial processes have undergone systematic scrutiny. From these 880, 89 were declared, 'Definite', 64 'Probable' and 264 as 'Possible' human carcinogens.

These substances were all reviewed by Siemiatycki et al and those considered "occupational exposures" involving a significant number of workers were tagged for inclusion. Based on this information the authors came up with a list of 28 definite, 27 probable, and 113 possible occupational carcinogens. They then produced an exhaustive array of tables listing the substances/industries and processes in a variety of ways to allow easy access to the information.

For simplicity, we have distilled Siemiatycki's paper down to the tables most relevant for the practicing MD. The first, seen on page 1, identifies occupations or industries that entail to varying degrees, excess risk of cancer amongst their respective workers. The second sorts definite or probable carcinogens or processes by cancer site.

ABOUT THE OCCUPATIONS/INDUSTRIES TABLE (page 1)

Occupations or industries appearing in the table on page 1 have been reviewed because of specific concerns. It should be kept in mind that *absence* of an occupation or industry from Table 1 does not necessarily mean there is no known risk therein.

Firefighting is a good example. Firefighters have been shown in numerous studies to suffer excesses of a wide variety of cancers, and these are being recognized by compensation boards globally. However, an IARC evaluation has not occurred.

**Table 2. Definite or probable occupational carcinogens and carcinogenic circumstances, by cancer site (adapted from Siemiatycki et al).**

| Site | Strength of evidence | High-risk industries/occupations | High-risk substances/processes |
|---|---|---|---|
| **Bladder** | Strong | Rubber industry | Aluminum production,4-aminobiphenyl, auramine manufacture, benzidine, coal gasification , magenta manufacture, 2-naphthylamine |
| | Suggestive | Boot and shoe manufacture/repair, hairdressers and barbers, painters, petroleum refining | Benz[a]anthracene, benzidine-based dyes, benzo[a]pyrene; 4-chloro-*ortho*-toluidine, coal tars and pitches, coke production, dibenz[a,h]anthracene, diesel engine exhaust, 4,4'-methylene bis(2-chloroaniline), mineral oils (untreated and mildly treated), *ortho*-toluidine |
| **Bone** | Strong | | Ionizing radiation |
| **Brain** | Suggestive | Petroleum refining | Nonarsenical insecticides |
| **Cervix** | Suggestive | | |
| **CNS** | Suggestive | | Epichlorohydrin |
| **Esophagus** | Suggestive | | Soots, tetrachloroethylene |
| **Gastrointestinal tract** | Suggestive | | Asbestos |
| **Kidney** | Suggestive | | Coke production |
| **Kidney (renal cell)** | Suggestive | | Trichloroethylene |
| **Larynx** | Strong | | Isopropanol manufacture, strong acid process, inorganic acid mists containing sulfuric acid, mustard gas |
| **Leukemia** | Strong | Boot and shoe manufacture/repair | Benzene, ethylene oxide, ionizing radiation |
| **Liver & biliary tract** | Strong | | Aflatoxin, ionizing radiation |
| | Suggestive | | Polychlorinated biphenyls, trichloroethylene |
| **Liver (angiosarcoma)** | Strong | | Vinyl chloride |
| | Suggestive | | Arsenic and arsenic compounds |
| **Liver (hepatocellular)** | Suggestive | | Vinyl chloride |
| **Lung** | Strong | Iron and steel founding, painters | Aluminum production, arsenic and arsenic compounds, asbestos, beryllium, cadmium & cadmium compounds, chromium (hexavalent) compounds, coal gasification, coke production, hematite mining (underground) with radon exposure, involuntary (passive) smoking, ionizing radiation, selected nickel compounds , silica (crystalline), soots, talc containing asbestiform fibers |

Occupational cancers in women is a more extreme example of a group of workers that have fallen below the radar in occupational research in general. A review of 1,233 occupational cancer papers published between 1971 and 1990 showed only 7% had detailed results for white women and 1% for nonwhite women [Zahm and Blair, 2003].

THE CANCER SITE TABLE (pages 2 & 3)

Table 2 summarizes the occupational carcinogens or exposures that are considered to be definite or probable by IARC. There are, as with all information, limits to IARC's material that should be recognized . They do not provide any indication of the strength of effect for individual carcinogens. Furthermore, there has been considerable controversy about the manner in which IARC reaches its designations of carcinogenicity.

Although there is some security in knowing that some obvious carcinogens have been identified, there are many reasons for caution:

- Only **880** substances/processes have been evaluated by IARC to 2003 (~1% of substances in use).
- About **85,000** chemicals are in the workplace with constant introduction of new ones (~1500-3000 per year) hence regulatory agencies are falling further behind each year.
- There is a shift away from occupational research in the epidemiological community.
- There are increased barriers to occupational research (exposure assessment, access to subjects, etc).

*(Continued on page 4)*

**Table 2 continued.**

| Site | Strength of evidence[a] | High-risk industries/occupations | High-risk substances/processes |
|---|---|---|---|
| **Lung** | Suggestive | Hairdressers and barbers, rubber industry | Benz[*a*]anthracene, benzo[*a*]pyrene, a-chlorinated toluenes, coal tars & pitches, dibenz[*a,h*]anthracene, diesel engine exhaust, epichlorohydrin, inorganic acid mists containing sulfuric acid, isopropanol manufacture (strong acid process), mineral oils (untreated and mildly treated), nonarsenical insecticides, mustard gas, production of art glass, glass containers and pressed ware, TCDD |
| **Lung (oat cell)** | Strong | | Bis(chloromethyl) ether & chloromethyl methyl ether (technical grade) |
| **Lympho-hematopoietic** | Suggestive | | 1,3-Butadiene |
| **Lymphoma (non-Hodgkin)** | Suggestive | Hairdressers and barbers | Nonarsenical insecticides, TCDD, tetrachloroethylene (aka perchlorethlyene), trichloroethylene |
| **Melanoma** | Strong | | Solar radiation |
| **Mesothelioma** | Strong | | Asbestos, erionite, talc containing asbestiform fibers |
| **Multiple myeloma** | Suggestive | | Nonarsenical insecticides |
| **Nasal cavities & paranasal sinuses** | Strong | Boot and shoe manufacture/repair, furniture & cabinet making | Isopropanol manufacture, strong acid process, selected nickel compounds including combinations of nickel oxides & sulfides in the nickel refining industry, wood dust |
| | Suggestive | | Chromium (hexavalent) compounds, formaldehyde, mineral oils (untreated and mildly treated) |
| **Ovary** | Suggestive | Hairdressers and barbers | |
| **Pancreas** | Suggestive | | Acrylamide |
| **Pharynx & nasopharynx** | Suggestive | | Mustard gas, formaldehyde |
| **Sarcoma** | Suggestive | | TCDD |
| **Skin** | Strong | | Arsenic and arsenic compounds, coal tars & pitches, coal gasification, coke production, dibenz[*a,h*]anthracene, mineral oils (untreated and mildly treated), shale oils or shale-derived lubricants, solar radiation, soots |
| | Suggestive | | Benz[*a*]anthracene, benzo[*a*]pyrene, creosotes |
| **Stomach** | Suggestive | Painters, rubber industry | |
| **Thyroid** | Strong | | Ionizing radiation |
| **Other sites** | Suggestive | | Ionizing radiation[b] |
| **All sites combined** | Strong | | TCDD[c] |

TCDD - 2,3,7,8-tetrachlorodibenzo-*para*-dioxin. [a]Authors judgment of strength of evidence regarding each site. [b]There is suggestive evidence of an effect of ionizing radiation on several sites in addition to those shown here. [c]The evidence for an association with TCDD only becomes strong when data are combined for all cancer sites.

*(Continued from page 3)*

Despite these caveats, the information in these tables represents a huge amount of research and review. If you suspect, based on the information presented or other evidence that your patient's cancer is work-related, you should notify the appropriate compensation board (in Ontario the WSIB, through a Form 8) and allow it to investigate.

"DOUBT IS OUR PRODUCT"

One of the most serious barriers to the determination of substances as carcinogenic are companies with vested interests doing research on their own occupational cohorts. As David Michaels, an epidemiologist at George Washington University states [Michaels 2005]:

**Uncertainty is an inherent problem of science, but manufactured uncertainty is another matter entirely. Over the past three decades, industry groups have frequently become involved in the investigative process when their interests are threatened.**

Michaels, a former Assistant Secretary of Energy for Environment, Safety and Health in the U.S. also writes,

**In 1969 an executive at Brown & Williamson, a cigarette maker now owned by R. J. Reynolds Tobacco Company, unwisely committed to paper the perfect slogan for his industry's disinformation campaign: "Doubt is our product since it is the best means of competing with the 'body of fact' that exists in the mind of the general public."**

> *"Doubt is our product since it is the best means of competing with the 'body of fact' that exists in the mind of the general public."*
>
> *- Tobacco executive*

**In recent years, many other industries have eagerly adopted this strategy. Corporations have mounted campaigns to question studies documenting the adverse health effects of exposure to beryllium, lead, mercury, vinyl chloride, chromium, benzene, benzidine, nickel, and a long list of other toxic chemicals and medications.**

**Emphasizing uncertainty on behalf of big business has become a big business in itself. The product-defense firms have become experienced and successful consultants in epidemiology, biostatistics and toxicology.**

> *"Where there is reasonable evidence of an impending threat to public health, it is inappropriate to require proof of causation beyond a reasonable doubt before taking steps to avert the threat."*
>
> *- Justice Krever*

AVERTING THREATS WITH REASONABLE EVIDENCE

The sheer magnitude of substances in the workplace, and the forces against regulation, make it clear that waiting for incontrovertible scientific proof will continue to fail miserably in the arenas of occupational medicine and public health. It is because of such conflicts that the ***Precautionary Principle*** began to evolve.

During the late 1990's federal inquiry into the tainted blood scandal Justice Krever stated the Precautionary Principle in this way, "Where there is reasonable evidence of an impending threat to public health, it is inappropriate to require proof of causation beyond a reasonable doubt before taking steps to avert the threat."

Recognizing the limitations of science in identifying carcinogens, and other health hazards in our workplaces, may help guide physicians in primary prevention teaching with patients and workers. As the healthcare system lumbers toward further breakdown, we have to do a better job finding our ounce of prevention, because we clearly can't afford the pound of cure.

*References*

Infante P. Cancer and Blue Collar Workers: Who Cares? New Solutions, 1995 (52): 52-57.

Michaels, D. Doubt is Their Product. Scientific American 2005;292(6):96-101.

Siemiatycki J, Richardson L, Straif K, Latreille B, Lakhani R, Campbell S, Rousseau MC, Boffetta P. Listing Occupational Carcinogens. Environ Health Perspect. 2004 Nov;112(15):1447-59.

Zahm SH, Blair A. Occupational Cancer Among Women: Where Have We Been and Where Are We Going? Am. J. Ind. Med. 2003 44:565-575.

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Occupational Health Clinics for Ontario Workers (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 (Sudbury, Toronto, Hamilton, Sarnia and Windsor) 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.

Contact us for the clinic nearest you.

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# Occupational Medicine Clinical Update

**Occupational Health Clinics for Ontario Workers Inc, Sarnia-Lambton**

*A newsletter by physicians, for physicians, dealing with issues related to occupational medicine*

## 'Avoiding the rough' when reporting workplace injuries/diseases

What degree of certainty that an injury or disease is work related, does a physician require to notify WSIB?

Physicians are sometimes asked by workers to send a 'report' to the Workplace Safety and Insurance Board (WSIB). This is a frequent occurrence in occupational medicine. In some situations the duty to do so seems clear, in others it is much murkier.

What degree of certainty that an injury or disease is work related does a physician require to notify WSIB (with a Form 8 - Physician's First Report)?

This question was recently posed to the Canadian Medical Protective Association (CMPA). Their written reply followed clarifying doctor's obligations.[1] The following scenarios will help highlight some of the more important points made by the CMPA.



In the following scenarios the question is whether an *obligation* exists to notify the WSIB with a Form 8:

1. A 26 year-old 'roadie' falls from the stage while doing the microphone check before a Blink 182 concert. He receives a complimentary trampling from the appreciative crowd in the 'mosh pit'. His injuries include a broken tib-fib, arm, and a liberal assortment of soft tissue injuries.

2. The aforementioned roadie requests that a report NOT be sent to WSIB. (He's afraid he'll lose his job). Is there an obligation to report?

3. A 65 year-old asbestos worker with a 50 pack-year smoking history and lung cancer requests a report be sent to the WSIB.

### 1. The Rumpled Roadie



This shouldn't pose too much of a dilemma. It happened at work, at least we think it did. Not much doubt that being trampled can cause these injuries. A relative 'no-brainer'. The Form 8 goes.

### 2. The Reluctant Roadie

So our roadie doesn't want to lose his fabulous job. Do you have to report to the WSIB anyway? There is a statutory obligation to report a workplace injury or disease on the part of the employer and employee. However, ***there is no statutory obligation on the physician in this regard.***[1] The onus is on the employer and the employee for reporting.

Furthermore, the physician who chooses to report a disease against a patient's wishes could find themselves breaching confidentiality.

### 3. The Smoking Asbestos Worker

This one is a bit tougher. Sure, you might know that asbestos is an independent contributor to lung cancer, but the guy was a heavy smoker. How can *you* say it caused the disease?

The answer is—you can't, and furthermore you are not being asked to make that determination:

***A physician is not required to determine whether a worker's claim is valid to send a Form 8.***

"The obligation to fill out a Form 8 is triggered by the fact that a worker *is making a claim to WSIB* and not by the nature of his or her medical condition."[1]

Workers have a statutory right to decide to make

*(Continued on page 2)*



*I'm in the woods so much I can tell you which plants are edible.*

- Lee Trevino

***Key Points on Occupational Reporting Obligations***

- ***You are obliged to send a Form 8 when requested by a worker who wishes to make a claim.***
- ***You are not required to determine whether a worker's claim is valid before sending a Physician's First Report (Form 8).***
- ***You are not obliged to report a workplace injury or disease unless requested to do so by the worker, or the WSIB, or if there is a 'designated substance' involved.***

a claim if they, "Think that they are ill because of something they did at work or were exposed to during work."[2] They can initiate a claim through any one of 5 routes:

- Their physician
- The employer
- Their union
- An advocate of their choice
- Themselves

It is not up to them, or the physician they ask to send the medical information, to determine if the claim is valid. That is the job of the WSIB. They will take neither the worker's nor the physician's word for it. The WSIB has its own policies, its own processes and its own physicians and other scientific resources for making these determinations.

So, once a worker decides he wishes to make a claim regarding an injury or condition to the WSIB, ***there is an obligation on the part of the MD to complete a Form 8***. However, this only requires that the physician supply, "factual information concerning, among other things, the date of the treatment, patient medical history, physical findings, diagnosis, current treatment and referrals made."[1]

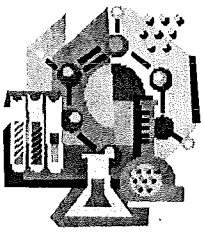
While there is a duty to complete a Form 8 for a patient wishing to make a claim, it is reasonable to give people realistic expectations. In our experience at OHCOW, a thorough literature review sometimes makes it clear that there is no scientific evidence supporting the causal relationship. If we are fairly certain that the WSIB is not going to accept the claim, even under appeal or tribunal, we convey this to the patient. There is no point in pursuing a claim that is going to be an exercise in futility for everyone, particularly the patient.

Table 1: Designated substances which require mandatory reporting by physicians

- Acrylonitrile
- Arsenic
- Asbestos
- Benzene
- Coke Oven Emissions
- Ethylene Oxide
- Isocyanates
- Lead
- Mercury
- Silica
- Vinyl Chloride

## Designated Substances and Obligatory Reporting

The only other statutory occupational obligation for physicians is with regard to 'designated substances'. The Occupational Health and Safety Act (OHSA)[3], defines a designated substance as, "a biological, chemical or physical agent or combination thereof prescribed as a designated substance to which exposure of a worker is prohibited, regulated, restricted, limited or controlled." (see Table 1).



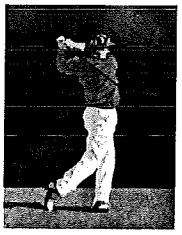
***If you suspect your patient has a disease that is the result of exposure to a designated substance you are required by law to contact the Provincial Physician at the Ontario Ministry of Labour (416-235-5235).***

These reporting obligations only apply if there is a *control program* in place for the designated substance. Any employer who uses a designated substance is required to have a control program in place. Workers are required under the program to submit for medical exam and relevant testing.

Furthermore, reporting is only necessary when the worker is deemed by the physician to be unfit to work, or can work but with limitations. If the physician determines that the worker can keep working in the exposure, reporting is not required.

**Conclusion**

We hope this brief review clarifies a potential area of confusion for physicians and keeps you in 'perfect form' as to what to do when faced with workers requesting reports. If you have any questions feel free to contact us.




*References*

*1. CMPA letter from General Counsel. Dated May 29, 2003.*

*2. Occupational Health and Safety Act R.S.O. 1990, CHAPTER O.1 @ http://www.e-laws.gov.on.ca/DBLaws/Statutes/English/90o01_e.htm#P174_3061*

*3. WSIB website http://www.wsib.on.ca/wsib/wsibsite.nsf/public/MakingAClaimOccupationalDisease*



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# Participatory Mapping of Occupational Hazards and Disease among Asbestos-exposed Workers from a Foundry and Insulation Complex in Canada

MARGARET M. KEITH, JAMES T. BROPHY

A study of former asbestos-exposed foundry and insulation workers was carried out in Sarnia, Ontario, home to Canada's petrochemical industry, using participatory mapping to document past exposures and subsequent diseases. Before it closed, government inspectors had monitored the use of asbestos at the facility, documenting levels that were thousands of times above the current legal limit. The study was undertaken by the Occupational Health Clinics for Ontario Workers (OHCOW) and Canadian Auto Workers (CAW) to provide evidence for worker compensation claims. Using facilitated hazard mapping, former Holmes workers graphically reconstructed their workplaces and detailed their exposures. Using facilitated body mapping, workers recorded and displayed their health problems. The study uncovered a grim pattern of occupational diseases. Following the release of the results, coupled with clinically confirmed diagnoses and corroborating evidence of exposure, hundreds of former Holmes employees and their families received compensation for occupational diseases that had previously gone unrecognized. *Key words*: body mapping; hazard mapping; participatory; asbestos; foundry; insulation; occupational disease; cancer; mesothelioma; Canada.

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A study of former asbestos-exposed Holmes Foundry, Caposite and Insulation workers was carried out using participatory mapping to gather and present evidence of past exposures and related diseases in support of claims for workers' compensation. It was a collaborative effort involving the Occupational Health Clinics for Ontario Workers (OHCOW) and the Canadian Auto Workers union (CAW).

The study took place in a small community in Southwestern Ontario, more than 1,000 kilometers from the nearest asbestos mine, where record numbers of asbestos-exposed workers have been diagnosed as having asbestos related diseases.[1] Like the current recipients of imported asbestos in developing countries, workers in Sarnia–Lambton became the unwitting victims of asbestos that was brought into their community by their employers.[2]

Sarnia–Lambton is situated on the St. Clair River about midway through the Great Lakes system. The city of Sarnia and the surrounding county of Lambton have a combined population of approximately 127,000. A thriving petrochemical industry was established following the 1851 discovery of petroleum "gum beds" in the area.[3] The abundance of crude oil and the proximity to the United States and a major steamship route made Sarnia an ideal site for doing business. By 1893, the Sarnia area was the major supplier of crude and petroleum products for Canada.[4]

Many companies have come and gone over the years; some have undergone name and ownership changes. Bayer Rubber, Nova Chemicals, Imperial Oil, Shell, and Dow are among the large multinational petrochemical producers currently operating in the Sarnia area. The various industries use each other's products and byproducts. A broad array of consumer and industrial goods is produced.[5]

Throughout the past century, there have also been some smaller operations, which served both the petrochemical industry and the auto industry. Ethyl Corporation produced tetra-ethyl lead additive for gasoline, Prestolite produced auto parts, Holmes Foundry made engine blocks and munitions, Holmes Caposite plant produced asbestos insulation products, and Owens-Corning produced fiberglass products.

One characteristic of almost all of the industries in Sarnia is their extensive use of asbestos. Asbestos lined the foundry ovens, asbestos products were produced and exported, and asbestos insulation covered the miles of pipes that interweave the chemical valley. The Sarnia–Lambton area has been cited as having the highest rates of pleural mesothelioma in Ontario.[6,7] Between 1986 and 1993 there was a fourfold excess incidence of mesothelioma in Lambton County compared with the rest of Ontario; 74% of the cases were among former workers from either the Sarnia petrochemical industry or the Holmes Foundry complex.[8]

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As Table 1 shows, the age-adjusted hospitalization rate for mesothelioma among males in Lambton County was over five times the provincial rate in 1992 to 1998; the rate for asbestosis among males was nine times the provincial rate.[1] There were elevated rates of several other respiratory diseases, including cancers that are associated in the literature with exposure to asbestos.[9]

A recent study of the Sarnia area reported by Health Canada[10] found increased rates of specific cancer morbidity and mortality. For example, there was a statistically significant fourfold excess mortality from non-Hodgkin's lymphoma among men aged 25–44 years.

While the health statistics are not attributed to any particular cause, it is not unreasonable to speculate that industrial emissions and occupational exposures have played a role in some of Sarnia–Lambton's ill health.[11,12] In the year 2000, industry in the Sarnia area reported the highest toxic air releases in Canada.[13] The largest hazardous waste operation in Canada, euphemistically named "Safety-Kleen" (and more recently "Clean Harbours") operates in the Sarnia area, not only storing and incinerating the area's toxic waste, but importing waste from all parts of Canada and the United States. Safety-Kleen ranked as the highest releaser of carcinogenic pollutants in the country in 2001; it also ranked number one for releases of reproductive and developmental toxicants.[14]

Sarnia lacks industrial diversification; it is very dependent on the petrochemical and related industries for its economic well-being. Although there was a significant downsizing of the petrochemical industry in the 1980s and 1990s, in 2002, 44% of employment in Sarnia's manufacturing sector was still in the petrochemical industry.[15] This dependency hampers worker and community occupational and environmental health reform efforts. Yet, it was in this period of economic restructuring that one of the most significant occupational health and safety stories of the past decade emerged in Canada—the story of the Holmes Foundry, Caposite, and Insulation complex, which had closed a decade earlier. Participatory mapping played a significant role in the emergence of an ultimately broad-based, successful campaign for occupational health services and compensation.

**TABLE 1. Hospital Morbidity Data, Lambton County, 1992–1998***

| Disease | Males | Females | Both |
|---|---|---|---|
| All cancers | 1.34* (4,443) | 1.28* (3,896) | 1.31 (8,339) |
| Lung cancer | 1.50* (768) | 1.39* (423) | 1.46* (1,191) |
| Mesothelioma | 5.33* (37) | N/A (4) | 3.92* (41) |
| Asbestosis | 8.97* (10) | N/A (0) | 8.93 (10) |
| Nasopharnyx | 3.59* (9) | N/A (0) | 2.52 (9) |
| Esophagus | 1.41* (79) | 1.18 (26) | 1.35* (105) |
| Asthma | 1.22* (869) | 1.16* (869) | 1.18* (1,738) |
| Emphysema | 1.38*(89) | 1.32 (59) | 1.31*(148) |

*Age-adjusted standard morbidity ratio (SMR) compared with the Ontario rate. Statistically significant differences with the province are indicated by asterisks.

*Source*: Lambton Public Health Unit, March 21, 2000.

## HOLMES FOUNDRY, CAPOSITE AND INSULATION COMPLEX

The Holmes Foundry, Caposite, and Insulation complex opened in Sarnia in 1918.[16] The foundry cast automobile engines for Ford Motor Company and parts for the agricultural and defence industries. It made extensive use of asbestos. The Holmes Insulation plant produced rock wool products. The Caposite production facility produced asbestos products for the petrochemical industry and beyond, using amosite asbestos.[17] The Caposite plant closed in 1974 and the foundry closed in 1988.[16] The Holmes Insulation plant was sold and began operations under new ownership at another location. During its full production years, the Holmes complex employed 300 to 625 workers at a time.[18]

The Occupational Health Clinics for Ontario Workers in neighboring Windsor, Ontario (approximately 160 kilometers from Sarnia) began to provide medical diagnostic services to workers in the Sarnia community in 1993. Satellite clinic days were held only once or twice per month as very few Sarnia workers were coming forward at that time with their occupational health concerns.

The Windsor clinic staff first heard of the illnesses and deaths among former Holmes workers in the mid-1990s when Bob Clarke, a former union plant chairperson and member of the Canadian Auto Workers (CAW) union, approached the clinic staff with a list of his co-workers who had died of cancers he believed to be work-related. He explained that he and his former co-workers at the now-closed Holmes Foundry and associated Caposite and rock wool Insulation plants in Sarnia had been exposed to high levels of asbestos dust in the course of their employment.[19] Clarke had earlier supported 51 successful compensation claims on behalf of Holmes workers,[16] many of which had been submitted following disease detection by the provincial government's Occupational Chest Disease Service mobile surveillance x-ray unit.

The Canadian Auto Workers union represented the Holmes Foundry workers; the Caposite and Insulation workers were not unionized. There are accounts of an 11-day labor dispute in 1937 in which workers, seeking to unionize, occupied the plant demanding improved health and safety conditions.[20] At the time, most of the Holmes workers were first-generation immigrants. Fuelled by anti-union and ethnic tensions, violence erupted against the strikers and their families. The union was broken and the striking foundry workers were permanently replaced. This event may have helped to set the stage for the ensuing Holmes occupational health and safety tragedy. The resulting intim-

idation may have discouraged workers' efforts to successfully address the unsafe conditions that existed for the remainder of the plant's operating years.

## COLLABORATIVE OCCUPATIONAL HEALTH STUDY

Following the revelations brought forward by Bob Clarke regarding the apparently high incidence of occupational disease among former Holmes workers, the occupational health clinic staff and the CAW agreed to collaboratively conduct an investigation to: identify former Holmes workers who were suffering from occupational disease or injury; identify surviving family members of former Holmes workers who had died from occupational disease; and gather evidence to support compensation claims for Holmes victims.

It was agreed that the occupational health clinic would gather evidence and provide medical diagnostic services. The union would take responsibility for contacting former Holmes workers and family members and would support compensation claims on their behalf.

## HAZARD MAPPING OF THE HOLMES COMPLEX

The process of gathering evidence regarding occupational exposures began in 1998 with a series of hazard-mapping sessions. Hazard mapping is a process whereby workers collectively draw their workplaces, including personnel, processes, and hazards.[21,22] A study conducted by workers at a Fiat plant in Turin, Italy, during the 1960s, is one of the earliest recorded examples of worker-driven occupational health and safety research using mapping.[23,24] Fiat workers used colors and symbols on blueprint drawings of the workplace to locate and identify hazards.[25,26] Outside experts subsequently verified the problems identified by the Fiat workers through the lay process of mapping.

In the case of Holmes, hazard mapping was used to gather and record the workers' collective recollections of their working conditions, as they had existed in decades past.

The initial hazard-mapping process took place with former Holmes Caposite and Insulation workers in one workshop room and the Holmes Foundry workers in another. Facilitated by occupational health clinic staff, the workers created retrospective hazard maps for their respective workplaces on large sheets of craft paper posted on the wall. Because most of the Holmes buildings are no longer standing, the facilities and features had to be drawn strictly from memory. The Holmes workers' collective memories provided very detailed descriptions of the workplace layouts, processes, controls, and worker exposures.

### *Holmes Foundry*

The workers described the foundry as it had existed during various time periods. They described how "operations moved around." They remembered that they "used to store piles of raw asbestos and silica sand in the yard—left uncovered." The asbestos and silica would be gathered in scoops and placed into open dump trucks "two or three times a week" and would be transported "uncovered." They recalled that in the foundry "the smoke was often so thick workers couldn't breathe—especially in the summertime"; "workers would run outside to get a breath of air."

The workers drew and described the characteristics of the core room where isocyanates were used, the shake-out room where shot blast was used, the mill room, the iron-pouring area, molding areas, grinding departments, the paint room, and the shipping department. One of the dirtier processes included chipping metal from the engine blocks. They agreed that smoke, silica, and asbestos dust were everywhere, as were numerous chemicals (see Figure 1).

### *Holmes Caposite*

The Caposite workers drew the exterior grounds and interior of the facility on a large wall-sized map. They included railway tracks and truck paths upon which asbestos materials were imported, exported, or transported from building to building. They reported that the materials were often left uncovered during transport and would blow loose from the rail cars and truck trailers. Workers described the manufacturing process whereby asbestos was dumped from bags into hoppers, then fed onto conveyors, which led to forming areas, and so on. One worker described the appearance of asbestos dust in the air as looking like "feathers floating" or "diamonds sparkling in the sunshine." "During the day you would have a light dust on you." The dust was "worse at night" after it had been cleaned off machinery by two men whose regular job it was to dust using a "two-inch air hose." After the blowing, it "looked like a bad snowstorm." Workers said there was "at least half an inch of dust" on their shoulders, which they brushed off. Some used the air hose to clean the dust off themselves.

They recalled that workers would "cut with a miter saw out in the open" and there was "no ventilation over the saw." The sawing operation was "later moved to the warehouse." There were "no real partitions" between work areas and no local ventilation; "the hood for the ventilation was high." The asbestos area was so thick where it was dumped into the hoppers that "in the hopper area it was the same as night." The work process included an oiling area where "oil was sprayed in the open." Workers remembered that they would often "eat lunch at their work stations" or would sometimes go

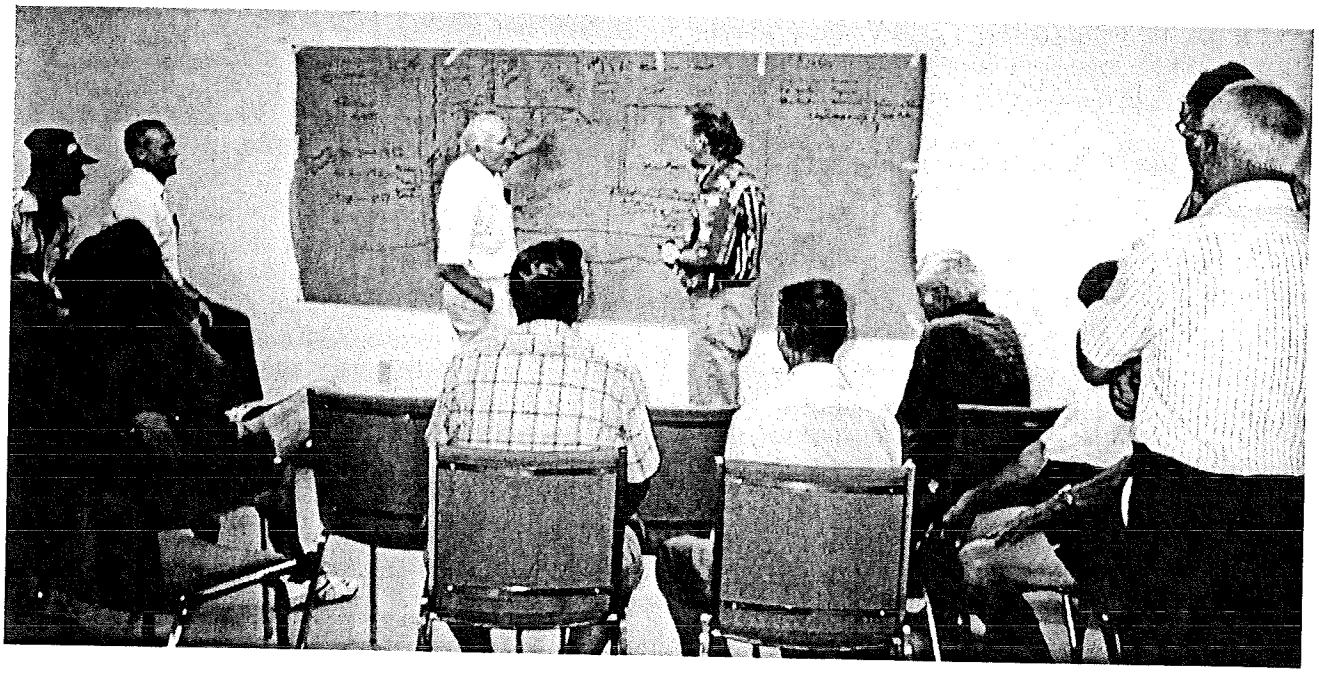


*Figure 1—Holmes Foundry hazard mapping.*

into the Holmes foundry lunchroom to eat. They recalled that they had "no respirators" and were "not told that asbestos was dangerous."

*Holmes Insulation*

The workers drew the Holmes rock wool insulation production facility adjacent to the other Holmes facilities. It was comprised of "two domed buildings." They explained that the insulation fibers were "made from rock." In the yard were a "stone pile," a "slag pile," a "coke pile," "scrap from rock wool," and "foundry castings." The rock was loaded onto a conveyor and carried into a processor, where it was "melted" and then mixed with "resin."

Insulation "batts" were created on a production line generating "heavy dust" and were subsequently packaged using a "baler." Some of the rock wool fibers were left in the form of "loose wool." "Granulated wool" was produced by adding a "binder." The loose and granulated product was fed into a "bagger" and "sold in small bags," which were stitched closed in the "sewing machine" area. The production process created considerable "dust inside and out."

## HAZARD-MAPPING REPORT

Following the initial hazard-mapping sessions, occupational health clinic nursing and administrative staff conducted four additional sessions with two dozen former Holmes workers to provide more detailed retrospective exposure profiles. According to the workers who participated in the detailed hazard-mapping sessions, asbestos dust was ubiquitous:

> . . . the workers carried asbestos from the insulation plants to the foundry. Huge piles of asbestos waste were piled directly outside the foundry, allowing the winds to carry it into the plant and, in fact, all over the surrounding neighbourhood. The plants were so hot in the summer that both the insulation plant and the foundry were forced to keep their doors open. This allowed not only air into the foundry but unfortunately, since the plants were so close, asbestos as well. One practice of the insulation plant was that of blowing the asbestos off the equipment with air hoses. This of course increased the amount of airborne asbestos particles.[18]

The hazard-mapping data gathered during the initial sessions, along with the more comprehensive information from the detailed mapping sessions, formed the basis of a descriptive report of the processes carried out in the Holmes complex and workers' subjective recollections regarding exposures.[18] This collective account of exposures was subsequently accepted as evidence in support of workers' compensation claims.[27]

## VALIDATION OF HAZARD-MAPPING DATA

The participatory nature of mapping is arguably its greatest strength. Mapping involves the direct input of those who are most intimately familiar with their workplace and its functions. When created collectively, hazard mapping has an intrinsic validity check. Collective hazard mapping results in a product that includes not only the input, but also the scrutiny of the co-participants. In other words, the information was validated by the Holmes workers themselves through a process called "consensual validation"; workers, within homogeneous

discussion groups, agreed that the information provided was accurate according to their collective experience.[28,29]

The hazard-mapping data were further validated by evidence of exposures provided by other sources: published interviews, government documents, and a peer-reviewed published mortality study.

The descriptions provided during the hazard-mapping sessions were similar to those later reported in articles and books:

> Asbestos was everywhere in the Holmes facilities. Former Holmes workers tell horror stories of asbestos in the air so thick they could hardly see, of asbestos on the floor that billowed up whenever anyone walked through, and of asbestos on machines and on shelves. There was asbestos dust on the workers, on clothing, on exposed skin and in their hair.[30]

Ralph Crevier, one of the participants in the Caposite hazard mapping sessions, said in a published interview: "You couldn't even see about three feet in front of you. . . . On top of your hair, it used to be pure white; you would think you were going white. It used to be like cotton candy, used to fly around in the air."[31] His father and two brothers, all former Holmes workers, had died of asbestos-related cancer. Ralph Crevier died of cancer in 2002.

The son of another stricken Holmes worker wrote:

> We lived only a few short minutes away from the Holmes Foundry where my father worked . . . my father took one of the most disliked jobs at the insulation plant . . . he was a charger and therefore likely one of the people most highly exposed to asbestos. I remember when he came home from work, his face was black, so were his clothes and then, of course, there was the dust in which he was covered. He hung up his clothes and I marvelled at the "twinkle" of the dust in the air that surrounded his clothes.[32]

The working conditions and exposures described by the workers during the hazard mapping sessions were also corroborated by historical government inspection reports. The executive director of the occupational health clinic encouraged the CAW to utilize "freedom of information" legislation to obtain all the existing inspection and industrial hygiene reports that had been stored in a government archive. Occupational health clinic staff reviewed the documents and reported that extraordinarily high levels of asbestos and other cancer-causing agents had been present throughout the years of production.[33]

Inspection documents revealed that, during the 16-year period when the government conducted air sampling at Caposite, it was reported that asbestos "counts were the highest ever encountered by this Branch in any of the plants in Ontario." In fact, the Ministry stated that at least one of its samples was "probably the highest asbestos fibre concentration ever recorded."[19]

In 1958, Holmes and the Ontario Ministry of Health exchanged letters acknowledging the potential health hazards of asbestos exposure. When inspectors conducted air sampling later that year they found levels that were 28 times over the standard. This would translate into exposures that were as high as 6,720 times above the current Ontario legal limit for asbestos. The government issued no directions or orders and did not return to the plant for another nine years. When the government inspectors finally returned in 1967, they estimated the total production at the Caposite plant at 10,000 pounds per day of asbestos insulation. The government inspectors took 34 air samples, of which only five were below the legal limit then in place. The average sample was 2.7 times the standard of the day. The ministry issued nine directions to the company regarding ventilation and asbestos handling. These directions were not enforced. Government inspectors did not return to check the asbestos levels at the Caposite and Holmes Insulation plant until 1972.

Between 1972 and 1973 the ministry measured asbestos as high as 852 fibers per cubic centimeter of air and issued 29 orders and directions. Finally, in 1973, the ministry issued an order to "cease" production at the facilities, only to discover on their follow-up visit that the company had ignored the order.

Besides the government documents, there is a small published epidemiologic study of the Holmes Caposite plant.[15] The study found excess cancers, including lung cancer and mesothelioma, and asbestosis among exposed workers.

## BODY MAPPING AT HOLMES COMPENSATION INTAKE CLINIC

Body mapping was used to gather health data from former Holmes workers or their proxies (surviving family members). Body mapping is essentially a health survey instrument that uses graphic images, colored marking pens, and stickers to elicit and record responses.[22,34] Body mapping, as an occupational health and safety tool, was first used to identify repetitive strain injuries and ergonomic issues.[35–37] It is now being used to collect all manner of work-related injury and disease data.[22,38]

Former Holmes workers with occupational disease and their family members were invited to attend a compensation intake clinic sponsored by the CAW, the Ontario Federation of Labour, and the occupational health clinic. Over 260 former Holmes workers and their families attended. Occupational health clinic staff and volunteer compensation advocates conducted confidential interviews with each attendee to gather work and medical histories.

Workers were then invited to participate in a body mapping exercise. There were 120 participants, representing approximately half the attendees. Because the union and the occupational health clinic had not antic-

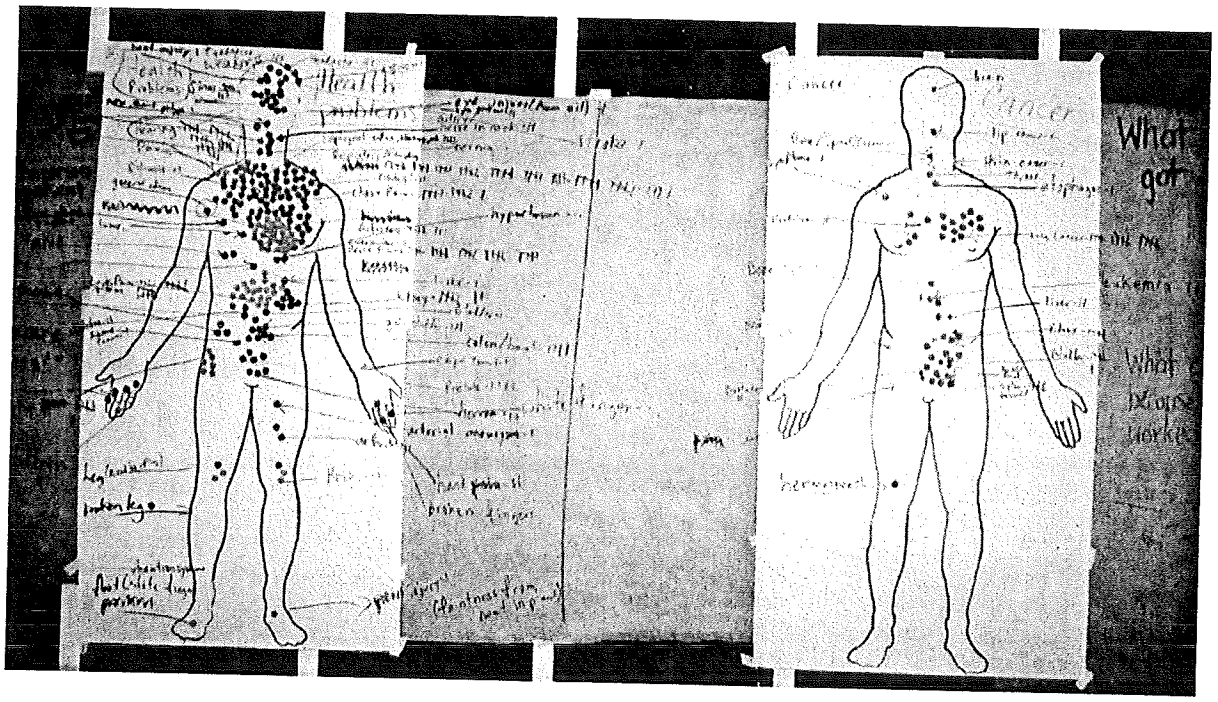


*Figure 2—Body mapping*

ipated such a large attendance, there were long waits to be registered and then again to be interviewed by volunteers. It appeared that some attendees did not take part in the body mapping because of the long line-ups. This likely did not result in any particular bias, as the decision of whether or not to participate depended primarily on the length of the wait for body mapping at any given time.

A screen provided a degree of privacy for body-mapping participants, and no names or other personal identifiers were used on the maps. The health problems of workers were recorded using self-sticking dots on life-sized outlines of the human body posted on the wall. There was one body map for general health problems and another for cancers. The body mapping was done by one worker or family member at a time, facilitated by clinic staff. Color coding was used to categorize the health problems.

As body-mapping participants reported and pointed out the symptoms and diseases, they were recorded on the maps as described. The health problems were also recorded on a separate log in which participants were identified only by the numbers they had been assigned upon registration.

The body maps, produced during the day-long session, resulted in a disturbing snapshot of the collective ill health of the workers. The body maps displayed significant clusterings of dots representing respiratory disease, cancers, and cardiovascular disease (see Figure 2).

Along with the previous hazard mapping, which established that workers had been subjected to very heavy asbestos and silica exposures, the body mapping provided a strong argument of associations between the workers' current health problems and their past working conditions. It became clear to the workers' union representatives and the occupational health clinic staff that a historically significant event had just occurred and that resources would have to be found to service the scores of ailing Holmes workers or their survivors.[39]

## OUTCOMES

News of the Holmes tragedy, along with subsequent and widely publicized mapping-based investigations of building trades workers and Owens Corning fiberglass workers, sent shock waves throughout the community as eyes were opened to the health implications of occupational exposures.

Workers were now becoming aware not only of their own occupational risks but of the risks to their families as well.[40] Evidence that bystanders—the spouses and children of Holmes workers—were also contracting asbestos-related diseases created outrage. The occupational health clinic discovered that "the milkman, for instance, who went into the plant once a day or once every couple of days has asbestosis—the guy that just loaded up the machine."[41]

The community learned that the 16-year old son of a former Holmes worker had died of mesothelioma—his only exposure having been to his father's clothing.[30]

A columnist for the *Toronto Star* editorialized about the deplorable working conditions and the risks posed to the family members and community surrounding the Holmes plant:

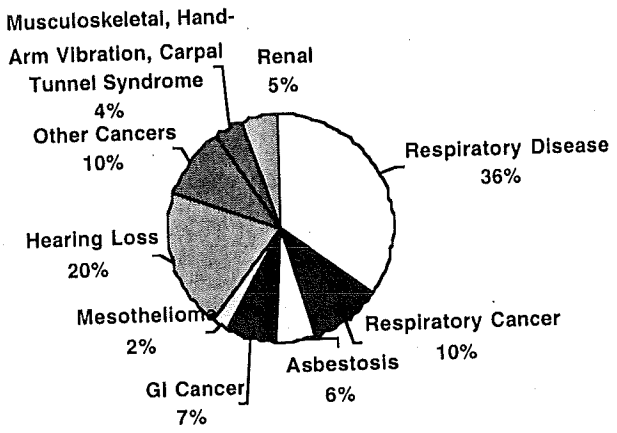



*Figure 3—Holmes body-mapping data.*

The men went to work every morning, proud to earn a livelihood for their families, and they came back each evening carrying death on their clothes. The women shook out the clothes and washed and ironed them, and were proud to be taking care of their families. Asbestos was so thick at the Holmes Caposite plant in Sarnia that shipping doors at both ends of the factory would be opened to clear the dust. It blew so thickly into the street that the traffic would come to a halt. In the park, across the street where the children played, the benches were coated with a layer of asbestos dust.[42]

There was a resulting broad-based outcry for occupational health services in the Sarnia community. In particular, the community demanded its own full-time local occupational health clinic. The community-based lobby included injured workers and widows, the local news media, local politicians, and the unions. A group of widows and injured workers calling itself Victims of Chemical Valley (VOCV) actively advocated for a clinic and for local compensation services.[41] With the support of the unions, members of the group took their demands directly to the provincial government legislature.[42]

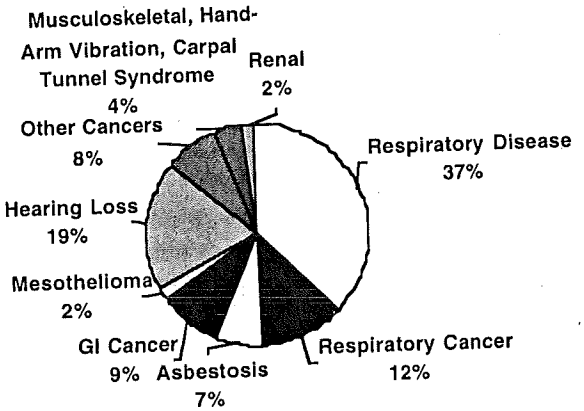



*Figure 4—Medically supported compensation claims filed.*

In response to the community's demands, the government and compensation board representatives agreed to fund an occupational health clinic in Sarnia. Another precedent-setting outcome was the establishment by the Workplace Safety and Insurance Board [workers' compensation board] of a special task force to review evidence for the Holmes compensation claims in order to streamline the process of determining work-relatedness. The task force was comprised of members of the compensation board, the Office of the Worker Advisor [workers' compensation advocates], representatives from the Occupational Health Clinics for Ontario Workers, and the CAW. Several presentations summarizing medical and scientific literature were made to the task force by the Sarnia occupational health clinic staff. They included evidence of associations between foundry work and bladder cancer, pancreatic cancer, and heart disease.[43–45]

## RESULTING COMPENSATION CLAIMS VALIDATE BODY MAPPING

Following the Holmes intake clinic, ensuing publicity, and the establishment of a local clinic, hundreds more former Holmes workers registered to be medically assessed. After gathering occupational histories and medical evidence, conducting diagnostic tests, and evaluating over 500 Holmes workers, by 2003 the clinic nurses, hygienists, and physicians had supported 326 compensation claims for a range of diseases, as shown in Figures 3 and 4 and Table 2.

Figures 3 and 4 show a simple comparison of the original self-reported body-mapping data gathered during the intake clinic in 1998 versus the compensation claims supported by the physicians at the Sarnia occupational health clinic by 2003.

Table 2 provides the breakdown of health problems, showing actual numbers and percentages in each category. Some individuals may have had more than one health problem. Each health problem is included separately.

The illnesses and injuries reported during body mapping are grouped according to the compensation claim categories. Notice that not all health problems recorded during body mapping are included, as many are not considered to be compensable under the current compensation board criteria. For example, the body-mapped heart disease is not included in the comparison as it is still generally considered by the compensation board to be *a disease of everyday life.* Heart disease is usually considered to be compensable only if a direct contemporaneous association with an etiologic agent can be demonstrated, such as a heart attack directly associated with an acute exposure.

Interestingly, the pattern of diseases initially revealed through the process of body mapping closely resembles the patterns seen in the clinically validated

Table 2. Comparison of Mapped Problems and Medically Supported Claims Submitted for Holmes Workers

| | Body-mapped Health Data (from Maps) N=139 | | Compensation Claims Submitted N=326 | |
|---|---|---|---|---|
| | No. | % | No. | % |
| Respiratory disease | 49 | 36 | 122 | 37 |
| Respiratory cancer | 14 | 10 | 40 | 12 |
| Asbestosis | 8 | 6 | 23 | 7 |
| Gastrointestinal cancer | 10 | 7 | 29 | 9 |
| Mesothelioma | 3 | 2 | 6 | 2 |
| Hearing loss | 28 | 20 | 62 | 19 |
| Other cancers | 14 | 10 | 25 | 8 |
| Musculoskeletal injuries, hand-arm vibration, carpal tunnel syndrome | 6 | 4 | 14 | 4 |
| Renal disease | 7 | 5 | 5 | 2 |

diagnoses of Holmes workers whose claims have been submitted for compensation. There are almost three times as many clinically validated claims as self-reported body-mapped health problems. However, the proportional similarities contribute to the argument that self-reported body-mapped data provide a reliable gross indicator of occupational health problems.

According to Dr. Abraham Reinhartz, a physician at the Sarnia occupational health clinic:

> The ailments documented by the mapping process closely resembled the overall pattern of diagnoses we made upon examination of the patients and review of their medical records. A search of the medical literature regarding occupational diseases and injuries associated with foundry work and similar exposures corroborated our own clinical findings.[46]

Based on the combined evidence of mapping results, scientific literature, government inspection reports, job records, and medical diagnoses, many of the workers or their surviving family members were granted compensation. In the summer of 2003, it was reported that:

> Success with Holmes Foundry, Sarnia, Ontario, claims for workers who suffered from occupational diseases from exposure to asbestos, silica, and other harmful substances continues with total claim payouts approaching $16,000,000 in lump sum payments and $1,115,000 per year in monthly benefits.[47]

Compensation claims continue to be filed as new cases of occupational disease arise among the surviving former Holmes workers. The union attributes the success of the compensation claims to the collaborative investigative effort launched in 1998:

> I can tell you categorically that our success to date would not have been possible without their [occupational health clinic] efforts. And here is why. The clinic first alerted us to the immensity of the problem at Holmes and assisted in bringing to light, documenting and analyzing the exposures at the Holmes facilities.[48]

## DISCUSSION

Bob Clarke, who initiated the collaborative investigation of the Holmes workers, was not able to experience the bittersweet satisfaction of seeing some justice finally brought to his stricken co-workers and family members. He died of cancer in the fall of 1998 before he could witness the results of the effort he had helped to launch.[41]

The Sarnia occupational health story is ongoing. Revelations of the Holmes tragedy have shaken the foundations of a historically trusting, culturally conservative community. The full ramifications of the Holmes story are yet unknown, but it is evident that a sea change has taken place locally. An editorial in the Sarnia *Observer* attributed emerging community distrust for industry to the exposé of the Holmes tragedy. He called it the "Holmes Foundry factor." This distrust has carried over to related community environmental issues:

> . . . we understand it was a mistake to trust Holmes. If we forget, we can visit our relatives' fresh graves, or ask the former employees of Holmes who are not quite dead yet, although they have to remove their oxygen masks to reminisce how they were naively working in asbestos years after government inspectors knew about the danger.[49]

The Holmes story has also had effects far beyond the Chemical Valley. As a social worker who has been dealing with Sarnia's stricken families observed:

> I think people are looking at Sarnia and initially thinking of it as an isolated incident but as the story unfolds recognizing that the Sarnia experience is alive in their own community. I think that is evidenced just in the number of calls that the clinic gets or I have gotten at home from people in other communities who have read articles and are thinking about their own work experience, their own exposure or those of family members.[40]

## CONCLUSION

There are several lessons to be drawn from the Holmes experience in Sarnia.

It is apparent that institutional occupational health and safety practices largely failed the Holmes workers. The government inspectors who visited the facilities throughout its operating years did not enforce orders that could have prevented exposures and subsequent disease. The one epidemiologic study that was conducted of the Caposite workers, suggesting that they were suffering from asbestos-related disease, took place after the facility closed—too late to protect them.[17] While 51 workers were compensated following disease detection by the Occupational Chest Disease Service mobile surveillance x-ray unit, the majority of the Holmes workers with occupational disease were not compensated until the collaborative study was undertaken.

The Holmes case study also demonstrates the successful use of participatory mapping as an alternative method for exploring the health impacts on workers from past exposure. Mapping proved to be an effective tool for data gathering. The hazard mapping recreated on paper the intricate details of an industrial complex that no longer exists in brick and mortar. The body mapping created an eye-opening collective health profile of a workforce subjected to life-threatening industrial exposures. The process proved to be empowering; it helped to mobilize workers and community members to join in advocating for occupational health services and fair compensation.

The threat of asbestos-related disease continues to dominate worker and public health concerns in Sarnia. Because of latency, these diseases will likely continue to emerge over the next decade and beyond. Today there are more building trades and petrochemical workers registered with the occupational health clinic in Sarnia than former Holmes workers. Over 500 have radiographic evidence of asbestos exposure. The dark shadow cast by the Holmes experience should awaken governments throughout the world about the dangers of asbestos. Anything short of a global ban is bound to cost human lives.[50]

The authors gratefully acknowledge the work of current and former staff of the Occupational Health Clinics for Ontario Workers (OHCOW) in Windsor and Sarnia; particular recognition is owing to: Dr. Abe Reinhartz, Kathy Mayville, Janice Holland, Margo Gilroy, Mark Parent, and Mary Cook for their contributions. They also wish to recognize the role played by the Canadian Auto Workers (CAW), particularly: Nick DeCarlo, Bill Hicks, Karen Willsey, Frank Marek, Cathy Walker, and Kim Clout. Ontario Federation of Labour staff along with the many workers' advocates participated in the data collection and supported workers in establishing compensation claims. Dr. Andrew Watterson and Michael Gilbertson provided valuable direction and editorial support in the preparation of the manuscript. Rory O'Neill, Dorothy Wigmore, and the former workers, widows, and family and community members were instrumental in the success of this undertaking.

*References*

1. Lambton Public Health Unit. Correspondence to Chemical, Energy and Paperworkers (CEP) union regarding Lambton County hospital morbidity data, 1992 to 1998, dated March 21, 2000.

2. Keith M, Brophy J. Presentation: Sarnia tragedy. Canadian asbestos—A Global Concern Conference, West Block Parliament, Ottawa, ON, Canada, September 12–14, 2003.

3. Ford RW. A History of the Chemical Industry in Lambton County. Sarnia–Lambton Environmental Association and Society for Industrial Archeology, 2000.

4. Tourism Sarnia Lambton. Oil Heritage District. <http://www.tourism-sarnia-lambton.com/main/ns/5/doc/21> (retrieved: 09/28/03).

5. Tourism Sarnia Lambton. Sarnia/St.Clair River. <http://www.tourism-sarnia-lambton.com/main/ns/3/doc/20> (retrieved: 09/26/03).

6. Finkelstein M. Mesothelioma in oil refinery workers. Scand J Work Environ Health. 1996, 22:67.

7. Marrett LD, Swift MB, Reynolds DL, Clarke EA. Geographic distribution of cancer in Ontario: Vol 1. Toronto, ON, Canada: Ontario Cancer Treatment and Research Foundation. 1991.

8. Health Canada. Correspondence to J. Brophy with report from Surveillance and Risk Assessment Division by Robert Semenciw, Ottawa, dated October 23, 2003.

9. Selikoff IJ, Hammond EC, Seidman H. Mortality experience of insulation workers in the United Sates and Canada, 1943–1976. Ann NY Acad Sci. 1979; 330:91-116.

10. Health Canada. St. Clair River Area of Concern: Health Data and Statistics for the Population of Sarnia and Region (1986 to 1992). Great Lakes Health Effects Program. Technical report for the RAP Committee, 1998.

11. Gilbertson M, Brophy J. Community health profile of Windsor, Ontario, Canada. Environ Health Perspect. 2001, 109(suppl 6): 827-43.

12. Gilbertson M. Male cerebral palsy hospitalization as a potential indicator of neurological effects of methylmercury exposure in Great Lakes communities. Environ Res. (2003; in press).

13. Pollution Watch. Pollution Rankings. <www.scorecard.org/pollutionwatch/> (retrieved: 06/13/01).

14. Pollution Watch. Pollution Rankings. <www.pollutionwatch.org> (retrieved: 10/25/03).

15. Industry Canada. Sarnia—A Leading Investment Location for the Chemical Sector. <http://strategis.ic.gc.ca/epic/internet/inchemicals-chimiques.nsf/vwGeneratedInterE/bt01202e.html> (retrieved: 10/22/03).

16. Smith D. Consulted to Death. Winnipeg, Canada: Arbeiter Ring Publishing, 2000: 78-101.

17. Finkelstein M. Mortality among employees of an Ontario factory manufacturing insulation materials from amosite asbestos. Am J Ind Med, 1989, 15:477-81.

18. Mayville K, Gilroy M. Holmes production exposure profile. Occupational Health Clinics for Ontario Workers—Sarnia, 1999.

19. Brophy J, Parent M. Documenting the asbestos story in Sarnia. New Solutions, 1999; 9: 297-316.

20. Snow D. The Holmes Foundry Strike of March 1937: "We'll give their jobs to white men!" Toronto, ON, Canada: Ontario Historical Society, 1977: 3-31.

21. Keith M, Cann B, Brophy J, et al. Identifying and prioritizing gaming workers' health and safety concerns using mapping for data collection. Am J Ind Med, 2001; 39:42-51.

22. Keith M, Brophy J, Kirby P, Rosskam E. Barefoot Research: A Work Security Manual for Workers. Geneva, Switzerland: International Labor Organization, 2002.

23. Reich MR, Goldman RH. Italian occupational health: concepts, conflicts, implications. Am J Ind Med. 1984; 74:1031-41.

24. Loewenson R, Laurell AC, Hogstedt C. Participatory Approaches in Occupational Health Research. Sweden: Arbete Och Halsa, 1994.

25. Mujica J. Coloring the hazards: risk maps research and education to fight health hazards. Am J Ind Med. 1992; 22:767-70.

26. Firth M, Brophy J, Keith M. Workplace Roulette: Gambling with Cancer. Toronto, ON, Canada: Between the Lines, 1997.

27. Brophy J. Correspondence to Ken Signoretti, president of the Occupational Health Clinics for Ontario Workers Board, and others regarding meeting with Workplace Safety and Insurance Board (WSIB) and CAW union representatives, January 22, 1999.

28. Misiti R, Bagnara S. Participation in health control at the workplace: the Italian experience. In: Bagnara S, Misiti R, Wintersberger H (eds), Work and Health in the 1980's. Experiences of Direct Workers' Participation in Occupational Health. Berlin, Germany: Science Centre, 1985: 31-55.

29. Laurell AS, Noriega M, Martinez S, Villegas J. Participatory research on workers' health. Soc Sci Med. 1992; 34:603-13.

30. McLaughlin J. Compensating for the Past. OHS Canada, December 1999, p. 29.

31. Smith D. Consulted to Death. Winnipeg, Canada: Arbeiter Ring Publishing, 2000: 82-3.

32. Sharpe J. Letter to the editor: Holmes story is personal tragedy. OHS Canada. March 2000: 6.

33. Brophy J, Keith M. Executive Summary of Holmes Caposite Government Records. <www.hazards.org/diyresearch/holmesreport.doc> (retrieved: 10/22/03).

34. Keith M. Workplace health and safety mapping: the why and how of body mapping. Occup Health Rev. 2003; 102:31-3.

35. Corlett E, Bishop R. A technique for assessing postural discomfort. Ergonomics. 1976; 19:175-82.

36. Moir S, Vogel M, Azaroff L, O'Donnell. Master ergonomics training: using popular education to train workers and supervisors to solve ergonomic problems on construction sites. Construction Occupational Health Project (COHP) at University of Massachussets Lowell and the Massachusetts Building Trades Council, AFL-CIO, 1998.

37. Habes DJ, Wigmore D. Health Hazard Evaluation Report No. HETA 98-0085-2715, Aurora Casket Company. Cincinnati, OH: Hazard Evaluations and Technical Assistance Branch, NIOSH, U.S. Department of Health and Human Services, 1998.

38. Hazards Magazine. Body of Evidence. Hazards. 1998; 61.

39. Brophy J. Report to Managing Director of Occupational Health Clinics for Ontario Workers regarding Holmes Intake Clinic, dated September 20, 1998.

40. Shrigley S. Interviewed by Margaret Keith for article on post traumatic stress in the Sarnia community, 2002.

41. O'Neill R. Workers are catching disease epidemics overlooked by official safety agencies. Workers' Health International Newsletter. 1999; 55:1.

42. Landsberg M. The tragic legacy of Sarnia's white death. Toronto Star. November 14, 1999.

43. Brophy J, Reinhartz A, Keith, M. Perspectives on bladder cancer and occupation. Unpublished presentation to the Workers Safety and Insurance Board Taskforce, 1999.

44. Brophy J, Reinhartz A, Keith M. Perspectives on cardiovascular disease and foundry work. Unpublished presentation to the Workers Safety and Insurance Board Taskforce, 2000.

45. Brophy J, Reinhartz A, Keith, M. Perspectives on pancreatic cancer and occupation. Unpublished presentation to the Workers Safety and Insurance Board Taskforce, 2001.

46. Keith M. Mapping for change: a picture is worth a thousand words. Part one. Occup Health Rev. 2003; 101:13-16.

47. Canadian Auto Workers (CAW). Holmes Foundry: $16 million for asbestos victims. CAW Health, Safety and Environment Newsletter.2003; 11:July/August.

48. DeCarlo N. Letter to the editor: Local OHCOW clinic effective. Sarnia Observer. December 19, 2001.

49. DeGurse C. Fear of Safety-Kleen fuelled by Holmes Foundry death list. Sarnia Observer. December 1, 1999.

50. Collegium Ramazzini. Call for an international ban on asbestos. Am J Ind Med. 1999; 36:227-9.

**Meeting of the National Committee on Environmental and Occupational Exposures (NCEOE) – December 11th, 2006 (8:00am-5:00pmEST) - Ottawa**
**South Way Inn** – *Capital R*

# Agenda

**Chair: Mr. Larry Stoffman**

| | |
|---|---|
| 8:00am | **Refreshments** |
| 8:30am | 1.0 **Welcome & Review of Agenda –Larry Stoffman** |
| 8:45am | 2.0 **Update on the PP-AG & CSCC – Barb K/Larry** |
| **Strategic Planning - NCEOE Budget and Proposed Core Activities** | |
| 9:15am | 3.0 **Overview- Larry Stoffman**<br>4.0 **CAREX O and E – Paul Demers, Larry, and committee discussion** |
| 10:15am | **Health Break** |
| 10:30am | 5.0 **TUR Conference and Follow-Up – Larry, Paul, Andy King, Alan Abelsohn and all** |
| 11:00am | 6.0 **WHMIS and MSDS Project – Larbi, Larry and all** |
| 12:00pm | **LUNCH** |
| 1:00pm | 7.0 **NGO Support** |
| 2:00pm | **Health Break** |
| 2:30pm | 8.0 **Occupational History & Medical Education - Jim, Gary, Paul, all** |
| 3:30pm | 9.0 **Communications strategy: all** |
| 4:30pm | 10.0 **Other Business**<br>• **Chemicals policy REACH and CEPA gap analysis : Conference Update - Sarah Miller** |
| 5:00pm | 11.0 **Adjournment** |

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# Meeting of the National Committee on Environmental and Occupational Exposures
## March 30th, 2006 (12:00-4:30) - Calgary
## Draft Minutes

1. **Workplace Hazardous Materials Information System (WHMIS) – (Dr. El Bilali )**

In response to the NCEOE's recommendation with respect to WHMIS, Dr. El Bilali was invited to attend the NCEOE meeting to provided an overview of Health Canada's WHMIS and the regulatory framework underpinning it. He expressed support for the NCEOE's recommendation and explained the issues encountered by WHMIS including: inaccuracy of MSDSs/supplier labels, inaccurate ingredient disclosure and the lack of dedicated intelligence gathering. The greatest challenge to be overcome is to be able to target carcinogens with evidence base data to enforce compliance. It is essential for everyone who is concerned about these issues to work together to resolve them. Dr. El Bilali concluded by stating that the National Office of WHMIS and its F/P/T government partners are interested in following up with the NCEOE to address compliance and enforcement, infrastructure and capacity building and to explore how to better use the official WHMIS web site. (See presentation slides for more information).

**Next Steps:**

- WHMIS National Office to take the lead in establishing a WG to address how best to work with provinces to implement this recommendation. WHMIS will be seeking provincial representation and welcomed NCEOE and PHAC representation.

2. **Update on the PP-AG (Mr. Larry Stoffman)**

A key outcome of the December meeting was the need for the PP-AG to better link with health promotion and chronic disease prevention stakeholders across the country and within PHAC and Health Canada, including linking with the various federal strategies that have an impact on cancer prevention. The PP-AG decided that the most important next step was to hold a broad Think Tank Session with all the PP-AG and key stakeholders (CDPAC, CPHA) and appropriate representatives from Health Canada and the Public Health Agency of Canada. The overall direction of the PP-AG - its action plan, membership and leadership as it relates to the IHLCDS and other federal initiatives that are of interest to the PP-AG will be discussed (i.e. Task Force on Preventive Health Care, Federal Tobacco Control Program, etc). More information on the Think Tank will be communicated to the NCEOE as it becomes available. NCEOE encouraged to bring strategic issues to the Think Tank.

3. **Update from the Public Health Agency of Canada (Les Mery)**

In Feb 2005, funding for the Integrated Healthy Living and Chronic Disease Strategy (IHLCDS) was announced. In keeping with the federal role within the shared federal, provincial and territorial (F/P/T) responsibility for public health, the Integrated Strategy will take public health action on three interrelated pillars across the spectrum of health and chronic disease as well as through disease-specific strategies on diabetes, cancer and cardiovascular disease. In addition, a Public Health Network was being established to link issues related to chronic diseases and healthy living to the F/P/T Deputy Ministers of Health. Cancer would be positioned as an Issue Group within this governance structure. The role of NGO's within this structure has not yet been defined. Until further direction from the new government, the Public Health Agency of Canada is moving forward on implementing the ISHLCD, including action in 5 of the 7 priority areas of the CSCC Strategy Framework. PHAC remains the focal point for federal cancer initiatives and can help facilitate linkages with other federal initiatives.

4. **Review of Revised Executive Summary of the BP Report**

**Action:**

1. NCEOE members to provide final comments on the revised Executive Summary by April 30th, 2006.

5. **Review of Progress – Refer to updated circulated.**

6. **Update on CAREX (Dr. Paul Demers)**

Although Dr. Demers received funding to adapt CAREX as a model to be used in Canada, it wasn't designed to be ongoing project. However the NCEOE recommended a review of the CAREX project results to investigate the possibility of broadening its development and application of it for all Canadian jurisdictions. Dr. Demers has prepared a short proposal to assess the feasibility of creating a CAREX Canada Programme and has been submitted it to PHAC for funding.

***Discussion:***

- Agreement that CAREX is a good system and effort should be made to implement it. The NCEOE should work through what is required for this system to be actually implemented. A feasibility study on the top ten exposures should be considered.
- Although Mae Burrows requested that group 2b carcinogens be included in the NCEOE's recommendations, the decision was made not to include them at this time.

**Next Steps:**

1. Funding for the CAREX feasibility proposal will be requested from PHAC.
2. Once CAREX project results are available, the NCEOE should publish an article or pamphlet that describes the BC/ON project, its strengths and weakness, results and potential.

7. **Ontario Cancer 2020: Environment and Cancer Initiative – Alan Abelsohn**

Cancer Care Ontario is leading an initiative focused on primary prevention of environmental cancer. Two working groups have been established, one to focus on making the scientific case of which carcinogens to target and a larger group is thinking about strategies and interventions. There will be a forum in the fall on toxic use reduction led by the Working Group. The NCEOE's Best Practices Report was the impetus for this important work. Dr. Abelsohn and Andy King will report progress of this initiative to NCEOE. Date of forum will be circulated once confirmed.

**Action**:

1. The NCEOE should send a letter of congratulation to CAPCA highlighting how excited the NCEOE is that three cancer agencies are already moving on action on prevention of environmental and occupational carcinogens – BC, AB and ON.
2. NCEOE members should notify the Committee when they become aware of local and provincial initiatives that are focused on primary prevention of environmental cancer. Dr. Brophy to forward some information.

**8. Strategic Discussion - Nature and mandate of the NCEOE**

Committee members were asked to discuss the nature and mandate of the NCEOE within the current cancer prevention landscape, including what the value added or unique contribution it can make and what priorities they should focus on. These discussions will be brought to the PP-AG Think Tank session.

***Discussion:***

***Role of NCEOE***

- The NCEOE serves an important function, that of coordinating and monitoring all the work going on.
- The NCEOE should be promote awareness of and facilitate action on prevention of environmental and occupational carcinogens.
- As a multi-sectoral group the NCEOE has built relationships that allows it to serve as a national guide for healthy public policy.
- The NCEOE does not want to supplant and replace what other organizations are doing but could be linked by expanding membership.

- The NCEOE can help coordinate and facilitate action in communities

***Principles***
- Encourage investments that will make an impact
- Continue to use and promote the precautionary principle
- Evaluation of prevention efforts to date is essential

***Priorities***
- Legitimize prevention to the CSCC
- Emphasize work place and the MSDS
- We need to link with community groups and help them to a greater capacity
- Actively promote the need for environmental and occupational epidemiology

**Key Projects:**
1. Funding for the CAREX feasibility proposal will be requested from PHAC.
2. Collaborating with the national office at WHMIS
3. Explore linkages with family physicians.

- Dr. Liss to assist Dr. Abelsohn to develop an Occupational Health Curriculum
- NCEOE to facilitate discussions between the OMA, CMA and the OCFPC to agree to some common messaging around the importance of educating physicians. The family physician and chronic disease survey currently being conducted by the CFPC will provide data for common messaging.

***Additional Membership/Linkages Required:***
- WHMIS Office, Health Canada
- Canadian Association of Physicians for the Environment
- Canadian Pediatric society
- Canadian Childhood Cancer Surveillance Program (PHAC)
- Link to appropriate CSCC Action Groups
- Link to CCRA
- Links to the CMA
- The OMA poised to move on environment and cancer.

**Next Meeting**
A debrief call will be held shortly after the ACB symposium to review feedback from participants regarding the role of the NCEOE.

## Meeting Participants

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***Regrets:***
Dr. Roch Bernier
Mr.PaulMuldoon
Barbara Kaminsky
Mr.AndrewKing

# Symposium Summary

Symposium on Environmental and Occupational Carcinogens

Alberta Cancer Board

Canadian Strategy for Cancer Control

The Symposium on Environmental and Occupational Carcinogens was the first conference of its kind to be held in Alberta. It took place on March 31, 2006 at the Delta Calgary Airport in Calgary.

The symposium was organized to address the perceived need to raise awareness on prevention of exposure to carcinogens in Alberta by sharing research, advocacy work and community initiatives done in Canada. Similar events had been held in Ontario, but not in Alberta. Prior to the conference, a booklet called *'Cancer and the Workplace'* was launched in Alberta, to highlight the link between workplace exposures and cancer.

The symposium was organized by the Alberta Cancer Board's Cancer Prevention Program in the Division of Population Health and Information and the National Committee on Environmental and Occupational Exposures (NCEOE) which is part of the Primary Prevention Action Group of the Canadian Strategy for Cancer Control. Logistical planning was co-ordinated by Timewise Event Management.

The target audience groups for the symposium were individuals working in the area of environmental health, occupational health, and cancer prevention. The symposium was promoted using word of mouth, web and e-mail communication strategies. Professional associations were also asked to promote the symposium to their members.

In total, 123 individuals participated in the symposium. Of these, 88 were paying delegates, and 35 were delegates who received complimentary registrations (including speakers, organizers, and guests). Of the 88 paying delegates, five were from Ontario, six were from BC, one was from Nova Scotia, and the remaining 76 were from Alberta. Most of the delegates work in the area of occupational health and safety; a few of the delegates work for a health region in Alberta or at a cancer control organization in Canada.



## Agenda

The morning and afternoon sessions consisted of short presentations by researchers and community workers on the prevention of exposure to occupational and environmental carcinogens. The presentations were focused around three themes: Surveillance, Legislation, and Community Education and Action; and each presentation was approximately 20 minutes in length. At least one speaker from Alberta presented on each theme to ensure that the symposium featured local, provincial and national perspectives. Small group discussions were held in the afternoon to give participants the opportunity to discuss key questions pertaining to the three symposium themes and to provide feedback to the National Committee on Environmental and Occupational Exposures.

**National Committee on Environmental and Occupational Exposures (Symposium Planning Committee):**

Anna Maria Boscaino
Jim Brophy
Mae Burrows
Paul Demers
Roland Hosein
Andrew King
Larry Stoffman

**Alberta Cancer Board:**

Andrea Ferneyhough
Marlene Hicks
Munira Lalji
Claire Morrow

## Symposium Costs

The total cost of hosting the symposium was approximately $22,000.00, which included the venue, catering, complimentary registration fees, etc. With each delegate paying a registration fee of $75.00, approximately $6,500.00 of the symposium cost was recovered. The NCEOE covered expenses for their committee members.

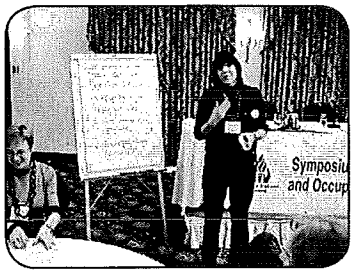
## Recommendations for Future Events

Given the interest in the symposium, it would be advisable to hold any future events on this topic in a larger venue to accommodate more participants. Also, many workshop participants indicated that the agenda was too full, and did not leave adequate time for questions or discussion. As a result, hosting the event over the course of two days or limiting the number of speakers and allowing more time for each speaker (including a discussion period) is recommended.

## Outcomes

- The symposium strengthened partnerships between the Alberta Cancer Board's Cancer Prevention Program and other organizations in Alberta.
- The conference presentations and discussions assisted the NCEOE in formulating plans for projects over the next 5 years. This includes deepening and expanding the work on CAREX, enhancing the NCEOE's ability to network with NGO's, working with both provincial and federal levels of government to develop workplace based interventions, and planning for annual symposia on environmental and occupational carcinogens.
- The response of the participants underlines the need to continue to bring the importance of addressing environmental and occupational exposures forward as a public concern.







# Symposium Summary
## Appendix I: Breakout Session Notes
### *Surveillance Session*

**Surveillance Breakout Session:**

1.A. CAREX PROGRAMS

What is needed?

- ✓ Cooperation with jurisdictions
- ✓ Network Coalition (Public & Private Sectors)
- ✓ Department Ministers of Health & Labour
- ✓ National Registry of Occupational Exposures (e.g. Registry of Individuals exposed to Asbestos)
- ✓ Legislated through Health and Safety to register exposures to all workers, including contract workers.

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1.B. OCCUPATIONAL HISTORIES MAPPING

What is needed?

- ✓ Capacity building
- ✓ Training
- ✓ Improve workplace documentation of employment history and exposure inventory of chemical use.
- ✓ Legislate collection by workplace. Ensure access for research purposes. Ensure retention of records. Promote sharing.
- ✓ Increase recording information in health record. Increase research using health records for occupational exposures & disease.
- ✓ Increase availability of Statistics Canada data on occupation.

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1.C. WORKPLACE & COMMUNITY MAPPING

What is needed?

- ✓ Map based on experience & environmental monitoring.
- ✓ Community toxin database.
- ✓ Training on community/workplace mapping – (federally based consistency for the "map tool" or template)
- ✓ Funding

Who should be involved?

- ✓ Government
- ✓ Local / Provincial / Federal
- ✓ WCB
- ✓ Public Health
- ✓ Educational Institutions
- ✓ Labour / Union
- ✓ Activists
- ✓ Community Representatives
- ✓ Environmental Experts
- ✓ Health and Safety Organizations

# Symposium Summary
## Appendix I: Breakout Session Notes
### *Legislation Session*

**Legislation Breakout Session:**

1.A. CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)

What is needed?

- ✓ Revisions as outlined in report in presentation
- ✓ Discussion/stakeholders
- ✓ Provincial harmonization

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1.B. LABELLING

What is needed?

- ✓ All consumer and industrial products
- ✓ Hazard labeling Group 1, Group 2A, Group 2B (IARC)

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1.C. OCCUPATIONAL HEALTH & SAFETY LEGISLATION

What is needed?

- ✓ Mandatory substitution
- ✓ Engineering controls where substitution
- ✓ Universal across country

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1.D. NATIONAL COMMITTEE ON ENVIRONMENTAL AND OCCUPATIONAL EXPOSURES (NCEOE)

What is needed?

- ✓ Education/awareness
- ✓ Develop public policy
- ✓ Partnership/coordination

# Symposium Summary
## Appendix I: Breakout Session Notes
### *Community Education Session*

**Community Education Breakout Session:**

1) Community Education
2) Community Coalition
3) Youth & Kids Education

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1. Community Education:

What is needed? (Everything from coalition plus)

- ✓ Common Messaging
- ✓ Research / Information
- ✓ Exposures / Cancer Rates
- ✓ Sustainability Plan
- ✓ Indicators & Benchmarks

People To Be There

- ✓ Media Outlets and/or Communications Professionals
- ✓ Library
- ✓ Peer educators
- ✓ Ethnic Community
- ✓ Experts
- ✓ People who are credible messengers
- ✓ Internet / E-Commerce
- ✓ Businesses

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2. Community Coalition:

- ✓ People affected by cancer
- ✓ Stakeholders
- ✓ Environmental groups
- ✓ Unions
- ✓ Businesses (Chambers of Commerce, Board of Trade)
- ✓ Alberta Cancer Board
- ✓ Public Health and/or local community health centre (research function)
- ✓ Call for community volunteers?
  - Canadian Cancer Society
- ✓ Parkland Institute

What is needed?

- ✓ Objectives (Shared, specific)
- ✓ Money
- ✓ Time
- ✓ Commitment
- ✓ Facilitation / Leadership

# Symposium Summary
## Appendix II: Evaluation Summary

**SYMPOSIUM EVALUATION SUMMARY :**
(44 forms received - 36% response rate)

1. What sector do you work in?

| | |
|---|---|
| o Federal government | 2% |
| o Provincial government | 8% |
| o Regional Health Authority | 18% |
| o Non-governmental organization | 14% |
| o Academia | 4% |
| o Labour | 29% |
| o Industry | 10% |
| o Other (Please specify) | 10% |

*Occupational Consultant*
*Calgary Public Library*
*Municipality*
*Occupational Health Clinic*
*School Board*

2. Do you address environmental or occupational exposures in your day-to-day work?

| | |
|---|---|
| o Yes | 93% |
| o No | 7% |

3. Did the conference meet your expectations?

| | |
|---|---|
| o Yes | 88% |
| o No | 12% |

4. Rate your level of satisfaction with the following conference services. Please assign a rating on a scale from 1 to 5, where 1 represents "Very Dissatisfied" and 5 represents "Very Satisfied."

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Overall quality of conference presenters | | 2% | 7% | 56% | 35% |
| Relevance of conference to your job and interests | | 5% | 12% | 35% | 49% |
| Quality of food | | 7% | 12% | 38% | 43% |
| Quality of lodging (if applicable) | 4% | | 26% | 41% | 29% |

5. Rate the sessions you attended. (Please assign a rating on a scale from 1 to 5, where 1 represents "Very Dissatisfied" and 5 represents "Very Satisfied."

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Carcinogens and Cancer: Observing the Obvious | | 5% | 12% | 24% | 59% |
| Mapping Occupational Hazards | | | 17% | 40% | 43% |
| Challenges in Exposure Assessment for Environmental Factors | 2% | 23% | 19% | 42% | 14% |
| CAREX: Challenges and Applications | | | 19% | 36% | 45% |
| Problems in recognizing environmental and occupational causes of cancer | | | 5% | 49% | 46% |
| Understanding the potential of the Environmental Legislative Framework in Canada | 2% | 7% | 21% | 41% | 29% |
| Cross Canada Regulatory Comparison for Workplace Carcinogens: ALARA | | | 21% | 53% | 26% |
| Missing Pieces: Canada and Alberta Safety Laws | 12% | 2% | 5% | 30% | 51% |
| Workers' Compensation (Firefighters') Amendment Act | 4% | 4% | 16% | 43% | 32% |
| Asbestos update | 2% | 7% | 18% | 31% | 41% |
| Primary Prevention of Occ. and Env. Cancer in an Urban Center: Strategies for Success | 4% | 4% | 32% | 30% | 30% |
| Chemical Trespass and Right to Know – Toxins in the Community | 2% | 7% | 2% | 30% | 58% |
| Environmental Carcinogens in Canadian Communities: the need to consider a Precautionary Approach | | | 17% | 33% | 50% |

6. Was there anything we didn't offer that you would like to see? If so, please tell us about it.
7. Any other comments or suggestions for future conferences?

Questions 6 and 7 both received numerous open-ended comments. The following summarizes the most common comments expressed by conference delegates.

Suggestions for improvement (LOGISTICS):

- More time for the conference (spread over two days rather than one lengthy day) - too much information for one day.
- More discussion and opportunities to ask questions and interact with the speakers after each presentation
- Larger venue: room was crowded

Suggestions for future conferences (CONTENT):

- More information on what concrete actions can be taken in the community and the workplace
- More inclusion of government and industry to give alternate point of view
- Stronger focus on environmental exposures
- More policy decision makers and politicians present
- A second symposium

## The National Committee on Environmental and Occupational Exposures
## A plea for bringing continuity and community to Cancer Prevention

*In February, 2010 the last meeting of the National Committee on Environmental and Occupational Exposures was held. The Canadian Partnership Against Cancer (CPAC) that had inherited this Committee in 2007 (?) from their founding agency the Canadian Strategy for Cancer Control had decided to reorganise its Action Group on prevention to exclude most further work pioneered by this Committee. This newly orphaned Committee is determined to continue to build on the progress they have made to demonstrate that many cancers are avoidable. Just as international interest in NCEOE's work is growing and there are now tools emerging to assist the Canadian public that is demanding more action on cancer prevention, NCEOE have been abandoned by the nongovernmental agency that controls Canada's cancer agenda.*

In 19__ the Public Health Agency of Canada established the Canadian Strategy for Cancer Control. Part of that control was considered to be the Primary Prevention of avoidable cancers. Indications had been growing world wide that some percentage of cancers is occupationally and environmentally induced and limiting exposures could result in fewer incidences of cancer. A Primary Prevention Action Group was created which in turn set up a National Committee on Environmental and Occupational and Exposures in January of 2003 made up of occupational, environmental, clinical, and academic and government experts with shared goals of promoting actions on environmental and occupational exposures in Canada in a variety of creative ways. In the ensuing _ years the NCEOE undertook a number of projects.

The first of these was a review in 2006 of best practices entitled *Prevention of Occupational and Environmental Cancers in Canada: a Best Practices Review and Recommendations.* http://www.cancer.ca/canada-wide/about%20us/cw-our%20positions%20and%20perspectives/~/media/CCS/Canada%20wide/Files%20List/English%20files%20heading/pdf%20not%20in%20publications%20section/NCEOE%20Best%20Practices%20Review%20Final%20Report%20May2005%20-%20English%20%20pdf_27365318.ashx .

The report contained recommendations on; the identification and surveillance of hazards and exposed populations; the transmission of information through labelling and disclosure laws; education of the public, workers and communities; the reduction of exposures to carcinogens through substitution or process changes; and, legislation and regulation that contribute to cancer prevention. This report was disseminated to widely to federal, provincial and local public health and cancer control agencies and reinforced a few efforts underway and identified the large need to enable efforts across Canada. The NCEOE developed work plans that built on the reports main recommendations that:

Environmental community profiles should be developed to allow us to easily find out the substances we are being exposed to in our communities, as well as the level and source of that exposure.

The committee urges municipalities and community groups to work together to eliminate pollutants from their environments.

Community bylaws preventing pollution should be passed.

Pollution prevention programs should be required for all facilities emitting carcinogens.

Employers and organizations should monitor and collect accurate data about the way they use and produce carcinogens.

A national program should be developed to audit reports and ensure that they are correct.

Companies using or producing carcinogens should be required to participate in pollution prevention programs.

Exposure limits in workplaces across Canada should be standardized and lowered as much as possible.

Where possible, manufacturers should be required to substitute safer materials for carcinogens.

The most ambitious of these projects was to support the work of CAREX (carcinogen exposure) Canada a **surveillance** project already underway in B.C. that had set out to replicate other CAREX databases in Europe and the US to develop estimates of the number of Canadians exposed to carcinogens in their workplace and community environments. The CAREX Canada team set out to undertake a series of interlocking projects to investigate carcinogens that Canadians are exposed to in workplace and community environments and committed to sharing the results of this research with policy makers, researchers, and health and safety professionals. http://www.carexcanada.ca/en/

Another project initiated by NCEOE members was the development of an free accredited course for medical professionals Occupational and Environmental Cancer: Recognition and Prevention that taught primary health care professionals **clinical surveillance skills** how to take case histories, how to recognize occupational and environmentally induced cancers and sets out how this information can propel prevention activities to reduce risk. This course has now been transferred to the Canadian Centre for Occupational Health and Safety. http://www.ccohs.ca/products/courses/prevent_cancer/

Another project Of the NCEOE Committee, lead by the Canadian Cancer Society, a Committee Member focused on consumer **right to know** about carcinogens in consumer products. This project researched how best to label products containing carcinogens and produced a report and held a workshop to focus the recommendations of this report. http://www.cancer.ca/Canada-wide/Prevention/Environment%20and%20you/Product%20labelling.aspx?sc_lang=en

Planning for actions that **prevent asbestos exposures** was an early focus of the NCEOE. The Committee discovered there were barriers and data gaps standing in the way in Canada. The last activity of the committee will be a gathering of statisticians and occupational experts in Toronto in early March 2010 to examine best practices in victim databases and compensation and make recommendations for a Canada-wide harmonized system. Committee members in their personal capacity continue to endeavour to stop the unethical export of chrysotile asbestos to developing countries with few exposure controls leading to tragic health consequences for workers and their families.

Finally the NCEOE devised a number of projects to focus on and promote **toxic use reduction** across Canada. Committee members primarily in Ontario had established important precedents in the City of Toronto 2008 community right to know

*Environmental Reporting and Disclosure By-law*
http://www.toronto.ca/legdocs/municode/1184_423.pdf

and the Province of Ontario's 2009 Toxic Reduction Act
http://www.ene.gov.on.ca/en/toxics/index.php .

NCEOE Committee members had hoped to enable and support parallel community movements that led to these two pieces of preventative and precautionary law reform. In anticipation of being able to move their projects into programs, laws and policies across the country in 2009 the Committee commissioned research into a scan of all of the diverse practitioners in local community, environmental, First Nation, government, health and worker groups in Canada who are trying to achieve **toxic use reduction**. This scan also looked at all of the programs and laws at all levels of government that have some toxic reduction purposes and made recommendations as how to begin to address the inequities and lack of programs and access to toxic reduction tools in many locations and vulnerable sectors across Canada. The scan shows irrevocably that thousands of people are pursuing many diverse ways to limit their exposures to toxics and many of then have little or no support. Just as this report has been completed the reorganization of CPAC has meant that this scan will be parked on the CPAC www.cancerview.ca web site fulfilling knowledge transfer obligations but no further resources or support will be given to the development of this demonstrated community of interest. CPAC however will continue to fund the CAREX Canada efforts.

In 2009 CPAC determined that they were approaching the midway point in the five year mandate they were given as an arms length agency by Health Canada, CPAC created a CLASP funding program to enhance deliverable projects to mirror their mandate and to encourage partnerships with other chronic disease agencies. Numerous meetings were held across Canada to encourage applications for five projects to be funded for the remaining 2.5 years of their mandate. The NCEOE Committee saw that they would need to submit proposals to ensure their work could continue. Forty one groups spent months preparing rigorous proposals and in the end none of the 5 proposals on environmental and occupational exposures were granted. CPAC reorganised future Action Groups around the five life style focused prevention projects.

Members of the NCEOE have included:

Chairman Larry Stoffman - affiliation
Etc.

**CELA's History with the Canadian Strategy for Cancer Control, CPAC and CLASP**

I thought it would be helpful to give a history of CELA involvement with the National Committee on Environmental and Occupational Exposures formerly a Committee of Health Canada's Canadian Strategy for Cancer Control and now a Committee of the Canadian Partnership against Cancer now an arms-length agency.
While Paul was a member of this Committee he managed to be part of efforts that led to Anne Wordsworth writing the Best Practices Report which has formed the basis of this Committee's mandate for the rest of its work. This report was sent to every Cancer and Health agency in Canada with the Strategy's recommendations at the time. Other excellent work that this Committee has done is to fund the building at UBC of a Canadian CAREX www.carex.ca
CAREX is making progress on identifying where exposures are occurring in Canadian workplaces and in the Canadian environment. They have also done a study comparing Ontario and BC workplace exposures. Part of the mandate of the CAREX project is to influence policy and prevention programs. http://www.carexcanada.ca/background/

It will be important to submit proposals which acknowledge and build on the use of this tool. As you know Cancer Care Ontario has also developed another exciting surveillance tool. It drills down to the neighbourhood level and looks at Cancer data. I am on a call on Friday on the potential to have CLASP enable these two tools to be integrated in a way their unique benefits can be applied to future work and the proposals coming forward.

In the time I have been on the NCEOE the Committee has determined they want to focus efforts on toxic use reduction as a disease prevention measure and were set to receive proposals two years ago to this end. I was part of a subcommittee that spent months drafting new proposal guidelines with Andy King. It was our hope to offer grants to many groups who were involved in TUR activities. Enter the new Corporation and CPAC CEO Jessica Hill. Jessica from the onset made it clear she was opposed to our proposal guidelines and would not be funding ENGOs as she has had bad experiences working with them. That year and the subsequent year we gave back the majority of our Committee's budgets. What ended up evolving was that collaborative projects of Committee Members were funded so Alan's and U of T's project an e-course for doctors on taking occupational histories, and Heather Logan and Mae's project on labelling for carcinogens was done the background paper and conference report was written by Anne. Larry and Larbi are organising a conference on Best Practices for asbestos victim registeries. Late this year we scrambled to get a scan of toxic use reduction activity done as the first step in what we hoped would be a longer Three year toxic reduction project. Anne and I discussed whether she would bid on this RFP but I discouraged her from getting involved in the initial phase as it was expressed that they had already used her for several other projects and wanted to diversify. As it turns out the contract was let to Dorothy Wigmore. Andy, Larry, Deb Keen of CPAC and I are on the Steering Committee for this project. Then out of the blue the CLASP Initiative appeared and poor Dorothy was asked to re-jig her work to inform that process. As she was understandably experiencing challenges doing that Anne was subcontracted by Deb Keen directly to provide the government part of the scan which was submitted by the March 31, 2009

deadline. What remains unclear is whether CLASP will overwhelm our Committee entirely. Jessica Hill has expressed to Ruth Grier that the environment might just have to go. I have done my best to keep the Committee informed of TUR and CRTK activities and others from across the country on the Committee are trying to replicate our experience, Mae Burrows and Toxic Free Canada is interested in CRTK by-law in Vancouver, Corrie Parker from Alberta's Cancer Agency commissioned Anne Wordsworth to do a Carcinogen Scan for Alberta which was completed about a month ago

Our NCEOE Committee is not the only Prevention Group it is a subcommittee of the Primary Prevention Action Group and there is also a National Skin Care Prevention Committee other of their "Prevention" work is antithetical to many on our committee such as their The Canadian Platform To Increase Usage of Real-World Evidence (CAPTURE) .

Note when you visit the Primary Prevention page on their website
http://www.partnershipagainstcancer.ca/prevention
you will find our committee mentioned under *more* without any in depth information except that they feature our CAREX project. I have done my best to try to increase their awareness that projects fitting a National scope will need to enable provincial and local activities.

Jon Kerner's agenda to build coalitions is in part a way to create partnerships that will leapfrog over objections to working with ENGOs in part by creating new Coalitions with groups that CPAC trusts, their more traditional partners. It is very much about leveraging funds from other chronic disease groups. For the CLASP initiative he was only successful in getting Heart and Stroke. Note that Anne wrote the paper for Mary Lewis of Heart and Stroke that first explored the links with toxics and heart disease and the common agenda they have with cancer prevention. Heart and Stroke's interests that were managed in the Montreal Meeting focusing on the environment is in obesity and the built environment. We can be sure that one grant will go for a project that addresses this. Although Anne says they are also interested in broadening their work on toxics. The other two initial CLASP meetings were one in Calgary and another in Toronto were on clinical and social determinants. There is a whole binder with Jon Kerner's presentation we can review although warning it may confound. There is a website where all the project ideas have been posted from those meetings. It is www.cancercollab.ca/primaryprevention/CLASP. My password to that site is
Username: sarah.miller@cancercollab.ca
Password: clasp123 (case-sensitive)

Letters of Intent are optional and are due by May 31, 2009
The Application forms come out June 1st
They are due July 17th
The winners will be announced in September
Projects will commence in October.

I just spoke with Deb to seek clarification on whether there would be a conflict if CELA worked through two separate coalitions we are members of and she said absolutely not.

The municipal meeting and the Calgary meeting are for potential partners to get together to work on proposals.

CANADIAN ENVIRONMENTAL LAW ASSOCIATION
L'ASSOCIATION CANADIENNE DU DROIT DE L'ENVIRONNEMENT

January 7, 2009

Jon Kerner and Larry Stoffman
National Committee on Environmental and Occupational Exposures
Canadian Partnership Against Cancer
Dear Jon and Larry,

**Membership in NCEOE Action Group**

The Canadian Environmental Law Association (CELA) has been a member of the NCEOE Action Group since the formative National Symposium on Cancer Prevention in 2003. Our former Executive Director, Paul Muldoon was our first member and our current representative Sarah Miller replaced him. CELA provided offices and resources to our Research Associate Anne Wordsworth when she was contracted by the Canadian Strategy for Cancer Control to author the *Prevention of Occupational and Environmental Cancers in Canada: a Best Practices Review and Recommendations*. This report has become the foundation for the priorities of our Action Group.

We have reviewed with interest your new Terms of Reference for Action Groups. We realise that CELA has been involved since the beginning taking us beyond your target of committee membership of three years. However we feel that continuity is crucial to our Action Group at this juncture and that our role in assisting with the environmental and legal components of health protection is a valuable one at this time. Working in coalitions with health and labour groups on common objectives has been crucial to the progress we have seen in environmental law and policy in the last decade. All partner communities together have achieved what they could not have working alone in one sector.

This work is going to take time and persistence to be successfully and fully implemented. Ontario's Toxic Use Reduction initiative and Toronto's community right-to-know programme are not slated to phase-in substantially until 2010. We are very excited about the potential to coordinate this work with the CAREX research and to see toxic use reduction spread across the country but both of these efforts are in their infancy. We are eager to be part of these programs once they are fully rolled out. We recommend that Committee membership should be large enough to include key sector members while also being geographically representational.

Some of the background and program focuses of CELA that would assist in NCEOE's mandate include:

130 SPADINA AVENUE • SUITE 301 • TORONTO • ON • M5V 2L4
TEL: 416/960-2284 • FAX: 416/960-9392 • WEB SITE: www.cela.ca

- work since the creation of the Canadian Environmental Protection Act on efforts to strengthen this federal law. Our efforts have led to the Chemicals Management Plan reforms underway today which we are closely monitoring,
- current efforts to shape Ontario's pending Toxic Use Reduction Law and strategy by writing a Model Law which could also assist other provinces,
- work with members of the Taking Charge of Toxics Coalition as well as with other environmental coalitions on this campaign,
- local work on the successful campaign for Toronto's Environmental Reporting, Disclosure and Innovation By-Law with the Toronto Cancer Prevention Coalition,
- CELA has partnered with Environmental Defence on the www.pollutionwatch.org web site that gives the public the ability to track pollution discharges in their neighbourhoods and learn about the health implications of these releases,
- international work includes published reports comparing EU, US and Canadian chemicals management laws and policies, as well as negotiations on the Stockholm Convention and the Treaty on Persistent Organic Pollutants, and considerable work on pollution prevention and health in the Great Lakes,
- CELA does research for the Canadian Partnership for Children's Health and the Environment, and
- CELA is currently involved in a project with the Environmental Health Institute of Canada linking environmental health, poverty and justice issues in six Ontario Communities.

We hope your evaluation of the future work of your action groups will allow us to continue to work with you at a time when decisions such as these will determine the success of our collective efforts to date. Sarah is certainly interested in continuing her involvement at this time and others on staff maybe available for future service.

Yours truly
Canadian Environmental Law Association



Theresa McClenaghan
Executive Director

**Canadian Partnership Against Cancer: Partnership Action Groups**

Cancer control knowledge and expertise are widely dispersed throughout Canada's health care system. To draw on this information and expertise and make it readily accessible to all stakeholders, collaborative networks of experts were established for each of the priority areas of the Canadian Strategy for Cancer Control. Each Action Group is headed by a Chair who is a recognized subject matter expert. Action Group members are drawn from across Canada and include health practitioners and administrators, epidemiologists, analysts and cancer survivors. The Action Groups feed information to the Advisory Council and make recommendations regarding priority setting, and manage and implement cancer control activities in their areas of expertise. The make up of the Action Groups is flexible and will change as new priorities in cancer control emerge. For further information, visit www.partnershipagainstcancer.ca.

There are nine Partnership Action Groups:

1. Primary Prevention – of greatest relevance to the Environmental & Occupational Carcinogen Stakeholder Group
2. Screening
3. Standards
4. Cancer Control Guidelines
5. Rebalance Focus
6. Human Resources
7. Research
8. Surveillance
9. Quality Performance Assurance

**The Primary Prevention Partnership Action Group has the most relevance for the Environmental & Occupational Carcinogen Stakeholder Group.**

**Mandate:**

1. To promote the creation of a national, provincial/territorial, and local community primary prevention system to address population-based risk factors for cancer and other chronic diseases, by collaboration with chronic disease constituencies.
2. To reduce the incidence of preventable cancers in Canada, and ultimately reduce morbidity and mortality from this disease.
3. To play a leadership role in promoting major change in the cancer control and health care paradigms, whereby primary prevention/health promotion obtains the appropriate increased priority and resource allocation, and this increase is sustained in the future.

**Priorities:**

1. Ensure that all cancer control organizations advance a primary prevention agenda.
2. Work with other chronic disease organizations on health promotion and addressing common risk factors such as unhealthy eating, physical inactivity and overweight / obesity.

3. Facilitate progress in communities of practice that require infrastructure and capacity building

i. National Skin Cancer Prevention Committee: Develop and promote national strategic directions to decrease the burden of skin cancer in Canada, by reducing exposure to the sun and other sources of ultraviolet radiation.

**ii. National Committee on Environmental and Occupational Exposures: Develop and promote national strategic directions to reduce and/or prevent exposure to environmental and occupational carcinogens.**

iii. National Infectious Agents Committee: Develop and promote national strategic directions to reduce and/or prevent exposure to cancer causing infectious agents.

4. Work with primary care providers to enhance the role of prevention in the primary care setting.

5. Assume a public and media communication/education role for primary prevention.

Chair: Dr. Alan Katz

**Reference:**
**http://www.partnershipagainstcancer.ca/inside.php?lang=EN&ID=16**

# Asbestos Registry Project
# 2008-2009

**Long term Outcomes**
An understanding of the burden of diseases related to asbestos exposure in Canada
A reduction in exposure to asbestos with a reduction in asbestos related disease in Canada.

**Goal of the Asbestos Registry Project**
To establish the feasibility of a uniform asbestos related disease and/or asbestos exposure registry in Canada based on learnings from national and international practice

**Objectives**
To understand the components of national and international asbestos related disease and asbestos exposure registries
To identify gaps in asbestos related disease and asbestos exposure registries in Canada
To provide recommendations on the feasibility of a uniform asbestos related disease registry and/or an asbestos exposure registry for Canada

**Deliverables**

1. **National Roundtable** with Research , Surveillance and Program Experts including representation from provincial, federal and international programs

Discussion will include
What's happening in Canada and elsewhere?
Where are the gaps in Canada?
Recommendations on the feasibility a uniform asbestos related disease registry and/or a asbestos exposure registry for Canada

2. **Final Report** outlining proceedings of the Roundtable including recommendations on feasibility for a coordinated registry and next steps

Canadian Strategy for Cancer Control

Barbara Kaminsky, Chair
Primary Prevention Action Group
565 West 10th Avenue
Vancouver, BC V5Z 4J4 Canada
Tel: (604) 675-7100
Email: kaminsky@bc.cancer.ca

September 8, 2006

Dr. Ivan D. Ivanov
Occupational and Environmental Health
World Health Organization
20, Avenue Appia – CH-1211
Geneva 27, Switzerland

Dear Dr. Ivanov:

**Re: Elimination of asbestos-related diseases policy paper**

The Primary Prevention Action Group of the Canadian Strategy for Cancer Control[1] endorses the World Health Organization's (WHO) draft paper, titled "Elimination of asbestos-related diseases policy paper". It is the opinion of our committee based on the recommendations of our sub-committee, the National Environmental and Occupational Exposures Committee, that every effort should be made to eliminate exposure to known human carcinogens. Asbestos, in all its forms including serpentine chrysotile, is recognized for its potent toxicity and its responsibility globally for tens of thousands of preventable cancer deaths each year.

We believe that the draft policy paper is a balanced summary of the scientific evidence regarding asbestos exposure and disease. It also draws the appropriate policy position to ban further the use of asbestos which is still employed under conditions that will likely produce asbestos disease amongst those exposed workers and their communities decades into the future. The precautionary principle highlights the need to prevent cancer and exposure to classified occupational and environmental carcinogens particularly when substitutes are available and the obvious harm can be avoided.

Our committee is cognizant that Canada has a long history of asbestos production and use, and has a resultant tragic record of asbestos-related disease. The first chrysotile asbestos mine opened in Quebec in the 1880s. Production grew until, at one time, Canada was the largest source of asbestos in the world. Canadian production and use has declined over the last decades as the international community and most Canadian jurisdictions implemented substitution requirements in order to eliminate exposures to this potent carcinogen. In 2002 Canada exported over 90% of its production to over 60 countries including India, Mexico, the United Arab Emirates (UAE), Thailand, Indonesia, Japan, South Korea, and Algeria.

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[1] Since 1999, Health Canada (now the Public Health Agency of Canada) has been working in partnership with the Canadian Association of Provincial Cancer Agencies, the Canadian Cancer Society and the National Cancer Institute of Canada and other stakeholders to develop the Canadian Strategy for Cancer Control (CSCC).
The CSCC is a collective effort by the major cancer players to present an integrated and national approach to fight cancer. Led by a Council selected from the major stakeholders, health service providers, and non-governmental organizations and supported by a secretariat, the CSCC addresses all the components of the cancer control continuum services. The CSCC implements its key priorities through six Action Groups, whose innovative projects will lead to major changes and improvements in the current cancer control system in Canada.

Domestic production of asbestos, which has now been reduced to two operating mines employing some 950 people, has produced a host of preventable occupational cancers and respiratory diseases within the exposed working population and sometimes within their families and communities. A recent Quebec governmental report has identified rates of mesothelioma within the province as among the highest in the world[2]. In other Canadian industrial communities, such as Sarnia, Ontario, hundreds of workers have developed mesothelioma, asbestos-related lung cancer, and asbestosis[3]. In every Canadian province the legacy of historic asbestos use is manifest in recorded occupational disease, and related economic loss.

We have four additional recommendations for your consideration. First, we suggest you add an action point calling for the just transition away from asbestos mining, production, and use to alternative and sustainable economic activities. Such important public health initiatives as the elimination of asbestos use should be accompanied with an economic strategy that effectively supports asbestos-dependent communities. Asbestos producing communities have unfortunately been compelled to choose between their immediate economic well being and their long-term elevated risk of contracting asbestos-related disease. This requires a comprehensive approach to public health that is sensitive to the larger economic interests while discouraging acceptance of preventable disease risks.

Our second recommendation is that another action point be added calling for environmental remediation of asbestos mines once they are no longer in use. It is interesting to note that governments have provided financial support to the asbestos industry for mining. Surely governments should also provide financial support to communities to ensure the areas in and around the abandoned mines were now safe for local residents.

Third, there is a growing body of literature regarding available asbestos substitutes, and it would be helpful for the policy to address this more fully.

Finally, we recommend that national registries for cases of mesothelioma be developed. There is a significant increase in recorded cases where such registries have been established.

In conclusion, we are endorsing the draft policy paper and would be glad to comment further, if appropriate, as the WHO finalizes this process. Please note that none of the members of the Primary Prevention Action Group of the Canadian Strategy for Cancer Control has any direct, indirect or perceivable conflict of interest in this matter.

Sincerely,

Barbara Kaminsky, Chair
Primary Prevention Action Group

Larry Stoffman, Chair, National
Environmental & Occupational
Exposures Committee

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2 Institut National de Sante Publique du Quebec. (2004) The Epidemiology of Asbestos-Related Diseases in Quebec. (available http://www.inspq.qc.ca/pdf/publications/293-EpidemiologyAsbestos.pdf)

3 Keith MM and Brophy J. (2004). Participatory mapping of occupational hazards and disease among asbestos-exposed workers from a foundry and insulation complex in Canada. Int J Occup Environ Health. 10(2):144-153.

Alberta Workers Health Centre
www.workershealthcentre.ca
E-mail: info@workershealthcentre.ca
111-10451 170 Street
Edmonton, Alberta
T5P 4T2
Phone: (780) 486-9009
Fax: (780) 483-7632

AWHC is a registered charity with a mandate to help improve the health and safety of Alberta's workplaces and to help those who have suffered from workplace injuries and illness.

Ban Asbestos Canada
www.bacanada.org
E-mail: info@bacanada.org

A non-profit, volunteer-run organization of asbestos victims and their families, scientists, academics, activists and concerned citizens dedicated to banning all types of asbestos world-wide.

Breast Cancer Action Montreal
www.bcam.qc.ca
E-mail: info@bcam.qc.ca
5890 Monkland Avenue, Suite 201,
Montreal, Quebec
H4A 1G2
Phone: (514) 483-1846
Fax: (514) 483-9221

A Quebec-based group advocating primary prevention of breast cancer and elimination of environmental toxins.

Canadian Association of Physicians for the Environment (CAPE)
www.cape.ca
Email: webmaster@cape.ca
130 Spadina Avenue, Suite 301
Toronto, Ontario, Canada
M5V 2L4
Phone: (416) 306-CAPE (2273)
Fax: (416) 960-9392

CAPE is a membership organization for health professionals. It focuses on Ecosystem Health, Human Health and Sustainable Development. CAPE is currently working with the Canadian Environmental Law Association on a local project with the South Riverdale neighborhood on environmental exposures and Breast Cancer.

PollutionWatch
www.pollutionwatch.org

A source for information about pollutants that facilities release and transfer in Canadian communities, including toxic pollutants (such as benzene, lead, dioxins and furans), Criteria Air Contaminants (pollutants that cause smog and acid rain) and greenhouse gases (air pollutants that lead to global climate change). PollutionWatch is a project of the Canadian Environmental Law Association and Environmental Defence.

Prevent Cancer Now
www.preventcancernow.ca
Email: info@preventcancernow.ca
Phone: (613) 482-8124

A newly established non-governmental organization that aims to create a national movement for cancer prevention and environmental health promotion encompassing environmental, labour, business, health, science, aboriginal, women's, children's, and other sectors of Canadian society.
Contact: Angela Rickman

Saunders-Matthey Cancer Prevention Coalition
www.stopcancer.org
E-mail: info@stopcancer.org
Box 13586
Kanata, ON
K2K 1X6
Phone: (613) 592-6164
Fax: (613) 592-2741

An Ontario-based group advocating primary prevention and elimination of environmental toxins.

Sierra Club of Canada
www.sierraclub.ca
E-mail: info@sierraclub.ca
412-1 Nicholas Street
Ottawa, Ontario
K1N 7B7
Phone: (613) 241-4611
Toll-free: 1-888-810-4204
Fax: (613) 241-2292

Grassroots network working to address the "ever-growing presence of chemicals in all living things." Has chapters in many Canadian cities.

Toronto Environmental Alliance (TEA)
30 Duncan Street. Suite 201
Toronto, Ontario, M5V 2C3
(p) 416-596-0660
(f) 416-596-0345
tea@torontoenvironment.org

TEA works with the Toronto Cancer Prevention Coalition and has led their Community Right-to Know Campaign to organize support for a CRTK by-law in Toronto. This is part of other local toxic use reduction work they have done, that has included a successful Pesticide bylaw for Toronto.

The Occupational and Environmental Carcinogens Working Group
Toronto Cancer Prevention Coalition
c/o Nancy Bradshaw
Community Outreach Coordinator
Environmental Health Clinic
76 Grenville Street
Toronto, Ontario
M5S 1B2
nancy.bradshaw@wchospital.ca
nancybradshaw@rogers.com
P (416) 323-6400 ext. 4993
F (416) 323-6130

A coalition of health, labour and environmental groups working for reconition of occupational and environmental causes of cancer and the role toxic use reduction plays in primary prevention. They are currently campaigning for improved RTK in Toronto.

Workers Health and Safety Centre
www.whsc.on.ca
15 Gervais Drive, Suite 802
Toronto, Ontario
M3C 1Y8
Phone: (416) 441-1939
Toll free: 1-888-869-7950
Fax: (416) 441-1043

Supports the efforts of workplace representatives in their pursuit of hazard-free workplaces. This support has ranged from answering health and safety concerns posed over the phone to the development and delivery of occupational health and safety training.

**Developing an international database on alternatives to chemicals of high concern**
**April 2008**

There is increasing recognition of the importance of substitution of high hazard chemicals as a primary prevention strategy. However, there is little information available on safer alternatives to chemicals of concern or even criteria and clear processes for undertaking substitution or alternatives assessments. This lack of information and clear processes hinders the ability of trade unions, advocates, government agencies and industry to advance substitution practices.

The goal of the alternatives database initiative is to develop a state of the art resource on safer alternatives (chemical and non-chemical) and processes for evaluating them. Specific objectives of the initiative are to:

- Provide authorities, trade unions, advocates and industry with information on alternatives in order to facilitate the effective substitution of substances of very high concern.

- To support all third parties interested in assessing promoting less hazardous alternative substances or processes through providing information on alternative processes and technologies to make substitution proposals as substantiated and sustainable as possible

This support will be carried out through an internet based portal and database which will work on different levels including:

- a database to provide information on alternatives, including best practices
- an information exchange forum on case examples using Wiki or other technologies
- processes for substitution and alternatives assessment
- training on alternatives assessment
- administrative support

**Kooperationsstelle Hamburg,** Germany (www.kooperationsstelle-hh.de), the **Instituto Sindical de Trabajo, Ambiente y Salud (ISTAS),** Spain (http://www.istas.ccoo.es) and the **Lowell Center for Sustainable Production**, Massachussets, USA (http://sustainableproduction.org/) are collaborating on building the database. Each institution has committed in-kind resources (approximately $15,000 each) to develop the database infrastructure and structures/criteria for including materials). We are in discussions with the European Commission about funds from the Directorate General of Research or the new European Chemicals Agency in Helsinki (seeing this as an important resource for application of the European Union's REACH policy). We will be seeking additional funds from private foundations in the United States and international sources. We envision a budget of about $100,000 to set up the infrastructure and test several chemicals. To complete reviews of a much larger number of chemicals may cost in the range of $500,000-$1,000,000.

The final structure of the database (for example the extent of evaluation of alternatives) will depend on funding resources but we see a first step as establishing criteria and infrastructure and then piloting the database on a number of initial chemicals of concern (for example proposals for addition of chemicals to the Stockholm Convention on Persistent Organic Pollutants).

# Choosing policy options to improve environmental and occupational health

Presentation to Webinar on the CPAC Prevention Policies Directory

Alec Farquhar, Managing Director
Occupational Health Clinics for Ontario Workers

March 3, 2011

# Today's objectives

- Identify the challenges faced by those who wish to achieve systemic improvements in environmental and occupational health
- Review the perspectives of key players: activists, stakeholder organizations, public servants, researchers and decision-makers
- Review the range of policy options available; when they may be applicable; and how to use the Prevention Policies Directory

# Challenges to achieving policy change

- People seeking change are often responding to a specific local or sectoral issue, which may or may not have a broader perspective. They are starting from scratch
- Many of those seeking change do not have technical, legal or policy expertise
- Community based activists may lack financial or organizational resources
- Larger stakeholder organizations are often better resourced and more technically knowledgeable

# Challenges to achieving change - 2

- Policy change is sometimes portrayed as "more government red tape and interference with the economy". So it can be an uphill process.
- As a result, political decision makers, even when open to making changes, may be concerned about economic competitiveness or other negative results from being "the first" to make a major change

# Perspectives of the key players

- Even on a local level, there are usually a number of key players. In advocating for change, it's important to understand their perspectives.
- **Community, labour and environmental activists** are often the initial primary drivers of change. They will usually be responding to a specific health concern, often one actually experienced by themselves or someone close to them. This means that their concerns are often urgent and pressing. This may push activists to press for the highest possible level of policy or regulatory change.

# Perspectives of the key players - 2

- **Key stakeholder organizations** will usually base their perspective on their organizational interests and priorities. These will sometimes align with those of the activists, but will often differ. Stakeholders are rarely monolithic – there may be a wide range of views within a labour union, medical organization or employer group.
- Stakeholders who are open to change will usually want to be shown examples of policy options which have been implemented elsewhere.

# Perspectives of the key players - 3

- **Public servants** are usually responsible for frontline dealings with proponents (and opponents) of change; and to review and develop policy options for decision makers. With competing priorities, public servants may lack time/resources to fully explore policy options. They may rely significantly on change proponents and opponents to provide information on options and outcomes in other jurisdictions.

# Perspectives of the key players - 4

- **Researchers** provide expert advice and research findings which inform the policy development process, particularly around potential health impacts of various types of exposures. Researchers will sometimes simply provide their findings; but sometimes will have opinions on policy options. This means that they may wish to inform themselves about these options.

# Perspectives of the key players - 5

- **Political decision makers** bring a broader, often political or ideological, perspective to their deliberations. They may on the one hand respond to local health concerns; and/or on the other hand worry about negative impacts of increased regulation.
- While politicians will sometimes want to lead the way, more commonly, especially in today's difficult economic climate, they will want to see a compelling case for action; with incremental rather than dramatic policy change as the preferred vehicle.

# The range of policy options

- The Prevention Policies Directory - www.cancerview.ca/preventionpolicies contains a very useful summary of the range of policy options (under "Definitions").
- The range starts with the most formal and potent policy option – statutes approved by a legislature – and proceeds through the other options. These include bills, regulations, by-laws, policies and guidelines. Under "other", the Directory includes standards.
- In considering policy change, it's important to understand the formal meaning of each category of policy option, but also to understand their advantages, disadvantages and limitations; and how they relate to one another.

# Statutes

- **Statutes** are usually seen as the "gold standard" for policy change. They are of broad application and if properly crafted can have dramatic and powerful impact on environmental and occupational health.
- In our Canadian federal system, there will usually be issues (and sometimes complex ones) around whether a matter is federally or provincially regulated.
- Achieving statutory change will seldom be possible for local or regional activists. It requires provincial or national level efforts.

# Statutes - 2

- The Directory can be of great assistance in identifying existing statutory solutions to the health concerns being addressed. It can show that your jurisdiction, for example, is well behind the curve and that statutory change will not put you at a competitive disadvantage.
- It can provide a range of differing legislated approaches – one of which may be more saleable in your jurisdiction than another. And of course, it can also show that no Canadian jurisdiction has gone where you want to go – giving you quite a mountain to climb!

# Bills

- **Bills**, in and of themselves, do not have legal authority. However, finding current or past Bills in the Directory can be valuable when considering potential statutory approaches.
- A bill may have had significant governmental or stakeholder support, but for some reason did not make it through the legislative process. Or it may have been a private member's bill, meaning that at least one legislator, or perhaps their party, may support your efforts. This is even more valuable to you when that party has later become the government.

# Regulations

- **Regulations:** Statutory change are usually only the first stage in achieving improvements in environmental or occupational health. It is increasingly common for statutes to be drafted in very broad terms, leaving the important details to subsequent regulations.
- This means that it is highly likely that the players in policy change initiatives will need to look at policy options either in addition to or instead of statutory amendments. Often, reform processes proceed in tandem, with specific regulatory approaches in mind at the point a statute is approved by a legislature.
- As with statutes, **regulations** or regulatory revisions are developed and implemented at the national or provincial/territorial level.

# Regulations - 2

- For proponents of change, or other players, regulations are much more likely than statutes to address the specific health concern in your community or sector. For example, there will seldom be a statute addressing a specific carcinogen, while there may be numerous regulations dealing with it. This means that the Directory can be an invaluable resource for finding all relevant references to a substance or process that you are concerned about.
- As with statutes, you will often find different regulatory approaches, one of which may recommend itself to your jurisdiction more than another.

# By-laws

- Regulatory processes can be just as complex and resource intensive as statutory ones. This can be very challenging for local/regional activists. This means that many people concerned about a specific carcinogen or harmful substance will search out ways to achieve change on a local level. Across Canada, this has often meant addressing concerns through municipal by-laws.

# By-laws - 2

- The Canadian experience has shown that policy reform initiatives which start with by-laws sometimes end up in regulations or statutes – for example restrictions on smoking in public places.
- Because by-laws are locally inspired, they provide a rich variety of experiences and approaches. The Directory can provide key players with a lot to choose from, in tailoring local solutions.
- Activists will often have the greatest chance of success at the local level, where the balance of forces among stakeholders can be more equal.

# Policies, guidelines and standards

- Policies, guidelines and standards are options with much less formal authority than statutes, regulations and by-laws. However, proponents of change can often make important progress by identifying an approach which can have major local/sectoral impact.
- Here, the Directory is valuable but will require more creativity by the user to apply what has been learned to the situation at hand.

# Policies, guidelines and standards - 2

- While these approaches are generally developed to guide the actions of one or more organizations, they are usually not applicable outside those organizations. In the case of standards, such as those of the Canadian Standards Association (CSA), they will be voluntary.
- However, there are promising avenues which can be used by proponents of change.

# Policies, guidelines and standards - 3

- The fact that one or more organizations have adopted an approach opens the way to advocate that other organizations sign on as well. Particularly where public or consumer preferences may apply, this can be a powerful mechanism. Think about the growth in coffee shops shifting to "fair trade" coffee.
- Proponents of change can also advocate that a currently voluntary standard be made mandatory – either in government procurement arrangements or through incorporation in a regulation. For example, some provincial health and safety regulations specifically reference CSA standards.

# Policies, guidelines and standards – 4

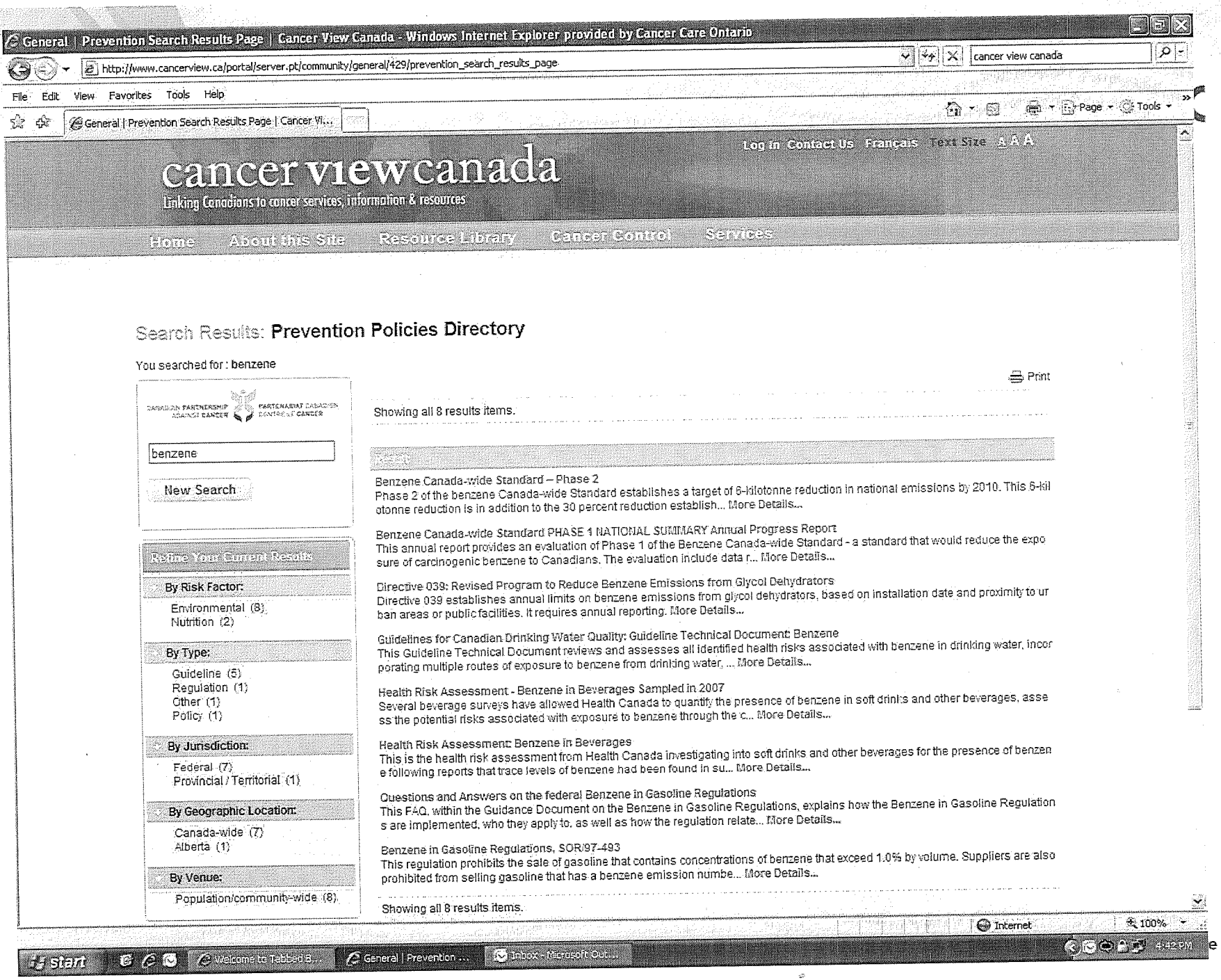
- Sometimes proponents of change, or governments, can find allies within important segments of stakeholder communities, for example when some businesses are voluntarily complying with an environmental or health and safety standard while their competitors are not.
- In the current economic and political environment, it is in the area of policies, guidelines and standards where progress can be made most easily; setting the stage for statutory or regulatory change in the future.

# A question for consideration

- In your role, which type of policy option do you see as most likely to bring positive change in the near future in environmental or occupational health?
- Statute
- Regulation
- By-law
- Policy, guideline or standard

## Hypothetical Scenario 1: There is new evidence that the toxic effects of a certain chemical occur at levels much lower than previously known

- What are the federal regulations regarding this substance?
- In terms of workplace regulations, how do the provinces compare?
- Are there other important and/or innovative regulations in this area?


General | Prevention Search Results Page | Cancer View Canada - Windows Internet Explorer provided by Cancer Care Ontario
http://www.cancerview.ca/portal/server.pt/community/general/429/prevention_search_results_page
cancer view canada
File Edit View Favorites Tools Help
General | Prevention Search Results Page | Cancer Vi...
Page Tools
Log in Contact Us Français Text Size A A A
cancer viewcanada
Linking Canadians to cancer services, information & resources
Home About this Site Resource Library Cancer Control Services
Search Results: Prevention Policies Directory
You searched for : benzene
Print
benzene
New Search
Showing all 8 results items.
Refine Your Current Results
By Risk Factor:
Environmental (8)
Nutrition (2)
By Type:
Guideline (5)
Regulation (1)
Other (1)
Policy (1)
By Jurisdiction:
Federal (7)
Provincial / Territorial (1)
By Geographic Location:
Canada-wide (7)
Alberta (1)
By Venue:
Population/community-wide (8)
Benzene Canada-wide Standard – Phase 2
Phase 2 of the benzene Canada-wide Standard establishes a target of 6-kilotonne reduction in national emissions by 2010. This 6-kil otonne reduction is in addition to the 30 percent reduction establish... More Details...
Benzene Canada-wide Standard PHASE 1 NATIONAL SUMMARY Annual Progress Report
This annual report provides an evaluation of Phase 1 of the Benzene Canada-wide Standard - a standard that would reduce the expo sure of carcinogenic benzene to Canadians. The evaluation include data r... More Details...
Directive 039: Revised Program to Reduce Benzene Emissions from Glycol Dehydrators
Directive 039 establishes annual limits on benzene emissions from glycol dehydrators, based on installation date and proximity to ur ban areas or public facilities. It requires annual reporting. More Details...
Guidelines for Canadian Drinking Water Quality: Guideline Technical Document: Benzene
This Guideline Technical Document reviews and assesses all identified health risks associated with benzene in drinking water, incor porating multiple routes of exposure to benzene from drinking water, ... More Details...
Health Risk Assessment - Benzene in Beverages Sampled in 2007
Several beverage surveys have allowed Health Canada to quantify the presence of benzene in soft drinks and other beverages, asse ss the potential risks associated with exposure to benzene through the c... More Details...
Health Risk Assessment: Benzene in Beverages
This is the health risk assessment from Health Canada investigating into soft drinks and other beverages for the presence of benzen e following reports that trace levels of benzene had been found in su... More Details...
Questions and Answers on the federal Benzene in Gasoline Regulations
This FAQ, within the Guidance Document on the Benzene in Gasoline Regulations, explains how the Benzene in Gasoline Regulation s are implemented, who they apply to, as well as how the regulation relate... More Details...
Benzene in Gasoline Regulations, SOR/97-493
This regulation prohibits the sale of gasoline that contains concentrations of benzene that exceed 1.0% by volume. Suppliers are also prohibited from selling gasoline that has a benzene emission numbe... More Details...
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Internet 100%
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General | Prevention ...
Inbox - Microsoft Out...
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http://www.ccme.ca/assets/pdf/benzene_ph2_backgrounder_e.pdf - Windows Internet Explorer provided by Cancer Care Ontario
http://www.ccme.ca/assets/pdf/benzene_ph2_backgrounder_e.pdf
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CCME

Canadian Council of Ministers of the Environment
Le Conseil canadien des ministres de l'environnement

# Benzene Canada-wide Standard – Phase 2

## 1. What is the Canada-Wide Standard for Benzene?

Phase 2 of the benzene Canada-wide Standard establishes a target of 6-kilotonne reduction in national emissions by 2010. This 6-kilotonne reduction is in addition to the 30 percent reduction established in Phase 1. Phase 2 also provides national application of Best Management Practices and develops the foundation for additional reductions to be achieved through other air issues programs (including other Canada-wide Standard initiatives). Key actions include follow-through on the benzene in gasoline regulations and voluntary initiatives to reduce emissions from natural gas dehydrators and the steel industry.

## 2. What is the Science on Benzene?

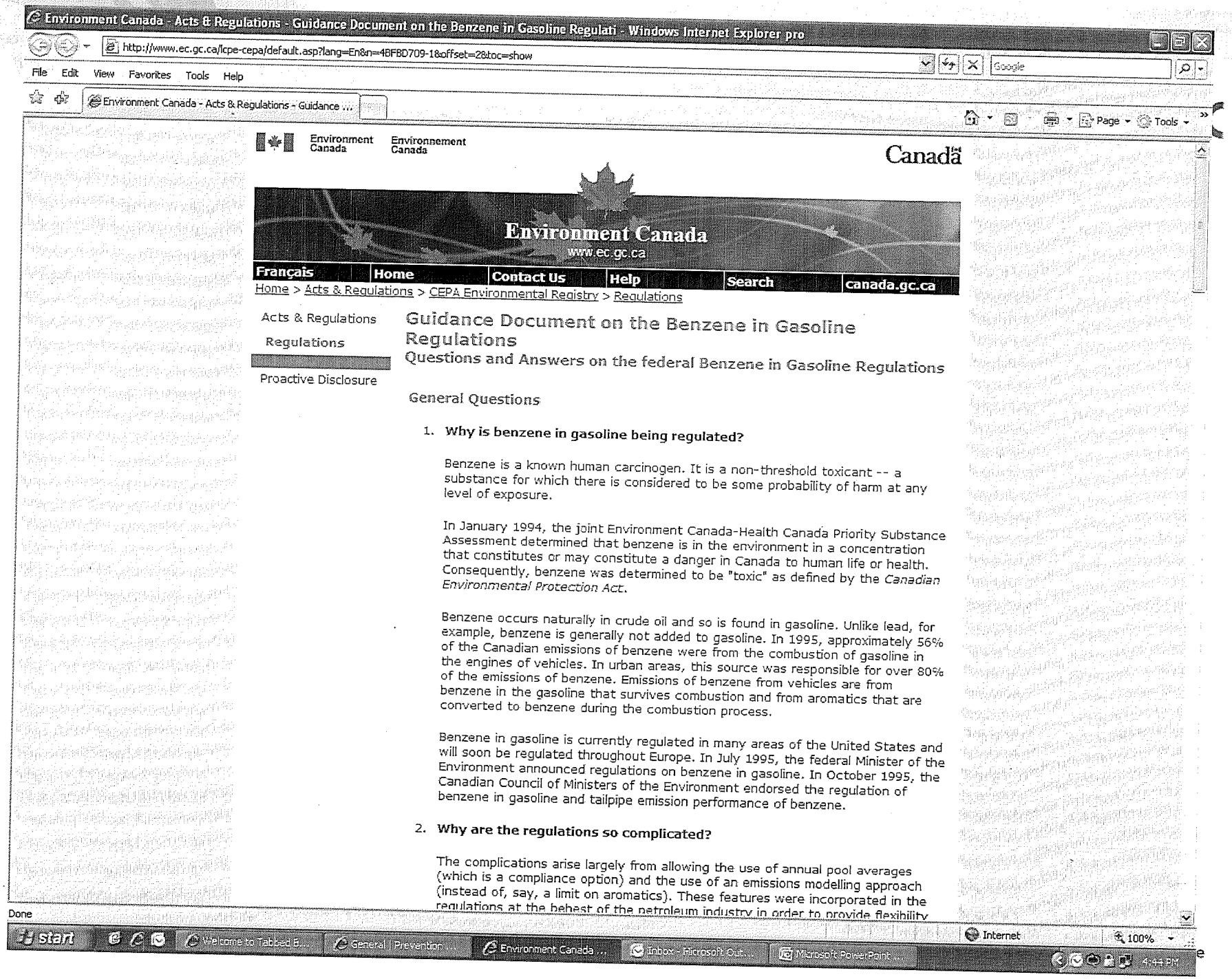
chemicals, and prescribed burning are also anthropogenic sources of benzene.

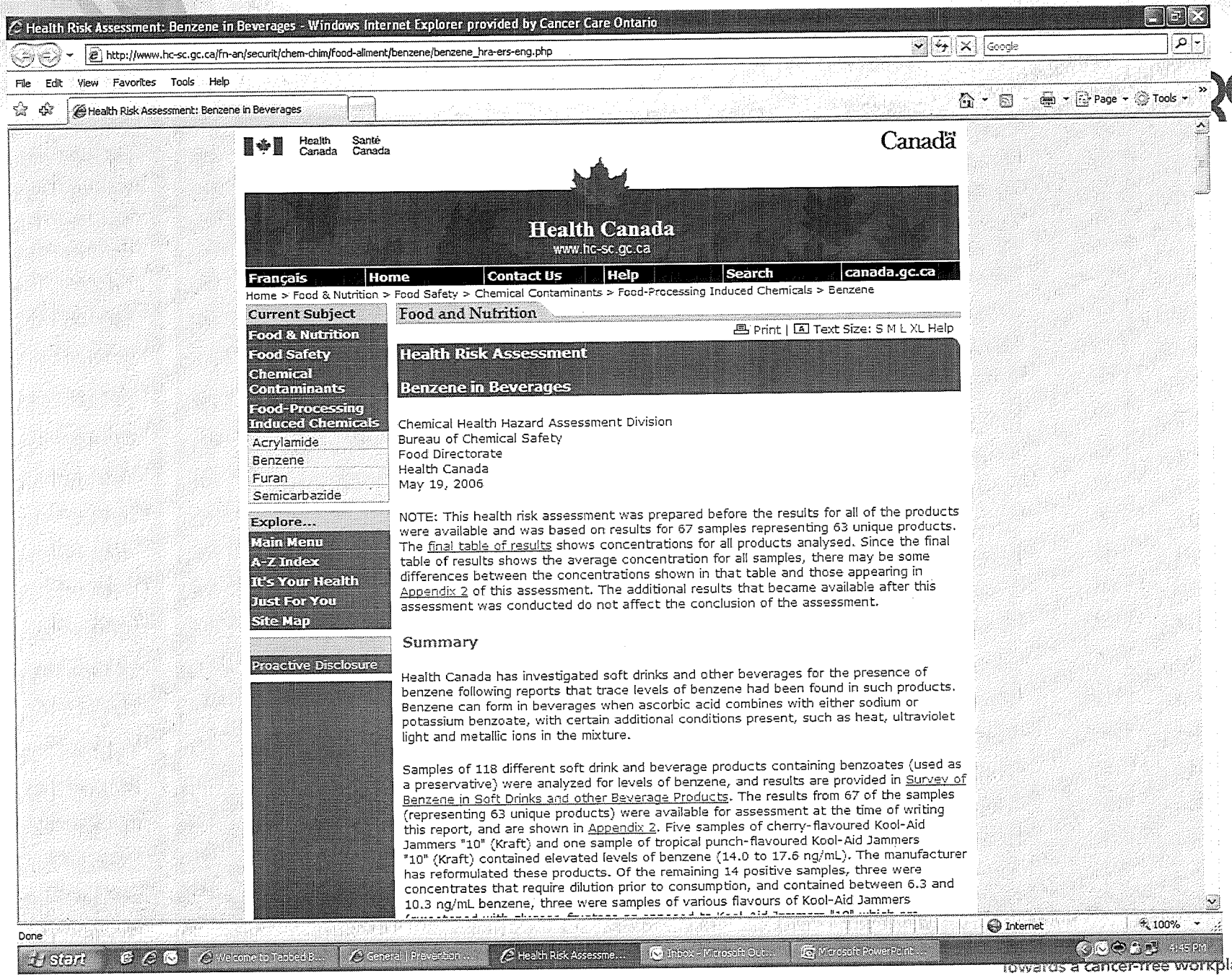
The largest source of benzene exposure for non-smoking Canadians is vehicular emissions. Cigarette smokers are exposed to even higher levels of benzene.

Average ambient levels for benzene in 1998 were 0.3 - 1.0 ug/m$^3$ in rural areas and 1.0 - 3.2 ug/m$^3$ in urban areas. In general, ambient levels of benzene in air in Canada are generally at or below the long-term targets set for Europe, the UK and various states in the USA.

## 4. Achieving the Standard

Efforts towards achievement of this CWS will continue with follow-through on the Phase 1 initial actions listed in the Companion Document that accompanies the Phase 2 CWS agreement.


Environment Canada - Acts & Regulations - Guidance Document on the Benzene in Gasoline Regulati - Windows Internet Explorer pro
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Guidance Document on the Benzene in Gasoline Regulations
Questions and Answers on the federal Benzene in Gasoline Regulations
General Questions
1. Why is benzene in gasoline being regulated?
Benzene is a known human carcinogen. It is a non-threshold toxicant -- a substance for which there is considered to be some probability of harm at any level of exposure.
In January 1994, the joint Environment Canada-Health Canada Priority Substance Assessment determined that benzene is in the environment in a concentration that constitutes or may constitute a danger in Canada to human life or health. Consequently, benzene was determined to be "toxic" as defined by the Canadian Environmental Protection Act.
Benzene occurs naturally in crude oil and so is found in gasoline. Unlike lead, for example, benzene is generally not added to gasoline. In 1995, approximately 56% of the Canadian emissions of benzene were from the combustion of gasoline in the engines of vehicles. In urban areas, this source was responsible for over 80% of the emissions of benzene. Emissions of benzene from vehicles are from benzene in the gasoline that survives combustion and from aromatics that are converted to benzene during the combustion process.
Benzene in gasoline is currently regulated in many areas of the United States and will soon be regulated throughout Europe. In July 1995, the federal Minister of the Environment announced regulations on benzene in gasoline. In October 1995, the Canadian Council of Ministers of the Environment endorsed the regulation of benzene in gasoline and tailpipe emission performance of benzene.
2. Why are the regulations so complicated?
The complications arise largely from allowing the use of annual pool averages (which is a compliance option) and the use of an emissions modelling approach (instead of, say, a limit on aromatics). These features were incorporated in the
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Health Risk Assessment: Benzene in Beverages - Windows Internet Explorer provided by Cancer Care Ontario
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Health Risk Assessment
Benzene in Beverages
Chemical Health Hazard Assessment Division
Bureau of Chemical Safety
Food Directorate
Health Canada
May 19, 2006
NOTE: This health risk assessment was prepared before the results for all of the products were available and was based on results for 67 samples representing 63 unique products. The final table of results shows concentrations for all products analysed. Since the final table of results shows the average concentration for all samples, there may be some differences between the concentrations shown in that table and those appearing in Appendix 2 of this assessment. The additional results that became available after this assessment was conducted do not affect the conclusion of the assessment.
Summary
Health Canada has investigated soft drinks and other beverages for the presence of benzene following reports that trace levels of benzene had been found in such products. Benzene can form in beverages when ascorbic acid combines with either sodium or potassium benzoate, with certain additional conditions present, such as heat, ultraviolet light and metallic ions in the mixture.
Samples of 118 different soft drink and beverage products containing benzoates (used as a preservative) were analyzed for levels of benzene, and results are provided in Survey of Benzene in Soft Drinks and other Beverage Products. The results from 67 of the samples (representing 63 unique products) were available for assessment at the time of writing this report, and are shown in Appendix 2. Five samples of cherry-flavoured Kool-Aid Jammers "10" (Kraft) and one sample of tropical punch-flavoured Kool-Aid Jammers "10" (Kraft) contained elevated levels of benzene (14.0 to 17.6 ng/mL). The manufacturer has reformulated these products. Of the remaining 14 positive samples, three were concentrates that require dilution prior to consumption, and contained between 6.3 and 10.3 ng/mL benzene, three were samples of various flavours of Kool-Aid Jammers
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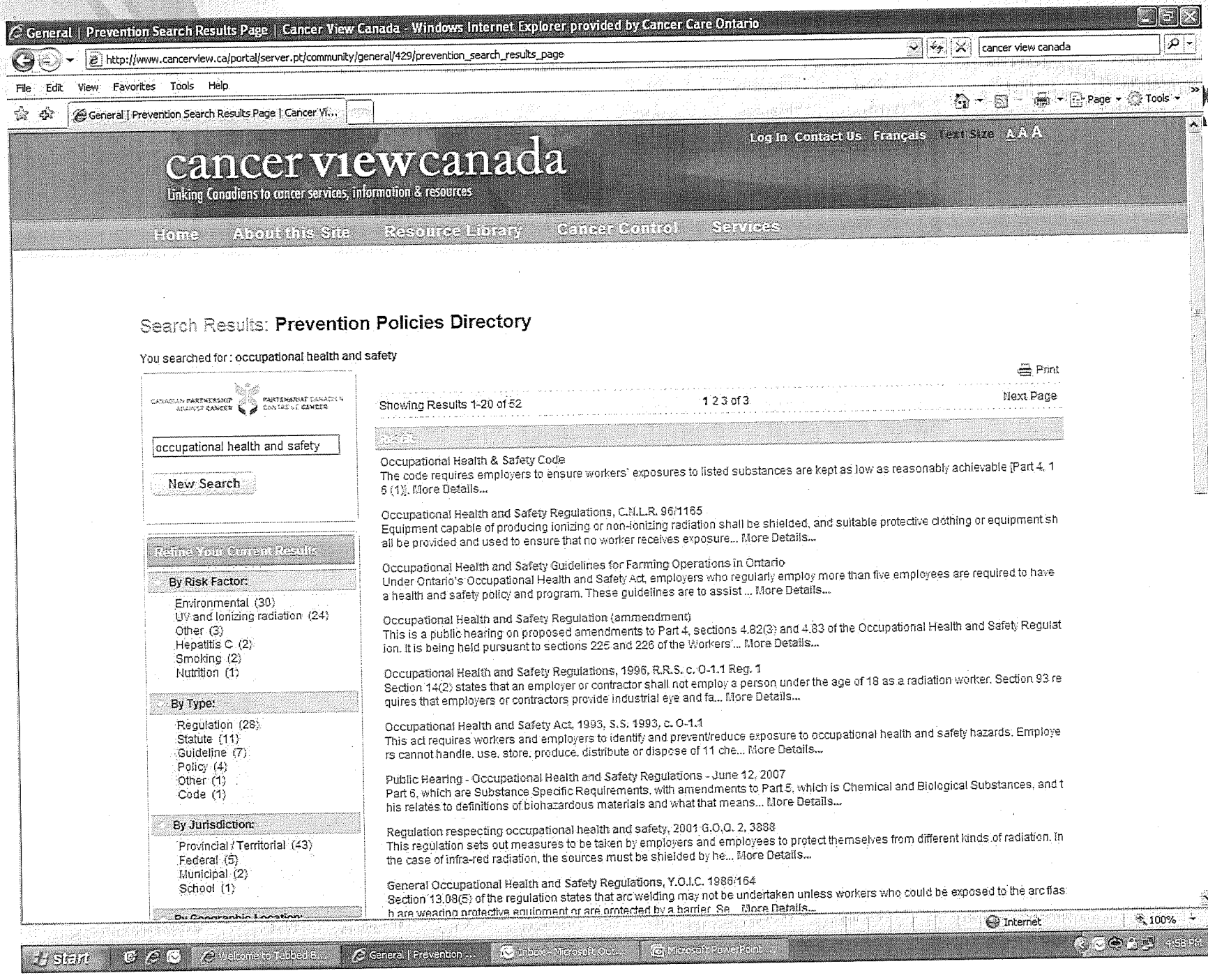
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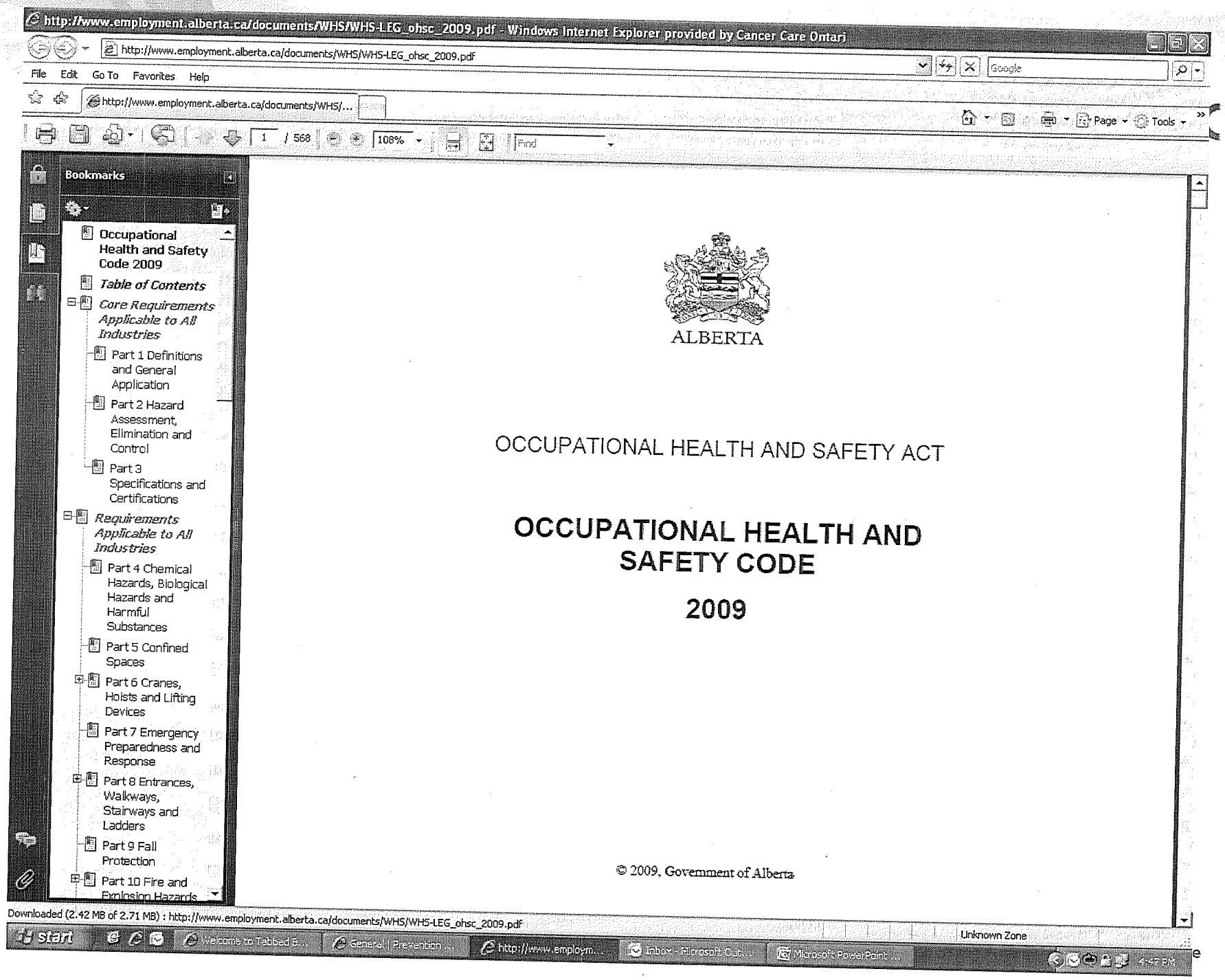
## Part II. Science and Technical Considerations (continued)

### 12.0 References


- Abernathy, D.J., Kleymenova, E.V., Rose, J., Recio, L. and Faiola, B. (2004) Human CD34+ hematopoietic progenitor cells are sensitive targets for toxicity induced by 1,4-benzoquinone. Toxicol. Sci., 79: 82-89.
- Adams, J.Q. and Clark, R.M. (1991) Evaluating the costs of packed-tower aeration and GAC for controlling selected organics. J. Am. Water Works Assoc., 83(1): 49-57.
- Aelion, C.M. and Bradley, P.M. (1991) Aerobic biodegradation potential of subsurface microorganisms from a jet fuel-contaminated aquifer. Appl. Environ. Microbiol., 57: 57-63.
- Al-Bastaki, N.M. (2003) Treatment of synthetic industrial wastewater with UV/$TiO_2$ and RO using benzene as a model hydrocarbon. Desalination, 156(1): 193-197.
- Alberta Department of Environment (2005) Personal communication with K. Pongar.
- Allan, G. (1988) Experiences with treatment for volatile organic contaminants. J. N. Engl. Water Works Assoc., 101(1): 13-21.
- Alther, G. (2002) Using organoclays to enhance carbon filtration. Waste Manage., 22(5): 507-513.
- Aoyama, K. (1986) Effects of benzene inhalation on lymphocyte subpopulations and


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Occupational Health & Safety Code
The code requires employers to ensure workers' exposures to listed substances are kept as low as reasonably achievable [Part 4, 1 6 (1)]. More Details...
Occupational Health and Safety Regulations, C.N.L.R. 96/1165
Equipment capable of producing ionizing or non-ionizing radiation shall be shielded, and suitable protective clothing or equipment sh all be provided and used to ensure that no worker receives exposure... More Details...
Occupational Health and Safety Guidelines for Farming Operations in Ontario
Under Ontario's Occupational Health and Safety Act, employers who regularly employ more than five employees are required to have a health and safety policy and program. These guidelines are to assist ... More Details...
Occupational Health and Safety Regulation (ammendment)
This is a public hearing on proposed amendments to Part 4, sections 4.82(3) and 4.83 of the Occupational Health and Safety Regulat ion. It is being held pursuant to sections 225 and 226 of the Workers'... More Details...
Occupational Health and Safety Regulations, 1996, R.R.S. c. O-1.1 Reg. 1
Section 14(2) states that an employer or contractor shall not employ a person under the age of 18 as a radiation worker. Section 93 re quires that employers or contractors provide industrial eye and fa... More Details...
Occupational Health and Safety Act, 1993, S.S. 1993, c. O-1.1
This act requires workers and employers to identify and prevent/reduce exposure to occupational health and safety hazards. Employe rs cannot handle, use, store, produce, distribute or dispose of 11 che... More Details...
Public Hearing - Occupational Health and Safety Regulations - June 12, 2007
Part 6, which are Substance Specific Requirements, with amendments to Part 5, which is Chemical and Biological Substances, and t his relates to definitions of biohazardous materials and what that means... More Details...
Regulation respecting occupational health and safety, 2001 G.O.O. 2, 3888
This regulation sets out measures to be taken by employers and employees to protect themselves from different kinds of radiation. In the case of infra-red radiation, the sources must be shielded by he... More Details...
General Occupational Health and Safety Regulations, Y.O.I.C. 1986/164
Section 13.08(5) of the regulation states that arc welding may not be undertaken unless workers who could be exposed to the arc flas h are wearing protective equipment or are protected by a barrier. Se... More Details...
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| Substance | CAS number | 8-hour occupational exposure limit | | | 15-minute or ceiling (c) occupational exposure limit | | Substance interaction 1, 2, 3 | Carcinogenicity A1, A2 |
|---|---|---|---|---|---|---|---|---|
| | | ppm | mg/m$^3$ | f/cc | ppm | mg/m$^3$ | | |
| p-Anisidine | 104-94-9 | - | 0.5 | - | - | - | 1 | |
| Antimony & compounds, as Sb | 7440-36-0 | - | 0.5 | - | - | - | 3 | |
| Antimony hydride | 7803-52-3 | 0.1 | 0.5 | - | - | - | - | |
| ANTU (α-Naphthylthiourea) | 86-88-4 | - | 0.3 | - | - | - | - | |
| Argon | 7440-37-1 | - | - | - | - | - | 2 | |
| Arsenic, elemental & inorganic compounds as As | 7440-38-2 | - | 0.01 | - | - | - | - | A1 |
| Arsine | 7784-42-1 | 0.05 | 0.2 | - | - | - | - | |
| Asbestos, all forms | 1332-21-4<br>12172-73-5<br>12001-29-5<br>12172-67-7 | - | - | 0.1 | - | - | - | A1 |
| Asphalt (Petroleum; Bitumen) fume | 8052-42-4 | - | 5 | - | - | - | 3 | |
| Atrazine | 1912-24-9 | - | 5 | - | - | - | 3 | |
| Azinphos-methyl (Guthion) | 86-50-0 | - | 0.2 | - | - | - | 1 | |
| Barium and soluble compounds, as Ba | 7440-39-3 | - | 0.5 | - | - | - | - | |
| Barium sulfate | 7727-43-7 | - | 10 | - | - | - | - | |
| Benomyl | 17804-35-2 | 0.84 | 10 | - | - | - | 3 | |
| Benzene | 71-43-2 | 0.5 | 1.6 | - | 2.5 | 8 | 1 | A1 |
| p-Benzoquinone (Quinone) | 106-51-4 | 0.1 | 0.4 | - | - | - | - | |
| Benzotrichloride (Benzyl trichloride) | 98-07-7 | - | - | - | (c) 0.1 | (c) 0.8 | 1 | A2 |
| Benzoyl chloride | 98-88-4 | - | - | - | (c) 0.5 | (c) 2.9 | 3 | |

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**SOR/86-304**

CANADA LABOUR CODE

Her Excellency the Governor General in Council, on the recommendation of the Minister of Labour, pursuant to sections 82˚ and 83˚ and subsection 106 (1)˚ of the *Canada Labour Code*, is pleased hereby to revoke

˚ S.C. 1984, c. 39, s. 20

(a) the *Canada Accident Investigation and Reporting Regulations*, C.R.C., c. 993,

(b) the *Canada Boiler and Pressure Vessel Regulations*, made by Order in Council P.C. 1979-1426 of May 9, 1979˚˚,

˚˚ SOR/79-399, 1979 *Canada Gazette* Part II, p. 2069

(c) the *Canada Building Safety Regulations*, C.R.C., c. 995,

(d) the *Canada Confined Spaces Regulations*, C.R.C., c. 996,

(e) the *Canada Dangerous Substances Regulations*, C.R.C., c. 997,

(f) the *Canada Electrical Safety Regulations*, C.R.C., c. 998,

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(*b*) makes and signs a report with respect to each inspection, test or maintenance work.

(4) A report referred to in paragraph (3)(*b*) shall

(*a*) include the date of the inspection, test or maintenance work performed by the qualified person;

(*b*) identify the ventilation system that was inspected, tested or maintained; and

(*c*) set out the safety observations of the qualified person in respect of the ventilation system.

(5) The employer shall keep at the work place at which the ventilation system is located a copy of

(*a*) the instructions referred to in subsection (1), and

(*b*) the most recent report referred to in paragraph (3)(*b*).

(6) The employer shall give to every operator of a ventilation system the necessary instruction and training for the safe and proper use of the system.

(7) The employer shall keep a written or computerized record of the instruction and training given to e as the operator remains in the employer's employ.

SOR/96-294, s. 2.

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*Control of Hazards*

**10.19** (1) An employee shall be kept free from exposure to a concentration of

(*a*) an airborne chemical agent, other than grain dust or airborne chrysotile asbestos, in excess of the value for that chemical agent adopted by the American Conference of Governmental Industrial Hygienists, in its publication entitled *Threshold Limit Values and Biological Exposure Indices*, dated 1994-1995, as amended from time to time;

(*b*) airborne grain dust in excess of 10 mg/m$^3$; or

(*c*) airborne chrysotile asbestos in excess of one fibre per cubic centimetre.

(2) Subsection (1) does not apply in respect of concentrations of carbon dioxide or respirable dust in the underground portion of a coal mine.

(3) Where there is a likelihood that the concentration of an airborne chemical agent may exceed the value referred to in subsection (1), air samples shall be taken and the concentration of the chemical agent shall be determined

(*a*) in accordance with the standards set out by the American Conference of Governmental Industrial Hygienists in its publication entitled *Manual of Analytical Methods Recommended for Sampling and Analysis of Atmospheric Contaminants*, dated 1958, as amended from time to time;

(*b*) in accordance with the standards set out by the United States National Institute for Occupational Safety and Health in the *NIOSH Manual of Analytical Methods*, third edition, volumes 1 and 2, dated February, 1984, as amended from time to time;

(*c*) in accordance with a method that collects and analyses a representative sample of the chemical agent with accuracy and with detection levels at least equal to those which would be obtained if the standards referred to in paragraph (*a*) or (*b*) were used; or

(*d*) where no specific standards for the chemical agent are set out in the publications referred to in paragraphs (*a*) and (*b*) and no method is available under paragraph (*c*), in accordance with a scientifically proven method used to collect and analyse a representative sample of the chemical agent.

(4) A written or computerized record of each test made pursuant to subsection (3) shall be kept by the employer at the employer's place of business nearest to the work place where the air sample was taken, for a period of three years after the date of the test.

(5) A record referred to in subsection (4) shall include

(*a*) the date, time and location of the test;

(*b*) the hazardous substance in respect of which the test was made;

(*c*) the sampling and testing method used;

(*d*) the result obtained; and

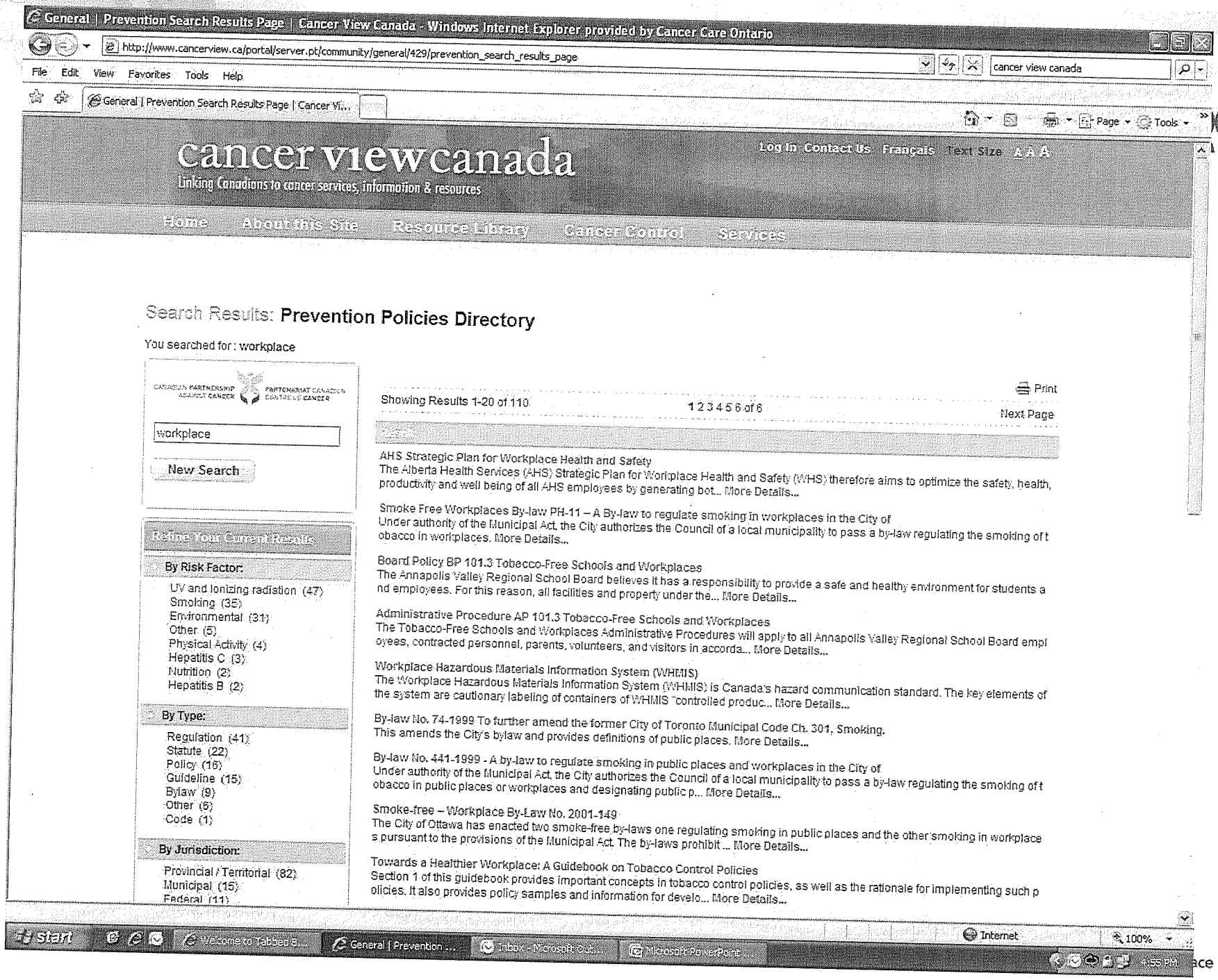
(*e*) the name and occupation of the person who made the test.

SOR/88-68, ss. 10, 14; SOR/94-263, s. 37(F); SOR/96-294, s. 2; SOR/98-427, s. 5; SOR/2002-208, s. 43(F).

**10.20** (1) Subject to subsection (2), the concentration of an airborne chemical agent or combination of airborne chemical agents in the work place shall be less than 50 per cent of the lower explosive limit of the chemical agent or combination of chemical agents.

(2) Where a source of ignition may ignite an airborne chemical agent or combination of airborne chemical agents in the work place, the maximum concentration of the chemical agent or of the combination of chemical agents shall be 10 per cent of the lower explosive limit of the chemical agent or

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The Alberta Health Services (AHS) Strategic Plan for Workplace Health and Safety (WHS) therefore aims to optimize the safety, health, productivity and well being of all AHS employees by generating bot... More Details...
Smoke Free Workplaces By-law PH-11 – A By-law to regulate smoking in workplaces in the City of
Under authority of the Municipal Act, the City authorizes the Council of a local municipality to pass a by-law regulating the smoking of t obacco in workplaces. More Details...
Board Policy BP 101.3 Tobacco-Free Schools and Workplaces
The Annapolis Valley Regional School Board believes it has a responsibility to provide a safe and healthy environment for students a nd employees. For this reason, all facilities and property under the... More Details...
Administrative Procedure AP 101.3 Tobacco-Free Schools and Workplaces
The Tobacco-Free Schools and Workplaces Administrative Procedures will apply to all Annapolis Valley Regional School Board empl oyees, contracted personnel, parents, volunteers, and visitors in accorda... More Details...
Workplace Hazardous Materials Information System (WHMIS)
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Towards a Healthier Workplace: A Guidebook on Tobacco Control Policies
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Environmental and Workplace Health



## Workplace Hazardous Materials Information System – Official National Site

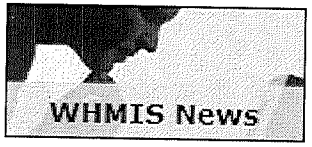
### *Workplace Hazardous Materials Information System (WHMIS)*

The Workplace Hazardous Materials Information System (WHMIS) is Canada's **national** hazard communication standard. The key elements of the system are cautionary labelling of containers of WHMIS "controlled products", the provision of material safety data sheets (MSDSs) and worker education and training programs.










## Additional Resources

- Reference Manual

## In this topic...

- **Application and Regulatory Requirements**
  - About WHMIS
  - Supplier and Importer Requirements, Application and Program Objectives

Occupational Health & Safety
Employee Assistance Services
Occupational Radiation
Workplace Hazardous Materials Information System
Workplace Health

Explore...
Main Menu
A-Z Index
It's Your Health
Just For You
Site Map

Proactive Disclosure

Help on accessing alternative formats, such as Portable Document Format (PDF), Microsoft Word and PowerPoint (PPT) files, can be obtained in the alternate format help section.

**Carcinogenesis - overview**
**WHMIS classification and hazard communication**
**Designations-explanatory notes**
**Substances assessed for carcinogenicity**
**References / Related Sites**

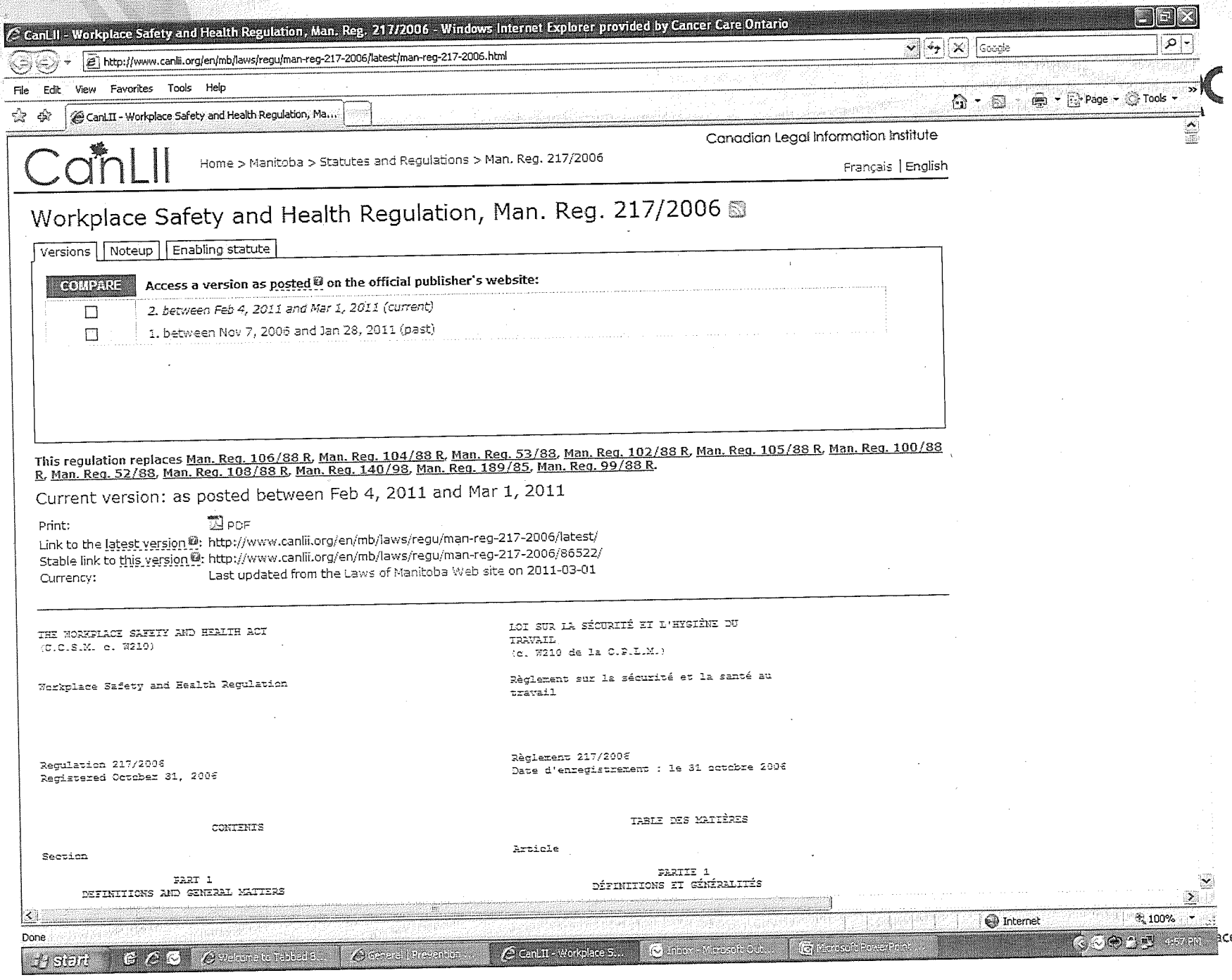
**Disclaimer**

Information contained in this section is of a general nature only and is not intended to constitute advice for any specific fact situation.

## Carcinogenesis - Overview:

Cancer is one of the leading causes of death in industrialized countries. In Canada, the cancer rate has risen from 1 in 10 in 1930 to 1 in 3 today. The International Agency for Research on Cancer (IARC) identified a number of substances, other than tobacco, that cause lung cancer through studies of workers who died as a result of exposure to carcinogens in the workplace. The debate on how many cancers are occupationally related continues and estimates range widely. Scientists have estimated that as may as 33% of all cancers are related to workplace exposures to carcinogens, (ref.: U. S. Civil Service Employees Association, 1998).

Although a number of factors have been related to the incidence of cancer, "It is not possible to predict with complete certainty from animal studies alone which agents, substances, mixtures, or exposure circumstances will be carcinogenic in humans. However, all known human carcinogens that have been tested adequately also produce cancers in laboratory animals. In many cases, an agent was found to cause cancer in animals and only subsequently confirmed to cause cancer in humans. Experimental carcinogenesis research is based on the scientific assumption that chemicals causing cancer in animals will have similar effects in humans. Laboratory animals' adverse responses to chemicals (of which cancer is only one) do not always strictly correspond to human responses; however, laboratory animals remain the best tool for detecting potential human health hazards of all kinds, including cancer." (Ref.: U.S. Department of Health and Human Services, Public Health Service, National Toxicology Program, 9th Report on Carcinogens Revised January 2001)


CanLII - Workplace Safety and Health Regulation, Man. Reg. 217/2006 - Windows Internet Explorer provided by Cancer Care Ontario
http://www.canlii.org/en/mb/laws/regu/man-reg-217-2006/latest/man-reg-217-2006.html
File Edit View Favorites Tools Help
CanLII - Workplace Safety and Health Regulation, Ma...
CanLII
Home > Manitoba > Statutes and Regulations > Man. Reg. 217/2006
Canadian Legal Information Institute
Français | English
Workplace Safety and Health Regulation, Man. Reg. 217/2006
Versions Noteup Enabling statute
COMPARE
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2. between Feb 4, 2011 and Mar 1, 2011 (current)
1. between Nov 7, 2006 and Jan 28, 2011 (past)
This regulation replaces Man. Reg. 106/88 R, Man. Reg. 104/88 R, Man. Reg. 53/88, Man. Reg. 102/88 R, Man. Reg. 105/88 R, Man. Reg. 100/88 R, Man. Reg. 52/88, Man. Reg. 108/88 R, Man. Reg. 140/98, Man. Reg. 189/85, Man. Reg. 99/88 R.
Current version: as posted between Feb 4, 2011 and Mar 1, 2011
Print: PDF
Link to the latest version: http://www.canlii.org/en/mb/laws/regu/man-reg-217-2006/latest/
Stable link to this version: http://www.canlii.org/en/mb/laws/regu/man-reg-217-2006/86522/
Currency: Last updated from the Laws of Manitoba Web site on 2011-03-01
THE WORKPLACE SAFETY AND HEALTH ACT
(C.C.S.M. c. W210)
Workplace Safety and Health Regulation
Regulation 217/2006
Registered October 31, 2006
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PART 1
DEFINITIONS AND GENERAL MATTERS
LOI SUR LA SÉCURITÉ ET L'HYGIÈNE DU TRAVAIL
(c. W210 de la C.P.L.M.)
Règlement sur la sécurité et la santé au travail
Règlement 217/2006
Date d'enregistrement : le 31 octobre 2006
TABLE DES MATIÈRES
Article
PARTIE 1
DÉFINITIONS ET GÉNÉRALITÉS
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CanLII - Workplace Safety and Health Regulation, Ma...
Page Tools

compromise.



When exposure to an airborne chemical
36.5(2) or biological substance at a concentration below the threshold limit value for that substance established by the ACGIH creates or may create a risk to the safety or health of a worker in a workplace due to

(a) conditions in the workplace, including,

(i) heat,

(ii) ultraviolet and ionizing radiation,

(iii) humidity,

(iv) pressure,

(v) length of work shift, work-rest regime, or

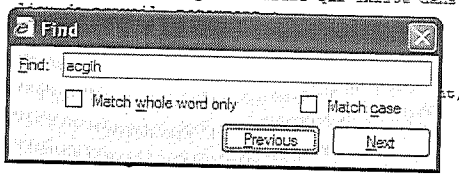
(vi) additive and synergistic effects of materials and workload; or

(b) the health or physical condition of a worker in the workplace known to an employer;

the employer must establish a lower occupational exposure limit for that substance than the limit established by the ACGIH. The occupational exposure limit established by the employer must ensure that the safety or health of workers who are exposed to the substance in that workplace at levels below that limit will not be placed at risk.

L'employeur fixe un seuil d'exposition
36.5(2) professionnelle inférieur à la valeur limite d'exposition établie par l'ACGIH si l'exposition à une substance chimique ou biologique aéroportée d'une concentration inférieure à la valeur limite d'exposition établie par l'ACGIH crée ou est susceptible de créer un risque pour la sécurité ou la santé d'un travailleur dans le lieu de travail en raison, selon le cas :

a) d'une condition particulière qui existe dans le




(v) la durée du quart de travail ou le cycle travail-repos,

(vi) l'action cumulative et synergique des matières et de la charge de travail;

b) de l'état de santé ou de l'état physique d'un travailleur dans le lieu de travail dont l'employeur est au courant.

Le seuil d'exposition professionnelle fixé par l'employeur fait en sorte que la sécurité ou la santé des travailleurs exposés dans le lieu de travail à une concentration inférieure de la substance en cause ne soit pas menacée.

## MONITORING AND CONTROL MEASURES

### Monitoring

If a worker is, or may be, exposed to an
36.6(1) airborne chemical or biological substance in the workplace at a concentration in excess of the occupational exposure limit for the substance

## SURVEILLANCE ET MESURES DE CONTRÔLE

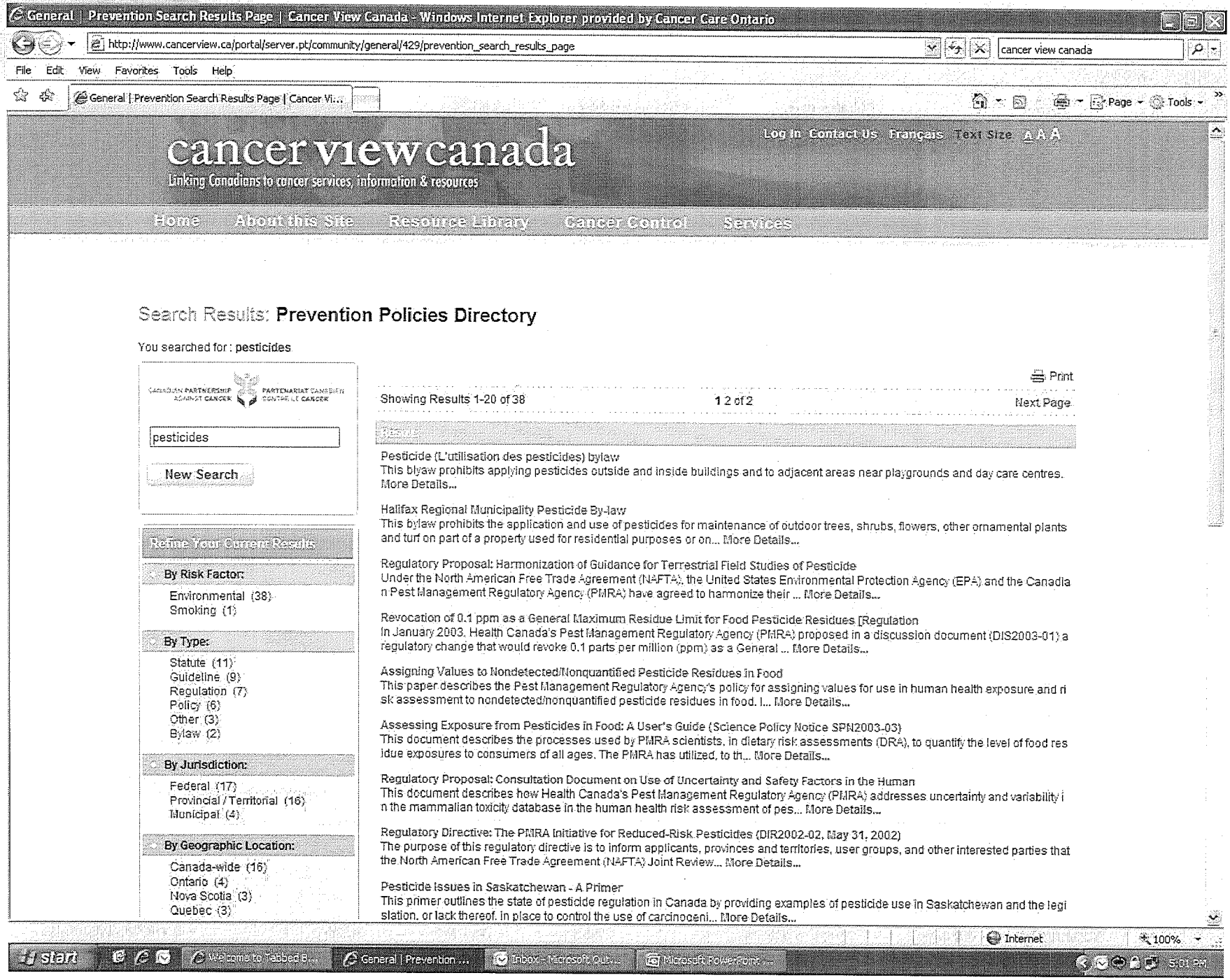
### Surveillance

Si un travailleur est ou risque d'être
36.6(1) exposé à une substance chimique ou biologique aéroportée qui est présente dans le lieu de travail et dont la concentration est supérieure au seuil

start
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General | Prevention ...
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# Hypothetical Scenario 2: Your jurisdiction is considering a cosmetic pesticide ban

- What do other cosmetic pesticide bans look like?
- What is already covered under existing regulations?
- Are there any other relevant guidelines or regulations related to pesticides that you should be aware of?


General | Prevention Search Results Page | Cancer View Canada - Windows Internet Explorer provided by Cancer Care Ontario
http://www.cancerview.ca/portal/server.pt/community/general/429/prevention_search_results_page
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Linking Canadians to cancer services, information & resources
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CANADIAN PARTNERSHIP AGAINST CANCER
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Pesticide (L'utilisation des pesticides) bylaw
This bylaw prohibits applying pesticides outside and inside buildings and to adjacent areas near playgrounds and day care centres. More Details...
Halifax Regional Municipality Pesticide By-law
This bylaw prohibits the application and use of pesticides for maintenance of outdoor trees, shrubs, flowers, other ornamental plants and turf on part of a property used for residential purposes or on... More Details...
Regulatory Proposal: Harmonization of Guidance for Terrestrial Field Studies of Pesticide
Under the North American Free Trade Agreement (NAFTA), the United States Environmental Protection Agency (EPA) and the Canadia n Pest Management Regulatory Agency (PMRA) have agreed to harmonize their ... More Details...
Revocation of 0.1 ppm as a General Maximum Residue Limit for Food Pesticide Residues [Regulation
In January 2003, Health Canada's Pest Management Regulatory Agency (PMRA) proposed in a discussion document (DIS2003-01) a regulatory change that would revoke 0.1 parts per million (ppm) as a General ... More Details...
Assigning Values to Nondetected/Nonquantified Pesticide Residues in Food
This paper describes the Pest Management Regulatory Agency's policy for assigning values for use in human health exposure and ri sk assessment to nondetected/nonquantified pesticide residues in food. I... More Details...
Assessing Exposure from Pesticides in Food: A User's Guide (Science Policy Notice SPN2003-03)
This document describes the processes used by PMRA scientists, in dietary risk assessments (DRA), to quantify the level of food res idue exposures to consumers of all ages. The PMRA has utilized, to th... More Details...
Regulatory Proposal: Consultation Document on Use of Uncertainty and Safety Factors in the Human
This document describes how Health Canada's Pest Management Regulatory Agency (PMRA) addresses uncertainty and variability i n the mammalian toxicity database in the human health risk assessment of pes... More Details...
Regulatory Directive: The PMRA Initiative for Reduced-Risk Pesticides (DIR2002-02, May 31, 2002)
The purpose of this regulatory directive is to inform applicants, provinces and territories, user groups, and other interested parties that the North American Free Trade Agreement (NAFTA) Joint Review... More Details...
Pesticide Issues in Saskatchewan - A Primer
This primer outlines the state of pesticide regulation in Canada by providing examples of pesticide use in Saskatchewan and the legi slation, or lack thereof, in place to control the use of carcinogeni... More Details...
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**CITY OF MONTRÉAL**
**BY-LAW**
**04-041**

## BY-LAW CONCERNING PESTICIDE USE

In view of section 410 of the Cities and Towns Act (R.S.Q., chapter C-19);

In view of section 136.1 of the Charter of the City of Montréal (R.S.Q., chapter C-11.4);

At the city council meeting of April 26, 2004, it was enacted:

### SECTION I
APPLICATION AND INTERPRETATION

1. This by-law applies to the entire city territory.

2. In this by-law, the following words mean:

"infestation": the presence of insects, mildew or other toxic agents, except noxious weeds, on more than 50% of a lawn area or on more than 5 $m^2$ of a plant bed area. There is also infestation where the presence of noxious weeds, insects, mildew or other toxic agents, whatever their extent, constitutes a safety hazard, a health hazard, a tree or shrub hazard, or an animal health hazard;

ww.hc-sc.gc.ca/cps-spc/pubs/pest/_pol-guide/dir2002-02/index-eng.php
s Tools Help
rective: The PMRA Initiative for Reduce...
Google



Current Subject
Consumer Product Safety
Reports & Publications
Pesticides and Pest Management
Publications for Consumer Education
Reports & Publications for Industry & Professionals

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Proactive Disclosure

Consumer Product Safety

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# Regulatory Directive: The PMRA Initiative for Reduced-Risk Pesticides

31 May 2002
ISBN: 0-662-32233-9
Cat. No.: H113-3/2002-2E-IN
(DIR2002-02)

Help on accessing alternative formats, such as Portable Document Format (PDF), Microsoft Word and PowerPoint (PPT) files, can be obtained in the alternate format help section.

(PDF Version - 261 K)

The purpose of this regulatory directive is to inform applicants, provinces and territories, user groups, and other interested parties that the North American Free Trade Agreement (NAFTA) Joint Review Programs for Reduced-Risk Pesticides will be extended by the Pest Management Regulatory Agency (PMRA) to include submissions made to the PMRA only. The program is designed to encourage pesticide manufacturers to apply for Canadian registration of reduced-risk products that are currently available in the United States (U.S.) Canada will use the same criteria as the U.S. Environmental Protection Agency (EPA) to determine eligibility of chemicals for the reduced-risk program and recognize the U.S. EPA's biopesticide designation, thus further harmonizing the approaches between the two countries. Through this program, the PMRA will also commit to shorter review

CanLII - Pesticides Control Regulations, 2003, N.L.R. 57/03 - Windows Internet Explorer provided by Cancer Care Ontario
http://www.canlii.org/en/nl/laws/regu/nlr-57-03/latest/nlr-57-03.html
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Home > Newfoundland and Labrador > Statutes and Regulations > N.L.R. 57/03
Canadian Legal Information Institute
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# Pesticides Control Regulations, 2003, N.L.R. 57/03

Versions | Noteup | Enabling statute

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- ☐ 3. between Jan 4, 2010 and Mar 1, 2011 (current)
- ☐ 2. between May 16, 2007 and Dec 11, 2009 (past)
- ☐ 1. between Jun 9, 2004 and Apr 10, 2007 (past)

Current version: as posted between Jan 4, 2010 and Mar 1, 2011

Link to the latest version: http://www.canlii.org/en/nl/laws/regu/nlr-57-03/latest/

Stable link to this version: http://www.canlii.org/en/nl/laws/regu/nlr-57-03/77627/

Currency: Last updated from Statutes and Regulations Web site of the House of Assembly of Newfoundland and Labrador on 2011-03-01

**This is not the official version.**

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## NEWFOUNDLAND AND LABRADOR
## REGULATION 57/03

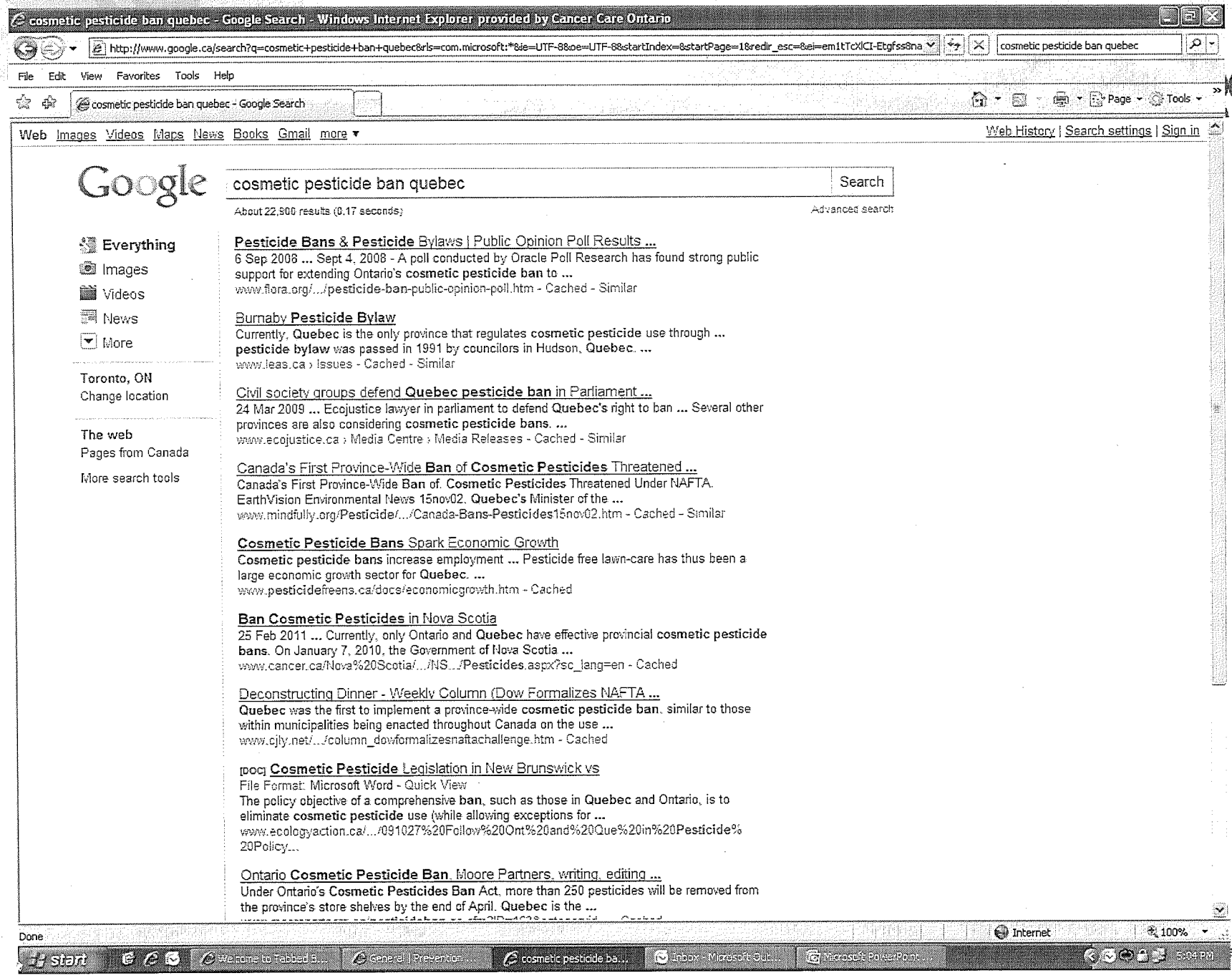
*Pesticides Control Regulations, 2003*
under the
*Environmental Protection Act*
(O.C. 2003-224)

Amended by:

49/07

## NEWFOUNDLAND AND LABRADOR
## REGULATION 57/03

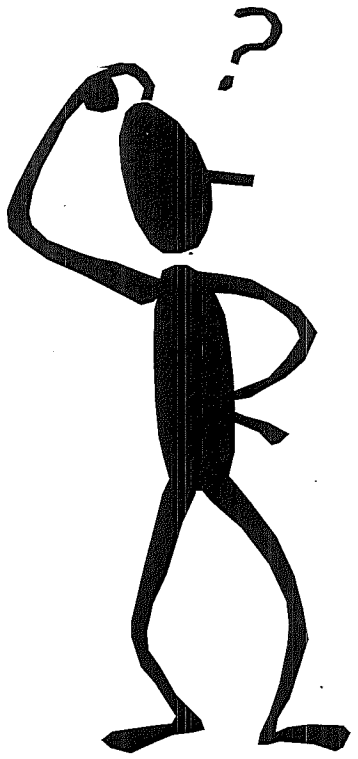
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About 22,900 results (0.17 seconds)
Advanced search
Everything
Images
Videos
News
More
Toronto, ON
Change location
The web
Pages from Canada
More search tools
Pesticide Bans & Pesticide Bylaws | Public Opinion Poll Results ...
6 Sep 2008 ... Sept 4, 2008 - A poll conducted by Oracle Poll Research has found strong public support for extending Ontario's cosmetic pesticide ban to ...
www.flora.org/.../pesticide-ban-public-opinion-poll.htm - Cached - Similar
Burnaby Pesticide Bylaw
Currently, Quebec is the only province that regulates cosmetic pesticide use through ... pesticide bylaw was passed in 1991 by councilors in Hudson, Quebec. ...
www.leas.ca › Issues - Cached - Similar
Civil society groups defend Quebec pesticide ban in Parliament ...
24 Mar 2009 ... Ecojustice lawyer in parliament to defend Quebec's right to ban ... Several other provinces are also considering cosmetic pesticide bans. ...
www.ecojustice.ca › Media Centre › Media Releases - Cached - Similar
Canada's First Province-Wide Ban of Cosmetic Pesticides Threatened ...
Canada's First Province-Wide Ban of Cosmetic Pesticides Threatened Under NAFTA. EarthVision Environmental News 15nov02. Quebec's Minister of the ...
www.mindfully.org/Pesticide/.../Canada-Bans-Pesticides15nov02.htm - Cached - Similar
Cosmetic Pesticide Bans Spark Economic Growth
Cosmetic pesticide bans increase employment ... Pesticide free lawn-care has thus been a large economic growth sector for Quebec. ...
www.pesticidefreens.ca/docs/economicgrowth.htm - Cached
Ban Cosmetic Pesticides in Nova Scotia
25 Feb 2011 ... Currently, only Ontario and Quebec have effective provincial cosmetic pesticide bans. On January 7, 2010, the Government of Nova Scotia ...
www.cancer.ca/Nova%20Scotia/.../NS.../Pesticides.aspx?sc_lang=en - Cached
Deconstructing Dinner - Weekly Column (Dow Formalizes NAFTA ...
Quebec was the first to implement a province-wide cosmetic pesticide ban, similar to those within municipalities being enacted throughout Canada on the use ...
www.cjly.net/.../column_dowformalizesnaftachallenge.htm - Cached
[pdf] Cosmetic Pesticide Legislation in New Brunswick vs
File Format: Microsoft Word - Quick View
The policy objective of a comprehensive ban, such as those in Quebec and Ontario, is to eliminate cosmetic pesticide use (while allowing exceptions for ...
www.ecologyaction.ca/.../091027%20Follow%20Ont%20and%20Que%20in%20Pesticide%20Policy...
Ontario Cosmetic Pesticide Ban, Moore Partners, writing, editing ...
Under Ontario's Cosmetic Pesticides Ban Act, more than 250 pesticides will be removed from the province's store shelves by the end of April. Quebec is the ...
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# Questions

Lisa.petermann@partnershipagainstcancer.ca
Program Manager, Primary Prevention
Canadian Partnership Against Cancer

www.cancerview.ca/preventionpolicies



Would you be willing to be consulted on how to improve the Directory with respect to environmental and occupational exposures in the future?

# Future Applications

## Features

- Mapping
- Search within a search
- Discussion Board

## Knowledge Exchange

- Webinar Series
- Semi-Annual Reports
- Canadian Obesity Network Workshop

CANADIAN PARTNERSHIP AGAINST CANCER / PARTENARIAT CANADIEN CONTRE LE CANCER

New Search

## Refine Your Current Results

### By Risk Factor:

**Environmental >>**
Smoking
Nutrition
UV and Ionizing Radiation
Other
Physical Activity
Alcohol Consumption
Hepatitis B
Hepatitis C

### By Type:

Regulation (97)
Guideline (86)
Statute (69)
Other (50)
Policy (24)
Bylaw (8)
Code (3)

### By Jurisdiction:

Provincial / Territorial (167)
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Municipal (14)

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Quebec (22)
Saskatchewan (19)
Newfoundland & Labrador (16)

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Results

**Greening the B.C. Building Code**
New Building Code that establishes requirements that increase energy and water efficiency. More Details...

**City of Toronto Sewer Use By-law (Chapter 681)**
This bylaw requires pollution prevention plans from industries with permits to discharge to City sewers (11 heavy metals and 27 organics, dental wastes) More Details...

**Occupational Health & Safety Code**
The code requires employers to ensure workers' exposures to listed substances are kept as low as reasonably achievable [Part 4, 1 6 (1)]. More Details...

**Air Quality Management Bylaws**
Air Quality Management Bylaws in Metro Vancouver include Bylaw No.: 1082, 1083, 1084, 1085, 1086, 1087, and 1088. They establish a permit system to regulate air emissions from major stationary indust... More Details...

**Guidance Document for Preparing a Submission for Food Health Claims**
This guidance document is to ensure that health claims for foods - a statement that implies a relationship between food or a component of food and health - are substantiated in a systematic, comprehen... More Details...

**Sewer Use Bylaw No. 299**
Sewer Use By-law No. 299 – 2007 includes Codes of Practice for dental operations, dry cleaners and photo processors. With Greener City Action Team, programs like this are being reviewed. More Details...

**Health Canada's Advisories, Warnings and Recalls by Subject**
This is a comprehensive list of Health Canada's advisories, warnings and recalls. Some categories with applicability to the prevention of cancer and chronic diseases include: food safety, lead and me... More Details...

**It's Your Health - Dioxins and Furans**
This backgrounder about the toxic substances dioxins and furans provides information about the health effects the chemicals cause, likely sources and levels of dietary exposures, how to minimize their... More Details...

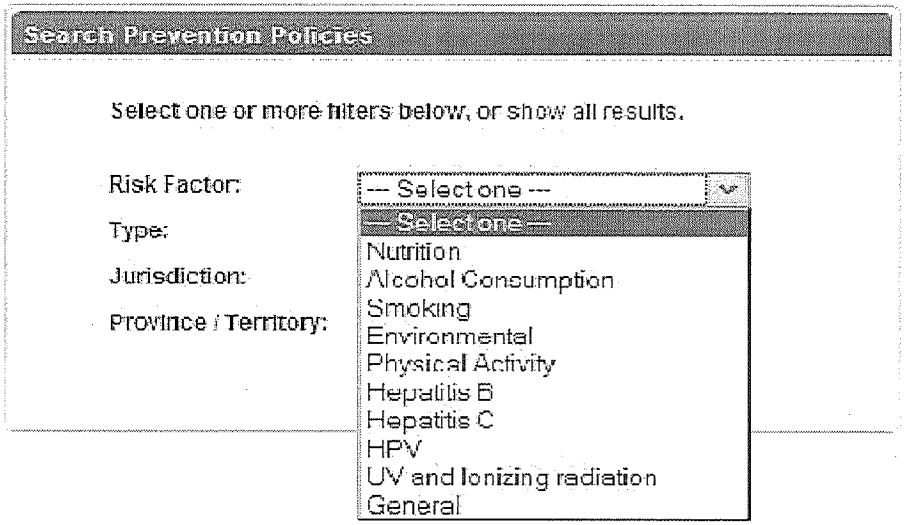
**City of Toronto Environmental Reporting and Disclosure By-law**
This bylaw requires businesses and City operations to report their use and release of 25 hazardous chemicals in Toronto's environment at levels of concern. More Details...

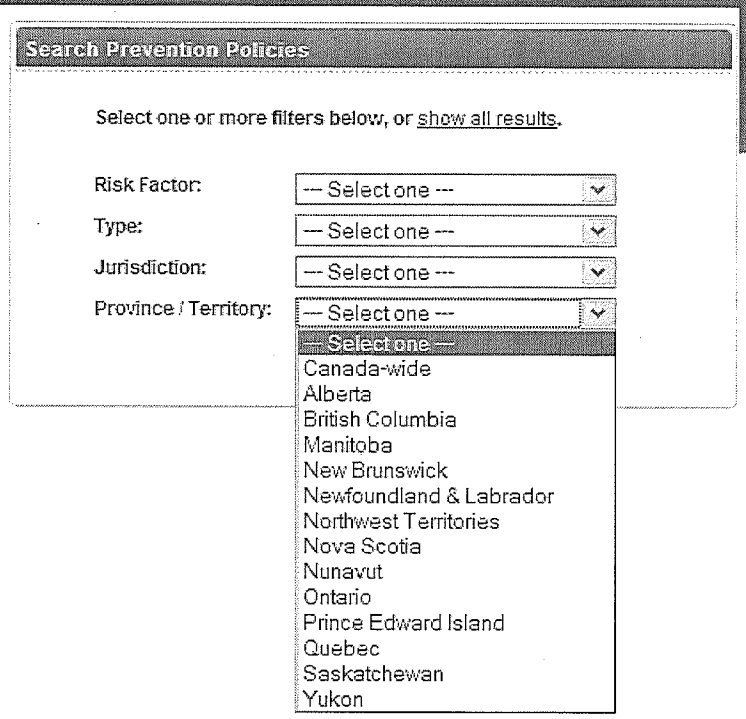
**N-Nitrosodimethylamine (NDMA) in Drinking Water - 2010 Health Canada Consultation Document**
The Federal-Provincial-Territorial Committee on Drinking Water (CDW) has assessed the available information on N-nitrosodimethylamine (NDMA) with the intent of establishing a drinking water guideline. ... More Details...

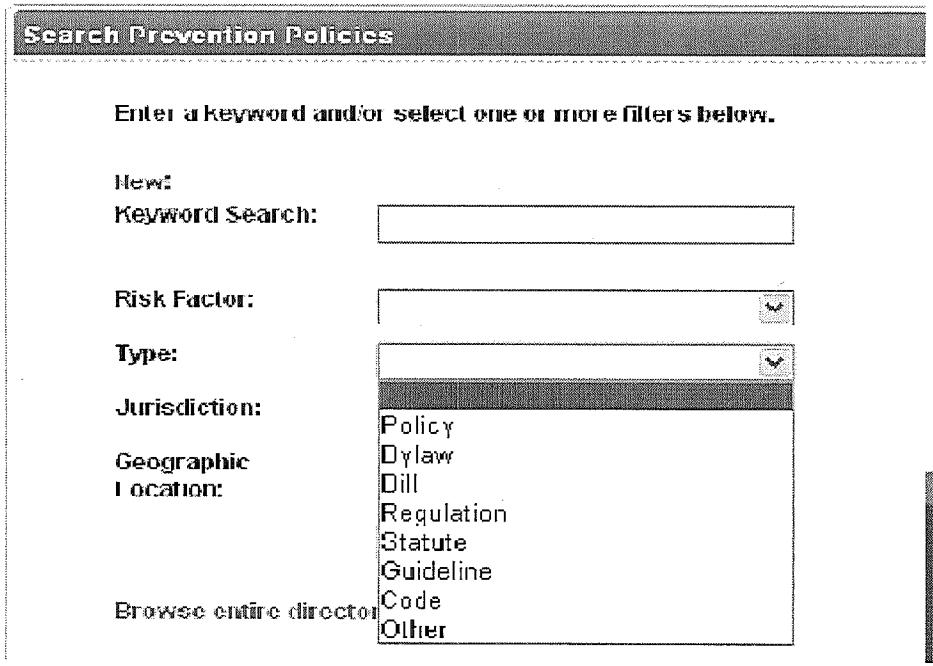
**Bronchogenic Carcinoma (Lung Cancer) in Asbestos-Exposed Workers**
Schedule B of the Workers Compensation Act ("Act") provides a presumption of work causation in favour of a worker who has developed primary site lung cancer1 where one or both of the following disease... More Details...

**Nitrilotriacetic Acid (NTA) [Technical document - Chemical/Physical Parameters]**
Nitrilotriacetic acid (NTA) is an important chelating agent with many industrial applications. NTA is used extensively in the treatment of boiler water to prevent accumulation of mineral scale. It is... More Details...

# Scope

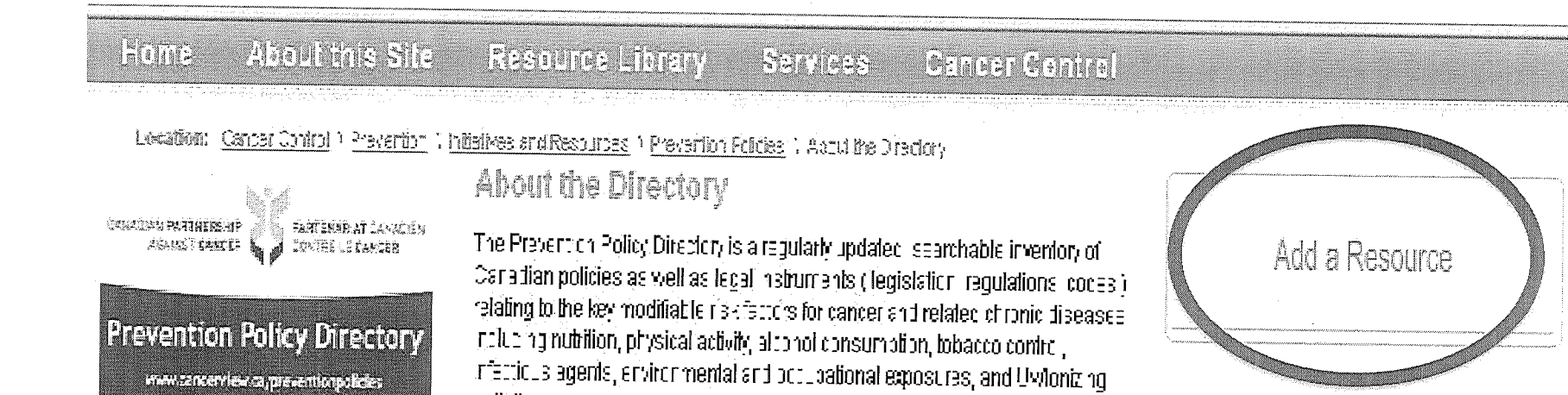



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PARTENARIAT CANADIEN CONTRE LE CANCER

# Interactive Web Interface

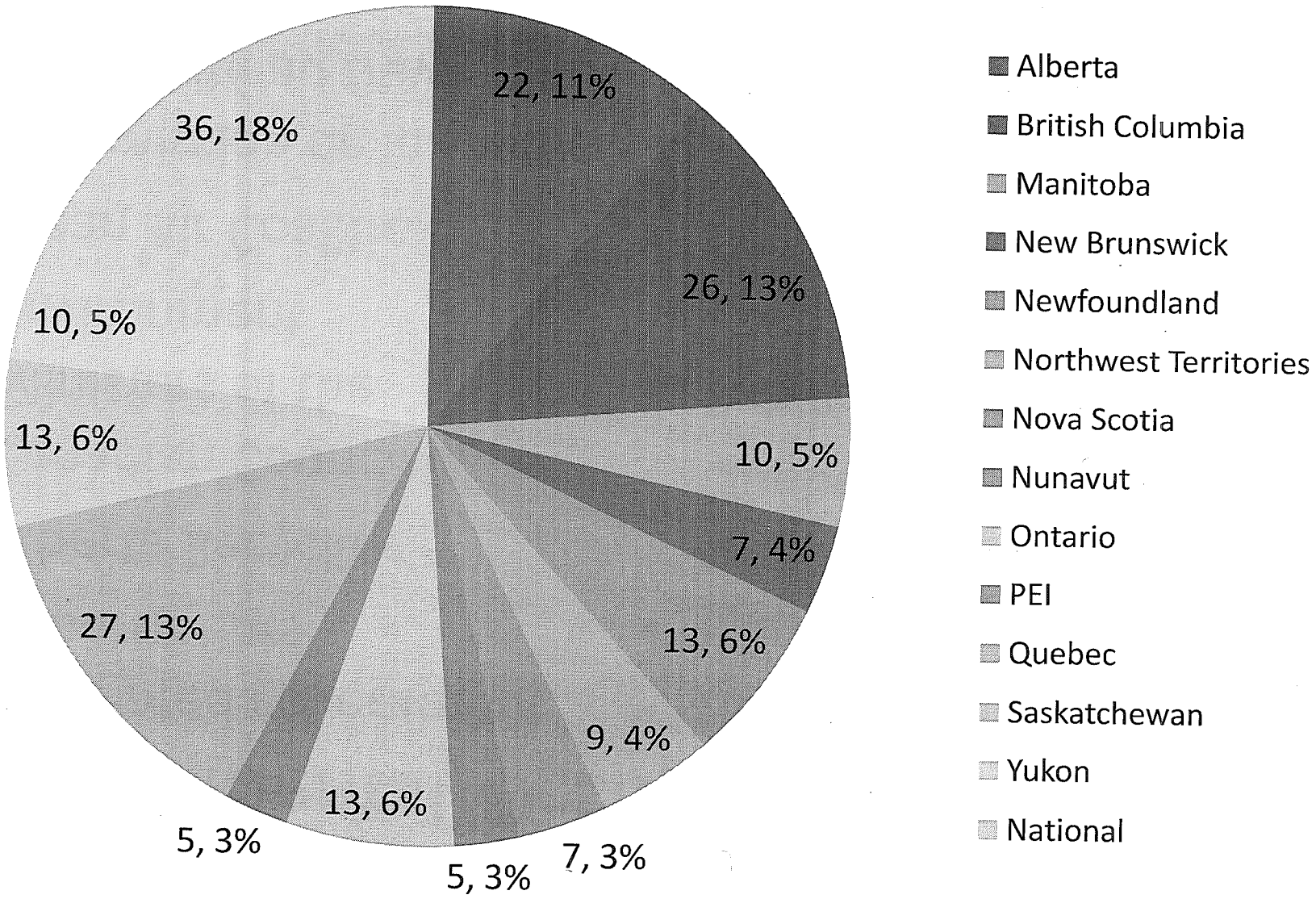



CANADIAN PARTNERSHIP AGAINST CANCER
PARTENARIAT CANADIEN CONTRE LE CANCER

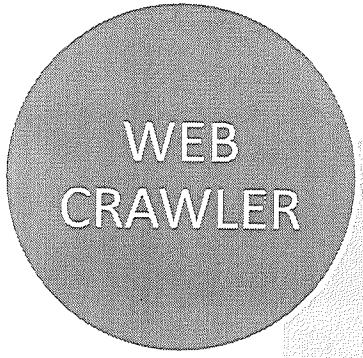
# Examples of Environmental/Occupational Websites

- All related government departments
- Alberta Recycling
- Canadian Council of Ministers of the Environment
- Clean Air Coalition
- Commission de la santé et sécurité au travil
- Energy resources conservation board
- Environment Canada
- Health Canada
- Institut national de santé publique du Québec
- Public Health Agency of Canada
- Recycle NB
- Workers' Safety and Compensation Commission
- Worksafe BC

# Geographic Distribution of Sites



# Version 2.0

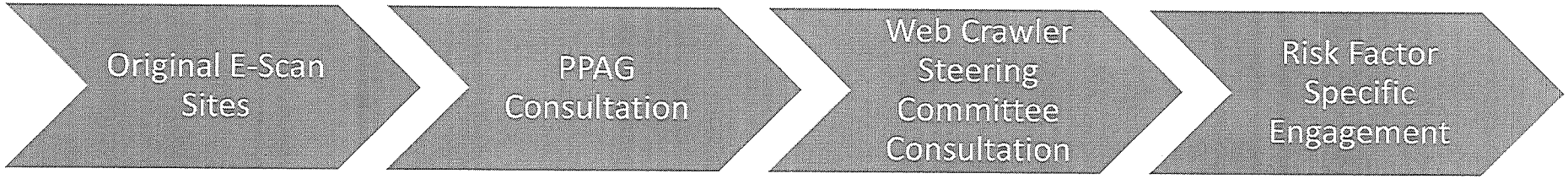



285 Websites

14,000+ unique entries

- WEB CRAWLER:
  - Robust and battle-tested: able to deal with all the standard and non-standard stuff out there on the web (sessions, cookies, buggy and crawler unfriendly websites, slow websites)

# Websites and Key words



# Prevention Policy Directory

CANADIAN PARTNERSHIP AGAINST CANCER | PARTENARIAT CANADIEN CONTRE LE CANCER

**Prevention Policy Directory**
www.canceview.ca/preventionpolicies

- Prevention Policies Directory
- About the Directory
- Webinars
- Definitions
- Directory Partners

## In the Spotlight

CLASP
Coalitions Linking Action and Science for Prevention – CLASP
Multi year plan targets preventable cancer and chronic diseases

CAPTURE

## Prevention Policies Directory

The Canadian Partnership Against Cancer is an independent organization funded by the federal government to accelerate action on cancer prevention and control for all Canadians. The goal of the Prevention Policy Directory is to provide a comprehensive, regularly updated resource to facilitate the development of healthy public policy in Canada. More...

**This Directory is updated regularly with new entries.**

## Search Prevention Policies

**Enter a keyword and/or select one or more filters below.**

New!
**Keyword Search:**

**Risk Factor:**

**Type:**

**Jurisdiction:**

**Geographic Location:**

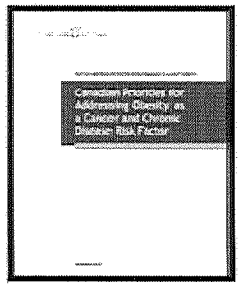
Search

Browse entire directory.

This site is hosted by
CANADIAN PARTNERSHIP AGAINST CANCER | PARTENARIAT CANADIEN CONTRE LE CANCER

Prevention Policies Directory Feedback

Canadian Priorities for Addressing Obesity as a Cancer and Chronic Disease Risk Factor



# Prevention Policy Directory

Objectives:

- to increase awareness of healthy public policies targeting modifiable risk factors
- to build capacity for policy research in Canada
- to be responsive to issues as they arise

# History

CANADIAN PARTNERSHIP AGAINST CANCER / PARTENARIAT CANADIEN CONTRE LE CANCER

Primary Prevention Action Group

## Environmental Scan of Policy and Legislation as it relates to Skin Cancer Prevention

## *An Environmental Scan of Toxic Use Reduction Activities in Canada*

A report commissioned by the
National Committee on Environmental and Occupational Exposures
Primary Prevention Action Group
Canadian Partnership Against Cancer

Prepared by: Dorothy Wigmore

June 14, 2010

The views expressed herein represent the views of the research and writing team and as such, do not necessarily represent the views of the Partnership.

Primary Prevention Action Group

## Environmental Scan of Primary Prevention Activities in Canada: Part 1 - Policies and Legislation

PARTENARIAT CANADIEN
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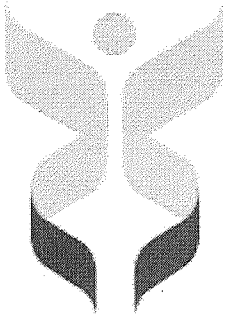
## Environmental Scan of Cancer Prevention Policy and Legislation as it relates to Food, Physical Activity, Alcohol and Public Education in Canada

IF you answered yes to the previous question –

Have you ever used the directory?

Before receiving information about this webinar were you aware of the prevention policies directory?

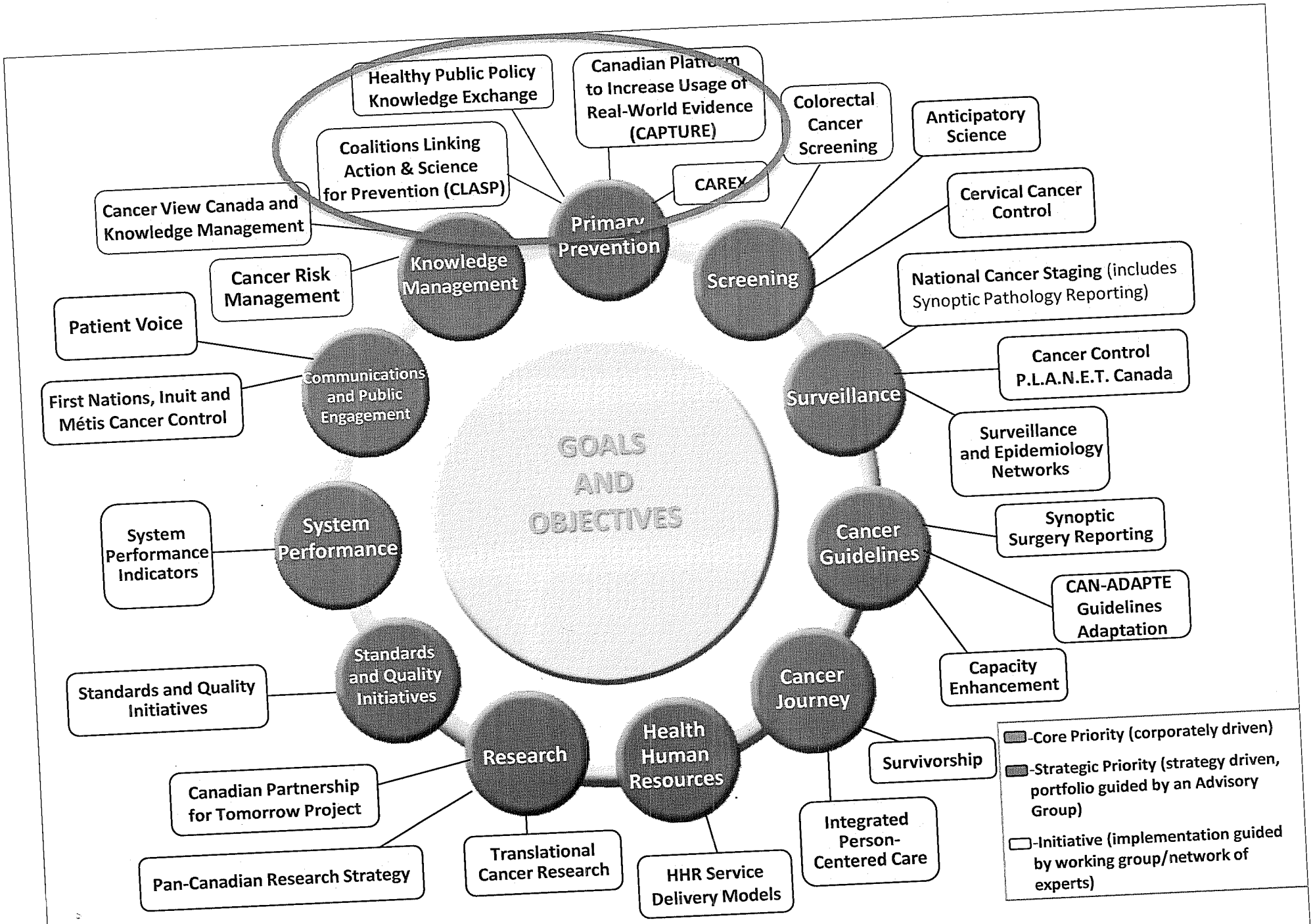
CANADIAN **PARTNERSHIP** AGAINST **CANCER**



**PARTENARIAT** CANADIEN CONTRE LE **CANCER**

# Prevention Policy Directory

**www.cancerview.ca/preventionpolicies**




Map of Partnership Priorities, Key Initiatives and Advisory Mechanisms

# Canadian Partnership Against Cancer Goals

**Reduce** the expected number of cancer cases

Enhance the **quality** of life for those affected by cancer

**Lessen** the likelihood of Canadians dying from cancer

***Unique role & Value-add*** *to support system-wide cancer control goals*

Increase the effectiveness and efficiency of the cancer control domain



CANADIAN PARTNERSHIP AGAINST CANCER
PARTENARIAT CANADIEN CONTRE LE CANCER

# Canadian Partnership Against Cancer – Who We Are?

The Canadian Partnership Against Cancer is an independent organization funded by the federal government to accelerate action on cancer control for all Canadians.

CANADIAN PARTNERSHIP AGAINST CANCER
PARTENARIAT CANADIEN CONTRE LE CANCER

# Agenda

| Time | Item/Speaker |
|---|---|
| 1:00-1:10pm | **Welcome/Introductions/Logistics**<br>Nicholas Watters, Senior Advisor Communications and Knowledge Transfer Chronic Disease Prevention Alliance of Canada<br>Deb Keen, Director Primary Prevention Canadian Partnership Against Cancer |
| 1:10-1:20pm | **Prevention Policy Directory: An Overview**<br>Lisa Petermann, Program Manager Primary Prevention Canadian Partnership Against Cancer |
| 1:20-1:40pm | **Choosing Policy Options to Improve Environmental and Occupational Health**<br>Alec Farquhar, Managing Director Occupational Health Clinics for Ontario Workers |
| 1:40-2:00pm | **Exploring the Directory: Applied Examples**<br>Paul Demers, Director Occupational Cancer Research Centre in Toronto, Scientific Director CAREX Canada |
| 2:00-2:25pm | **Discussion** |
| 2:25-2:30pm | **Closing Remarks**<br>Deb Keen, Director Primary Prevention Canadian Partnership Against Cancer |

# Objectives of Today's Webinar

- To increase awareness of the Prevention Policy Directory and its potential uses in research, practice and policy settings
- To engage the environmental and occupational exposures community around improving the applicability of the Directory

CANADIAN PARTNERSHIP AGAINST CANCER | PARTENARIAT CANADIEN CONTRE LE CANCER

Prevention Policy Directory
www.cancerview.ca/preventionpolicies

CDPAC
APMCC

# WebCrawler Webinar Series Webinar 1:
# Environmental and Occupational Exposures

**Thursday March 3rd, 1-2:30pm ET**

**Logistical Support:**
Nicholas Watters, Senior Advisor Communications and Knowledge Transfer
Chronic Disease Prevention Alliance of Canada

**Facilitator:**
Deb Keen, Director Primary Prevention
Canadian Partnership Against Cancer

**Presenters:**
Lisa Petermann, Program Manager Primary Prevention
Canadian Partnership Against Cancer

Alec Farquhar, Managing Director
Occupational Health Clinics for Ontario Workers

Paul Demers, Director Occupational Cancer Research Centre in Toronto,
Scientific Director CAREX Canada

## Preventing Avoidable Cancers in Canada

CELA has been a member of the National Committee on Environmental and Occupational Exposures of the Canadian Partnership against Cancer for several years. The mandate of this committee is to research and reduce exposures to carcinogens. We hope that several important projects resulting from this committee's work will quickly gather attention across the country.

The first is an accredited **e-course** for doctors and other primary care providers to learn how to recognize and respond to occupational and environmental cancers. This course can be found on the Canadian Centre for Occupational Health and Safety's website focuses on practical skills in taking exposure histories and uses case studies as examples. http://www.ccohs.ca/products/courses/prevent_cancer/.

CAREX Canada extends the work of the global CAREX network tracking occupational and environmental exposures. Paul Demers and his team at the University of British Columbia with grants from NCEOE are developing estimates of the number of Canadians exposed to carcinogens in workplace and community environments. These estimates will provide significant support for targeting exposure reduction strategies and cancer prevention programs. By bringing together data from across Canada on sources and levels of exposure, they have begun to identify regional differences and vulnerable populations. CAREX Canada will create a significant new resource for policy makers and researchers to prevent cancer. http://www.carexcanada.ca/.

## PPAG Outcomes in the context of CPACC Goals and Objectives

| Major Theme/Area of Focus | Project | Specific Components | Outcomes/Results to be achieved |
|---|---|---|---|
| **KNOWLEDGE TRANSFER AND EXCHANGE** | | | |
| **Communities of Practice** | An Overview | • The creation of COP will<br>○ create network(s) through which information from the PPAG/CPACC – data, best practices, tools, case studies etc can be disseminated to those most actively involved in, or responsible for, various elements of primary prevention<br>○ afford opportunities for collaboration; leveraging of existing infrastructure to support needs identified by participants/stakeholders; facilitate the development of, or enhance the scope of, projects with applications on a national scale e.g. Ontario UV Network<br>• Members of COP develop<br>○ a common body of knowledge, a common set of practices and a common set of values | • |
| | Establishment of National (integrative) COP | • National (integrative) COP<br>○ Research and consultation re appropriate model in 07/08<br>○ Launch planned for 08/09 at CDPAC-led national conference | • |
| | Establishment of COP for Skin Cancer Prevention | • COP NSCPC<br>○ Founding meeting occurs at May 08 National Skin Cancer Prevention Consultation<br>○ Presentation of model(s) researched by | |

| | | | |
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| | Establishment of COP for Cancer Prevention Professionals | CDPAC as part of integrative project<br>o Following Consultation, amendments to model to reflect needs of NSCPC (and/or potential adjustments to integrative model to harmonize as appropriate)<br><br>• COP Cancer Prevention Prof (CAPP)<br>o Initial meeting of group in March 08<br>o 08/09 present proposed COP model to CAPP and determine how to harmonize as well as how to address unique elements<br><br>• In 08/09 PPAG will engage a contractor to move the COP forward; emphasis will be placed on coordination while facilitating development of unique features and activities identified by individual COP (establish small work group to support) | |
| | | | |
| | Supporting members of COP | • Providing COP with the information and tools they need to promote prevention initiatives/healthy living is a key objective; work in 08/09 includes<br>o a scan of current cancer prevention legislation followed by analysis and development of report and/or production of case studies for use by members of the COP;<br>o mechanisms for providing policy advice will also be explored e.g. success stories, case studies<br>o identification and profiling of strategies to implement healthy public policy re sun safety<br>o development of report on the cost of skin | • |

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| | | cancer | |
| | Development of Primary Prevention Community Capacity and Partnerships (integrative) *and* with an emphasis on occupational and environmental exposures | • The objective of these projects is to establish a granting process to invest in building community capacity for knowledge exchange in cancer prevention.<br>• Maintaining COP will require interaction and partnership building within and among the membership along with provision of the supports (tools, resources, information) identified by them; this may involve:<br>o funding to operate a demonstration project and subsequent development of case study for broad dissemination<br>o funds to facilitate collaboration on specific initiatives,<br>o funding to implement, analyze, test promising practices by stakeholder group(s),<br>o funding to develop resources, tools to meet needs identified by members/stakeholders<br>o funding to support development of evaluation frameworks as well as formal project evaluations to promote evidence-based decision making | • Development of national network pof expertise in prevention strategies concerning occupational and environmental risk factors.<br><br>Knowledge transfer and exchange across communities of practice<br><br>National and Regional Policy recommendations pursuant to collaboration on successful demonstration projects focussing on areas identified as best practice initiatives , such as toxic use reduction strategies, municipal and provincial.<br><br>Development of resources for industry, labour and the community to enhance risk reduction strategies , such as substitution analysis, and KTE. |
| | | | |
| **Communications/ Public Education** | An Overview | • PPAG identified Communications/Education as one of its Key Results Areas: *Identify, create (if necessary) and promote key messages that encourage prevention through healthy living, such information to be delivered through partners and strategic allies, in order to connect with stakeholders and the public at a local, provincial, national and international level*<br>• CPACC identified Communications as one of four Core Frameworks in order to *ensure public access to information and enhance CPACC's* | • |

| | | | |
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| | | *relevance through engagement with Canadians and stakeholders* | |
| | Public Awareness Building | • Review of messages currently being used by major cancer control agencies; analysis to clarify commonalities, differences; and consensus building around a set of common key messages to the public<br>• Public Opinion survey re Canadians knowledge, attitudes and behaviours related to primary prevention of cancer<br>• Design of public messaging and appropriate delivery mechanisms in concert with CPACC-led development of a corporate communications strategy<br>• Finalization of key messages for skin cancer prevention following input received from stakeholders at national consultation in May 08<br>• PPAG-let contract to communications/marketing professionals to "translate" the messages for vulnerable target audiences e.g. skin cancer prevention for teens re sun safety and artificial tanning (linkages to CPACC-led communications strategy) | • |
| | Knowledge Translation Plan for Primary Care Providers | • Detailed knowledge translation plan for primary health care practitioners developed in 07/08 will be finalized and approved<br>• Specific implementation strategies will be identified, prioritized and implementation will commence | • |
| | Status Report on Cancer Prevention | • High level indicators addressed in 07/08 (smoking rates, vegetable and fruit consumption, physical activity, obesity, alcohol consumption & breast feeding<br>• 08/09 work will focus on consultation with key stakeholders e.g. provincial governments and assess potential to report on additional indicators | • |

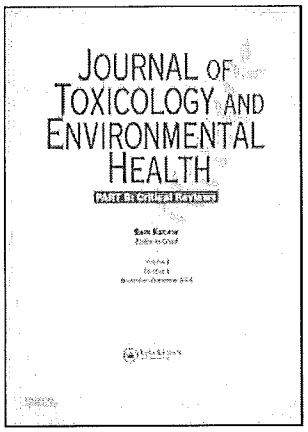
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| | | and the development of a framework | |
| | | | |
| **RISK FACTORS FOR CANCER** | An Overview | • CPACC: Cancer shares common risk factors with many chronic diseases including tobacco use, obesity, unhealthy diet, etc; some prevention areas e.g. obesity have less well developed population strategies<br>• PPAG Strategic Plan "…Behaviours such as smoking, poor diet, inactivity, and obesity have the greatest bearing – not only on cancer – but on a number of other 'chronic' diseases. Other risk factors are cancer-specific, including sun/UV exposure and occupational and environmental exposure to carcinogens. The recent development of a vaccine to prevent HPV (and by extension cervical cancer) opens up further opportunities for prevention." | • |
| Risk Factors for Skin Cancer | Develop Key Skin Cancer Messages | • Finalization of common set of key skin cancer prevention messages<br>• Messages are directly linked to risk factors e.g. exposure of unprotected skin during periods of high UV values see Communications/Public Education in Knowledge Transfer and Exchange Work Plan | • |
| | Sun Safety Risk Factor Analysis and Translation | • Further analysis of NSS2 data<br>• Further analysis of Vitamin D (includes potential linkages to other Vitamin D related work – Vitamin D & breast cancer and Nutrition project) | • |
| Common Risk Factors for Chronic Diseases including cancer | Planning for Integrated Chronic Disease Management | • Working with CDPAC in the development of a chronic disease prevention "cube" to support the management of initiatives across the country<br>• Key purpose is to take two current prevention sources: an inventory of 500 interventions across the country collected by CPHI and the criteria established by the best practices portal and | • |

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| | | create an inventory demonstrating which interventions meet the best practices criteria<br>• Includes mapping all of the prevention programs and funding sources across the country (identifying duplication)<br>• Addresses risk factors common to a number of disease conditions – diabetes, heart disease, some cancers – **obesity, inactivity, tobacco use, unhealthy eating** | |
| | National Nutrition Mobilization | • Moving forward on a nutrition focus is a priority for PPAG/CPACC; teleconference planned to flesh out approach, 08/09 work plan, etc<br>• **Obesity** is the targeted risk factor<br>• In 08/09 PPAG plans to engage a contractor to provide innovative options for promoting healthy eating including a survey of existing practices e.g. school nutrition policies as well as successful strategies for engaging the many players: parents, children/teens, fast food industry and gaining "buy in"/behaviour change | |
| | National Infectious Agents Mobilization | • Establishment of expert group including reps from Health Canada and PHAC to undertake planning and development work in this area<br>• First step: bring together appropriate individuals to consider and develop pan-Canadian recommendations to integrate existing prevention strategies of screening and early detection for cervical cancer with those new strategies from primary prevention utilizing HPV vaccines (April 08 tentative) | • |
| | National Infectious Agents Symposia | • Focus on knowledge transfer and development of reporting mechanisms for multiple target audiences e.g. policy makers, primary care physicians focusing on prevention and the public<br>• First step: establish a small working group to seek common areas where appropriate and | • |

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| | | independent strategies for others in research, practice and potentially policy within the broad subjects of Hepatitis B, Helicobacter Pylori, HPV and other related infectious agents that have been directly linked to causation<br>• It is anticipated this one-day meeting will better inform proposed broader based symposia later I 08/09 | |
| Attributable Risk | | • Phase 1 identifying the strengths and weaknesses of various attributable risk models;<br>• Report to be developed in 08/09 | • |
| | | | |
| **CANCER-SPECIFIC ENVIRONMENTAL EXPOSURE** | An Overview | • CPACC area of focus: *Unique to cancer are carcinogens in environment that are not modifiable by lifestyle choices; the exposures to many of these are not understood in Canada*<br>• Recognizing the growing public interest, PPAG/NCEOE oversaw the development of a report entitled"*Prevention of Occupational and Environmental Cancers in Canada: a Best practices Review*". Based on this review a number of recommendations were made; these have helped shape PPAG priorities and informed its Strategic Plan | • Overall outcome and objective is to increase awareness and action in primary prevention amongst all stakeholders and to demonstrate that CPAC through its PPAG and NCEOE is providing support for creative national initiatives in this area of increasing public concern<br>This report exceeded its objectives. That is, it has already been cited by a number of stakeholders as an important impetus to their own actions in this area. |
| | CAREX Unit | • ongoing | • Development of a national database and resource to track and document exposures to identified priority carcinogens in both occupational and community environments. The production of educational materials based on data analysis and the exchange of this information through COP |
| | Collection of | • 0n-line educational module for health care | • Increased awareness amongst primary |

| | | | |
|---|---|---|---|
| | Occupational Histories | professionals; ongoing in 08/09<br>• Occupational cancer-related disease registry review | care practitioners. Improved communication with compensation boards and tumour registries regarding occupational exposures.<br>• Proposed registry review will establish a framework for a more detailed proposal concerning the development of a national asbestos disease registry, as recommended by WHO |
| | Right to Know Labelling | • 07/08 Best practices review of Canadian and international regulatory and voluntary right-to-know labelling programs<br>• 08/09 NGO workshop and consultation | • Development of best practices based recommendation for labelling strategies in Canada. Review of legislative and voluntary options and their potential impacts on public attitudes and ability to adopt risk reduction behaviours at the consumer level |
| | Occupational and Environmental Exposure National Symposia | • Biannual symposia are planned to report on key findings re E & O exposures<br>• Support planned for two national symposia: one addressing pesticides with CCS and (the other addressing asbestos with CAPE) | • KTE<br><br>Update of best practice, activity and knowledge concerning pesticide use and primary prevention of exposure.<br><br>Development of policy recommendations for government<br><br>-- Discussion of Asbestos registry review and working meeting of international experts in the development use and possible structure of a Canadian national registry ( 2009?) |
| | | | |

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# Pesticides and Childhood Cancer: An Update of Zahm and Ward's 1998 Review

Claire Infante-Rivard [a]; Scott Weichenthal [a]
[a] Department of Epidemiology, Biostatistics, and Occupational Health, Faculty of Medicine, McGill University, Montréal, Québec, Canada

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DOI: 10.1080/10937400601034589

Taylor & Francis

# PESTICIDES AND CHILDHOOD CANCER: AN UPDATE OF ZAHM AND WARD'S 1998 REVIEW

**Claire Infante-Rivard, Scott Weichenthal**

Department of Epidemiology, Biostatistics, and Occupational Health, Faculty of Medicine, McGill University, Montréal, Québec, Canada

**Children are exposed to pesticides through a number of sources, including residential and agricultural applications. Parental occupational exposure to pesticides is also a concern because exposures occurring during pregnancy and carry-home residues also contribute to children's cumulative burden. A number of epidemiological studies consistently reported increased risks between pesticide exposures and childhood leukemia, brain cancer, neuroblastoma, non-Hodgkin's lymphoma, Wilms' tumor, and Ewing's sarcoma. An extensive review of these studies was published in 1998 (Zahm & Ward, 1998). Fifteen case-control studies, 4 cohort studies, and 2 ecological studies have been published since this review, and 15 of these 21 studies reported statistically significant increased risks between either childhood pesticide exposure or parental occupational exposure and childhood cancer. Therefore, one can confidently state that there is at least some association between pesticide exposure and childhood cancer. However, an unambiguous mechanistic cause-and-effect relationship between pesticide exposure and childhood cancer was not demonstrated in these studies, and modifying factors such as genetic predisposition, rarely considered in the reviewed studies, likely play an important role. While the time window of exposure may be a crucial determinant for biological effects associated with pesticide exposure on children, studies have not contributed definitive information on the most vulnerable period. Accurate exposure assessment remains a challenge; future epidemiological studies need to assess gene–environment interactions and use improved exposure measures, including separate parental interviews, specific pesticide exposure questions, and semiquantitative exposure measures that can be used to confirm information obtained through questionnaires.**

Pesticides are biologically active molecules that are commonly used to destroy unwanted organisms in agricultural and residential environments. However, the widespread use of these chemicals has raised concerns regarding their impact on children's health, and a potential relationship between pesticide exposures and various childhood cancers seems most troubling.

Although specific biochemical mechanisms relating pesticide exposures to childhood cancer have yet to be established, some evidence suggests that pesticides may promote the formation of chromosomal aberrations known to be associated with an increased cancer risk by upsetting the balance of free radical production in the body (Abdollahi et al., 2004; Granot & Kohen, 2004). Indeed, several studies indicate that common classes of herbicides and insecticides induce oxidative stress, and pesticide exposures have been associated with genotoxic effects in both occupational (Garaj-Vrhovac & Zeljezic, 2000) and residential (Lieberman et al., 1998) environments. A study used Comet assays to evaluate DNA damage in workers occupationally exposed to pesticides and found that lymphocyte DNA from exposed workers displayed more damage than that of unexposed workers (Garaj-Vrhovac & Zeljezic, 2000). In addition, 6 mo after being removed from the exposure zone, lymphocyte DNA from formerly exposed workers continued to display a higher amount of damage than that of control workers (Garaj-Vrhovac & Zeljezic, 2000). Another study observed chromosome breaks and chromosome translocations in men and women reporting domestic exposure to organophosphate pesticides (Lieberman et al., 1998). Findings from the latter study are important because they illustrate the potential for pesticides to produce biological effects even at levels commonly used in the residential environment. Unfortunately, however, few genotoxicity studies focused specifically on the effects of childhood pesticide exposures, and, as a result, little is known about the effects pesticide exposures exert on children's DNA. Nevertheless, studies

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in adult populations do suggest that pesticide exposures may have a direct effect on chromosome structure, and therefore a causal relationship between pesticide exposures and childhood cancer is plausible.

Increasing public concerns regarding the chronic effects of everyday environmental exposures have highlighted the need for a clearer stand on the causal relationship between pesticide exposures and childhood cancers. However, the scientific community has yet to arrive at a definitive conclusion regarding this relationship. Nevertheless, a growing amount of epidemiological evidence is currently building the foundation upon which such decisions will eventually be made. Specifically, recent epidemiological studies indicate that both direct childhood pesticide exposures and parental occupational pesticide exposures may contribute to the development of childhood cancers. Similarly, although nonspecific pesticide exposure information often limits the scope of our knowledge, various trends in the results are increasingly apparent. The goal of this review was to update results from epidemiological studies that were published after a review carried out by Zahm and Ward (1998); it addresses the relation between pesticide exposure and specific types of childhood cancers, and discusses the causal nature of this relation.

## MATERIALS AND METHODS

In 1998 Zahm and Ward published a comprehensive literature review on the then current state of knowledge regarding pesticide exposure and childhood cancer (Zahm & Ward, 1998). Since then, several additional epidemiological studies have been conducted to examine the relationship between pesticide exposures and childhood cancers. Studies are included in this review if they were published in English between 1999 and 2004 and assessed the risks between childhood cancer and pesticide exposures occurring either through residential use or parental occupation. The articles were identified by systematically searching the Medline/PubMed database, and using the following keywords or combinations of these words: childhood cancer (leukemia, brain cancer, neuroblastoma, non-Hodgkin's lymphoma, Wilms' tumor, or Ewing''s sarcoma), insecticide exposure, herbicide exposure, environmental risk factors for childhood cancer, residential pesticide exposure, occupational pesticide exposures, agricultural pesticide exposures, parental pesticide exposures, paternal pesticide exposures, maternal pesticide exposures, preconceptional maternal/paternal pesticide exposures, and prenatal pesticide exposures. Additional references were also identified from the reference list of Zahm and Ward (1998). What follows is a brief summary of the findings of Zahm and Ward (1998) and a summary of more recent studies that examined the relationship between pesticide exposure and childhood cancer.

## RESULTS

### Leukemia

**Zahm and Ward review** Seventeen case-control studies and one retrospective cohort study were reviewed (Zahm & Ward, 1998). In total, 13 studies reported increased risks of childhood leukemia (Buckley et al., 1989; Gardner et al., 1990; Hemminki et al.,1981; Infante-Rivard et al., 1991; Kristensen et al., 1995, 1996; Leiss & Savitz, 1995; Lowengart et al., 1987; Magnani et al., 1990; Meinert et al., 1996; Mulder el al., 1994; Roman et al., 1993; Schwartzbaum et al., 1991; Shu et al., 1988), but only 6 showed statistically significant results (Buckley et al., 1989; Leiss & Savitz, 1995; Lowengart et al., 1987; Magnani et al., 1990; Meinert et al., 1996; Shu et al.,1988). Of note, 11 of the 17 case-control studies reviewed reported risk estimates for all leukemia types together, and not for the specific histological type of leukemia (such as acute lymphocytic leukemia [ALL], acute nonlymphocytic leukemia [ANLL]/acute myelogenous leukemia [AML], or chronic myelogenous leukemia [CML]). In the studies reviewed (Zahm & Ward, 1998), a clear pattern of risk regarding the timing of pesticide exposure, the leukemia type that is more at risk, or the exposure of which parent was more determinant could not be identified. Methodological limitations were underscored, such as small numbers of exposed cases, mixing of different leukemia types, crude exposure measures,

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and absence of defined time windows for exposure. Although methodological limitations still exist, recent studies published address some of these concerns.

**Recent Studies** Recent studies of pesticide exposure and childhood leukemia are summarized in Table 1. A population-based case-control study including 491 cases and as many controls conducted in Québec addressed two concerns stated in Zahm and Ward (1998) by focusing on the association between a specific type of leukemia, ALL, and measuring pesticide exposures during specific time periods (Infante-Rivard et al., 1999). Maternal pesticide exposure from 1 mo before pregnancy to the end of pregnancy was determined, as well as child exposure from birth to diagnosis. The risk of ALL increased with frequency of maternal use of herbicides, plant insecticides, and products for trees during pregnancy, with the highest risk being associated with interior plant insecticide use greater than five times. For childhood exposure a rise in ALL risk was observed with exposure to herbicides, plant insecticides, and products for trees. The study also reported statistically significant case-only interaction odds ratios between CYP1A1 polymorphisms and pesticide use during pregnancy and childhood. This investigation was the first to consider both genetic susceptibility and pesticide exposure as factors influencing onset of childhood leukemia, and is still the only study to have done so. However, the case-only study design employed in the genetic portion of this investigation did not allow the direct estimation of the effect of genotype or exposure on risk, but only the interaction effect between exposure and polymorphism. Therefore, further investigations with more robust designs are needed to clarify the role of genetic susceptibility with respect to pesticide exposure and the onset of childhood leukemia. From the same study (Infante-Rivard et al., 1999), a report examining the relationship between ALL and preconceptional paternal workplace pesticide exposures was published (Infante-Rivard & Sinnett, 1999). Here, chemists determined that 175 case fathers and 107 control fathers were exposed to pesticides in the 2 yr previous to pregnancy. Increased risks were observed between preconceptional paternal exposure to all pesticides, fungicides, insecticides, herbicides, and ALL.

Another case-control study including 162 cases and an equal number of controls, conducted in northern California, also addressed the importance of pesticide exposure timing in the development of all childhood leukemias combined and ALL specifically (Ma et al., 2002). Increased risks were observed with household insecticide exposures (excluding flea control products) from 3 mo before pregnancy to 3 yr of age for all leukemias combined, and for ALL specifically with the greatest risk associated with exposures during pregnancy. In addition, more frequent household insecticide exposures were associated with a higher risk of leukemia. The use of a professional pest control service during the same time window was also associated with an excess of all childhood leukemias combined and ALL specifically, with the greatest risk associated with exposures occurring during the child's second year of life. Use of flea control products was not associated with an increased risk of all leukemias combined or ALL specifically in this study, but risk increases were reported for herbicide use 3 mo before pregnancy, during pregnancy, and during the child's second and third year of life. In general, however, outdoor herbicide use was not associated with childhood leukemia.

A pilot case-control study was conducted including infant leukemia (ALL, AML) cases from Europe, the Middle East, South America, and Asia (Alexander et al., 2001). Increased risks of infant leukemia were observed in this study with maternal pesticide exposures occurring during pregnancy. The mosquitocide Baygon was specifically examined, and exposure to this pesticide was associated with infant leukemias involving a rearrangement of the MLL gene ($MLL^{+ve}$). Baygon exposure was not associated with infant leukemias without this gene rearrangement ($MLL^{-ve}$), and therefore this pesticide may influence the risk of infant leukemia by promoting gene rearrangement in utero. Further investigation is required.

An ecological study conducted in California failed to report a statistically significant increased risk between agricultural pesticide use and childhood leukemia, with the exception of one block group having the highest use of the insecticide propargite (Reynolds et al., 2002). However, this study assumed that pounds per square mile of pesticide use represented actual child exposures, which is not necessarily the case. A second ecological study observed an increased risk of leukemia in boys and girls living in areas with greater wheat acreage (a surrogate for exposure to chlorophenoxy herbicides), but this increase was not statistically significant (Schreinemachers, 2000). On the other

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**TABLE 1.** Summary of Studies on Pesticides and Childhood Leukemia

| Reference | Study design | Cancer | Total number of cases | Exposure | Timing of exposure | Number of exposed cases | Risk estimate/comment |
|---|---|---|---|---|---|---|---|
| Infante-Rivard et al., 1999 | Case-control | ALL | 491 | Maternal pesticide use in and around the home: | During pregnancy | | |
| | | | | Herbicides | | 118 | 1.84 (1.32, 2.57) |
| | | | | Plant insecticides | | 78 | 1.97 (1.32, 2.94) |
| | | | | Pesticides for trees | | 63 | 1.70 (1.12, 2.59) |
| | | | | Repellants/sprays | | 49 | 0.70 (0.45, 1.09) |
| | | | | Products for slugs and snails | | 6 | 1.57 (0.43, 5.62) |
| | | | | Parental pesticide use during childhood: | From birth to diagnosis | | |
| | | | | Herbicides | | 178 | 1.41 (1.06, 1.86) |
| | | | | Plant insecticides | | 128 | 1.82 (1.31, 2.52) |
| | | | | Pesticides for trees | | 99 | 1.41 (1.01, 1.97) |
| | | | | Repellants/sprays | | 73 | 0.65 (0.42, 0.94) |
| | | | | Products for slugs and snails | | 11 | 2.23 (0.76, 6.47) |
| Infante-Rivard & Sinnett, 1999 | Case-control | ALL | 175 | Paternal occupational exposure: | Preconception | | |
| | | | | Pesticides | | 66 | 1.56 (1.02, 2.40) |
| | | | | Fungicides | | 15 | 5.11 (1.46, 17.81) |
| | | | | Insecticides | | 50 | 1.38 (0.87, 2.18) |
| | | | | Herbicides | | 19 | 2.05 (0.93, 4.56) |
| Meinert et al., 2000 | Case-control | Leukemia | 1184 | Maternal occupational pesticide exposure | Year before pregnancy | 19 | 2.1 (1.1, 4.2) |
| | | | | | During pregnancy | 15 | 3.6 (1.5, 8.8) |
| | | | | | After pregnancy | 12 | 2.5 (1.0, 6.4) |
| | | | | | Ever | 24 | 2.5 (1.3, 4.7) |
| | | | | Paternal occupational pesticide exposure | Year before pregnancy | 62 | 1.5 (1.2, 2.2) |
| | | | | | During pregnancy | 57 | 1.6 (1.1, 2.2) |
| | | | | | After pregnancy | 49 | 1.3 (0.0, 1.9) |
| | | | | | Ever | 68 | 1.6 (1.1, 2.3) |
| | | | | Farm use of pesticides | From birth to diagnosis | 54 | 1.5 (1.0, 2.2 ) |
| | | | | Garden pesticides | From birth to diagnosis | 164 | 1.0 (0.8, 1.2) |
| Ma et al., 2002 | Case-control | ALL | 135 | Professional pest control at home | 3-mo before pregnancy | 15 | 1.9 (0.7, 4.7) |
| | | | | | During pregnancy | 20 | 2.3 (0.9, 5.4) |
| | | | | | 3-mo before pregnancy to 3 yr old | 36 | 2.6 (1.2, 5.4) |
| | | | | Insecticides at home | 3-mo before pregnancy | 53 | 1.7 (1.0, 3.1) |
| | | | | | During pregnancy | 68 | 2.3 (1.3, 4.0) |
| | | | | | 3-mo before pregnancy to 3 yr old | 80 | 2.2 (1.0, 4.6) |
| | | | | Flea control products used at home | 3-mo before pregnancy | 22 | 0.8 (0.4, 1.6) |
| | | | | | During pregnancy | 22 | 0.7 (0.4, 1.4) |
| | | | | | 3-mo before pregnancy to 3 yr old | 36 | 1.0 (0.5, 1.8) |
| | | | | Herbicides used at home | 3-mo before pregnancy | 24 | 1.6 (0.8, 3.3) |
| | | | | | During pregnancy | 30 | 1.8 (0.9, 3.5) |
| | | | | | 3-mo before pregnancy to 3 yr old | 35 | 1.0 (0.6, 1.8) |

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|---|---|---|---|---|---|---|---|
| Reynolds et al., 2002 | Ecological study | Leukemia | 2443 | Pounds per square mile of pesticide use | 1988 through 1994 | NA | 1.48 (1.03, 2.13) for block group with highest use of insecticide propargite. |
| Feychting et al., 2001 | Cohort | Leukemia, nervous system tumors | 235,635 cohort | Paternal occupational exposure to pesticides | Before conception | 5 | 0.9 (0.37, 2.19) |
| | | | | Paternal occupation in agricultural, horticultural, and forestry management | | 5 | 1.12 (0.46, 2.74) |
| Flower et al., 2004 | Cohort | Leukemia, others | 17,357 cohort | Paternal occupation as a pesticide applicator | Before birth | 9 | 0.91 (0.47, 1.75) |
| Alexander et al., 2001 | Case-control | ALL, AML | 136 | Maternal pesticide exposure | During pregnancy | 15 | ALL 2.53 (0.71, 8.97) |
| | | | | | | | AML 5.08 (1.84, 14.0) |
| | | | | Baygon/mosquitocidal | | 7 | ALL 4.30 (0.66, 28.0) |
| | | | | | | | AML 7.82 (1.73, 35.3) |
| Heacock et al., 2000 | Cohort + nested case-control | Leukemia | 19,674 cohort | Paternal occupational exposure to chlorophenate fungicides | Employment in sawmill at least 1 yr before child's birth | 11 | 1.0 (0.5, 1.8) |
| | | | | High vs. low cumulative exposure | | | |
| McKinney et al., 2003 | Case-control | Leukemia, ALL | 1737 | Parental occupational exposure: Maternal | Periconception | 5 | 0.8 (0.2, 3.6) |
| | | | | Agrochemicals | | 5 | Leukemia 0.81 (0.31, 2.12) |
| | | | | | | 5 | ALL 0.97 (0.37, 2.52) |
| | | | | Agriculture | | 7 | Leukemia 1.41 (0.60, 3.31) |
| | | | | | | 7 | ALL 1.68 (0.72, 3.95) |
| | | | | Paternal | | | |
| | | | | Agrochemicals | | 36 | Leukemia 0.83 (0.58, 1.19) |
| | | | | | | 31 | ALL 0.85 (0.58, 1.24) |
| | | | | Agriculture | | 29 | Leukemia 0.90 (0.60, 1.34) |
| | | | | | | 25 | ALL 0.92 (0.59, 1.40) |
| Rodvall et al, 2003 | Cohort | Leukemia | 27,329 cohort | Paternal occupation as a pesticide applicator | Offspring of pesticide applicators born 1958–1994 | 8 | 0.43 (0.19, 0.86) |
| Schreinmachers, 2000 | Ecologic study | Leukemia | 59 | Wheat acreage (< 72,000 vs. >72,000) | 1980 through 1989 | | |
| | | | | Boys | | 15 | 1.40 (0.75, 2.62) |
| | | | | Girls | | 5 | 1.43 (0.49, 4.18) |

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hand, cohort studies have failed to detect an increased risk of leukemia with paternal occupational exposure to chlorophenate fungicides (Heacock et al., 2000) or paternal occupation as a pesticide applicator (Rodvall et al., 2003). Increased risks of leukemia and ALL specifically were reported in a recent case-control study with maternal employment in agriculture at periconception, but these increases were not statistically significant (McKinney et al., 2003).

A case-control study conducted in Germany collected exposure information between the year of birth and diagnosis for 1184 cases and 2588 controls. An increase in the risk of all childhood leukemia combined was seen for outdoor pesticide use on farms, but not for pesticide use in gardens (Meinert et al., 2000). On the other hand, increased risks were reported between maternal occupational pesticide exposures the year before pregnancy, and during pregnancy, and between paternal occupational pesticide exposures the year before pregnancy and during pregnancy.

In general, these new studies are consistent with those reviewed by Zahm and Ward (1998) because they too suggest an association between pesticide exposure and childhood leukemia. Specifically, childhood exposure to household insecticides and parental exposure to pesticides before pregnancy and during pregnancy seem to present the greatest risks (Alexander et al., 2001; Infante-Rivard et al., 1999; Infante-Rivard & Sinnett, 1999; Ma et al., 2002; Meinert et al., 2000). Of these studies, those conducted by Infante-Rivard et al. (1999) and Ma et al. (2002) are most interesting because the strengths of the reported risk estimates were both greatest for insecticide exposures, and both studies observed exposure response gradients. These two studies also performed the most thorough pesticide exposure assessments of all the childhood leukemia studies identified after Zahm and Ward (1998). Therefore, the failure of the other studies to find risk increases may be due to less adequate exposure assessment for domestic exposure. However, five case-control studies published after Zahm and Ward (1998) observed elevated risks between childhood leukemia and parental pesticide exposures shortly before pregnancy or during pregnancy (Alexander et al., 2001; Infante-Rivard et al., 1999; Infante-Rivard & Sinnett, 1999; Ma et al., 2002; Meinert et al., 2000).

### Brain Cancer

**Zahm and Ward review** Sixteen case-control studies and one retrospective cohort study were reviewed (Zahm & Ward, 1998). Seven of the 16 case-control studies (Bunin et al., 1994; Cordier et al., 1994; Davis et al., 1993; Leiss & Savitz, 1995; Pagoda & Preston-Martin, 1997; Sinks, 1985; Wilkins & Koutras, 1998) reported statistically significant increased risks between pesticide exposures and childhood brain cancer. In addition, 5 of 16 case-control studies (Gold et al., 1979; Hemminki et al., 1981; Kuijten et al., 1992; McCredie et al., 1994; Wilkins & Sinks, 1990) detected increased risks between pesticide exposures and childhood brain cancer. In general, the highest risk estimates reported by case-control studies were for parental use of pesticides in the home or garden or on pets. However, the retrospective cohort study also detected a statistically significant increased risk of nonastrocytic gliomas and nonastrocytic neuroepitheliomoas in children whose fathers engaged in agricultural work (Kristensen et al., 1995, 1996). In addition, one case-control study observed an increased risk of astrocytomas and a significantly increased risk of primitive neuroectodermal tumors in association with maternal household insecticide use during pregnancy and living on a farm for more than one year respectively (Bunin et al., 1994).

**Recent Studies** Recent studies of pesticide exposure and childhood brain cancer are summarized in Table 2. A case-control study conducted in Germany collected information from 466 cases with pediatric central nervous system (CNS) tumors (119 astrocytomas, 112 medulloblastomas, 50 ependymomas, 31 other gliomas, 154 unspecified CNS tumors) and 2458 controls (Schuz et al., 2001a). The questions used to assess children's pesticide exposures focused primarily on the ever/never use of pesticides in gardens or farms, and on the use of household insecticides either once a year or greater than once a year. Increased risks between household insecticide use once a year and astrocytomas, medulloblastomas, and all CNS tumors combined were observed. Increased risks between household insecticide use greater than once a year and ependymomas were also noted. However, no rise in risk was observed between household insecticide use more than once a year and astrocytomas, and no increased risk was found between pesticide use in gardens or farms and

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**TABLE 2.** Summary of Studies on Pesticides and Childhood Brain Cancer

| Reference | Study design | Total number of cases | Exposure | Timing of exposure | Number of exposed cases | Risk estimate/comment |
|---|---|---|---|---|---|---|
| Schuz et al., 2001 | Case-control | 466 | Pesticide use: | | | |
| | | | On gardens | Ever | 16 | Astrocytomas 0.91 (0.48, 1.71) |
| | | | | | 5 | Ependymomas 0.71 (0.27, 1.89) |
| | | | | | 13 | Medulloblastomas 0.81 (0.43, 1.53) |
| | | | | | 60 | All CNS tumors 0.94 (0.68, 1.29) |
| | | | On farms | | 2 | Astrocytomas 0.44 (0.09, 2.04) |
| | | | | | 1 | Ependymomas 0.64 (0.08, 5.05) |
| | | | | | 0 | Medulloblastomas — |
| | | | | | 7 | All CNS tumors 0.41 (0.18, 0.93) |
| | | | Household insecticide use | Once a year | 8 | Astrocytomas 2.45 (1.09, 5.47) |
| | | | | | 2 | Ependymomas 1.51 (0.34, 6.79) |
| | | | | | 5 | Medulloblastomas 1.14 (0.44, 2.95) |
| | | | | | 22 | All CNS tumors 1.38 (0.84, 2.25) |
| | | | | More than once a year | 6 | Astrocytomas 0.58 (0.23, 1.49) |
| | | | | | 5 | Ependymomas 1.69 (0.63, 4.54) |
| | | | | | 8 | Medulloblastomas 1.06 (0.49, 2.28) |
| | | | | | 38 | All CNS tumors 1.19 (0.81, 1.77) |
| Heacock et al., 2000 | Cohort + nested case-control | 19,674 cohort | Paternal occupational exposure to chlorophenate fungicides | Employment at least 1 yr before child's birth | 9 | 1.3 (0.6–2.5) |
| | | | High vs. low cumulative exposure | | 5 | 1.5 (0.4, 6.9) |
| McKinney et al., 2003 | Case-control | 1737 | Parental occupational exposure: | Periconception | | |
| | | | Maternal | | | |
| | | | Agrochemicals | | 3 | 1.26 (0.38, 4.17) |
| | | | Agriculture | | 3 | 1.55 (0.46, 5.19) |
| | | | Paternal | | | |
| | | | Agrochemicals | | 13 | 0.77 (0.44, 1.36) |
| | | | Agriculture | | 9 | 0.70 (0.35, 1.38) |
| Reynolds et al., 2002 | Ecologic study | 1351 | Pounds per square mile of pesticide use | 1988 through 1994 | NA | No increased risks observed |
| Rodvall et al, 2003 | Cohort | 27,329 cohort | Paternal occupation as a pesticide applicator | Offspring of pesticide applicators born 1958–1994 | 17 | 1.03 (0.60, 1.65) |
| Schreinmachres, 2000 | Ecologic study | 35 | Wheat acreage (< 72,000 vs. >72,000) | 1980 through 1989 | | |
| | | | Boys | | 9 | 1.82 (0.78, 4.26) |
| | | | Girls | | 5 | 1.63 (0.53, 4.99) |

*(Continued)*

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**TABLE 2.** (*Continued*)

| Reference | Study design | Total number of cases | Exposure | Timing of exposure | Number of exposed cases | Risk estimate/comment |
|---|---|---|---|---|---|---|
| Wijngaarden et al., 2003 | Case-control | 321 | Parental occupational exposure: | Before or during pregnancy | | Risk estimates for astrocytomas only |
| | | | Maternal | | 53 | 1.9 (1.1, 3.3) |
| | | | Insecticide | | 9 | 1.3 (0.5, 3.7) |
| | | | Herbicides | | 56 | 1.6 (0.9, 2.7) |
| | | | Fungicides | After high school | | |
| | | | Paternal | | 82 | 1.5 (0.9, 2.4) |
| | | | Insecticide | | 51 | 1.6 (1.0, 2.7) |
| | | | Herbicides | | 99 | 1.6 (1.0, 2.6) |
| | | | Fungicides | | | |
| Flower et al., 2004 | Cohort | 17,357 cohort | Paternal occupation as a pesticide applicator | Before birth | 11 | 1.60 (0.89, 2.89) |
| Feychting et al., 2001 | Cohort | 235,635 cohort | Paternal occupational exposure to pesticides | Before conception | 11 | 2.36 (1.27, 4.39) |
| | | | Paternal occupation in agricultural, horticultural, and forestry management | | 9 | 2.12 (1.08, 4.16) |
| Cordier et al., 2001 | Case-control | 1218 | Parental occupation in agriculture: | 5 yr before birth up to birth | | Risk estimates for all brain tumors combined |
| | | | Maternal | | 22 | 1.1 (0.7, 1.9) |
| | | | Paternal | | 80 | 1.3 (1.0, 1.8) |

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any of the CNS tumors investigated. However, the number of cases exposed to household insecticides or pesticides used in gardens or farms was small (maximum 16, minimum 1), and thus few firm conclusions can be drawn from these results. A second case-control study was conducted concurrently in Sydney, Israel, Paris, Winnipeg, Milan, Valencia, Los Angeles, San Francisco, and Seattle, WA, focusing primarily on parental occupational exposures (Cordier et al., 2001). In this study, data obtained via telephone and in-home interviews was used to categorize parental occupations. The risk of all childhood brain tumors, astroglial tumors, primitive neuroectodermal tumors, and other glial tumors was then assessed according to parental occupational category. Although no statistically significant risks were identified, increased ones were observed between maternal and paternal occupation in agriculture in the 5 yr before birth and all childhood brain tumors, astroglial cancers, and primitive neuroectodermal tumors. Similarly, a recent case-control study from the United Kingdom reported an increase in the risk of childhood CNS tumors with maternal occupation in agriculture (McKinney et al., 2003).

A case-control study including 321 cases and an equal number of controls was conducted in the United States and Canada between 1986 and 1989 and examined the relationship between parental occupational exposures and brain cancer (Wijngaarden et al., 2003). A complete history of jobs held for 6 mo or more since leaving high school was obtained for fathers, and mothers were asked about their "usual" occupation before pregnancy and all of their jobs during pregnancy. The probability and intensity of exposure to insecticides, herbicides, and fungicides were evaluated based on an extensive review of the industrial hygiene literature and a job–exposure matrix. A rise in risk was observed for maternal occupational exposure (ever vs. never) to insecticides and astrocytomas. Increased risks were also reported between paternal occupational exposures to insecticides, herbicides, and fungicides (ever vs. never) and astrocytomas, as well as primitive neuroectodermal tumors. Increased risks between astrocytomas and maternal occupational exposures to fungicides and herbicides were also observed, but exposure response gradients were absent for both maternal and paternal occupational exposures.

The first of four cohort studies published after the review by Zahm and Ward (1998) was a retrospective study conducted in Sweden (Feychting et al., 2001). Investigators identified 162 children with nervous system tumors born to married couples in 1976, 1977, 1981, and 1982; occupational hygienists assessed paternal occupational exposures reported in two different censuses conducted in 1975 and 1980. An elevated risk between paternal occupational exposures to pesticides 2 to 26 mo prior to conception and childhood nervous system tumors was observed. In this study, paternal occupation in agricultural, horticultural, and forestry management was also associated with an increased risk of nervous system tumors. The second cohort study used self-administered questionnaires among Iowa pesticide applicators who gave birth to a total of 17,357 children between 1975 and 1998, among whom 6 cases of astrocytomas and 5 other subtypes of brain cancer were observed (Table 2) (Flower et al., 2004). Standardized incidence ratios were estimated using cancer rates in Iowa. An increased risk of brain cancer was observed in the cohort of children of pesticide applicators. Likewise, a third cohort study observed an increased risk of brain cancer with paternal occupational exposure to chlorophenate fungicides, but this increase was not statistically significant (Heacock et al., 2000). Paternal occupation as a pesticide applicator was not associated with brain cancer in a cohort study by Rodvall et al. (2003), but an ecological study reported a quantitative increase in brain cancer risk among boys and girls living in areas with greater wheat acreage (Schreinemachers, 2000).

Like studies on childhood leukemia, the recent case-control studies of brain cancer suggest that the greatest risks are associated with household insecticide use and prenatal exposure to insecticides (Schuz et al., 2001a; Wijngaarden et al., 2003). In addition, these studies consistently reported rises in risks between pesticide exposures and brain cancer (Cordier et al., 2001; Heacock et al., 2000; McKinney et al., 2003; Schreinemachers, 2000; Schuz et al., 2001a; Wijngaarden et al., 2003). The results suggest that power may be an issue, with respect to specific types of brain cancer in particular, which is only compounded by imprecise measures of exposure. Genetic susceptibilities may also play some role in determining the effects of

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childhood pesticide exposures, and therefore future studies should examine the role of gene–environment interactions in the development of childhood brain cancer. In general, results from these recent brain cancer studies are consistent with those from the studies reviewed by Zahm and Ward (1998). However, unlike at least three of the studies reviewed by Zahm and Ward (1998), none of the recent ones reported exposure-response gradients. Three studies (Heacock et al., 2000; Schuz et al., 2001a; Wijngaarden et al., 2003) attempted to address this issue: One used high versus low exposure levels (Heacock et al., 2000), one used categories of once a year and more than once a year to classify frequency of pesticide use (Schuz et al., 2001a), and the other used the probability of parental pesticide exposure (Wijngaarden et al., 2003). Clearly, none of these methods provides an ideal measure of pesticide exposure frequency. Brain cancers are possibly more heterogeneous than leukemias. An additional limiting factor of most recent studies, with the possible exception of Cordier et al. (2001), is power to detect associations, if any, for specific subtypes of brain cancers.

### Neuroblastoma

**Zahm and Ward review** Four case-control studies (Bunin et al., 1990; Spitz & Johnson, 1985; Schwartzbaum et al., 1991; Wilkins & Sinks, 1990) and one retrospective cohort study (Kristensen et al., 1995, 1996) were reviewed (Zahm & Ward, 1998). All five of these studies examined parental occupational exposures to pesticides, while none specifically examined residential childhood pesticide exposures prenatally or during childhood. Two case-control studies observed increased risks with preconceptional paternal occupation as a farmer (Bunin et al., 1990), and parental gardening with pesticides during childhood (Schwartzbaum et al., 1991). A retrospective cohort study observed a statistically significant increased risk with parental occupation in agriculture before birth (Kristensen et al., 1995, 1996).

**Recent Studies** Recent studies of pesticide exposure and neuroblastoma are summarized in Table 3. Three case-control studies (Daniels et al., 2001; Kerr et al., 2000; Olshan et al., 1999) and one prospective cohort study (Flower et al., 2004) examined the relationship between neuroblastoma and pesticide exposures. The first of these case-control studies focused on the relationship between parental occupation and neuroblastoma in both the United States and Canada (Olshan et al., 1999). Parental occupational history included all jobs held since 18 yr of age until the diagnosis reference date, and an increased risk was observed between paternal occupation as a landscaper or groundskeeper (Olshan et al., 1999). Elevated risks were also observed with maternal occupation as a farmer or florist.

The second case-control study was conducted in New York State, and specifically examined parental occupational exposures during pregnancy (Kerr et al., 2000). Increased risks were observed with self-reported maternal and paternal occupational exposures to insecticides during pregnancy. Odds ratios were calculated according to categories of maternal insecticide exposure certainty (category 1: reported exposure and potential for exposure; category 2: no report of exposure but potential for exposure; category 3: reported exposure but no potential for exposure); the odds ratio for category 1, in comparison with mothers who reported no exposure and had no potential for exposures, was 2.6 and was the highest.

Another case-control study focused specifically on residential pesticide exposures and neuroblastoma (Daniels et al., 2001). Detailed interviews regarding the type, purpose, and timing of pesticide use from 1 mo before conception to the date of diagnosis were conducted separately with mothers and fathers of cases and controls identified in the United States and Canada (Daniels et al., 2001). When reported by both parents, elevated risks were observed with garden pesticide use, and home pesticide use in children diagnosed after 1 yr of age (Daniels et al., 2001). Herbicides were more strongly associated with neuroblastoma than insecticides (Daniels et al., 2001). When both parents reported residential pesticide use in this study the odds ratios were nearly always greater than when only one parent reported it. Therefore, the practice of questioning both parents individually about residential pesticide use may be an effective means of improving exposure assessment.

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**TABLE 3.** Summary of Studies on Pesticides and Childhood Neuroblastoma

| Reference | Study design | Total number of cases | Exposure | Timing of exposure | Number of exposed cases | Risk estimate/comment |
|---|---|---|---|---|---|---|
| Daniels et al., 2001 | Case-control | 538 | | | | Risk estimates for both parents reporting exposure |
| | | | Home extermination | Ever | 63 | 1.4 (0.9, 2.1) |
| | | | | Preconception to pregnancy | 150 | 1.0 (0.5, 2.1) |
| | | | | Childhood | 113 | 1.5 (0.8, 2.6) |
| | | | | Age <1 yr | 22 | 1.5 (0.7, 3.0) |
| | | | | Age 1 yr or more | 41 | 1.3 (0.7, 2.3) |
| | | | Home pesticide use | Ever | 23 | 1.6 (1.0, 2.3) |
| | | | | Preconception to pregnancy | 93 | 1.3 (0.8, 3.3) |
| | | | | Childhood | 65 | 1.4 (0.9, 2.2) |
| | | | | Age <1 yr | 44 | 1.2 (0.7, 2.2) |
| | | | | Age 1 yr or more | 106 | 1.9 (1.1, 3.2) |
| | | | Garden | Ever | 46 | 1.7 (0.9, 2.1) |
| | | | | Preconception to pregnancy | 92 | 1.3 (0.8, 2.0) |
| | | | | Childhood | 74 | 1.8 (1.0, 3.1) |
| | | | | Age <1 yr | 31 | 1.0 (0.6, 2.0) |
| | | | | Age 1 yr or more | 82 | 2.2 (1.3, 3.6) |
| | | | Garden herbicide | Age <1 yr | 12 | 1.2 (0.5, 3.1) |
| | | | | Age 1 yr or more | 39 | 2.2 (1.1, 4.3) |
| | | | Garden insecticide | Age < 1 yr | 10 | 0.8 (0.3, 2.2) |
| | | | | Age 1 yr or more | 24 | 1.7 (0.8, 3.6) |
| Kerr et al., 2000 | Case-control | 183 | Parental occupational exposure: Maternal insecticide exposure | During pregnancy | 40 | 2.3 (1.4, 3.7) |
| | | | Paternal insecticide exposure | | 40 | 1.7 (1.0, 2.7) |
| Olshan et al., 1999 | Case-control | 504 | Parental occupation: | From age 18 yr to diagnosis reference date | | |
| | | | Paternal work in landscaping | | 21 | 2.3 (1.0, 5.2) |
| | | | Maternal farm work | | 7 | 2.2 (0.6, 8.8) |
| | | | Maternal floral/gardening work | | 6 | 2.4 (0.6, 9.9) |
| Flower et al., 2004 | Cohort | 17,357 cohort | Paternal occupation as a pesticide applicator | Before birth | 3 | 1.26 (0.40, 3.89) |

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A prospective cohort study also examined the relationship between parental occupational exposure to pesticides and neuroblastoma (Flower et al., 2004). Exposure information was collected using a self-administered questionnaire, but only three cases of neuroblastoma were identified during the study period. An increase in risk with parental occupation as a pesticide applicator was seen in comparison with the reference population.

An increased risk of neuroblastoma was observed for parental occupational exposure to pesticides or residential pesticide use in all four recent studies (Daniels et al., 2001; Flower et al., 2004; Kerr et al., 2000; Olshan et al., 1999). In summary, both previously reviewed studies (Zahm & Ward, 1998) and more recent investigations tend to support a potential relationship between parental occupational pesticide exposure and neuroblastoma in offspring. A recent study (Daniels et al., 2001) also indicates that residential use of pesticides, and herbicides specifically, may increase the risk of neuroblastoma in children.

### Non-Hodgkin's Lymphoma

**Zahm and Ward review** Six case-control studies (Buckley, 1991; Leiss & Savitz, 1995; Magnani et al., 1990; Mulder et al., 1994; Roman et al., 1993; Schwartzbaum et al., 1991) and one retrospective cohort study (Kristensen et al., 1995, 1996) were reviewed (Zahm & Ward, 1998). Of these studies, one case-control study observed a significantly increased risk of non-Hodkin's lymphoma (NHL) with home extermination from pregnancy to 2 yr prior to diagnosis (Leiss & Savitz, 1995), and a second case-control study observed that the risk of NHL increased with increased frequency of maternal home insecticide use (Buckley, 1991). The retrospective cohort study observed a statistically significant increased risk of NHL in children living on farms with the highest pesticide expenditures (Kristensen et al., 1995, 1996).

**Recent Studies** Recent studies of pesticide exposure and childhood NHL are summarized in Table 4. Two case-control studies (Buckley et al., 2000; Meinert et al., 2000) and two cohort studies (Flower et al., 2004; Rodvall et al., 2003) have examined the relationship between pesticide exposures and NHL. The first case-control study was conducted in California; child pesticide exposures and maternal pesticide exposures around the time of pregnancy were assessed (Buckley et al., 2000). Increased risks were observed with childhood exposures and with maternal use of pesticides in the home around the time of pregnancy. An exposure-response gradient in which the risk of NHL increased with elevated maternal insecticide use in the home around the time of pregnancy was reported. Statistically significant increased risks were observed between NHL and professional insecticide use in the home, as well as postnatal childhood exposure to pesticides.

Another case-control study from Germany (Meinert et al., 2000) reported increased risks of NHL with maternal occupational exposure to pesticides before pregnancy, during pregnancy, after pregnancy, or ever. Increased risks for paternal occupational exposure the year before pregnancy, during pregnancy, after pregnancy, or ever were also reported but were not statistically significant. The study also observed increased risks of NHL for residential parental insecticide use more than 10 times a year and the use of a professional exterminator. An exposure response gradient was also observed in relation with more frequent applications of home insecticides.

A prospective cohort study used self-administered questionnaires to examine the relationship between parental occupational pesticide exposures and various childhood cancers (Flower et al., 2004). Only two cases of NHL were identified during the study period; this resulted in an increased measure of effect for parental employment as a pesticide applicator. The second cohort study observed only three cases of NHL and failed to detect an increased risk with paternal occupation as a pesticide applicator (Rodvall et al., 2003).

Like the studies reviewed by Zahm and Ward (1998), more recent ones suggest a role for pesticides in the development of childhood NHL (Buckley et al., 2000; Flower et al., 2004; Meinert et al., 2000). Of note are the repeated finding of statistically significant increased risks of NHL associated with residential childhood pesticide exposures, and the exposure response gradients observed in two of the three reviewed studies.

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**TABLE 4.** Summary of Studies on Pesticides and Childhood Non-Hodgkin's Lymphoma

| Reference | Study design | Total number of cases | Exposure | Timing of exposure | Number of exposed cases | Risk estimate/ comment |
|---|---|---|---|---|---|---|
| Buckley et al., 2000 | Case-control | 268 | Maternal exposure: | In the month before pregnancy, during pregnancy, or while nursing | | |
| | | | Household insecticide use on most days | | 6 | 7.33 (0.84, 63.85) |
| | | | Use of garden sprays more than once/ month | | 13 | 1.71 (0.67, 4.37) |
| | | | Exterminate around home | | 31 | 2.98 (1.44, 6.16) |
| | | | Child exposure to herbicides or insecticides | Between birth and 1 yr before diagnosis | 50 | 2.35 (1.37, 4.03) |
| | | | Parental occupational exposure | Ever | 21 | 1.74 (0.82, 3.69) |
| Meinert et al., 2000 | Case-control | 234 | Occupational pesticide exposure: | | | |
| | | | Maternal | Before pregnancy | 3 | 2.9 (0.7, 13) |
| | | | | During pregnancy | 4 | 11.8 (2.2, 64) |
| | | | | After pregnancy | 3 | 7.5 (1.1, 52) |
| | | | | Ever | 4 | 4.1 (1.1, 16) |
| | | | Paternal | Before pregnancy | 11 | 1.5 (0.7, 3.1) |
| | | | | During pregnancy | 10 | 1.6 (0.7, 3.6) |
| | | | | After pregnancy | 8 | 1.0 (0.4, 2.5) |
| | | | | Ever | 14 | 1.9 (0.9, 3.7) |
| | | | Pesticide use: | | | |
| | | | On farm | From birth to diagnosis | 4 | 0.5 (0.2,1.4) |
| | | | In garden | From birth to diagnosis | 33 | 0.8 (0.5, 1.2) |
| | | | Exterminator use | From birth to diagnosis | 10 | 2.6 (1.2, 5.7) |
| Flower et al., 2004 | Cohort | 17,357 cohort | Paternal occupation as a pesticide applicator | Before birth | 2 | 1.18 (0.29, 4.70) |
| Rodvall et al., 2003 | Cohort | 27,329 cohort | Paternal occupation as a pesticide applicator | Offspring of pesticide applicators born 1958–1994 | 3 | 0.63 (0.13, 1.83) |

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## Wilms' Tumor

**Zahm and Ward review** Five case-control studies (Kantor et al., 1979; Olshan et al, 1993; Schwartzbaum et al., 1984; Sharpe et al., 1995; Wilkins & Sinks, 1984) and one retrospective cohort study (Kristensen et al., 1995, 1996) examined the relationship between childhood and parental pesticide exposures and the incidence of Wilms' tumors (Zahm & Ward, 1998). Two of these five case-control studies examined parental occupational pesticide exposures beginning at birth, and none showed increased risks (Kantor et al., 1979; Wilkins & Sinks, 1984). A third case-control study failed to detected an increased risk of Wilms' tumor with parental gardening from birth to diagnosis (Schwartzbaum et al., 1991). However, one of the two remaining case-control studies conducted in the United States examined the relationship between household extermination and Wilms' tumors and detected statistically significant increased risks with extermination ever and once a year (Olshan et al., 1993). The remaining case-control study conducted in Brazil (Sharpe et al., 1995) and the retrospective cohort study conducted in Norway (Kristensen et al., 1995, 1996) focused on parental occupational exposures before birth, and both studies observed statistically significant increased risks.

**Recent Studies** Recent studies of pesticide exposure and Wilms' tumors are summarized in Table 5. One case-control study (Schuz et al., 2001b) and one prospective cohort study (Flower et al., 2004) examined the relationship between pesticide exposures and Wilms' tumors. The case-control study was conducted in Germany. Although detailed information was not obtained regarding the type or timing of pesticide exposures, increased risks were observed with maternal occupational exposure ever, and in house use of insecticides more than once a year (Schuz et al., 2001a). However, the observed elevated risk between maternal occupational pesticide exposure and Wilms' tumors was based on only two exposed cases, and childhood exposure to pesticides in gardens or farms and paternal occupational exposure to pesticides after birth were not associated with an increased risk.

A prospective cohort study using self-administered questionnaires from Iowa pesticide applicators identified only three cases of Wilms' tumors during the study period (Flower et al., 2004). However, an increased risk was still observed in comparison with the reference population.

In general, pesticide exposure assessment was limited and small numbers of children with Wilm's tumors in both the case-control study and the prospective cohort study prevent either of these studies from making a definitive contribution. However, the studies reviewed by Zahm and Ward (1998) suggest that childhood insecticide exposures and parental pesticide exposures before birth both increase the risk of developing Wilms' tumors.

**TABLE 5.** Pesticide Exposure Study of Childhood Wilms' Tumors

| Reference | Study design | Total number of cases | Exposure | Timing of exposure | Number of exposed cases | Risk estimate/comment |
|---|---|---|---|---|---|---|
| Schuz et al., 2001a | Case-control | 177 | Occupational exposure: | | | |
| | | | Maternal | Ever | 2 | 2.52 (0.50, 12.6) |
| | | | Paternal | After birth | 6 | 0.97 (0.39, 2.37) |
| | | | Home insecticide use more then 1/yr | | 23 | 1.27 (0.78, 2.08) |
| | | | Child exposure | | | |
| | | | In gardens | | 13 | 0.80 (0.44, 1.47) |
| | | | On farms | | 5 | 0.84 (0.32, 2.25) |
| Flower et al., 2004 | Cohort | 17,357 cohort | Paternal occupation as a pesticide applicator | Before birth | 3 | 1.56 (0.50, 4.84) |

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TABLE 6. Pesticide Exposure Study of Childhood Ewing's Sarcoma

| Reference | Study design | Total number of cases | Exposure | Timing of exposure | Number of exposed cases | Risk estimate/comment |
|---|---|---|---|---|---|---|
| Valery et al., 2002 | Case-control | 106 | One parent with farm-related occupation | Conception to pregnancy | Not provided | 3.4 (1.1, 10.5) |
| | | | Paternal employment in farm-related job | | Not provided | 3.5 (1.0, 11.9) |

### Ewing's Sarcoma

**Zahm and Ward review** The risk of Ewing's sarcoma in children appears to be closely linked to parental pesticide exposure (Zahm & Ward, 1998). Three case-control studies reviewed showed increased risks of Ewing's sarcoma with parental occupation in agricultural (Daigle, 1987; Holly et al., 1992; Winn et al., 1992), and two of these were statistically significant (Daigle, 1987; Holly et al., 1992). One of the three studies showed an increased risk with household extermination during pregnancy (Winn et al., 1992); a second one reported deficits with household extermination both during pregnancy and childhood (Holly et al., 1992).

**Recent Studies** One Australian case-control study specifically examined farm exposures, parental occupation, and the risk of Ewing's sarcoma (Table 6) (Valery et al., 2002). Pesticide exposure information pertaining to the time period 6 mo before pregnancy to the date of diagnosis was collected. Although specific pesticide exposure information was not obtained, having at least one parent in a farm-related job at conception or pregnancy, and paternal employment in a farm related job at conception or pregnancy were associated with increased risk. However, having a "farm-related job" hardly qualifies as precise exposure assessment and further efforts should focus on specific types of pesticide exposures. Nevertheless, these recent findings are consistent with evidence provided by studies reviewed by Zahm and Ward (1998).

## DISCUSSION

In 1965, Sir Austin Bradford Hill outlined nine factors that should be considered before deciding whether or not an association between an exposure and a disease is causal (Hill, 1965). In 1998, Rothman and Greenland provided more recent adaptations of these factors (Rothman & Greenland, 1998). These factors are: strength, consistency, specificity, temporality, biological gradient, plausibility, coherence, experiment, and analogy (Hill, 1965).

Pesticides are biologically active molecules, and like other biologically active chemicals it is certainly plausible that they play some role in cancer etiology because this hypothesis does not conflict with our current understanding of the natural history of cancer. Similarly, the "experiment" criterion of Hill (1965) is essentially tested by every case-control study and every cohort study through the comparison of the disease rates in exposed and nonexposed individuals. Therefore, the remainder of this discussion focuses only on the application of the remaining seven Hill (1965) criteria to recent studies of pesticide exposures and childhood cancer.

### Strength

It is much easier to make a decision regarding the causal relationship between an exposure and a disease when the strength of the observed association is great because strong associations are less likely to be explained by undetected biases (Hill, 1965; Rothman & Greenland, 1998). However, in studies conducted to date, the risk estimates observed between pesticide exposures and childhood cancers are normally small, and the lower limits of the confidence intervals surrounding these risk estimates are often less than half a unit away from the null value. Nevertheless, Hill (1965) points

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out that one should not automatically dismiss cause-and-effect relationships only on the grounds that they are small, because many such associations do exist. Similarly, Rothman and Greenland (1998) point out that a "strong association is neither necessary nor sufficient for causality, and weakness is neither necessary nor sufficient for absence of causality" (p. 25). Rothman and Greenland (1998) also argue that the "strength of a factor's effect on a population depends on the relative prevalence of its causal complement" (p. 11). Therefore, in the case of pesticide exposures, other causal complements such as genetic susceptibility may play key roles in the development of childhood cancers, and because these are not measured, only weak associations are observed.

### Consistency

Perhaps the strongest evidence in support of a causal relationship between pesticide exposure and childhood cancer is the repeated detection of statistically significant increased risks between childhood pesticide exposures and cancer. For example, a number of studies published after Zahm and Ward (1998) reported statistically significant enhanced risks between either childhood pesticide exposures or parental occupational exposures and childhood cancer (Alexander et al., 2001; Buckley et al., 2000; Daniels et al., 2001; Feychting et al., 2001; Flower et al., 2004; Infante-Rivard et al., 1999; Infante-Rivard & Sinnett, 1999; Kerr et al., 2000; Ma et al., 2002; Meinert et al., 2000; Olshan et al., 1999; Reynolds et al., 2002; Schuz et al., 2001a; Valery et al., 2002; Wijngaarden et al., 2003). Other studies detected nonstatistically significant increases in risks for childhood pesticide exposures (Schuz et al., 2001b), parental occupational exposures (Cordier et al., 2001; Heacock et al., 2000; McKinney et al., 2003), or residing in areas with high wheat acreage assumed to be a surrogate for herbicide exposure (Schreinemachers, 2000). Therefore, the repeated detection of an association between pesticide exposure and childhood cancer tends to support a causal relationship. However, the degree to which publication bias influences the consistency of these observed increased risks remains unknown.

### Specificity

Our ability to associate specific pesticide exposures with specific childhood cancers is limited by both the rarity of childhood cancer and the imprecise exposure assessment methods often employed in epidemiological studies. For example, of the 21 studies published after Zahm and Ward (1998), only 3 (Alexander et al., 2001; Flower et al., 2004; Reynolds et al., 2002) reported risk estimates for specific chemical exposures, and 2 (Alexander et al., 2001; Reynolds et al., 2002) associated this risk with a specific form of childhood cancer. All other studies used broad categories such as insecticides, herbicides, fungicides, or parental occupation to classify exposures. However, Rothman and Greenland (1998) argue that "specificity does not confer greater validity to any causal inference regarding the exposures effect" (p. 25) because many exposures have more than one effect. Therefore, the fact that recent studies associated many types of childhood cancers with several types of pesticide exposures does not rule out a casual relationship. Perhaps pesticides belong to a larger group of causal complements that must all act in order to initiate cancer development. In addition to pesticides, this group of causal complements might also include genetic susceptibility. However, more investigations are needed to identify these factors.

### Temporality

If there is causal relationship between pesticide exposures and childhood cancer, it is obvious that exposure must occur before cancer develops. What is not clear is when these exposures must occur (the time window) in order to exert their causative action. In recent studies, statistically significant increased risks were observed between childhood cancer and pesticide exposures occurring either prior to conception, during pregnancy, or during childhood. However, maternal pesticide exposure during pregnancy was most consistently associated with childhood cancer.

### Biological Gradients

Biological gradients were observed in 4 of the 21 studies published after Zahm and Ward (1998) (Buckley et al., 2000; Infante-Rivard et al., 1999; Ma et al., 2002; Meinert et al., 2000). Two

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of these studies focused on the risk of ALL (Infante-Rivard et al., 1999; Ma et al., 2002) in association with pesticide exposure, and two focused on the risk of NHL (Buckley et al., 2000; Meinert et al., 2000). However, all of the biological gradients observed in these four studies were associated with increased frequency of insecticide exposure (Buckley et al., 2000; Infante-Rivard et al., 1999; Ma et al., 2002; Meinert et al., 2000). Therefore, although many of the studies conducted after Zahm and Ward (1998) did not attempt to assess cancer risks in response to increasing frequency of pesticide exposures, at least four identified biological gradients and support a causal relationship between insecticide exposure and childhood cancer.

## CONCLUSIONS

At this point in time one can confidently state that there is at least some association between pesticide exposure and childhood cancer. Furthermore, based on the Hill (1965) causation criteria, recent epidemiological studies suggest that this relationship may be causal due to the repeated finding of pesticide exposures significantly increasing the risk of childhood cancer. In addition, the biological gradients observed in four recent studies also suggest that there may be a causal relationship between childhood insecticide exposures and the development of ALL and NHL (Buckley et al., 2000; Infante-Rivard et al., 1999; Ma et al., 2002; Meinert et al., 2000). However, a one-to-one cause-and-effect relationship likely does not exist between any single type of pesticide exposure and childhood cancer. Probably the development of childhood cancer depends on the presence of many factors, including genetic predisposition, which must all be present at the appropriate time in order to exert their effects. In order to identify these factors, and improve our current understanding of the relationship between pesticide exposures and childhood cancer, future epidemiological studies must employ improved exposure assessments that include separate parental interviews, specific pesticide exposure questions, and semiquantitative exposure measures that can be used to confirm information obtained through questionnaires.

## REFERENCES


Abdollahi, M., Ranjbar, A., Shadnia, S., Nikfar, S., and Rezaie, A. 2004. Pesticides and oxidative stress: A review. *Med. Sci. Monit.* 10: RA141–147.

Alexander, F. E., Patheal, S. L., Biondi, A., Brandalise, S., Cabrera, M. E., Chan, L. C., Chen, Z., Cimino, G., Cordoba, J. C., Gu, L. J., Hussein, H., Ishii, E., Kamel., A. M., Labra, S., Magalhaes, I. Q., Mizutani, S., Petridou, E., Oliveira, M. P., Yuen, P., Wiemels, J. L., Greaves, M. F. 2001. Transplacental chemical exposure and risk of infant leukemia with MLL gene fusion. *Cancer Res.* 61:2542–2546.

Buckley, J. D. 1991. *Childhood non-Hodgkin's lymphoma*. Presented at the National Cancer Institute Workshop on the Time Trends in Non-Hodgkin's Lymphoma: Current Knowledge and Recommendations for Research, 22–23 October 1991, Bethesda, MD.

Buckley, J. D., Robison, L. L., Swotinsky, R., Garabrant, D. H., LeBeau, M., Manchester, P., Nesbit, M. E., Odom, L., Peters, J. M., and Woods, W. G. 1989. Occupational exposures of parents of children with acute nonlymphocytic leukemia: A report from the children's cancer study group. *Cancer Res.* 49:4030–4037.

Buckley, J. D., Meadows, A. T., Kadin, M. E., Le Beau, M. M., Siegel, S., and Robison, L. L. 2000. Pesticide exposures in children with non-Hodgkin lymphoma. *Cancer* 89:2315–2321.

Bunin, G. R., Ward, E., Kramer, S., Rhee, C. A., and Meadows, A. T. 1990. Neuroblastoma and parental occupation. *Am. J. Epidemiol.* 131:776–780.

Bunin, G. R., Buckley, J. D., Boesel, C. P., Rorke, L. B., and Meadows, A. T. 1994. Risk factors for astrocytic glioma and primitive neuroectodermal tumor of the brain in young children: A report from the children's cancer group. *Cancer Epidemiol. Biomarkers Prev.* 3:197–204.

Cordier, S., Iglesias, M. J., LeGoaster, C., Guyot, M. M., Mandereau, L., and Hemon, D. 1994. Incidence and risk factors for childhood brain tumors in the Ile de France. *Int. J. Cancer* 59:776–782

Cordier, S., Manderaau, L., Preston-Martin, S., Little, J., Lubin, F., Mueller, B., Holly, E., Filippini, G., Peris-Bonet, R., McCredie, M., Choi, N. W., and Arslan, A. 2001. Parental occupation and childhood brain tumors: Results of an international case-control study. *Cancer Causes Control* 12:865–874.

Daigle, A. E. 1987. Epidemiologic study of etiologic factors in Ewing's sarcoma. University of Minnesota. *Diss. Abstr. Int. B Sci. Eng.* 47:2861.

Daniels, J. L., Olshan, A. F., Teschke, K., Hertz-Picciotto, I., Savitz, D. A., Blatt, J., Bondy, M. L., Neglia, J. P., Pollock, B. H., Cohn, S. L., Look, A. T., Seeger, R. C., and Castleberry, R. P. 2001. Residential pesticide exposure and neuroblastoma. *Epidemiology* 12:20–27.

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Davis, J. R., Brownson, R. C., Garcia, R., Bentz, B. J., and Turner, A. 1993. Family pesticide use and childhood brain cancer. *Arch. Environ. Contam. Toxicol.* 24:87–92.

Feychting, M., Plato, N., Nise, G., and Ahlbom, A. 2001. Paternal occupational exposures and childhood cancer. *Environ. Health Perspect.* 109:193–196.

Flower, K. B., Hoppin, J. A., Lynch, C. F., Blair, A., Knott, C., Shore, D. L., and Sandler, D. P. 2004. Cancer risk and parental pesticide application in children of agricultural health study participants. *Environ. Health Perspect.* 112:631–635.

Garaj-Vrhovac, V., and Zeljezic, D. 2000. Evaluation of DNA damage in workers occupationally exposed to pesticides using single-cell gel electrophoresis (SCGE) assay. Pesticide genotoxicity revealed by comet assay. *Mutat. Res.* 469:279–285.

Gardner, M. J., Snee, M. P., Hall, A. J., Powell, C. A., Downes, S., and Terrell, J. D. 1990. Results of case-control study of leukaemia and lymphoma among young people near Sellafield nuclear plant in West Cumbria. *Br. Med. J.* 300:423–439.

Gold, E., Gordis, L., Tonascia, J., and Szklo, M. 1979. Risk factors for brain tumors in children. *Am. J. Epidemiol.* 109:309–319.

Granot, E., and Kohen, R. 2004. Oxidative stress in childhood—In health and disease states. *Clin. Nutr.* 23:3–11.

Heacock, H., Hertzman, C., Demers, P. A., Gallagher, R., Hogg, R. S., Teschke, K., Hershler, R., Bajdik, C. D., Dimish-Ward, H., Marion, S. A., Ostry, A., and Kelly, S. 2000. Childhood cancer in the offspring of male sawmill workers occupationally exposed to chlorophenate fungicides. *Environ. Health Perspect.* 108:499–503.

Hemminki, K., Saloniemi, I., Salonen, T., Partanen, T., and Vainio, H. 1981. Childhood cancer and parental occupation in Finland. *J. Epidemiol. Commun. Health* 35:11–15.

Hill, A. B. 1965. The environment and disease: Association or causation? *Proc. R. Soc. Med.* 58:295–300.

Holly, E. A., Aston, D. P., Ahn, P. K. A., and Kristiansen, J. J. 1992. Ewing's bone sarcoma, parental occupational exposure, and other factors. *Am. J. Epidemiol.* 135:122–129.

Infante-Rivard, C., and Sinnett, D. 1999. Preconceptional paternal exposure to pesticides and increased risk of childhood leukemia. *Lancet* 354:1819.

Infante-Rivard, C., Mur, P., Armstrong, B., Alvarez-Dardet, C., and Bolumar, F. 1991. Acute lymphoblastic leukaemia among Spanish children and mothers' occupation: A case-control study. *J. Epidemiol. Commun. Health* 45:11–15.

Infante-Rivard, C., Labuda, D., Krajinovic, M., and Sinnett, D. 1999. Risk of childhood leukemia associated with exposure to pesticides and with gene polymorphisms. *Epidemiology* 10:481–487.

Kantor, A. F., McCrea-Curnen, M. G., Meigs, J. W., and Flannery, J. T. 1979. Occupations of fathers of patients with Wilms's tumour. *J. Epidemiol. Commun. Health* 33:253–255.

Kerr, M., Nasca, P. C., Mundt, K. A., Michalek, A. M., Baptiste, M. S., and Mahoney, M. C. 2000. Parental occupational exposures and risk of neuroblastoma: A case-control study (United States). *Cancer Causes Control* 11:635–643.

Kristensen, P., Andersen, A., and Irgens, L. M. 1995. Childhood cancer at young age and pesticide use on the parents' farm: A register linkage study in Norway [abstr.]. *Epidemiology* 6:S125.

Kristensen, P., Andersen, A., Irgens, L. M., Bye, A. S., and Sundheim, L. 1996. Cancer in offspring of parents engaged in agricultural activities in Norway: Incidence and risk factors in the farm environment. *Int. J. Cancer* 65:39–50.

Kuijten, R. R., Bunin, G. R., Nass, C. C., and Meadows, A. T. 1992. Parental occupational and childhood astrocytoma: Results of a case-control study. *Cancer Res.* 52:782–786.

Leiss, J. K., and Savitz, D. A. 1995. Home pesticide use and childhood cancer: A case-control study. *Am. J. Public Health* 85:249–252.

Lieberman, A. D., Craven, M. R., Lewis, H. A., and Nemenzo, J. H. 1998. Genotoxicity from domestic use of organophosphate pesticides. *J. Occup. Environ. Med.* 40:954–957.

Lowengart, R. A., Peters, J. M., Cicioni, C., Buckley, J., Bernstein, L., Preston-Martin, S., and Rappaport, E. 1987. Childhood leukemia and parent's occupation and home exposures. *JNCI* 79:39–46.

Ma, X., Buffler, P. A., Gunier, R. B., Dahl, G., Smith, M. T., Reinier, K., and Reynolds, P. 2002. Critical windows of exposure to household pesticides and risk of childhood leukemia. *Environ. Health Perspect.* 110:955–960.

Magnani, C., Pastore, G., Luzatto, L., and Terracini, B. 1990. Parental occupational and other environmental factors in the etiology of leukemias and non-Hodgkin's lymphomas in childhood: A case-control study. *Tumori* 76:413–419.

McCredie, M., Maisonneuve, P., and Boyle, P. 1994. Antenatal risk factors for malignant brain tumours in New South Wales children. *Int. J. Cancer* 56:6–10.

McKinney, P. A., Fear, N. T., Stockton, D. 2003. Parental occupation at periconception: Findings from the United Kingdom childhood cancer study. *Occup. Environ. Med.* 60:901–909.

Meinert, R., Kaatsch, P., Kaletsch, U., Krummenauer, F., Miesner, A., and Michaelis, J. 1996. Childhood leukaemia and exposure to pesticides: Results of a case-control study in northern Germany. *Eur. J. Cancer* 32A:1943–1948.

Meinert, R., Schuz, J., Kaletsch, U., Kaatsch, R., and Michaelis, J. 2000. Leukemia and non-Hodgkin's lymphoma in childhood and exposure to pesticides: Results of a register-based case-control study in Germany. *Am. J. Epidemiol.* 151:639–646.

Mulder, Y. M., Drijver, M., and Kreis, I. A. 1994. Case-control study on the association between a cluster of childhood haematopoietic malignancies and local environmental factors in Aalsmeer, The Netherlands. *J. Epidemiol. Commun. Health* 48:161–165.

Olshan, A., Breslow, N. E., Falletta, J. M., Grufferman, S., Pendergrass, T., Robison, L. L., Waskerwitz, M., Woods, W. G., Vietti, T. J., and Hammond, G. D. 1993. Risk factors for Wilms' tumor: report from the national Wilms' tumor study. *Cancer* 72:938–944.

Olshan, A. F., De Roos, A. J., Teschke, K., Neglia, J. P., Stram, D. O., Pollock, B. H., and Castleberry, R. P. 1999. Neuroblastoma and parental occupation. *Cancer Causes Control* 10:539–549.

Pagoda, J. M., and Preston-Martin, S. 1997. Household pesticides and risk of pediatric brain tumors. *Environ. Health Perspect.* 105:1214–1220.

Reynolds, P., Behren, J. V., Gunier, R. B., Goldberg, D. E., Hertz, A., and Harnly, M. E. 2002 Childhood cancer and agricultural pesticide use: An ecologic study in California. *Environ. Health Perspect.* 110:319–324.

Downloaded By: [Health Canada] At: 17:05 10 October 2007

Rodvall, Y., Dich, J., and Wiklund, K. 2003. Cancer risk in offspring of male pesticide applicators in agriculture in Sweden. *Occup. Environ. Med.* 60:798–801

Roman, E., Watson, A., Beral, V., Buckle, S., Bull, D., Baker, K., Ryder, H., and Barton, C. 1993. Case-control study of leukaemia and non-Hodgkin's lymphoma among children aged 0–4 living in West Berkshire and North Hampshire health districts. *Br. Med. J.* 306:615–621.

Rothman, K. J., and Greenland, S., eds. 1998. *Modern epidemiology*. Philadelphia: Lippincott-Raven.

Schreinemachers, D. M. 2000. Cancer mortality in four northern wheat-producing states. *Environ. Health Perspect.* 108:873–881

Schuz, J., Kaletsch, U., Kaatsch, P., Meinert, R., and Michaelis, J. 2001a. Risk factors for pediatric tumors of the central nervous system: Results from a German population-based case-control study. *Med. Pediatr. Oncol.* 36:274–282.

Schuz, J., Kaletsch, U., Meinert, R., Kaatsch, P., and Michaelis, J. 2001b. High birthweight and other risk factors for Wilm's tumor: Results of a population based case-control study. *Eur. J. Pediatr.* 160:333–338.

Schwartzbaum, J. A., George, S. L., Pratt, C. B., and Davis, B. 1991. An exploratory study of environmental and medical factors potentially related to childhood cancer. *Med. Ped. Oncol.* 19:115–121.

Sharpe, C. R., Franco, E. L., de Camargo, B., Lopes, L. R., Barreto, J. H., Johnsson, R. R., and Mauad, M. A. 1995. Parental exposures to pesticides and risk of Wilms' tumor in Brazil. *Am. J. Epidemiol.* 141:210–217.

Shu, X. O., Gao, Y. T., Brinton, L. A., Linet, M. S., Tu, J. T., Zheng, W., and Fraumeni, J. F. Jr., 1988. A population-based case-control study of childhood leukemia in Shanghai. *Cancer* 62:635–644.

Sinks, T. H., Jr. 1985. N-*Nitroso compounds, pesticides, and parental exposures in the workplace as risk factors for childhood brain cancer: A case-control study*. PhD dissertation, Ohio State University, Columbus.

Spitz, M. R., and Johnson, C. C. 1985. Neuroblastoma and paternal occupation: A case-control analysis. *Am. J. Epidemiol.* 121:924–929.

Valery, P. C., McWhirter, W., Sleigh, A., Williams, G., and Bain, C. 2002. Farm exposures, parental occupation, and risk of Ewing's sarcoma in Australia: A national case–control study. *Cancer Causes Control* 13:263–270.

Wijngaarden, E. V., Stewart, P. A., Olshan, A. F., Savitz, D. A., and Bunin, G. R. 2003. Parental occupational exposure to pesticides and childhood brain cancer. *Am. J. Epidemiol.* 157:989–997.

Wilkins, J. R., and Koutras, R. A. 1998. Paternal occupation and brain cancer in offspring: A mortality-based case-control study. *Am. J. Ind. Med.* 14:299–318.

Wilkins, J. R., and Sinks, T. H. 1984. Occupational exposures among fathers of children with Wilms' tumor. *J. Occup. Med.* 26:427–435.

Wilkins, J. R., and Sinks, T. H. 1990. Parental occupation and intracranial neoplasms of childhood: Results of a case-control interview study. *Am. J. Epidemiol.* 132:275–292.

Winn, D. M., Li, F. P., Robison, L. L., Mulvihill, J. J., Daigle, A. E., and Fraumeni, J. F., Jr. 1992. A case-control study of the etiology of Ewing's sarcoma. *Cancer Epidemiol. Biomark. Prev.* 1:525–532.

Zahm, S. H., and Ward, M. H. 1998. Pesticides and childhood cancer. *Environ. Health. Perspect.* 106(suppl. 3):893–908.

# Utilization of the National Pollutant Release Inventory for Substances under Canada's Chemicals Management Plan

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## Introduction

This paper examines the potential for using the National Pollutant Release Inventory (NPRI) as a public reporting mechanism on chemicals identified by Domestic Substances List (DSL) categorization. In addition, it supports the initial work of Environment Canada to investigate the results of categorization and the rationale to advance this work with effective engagement for the NPRI Working Group.

The categorization of 23,000 substances listed on the Domestic Substance List by Health Canada and Environment Canada has been a major achievement in taking stock of the thousands of substances that may be in commerce in Canada and identifying and prioritizing for further attention those substances of concern to human health and/or the environment. As a result of this work, over 4,000 substances have exhibited characteristics that may cause harm to human health and/or the environment and require

further action. This sobering finding speaks to the need to protect Canadians and their environment from risks associated with these chemicals and the need to establish an agenda that effectively aims to prevent releases and exposure of these substances and, in many cases, eliminating their use. It also speaks to the need to have on-going monitoring of the releases and transfers of these substances.

Under the Chemical Management Plan, announced in December 2006, these substances have been prioritized based primarily on the degree of risks /hazards posed and exposure data. Approximately 500 substances have been designated as high priorities for action. These substances are to be addressed through various mechanisms. In particular, and of relevance to this paper, are 193 of the high priority substances that are being addressed through a "Challenge" program[1]. These substances have characteristics that indicate they are persistent, bioaccumulative **and** inherently toxic to non-human organisms (PBiT), or pose a high hazard to human health (based on evidence of carcinogenicity, mutagenicity, developmental toxicity or reproductive toxicity)[2]. Another 2,600 are designated as "medium priority", while 1,200 are considered to be of "low concern".

The current focus of the government plan is on establishing management regimes over the next three years to address the substances identified under the "Challenge"[3]. As yet, no plan has been released to address those substances considered to be of "medium priority".

However, there is very limited information on many of the categorized substances and this information is not readily accessible to the public, nor in a form that is useful in terms of tracking releases of these substances to the environment, trends, pollution prevention actions and so on. Whatever measures are decided upon to "manage" these substances needs to be subject to public scrutiny. Public participation and access to information are critical components to ensure that there is effective engagement by the public.

## Pollutant Inventories and the NPRI

Pollutant inventories, such as the NPRI, provide the public with access to information that is not otherwise readily available on releases and transfers of chemicals in their community, workplace or other areas in which they have a concern and interest.

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[1] Refer to www.chemicalsubstances.gc.ca for more information on the Challenge program. Other components to address the top priority substances include: significant new activity controls (SNACs), the petroleum sector stream, and substances that are already in the assessment and management stream.

[2] The evidence from categorization indicates that these 193 substances meet the criterion for toxicity (section 64 (a), (c), CEPA 1999. Note: The approach followed by Health Canada is not necessarily in keeping with the CEPA criteria for categorization since Health Canada combined hazard and exposure information to determine their priorities).

[3] These substances, along with their chemical profiles, are being published in batches of 15-30 substances every three months over a 3 year period. (Batch 1 was released February 3, 2007).

The NPRI is an annual mandatory facility-based public reporting system (under section 46, CEPA 1999). Presently, reporting to NPRI is required on 367 substances. For those facilities that meet reporting requirements, releases are reported to air, water, land, as well as transfers, disposal and recycling activities[4].

The NPRI is a useful tool to track emission trends, pollution prevention strategies, the environmental performance of specific industrial sectors; and in disseminating information to the public and raising public awareness. However, the NPRI is under-utilized in a number of ways, such as in its potential capacity to track progress in pollution prevention and is limited to release and transfer data for a select number of substances.

The NPRI should be considered as a useful and effective tool in providing some essential information on substances that have been identified through categorization, information that is otherwise lacking, outdated and not publicly transparent.

At the same time, in order to achieve its full potential to assist the "Challenge" Program, there are a number of areas in the NPRI program in which improvements are needed, such as, thresholds for reporting, removing exemptions for specific facilities, requiring more information on pollution prevention activities, and data quality.

**Status of Categorized Substances Reported to the NPRI**

Out of the 193 high priority substances listed in the "Challenge" program, 31 are listed on the NPRI as discrete substances. Another 19 substances may be found within groups of substances that are listed on the NPRI. For example, a survey of the 30 Batch 1 and Batch 2 substances indicates that 8 of the Batch 1 substances and 5 of those in Batch 2 are listed on the NPRI. These substances have been identified as a high hazard to humans and of high likelihood of exposure to Canadians. None are PBiTs[5].

But even for those substances listed on NPRI, the NPRI data on releases and transfers of Batch 1 substances is very limited.. This may possibly be attributed to the current NPRI threshold requirements for reporting (10 tonnes manufactured, produced or otherwise used for substances listed in Part 1[6]). This requires further investigation.

[4] Reporting is mainly triggered by a set of thresholds based on the amounts of the substance that is manufactured, produced or otherwise used, or in some cases, release levels.
[5] See attached spreadsheet on Batch 1 and 2 Substances and Substances in future batches.
[6] http://www.ec.gc.ca/pdb/npri/npri_online_data_e.cfm.

**Relevancy of NPRI on other substances (PiTs, BiTs) identified through Categorization**

The following subsections provide rationale to further government efforts in integrating the substances identified through categorization under NPRI program.

*Contribution to development of management regimes*

A number of the categorized substances designated as high priority lack information, have outdated information, or have no systematic method of tracking uses and releases. Such information would better inform strategies to "manage" these substances and serve as a means of validating whether such strategies are accomplishing what they are purported to do – such as virtual elimination, prohibition, pollution prevention, etc.

Other issues of concern regarding the substances identified through the categorization process include:

- Substances may no longer be found in commerce but may still be released to the environment
- There are no means of tracking these substances in products.
- Information on substances in the "Challenge" program is sparse and outdated (see technical profiles).
- There is no government plan to date as to how to deal with the 2,600 "medium priority" substances. Nor is there a mechanism to track these and low-priority substances.
- For some substances, there are no Chemical Abstract Service (CAS) numbers, which may be due to trade secrets. This is an obstacle to finding out information on such substances.

*Coordination with existing questionnaire*

NPRI-like information is requested for the voluntary "Challenge" questionnaire for high priority substances, but there are inconsistencies with thresholds for reporting to the NPRI and those thresholds in the questionnaire. There is value in addressing these inconsistencies at the beginning part of the process. Another issue of concern with the existing questionnaire relates to the voluntary nature of the questionnaire. It does not provide the public transparency of a mandatory system such as the NPRI.

*Improving the NPRI program: Linking Categorized Substances to the NPRI*

The results of categorization present an opportunity to improve the use and scope of NPRI. Over the years, stakeholders have expressed a need to use the data from NPRI to evaluate effectiveness of current policies and regulations aimed at management of toxic substances. The results of the categorization process and Canada's Chemical Management Plan have created some opportunities to track progress on reductions in releases of these substances, informing the priority setting process for moving toward screening assessments and decisions on these substances. At the same time, the dearth of

information and the lack of current information on some of the most hazardous substances identified by categorization stress the need for a mandatory reporting mechanism to track these substances.

*Identifying substances for priority action*

The proposed use of the rapid screening tool included in the Chemicals Management Plan to address substances of "low ecological concern" is a very specific aspect of the Plan that would benefit significantly from the utilization of the NPRI for updated data on releases and transfers of these substances. An NGO submission dated April 5th, 2007 on the proposed rapid screening approach outlined a list of concerns and expressed objections to the government proposal to use the rapid screening tool to "set aside" substances from further assessment. Instead, NGOs have expressed the need to use the rapid screening tool to *assist* in setting priorities for evaluation. The use of the NPRI to track such substances is viewed as a critical component of such an approach.[7]

## Summary and Recommendations

Linking the categorized substances to the NPRI could be a strong component of the Public Right-to-Know. We support the following recommendations:

1) We support Environment Canada's activities and active participation by the NPRI Working Group to investigate the results of categorization for the purposes of adding these substances to the NPRI.

2) It is our position that the NPRI program should be expanded to include reporting of all substances identified through categorization. The challenge before the government is <u>not</u> a matter of which substances should be added to the NPRI but how these substances <u>can</u> be added and in what timeframe.
   i) It is essential that the 193 substances in the "Challenge" program be listed and tracked through the NPRI.
   ii) Furthermore, the application of the NPRI program is highly relevant to tracking substances in the government's proposed approach to address 1,200 low concern substances.
   iii) A similar approach should be taken for the medium priority substances for which no plan for action by the government has been released.

3) Adjustments to the NPRI beyond adding substances are needed to incorporate the categorized substances. A systematic mechanism needs to be developed to carry out this task and would require substantive discussions within the NPRI Working Group.

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[7] Canadian Environmental Law Association, World Wildlife Fund Canada, York Region Environmental Alliance. April 5, 2007. Application of rapid screening tools for categorized substances of low ecological concern
Submitted to Environment Canada. Prepared for Canadian Environmental Network Toxics Caucus (9 pp.).

4) The NPRI Working Group should be given the responsibility and adequate resources to focus its work on integrating the substances identified through the categorization process.

5) A review of thresholds for reporting on these substances in addition to substances already being reported to the NPRI is a critical component of this work[8].

6) Other aspects of the NPRI that require improvements include:
   i) an enhancement of mandatory reporting in NPRI on pollution prevention activities;
   ii) removal of exemptions from reporting; and
   iii) add direct links to health and environmental issues for each substance being reported.

RCEN members will be pleased to work with Environment Canada to develop changes to the NPRI program so it can fulfill its potential to assist in the work under the government's "Challenge" program.

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[8] Note: An Alternate Threshold (ATH) sub-group of the NPRI Working Group currently exists, but its mandate needs to be re-examined to incorporate this aspect.

**Notes on Labelling Systems: A Best Practices Review**

Overall comments

I think we need to set the stage a bit more in the introduction to the report. In the introduction I think the rationale for the Report would benefit from a small section on exposure pathways i.e.: ingestion, absorption and inhalation. If statistics are available on what the major pathways are it would assist to better focus the discussion of what should be labelled. I think we should use the term involuntary exposure because it brings the point home that we are not choosing exposure because we have not had the right to know. I also think we should point out the historical complacency Canadians have had and their overall assumptions that their governments were protecting them until recent exposes by the media and products recalls have made it evident that this is not true.

A small discussion of vulnerable populations, children, the chemically sensitive, the elderly and chronically ill would be valuable as well as emerging evidence of the role of toxic substances in asthma, heart disease, developmental outcomes and cancers. There is increasing recognition that Toxic use reduction and elimination would likely result in less chronic illnesses overtime and that labelling would give the consumer the information to make healthier choices.

I would also make the point that labelling is not a panacea and should not be seen as a substitute for reducing and eliminating high hazard chemicals from products.

The discussion of labelling options

There is a typo in the first paragraph on page 14 "released on January 29, 2008".

It would help to have visuals for all options discussed if possible. It helps to clearly assess the options. Also it would help to have a chart or someway of defining considerations of health and hazards. For instance on page 24 the health and environmental hazards covered by the GHS introduce sensitization, reproductive toxicity impacts on lactation and target organ toxicity. These are impacts that I wasn't really considering while reading the report up to that point. It would be valuable to introduce a more comprehensive description of health outcomes of hazards earlier in the report so that they are in the readers mind before they evaluate all the labelling options. This will

help them focus not only on what is covered but also what is missing from various options.

In the section on REACH labelling we should probably speculate how much this will drive the labelling of globally traded goods. Does this mean that we will not be able to ignore their labelling approach as it will soon be required practice for some goods in Canada? Is this also the case for other systems that harmonisation is expected. Perhaps we need an additional section in the report that talks about the politics of labelling and speculates on how the world could effectively move toward a harmonised system and what will influence this being a best practices common denominator. This may go well beyond the mandate for this report but should be something NCEOE does with it.

On page 41 in the 5th point under strength I would omit the word Federal.
I would add another Strength. That requiring hazard labelling can be a stigma and deterrent for continued use of the hazardous substance by the manufacturer.

Omissions
One label that has not been discussed are the fruit stickers. Most consumers do not know their purpose. Most Produce Look-Up numbers (PLU) consist of four digits. They are mainly used in supermarkets to identify fruits and vegetables at the check-out.

I was recently surprised to learn that in the US some four-digit PLUs are prefixed with an 8 (8xxxx) which denotes genetically modified produce and a 9 (9xxxx) which denotes organically grown produce. Both numbers are prefixes to the standard four digit PLU. When numbering systems like this are used to covey information directed at both distributors as well as the public it is important that there are materials that explain what those numbers mean to Consumers.

A discussion of the **best location** for labelling is needed and how many degrees of separation are effective. i.e.:

- Directly on the product.
- On the packaging of the product
- Inserted in the packaging of the product.
- Available from a remote source such as an aggregated list or database,
- In a designated location in a workplace, or
- on a manufacturer's or a regulator's website.

Sorting what the most successful labelling practices are might be information that has been developed by marketers rather than regulators since their product success depends on communicating risks.

**Accessibility** of labelling needs to drive the process. A fundamental question that needs to be answered is; should all labelling be universally accessible to consumers, regulators, workers, medical and emergency responders?

Concerns about future challenges

With a greening of society public concerns are growing about a number of different components of a product. Not only are consumers concerned about what products contain, but they are also concerned about their origins, if they grown or manufactured locally and how much the "carbon footprint" of that particular product is and how much waste is generated by the product and its packaging. Some of these additional concerns may create challenges for labelling as consumers demand to know more.

If too much information is needed to be on a product then it will have to be packaged with large surfaces to adequately display the information. This could lead to more waste and more undesirable forms of packaging that in themselves are hazardous (such as the recent revelations about Bisphenol A in cans). It is likely that there may be a demand for multi-dimensional broader eco-based labelling in the future.

We should not loose sight of where the burden of proof should fall. Because manufacturers and governments are not protecting us, right to know means the public consumers need to become the experts. The practicality of scrutinising every ingredient in a product at point of purchase or even later is daunting. For these reasons I favour the simple highly visible hazard labelling that clearly says what the hazard is (a carcinogen, toxic, hormone disruptor) and the health outcome it can cause. I still need to be convinced of the success of some of the symbols in communicating a health hazard.

I cannot stress enough that labelling will be dangerous if there are not checks and balances on whether the labels are accurate and stiff penalties for failure to comply.

National Committee on Environmental and Occupational Exposures -
Primary Action Group
Canadian Partnership Against Cancer

# Right to Know Labelling Consultation and Partnership Development Meeting

February 2008

## 1. Introduction

On Monday, October 27, 2008, the National Committee on Environmental and Occupational Exposures (NCEOE), a subcommittee of the Primary Prevention Action Group - Canadian Partnership Against Cancer, held the Right to Know Labelling Consultation and Partnership Development Meeting at the Fairmont Royal York Hotel in Toronto, Canada. The consultation was convened to discuss recommendations for hazard-based labelling of consumer products in Canada.

Those who attended the workshop included representatives of national associations and organizations, individuals with expert knowledge of labelling systems, and members of the NCEOE and the Primary Prevention Action Group. Representatives from Health Canada also attended the workshop to provide information and act as a resource for the group, but not as active participants.

The labelling discussion was informed by the report, A Review of Recognized Labelling Practices: The Potential for Improving Health and Environmental Standards, commissioned by the NCEOE.

The overall objectives of the workshop were:

. To provide an update on labelling in Canada and other jurisdictions; and,

. To provide the opportunity for input to the development of priority actions

and recommended next steps for hazard-based labelling in the context of

labelling in Canada.

This document looks at the most recent developments in labelling practices in Canada, reviews the workshop discussions and provides a summary of the policy options and actions suggested by workshop participants for developing right to know labelling in Canada.

## 2. Background

Different approaches have been taken to the labelling of hazards in products in various jurisdictions around the world. A number of recognized right-to-know practices were documented in the NCEOE's 2006 report, Prevention of Occupational and Environmental Cancers in Canada: A Best Practices Review and Recommendations. In this report, the NCEOE identified the disclosure of classified carcinogens in consumer products, in particular, as an important best

practice.

The NCEOE has endorsed a precautionary approach to the labelling of toxic substances in consumer products. It has recommended hazard-based labelling as one method of reducing consumer exposure to recognized carcinogens.

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Currently, in Canada, there is no legislation mandating the disclosure of carcinogens in consumer products, except for the requirements for full ingredient
labelling of personal care products.

3. Current Issues in Product Labelling
The United Nations has proposed a classification and labelling system for identifying toxic chemicals in products, known as the GHS (Globally Harmonized System of Classification and Labelling), and this proposal is currently under consideration by the government of Canada. The GHS is a hazard-based system, and its application to consumer products is a key option under the agreement approved by Canada as a signatory to the GHS.

The adoption of the GHS has the potential to change consumer product labelling and workplace labelling of hazardous substances, as well as labelling of pesticides and the transportation of dangerous goods. For consumer product labelling, the GHS is an opportunity for the government to incorporate the identification of chronic hazards, including carcinogenicity and reproductive toxicity, into its labelling regulations.

Consumer products in Canada are governed by the Consumer Chemicals and Containers Regulations (CCCR 2001) under the Hazardous Products Act. CCCR 2001 provide for the identification of acute hazards such as flammability, rather than for chronic hazards such as cancer. GHS labelling, if adopted in its

entirety as proposed by the United Nations, would require carcinogenic ingredients to be identified through the use of symbols and signal words on labels of consumer products. In order to apply the GHS to a wide range of consumer products, it would be necessary to revise the Hazardous Products Act and the CCCR 2001 which cover a limited number of consumer products.

Since the workshop discussion, the European Union has moved ahead with the adoption of the full classification and labelling system of the GHS in December 2008. This makes the European Union an international leader in the uptake of the GHS. The regulation, which entered into force on January 20, 2009, will be phased in to replace the current rules. The EU Regulation on Classification, Labelling and Packaging of Substances and Mixtures applies to all consumer products in the European Union, with the exception only of food additives, cosmetics and other substances, where EU directives require more restrictive labelling than the GHS.

Decisions on the implementation of the GHS labelling system are likely to be made by the Canadian government in 2009. Ongoing stakeholder discussions have continued to debate the issue of hazard-based labelling of chronic toxic ingredients as an alternative to risk-based product labelling supported by industry
groups.

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4. Recent Developments in Canada
There is considerable public support across Canada for broadening the scope of information disclosure and reducing public exposure to toxic chemicals. Public opinion surveys conducted by the Canadian Cancer Society in British Columbia and Saskatchewan showed that virtually everyone agrees that they have the right to know the ingredients in products they purchase, and the vast majority (97 and

96% respectively) would like to see governments pass legislation requiring the labelling of all products containing carcinogens.

The most recent initiative establishing citizens' access to information is the adoption by Toronto City Council in December 2008 of The Environmental Reporting, Disclosure and Innovation Program. The Program aims to reduce the use of hazardous substances in the City of Toronto. It includes a bylaw, which will require Toronto businesses and City operations to report publicly on their use
and release of 25 hazardous chemicals. These chemicals were selected on the basis of their presence in the City of Toronto's environment at levels of concern.
The bylaw comes into effect on July 1, 2010 and will be phased in over 4 years.

In addition to public disclosure of hazardous chemicals, the City's program includes support for businesses to help them track their chemicals and to prevent
pollution.

In addition, private member's bills that promote information disclosure have been
introduced provincially in British Columbia and Ontario, and into the federal Parliament:

. Introduced in November 2007, the British Columbia Right to Know Act, 2007, provides for warnings to consumers when services or consumer goods contain toxic substances to which they might be exposed. Goods containing toxic substances must display a label that includes the name of the toxic substance, a danger symbol and indication of the danger, a reference to any special risks, and the origin of the substance. It also included provisions for alerting consumers to the presence of genetically modified organisms in food. Although this bill did not proceed with provincial government support, right to know labelling continues be an issue of considerable interest in the province.

. Similarly, in Ontario in 2006, a private member's bill was introduced into Parliament that would have provided for warnings on consumer goods or services that had the potential to expose people to carcinogens or reproductive toxins. The passage of Bill 164, which was supported by all political parties, was interrupted by the provincial election and has not been re-introduced.

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. At the federal level, a private member's bill was introduced in May 2008 that would require manufacturers to print warning labels on all products known to contain toxins.

Furthermore, Ontario's Toxics Reduction Strategy, released in August 2008, proposes to create new authorities to address toxic chemicals in consumer products. The legislation, which has not yet been introduced, would allow the Ministry of Environment to ban or restrict the manufacture, distribution or sale of
a designated toxic substance or products that contain it, and would allow the Ministry to require manufacturers or sellers of consumer products to publicly report on products containing a toxic substance. Another aspect of the government's strategy is to provide the public with accessible, easy-tounderstand information about toxics, including carcinogens, in the environment
and in consumer products so that people in Ontario can make informed choices.

Similarly, the federal government has proposed significant changes to the Food and Drugs Act and introduced the Consumer Product Safety Act in January 2009 with the goal of improving product safety in Canada. The bill, which has not yet

been passed, will prohibit the manufacture, importation or sale of consumer products that pose an unreasonable danger to human health or safety. Although the proposed revisions to the Food and Drugs Act and the new Consumer Product Safety Act do not change the current labelling requirements, the legislation will put the onus on manufacturers to ensure the safety of their products.

The federal government is also continuing with its Chemicals Management Plan, releasing batches of 15 to 30 high hazard chemicals every few months for industry input. Management plans have been drawn up for chemicals in the first series, which include a number of carcinogens.

5. National Workshop Summary
The events of the day were initiated with an overview of the work of the Primary

Prevention Action Group of the Canadian Partnership Against Cancer and the work of the NCEOE.

This was followed by a review of recognized labelling practices: 1) information labelling, such as ingredients labelling used for cosmetics; 2) hazard labelling

which warns consumers about hazardous properties of a chemical or a product; and, 3) preferred product labelling, which marks those products that meet a higher environmental or health standard.

Current issues in federal labelling, particularly the proposed adoption of the GHS
for consumer product labelling and the workplace hazardous materials information system, were presented by the NCEOE.

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A presentation from a representative of the California Department of Public Health Services described the basic elements of Proposition 65 in California. The accomplishments of Prop 65 include the listing of 777 chemicals, quiet compliance and research on alternatives, market-based incentives, and visible cases where toxins have been removed from products. Two issues were identified that were challenges in the Prop 65 system: first, generic warnings generally provide little specific information as to chemicals and exposures, and,
second, because of liability concerns, businesses tend to provide warnings for listed chemicals whether or not they are required.

Representatives from Health Canada explained the scope of the Consumer Chemicals and Containers Regulations (CCCR 2001) with respect to the proposed GHS labelling. GHS labelling would apply only to chemical ingredients in consumer products. There have been extensive consultations with stakeholders, and government is evaluating this input. No decision has been made to date regarding the implementation of GHS in Canada.

6. Broad Strategic Priorities Identified in Workshop Discussions
The afternoon session was a facilitated discussion about approaches to hazard-based labelling in Canada. The objectives for the session were:

. to provide input on policy options for a Canadian labelling system with a focus on carcinogens;
. to identify key actions and steps to support the development of a Canadian labelling policy; and,
. To develop a plan for disseminating the knowledge generated at the meeting.

For clarification, non-governmental organizations participating in the discussions
first agreed on a definition of a hazardous consumer product -- any manufactured

product offered (for sale, rent, given away or provided as a service) to a consumer or individual that carries with it the potential for exposure to a toxic
substance. Discussion questions were then presented to the workshop.

A. Policy Options
The first set of questions focussed on what could be learned from the experience

of other jurisdictions to create an effective hazard-based labelling system in Canada.

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Positive lessons:

A number of positive outcomes, which could enhance primary prevention of exposure to carcinogens in consumer products, were identified:

. Hazard-based labels require that the manufacturer identify specific toxic ingredients, their potential health hazards and the appropriate precautionary response;

. Process and design features on labels can enable consumers to understand the hazard easily;

. Warnings are effective with legislated space requirements, as is the case with tobacco labels which require warnings on 50% of the package (although tobacco labelling was a long, hard-fought battle);

. Consumer input can be valuable to effective labelling;
. Preferred product labelling can happen simultaneously with hazard labelling;
. Labelling can help consumers to make healthy or environmentally sound choices and assist manufacturers in reformulating products;
. People want to have clear, transparent and targeted information; they do not want to be overwhelmed.

Challenges

A number of challenges were also identified by participants in the workshop, including:

. Not only is the presence or absence of a hazardous substance important in labelling, but the magnitude of the hazard should be conveyed to the consumer;

. Ingredient disclosure is a good starting point but is not sufficient as the only information on a label; many people do not know what the chemicals are if they are just listed as ingredients in a product without any indication of the hazard;

. Warnings can be too general to be helpful to people, as in California where labels do not identify specific ingredients or specify how carcinogenic a chemical is;

. Warnings on packages need to be refreshed or "label fatigue" sets in and people do not pay attention;

. It is important not to give people the impression that "everything causes cancer"; information must be very specific about what carcinogen is present and what the health effects are;

. There are literacy and comprehension issues that must be considered when labels are being designed;
. Hazard information must be visible to consumers at the point of purchase, and should include the CAS number; and,

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. Pesticide labelling is an example of labelling where warnings are not noticeable enough to have an effect.

B. Key Actions and Next Steps

Participants in the workshop proceeded to identify next steps to support the development of a Canadian information/hazard labelling system based on a second set of questions. Participants were asked to award the highest value to those actions with which they were most in agreement. Although these priorities are not necessarily a consensus view, the order of these topics reflects the priority attached to them by the participants, with the first one having the

most
support. The first group of actions are those considered to be important over the
long-term for developing a hazard-based labelling system in Canada, while the second set reflects the participants' proposals for more immediate action.

Proposed Longer-term Actions:

1) Consumer Research:

Consumer research was considered by many participants to be an important next step. It was suggested that consumer research was needed to determine whether government, industry and the public support better product labelling, to

find out what languages are needed to help consumers make informed and safe choices, and what symbols would be most useful to the public and effective in identifying hazardous chemicals. It would also be helpful to know what consumers want overall, including possibly the complete elimination of carcinogens from consumer products.

For products that are already covered in Canada by the CCCR, the options for consumers would be the adoption of the GHS in Canada or the development of an alternative hazard symbol to indicate the presence of a carcinogen in a product. Other options included partial ingredient disclosure of only those ingredients deemed to be hazardous, full ingredient disclosure, or colour-coded symbols.

For products that currently have no hazard labels, there was support for more research to find out what consumers wanted to know from labels and what approaches work or don't work. The issue of potential information overload was also identified as a concern. It was generally agreed that consumer research should be directed at not only determining what consumers want but also what is most essential in the labelling of consumer products.

2) Hazard Determination:

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A second step, noted by a number of participants, was the need for hazard identification to support a hazard-based labelling system. This would mean determining which chemicals posed the greatest magnitude of hazard to the public and which ones should be identified on labels. Carcinogens were considered a priority for identification in products. It was agreed that more information about carcinogens is needed in order to understand the sources, potency, and routes of exposure.

It was also suggested that by making manufacturers responsible for full ingredient disclosure and not allowing market access unless this is done, the federal government could more easily identify carcinogenic, mutagenic and endocrine disrupting chemicals, as well as persistent and bioaccumulative chemicals, for accurate labelling.

3) Advocacy:

The third suggested step was advocacy work to build the political will to bring in
right-to-know labelling legislation.

4) Legislation/Policy Scan:

The fourth proposed action was to evaluate existing legislation and regulations governing products that would be the focus of hazard-based labelling. This would include, for example, different classes of manufactured consumer products, such as personal care products under Cosmetics Regulations of the Food and Drugs Act, or toys under the Hazardous Products Act. An assessment of the legislation would provide clarity on the classes of consumer products,

and
on federal, provincial and municipal jurisdiction with respect to labelling and their
potential overlap.

5) Partnership and collaboration:

Another possible next step identified by the participants was collaboration among
groups who want hazard-based labelling legislation. It was decided that it was important to determine which groups want to play a role in advocating for such legislation, and on which aspects of labelling they are interested in taking the

lead.

6) Evaluation:

The sixth action was an evaluation of hazard-based labelling. Questions were asked about how the effectiveness of a labelling program would be judged. It was suggested that the influence of labelling could be evaluated through changes in consumer behaviour and by a shift to eliminate or reduce toxins in products by manufacturers. It could also be evaluated through the introduction of

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legislation or programs that would lead to reductions in the use of toxic chemicals
in products and reduce people's exposures.

7) Industry Perspectives:

The seventh and last action supported by some participants was to understand industry's arguments against hazard-based labelling and be prepared to respond. For example, it should be determined what the actual need for business confidentiality is and how it could be accommodated so that it is not a barrier to
the public's right to know.

Proposed Actions that Could Be Taken in the Short Term:

A related set of questions focussed on the actions that could be taken more immediately, based on what is already known.

1) Just Do It:

There was strong support from participants in the workshop for the immediate implementation of labelling that would inform people about carcinogens and other

hazards in products. This labelling would include the identification of carcinogens by chemical name and CAS number; a clear hazard symbol (such as "C") or a picture in the most prominent area of a consumer product; and signal
words that are effective in communicating hazards. Precautionary information should be included that would serve to protect the environment and public health.

The information would be large and easy to understand and follow. Product labelling has already been linked to positive health and environment benefits, and should be used to promote those goals. In addition, the government should extend requirements for full ingredient disclosure beyond cosmetics to all consumer products.

2) Advocacy:

There was also support in the group for advocacy work and a clear plan of

action. Possible elements of a plan were to:

. Organize a delegation of groups in favour of improved product labelling legislation to go to Ottawa to determine the degree of political support among government and opposition parties for such an initiative;

. In addition to Health Canada, lobby members of Parliament and find champions of hazard-based labelling in every political party;

. Gather allies among consumer organizations, health and environmental groups, labour and academic leaders who would support a consumer product labelling initiative;

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. Demonstrate to government how a labelling initiative should be done, by being prepared with questions and answers, facts and myths, and model legislation;

. Define what legislative provisions the government should require for ingredient labelling, and for the identification of hazards such as carcinogens in consumer products; and,

. Make concrete recommendations that IARC and NTP classified carcinogens must be disclosed, and support federal and provincial laws which address this.

3) Consumer engagement:

The third proposed action was to define the process for obtaining consumer input on different labelling formats, and begin research on the design and content of labels. Special attention would be paid to how to communicate a range of possible exposure routes.

4) Minimum Starting Point:

A fourth action was to identify a minimum starting point for labelling, and begin to improve labelling starting with simple steps. These simpler, more straightforward actions included:

. scope the range of products and identify those which must be labelled; then ask the industry responsible for these products to put in place voluntary hazard labelling and monitor its effectiveness;

. immediately ask or require companies to disclose any carcinogenic ingredients in their products; and,

. require all products containing chemicals designated as toxic under the Canadian Environmental Protection Act to bear hazard warnings.

C. Knowledge Dissemination

The last topic for discussion was focussed on possible areas of collaboration among groups supporting hazard-based labelling, although it was not determined which groups want to play a role and on what aspects of labelling.

It was recommended that the knowledge and information gained at the workshop be disseminated to invited groups and organizations that could not attend and to other interested organizations. It was also suggested that all participants in

the
workshop identify other groups or individuals who would be interested in taking action on labelling.

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7. Conclusion
The Canadian Partnership Against Cancer (CPAC) will continue its work in this area, guided by the strategic priorities identified in the workshop discussions.

Many of the groups attending the workshop will take further action to promote hazard-based labelling of consumer products, particularly the identification of carcinogens on product labels. Because of the different perspectives represented by the groups, this work will encompass a broad range of strategies.

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Appendix A: Agenda

Right To Know Labeling Consultation & Partnership Development Meeting
October 27, 2008
Fairmont Royal York Hotel

100 Front Street West
Meeting room: Alberta room
Toronto, Ontario
M5J-1E3
8:30-4:30 pm

Objectives

To provide an update on labeling in Canada and other jurisdictions
To provide opportunity for input to the development of priority actions and recommended next steps for hazard based labeling in the context to all labeling in Canada

Audience

National Organizations with expertise in labeling in Canada

Agenda

Time Topic Lead
8:30- 9:00 Breakfast and
Networking
9:00-9:30 Welcome and
Introductions
Review of Agenda
Heather Logan,
Mae Burrows
Leads, Right to Know
Labeling Working Group
9: 30-9:35 Overview of the
Canadian Partnership
Against Cancer and the
Primary Prevention
Action Group
Jon Kerner, Chair,
Primary Prevention
Action Group, Canadian
Partnership Against

Cancer
9:35-9:40 Overview of the National
Committee on
Environment and
Occupational Exposure
Larry Stoffman, Chair of
the National Committee
on Environment and
Occupational
Carcinogens
9:40 -10:30 A Review & Discussion of
Recognized Labeling
Practices
Anne Wordsworth,
Consultant and author of
the Review of the
Recognized Labeling

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Practices
10:30-10:50 BREAK
10:50-11:20 Federal Labeling
Discussion
Larry Stoffman
Mae Burrows
11:20-11:30 Questions Heather Logan,
Mae Burrows
11:30-12:00 California Proposition 65 Bob Schlag, California
Department of Public
Health
12:00-12:10 Questions Heather Logan
Mae Burrows
12:10-1:00pm Lunch
1:00-2:30 Facilitated Discussion
Approaches to Labeling
in Canada
Facilitator: Brian
Hyndman, Alder Group
2:30-2:45 Break
2:45- 3:45 Consensus on priority
actions
Brian Hyndman
3:45- 4:15 Recommended next
steps and knowledge
exchange plan
Brian Hyndman
4:15- 4:30 Conclusion Heather Logan
Mae Burrows

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