

Are we reducing the use of toxic substances?

**An environmental scan
of current activities and possible connections
about toxics 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**

Submitted by Dorothy Wigmore
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Note: This report and the charts in the appendices contain a lot of links to internet sites. Rather than write out the specific URLs, the links can be found by using the electronic versions. In this report, the links are indicated by **green** text; in the charts, they are **blue**.

Executive summary

Background

Consumers. First Nations. Academics. Children's health advocates. Environmental and conservation groups. Governments. The Canadian Cancer Society, Lung Association and Heart and Stroke Foundation. Workplaces, sectoral business associations and non-profit organisations. Unions and public health departments.

They, and others, are involved in a range of activities to prevent cancer and eliminate or reduce the use of toxic substances in Canada. But who's doing what? Are they connected and how?

These kinds of activities led the National Committee on Environmental and Occupational Exposures (NCEOE) of the Primary Prevention Action Group in the Canadian Partnership Against Cancer to examine appropriate strategies to reduce the presence and use of toxic substances. One result was requesting an environmental scan about toxics use reduction (TUR) and cancer prevention activities in Canada.

The findings were to be analysed for opportunities and gaps and to lay *the groundwork for networking resources active in the area of toxic reduction, and to facilitate national and provincial discussions on which strategies may hold the greatest promise on both a regional and national level.*

For this scan, TUR was defined as a pollution prevention strategy. As one ingredient of a healthy environment, the goal is to reduce or eliminate toxic substances to the greatest extent possible, thus preventing exposure or harm (e.g., cancers and other chronic illnesses or diseases).

In this context, TUR may be aimed at, or take place in various settings. Activities include:

- ☐ pollution prevention programmes, laws, practices and research;
- ☐ legislation or workplace programmes requiring substitution or other practices to prevent exposure or harm;
- ☐ "green chemistry" research and applications;
- ☐ company or sectoral best practices and programmes; and/or
- ☐ public campaigns about:
 - preventing exposure to, or harm from, toxic substances in particular products, production practices or environments;
 - preventing specific outcomes (e.g., cancer, sensitisation, adverse reproductive effects); and/or
 - "right-to-know" about toxic substances in products, communities, etc.

Key concepts that go with TUR are aiming for prevention of exposure to toxic substances and the principles of precaution and informed substitution.

The scan was done in the first half of 2009. The work was divided into two parts: government and other organisational activities. It was informed by advice from NCEOE members and Partnership staff, conversations with representatives of more than 40 organisations/committees/stakeholder groups/individuals, and documents going back to at least the 1980s. Aside from these leads, internet searches were the principal method used in the scan.

Findings

Using a broad definition of toxic use reduction was helpful. While many organisations do not label their work as TUR or "pollution prevention", the scan found many relevant activities.

Life cycle thinking is a helpful framework in which to situate them. Governments, coalitions, networks, organisations, community groups and academics enter the realm of cancer prevention and TUR at different points in the life cycle of chemicals. The specifics depend on the scope of their focus and activities.

The detailed findings are in 14 documents. One is about governments. The rest are presented in one document for those with a national/federal focus and another 12 by province/territory (except Nunavut). Numerically, the listings were:

- ☐ government laws, programmes and policies: federal - 28, provincial and territorial - 144, municipalities - 18;
- ☐ organisations with a national/federal scope: 78; and
- ☐ organisations with a provincial or territorial scope (for all but Nunavut): 185.

Only one government law, policy or programme -- the new Ontario *Toxic Reduction Act* -- names TUR directly; another 65 fit our definition of a TUR activity. Three occupational health and safety laws mention or use the precautionary principle or substitution (British Columbia's *Occupational Health and Safety Regulation*, Part X of the *Occupational Health and Safety Regulations* in the *Canada Labour Code* and Section 39 in Division 5 of Québec's *Regulation Respecting Occupational Health and Safety*).

The activities and descriptions of the 263 non-government provincial/territorial listings were classified using 28 specific keywords and a smattering of others. For analytical purposes, the keywords are compiled by organisation and jurisdiction in the charts in Appendix 4.

The circles of interest found in the scan were:

- ☐ academics, research and surveillance,
- ☐ business and employers (including health care institutions),
- ☐ cancer,
- ☐ children and schools,
- ☐ environmental illnesses,
- ☐ First Nations, Inuit, Metis (Aboriginal Peoples),
- ☐ green building and purchasing (including food and household products),
- ☐ green chemistry,
- ☐ labour,
- ☐ occupational activities, workplaces, green jobs,
- ☐ pesticides and alternatives,
- ☐ pollution prevention and toxics use reduction,
- ☐ training and workshops, and
- ☐ miscellaneous themes.

Every jurisdiction in southern Canada has some kind of TUR-related activity involving:

- ☐ air quality,
- ☐ green purchasing (except Prince Edward Island),
- ☐ household products,
- ☐ occupational health,
- ☐ cosmetic pesticide bans,
- ☐ training/workshops,
- ☐ water quality (except PEI), and
- ☐ workplaces.

Most also have activities:

- ☐ involving research (mostly academic),
- ☐ related to the effects of mining and waste,
- ☐ concerned with children, and
- ☐ using surveillance methods (i.e., monitoring of people's health or effects on air, soil, water, wildlife and/or fauna).

Training and workshops are common methods for most listings (209), while the most common topic is pesticides and their alternatives (106). Smoking (11), environmental illness (17) and green chemistry (18) are the least common topics covered, with indoor air quality (30) and green buildings (32) not far behind. Toxics use reduction is a phrase or idea used by only 45 listings, while 73 talk about pollution prevention. Although specific or general occupations (110) and workplaces (95) are mentioned in larger numbers, occupational health itself is rarely the focus of attention. Given the topic of the scan, it's not surprising that almost all listings mentioned the words environment (257), health (251) and chemicals (238).

Stakeholder groups are involved in specific activities or describe the "ownership" of the organisation. Including the type of organisation, the scan found this number of listings: labour: 27; First Nations, Inuit, Metis: 32; network: 33; academic: 37; business: 39; and NGO: 87.

The gaps

The most obvious gaps are that many groups and governments do not use life cycle thinking or the language of TUR and pollution prevention. Within a life cycle framework, the strategies of clean or sustainable production, green chemistry and the "cradle to cradle" approach are important for TUR activities. But they also are not on the radar or in the vocabulary of many of the organisations found in the scan (or the people associated with them). Nor is the TUR concept of not "shifting" hazards.

These groups, governments and their leaders do not go back this far in the life cycle of chemicals to understand where toxic substances come from, who and what is affected by the extraction and processing, and how. The consequences include:

- ☐ a lack of comprehensive visions for alternate life cycles and production processes and toxics use reduction itself;

- ☐ inadequate language to describe toxics use reduction for multiple audiences;
- ☐ incomplete and mis-understandings about what change is possible and necessary;
- ☐ much more emphasis on individual efforts than on more effective collective and systemic TUR strategies;
- ☐ little or no thought about the “just transition” programmes needed to avoid shifting the economic burden to those now employed in extraction and production workplaces, or those depending on them;
- ☐ disconnects between those interested in occupational and environmental health;
- ☐ isolation of those concerned with occupational and Aboriginal Peoples’ health from others who do not share their understanding of the life cycle of toxic substances;
- ☐ a paucity of research and experience about what TUR activities are possible in the early stages of a chemical’s life cycle; and
- ☐ difficulty to truly prevent ill health and effects on flora, fauna and wildlife.

Furthermore, few of the activities found in the scan:

- ☐ name green chemistry, green buildings or green jobs as a strategy,
- ☐ include labour or business (although this is both difficult to discover and seems to be increasing),
- ☐ recognise environmental illness (or at least name it), or
- ☐ involve schools (in terms of the students and/or staff).

Workplaces are important in life cycle thinking. When they are included, production and extraction activities are much higher priorities as sites for action to prevent cancer and implement TUR. Instead, the scan found:

- ☐ TUR, the precautionary principle, clean production and informed substitution rarely show up in occupational health and safety laws, although many of them have a goal to prevent ill-health and injuries;
- ☐ inside workplaces, TUR and cancer prevention activities focus on reducing waste, energy use and greenhouse gases, rather than the earlier stages of a life cycle; and
- ☐ the 10 organisations that talk about green jobs - ones that are good for the environment and

the people doing them -- are limited to those working with or representing workers and their unions.

Geographically, few national coalitions, groups, organisations or networks have obvious connections to most parts of the country (especially the Prairies, Atlantic Provinces and the North). What happens in Québec tends to stay there, cosmetic pesticide bans and environmental sensitivities excepted. There are other regional differences, including a preponderance of activities and organisations with paid staff in southern and urban Ontario, and those outside that area often knew little about the new TUR law in that province or similar activities elsewhere.

Sectoral differences also showed up. They include:

- ☐ healthcare is clearly ahead of many other sectors, at least in southern Ontario and British Columbia;
- ☐ those with environmental illnesses are included in fewer joint efforts than those from general environmental organisations, or better-funded ones with paid staff;
- ☐ volunteer-based organisations are strapped for resources, so their effectiveness often is the result of dedication, passion and sacrifices, and it is difficult for them to participate fully in face-to-face networking; and
- ☐ although occupational health and safety laws have been around since the mid-1970s in many jurisdictions, there is little data available about enforcement of provisions to deal with toxic substances or examples of creative use of the provisions, although general enforcement is reported to be uneven and ineffective.

Finally, although the findings offer a lot of opportunities for conversations that can make up for the gaps found, the results are missing some voices and activities such as:

- ☐ community-based Aboriginal activities;
- ☐ French-speaking groups in Québec, New Brunswick and northern Ontario;
- ☐ groups that work in other languages;
- ☐ workplace-based activities (for employers/ businesses and labour);
- ☐ smaller local groups and programmes;
- ☐ groups and individuals without websites; and
- ☐ self-employed people, an increasingly common job status for researchers and environmental and occupational health specialists.

The opportunities

Although there is little happening specifically about TUR and cancer prevention amongst Canadian governments, a large number of listings fit our TUR rubric. This indicates potential for action in almost every jurisdiction, using existing laws, policies and programmes.

In the non-government listings, opportunities include:

- ❑ A growing number of networks and coalitions are focused on specific goals or issues related to TUR and cancer prevention, while long-time national health-oriented organisations now include occupational and environmental health issues in their purview.
- ❑ Nationally and regionally, there is a growing attention to, and research about, the health of Aboriginal peoples and communities.
- ❑ A few organisations and networks provide examples of how to develop and use comprehensive approaches to cancer prevention and TUR activities. Of note are: the Canadian Environmental Law Association, the Canadian Labour Congress, the Canadian Partnership for Children's Health and Environment, Canadians for a Safe Learning Environment, Clean Production Action, Great Lakes United, Ontario Centre for Environmental Technology Advancement and Toxic Free Canada.
- ❑ Collectively, Toronto-based organisations (with help from others) have pushed the possibilities for TUR and cancer prevention, including:
 - Toronto's community right-to-know by-law,
 - the Ontario *Toxics Reduction Act*, passed on June 3, 2009,
 - the most comprehensive provincial cosmetic pesticide ban in the country, and
 - a variety of documents about cancer prevention and strategies to accomplish that goal.
- ❑ Organisations are doing innovative work in smaller centres and the hinterland in general.
- ❑ There is increasing interest in, and support for, "sustainable consumption" and "green purchasing" or "green procurement", emphasising individual actions.
- ❑ Innovative approaches include using maps, the media (including the internet) and the law (particularly by the Canadian Environmental Law Association or CELA).

- ❑ Existing joint efforts show how to develop shared experiences, personal and collegial friendships, outreach for specific purposes and building trust by working together in different settings over time.

The suggestions and insights from more than 40 interviewees point the way to useful networking content and processes.

Conclusions and recommendations for next steps

Lots of relevant things are going on across the country, even if they are not labelled TUR activities at the moment.

Networking and sharing resources about this topic also does happen now, particularly around cosmetic pesticide bans. The interviews showed there is a thirst for more. Key informants provided useful suggestions about practical ways to make connections, indicated the support they need to network, and named their limits about these kinds of activities.

Within governments, existing laws, policies and programmes could be used directly and indirectly to tackle TUR in a comprehensive and effective way. The Ontario law and Toronto right-to-know by-law indicate some possibilities.

The conjuncture of activities, legal tools, interest, hope, inspiration and enthusiasm make this an opportune time to develop TUR and cancer prevention networks locally, regionally and nationally.

The recommendations for next steps build on the interviewees' suggestions and the opportunities and gaps found. The details are in section 4.

1. Distribute the report and appendices extensively

The Partnership should:

- ✓ distribute the final report and appendices to each organisation and government department or agency listed in the appendices (electronically and/or by mail), and others;
- ✓ encourage the recipients to distribute the report and appendices to their networks and member organisations;
- ✓ put the report and appendices on its website, and allow and encourage others to do so;

- ✓ collect information about the “hits” and feedback when documents are downloaded; and
- ✓ report about the collected information and feedback to whatever entity is set up by the former NCEO, as well as the new PPAC.

Members of the former NCEO should:

- ✓ distribute the final report and appendices to their own networks; and
- ✓ encourage their organisations, and others with which they are affiliated, to post the report and appendices on their respective websites.

2. Develop integrated TUR-related networks at different levels

Networks require laying groundwork in multiple ways. To start, it may be done most easily by those with a comprehensive approach to TUR, the RCEN and/or a committee similar to the NCEO. The basic tasks required are:

- ✓ identify known and possible “players” and set up a database to include all this information;
- ✓ inventory current activities, documents, resources and best practices, and set up a database with this information;
- ✓ evaluate past experiences and current government activities to identify lessons to inform future efforts, as well as best practices;
- ✓ propose a way forward; and
- ✓ along the way, use opportunities to network and work together.

3. Take advantage of so many organisations doing training or workshops

Whatever else is done, it makes sense to take advantage of the large number of training events and workshops found. As with the last recommendation, the work could be done by organisations that already have a presence and voice on the topic.

To present TUR as a pollution prevention tool, and to further its development and use across the country, activities and approaches should include:

- ✓ a needs assessment, following compilation of the inventory of training and workshop topics and materials;
- ✓ development of participatory workshops and train-the-trainer sessions for different situations;
- ✓ objectives such as:

- “seeing” TUR in the context of life cycle thinking, and the precautionary and informed substitution principles,
- situating participants’ current activities in the life cycle of chemicals,
- discussing how to shift the effects of those activities closer to the production points on the life cycle,
- expanding participants’ “language” about preventing and reducing exposure to, and harm from, toxic substances, and
- discussing opportunities for changes to, or new, laws and government programmes;
- ✓ integrate occupational and environmental experiences and issues to:
 - show how and why to avoid “shifting” hazards and risks,
 - better situate current activities in a life cycle, and
 - broaden the lenses used in TUR activities;
- ✓ share training materials through organisations with a wide range of potential partners;
- ✓ reach out to existing environmental and labour educational efforts;
- ✓ offer presentations about TUR at annual meetings, conferences or other events; and
- ✓ a multi-disciplinary and multi-sectoral “speakers bureau” to do these presentations and workshops, using materials developed as a result of this recommendation.

Final considerations

Follow-up and evaluation are key ingredients of whatever the Partnership and others decide to do with this report. They can be done in the context of seeking opportunities to advance TUR and support those who implement and advocate for this pollution prevention strategy in any way.

In the end, the scan findings provide opportunities to start conversations, build on experiences, follow leads and develop collaboration. They offer ways to move towards preventing harm, using the strategy of toxics use reduction and the possibility of networking and sharing resources about the topic.

While there is much to be done, the glass is more than half-full in terms of interest, enthusiasm and actions. Helping to fill it would be a positive step for public health and the environment.

1. ***What's behind this scan?***

1.1 ***What's the context? An introduction***

Consumers are abandoning plastic baby bottles and toys, reducing their use of bottled water and asking questions about the toxic contents of household products and cosmetics.¹

Many First Nations are challenging mining, hydro and other industrial developments, citing health effects to their peoples and wildlife.² Near Sarnia, Ontario's Chemical Valley, the Aamjiwnaang First Nation wonders why its families have fewer male children these days.³

More than 150 Canadian municipalities have cosmetic pesticide bans, the result of advocacy by traditional health and environmental organisations, unions and public health groups, often working in relatively-new coalitions. The governments of New Brunswick and Prince Edward Island will introduce bans in 2010, following the leads of Ontario and Québec. Alberta will ban "weed and feed" pesticide-fertilizer mixtures in 2010. MPs have introduced bills for a national cosmetic pesticide ban.

Water quality and pollution/contamination by a wide variety of sources is the subject of study and action by academics, environmental and conservation groups from coast to coast to coast. In some cities, sewage by-laws now restrict toxic substances allowed in the water-related systems.

The Canadian Cancer Society, Lung Association and Heart and Stroke Foundation have a joint campaign to increase public attention and political action about environmental health hazards. They want ingredient labels on all products designed for human use, with clear, highly-visible identification

of toxic or carcinogenic substances, and a national Air Quality Health Index.

The Cancer Society also now advocates for prevention of environmental and occupational exposures to cancer-causing hazards, after many years focused on finding "a cure". This includes joining many others calling on governments to phase out the use and export of asbestos.

Unions and environmental groups are joining forces to develop education, policies and actions about extended producer responsibility, just transitions to green jobs and integrated responses to occupational and environmental health issues.

The Ontario government passed a bill about toxics use reduction in June, 2009. It was responding to publicised gaps in cancer prevention and growing pressure from a broad spectrum of organisations committed to environmental, occupational and/or public health issues and "taking on toxics".

Federally, the government is going through toxicity information for about 23,000 chemicals used commercially in the country. The Chemicals Management Plan (CMP) and its consultation process are an intense effort to determine which substances should be declared "toxic" under the Canadian Environmental Protection Act (CEPA).

These are some of the activities⁴ that led the National Committee on Environmental and Occupational Exposures (NCEOE) of the Primary Prevention Action Group in the Canadian Partnership Against Cancer (The Partnership) to examine appropriate strategies to reduce the presence and use of toxic substances in Canada. One result was the request for an environmental scan about toxics use reduction (TUR) activities in Canada.

1.2 ***What was the scan about? How was it done?***

The NCEOE asked for an environmental scan of TUR and cancer prevention activities in Canada. The findings were to be analysed for opportunities and gaps and to lay *the groundwork for networking resources active in the area of toxic reduction, and to*

¹ CBC coverage of these trends and related studies can be found at their websites about **bisphenol A**, "**Homo toxicus**", **scented household products** and **toxic toys**, amongst others. Also see the household products categories in the charts in this report.

² For example, see the **resources and publications** from the First Nations Environmental Health Innovation Network and the **Indigenous rights section** of MiningWatch Canada's website. Also see section 2.3.3 of this report.

³ A **CBC report** provides a good summary about this and a 2005 **scientific paper** is available on line.

⁴ Details about these activities, and more, are provided in this report and the charts in the appendices.

facilitate national and provincial discussions on which strategies may hold the greatest promise on both a regional and national level.

The scan was done between February and May, 2009. Three committee members and a Partnership staff person formed an advisory group to start things off. The advice helped to ensure that the scan was informed by experiences and documents about preventing exposure to and/or harm from toxic substances, going back to at least the 1980s.

An earlier document is the Environment Canada 1986 report *From cradle to grave: A management approach to chemicals. Report of a task force representing industry, governments, labour, environmental groups and consumers*. More recent and relevant documents include:

- ☐ the 2002 report prepared for Toronto Public Health, *Potential for occupational and environmental exposure to ten carcinogens in Toronto*;
- ☐ *Prevention of Occupational and Environment Cancers in Canada: A best practices review and recommendations* (known as the *Best practices* report), done for the Canadian Strategy for Cancer Control/NCEO in 2006;
- ☐ *Cancer and the environment in Ontario: Gap analysis on the reduction of environmental carcinogens* (known as the *Gap Analysis*), done for Cancer Care Ontario's Cancer and the Environment Stakeholder Group in 2007;
- ☐ *Proceedings of the environmental carcinogen use reduction symposium*, a 2007 meeting sponsored by the Canadian Cancer Society, Canadian Strategy for Cancer Control and Cancer Care Ontario;
- ☐ *Not that innocent: A comparative analysis of Canadian, European Union and United States policies on industrial chemicals*, a 2007 report done for Pollution Probe and the U.S. Environmental Defense group;
- ☐ *Creating Ontario's toxics reduction strategy. Discussion paper*, and related documents, in the Canadian Environmental Law Association's **TUR collection**; and
- ☐ *Cancer and the environment: A Review of Alberta's programs and a comparison with international approaches*, which Anne Wordsworth prepared in 2009 for the former Alberta Cancer Board's Environment Unit.

The work was divided into two parts. Government activities were found by using:

- ☐ internet searches of federal, provincial, territorial and municipal government sites, and other relevant legal and pollution prevention-related websites;
- ☐ e-mails to specific federal, provincial and territorial government departments about toxics use reduction and pollution prevention laws and policies;
- ☐ published reports documenting toxics-related federal and provincial laws, policies and programs; and
- ☐ personal knowledge based on previous experience and research.

Other organisational activities were found by using:

- ☐ references and descriptions of activities in recent documents about TUR and cancer prevention;
- ☐ requests for assistance posted on a key Canadian health and safety list-serve;
- ☐ internet searches and links from specific sites;
- ☐ conversations with representatives of more than 40 specific organisations / committees / stakeholder groups or individuals doing relevant work; and
- ☐ referrals from NCEO members, the contractor's networks and interviewees.

The conversations used telephone and/or e-mail, except for small meetings in Yellowknife and Prince George. The latter were an attempt to better understand the situation for those in smaller and more remote communities who are trying to reduce or prevent exposures to toxic substances in workplaces, First Nations communities, homes and the general environment.

There was a standard set of questions to get information required for the scan (e.g., mission/objectives, contact person, description of TUR-related or cancer-prevention activities past and present). Aside from questions about their current connections, others dealt with networking possibilities:

- ☐ Interested in networking about TUR? Sharing resources?
- ☐ Why?
- ☐ Who are you interested in networking with in Canada? (by type / issue / name)
- ☐ What would help your organisation do that?

The result of all the work is this report which reviews the findings, analyses the gaps and opportunities and briefly concludes with some recommendations for next steps. The detailed scan findings are in 14 separate documents that were put into two appendices. Those listings are organised this way:

- ❑ Appendix 1 includes governments (federal / national, provincial / territorial and municipal), listed alphabetically; and
- ❑ Appendix 3 covers people and organisations, sub-divided into one document for those with a national / federal focus and another 12 that are arranged alphabetically by province / territory (except Nunavut).

Appendix 1 includes information about legislation or materials related to TUR, related websites and information about the responsible government department or organisation, where possible. Appendix 2 summarises and compares government TUR activities in a numerical way.

The lists in Appendix 3 have a column for keywords to assist searching by topic or interest. Those words were used to develop the charts in Appendix 4 of this report. The charts provide a quick overview by jurisdiction of each organisation and its type of TUR activities. These grid charts were invaluable in analysing the gaps and opportunities discussed in the report.

There are some caveats and important limitations about the findings. They include:

- ❑ The internet and document aspects of the scan were done in English, although a few French-language sites in Ontario, Québec and New Brunswick were investigated. This approach effectively missed potential listings for many Francophone groups.
- ❑ Some listings do have complete or partial versions of their websites in French, and / or French-language materials. The English versions are named as a starting point; French-language links usually are on the website's main page.
- ❑ Some columns are blank because a few organisations and individuals do not have websites. In other cases, there is no "real" office or address to use to get hold of an organisation or individual, or no information about the appropriate person to contact.
- ❑ Others lack details or are missing information because individuals did not respond to e-mails

or phone calls and / or groups have no or out-of-date websites.

- ❑ As the introduction to the lists says, they do not include absolutely everything happening in the country. The reasons vary. Perhaps most important, it's a shifting landscape; websites change, new reports come out, new coalitions or networks form or recent actions offer new ways to approach the topic. Economic problems can lead to layoffs and closing offices. Other reasons include the time available for the scan, difficulty getting information about activities that likely are going on (particularly about workplace activities) and how "green" has become a ubiquitous word that cannot be trusted ("greenwashing").
- ❑ Efforts were made to discern what is relevant, but this scan does not analyse the worthiness or successes of the efforts and activities listed. It is much more about what looks interesting, innovative or full of possibilities in the realm of preventing or reducing exposure to toxic substances in our world.

1.3 What is toxics use reduction?

For this scan, toxics use reduction was defined as a pollution prevention strategy. As one ingredient of a healthy environment (whether inside or outside a structure), the goal is to reduce or eliminate toxic substances⁵ to the greatest extent possible, thus preventing exposure or harm (e.g., cancers and other chronic illnesses or diseases).

In this context, TUR activities may be aimed at, or take place in:

- ❑ individual workplaces and facilities,
- ❑ communities (including First Nations, Inuit and Métis),
- ❑ the private sector (e.g., specific companies, sectoral associations),
- ❑ academic institutions (e.g., research about "green chemistry" or substitution), and / or

⁵ We defined toxic substances as chemicals (i.e., gases, liquids and solids and their "relations") that can cause adverse effects to people and / or their environments. The effects may be acute, chronic or inter-generational. For this scan, the substances of particular interest are carcinogens, mutagens, those affecting reproduction and development, sensitisers and persistent organic pollutants or POPs.

- ❑ the public sector (e.g., governments, public health agencies, schools).

The activities include:

- ❑ pollution prevention programmes, laws, practices and research;
- ❑ legislation or workplace programmes requiring substitution or other practices to prevent exposure or harm;
- ❑ "green chemistry" research and applications;
- ❑ company or sectoral best practices and programmes; and/or
- ❑ public campaigns about:
 - preventing exposure to, or harm from, toxic substances in particular products, production practices or environments;
 - preventing specific outcomes (e.g., cancer, sensitisation, adverse reproductive effects); and/or
 - "right-to-know" about toxic substances in products, communities, etc.

This understanding of toxics use reduction is consistent with the goals of the new Ontario law⁶ but broader than some other definitions. For example, the ground-breaking Massachusetts law describes TUR as:

*in-plant changes in production processes or raw materials that reduce, avoid, or eliminate the use of toxic or hazardous substances or generation of hazardous byproducts per unit of product, so as to reduce risks to the health of workers, consumers, or the environment, without shifting risks between workers, consumers, or parts of the environment.*⁷

This scan showed that it can be quite helpful to start with a broader overall definition of the topic. Going beyond production processes helped to find many ways in which Canadians, their institutions and organisations are trying to prevent or reduce exposures to toxics. (The life cycle graphic in section 2.1 presents another way to appreciate how this occurs.)

TUR also needs to be put in context. Figure 1 shows one way to do this. A TUR strategy builds on the principles -- or foundation stones -- of the



Figure 1 TUR is one ingredient of a healthy environment. The five foundation stones -- or principles -- at the bottom of this graphic can be implemented using the "bricks" or building blocks above them as strategies. However the blocks are arranged, TUR is a key strategy. (From training materials prepared by the author)

precautionary principle, substitution, life cycle thinking, sustainable development and environmental justice. With the other "bricks", it contributes to a healthy environment in workplaces, homes and communities.⁸

"Prevention" is a key concept here. As the Canadian Environmental Law Association (CELA) stated in its model law, the purpose of TUR is:

*to promote public and workplace health and safety, including protection of sensitive populations, and the environment through the **prevention**, reduction, or **elimination** of the manufacture, use, processing, and release of toxic substances. (emphasis added)*⁹

The Massachusetts criterion about not shifting hazards and their associated risks¹⁰ also is crucial in an effective toxics use reduction strategy. For public health and prevention purposes, releasing a hazardous substance into the outside air, or water,

⁶ The Toxics Reduction Act, 2009 (also known as Bill 167) was passed by the Ontario Legislature on June 3, 2009. For details, see

<http://www.ene.gov.on.ca/en/toxics/index.php>.

⁷ From the *Massachusetts Toxics Use Reduction Act*.

⁸ These "foundation stones" are consistent with the **principles** behind the *Canadian Environmental Protection Act*.

⁹ See the August 26, 2008 document, *Our Toxic-Free Future: An Action Plan and Model Toxics Use Reduction Law for Ontario (combined report from June 2008 and Model Bill)*.

¹⁰ A hazard is not the same thing as a risk. "Risk" refers to the odds or chances of an effect because of the inherent hazardous properties of a substance. TUR strategies are based on the hazards of a substance.

creates a challenge if it increases exposures for workers inside the plant or facility. This “shifting” of hazards and their effects may reduce health and environmental effects in one arena, but it likely will increase them in another.

Public health practitioners -- whether they deal with environmental or occupational health issues -- aim to prevent people getting ill or hurt using an approach summarised by the “prevention triangle” (Figure 2).

Borrowed from a Belgian law, it explains the three possible types of solutions for hazards, explicitly using the word “prevention”.¹¹ Level 1 gets rid of the hazard. The other more-collective solutions at Level 2 (i.e., they don’t depend on individuals and are available to everyone who may be exposed) prevent harm at the source. Level 3 only limits the harm to people and the environment.

TUR actions usually aim for Level 1 prevention. Reducing the amount of a toxic substance present in a given situation -- a Level 2 solution -- could prevent harm. (This is not true of substances for which there is no accepted “safe” concentration at which effects may not occur.)

An important phrase associated with prevention is the precautionary principle, one of the “foundation stones” in Figure 1. It is considered a public health approach to making decisions about strategies such as TUR. The 1998 **Wingspread Statement on the Precautionary Principle** explained it this way:

Where an activity raises threats of harm to the environment or human health, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of an activity, rather than the public bears the burden of proof. The process of applying the Precautionary Principle must be open, informed and democratic, and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action.

(For examples of how to use the principle, many of which involve toxics use reduction strategies, see the European Environment Agency’s **Late lessons from early warnings**.)

These contextual considerations helped to frame the searches and conversations that were part of this environmental scan. They also are discussed in the analysis of the findings, as well as the gaps and opportunities for TUR activities and networking.

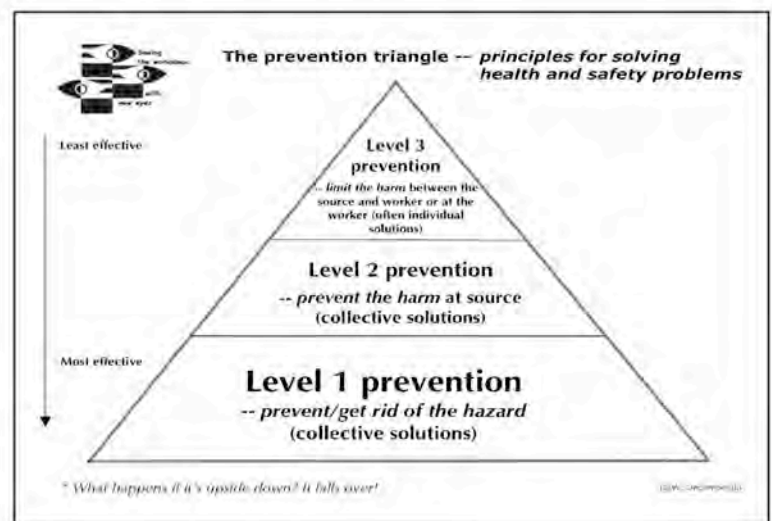


Figure 2 The prevention triangle explains the three types of prevention activities and their effectiveness. A firm foundation for prevention requires getting rid of hazards, using collective solutions that benefit all who are or may be exposed. On the other hand, the least effective methods only limit harm and tend to rely on individual actions or activities. (From training materials developed by the author)

¹¹ The phrase “hierarchy of controls” is often used in occupational health and safety to describe how to tackle hazards. This detracts from the goal of preventing harm. “Controls” assume the problem still exists, while explicitly using “prevention” offers the possibility of informed substitution with less toxic substances or processes. This distinction is very important in TUR.

2. Who's doing what about TUR in Canada these days?

2.1 Overview

It is useful to recognise that exposures to toxic substances can occur at various points in a chemical's life cycle (Figure 3). The Ontario government used a similar framework in its proposed toxics reduction strategy.¹²

This approach is reflected in the variety of "places" where TUR-related activities were found in this scan. Governments, coalitions, networks, organisations, community groups and academics enter the realm of toxics use reduction at different points in the life cycle of chemicals, depending on the scope of their focus and activities. As a result, they bring different perspectives -- a few of them overarching views and understandings about the whole life cycle, but most paying particular attention to post-production stages.

However, few describe their activities and goals as "toxics use reduction". Instead, they sometimes talk and write about "pollution prevention", dealing with "contaminants" and -- these days especially -- "green" and/or "sustainable" workplaces, products, practices, processes and environments.

The words "prevent" and "prevention" are used more often but "substitution" (or "informed substitution, the term used by the innovative Clean Production Action) is infrequently used and then, mostly by those associated with occupational health and workplaces.

Whatever they call their activities, the organisations found in this scan put individual and collective pressure on decision-makers in government and industry to prevent or reduce exposures to toxic substances. Governments often respond to this advocacy and the public attention generated by those outside government.

An important example is the recent successful efforts to push the Ontario government to introduce a TUR law. Like that campaign, these kinds of efforts increasingly occur in coalitions or networks¹³ focused on specific goals (e.g. the Toronto community "right-to-know" by-law, cosmetic pesticide bans, Ban Asbestos campaigns) or issues (e.g., Canadians for a Safe Learning Environment, Canadian Partnership for Children's Health and Environment, First Nations Environmental Health Innovation Network, Gordon Water Group of Concerned Scientists and Citizens).

Despite the increased attention, laws and campaigns about toxic substances, occupational exposures and their consequences get much less attention than do exposures and their effects outside workplaces. Activities in this category proved to be quite difficult

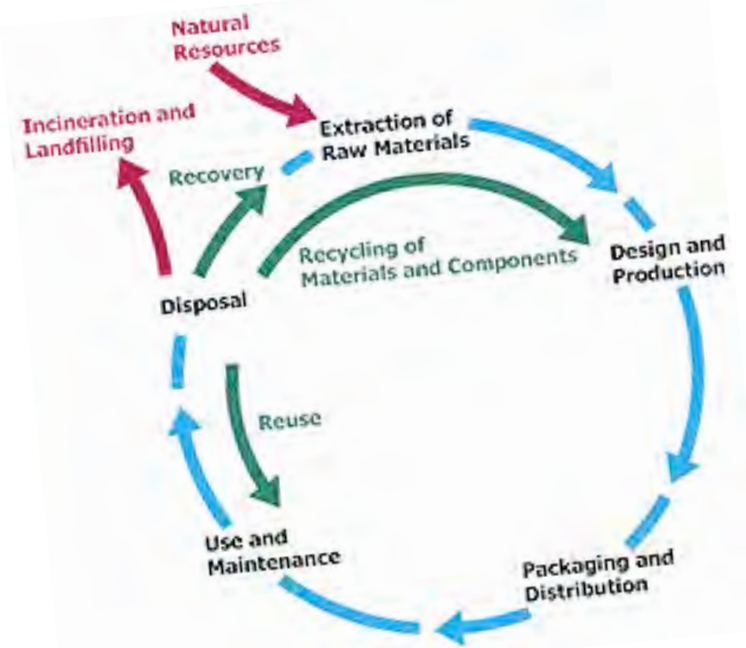


Figure 3 Toxic substances have a multi-stage life cycle. They can be released into the air, water and soil of work or general environments at any stage, leading to exposures for people, wildlife, and plants. There are energy inputs and wastes leave the cycle. The United Nations Environment Programme also is concerned about the environmental, social, and economic impact of a product over its entire life cycle. (From <http://www.unep.fr/scp/lifecycle/>.)

¹² Ontario Ministry of the Environment. *Toxics, the environment and your health. A toxics reduction strategy for Ontario*. August, 2008.

¹³ It can be difficult to distinguish between coalitions and networks, given how groups choose to describe themselves. According to the Oxford Canadian Dictionary, a coalition is "a temporary alliance for combined action"; networks are defined as "group(s) of people who exchange information, contacts and experience for professional or social purposes".

to find, requiring personal interviews and creative web search methods.

At the same time, there are indications that workplace stakeholders -- owners/employers and workers and their unions -- are being recognised and included more often in toxics reduction activities. For example, most individual workplaces were found through these sources, the results of government-sponsored programmes, academic efforts and coalition activities:

- ❑ links about “partners” and specific activities on individual websites (e.g., those supporting cosmetic pesticide bans);
- ❑ **Ontario Centre for Environmental Technology Advancement** (OCETA)’s Clean Technology reports and its regional “Sustainability” pollution prevention programmes for small-to-medium sized manufacturers in the Greater Toronto Area;
- ❑ Pollution Probe’s 12 industrial **case studies** using environmental sustainability concepts and tools;
- ❑ Québec-based **EnviroClub** about pollution prevention for small and medium workplaces;
- ❑ success stories from the **Canadian Centre for Pollution Prevention**, its sister site (the **Canadian Pollution Prevention Information Clearinghouse**) and the **Eco-efficiency Centre**’s work in eastern Canada;
- ❑ **Toxic Free Canada** (formerly the Labour Environmental Alliance Society) reports about its activities; and
- ❑ ZWATeam’s **Local Zero Heroes** in Thunder Bay.

Other examples turned up through personal conversations and e-mails. Unions and Toxic Free Canada provided some about school boards and other employers negotiating collective agreements to reduce the use of toxics or co-operative programmes introduced through joint health and safety committees. (There is a sample in Appendix 5.) The NCEO itself is an example of including and/or working with union representatives. So too are Blue Green Canada, Toxic Free Canada, the Canadian Partnership for Children’s Health and Environment, Ontario-based efforts for TUR and pesticide laws, Toronto-based efforts to get right-to-know bylaw and the Prevent Cancer Now coalition.

In other sectors or circles of interest, academics like those at the Atlantic RURAL Centre are starting to include occupational exposures in their health

studies. The Centre also is part of a growing effort to expand the common focus on urban exposures to look at situations in rural areas and Canada’s First Nations, Inuit and Métis populations. This goes beyond traditional isolated research efforts to academics and specialists working with and/or for environmental organisations and First Nations and Inuit communities and organisations. Participatory and qualitative methods also are more common.

These efforts, and those of other organisations with paid staff, need to be recognised. So too do the considerable achievements of volunteer-run groups. Those representing people with environmental sensitivities stand out, in particular. Their members are not able to work consistently and the groups operate on the proverbial financial shoe-string and a lot of good will. Still, they provide remarkable examples about how it is possible to use fewer toxic substances in schools, public buildings, homes and workplaces (see section 2.4.6 for details).

While the lists include organisations, groups, companies and governments, individuals found during the scan have been left out. However, they play an important role in influencing organisations, government and academic activities. As more people become self-employed, the place of these consultants in the world of toxics use reduction needs to be considered. For more about this, see the discussions about gaps and opportunities.

It also is important to recognise ground-breaking activities that are not easily visible in a scan like this. The Great Lakes ecosystem is a very important site of attempts to deal with toxic substances. At least three groups listed in this report played key roles in pioneering TUR activities in this multi-national ecosystem, starting in the 1970s. The work of Great Lakes United (GLU), the Canadian Environmental Law Association (CELA), the Mohawk Council of Akwesasne and others, led to the Great Lakes Water Quality Agreement of 1978¹⁴. It commits the Canadian and US governments to “virtual elimination” of toxics in the ecosystem and regular reviews of priority substances.

The groups continued to work with the International Joint Commission (IJC) and its science and water quality advisory boards, and on other fronts (e.g., GLU led its union members in clean production campaigns in the 1980s). Others did research about the effects of toxic substances on fish and whales, discovered hormone-disrupting and

¹⁴ The International Joint Commission administers the **document** and the review process associated with it.

mimicking chemicals and worked with fishers. Networking and discussions amongst and between the two countries and affected states and provinces were key parts of the work. Despite the precedent-setting work, these days the research capacity for, and attention to, the eco-system are a shadow of earlier efforts.¹⁵

The rest of section 2 looks at TUR-related activities found in the scan through several lenses: government/non-government, provincial/territory geography, the topic of concern or strategy used and the gaps found using these frameworks.

2.2 National/federal activities

2.2.1 Government

The 29 federal government entries found in the scan are listed in Appendix 1. They reflect some of the guiding principles¹⁶ behind the *Canadian Environmental Protection Act* (CEPA) that are important when it comes to toxics use reduction:

- ✓ sustainable development
- ✓ pollution prevention
- ✓ virtual elimination
- ✓ ecosystem approach
- ✓ precautionary principle
- ✓ polluter pays principle.

Environment Canada (which administers the CEPA) and Health Canada are the federal departments that would be most involved in toxics use reduction, at least in terms of using current laws, programmes and policies. Their attention is on “the environment” (i.e., outside workplaces), cosmetics and household products, although their (in)actions also affect workplaces.

Some laws, programmes and policies on the list are highlighted in turquoise. This indicates current activities and laws that fit easily under the TUR rubric. For example, federal regulations ban the manufacture, use, sale or importing of nine

substances, and the “virtual elimination” of one other. These rules open the door for similar actions about other substances. These have been pointed out elsewhere¹⁷ and are discussed later in this report. At the same time, the other laws, programmes and policies still are relevant to TUR activities and could be mixed and matched into a comprehensive programme.

Aside from their own programmes, the departments support some activities carried out by academics and organisations such as the:

- ❑ Canadian Centre for Pollution Prevention,
- ❑ Canadian Council of the Ministers of the Environment,
- ❑ Canadian Network for Human Health and the Environment, and
- ❑ Canadian Environmental Network (e.g., consultations about the Chemicals Management Plan).

Occupational health and safety is usually in the purview of provincial governments. However, workplaces covered by federal labour laws are governed by regulations issued under the *Canada Labour Code* and enforced by inspectors from Human Resources and Skills Development Canada.

Those regulations include requirements to implement the Workplace Hazardous Materials Information System (WHMIS). The workplace right-to-know law is replicated in all other health and safety laws in the country, thanks to an agreement made in the late 1980s. The system relies on the *Hazardous Materials Information Review Act* (HMIRA), its regulations and the federal *Hazardous Products Act* and some of its regulations.

Workplace substitution of hazardous substances, is spelled out in Part X (Hazardous substances) of the *Occupational Health and Safety Regulations* in the *Canada Labour Code*. It is qualified by the legal phrase “reasonably practicable”.¹⁸ Use of Section

¹⁵ For more about Great Lakes TUR and related activities, see the CELA, GLU and Akwesasne websites, as well as the **Great Lakes Information Network** (GLIN), an on-line information service provided by the Great Lakes Commission, a bi-national agency of Great Lakes’ provinces and states.

¹⁶ **CEPA 1999 Guiding Principles.** *A Guide to Understanding the Canadian Environmental Protection Act, 1999.*

¹⁷ Canadian Environmental Law Association. ***Strengthening legislation for a sustainable environment, a healthy population and a competitive economy. ENGO Response to Questionnaire on Scoping the Issues. Preparation for the Parliamentary Review of the Canadian Environmental Protection Act, 1999 (CEPA).*** Prepared for the Canadian Environmental Network Toxics Caucus and submitted February 11, 2005.

¹⁸ This phrase is from the *British Health and Safety at Work Act* of 1974. Its legal interpretation is the result of the 1949 case of *Edwards vs. The National Coal Board*.

10.16 has not been tracked or evaluated. Pregnant and nursing women also can request a “protective re-assignment” to avoid exposure to toxic substances.

The public’s right-to-know about toxic chemicals outside a workplace is limited at the moment in Canada. The main access is through the National Pollutant Release Inventory (NPRI) of 323 substances, a CEPA regulation. However, it is not all that helpful. It applies to only a small number of the 23,000 commercial chemical substances said to be in the workplace or general environment in Canada.¹⁹ The cut-off amounts at which releases to the environment must be reported are high and there is very limited toxicology (human and environmental health) information about most of those chemical substances, especially their “invisible” and/or long-term or inter-generational effects.

Changes are being made in several ways. The relatively-new *Cosmetics Regulations* (passed in 2004 under the *Food and Drugs Act*) require ingredient labeling of all cosmetic and personal care products. A related policy restricts or prohibits more than 400 substances in these kinds of products.

This change to the population’s right-to-know about some hazardous substances to which they may be exposed brings our laws closer to the Global Harmonised System (GHS). It is a United Nations system to identify all chemicals classified as hazardous, wherever they are used. It will provide information about them using “safety data sheets” and standard symbols and phrases on labels. This will expand the WHMIS requirements that currently do not apply to pesticides, drugs, transportation of dangerous goods and a few other situations. With GHS, pharmaceuticals, food additives, cosmetics and pesticide residues in food will be covered where workers may be exposed and

in transport; they will not have to be covered at the “point of intentional intake” (i.e., consumers).

Canada is committed to the GHS but has not implemented it yet. (The European Union’s GHS regulation took effect in January, 2009 and its requirements must be implemented by 2015.) Meanwhile, the government is focused on its Chemical Management Plan and current consultations about hazardous chemicals, which may lead to more bans or restricted uses.

2.2.2 Non-government

There are 78 listings in the non-government national / federal sector chart, including several overlaps with the government listings. They represent government-funded and independent organisations, networks, coalitions, NGOs, unions, businesses or employers and their associations, academics, health care providers and others, all of whose interests and activities can be sliced and diced in different ways.

Their strategies include using the law, advocating for new laws and/or enforcement; workshops, training and using the media, publications and the internet; and research and measuring. Increasingly, they are building coalitions and networks to intertwine and support specific organisations, issues and solutions. In terms of the object(s) of their concern, the categories that they research, focus on and/or represent include:

- ☐ Aboriginal Peoples (First Nations, Inuit and Métis) health and communities;
- ☐ the general environment and/or conservation;
- ☐ workplace practices to prevent and reduce the use of toxics substances;
- ☐ other pollution prevention and toxics use reduction activities;
- ☐ cosmetics and/or household products;
- ☐ food security;
- ☐ pesticide use in agriculture and urban settings, and organic / other alternatives;
- ☐ children’s exposures (*in utero* and up to the teen years) and their health and developmental effects; and
- ☐ the health effects of exposures (e.g., cancer, diabetes, adverse reproductive outcomes, respiratory diseases) and surveillance about the presence of toxic substances and/or their effects on people, wildlife, water, soil, air.

Essentially, it means that an employer must weigh the cost of doing nothing or little against the cost of dealing with a hazard. “Costs” of money, time and effort must be considered. There must be a “gross disproportion” between the costs of fixing/preventing the hazard and doing nothing or little. The greater the hazard, the greater the difference must be. Only after this analysis can the employer successfully argue it is not reasonably practicable to deal with the hazard.

¹⁹ The number of chemicals said to be commercially available in the United States is much higher. It ranges from 40,000 to 100,000, depending on the year in which the estimate was made and the source. The number in Canada could be much higher than the 23,000 number the government uses.

These labels are useful to understand the main focus of individual organisations/groups. However, the lines are starting to blur with what appears to be a trend towards forming coalitions and partnerships for specific goals. At the same time, long-time national health-oriented organisations now include occupational and environmental health issues in their purview (although this is not always evident among the provincial divisions or branches). For example, the:

❑ Canadian Cancer Society is:

- ✓ putting environmental issues on the front page of its campaign to “make the fight against cancer a national priority”;
- ✓ working with other NGOs, public health officials and unions about banning asbestos and cosmetic pesticides; and
- ✓ involved provincially in several relevant campaigns, e.g.,
 - Ontario Division hosts Take Charge on Toxics website in the campaign for effective TUR legislation in Ontario
 - BC and Yukon and other divisions are in coalitions advocating cosmetic pesticide bans.

❑ Lung Association:

- ✓ is a key player in the new National Lung Health Framework,
 - a plan that calls for *building partnerships, sharing best practices and identifying gaps and opportunities in the respiratory health community*, and
 - for which the interim steering committee includes representatives from government departments, physicians’ groups, academic researchers, Inuit Tapiriit Kanatami, the Assembly of First Nations and the David Suzuki Foundation;
- ✓ made work-related asthma and indoor air quality its monthly topic in May, 2009;
- ✓ has an Environmental Issues Working Group with staff in each province, and eight in New Brunswick; and
- ✓ supports bans on the cosmetic use of pesticides and recommends alternatives.

Others also provide lessons about how to organise networks or co-operation around specific activities. They include the:

❑ Canadian Network for Human Health and the Environment (CNHHE), which:

- ✓ is co-ordinated by the New Brunswick Lung Association, under a three-year contract,
 - ✓ works with Health Canada to deliver NGO delegates for consultations, and
 - ✓ provides opportunities for networking through a website, topic-based tele-conference calls, web seminars and member surveys to get input about priorities;
- ❑ Canadian Partnership for children’s Health (CPCHE), which:
- ✓ is working across three sectors -- health, environment and child care -- to produce a national voice on children’s health, not a network;
 - ✓ has 11 core member organisations, many of which worked together over many years, working in a constellation model that allows them to work together and agree on Partnership materials and positions, and in smaller sub-groups on specific topics,
 - ✓ focuses on “product” -- plain language, basic hands-on materials about where to get info about where exposures occur and safer/healthier alternatives, and
 - ✓ rolls in TUR and occupational exposures as part of its policy advocacy on several fronts; and
- ❑ Canadian Association of Physicians for the Environment (CAPE), which:
- ✓ is best known for its key role in organising support for municipal and provincial cosmetic pesticide bans across the country,
 - ✓ co-operated with a wide variety of organisations about these bans,
 - ✓ works with the Canadian Autoworkers Union (CAW) on the CAPE organic food project involving school children, and
 - ✓ is expanding its focus to include other environmental, occupational and consumer issues such as green purchasing policies.

Occupational health is mentioned infrequently in the scan of national organisations. Two exceptions are the:

- ❑ Canadian Centre for Occupational Safety and Health (CCOHS), a federal Crown Corporation with a tripartite Council of Governors, that:
- ✓ since 1978, has provided hazard information about workplace toxic substances and how to prevent or reduce exposures to them,

- ✓ provides access to its large collection of material safety data sheets (MSDSs), and
- ✓ developed a prototype database about alternative products, and is interested in doing more in this area; and
- ❑ Canadian Labour Congress and some of its member unions (Canadian Association of University Teachers/CAUT, Canadian Autoworkers Union/CAW, Canadian Union of Public Employees/CUPE, Canadian Nurses Association/CNA and United Steelworkers/USW), which have played an important role in developing policies and educational materials about and advocating for:
 - ✓ toxics use reduction,
 - ✓ extended producer responsibility,
 - ✓ just transition for workers who become unemployed by the banning or reduced use of toxic substances,
 - ✓ green jobs,
 - ✓ preventing cancer by banning substances and preventing workplace exposures to carcinogens, and
 - ✓ coalitions with environmental groups such as the Blue Green Canada.

Likewise, there is not a lot of information about relevant actions taken by specific national employers to deal with occupational health issues. One exception is the Canadian Coalition for Green Healthcare, affiliated with the international Health Care Without Harm organisation. Its membership reflects the coalition nature of the organisation; it includes national health care provider unions and organisations, environmental groups and specific hospitals or hospital programmes. However, aside from national organisations, members are concentrated in southern Ontario.

Instead, the focus of workplace toxics reduction activities is on reducing waste, energy use and greenhouse gases. Examples of this are the:

- ❑ networks, coalitions and others that work with or for companies or non-commercial employers, such as the:
 - ✓ Canadian Eco-Industrial Network,
 - ✓ Clean Air Foundation,
 - ✓ ICLEI - Local Governments for Sustainability,
 - ✓ International Institute for Sustainable Development (IISD),
 - ✓ Product Care Association, and

- ✓ Terrachoice and its EcoLogo programme; and
- ❑ green purchasing/procurement advocates and facilitators, including:
 - ✓ North American Sustainable Consumption and Production Database,
 - ✓ My Sustainable Canada,
 - ✓ Markets Initiative, and
 - ✓ the Commission for Environmental Co-operation (CEC).

The notable exception amongst those working with companies and businesses is the innovative and boundary-pushing Clean Production Action (CPA). Based in Montréal, CPA works with multinational companies in the United States, advocating for green chemistry, toxics use reduction, extended producer responsibility and clean production in general. It also works with and recognises the work of unions, environmental organisations and key U.S. players in toxics use reduction (e.g., Toxics Use Reduction Institute and the Lowell Centre for Sustainable Production).

Nationally and regionally, there is a growing attention to, and research about, the health of Aboriginal peoples and communities. Environmental hazards, particularly from mining and other sources of contamination, are almost the exclusive concern of national organisations of:

- ❑ First Nations and Inuit peoples:
 - ✓ Assembly of First Nations,
 - ✓ Indigenous Environmental Network - Canadian Indigenous Tar Sands Campaign, and
 - ✓ the Inuit Tarpitiit; and
- ❑ research and solution-based groups:
 - ✓ Manitoba-based Centre for Indigenous Environmental Resources (CIER),
 - ✓ university-based Centre for Indigenous Peoples' Nutrition and environment (CINE),
 - ✓ the Turtle Island Environmental Resources (TIERs) programme within Environmental Defence,
 - ✓ the virtual First Nations Environmental Health Innovation Network,
 - ✓ Inuit Tuttarvingat of the National Aboriginal Health Organization, and
 - ✓ Nasivvik Centre (Centre for Inuit Health and Changing Environments).

Most national environmental groups are members of the co-ordinating Canadian Environmental Network and/or its provincial networks. Although it is not an advocate, CEN facilitates consultations with the federal government and provides opportunities for co-ordinated or joint activities through its caucuses. It also provides a link to international campaigns such as the global outreach one for the Strategic Approach to International Chemicals Management (SAICM).

The trend amongst these national organisations to work with one another (and others) about specific issues and campaigns shows up in such things as:

- ❑ in April, 2009, Ecojustice, MiningWatch and Great Lakes United won a Federal Court ruling that will force the federal government to collect and publish data about toxics in mining tailings and waste in its National Pollutant Release Inventory (NPRI);
- ❑ the Alberta Tar Sands has grabbed the attention of most national environmental and conservation groups, leading to campaigns in which they also work with First Nations communities and groups, regional groups and water organisations; and
- ❑ PollutionWatch is a joint programme of Environmental Defence and the Canadian Environmental Law Association that makes NPRI information accessible to the public.

Other national groups working on a wide range of environmental issues, increasingly in coalitions and networks, are:

- ❑ David Suzuki Foundation,
- ❑ Environmental Defence,
- ❑ Greenpeace Canada,
- ❑ Learning Disabilities Association of Canada,
- ❑ National Network on Environments and women's Health (NNEWH),
- ❑ Pollution Probe,
- ❑ Sierra Club of Canada, and
- ❑ World Wildlife Fund (WWF) Canada.

Others in the national list don't fall into the categories used above. For example, the media provides a small but intriguing contribution to TUR activities. The National Film Board's Citizenshift is a home-grown social media network with entries about some activities found in the scan. Greenpages.ca and Green Muze are Canadian entities on the World Wide Web, bringing "green"

ideas (including some on the TUR landscape) to computer screens across the country. For more about these themes, see Section 2.4.15.

2.3 Provincial and territorial activities

2.3.1 General observations

The scan found governmental efforts in every jurisdiction and non-government activities in each province and territory, except Nunavut.

The totals for government and non-government activities are presented in Table 1. The numbers do not reflect quality and are not population-based rates (for estimates of the latter, see Appendix 2).

Québec and New Brunswick likely are under-represented in the non-government category, since the scan was done using a limited number of French words or phrases.

Adding in the national/federal focus government and non-government listings would increase the Ontario listings. These organisations likely also carry more weight in advocacy activities and can assign paid staff to campaigns, research, etc.

Table 1: Scan findings for provinces and territories

Province/ Territory	Non- gov't	Governments (prov'l/munp'l)
Alberta	16	13 / 4
British Columbia	30	15 / 5
Manitoba	8	10 / 0
New Brunswick	9	10 / 0
Newfoundland and Labrador	6	12 / 0
Northwest Territories	3	9 / 0
Nova Scotia	14	12 / 2
Nunavut	0	6 / 0
Ontario	64	14 / 4
Prince Edward Island	5	5 / 0
Québec	20	18 / 3
Saskatchewan	7	11 / 0
Yukon Territory	3	9 / 0
Totals	185	144/18

Considering the limitations of the scan, observations about the numbers from Table 1 and the related one in Appendix 2, include:

- ❑ there are almost as many non-governmental listings in Ontario as all other provinces and territories combined, as the province proportionately “pulls its weight”;
- ❑ most Ontario non-government listings are in southern Ontario and most of those are in the Greater Toronto Area (GTA), reflecting disparities between those areas and hinterland northern regions of the province;
- ❑ Nova Scotia, British Columbia and New Brunswick are other jurisdictions with a high number of activities (and PEI may be, proportionately);
- ❑ relative to its population, Alberta lags behind for both government and non-government listings; and
- ❑ the lack of non-government listings in Nunavut may reflect the very local nature of groups and/or lack of easy internet access or connections to southern organisations, not a relative lack of activity.

A couple of things stand out in the specifics of the laws found. Cosmetic pesticide bans are the most common form of TUR laws, programmes and activities in the country. (There are provincial bans in effect in Ontario and Québec, others pending in Alberta, New Brunswick and Prince Edward Island and pressure growing in other provincial, municipal and federal jurisdictions.) Ontario has the only TUR law in the country (as of June 3, 2009) and Toronto has the only community right-to-know by-law.

Although the scan did not include listing specific substances that are regulated, a 2006 survey identified only 24 carcinogens that are dealt with inconsistently by health and safety laws. British Columbia, Alberta, Manitoba, Ontario, Québec and Saskatchewan had established designated lists of substances with special attention to the handling, use and occupational exposure limits (OELs) for carcinogens.²⁰

The precautionary principle and substitution rarely show up in these laws, although many of them have a goal to prevent ill-health and injuries. However, these prevention principles are both in British Columbia’s *Occupational Health and Safety Regulation*. **Section 6.34** requires use of the precautionary principle when developing “exposure control plans” for some biological substances. **Section 5.57** says that if a “designated substance”²¹ is present in the workplace, “the employer must replace it, if practicable, with a material which reduces the risk to workers”. If replacement is impossible, the employer must develop and implement another “exposure control plan” to keep workers’ exposures as low as reasonably achievable below the OEL.

This seems to be the most stringent substitution requirement in Canadian health and safety laws, since “practicable” means if it is possible to do, without qualifications about costs. (It is unclear how this is enforced and what resources are available to assist workplaces to find substitutes.) For example, **Section 10.16** of Part X (Hazardous substances) of the *Occupational Health and Safety Regulations* in the *Canada Labour Code* qualifies its substitution requirements with the phrase “reasonably practicable”. **Section 39** in Division 5 of Québec’s *Regulation Respecting Occupational Health and Safety*, also calls for replacement (i.e., substitution) of hazardous substances in workplace air “(i)nsofar as possible .. with substances that are not dangerous or are the least dangerous possible”.

As an indication of legal efforts in hinterland areas, five of the 12 Nova Scotia laws and programmes are directly related to TUR, and the one about janitorial services specifications may be unique. For more about legal requirements in Canada and elsewhere, see the documents referred to in the introduction (page 2) and in the analysis that follows about specific jurisdictions.

Patterns in the non-government provincial/territorial findings in Appendix 3 include:

- ❑ the Canadian Environmental Network has regional networks in all but Nunavut and the Northwest Territories;
- ❑ in turn, these regional networks lead to many member organisations and groups;

²⁰ Hosein & Deffie’s report is cited in National Committee on Environmental and Occupational Exposures, Canadian Partnership Against Cancer (NCEO). (2006). *Prevention of occupational and environmental cancers in Canada: A best practices review and recommendations*.

²¹ These are substances classified by the American Conference of Governmental Industrial Hygienists (ACGIH) as A1 or A2 carcinogens, by the International Agency for Research on Cancer (IARC) as 1, 2A or 2B carcinogens, and what the ACGIH classifies as reproductive toxins and sensitisers.

- ❑ the traditional national health organisations (i.e., Cancer Society, Heart and Stroke Foundation and Lung Association) all have provincial and territorial offices (not all of which are listed) and sometimes, within them, regional offices;
 - ❑ few other national coalitions, groups, organisations or networks have obvious connections to most parts of the country (especially the Prairies, Atlantic Provinces and the North);
 - ❑ like many other things, what happens in Québec tends to stay there, cosmetic pesticide bans and environmental sensitivities excepted;
 - ❑ collectively, Toronto-based organisations (with help from national groups and others) have pushed the possibilities for TUR and cancer prevention, including:
 - the Toronto community right-to-know by-law (officially, the *Environmental Reporting and Disclosure* by-law),
 - Ontario Bill 167 -- the *Toxics Reduction Act* -- which passed June 3, 2009 to become the first such law in Canada,
 - the most comprehensive provincial cosmetic pesticide ban in the country, and
 - a variety of documents about cancer prevention and strategies to accomplish that goal, including TUR;
 - ❑ groups and organisations also are doing innovative work in smaller centres and the hinterland in general;
 - ❑ some groups and organisations clearly have national influence, but this scan could not evaluate how much of the resources and knowledge in the hinterland makes its way out of those regions; and
 - ❑ there is increasing interest in, and support for, “sustainable consumption” and “green purchasing” or “green procurement”, emphasising individual actions as opposed to systematised approaches that reduce the production of and exposures to toxics, especially inside workplaces.
- ❑ every jurisdiction in southern Canada has some kind of TUR-related activity involving:
 - air quality,
 - green purchasing (except Prince Edward Island),
 - household products,
 - occupational health,
 - cosmetic pesticide bans,
 - training / workshops,
 - water quality (except PEI), and
 - workplaces.
 - ❑ most have activities:
 - involving research (mostly academic),
 - related to the effects of mining and waste,
 - concerned with children, and
 - using surveillance methods (i.e., monitoring of people’s health or effects on air, soil, water, wildlife and / or fauna); and
 - ❑ there’s a lot going on, in general, but few of these activities:
 - are described as toxics use reduction or pollution prevention,
 - name green chemistry, green buildings or green jobs as a strategy to advocate or use,
 - include labour or business (although this is both difficult to discover and seems to be increasing),
 - recognise environmental illnesses (or at least name it),
 - include First Nations and other Aboriginal Peoples in non-Aboriginal organisations, coalitions, etc., or
 - involve schools (in terms of the students and / or staff).

Other comments and observations are in the sections about gaps and opportunities. For now, the most intriguing and / or helpful listings are discussed by province and territory, organised alphabetically. There are similar comments and observations based on sectors, in the next sub-section.

Appendix 4 has two sections. Part A lists TUR activities by category for each jurisdiction and Part B summarises the findings; the categories used in the latter include all those from Part A and others that turned out to be important in the “other” column of Part A. From these charts, it seems that:

2.3.2 Alberta

Efforts that are pushing into workplaces and towards more systematic solutions to the use of toxic substances include:

- ❑ the green jobs report by the Alberta Federation of Labour, the Sierra Club Prairie Chapter and Greenpeace (an interesting multi-sectoral collaboration);
- ❑ the Alberta Workers Health Centre's use of participatory theatre to present right-to-know and workplace experiences of dealing with toxics in schools and public venues;
- ❑ work by the Cancer Bureau's Environment Unit about TUR and preventing work-related cancer, including its partnership with Alberta Employment and Immigration to develop a long-term strategy to track and prevent occupational diseases, especially cancer;
- ❑ Prairie Water Watch's agreement and advocacy for it;
- ❑ university faculty researching environmental illnesses, occupational health and indoor air quality;
- ❑ the Clean Calgary Eco-store; and
- ❑ Pembina Institute's *Genuine progress indicator*.

The new Environmental Health Association of Alberta likely will also have an influence.

On the government front, particularly strategic efforts include:

- ❑ Edmonton's Environmental Strategic Plan (it actually mentions toxics use reduction);
- ❑ Calgary's sustainable and ethical procurement policy; and
- ❑ provincial regulations about:
 - recycling of tires, electronics and paints, besides the usual materials,
 - benzene emissions from glycol dehydrators
 - petroleum industry flaring (whether or not the requirements are as good as they could be), and
 - a partial ban of cosmetic pesticides (limited to "weed and feed pesticide-fertiliser mixtures) in 2010.

2.3.3 British Columbia

Toxic Free Canada (TFC), formerly the Labour-Environmental Alliance Society (LEAS), is one of the few organisations in the country devoted almost entirely to toxics reduction in workplaces, schools, homes and the community. Among other things, it:

- ✓ creates alliances and initiatives promoting *healthy workplaces, healthy homes and communities and a healthy environment*;
- ✓ has a mission that includes *(a)ctively informing and educating the public in the key areas of toxics use reduction, cancer prevention and environmental pollution prevention*;
- ✓ has publications such as the nationally known *CancerSmart* consumer guide (the result of CBC's Wendy Mesley featuring it on a programme about the environmental causes of cancer) and one about green cleaners;
- ✓ is working with the Seton Lake Indian Band, the Wilderness Committee and Thompson Rivers University faculty to investigate environmental links to high rates of cancer and other illnesses on the reserve near Lillooet, B.C.;
- ✓ has reports about its activities related to working with school districts to introduce green cleaners and other workplaces about reducing the use of toxics (e.g., hotels);
- ✓ worked with the Canadian Cancer Society and Canadian Association of Physicians for the Environment (CAPE) to persuade the Union of B.C. Municipalities to vote for a motion urging the provincial government to ban the sale and use of cosmetic pesticides; and
- ✓ has connections to national and provincial environmental and occupational health initiatives, researchers, groups, organisations and networks.

TFC gets funding from grants and donations and depends on its multi-stakeholder board and networks to do some of its work. Some of its activities are hidden in meetings, educational workshops and lobbying. For example, it was difficult to find educational materials the TFC has developed on its website. By chance, personal messages to individuals at the British Columbia Nurses Union produced examples of some of the materials TFC prepared with and for them. This is typical of educational materials used in trainings and workshops, whatever the organisation. It also may be the result of under-funded and/or under-staffed organisations that do not have time to make

all their documents easily accessible on their web pages.

Examples of intriguing British Columbia activities found in the scan, but without many specific documents or details, are in Vancouver or Victoria. They include the:

- ☐ Society Promoting Environmental Conservation,
- ☐ Pacific Marine Analysis and Research Association,
- ☐ new Vancouver City Greenest City Action Team,
- ☐ Environmental Health Association of British Columbia,
- ☐ EcoDesign Resource Society,
- ☐ Centre for Interactive Research on Sustainability, set to open in 2010 at the University of British Columbia, and
- ☐ Centre for Integral Economics.

On the other hand, publically-funded entities, or those associated with them, tend to have on-line and easily-accessible newsletters, stories, articles and reports about their work. They include:

- ☐ Metro Vancouver's BuildSmart programme,
- ☐ the Occupational Health and Safety Agency for Healthcare in British Columbia (OHSAH), and
- ☐ the British Columbia Environmental & Occupational Health Research Network.

There is a lot of activity related to preserving water quality and dealing with new, current or abandoned mines or industrial complexes, usually outside large urban centres. This includes:

- ☐ Wildsight,
- ☐ Western Canada Wilderness Committee,
- ☐ Prince George Air Improvement Roundtable,
- ☐ People's Action Committee for Healthy Air (PANCH) in Prince George, and
- ☐ George Strait Alliance.

As the introduction to the British Columbia listings notes, the scan results do not properly reflect the activities of British Columbia-based First Nations that are dealing with air, land and water pollution that affects the health of their peoples, the wildlife in their communities and the fish in their waters.

Mines, particularly abandoned ones, are key sources of contamination and controversy. First Nations affected, advocating for changes and/or opposing new operations include Tl'azt'en, Takla Lake, Nak'azdli (all three are part of **Carrier Sekani Tribal Council**), Xeni Gwet'in (aka Nemiah), Wet'suwet'en. Hydro project flooding also has led to toxic contaminants affecting communities such as Tsay Kay Dene, Kwadacha and Cheslatta.

Many of these First Nations have staff or consultants working on these issues. However, it was not possible to have proper conversations with them or others representing the First Nations during the time available for this scan. Some sense of the issues involved were found in documents from the First Nations Environmental Health Innovation Network and other Aboriginal and Inuit health organisations, most of which are listed in Appendix 3.

Finally, B.C. has a number of commercial businesses developing products advertised as avoiding toxics, non-profits working with them or consultants who help to design and green workplaces. They include:

- ☐ Upholstery Arts,
- ☐ the Fraser Basin Council's Sustainability Purchasing Network,
- ☐ Reach for Unbleached,
- ☐ Paper Choice Ltd., and
- ☐ Green Workplaces.

On the occupational health front, as mentioned earlier, British Columbia's laws are unique in requiring application of the precautionary principle for some situations (although it's defined differently than the Wingspread Statement) and substitution in others. Employers also are required to have "**protective policies**" for those exposed to reproductive toxins and sensitisers; protective re-assignment does not exclude men.

2.3.4 Manitoba

The site of fierce opposition to the city or provincial government spraying malathion to deal with mosquitoes, Winnipeg also is home to several noteworthy efforts with national influence, including:

- ☐ the Centre for Aboriginal Health Research,
- ☐ Chemical Sensitivities Manitoba,

- ❑ the Children's Health and Environment Partnership (the result of discussions initiated by the Social Planning Council), and
- ❑ Organic Food Council of Manitoba.

An interesting feature of the environment groups in Manitoba is that many share space on the third floor of Mountain Equipment Co-op's downtown and accessible green building.

The provincial *Workplace Safety and Health Act* permits regulations to ban substances or processes but has not been used for that purpose. However, there are special rules for exposure to "**designated materials**" (carcinogen, mutagen, respiratory sensitizer, reproductive toxin, foetotoxin or teratogen as defined by the federal *Controlled Products Regulations*).

The government also has:

- ❑ a *Green and growing strategy*,
- ❑ a green procurement programme,
- ❑ the Sustainable Development Innovation Fund, and
- ❑ started to work on the quality of water in Lake Winnipeg.

2.3.5 New Brunswick

This province is an unexpected home to some TUR and cancer prevention activities. As Appendix 2 shows, New Brunswick non-government listings are almost five percent of those in the country, while the population is only 2.2 percent of the total. These include the:

- ❑ Canadian Cancer Society's work in coalitions advocating for children's environmental health and the up-coming provincial cosmetic pesticide ban;
- ❑ Lung Association's national lead in the organisation's Environmental Issues Working Group, innovative environmental health mapping for analysis and decision-making and their advocacy for a provincial cosmetic pesticide ban and reductions to coal burning, radon exposures and air quality contamination inside and out;
- ❑ ACORN's organic berry network and work about pesticide alternatives; and
- ❑ Conservation Council's Health Watch programme that blends research and action, including:

- new reports about cancer rates in the province,
- developing ways to demystify and analyse community health "risk assessments",
- community involvement in contaminated site clean-up, and
- a commissioned report estimating the environmental burden of disease that led to the Council advocating for the provincial government to increase pollution prevention measures, introduce a cosmetic pesticides ban and take more efforts to foster public awareness about the links between health, pollution and pesticides.

Provincially, the government is about to put a cosmetic pesticides ban into place (in 2010) and its mercury reduction plan for industrial facilities and consumer products is getting rid of that toxic substance. The ban is the result of work by local and provincial groups, in association with the Canadian Association of Physicians for the Environment. There does not appear to be other TUR activity within the government, despite laws that offer possibilities. Nor was any municipal government TUR activity found.

2.3.6 Newfoundland and Labrador

In Newfoundland (there are no activities listed in Labrador), the Environment Network has 49 members ranging from the Women's Institute and other national organisations' regional offices to university students' groups to biodiversity, climate change, water quality and partridge and other wildlife preservation groups.

However, there appear to be few outright TUR activities in the province. The Lung Association (and other groups presumably) does support a cosmetic pesticide ban and is concerned about general air quality and scents. Memorial University has a green chemistry programme that includes a professor with national and international connections, and a sustainability office that is considering adoption of the international **Talloires Declaration** and its 10-point action plan about sustainable higher education (signed by 32 other Canadian post-secondary institutions).

Although there are no regional listings in Labrador, the national Centre for Inuit Health and Changing Environments (Nasivvik) is working with the community of Hopedale and Environment Canada

to investigate PCB contamination of food sources from a former radar station.²²

2.3.7 Northwest Territories

Like Nunavut, the NWT's environmental legislation covers a variety of topics. Those with possibilities for TUR activities include the *Waste Reduction Act*, the sustainable development policy and asphalt and used oil regulations. The occupational health and safety law, including regulations about asbestos, applies to both the NWT and Nunavut.

Also like Nunavut, some Aboriginal Peoples' organisations in the national listings do a lot of work in this region. Two of the three local groups listed deal with mining, waste and water quality. The Independent Environmental Monitoring Agency offers an interesting example of a negotiated oversight function of mining activity that must integrate Aboriginal knowledge in its plans and programmes.

It is worth noting that individuals from organisations on the list meet regularly with others in the Yellowknife area through Alternatives North. The social justice coalition also has representation from churches, unions, women and family advocates and anti-poverty groups. It has opposed the Mackenzie Gas Project, taken positions about the diamond industry and sponsored meetings about climate change and topics that have TUR potential.

2.3.8 Nova Scotia

One of the country's oldest environmental organisations -- the Ecology Centre -- is based in Halifax. So too are the other listings found during the scan of this province -- except for Sierra Club groups. There likely are others outside the capital region, especially since the federal government calls the **Sydney Tar Ponds** "Canada's worst contaminated site with 700,000 tonnes of toxic-laden soil due largely to wastes from some old coke ovens".

The government's laws, programmes and policies indicate TUR related activity in five of the 12 listings. As said earlier, the one about janitorial services specifications may be unique. It may reflect the advocacy of two organisations -- the Environmental Health Association of Nova Scotia (EHANS) and its sister group, Canadians for a Safe Learning Environment (CASLE).

CASLE has had profound impacts on Nova Scotia schools and public buildings and beyond. Their call for the first annual National Healthy Schools Day in Canada (April 27, 2009) was supported by more than 30 organisations²³. Their achievements include²⁴:

- ✓ facilitating:
 - identification of asbestos in Nova Scotia schools and new procedures for safe removal,
 - replacement of cleaning materials containing toxic ingredients (including an endocrine disrupter as a main ingredient) with safer alternatives,
 - scent-free programs, tobacco-free policies in schools and other public buildings, and
 - reduced use of pesticides in and around schools and reduced CCA pressure-treated wood in playgrounds and new school construction;
- ✓ Healthy Schools Design and Construction (2002) integrated into the provincial *Design Requirements Manual* for construction of all new public buildings;
- ✓ full ventilation systems recommendations adopted for all new public schools;
- ✓ reduced use of toxic building materials in existing schools (e.g., low-emission paint, caulks, waxes); and
- ✓ increased use of isolation techniques and timing measures for renovations and maintenance of schools (e.g., painting or tarring roofs when children not in school).

CASLE grew out of the older Environmental Health Association of Nova Scotia. EHANS is a volunteer-run organisation dealing with issues important to people with environmental illnesses. It emphasises preventing the condition, as its ubiquitous *Guide to Less Toxic Products* and other materials demonstrate.

As the main centre for Atlantic region post-secondary institutions, Halifax is home to research-based programmes such as:

- ☐ Atlantic PATH, part of a large national cancer study;
- ☐ Atlantic RURAL Centre, studying the health of rural Atlantic Canadians;
- ☐ St. Mary's green chemistry studies;

²³ See the **press release**, accessed June 6, 2009.

²⁴ For a complete list, see the archive and information and resources tabs on the CASLE **website**.

²² There is a description on the **Nasivvik** website.

- ❑ St. Mary's Community-Based Environmental Monitoring Network that, among other things, loans equipment to community groups wanting to monitor toxics; and
- ❑ Dalhousie University's Eco-efficiency Centre's work with local businesses, that provides case studies about what are variously called "green business", "sustainable prosperity" and "pollution prevention".

Cosmetic pesticide bans -- in place in Halifax, and on the to-do list provincially -- have brought together the Ecology Action Centre, regional offices of the Canadian Cancer Society and Lung Association, RATE, the Sierra Club's Atlantic Chapter and others. Given the city ban, the Ecology Action Centre is running a programme to "get your lawn off drugs", while Clean Nova Scotia runs the city's pesticide permit programme, others about alternatives and does environmental home assessments.

2.3.9 Nunavut

Canada's newest territory is not home to major industries. However, its population has been affected by the fallout of toxic substances from other parts of the country and world, and a small amount from former armed forces bases.

Therefore, most toxics reduction work in this territory is health monitoring studies and related activities by governments, academics and Inuit organisations. The Inuit Tapiriit Kanatami and others also advocated internationally for the Stockholm Convention about banning persistent organic pollutants (POPs).

Local representatives and organisations are involved with the federal government's Northern Contaminants Programme and discussions about uranium mines and waste, according to ITK staff members. However, it was difficult to gather information about their specific activities.²⁵ Government legislation, including the health and safety laws, do not include specific TUR requirements, other than limiting emissions from asphalt paving plants and a general framework to control pollutants.

2.3.10 Ontario

Besides its cosmetic pesticide ban and TUR law (that still needs regulations), there is little in Ontario government laws directly related to the prevention end of TUR.

On the other hand, the province reflects its central position in the country with the mixture of:

- ❑ long-time and newer Aboriginal activities, some with national influence;
- ❑ the innovative and unique Ottawa housing project for those with environmental sensitivities;
- ❑ occupational and environmental cancer prevention activities supported by two respected institutions and the new union-supported Occupational Cancer Research Centre;
- ❑ labour participation in local and provincial coalitions/networks focused on cancer prevention, TUR and community right-to-know disclosures, and in occupational toxics surveillance and policy development;
- ❑ business involvement and examples of and support for pollution prevention;
- ❑ green building, purchasing, chemistry and health care activities;
- ❑ local and provincial advocacy for cosmetic pesticide bans, supported by large national organisations such as the Canadian Cancer Society;
- ❑ the largest collection of TUR-related research activities in the country (including a green chemistry centre);
- ❑ contributions using comprehensive, integrated or creative approaches by:
 - Sudbury's participatory theatre group Myth and Mirrors,
 - CELA (a driving force behind many of the provincial TUR-related activities),
 - the Environmental Health Clinic,
 - Great Lakes United,
 - St. Lawrence River Institute of Environmental Sciences,
 - South Riverdale Community Health Centre,
 - Toronto's Public Health department,
 - Women's Healthy Environments Network and
 - zero waste groups;

²⁵ Two sources are an **ITK paper** about municipal wastewater, including mention of northern contaminants and an international site about **uranium mining** that lists sites in Nunavut and the Northwest Territories.

- ❑ long-time and newer local, regional and provincial conservation and environmental groups;
- ❑ much co-operation, coalition- and movement-building (particularly evident in southern Ontario); and
- ❑ groups and organisations that take on toxics in all environmental media.

2.3.11 Prince Edward Island

The PEI government's upcoming ban on cosmetic pesticide use is the result of advocacy and activities by national organisations and provincial groups such as the Eco-Net, the Environmental Health Co-op and the Environmental Coalition. (In fact, the Prince Edward Island Environment Minister reportedly wants all three Maritime provinces to have similar bans, reflecting the advocates' regional co-operation.)

Understandably, Island groups also are working on food-related issues, including reduced use of agricultural pesticides. The Environmental Health Co-op provides an overlap between the food and pesticide groups, partly because its main concern is working with and on behalf of those with environmental illness.

2.3.12 Québec

The scan is incomplete when it comes to TUR activities in Québec. However, links from the listings to other organisations are one place to start a French-language search. Those listed in Appendix 3 include ground-breaking work by non-government entities such as:

- ❑ Acti-sol, turning hen manure into fertiliser;
- ❑ the leadership of those behind the Allergy and Environmental Health Association of Québec and the Coalition for Alternatives to Pesticides (a key to Québec's 2003 cosmetic pesticide);
- ❑ Breast Cancer Action Montréal's advocacy of primary cancer prevention and related work, such as the "safe cosmetics" campaign;
- ❑ Equiterre's integration of community-supported agriculture and food going to day care centres;
- ❑ the sustainable event programme developed by Réseau québécois des femmes en environnement;
- ❑ Option-consommateurs' advocacy for labelling hazardous ingredients in consumer products

and translation of Toxic Free Canada's *CancerSmart Guide*;

- ❑ Société pour vaincre la pollution's work with fishers; and
- ❑ chemical substitution research at Montréal universities.

Québec governments also have shown leadership in some aspects of TUR activities. Examples include:

- ❑ the first municipal and provincial government cosmetic pesticide bans;
- ❑ research and prevention work by the James Bay Cree Territory's public health department;
- ❑ inclusion of environmental and occupational health into the Montréal and Québec public health departments;
- ❑ the Bureau de normalisation du Québec's involvement with Événement ÉCOresponsable;
- ❑ the government recycling programme that became a paint brand; and
- ❑ occupational health and safety laws that require substitution of hazardous substances "insofar as possible" and, since 1981, the successful "retrait préventif" (protective re-assignment) requirements for pregnant and nursing women (to prevent exposure to toxic substances).

2.3.13 Saskatchewan

Aside from those advocating cosmetic pesticide bans, four listings from Saskatchewan cover different aspects of the life cycle of chemicals:

- ❑ the creative programme to have asbestos in public buildings registered and dealt with, organised by labour-community Action Committees (co-ordinated through the Saskatchewan Federation of Labour) and Ban Asbestos Saskatchewan;
- ❑ Eco Network's Green Directory with public criteria for its listings, a way to avoid "greenwashing";
- ❑ Saskatchewan Organic Directorate's efforts in a province dominated by agribusiness; and
- ❑ the provincial government's Go Green plan and fund supports "green" technologies for small and medium businesses and homes, respectively.

Saskatchewan also is home to the first modern Canadian health and safety law. The 1972 Act introduced the rights to know about job hazards, to

refuse unhealthy or unsafe work, and to participate in decisions about occupational health and safety. It also had the first workplace “chemical” (right-to-know) regulation. There are vestiges of these innovative approaches in requirements for special prevention and control measures for “designated substances” in the law.

2.3.14 Yukon Territory

Like the NWT, the Yukon groups listed are particularly interested in land use issues (especially mining) and Aboriginal Peoples’ environmental exposures and knowledge. (There was no on-line information about the Yukon Environmental Network.)

The Arctic Borderlands Ecological Knowledge Co-op’s work that looks interesting for TUR-related activities includes the information sources database, indicators to track ecosystem changes and interview reports.

The Yukon Conservation Society may be the oldest environmental organisation in the country (it started in 1968). Its TUR-related activities enter the life cycle of chemicals at several points -- production (oil, gas and uranium exploration and development moratorium), use (diesel generation of electricity) and surveillance of exposures.

2.4 Activities by sector and circles of interest

2.4.1 Introduction

The following discussion builds on the keywords used to describe the findings in Appendix 3 and for the charts in Appendix 4. Some are specific sectors, while others are circles of interest about particular topics. They are discussed alphabetically, rather than assessing their relative importance. Some have been grouped together to assist the analysis. The Appendix 4 charts provide capsule visualisations of activities by individual jurisdiction and as totals.

2.4.2 Academics, research and surveillance

University-based academics usually contribute to TUR and cancer prevention activities by doing research²⁶ about topics of interest to them. This scan

found research also is done in 66 organisations outside universities, some of it in co-operation with academics.

Inside universities, the 37 listings clearly demonstrate an uneven distribution of activity in the topics researched and the places at which they enter the life cycle of chemicals.

A lot is about/for First Nations and Aboriginal Peoples. All of this research is done by national institutions and appears to investigate only environmental exposures, particularly related to mining activities.

Surveillance accounts for 55 of the 102 research listings. Like other academic research, most university-based studies involve monitoring or surveillance of the effects of toxic substances on people, wildlife, water, soil and fauna. (Communities may use the results to oppose new developments or processes or to demand particular clean-up procedures and follow-up.)

Water quality is the major focus of much of environmental health academic research. Those in this category include the:

- ☐ Aboriginal health researchers (A, for most),
- ☐ Canadian Water Network,
- ☐ Environmental Health Research Network / Réseau de recherche en santé environnementale,
- ☐ Institut national de santé publique du Québec (A),
- ☐ International Institute for Sustainable Development (A),
- ☐ Gordon Water Group,
- ☐ National Collaborating Centre on Environmental Health (A),
- ☐ National Network on Environments and Women’s Health (A), and
- ☐ St. Lawrence River Institute of Environmental Sciences (A).²⁷

The institutions at which research also is done about air quality are indicated by an (A). Other academics interested in air quality usually come at it from an occupational health perspective (e.g.,

²⁶ For purposes of this scan, research is original work that is trying to answer questions or investigate situations, exposures or alternatives to processes and chemicals. It includes surveys and studies of populations or environments and analysis of the

findings or others’ data. It may include opinion polls and worker questionnaires.
²⁷ Others may be doing it but the information was not available on their websites or mentioned in interviews.

researchers at the University of Alberta). McMaster University's Brian McCarry is an exception.

Others doing only occupational health-oriented and university-based research are found at Alberta's two largest universities and the Université de Montréal. The only academic listings that integrate occupational and environmental health appear to be the:

- ☐ Atlantic PATH,
- ☐ Atlantic RURAL Centre,
- ☐ British Columbia network, and
- ☐ new CIHR team on gender, environment and health.

Members of the Green Chemistry Network could be doing this too, but there is no easily-accessible evidence to this effect. (For more about green chemistry, see section 2.4.9.) The Eco-Efficiency Centre's work effectively does make the overlap, but doesn't appear to do it explicitly. The UBC Centre for Interactive Research on Sustainability might fit in this category, once it is in operation.

Academics interested in occupational health research involving toxic substances tend to do epidemiological studies about health effects, i.e., surveillance. Exceptions are the:

- ☐ CAREX project, which also is looking for hazards (i.e., carcinogens);
- ☐ Eco-Efficiency Centre at Dalhousie University (developing workplace-based solutions to reduce the use of chemicals); and
- ☐ Université de Montréal professors developing substitutes for toxic solvents.

Others outside universities and governments who are researching, or supporting the research of, the effects of environmental exposures to toxic substances and/or alternatives include organisations concerned about or working with:

- ☐ Aboriginal communities,
- ☐ air quality,
- ☐ cancer prevention,
- ☐ certification of products or processes,
- ☐ children's health,
- ☐ chronic diseases,

- ☐ economics,
- ☐ environmental law and health,
- ☐ extended producer responsibility,
- ☐ food and organics,
- ☐ marinas,
- ☐ mining,
- ☐ pesticides,
- ☐ ski resorts,
- ☐ sustainable consumption, and
- ☐ women's health.

Those outside governments and universities doing or supporting workplace-related research include:

- ☐ Alberta's cancer prevention programme,
- ☐ British Columbia's healthcare health and safety agency,
- ☐ Canadian Centre for Occupational Health and Safety (CCOHS), and
- ☐ occupational health clinics.

Overlaps occur with chronic disease organisations, environmental illness groups and health care providers, health care networks, public health institutions and groups, unions, and organisations such as:

- ☐ CELA,
- ☐ Clean Production Action,
- ☐ Conservation Council of New Brunswick,
- ☐ Environmental Defence,
- ☐ Great Lakes United,
- ☐ Option-consommateurs, and
- ☐ Toxic Free Canada.

Like their academic counterparts, much of this research seems to deal with the use and/or disposal of toxic substances, and the effects related to these activities. However, those involved with both occupational and environmental health also tend to cover most, or all, of the spectrum of a chemical's life cycle.

One thing almost all these groups and organisations have in common is a combination of issuing publications (e.g., newsletters, stories about their work, journal articles) and holding workshops or doing other kinds of training.

2.4.3 Businesses and employers (including health care institutions)

The scan found 39 examples of individual businesses/employers and organisations working with them. Most are based in Ontario (whether they are national or provincial entities), followed by British Columbia (5), Québec (3), Nova Scotia (2) and Alberta, New Brunswick and Saskatchewan (one each). There are also some examples of unions negotiating or having joint activities about pollution prevention or toxics use reduction.

The BC agency for healthcare occupational health and safety, the Canadian Centre for Occupational Health and Safety and the Alberta cancer prevention activities are examples of bipartite (i.e., employers and unions) or tri-partite activities (with government and/or technical representatives). Other health care efforts include the University Health Network and the Canadian Coalition for Green Healthcare, to which it belongs.

It was difficult to find examples of businesses or employers that are putting pollution prevention and/or toxics use reduction into practice. (For a discussion of possible reasons, see section 2.5.) However, the scan did find:

- ❑ some specific businesses or employers (e.g., house and dry cleaners in several provinces, Acti-sol and other partners of the Coalition for Alternatives to Pesticides, Arvee Corporation, Cogent Environmental Solutions, Colour Innovations, Eco-House, Essentia, Mountain Equipment Co-op, Nature Clean, Nature's Carpet, Paper Choice and Upholstery Arts);
- ❑ consulting firms, non-profits and NGOs offering "green" services (e.g., Eco Building Resource, Green Workplaces, Jantzi Research, Product Care Association, Green Directory and the Sustainability Purchasing Network);
- ❑ certification organisations (e.g., Coalition for Alternatives to Pesticides, Enviroidesic, Terrachoice);
- ❑ leads that can be followed through organisations producing case studies or awards lists (e.g., see the lists referred to in section 2.1), Canadian's Greenest Employers and Environmental Printing Awards);
- ❑ organisations with business partners, members or representatives (e.g., OHCOW, My Sustainable Canada, Markets Initiative, Zero Waste Action Team);
- ❑ business organisations (e.g., Canadian Eco-Industrial Network, Eco-Peinture and its

partner, Peintures Récupérées du Québec, Ontario Marine Operators Association, Ontario Snow Resorts Association and the Product Care Association); and

- ❑ unions negotiating such things with their employers [e.g., CUPE's school activities (some in association with Toxic Free Canada or CASLE), CAW's negotiations with the Big Three about metalworking fluids and United Steelworkers' activities about the use of diesel engines in mines].

The three national health organisations (cancer, heart & stroke and lung) also have business connections through sponsorships, fund-raising and their corporate boards. There also is an overlap with organisations interested in green building and green purchasing (section 2.4.8).

Clean Production Action offers a comprehensive approach to how businesses and employers can use toxics use reduction and other practices to develop "healthy workplaces". Their current major effort uses green chemistry and related clean production principles (e.g., precaution, substitution and life cycle thinking) to work with US-based companies in the **Healthy businesses strategy: Benign by design**.

Unfortunately, the best Canadian corporate example of sustainable production goals is not manufacturing its floor coverings in this country any more. Company president Ray Anderson once described **Interface's** only Canadian site in Belleville, Ontario, as the best in the company. However, the company stopped production there in late 2008; it continues to distribute the US-based company's products from the facility. The company and Anderson are well-known for their goal of having no carbon footprint by 2020, using biomimicry to reduce toxic substances in the production process and taking other measures to be a "green" business.²⁸

2.4.4. Cancer

Cancer is the purview of academics, NGOs, unions and environmental groups. They range from those active around asbestos and pesticide issues to the Canadian Cancer Society and women's health organisations to unions and the CCOHS.

²⁸ See Anderson in excerpts from the film *The Corporation* and some of his many speeches, including those about green chemistry, all on YouTube. He has published a book about his vision and the company's website explains a lot about it.

Academics are studying occupational and environmental cancers (e.g., the UBC CAREX project).

Three organisations have preventing cancer as their main goal (Prevent Cancer Now, the Saunders-Matthey Cancer Prevention Coalition and the Toronto Cancer Prevention Coalition). It is one of several goals, or a secondary goal, for 77 others outside government departments.

The prevention goal is a shift for organisations such as the Canadian Cancer Society. Within the last few years, it has started to move away from being focused on a “cure” and lifestyle factors to taking positions about preventing environmental and occupational carcinogen exposures (especially at the national, Ontario and British Columbia offices) and supporting toxics use reduction in Ontario. It also joined with Cancer Care Ontario and the United Steelworkers to set up the first occupational cancer research centre in Canada in 2009.

The goal of prevention also has moved higher on the priority lists of governments and their agencies. Examples include The Partnership itself and the Alberta cancer programme. Some academics are researching occupational and environmental hazards that contribute to cancer, with the stated goal of linking their findings to prevention.

Finally, the Ontario toxics use reduction law owes much to cancer prevention advocates and their research publications (see section 1.2 about some of the documents informing this scan).

2.4.5 Children and schools

Children’s health clearly is a route to decision-makers’ hearts and policy-making. About 22 percent of the scan listings directly mention children and others likely use the topic in their work. However, it is the principal focus of only a few groups.

The Canadian Partnership for Children’s Health and Environment (CPCHE) is one of the best examples of national networking that involves TUR, use of the precautionary and substitution principles and advocacy activities. The eight-year-old national virtual affiliation has 10 members representing almost the full range of those who have an interest in children’s health and the environment (labour is one obvious gap); most of them are Toronto-based. It is linked to other organisation across the country.

CPCHE gathers and synthesizes scientific evidence about links between exposures and foetal/child health outcomes. Its 2008 document, *First Steps in Lifelong Health. A Vision and Strategy for Children’s Health and Environment in Canada*, covers occupational, environmental, school and consumer exposures that affect children. Like their other materials, the document is designed to be accessible to a wide range of people.

Manitoba’s new Children’s Health and Environment Partnership (CHEP) grew out of discussions facilitated by Winnipeg’s Social Planning Council (SPC). It is still getting on its feet, but plans to make resources available and do outreach to families, childcare providers and health professionals looking after children. Given the SPC’s involvement, it likely will also be an advocate for changes in government laws and policies and company practices.

Schools are the focus of only 33 listings; some of this was inferred from the available information. The discrepancy may reflect concerns about pre-school children’s health and/or non-school exposures. Only CASLE is solely concerned with schools, although its influence has expanded into other public buildings.

2.4.6 Environmental illnesses

Six volunteer-based groups across the country are focused exclusively on this medical condition and related topics; there is one each in British Columbia, Alberta, Manitoba, Ontario, Québec and Nova Scotia. Others mainly concerned with environmental sensitivities and related conditions include:

- ☐ the Environmental Health Clinic serving Ontario residents,
- ☐ individual physicians not included in this scan,
- ☐ several researchers and research organisations (e.g., University of Alberta’s Stephen Genuis and the Environmental Health Institute of Canada),
- ☐ the Prince Edward Island Environmental Health Co-operative, and
- ☐ Canadians for a Safe Learning Environment (CASLE).

Those more on the periphery are:

- ☐ the Canadian Human Rights Association (publications),
- ☐ the Canadian Partnership for Children’s Health and Environment,

- ❑ some businesses selling “green” cleaning services and products,
- ❑ the Occupational Health Clinics for Ontario Workers (OHCOW), and
- ❑ South Riverdale Community Health Centre.

As mentioned earlier, despite their volunteer base and individual members’ health status that prevents consistent work activity, these groups have managed -- by sheer persistence and drive, it seems -- to have influence beyond their numbers. The results of their labours include:

- ❑ *The Guide to Less Toxic Products*, produced by the Environmental Health Association of Nova Scotia (EHANS), is one of the most cited and/or linked publications found in this scan. EHANS sends representatives to several provincial and national networks and government consulting programmes.
- ❑ Canadians for a Safe Learning Environment (CASLE) is responsible for changing how schools and public buildings are put up, renovated and maintained in Nova Scotia. The small group also has influenced healthy schools and children’s’ health groups across the country.
- ❑ The 100 percent smoke / scent / pet / chemical free housing project underway in Ottawa -- the result of work by the Environmental Health Association of Ontario -- is a first in Canada.
- ❑ Key players in the Allergy and Environmental Health Association of Québec have pushed boundaries (e.g., about workplace accommodation for those with environmental sensitivities) and were ground-breakers in advocating for Québec’s cosmetic pesticide bylaws and provincial bans.
- ❑ Chemical Sensitivities Manitoba is almost a one-woman show. Without a website, high profile or paid staff, it has a voice in national, provincial and local environmental, cancer prevention and children’s health networks and government consultation programmes.

For other observations about this circle of interest, see section 2.1.

2.4.7 First Nations, Inuit, Métis (Aboriginal Peoples)

Aboriginal Peoples’ exposures to toxic substances occur in many ways, as shown by the work of their organisations and researchers working with them.

The scan found 32 relevant Aboriginal organisations or others supporting them, including:

- ❑ six national and two provincial research institutions investigating environmental connections to aboriginal health;
- ❑ three national organisations with aboriginal health programmes or working with aboriginal institutions;
- ❑ two Ontario First Nations with long-time and influential environmental health programmes (the Mohawk Council of Akwesasne and Walpole Island First Nation / Bkejawanong);
- ❑ one youth-based First Nations group in Northern Ontario;
- ❑ a variety of environmental organisations working with First Nations in about half the provinces and territories; and
- ❑ evidence of a lot of activity in British Columbia (see section 2.3.3) and the Aamjiwnaang First Nation near Sarnia, Ontario.

The research institutions are a mixture of university-based centres, public health programmes and Aboriginal-controlled organisations. Their work does not include occupational exposures; it does include monitoring of people and their environment.

The scan could not document other TUR-related activities in this circle of interest and their populations for various reasons, including time and key informants’ schedules.

2.4.8 Green building and purchasing (including food and household products)

Based on the scan findings, green purchasing or procurement is a growing industry and focus of NGOs and businesses. The activities of 76 organisations and institutions fit in this circle of interest; there were 32 in the green building category.

They range from international organisations (e.g., the Commission for Environmental Co-operation, ICLEI - Local Governments for Sustainability and the North American Sustainable Consumption and Production Database) to consulting and certification firms (e.g., Green Workplaces) and unions (e.g., British Columbia Nurses Union, Canadian Union of Public Employees).

Other examples include:

- ☐ businesses selling “green” products and services,
- ☐ Canadian Coalition for Green Healthcare and the University Healthcare Network,
- ☐ cancer prevention groups,
- ☐ Clean Air Foundation,
- ☐ Clean Production Action (which has one of the most comprehensive set of materials about the topic),
- ☐ David Suzuki Foundation,
- ☐ Environmental Defence,
- ☐ food security and organic groups (sustainable practices lead to “green” purchasing practices),
- ☐ Greenpeace,
- ☐ groups representing those with environmental illnesses,
- ☐ HealthySchools.com,
- ☐ Memorial University’s Sustainability Office,
- ☐ Mohawk Council of Akwesasne,
- ☐ pollution prevention centres,
- ☐ Reach for Unbleached,
- ☐ Resource Conservation Manitoba, and
- ☐ Saskatchewan Green Directory.

Household products with fewer or no toxic substances are recommended by 86 listings (just less than one-third of the total). There is at least one in each province and the Northwest Territories, as well as 28 national listings. Pesticide alternatives could be included in this category and many stores and shops sell these “green” products.

Green building programmes and consultants also are starting to spring up across the country. They often incorporate green purchasing, recycling, attention to waste and energy efficiency and use of renewable resources, not all of which are TUR-related.

About two-thirds of the listings included in the scan that support or practice green building are in the national or Ontario jurisdictions.²⁹ This indicates an

uneven distribution of the practice and/or support for it. There also is little government support for green building TUR-related activities; most involves energy efficiency.

Vancouver’s BuildSmart is a good example of a municipal programme integrating practical resources from provincial, federal and international sources (LEED certification is an important one). CASLE’s work in Nova Scotia provides examples of what advocacy groups can persuade governments to do. The Centre for Pollution Prevention and the IISD provide relevant case studies and research.

As those with environmental illnesses point out, there is a lot of “greenwashing” around green building and purchasing. The CASLE website’s front page puts it this way: “*Green is Good. Healthy is Good. But Green AND Healthy is Better!*” Suzanne LeBlanc, Environmental Health Association of Nova Scotia (EHANS).

2.4.9 Green chemistry

Green chemistry is an important research topic of late. In the 1990s, two US chemists introduced the idea as a method to apply 12 principles for the design of chemical products and processes that reduce or eliminate the use and generation of hazardous substances.

More recently, green chemistry has been described as an approach to sustainability that considers the entire life cycle of chemical processes for opportunities for design innovation. In this way, it goes “far beyond” waste reduction and pollution prevention.

*As we have gained an increased awareness with regard to the fundamental nature of hazard, it has supplied the ability to address the hazard at the design stage. ... Unlike the exposure controls that have been developed historically, Green Chemistry can impart added performance, added capabilities and added efficiencies to the products and processes it is applied to at the same time that it addresses the environmental and human health concerns.*³⁰

California researchers and advocates agree, saying in a recent document that green chemistry *differs markedly from current chemical management practices*,

²⁹ A growing number of companies call themselves green builders. It was difficult to evaluate their claims. Therefore, after checking out a few examples, these kinds of companies were not included in the scan. Nor did the scan end up including businesses claiming to sell green building products.

³⁰ Manley, J., Anastas, P., Cue, B. (2008). Frontiers in green chemistry: meeting the grand challenges for sustainability in R&D and manufacturing. *Journal of Cleaner Production*, 16 (6), 743-750.

*which focus on reducing, rather than preventing chemical exposures and environmental contamination.*³¹

The Canadian Green Chemistry Network has members employed by 20 universities, two federal government departments and several other workplaces. The Canadian chapter of the American Chemical Society's Green Chemistry Institute, it does not appear to be very active. Two individual members are listed in the scan. Others can be found through the Network's webpage.

In fact, the Clean Production Action (CPA) website and its director do much more public work about the topic. The organisation's *Green Screen* provides a unique document that uses a green chemistry approach to implement toxics use reduction in a programmatic way. CPA's latest effort integrates green chemistry into its co-operative efforts with some multinational U.S.-based companies.

GreenCentre Canada will be the first of its kind in Canada and one of few in the world. Recently awarded \$9.1 million by the federal government, it is a National Centre of Excellence to develop and commercialise green chemistry technologies. The Centre will be built in Innovation Park, run by the technology commercialization office of Queen's University in Kingston, Ontario. The technical director, a member of the Green Chemistry Network, hopes the Centre will operate in green materials and polymers, chemicals like surfactants and oil and gas (extraction, additives). They will not get too far into biology or pharmaceuticals (where a lot of green chemistry currently is focused), he said.

Others supporting and advocating green chemistry include unions and national environmental organisations, Toxic Free Canada, Blue Green Canada, the Canadian Centre for Pollution Prevention and the Canadian Coalition for Green Healthcare.

2.4.10 Labour

Unions, their provincial federations and the national "house of labour" (the Canadian Labour Congress) have policies about toxics use reduction and related topics. (See the list of CLC policies in section 2.2.2.) The labour movement also advocated for right-to-know legislation in the 1960s and 1970s. One result of which was the WHMIS system that

integrates federal and provincial laws about hazardous substances present in workplaces.

However, only seven unions and three federations of labour -- Alberta, Ontario and Saskatchewan -- were found in the scan. There were four coalitions or alliances between unions and environmental groups:

- ☐ Toxic Free Canada,
- ☐ the Occupational and Environmental Health Coalition of Peterborough,
- ☐ the CAW Durham Regional Environment Council, and
- ☐ Blue Green Canada.

Other organisations, coalitions and networks that report collaborating with unions or having union representation are:

- ☐ Canadian Environmental Network and some of its regional affiliates,
- ☐ CASLE,
- ☐ CCOHS,
- ☐ Clean Production Action,
- ☐ Green Prosperity,
- ☐ Greenpeace,
- ☐ MiningWatch,
- ☐ Ontario's Occupational Cancer Research Centre,
- ☐ Prevent Cancer Now,
- ☐ Sierra Club,
- ☐ Take Action on Toxics!, and
- ☐ Toronto Cancer Prevention Coalition.

The Steelworkers dominate the list of those participating. Others may be involved inside workplaces, which it is difficult to learn about.

2.4.11 Occupational activities, workplaces, green jobs

An occupational focus is not the same as activities involving workplaces. There were 110 references to activities related to occupational health and safety compared to 95 sometimes-different listings for workplaces. For example, green building and purchasing activities often do not explicitly name occupational health; nor do many pollution prevention case studies. In some cases, occupational health concerns were inferred from the descriptions, so the number may be over-estimated.

³¹ Wilson, M.P., Schwarzman, M.R., Malloy, T.F., Fanning, E.W., Sinsheimer, P.J. (2008) *Green Chemistry: Cornerstone to a sustainable California* (2008). Berkeley: Centers for Occupational and Environmental Health, University of California.

Whatever the number, occupational health and safety clearly is not considered by many environmental organisations, researchers, Aboriginal health researchers, businesses concerned about “the environment” and pollution prevention, and those concerned about pesticides. While each jurisdiction has job-related health and safety laws and regulations, few incorporate TUR, the precautionary principle or active collective prevention requirements, as illustrated in Figure 2. For those with relevant provisions, there is little, if any, link to environmental laws and requirements and enforcement often is reported to be uneven and ineffective.³²

Historically, national health organisations have ignored occupational health; this is changing, at least at the national level but few regional offices had their own or any occupational health and safety materials.

The 10 references in this scan to “green jobs” -- ones that are good for the environment and the people doing them -- only come from organisations that work with or represent workers and their unions. “Green building” and production of “green” products rarely are linked to these kinds of jobs. Another sign of the disconnect is that the term also is missing from most descriptions of a “green economy” on the websites and in the documents of more organisations and businesses.

2.4.12 Pesticides and alternatives

Canadians have taken a unique route to deal with cosmetic pesticides used outside agricultural settings. Starting in Hudson, Québec in 1991, municipal governments across the country have been pressured to ban their use on lawns, gardens, golf courses and public spaces. The coalitions behind them have expanded beyond “traditional” environmentalists to physicians, those with environmental illnesses, children’s health advocates,

public health departments, the Canadian Cancer Society and Lung Association, unions, legal clinics, cancer prevention organisations, individuals and more.

As of mid-2009³³, more than 150 municipalities have passed these kinds of by-laws. Québec and Ontario have provincial bans, while New Brunswick and Prince Edward Island will have bans in 2010. Alberta has passed a limited ban to take effect in 2010. Agricultural users are feeling the pressure and Dow Chemical is using the NAFTA law to challenge Québec’s law.

Aside from advocating for bans, the coalitions and organisations have developed and publicised materials about alternative organic methods to deal with pests and unwanted plants.

2.4.13 Pollution prevention and toxics use reduction

Explicit naming of “pollution prevention” and “toxics use reduction” (or reducing the use of toxics or “toxics reduction”) appears in 73 and 45 listings respectively, out of the 263 listings from all jurisdictions. (This does not include governments.)

“Pollution prevention” is associated mostly with businesses, case studies from the Canadian Centre for Pollution Prevention and others, and some governments. Most of those self-describing their activities as “pollution prevention” are in the national category and Ontario’s provincial jurisdiction.

Toxics use reduction is almost exclusively a term used in Ontario. Outside the province, it only appears in materials from Toxic Free Canada, Clean Nova Scotia, four Québec organisations, Ban Asbestos Saskatchewan, the Saskatchewan Organic Directorate and the Yukon Conservation Society.

This leads to asking questions about the language used around this topic. After all, misinterpretation of some materials may under-estimate the use of these terms, but the 263 non-government listings meet the scan definition of TUR.

2.4.14 Training and workshops

This is the most common activity shared by the 263 non-government listings. It includes 209 examples of academic training, environmental and union

³² For example, in 2007 the **Manitoba auditor general** criticised the province’s Workplace Safety and Health Division. Safety and health officers gave out more than 600 improvement orders that were not obeyed. The division did not follow up with administrative penalties for failure to comply with any orders. The “internal responsibility system” and under-staffing are sometimes blamed for governments’ reluctance to enforce the law. The **Westray explosion** is one example of how these factors play out, according to documents and inquiries about the 26 deaths that resulted. At the same time, **research** by the Institute for Work & Health shows that enforcement is the most effective way to prevent workplace safety and health incidents, illnesses, injuries and deaths.

³³ The numbers quoted vary, depending on the source. One that seems to be quite thorough and up-to-date is <http://www.pesticidefreebc.org>.

workshops, NGO and business seminars and theatre presentations. Some are a principal role for the organisation (e.g., regional affiliates of the Canadian Environmental Network, Myth and Mirrors) while others are more incidental.

Publications are another form of training. Their usefulness depends on individuals having access to them, the language used (i.e., how “plain” and what it is), readers’ literacy about the topic and in general, and the relevance of the content to readers. In a few cases, the publications listed are actually training materials (e.g., BCNU, Toxic Free Canada). They also cover the full range of the life cycle of chemicals.

2.4.15 Other themes/circles of interest

It is worth noting that the scan found four other themes or circles of interest that don’t quite fit the usual mould. They are:

- ❑ Mapping is used by a variety of organisations to indicate sources of pollution, toxic contamination and incidence of illnesses or diseases.
- ❑ “Clean production” and “extended producer responsibility” are terms used only by a few organisations, again indicating language issues with TUR and its related strategies.
- ❑ Legal clinics (CELA stands out) and practices (e.g., Ecojustice) have played important roles in TUR advocacy and policy-making/ changing.
- ❑ The use of media beyond the printed page is starting to enter environmental and occupational health work about TUR. Greenpages.ca’s provincial and national news, stories and links were a popular link for some groups found in the scan, as were news feeds from outside the country (e.g., *Environmental Health News*). Victoria-based Green Muze is a slightly different type of mixed operation about things “green” while the NFB’s CitizenShift is a visual social networking opportunity that also wanders into the TUR world. On another front, Mirrors and Myths and the Alberta Workers’ Health Centre are using theatre, particularly with youth, to delve into toxics issues.

2.5 What gaps were found in the scan?

2.5.1 Introduction

The gap analysis uses several lenses to assist readers to develop their own understandings about what is missing from this scan. Readers also are

encouraged to review the listings themselves in Appendices 1 and 3, the summary charts constructed from those results in Appendix 4 and the discussion above, to draw additional insights about gaps and possibilities that appear as a result of the scan.

2.5.2 Using life cycle thinking

As suggested in the first part of this section of the report, the listings found in this scan fit into different parts of the life cycle of chemical substances. Therefore, the first lens uses that general framework.

The most obvious gap is that many groups and governments do not use life cycle thinking. Within a life cycle framework, the strategies of clean or sustainable production, green chemistry and the “cradle to cradle” approach are important for TUR activities. But they also are not on the radar or in the vocabulary of many of the organisations found in the scan (or the people associated with them). Nor is the TUR concept of not “shifting” hazards.

These groups, governments and their leaders do not go back this far in the life cycle of chemicals to understand where toxic substances come from, who and what is affected by the extraction and processing, and how. It doesn’t help that extraction usually occurs out of sight of urban centres (except for communities such as Sudbury and Whitehorse), or on or near relatively-isolated Aboriginal lands. Activities such as the Alberta tar sands and uranium mining also may present a conundrum when individuals and/or their means of making an income depend on petroleum products and nuclear energy.

Instead, as manufacturing plants close and/or move elsewhere, most environmental groups and governments with a “sustainability” approach to their advocacy practices, enter the life cycle when:

- ❑ toxic chemicals have been used to make products, construct buildings and homes, etc.;
- ❑ production waste products have entered the air, soil and water;
- ❑ the chemical products themselves become waste as objects, packaging, sewage, etc.;
- ❑ the land, air and/or water are contaminated; and/or

³⁵ “Knowledge transfer” materials and reports are increasingly common and might be useful. One interviewee recommended **Collaborative knowledge exchange: Enhancing CDPAC’s capacity**.

- ❑ individuals, their children, other relations, friends, neighbours and/or co-workers become ill or face an early death that may be linked to exposure(s) to toxic chemicals.

The consequences include:

- ❑ a lack of comprehensive visions for alternate life cycles and production processes and toxics use reduction itself;
- ❑ inadequate language to describe toxics use reduction for multiple audiences;
- ❑ incomplete and mis-understandings about what change is possible and necessary;
- ❑ much more emphasis on individual efforts than on more effective collective and systemic TUR strategies (e.g., the recent “One million acts of green” **campaign**);
- ❑ little or no thought about the “just transition” programmes needed to avoid shifting the economic burden to those now employed in extraction and production workplaces, or those depending on them (e.g., auto parts suppliers are just as affected by car plant shut-downs and layoffs as the autoworkers themselves);
- ❑ disconnects between those interested in occupational and environmental health;
- ❑ isolation of those concerned with occupational and Aboriginal Peoples’ health from others who do not share their understanding of the life cycle of toxic substances;
- ❑ a paucity of research and experience about what TUR activities are possible in the early stages of a chemical’s life cycle (e.g., like that done by the Massachusetts Toxics Use Reduction Institute/TURI); and
- ❑ difficulty to truly prevent ill health and effects on flora, fauna and wildlife.

2.5.3 The language of “pollution prevention”, “toxics use reduction”, “prevention” and “green” things

There is a definite interest in reducing the use and production of toxic substances and connecting with others sharing this interest. That is clear from the scan.

However, the terms “toxics use reduction”, “toxics reduction strategy” and “pollution prevention” often had to be explained before the “aha” moment in a conversation. Instead, they are surpassed by the use of “green” and “sustainable”, although people also are becoming cynical about such claims.

“Prevention” and “hazard” also are used much less often than “control”, “manage” and “risk”.

Internet searches using the terms “toxics use reduction” / “toxics” and “reduction” / TUR (in particular) and “pollution prevention” also were not the most effective strategy for this scan. Results tended to come from the United States or Europe, largely the result of work by the Massachusetts Toxics Use Reduction Institute (TURI), its related Lowell Centre for Sustainable Production and students of the UMass Lowell Work Environment Program. It became evident that Canadian groups whose activities meet our broad TUR definition just do not use these terms to describe their work.

TUR advocates need (help) to determine the best words and phrases to describe TUR for multiple audiences. The new ones will vary depending on the local “lingo”, education, experiences, literacy (scientific and otherwise), cultures and social position of different audiences and individuals. The terms do not have to be abandoned; it means that words have to be re-jigged or those used with them must be more relevant and what Paulo Freire called a “trigger” that gets to a “hot button” issue for the conversation participant(s).

The small number of references to “green jobs”, and limited linking between them and “green building” and production of “green” products are signs of disconnects. The term also is missing from most discussions of a “green economy”. Therefore, dealing with language issues also could help clarify the meanings of “green” and “sustainable” and increase the attention paid to occupational, compared to, environmental health in research, public policy and workplaces.

2.5.4 The scan did not find all the TUR activities in Canada

Using a broad definition led to 263 non-government listings and 150-plus federal, provincial and municipal government listings of TUR-related activities. However, the hunt for these activities also was much more complicated, meandering and time-consuming than expected. It also needed more personal and group conversations.

Although the findings offer a lot of opportunities for conversations that can make up for the gaps found, the results are missing some voices and activities such as:

- ❑ community-based Aboriginal activities (e.g., those in northern British Columbia about the effects of mining and other developments);

- ❑ French-speaking groups in Québec, New Brunswick and northern Ontario;
- ❑ groups that work in other languages;
- ❑ workplace-based activities (for employers/ businesses and labour);
- ❑ smaller local groups and programmes;
- ❑ groups and individuals without websites; and
- ❑ self-employed people, an increasingly common job status for researchers and environmental and occupational health specialists.

2.5.5. Workplaces, businesses/employers and labour are not a major part of the TUR picture yet

Labour organisations have some of the most comprehensive TUR-related policies, training materials and advocacy experiences in the country. However, aside from the southern Ontario influence of some unions and B.C. activities with OHSAA and Toxic Free Canada, there is little evidence of labour participation in other TUR activities. This includes those involving employers, businesses, workplaces and governments.

In terms of keywords, “occupational” and “workplace” were much less common (see the Appendix 4 summary chart) than “environmental” and “health”, although all the listings deal with toxic chemicals in some way.

It is not a surprise to anyone doing occupational health work that it is difficult to find examples of TUR activities involving workplaces, businesses/ employers and workers and their unions, particularly at earlier stages of chemicals’ life cycles. Instead, government and business-linked programmes tend to emphasis energy and waste efficiencies and recycling and reusing (instead of approaches like the Take Charge on Toxics! slogan: Reduce, Reveal, Replace, Restrict, Report).

The closed doors of workplaces (except some construction) cut off what happens inside those environments from public views. Unlike polluted streams or air, there can be much more control about the information that comes out of workplaces either through employers or employees. Negotiations about reducing or banning certain chemicals or products don’t make headlines unless someone brags about the results. Unions and their employers don’t seem to be very good at broadcasting their successes to reduce the use of toxics (unless it’s a selling point for a product such as the furniture produced by Upholstery Arts).

Other factors complicate finding workplace success stories:

- ❑ The Canadian Centre for Pollution Prevention and other regional efforts seem to be under-funded and under-staffed, with no TUR research capabilities.
- ❑ Almost all the 263 activities listed from the scan use the words “environment” or “environmental” and “health” to describe what they care about or are working on. However, many of those whose activities take them into workplaces make no “occupational” connection.
- ❑ Most of those whose advocate to prevent and reduce contamination of their air, soil or water by toxic chemicals do not make workplace connections in their activities.
- ❑ “Green chemistry” practitioners seem to not know that labour organisations and groups like Clean Production Action and Environmental Defence advocate for their specialty. The Canadian network does not mention the occupational health benefits of this re-design process or link to others promoting green chemistry. Previous reviews of some recent literature in this field found that research and publicity usually emphasise reducing waste and being “environmental”.
- ❑ “Green building” and “green purchasing” advocates and practitioners also seem to exclude working with labour representatives, not necessarily on purpose.

At the same time, the listings show that relatively few listings name “green chemistry”, “green building” or “green jobs” as a topic of interest or focus, while many more effectively are interested in “household products” and “cosmetic pesticide bans”, both of which have implications for the “green” strategies.

As discussed earlier, there is some evidence that workplaces, the people who own and work in them, and occupational health are becoming better integrated into the wide range of TUR activities in this country. However, it occurs quite unevenly in terms of regions, sectors and types of activities. (e.g., labour and business-linked “pollution prevention” projects don’t seem to go together, whether they involve researchers, non-profit government funded organisations or business associations).

2.5.6 Regional differences

The summary chart in Appendix 4.2 shows the trend to activity in Ontario and British Columbia, with some anomalies in Nova Scotia and New Brunswick. The “national/federal” focused listings replicate this. Addresses used in the provincial and territorial listings are concentrated in large urban centres. Some of the specifics are listed in section 2.3.1.

There are differences in the occupational health and safety and environmental laws, policies and programmes across the country. Few deal with the early aspects of a chemical’s life cycle, use the precautionary principle, or require substitution. Only Ontario has a TUR law (about which judgement will be easier to make after its regulations are written). Hinterland regions tend to have fewer relevant laws, policies and programmes, with little evidence of networking outside their region or urban centre(s).

Other regional differences include:

- ❑ Traditional national health organisations, the Canadian Environmental Network and the Canadian Labour Congress are the only national organisations with obvious connections and offices in most parts of the country. This is particularly true of the Prairies, some of the Atlantic Provinces and the North.
- ❑ Environmental illness groups are present in seven provinces but concentrated in urban centres.
- ❑ Aboriginal representatives are few and far between in many national and provincial groups, outside their own organisations or research groups with which they are involved.
- ❑ Research activities are found outside universities in some jurisdictions but usually in major urban centres.
- ❑ Activities directly related to children and their schools are limited on the ground, despite CPCHE and CASLE.
- ❑ Outside the CEN’s facilitation of discussions about the federal Chemical Management Plan and southern Ontario’s networks and coalitions, there are few comprehensive and policy-focused TUR initiatives in the country.
- ❑ Southern parts of Ontario tend to have larger organisations with paid staff, while those in the hinterland usually rely more on volunteers.
- ❑ Some stakeholders -- particularly outside Ontario’s TUR law discussions -- know little

about TUR approaches in Ontario and/or outside the country (e.g., Massachusetts’ *Toxics Use Reduction Act* and TUR Institute, the European Union’s REACH regulation and related efforts such as the Substitute It Now or **SIN list**).

2.5.7 Sectoral differences

A variety of sector differences were noted, including:

- ❑ Healthcare is clearly ahead of many other sectors on the TUR front, at least in southern Ontario and British Columbia.
- ❑ Academics are unevenly distributed across the country, partly because of where universities are located. Few of their research projects go beyond surveillance and monitoring, although some of the latter put these activities in a prevention framework. Furthermore, few actually research occupational health or TUR methods. (This may reflect funding priorities, not interest.)
- ❑ Those with environmental illnesses are included in fewer networks, coalitions and joint efforts than individuals from general environmental organisations, or better-funded ones with paid staff. Environmental illness groups also need regular staff more than most, but are least likely to have enough money to pay them.
- ❑ Volunteer-based organisations are strapped for monetary and staff resources, so their effectiveness often is the result of dedication, passion and sacrifices. Without adequate funding, it is difficult for stakeholders to participate fully in face-to-face networking (e.g., at conferences or meetings, especially outside their city/town/region).
- ❑ Without face-to-face meeting opportunities, it’s difficult to build relationships that are essential in successful networking.
- ❑ Inadequate funding forces organisations to pick and choose which projects they support, initiate, etc., including networking opportunities and sharing resources.
- ❑ Organisations working on environmental health issues fall between funding cracks, because of their perceived place in environment versus health categories.
- ❑ Few environmental and occupational hazards receive the attention, advocacy and policy/legal results given to cosmetic pesticides.

- ❑ Most “solutions” still focus on individual behaviours, rather than a more systemic, collective and preventive approach, whether it’s cancer, reducing the use of toxics or purchasing “green” products.
- ❑ Although occupational health and safety laws have been around since the mid-1970s in many jurisdictions, there is little data available about enforcement of provisions to deal with toxic substances or examples of creative use of the

provisions. We do know that general enforcement is reported to be uneven and ineffective.

- ❑ While each jurisdiction has job-related health and safety laws and regulations, few incorporate toxics use reduction, the precautionary principle or active collective prevention requirements. For those with relevant provisions, there are little, if any, links to environmental laws, policies and programmes.

3. Where are opportunities to network and share resources about TUR?

3.1 What is networking?

This section draws on the conversations with individuals from a wide range of groups and observations about the findings. It starts with examples of different types of networks and tools that support them, followed by lists of opportunities to network and share resources about TUR. Like the gaps, readers likely will develop their own insights and ideas by reading the descriptions in section 2 and the appendices.

The British Columbia Environmental Network takes the earlier definition of networking a bit further than the *Canadian Oxford Dictionary*, quoted earlier. They say it includes pooling information, talents, and resources, and developing activist skills and projects, to solve current problems and prevent new ones.

This may be the kind of networking the NCEO wants to promote. If so, it also is important to consider how to incorporate and make the most of current and new technologies. Some guidance and examples emerged from the scan.

For example, social networking sites are popular these days. Citizenshift, Green Muze and Greenpages.ca may offer opportunities for some types of networking.

For thoughts about how to develop different types of networks and partnerships, aside from the examples below, review the International Institute for Sustainable Development (IISD) **Networks & Partnerships** documents and **We Conserve’s** examples of building networks.

3.2 What happens now?

The charts include examples of those with whom groups and organisations have worked or have joint projects at the moment. There is a trend to more networks and coalitions, at least amongst organisations that have an established history of working with one another in central Canada and on specific national issues (e.g., the Toronto community “right-to-know” by-law, cosmetic pesticide bans, ban asbestos campaigns, First Nations Environmental Health Innovation Network, Gordon Water Group of Concerned Scientists and Citizens, Healthy Schools Day).

These joint efforts grow out of shared experiences, personal and collegial friendships, outreach for specific purposes and building trust by working together in different settings over time.

CELA’s TUR activities are one example of this how this can be done in a setting where people are able to meet face-to-face, at least occasionally. Institutionally and personally, staff members have worked with some groups for more than 25 years. By the time a provincial TUR law was chosen as a strategy in one joint effort, they were submitting briefs on behalf of their own organisation and:

- ❑ Canadian Association of Physicians for the Environment (CAPE),
- ❑ Canadian Institute for Environmental Law and Policy,
- ❑ Windsor-based Citizens Environment Alliance,
- ❑ Ecojustice,
- ❑ Environmental Defence,

- ☐ Great Lakes United (GLU),
- ☐ Northwatch,
- ☐ Prevent Cancer Now,
- ☐ Toronto Environmental Alliance,
- ☐ Toronto Cancer Prevention Coalition, and
- ☐ Women's Healthy Environment Network.

To advocate for the proposals, they became part of Take charge on Toxics! headed up by the Ontario Division of the Canadian Cancer Society. Other members include:

- ☐ Canadian Association of Physicians for the Environment (CAPE),
- ☐ Ontario College of Family Physicians,
- ☐ Ontario Public Health Association,
- ☐ Prevent Cancer Now!,
- ☐ Registered Nurses Association of Ontario,
- ☐ The Lung Association,
- ☐ Toronto Cancer Prevention Coalition,
- ☐ Toxic Free Canada,
- ☐ United Steelworkers, and
- ☐ Women's Healthy Environment Network.

At the same time, CELA is one of 24 "of Ontario's leading environmental organizations (that) have endorsed an action agenda for the province that we believe can help it to usher in an era of green prosperity." Seven of the other organisations are amongst those with which they are working about the TUR law.

This criss-crossing of support and coalitions seems to be supplemented by informal networking. Interviewees talked about organisations with which they worked, but whose names did not appear on websites or documents viewed.

Another way to organise working together is CPCHE's 11-member virtual constellation model. It grew out of relationships built in earlier coalitions about children's health and the environment. Potential members had detailed discussions about what kind of organisation they wanted, the purpose and what they wanted to avoid, based on experiences in coalitions and networks. They developed a common vision and agreed to a decision-making process that allowed CPCHE to advocate and have a national voice from the perspective of members in the three sectors. It also

allows consultations in sub-groups with others that share their purpose about a particular topic.

This means "we do the work because of the work, not to maintain the organisation," a representative explained. After 10 years of research in the field, they are "very much focused on product", she said. All documents are debated before positions are taken, and translated into French. There is a fully-bilingual paid co-ordinator.

The Atlantic Environmental Science Network is a network of networks, each with a specific focus. It has six thematic co-operatives. Thematic programs/ projects are multi-institutional and multi-sectoral, each with environmental policy and socio-economic components.

Others, like the Canadian Environmental Network, explicitly do not advocate. They bring together regional networks and organisational representatives in different ways, depending on the topic or purpose. The networking depends heavily on e-mail and internet access, supplemented by face-to-face meetings.

There also are examples of networking within unions, in smaller communities (where people tend to know one another), etc. Sometimes this may occur through other types as organisations, like the Yellowknife area social justice network, Alternatives North. And, of course, there are the regional networks of the Canadian Environmental Network, with links to links to links.

3.3 What did the key informants say?

These are a selection of the answers to the questions posed to more than 40 people interviewed as part of this scan. Duplicates have been eliminated and similar responses grouped for ease of reading.

3.3.1 Who wants to network and share resources?

While some stakeholders are in overlapping "circles of interest", others are very disconnected from TUR and cancer prevention activities in other regions or with other foci. Despite this, everyone interviewed said they would like to participate in a TUR network and to share resources.

Qualifications to these positive responses included:

- ☐ it depends on the campaign, "not just so we can say we have Facebook friends";

- ❑ those from groups representing people with environmental illnesses talked about the limited energy their members have and the difficulties they can face leaving their homes, attending meetings, etc.;
- ❑ some people are already active and, therefore, have limited time;
- ❑ approval from the governing structure is needed before doing something like this; and
- ❑ some cannot share financial resources but are interested in networking and sharing activities.

3.3.2 *Why?*

One of the most profound and helpful responses came from an Aboriginal man: “It’s like saying ‘Why do you breathe?’ What else could we do? .. The biggest network we live in is our environment.” It’s our collective responsibility to take care of it, he added.

“It’s almost motherhood,” said a Maritimer. It’s a key piece because “the whole point of a network is to reduce exposures to environmental risks, toxins in the everyday world, whether in the ambient world of industry or a smaller space like home . It’s not just using healthier products.”

At CELA, “it’s part of our mandate,” said a long-time staff member. “One of our main functions is outreach and networking. Grassroots groups often don’t have the resources needed to do the policy analysis required. We’re very fortunate to have funding. Our role in the last few decades is to develop policy positions others can adopt, especially on chemicals management.”

A Toronto Public Health official brought it home in terms of TUR. “In our experience, exchanging information is how best practices start. We benefit from others’ leadership (citing the example of Massachusetts efforts about TUR). Once we do it, other jurisdictions start to ask about how to do it. And collective experience helps refines ideas.”

In terms of general experiences, a self-employed consultant from northern British Columbia had a typical explanation. “It’s worthwhile understanding what others are doing. .. If I get a request to look at particular issue, I want to find out if others have done similar work, where did they get funding (and things like that), to avoid starting from scratch.”

For some, it’s because there isn’t much networking or sharing in their province or region. “We want to

deepen our resources and add to our technical knowledge,” said an Alberta resident. “It’s strategically important for getting things changed. To do that, we need to work with others; we can’t do it on our own.” Networking is a very powerful way to co-ordinate public change and get messages out, added a consumer advocate.

Some talked about how the importance of sharing solutions, particularly for those in isolated communities and “one company towns”. “What’s happening in our community, especially around refineries and pulp mills, is not isolated to (our city). There are 100 mills or so in Canada. There are probably similar things happening in other communities. We could share resources, lobby for changes at higher levels in the pulp industry so communities are healthier.”

Those trying to develop solutions, such as green chemistry, want to increase their connections with others. For example, the GreenCentre’s goal is to help Canadian industries become greener and more competitive. This is possible only with good communication between those identifying issues and those who need or want changes, the technical director said. Another practitioner went further. “We need collaborations and different points of view (to realise something may not be ‘green’). We need an extra pair of eyes to help realise what may not be ‘green’ .. in real life.”

Then there’s the perspective of those with environmental illnesses and others whose voices are not always included. The former have a “compelling perspective”, a representative from one group said. “As canaries, we have a special perspective to offer about what’s problematic.”

3.3.3 *Who are you interested in networking with in Canada?*

Most interviewees knew with whom they want to work. The answers dealt more with strategy, expanding the “voices” involved, and the need for general support and specialised connections.

Those concerned with strategy said things such as:

- ❑ “It depends on whether it can help us win. We don’t partner (just) because we want to have everyone at table.”
- ❑ It depends on the issue(s) “on our plate” at a particular time.
- ❑ “Groups that initiate prevention, go into workplaces, are more hands-on, rather than specific companies/ workplaces. Often

workplaces don't know what the problem is or if solution is a good one so it helps to have outside eyes to confirm that is a best practice."

- ☐ Some work only with those who have a philosophy their organisation "can live with".
- ☐ Having more integrated approaches that reflect multiple determinants of health (e.g., lead paint removal is done improperly, green chemistry implemented without consideration of occupational health and safety hazards).
- ☐ They want to connect with those who have time to network because "no one pays for networking time".

Many respondents talked about expanding the types of organisations with which they work.

- ☐ Several said they wanted to start working with, or work more with, unions, those doing occupational health work and/or people and organisations using occupational health information and data.
- ☐ Some union representatives want to work more with environmental NGOs and researchers.
- ☐ Some representatives of long-standing groups wanted to expand their circles to include those doing anti-poverty work and other activities not currently involved in toxics work.
- ☐ Others wanted to connect with grassroots groups having similar experiences or dealing with similar issues and specialists who could help investigate and/or support individual and group demands.

In terms of support and specialised connections, these answers were typical:

- ☐ Grassroots community groups with concerns about particular hazards (e.g., air quality) want to find researchers with information about these hazards.
- ☐ Working with those who understand technical knowledge isn't enough, for some groups. "They must understand the relationship between what they offer and what people can do .. be in it for the long-term, so they can build trusting relationships with folks."
- ☐ Several organisations with a focus on green chemistry and toxics use reduction would like to find companies willing to change processes and/or the chemicals they use, promote "safe" alternatives, and people or organisations who are identifying health and environment issues related to chemicals.

- ☐ Public health departments would expand that to ask businesses to share information about how information travels, how they measure things and what they need from regulators.

3.3.4 What would help your organisation do that?

Many responses to this question were quite thoughtful and given in more detail than recorded here. They range from the general to specifics about information, communication/networking methods and funding,

On the information front, suggestions included having:

- ☐ helpful ways to document best practices from smaller communities/isolated/rural areas, about how to do better (e.g., case studies about how to manage hazardous wastes or work for cosmetic pesticide bans in northern regions);
- ☐ some form of information about:
 - who's out there, who's who,
 - what are they doing?
 - what resources do they have in terms of experience, documents, training materials, strategies, successes?;
- ☐ a central and accessible repository for information;
- ☐ help to find allies and/or help for debates about whether "green" cleaning products are "healthy" or "safe", part of the spectrum of employers, unions and others looking for specific effective and "safe" substitutes;
- ☐ good Canadian examples of toxics use reduction;
- ☐ grassroots-up strategies;
- ☐ electronic resources such as:
 - a national environmental health blog, list-serve/news-letter/website where organisations or people can share their own resources,
 - website like CIER's that help connect people with similar interests to share research, etc.,
 - on-line portals where people can become part of a group/network, post new info, efforts want to partner with others on, general info about what doing, opportunities to connect, etc.,
 - informal ways to collectively communicate and exchange ideas/info),

- webcams, to reduce greenhouse gases,
- an existing “place” to build on
- two sites so have options for those without high speed,
- one that gives access to places outside the organisation’s normal range, and
- up-to-date resources for businesses, with free access.

There were many useful ideas about how to network and communicate. They included:

- ☐ time to get to know others, share beliefs and learn what others are interested in;
- ☐ others knowing “how to be nice” in partnerships;
- ☐ joint projects to build connections and networks;
- ☐ processes and structures respectful of Inuit and First Nations processes (the two are different);
- ☐ a champion for this TUR networking and resource sharing;
- ☐ staffed central body that reports initiatives, to inspire others and widely distribute ideas such as best practices, set up virtual network and central annual meetings;
- ☐ something that could just join without needing time to research or do things (otherwise need funding);
- ☐ bring together similar groups from their and other jurisdictions, to be stronger voice for what they are advocating;
- ☐ capacity-building so there are regional groups to which can take national discussions/ideas;
- ☐ people taking advantage of where there are open doors or possibilities now, cultures in different departments; and
- ☐ better integrate people concerned about/representing health, environment and labour;
- ☐ meetings that could be organised in different ways, such as:
 - another organisation helping to bring people together, even just for a meeting to talk about what everyone’s doing, share resources, etc.,
 - pick top 5 people/organisations would like to work with, and get in the same room with them at least once a year,

- face-to-face regional and national meetings, given time and resources constraints with visioning activities to maintain the purpose,
- holding workshops or meetings to which a “circuit rider” brings examples of reducing toxics,
- opportunities for policy and technical people and others to get together regularly,
- a meeting strategy such as a series of regional workshops, culminating in a national meeting, with regional input about TUR strategies that work or don’t,
- for businesses, an opportunity for candid discussions about how they measure progress and what affects decision-making to help them deliver some of the information; and

- ☐ pay attention to situations and needs, such as:
 - for those with environmental illnesses, recognise their skills, connections, knowledge, organisational experience and constraints about not being able to go outside homes, to socialise, etc., not being paid for their time, their isolation,
 - setting and using (existing) criteria for appropriate meeting spaces and how people get there, to accommodate needs of those with environmental illnesses, and
 - smaller and remote communities may only have internet dial-up and/or access through the library, and that post-secondary applied research institutions are far away.

Funding was an issue for organisations large and small:

- ☐ Most organisations will need more funding to provide resources and skills to foster and facilitate networking.
- ☐ Networking is a tool, not an end. Winning campaigns takes money and is difficult without paid staff.
- ☐ Volunteer-based organisations need money, period. They may get small grants to send people places, but they slip between the cracks because of their perceived place in environment versus health. Some grants won’t cover wages.
- ☐ A travel budget, and a “travel pool” to share financial and people resources, would make it possible to go to conferences, etc. Others talked about recognising the time and other costs

involved for those from isolated communities to attend meetings outside their area.

- ❑ For some, money is needed for testing, advocacy work, report-writing and core funding so people have time to do basic things like write letters, once agree to do that, and for research to make connections.

In these discussions, offers of help included:

- ❑ the CPCHE representative volunteered to share relevant resources by posting documents from other organisations on the Partnership's website;
- ❑ CCOHS has experience with, and can facilitate, networking list-serves, websites, regional meetings; and
- ❑ CNHHE volunteered to post information sent to it and share with its network.

3.4 Where are there other opportunities to network about TUR?

What follows is a brief discussion about three specific frameworks for opportunities to develop networking about TUR activities in Canada.

The comments in Section 4 add to the ideas in this section, as does the discussion about the gaps earlier in this section. Readers also may add to the list based on their reading of the report.

3.4.1 Training and workshops

Almost all the organisations found in this scan do training and present workshops in some ways, likely with different regularity and content. This striking observation from the summary chart in Appendix 4.2 provides many opportunities to bridge some gaps found in the scan.

For example, organisations with the capacity and experience could either contract for or have staff do a needs assessment starting with the range of training and workshop situations the listed groups and organisations have. They also could arrange discussions by e-mail or telephone to brainstorm ways to deal with the language issues raised in the gap analysis and test-run them in a few situations.³⁵

Participatory workshops (of different lengths for different situations) and train-the-trainer sessions could be developed, based on the pilot explorations. It should focus on TUR in the context of life cycle thinking using the precautionary and informed substitution principles.

Occupational and environmental experiences and issues could be integrated into the materials³⁶ to demonstrate why and how to avoid “shifting” of hazards and their risks. It could help groups situate themselves and their activities in a life cycle framework, and help them develop ways to broaden the lens(es) they use for their work. Lists like the ones prepared for this scan could be used to assist them in finding others with similar interests and ones they wish to explore.

3.4.2 Common issues

Other common themes are apparent from the summary charts. They show that air and water quality, “environmental”, “health” and household products are important to many of those listed. There are opportunities to build on these concerns by considering how to put them in a TUR context, again using the life cycle framework. This could work for a wide variety of audiences, including businesses.

Most of the topics also are the subject of government laws, policies and/or programmes. Despite their current limitations, many of them offer possibilities for expanded interpretations and use for TUR purposes. (See the summary in section 2.3 and Appendix 1 for examples.) Legal clinics and others with regulation development experience could analyse the list of government activities for the best examples amongst the jurisdictions and opportunities to use the laws, policies and programmes.

3.4.3 Comprehensive and creative approaches, laws and joint activities do exist

The TUR wheel does not have to be re-invented.

A number of groups already have a comprehensive understanding of TUR, as shown by their activities and/or documents. They include the Canadian Environmental Law Association (CELA), the Canadian Labour Congress (CLC), Canadian Partnership for Children's Health and Environment (CPCHE), Canadians for a Safe Learning Environment (CASLE), Clean Production Action (CPA), Great Lakes United (GLU), the Ontario Centre for Environmental Technology

³⁶ One example of how this has been done is the learning activity, *The Environment and health and safety -- How do we make the connections?*, which the author prepared for the Public Service Alliance of Canada's Education Department.

Advancement (OCETA) and Toxic Free Canada (TFC). The large variety of existing government laws, programmes and policies offer opportunities to implement TUR in every jurisdiction. They also could be the objects of analysis and advocacy about how to do this in a coherent and strategic fashion.

Opportunities for networking and sharing resources could start by finding a way to prepare an inventory of their materials and campaigns/activities, as well as their current networks and partners. That inventory could be shared with existing networks and organisations. Analysis for missing items, sectors, etc. could be supported, and filled in by other organisations, or by agreements to develop links, materials, etc. Discussion results could be developed into best practices for TUR in general and specific settings.

Strategically useful TUR activities found in the scan could be shared via websites, national and regional organisations, social networking sites and meetings of existing national and regional organisations and networks. National organisations and their networks could use the lists to analyse what is going on in regions where they have members, how to support these important TUR activities, etc.

This is particularly important for those in hinterland areas in two ways. First, those who are already doing creative and useful work need to be

recognised and connected with others in similar communities. Second, their work needs to be shared with others.

Unions can work together through provincial federations of labour and/or the CLC to combine their workplace examples of TUR. This includes the type of bargaining language that CUPE recently put onto its website and documents such as the Langley School District policy about “Environmentally friendly materials” (see Appendix 5). The materials then could be shared with union locals, health and safety and environmental representatives and others.

The experiences of joint activities now centred in southern Ontario could be shared and promoted across the country. This may require evaluations and facilitated discussions about the lessons from efforts such as the Toronto right-to-know by-law from the perspectives of all the stakeholders or “players”. These should be supplemented by similar analyses of experiences from other regions where there have been successful campaigns for cosmetic pesticide bans, healthy schools, etc.

The results could be written up, developed into website materials, etc. Local or regional activities could be developed, supported by mentoring from the organisations involved elsewhere (and financial support for those who need it).

4. Conclusions and recommendations for next steps

4.1 General conclusions

Lots of relevant things are going on across the country, even if they aren’t labelled TUR activities at the moment. Networking and sharing resources about this topic also does happen now, particularly around cosmetic pesticide bans.

Based on the interviews, there is a thirst for more. Key informants provided useful suggestions about practical ways to make connections, indicated the support they need to network and named their limits about these kinds of activities.

Within governments, existing laws, policies and programmes could be used directly and indirectly to tackle TUR in a comprehensive and effective way. The Ontario law and Toronto right-to-know by-law indicate some of the possibilities for new legal strategies.

The conjuncture of activities, legal tools, interest, hope, inspiration and enthusiasm make this an opportune time to develop TUR and cancer prevention networks locally, regionally and nationally.

What follows are some recommendations for next steps that build on the interviewees’ suggestions and the opportunities listed.

4.2 What are the next steps?

4.2.1 Distribute the report and appendices extensively

4.2.1.1 The Partnership should:

- ✓ distribute the final report and appendices to
 - each organisation and government department or agency listed in the appendices (electronically and/or by mail),
 - members of the former NCEO, and
 - members of all other committees within the Partnership;
- ✓ encourage the recipients to distribute the report and appendices to their networks and member organisations;
- ✓ put the report (as a PDF) and appendices (as word processed documents) on one page of its website, so they can be found easily;
- ✓ make clear where the information in Appendix 1 (the government listings) can be found on the Cancerview Canada website;
- ✓ include an occupational health category in the prevention policies searchable database on the Cancerview Canada website;
- ✓ collect information about the number of “hits” and their sources;
- ✓ ask for feedback when any of the documents are downloaded;
- ✓ report about the collected information and feedback to whatever entity is set up by the former NCEO, as well as the new PPAC; and
- ✓ allow and encourage others to post the report and its appendices on their own sites or to link to the documents on the Partnership’s site.

4.2.1.2 Members of the former NCEO should:

- ✓ distribute the final report and appendices to their own networks; and
- ✓ encourage their organisations, and others with which they are affiliated, to post the report and appendices on their respective websites.

4.2.2 Develop integrated TUR-related networks at different levels

There clearly is a desire to network about toxics use reduction within the country, and to make links to activities elsewhere. However this requires laying the groundwork in multiple ways.

To start, it may be easiest if this is done by organisations, partnerships, networks, etc. that already have a presence and voice on the topic. This includes those with a comprehensive approach to TUR, the RCEN and/or a committee similar to the NCEO. The basic tasks required are:

4.2.2.1 Identify known and possible “players”

- ✓ use the report to compile an inventory of “players” by categories (e.g., region, experiences, sector, circles of interest, etc.);
- ✓ start to identify the missing voices and faces;
- ✓ develop a method to find and include the self-employed and consultants, especially those available to work in more isolated communities or where scientific, research and/or advocacy voices difficult to find;
- ✓ national organisations should analyse the scan lists for activities in regions where they have members, looking for possibilities to network, share resources and reach out to broaden current connections and links;
- ✓ identify key international efforts about TUR and chemicals management (including those in which Canadian groups now participate), such as:
 - *Guidelines and Principles for Toxic Chemical Regulatory Reform in the United States* that includes requiring “safer substitutes and solutions” and the related *Louisville Charter for Safer Chemicals*,
 - the Strategic Approach to International Chemicals Management or *SAICM*,
 - *Collaborative on Health and the Environment*,
 - *Toxic data sets* portal and other materials from California state’s *green chemistry page*,
 - the Lowell Center for Sustainable Production’s *chemical policies database* and innovative work (e.g., using environmental information to analyse

work-related and children's asthma rates),

- The Toxics Use Reduction Institute (TURI) **cleaners database** and reports,
 - **Precautionary policy clearinghouse** from Center for Health, Environment and Justice in New York, including **state** and **municipal** green purchasing policies,
 - green jobs materials from the **International Labour Organisation** and the **National Institute for Occupational Safety and Health** (NIOSH),
 - NIOSH's **prevention by design project**,
 - the **Talloires Declaration**, an international agreement about environmental sustainability in higher education, signed by university presidents and chancellors in 40-plus countries, including 32 in Canada, and
 - work done by the **European Environment Agency** (EEA) about the precautionary principle and related policy topics; and
- ✓ set up a database to include all this information.

4.2.2.2 Inventory current activities, documents, resources and best practices

Organisations found in the scan should be asked for up-to-date lists and links to activities and things that can be shared. In particular, they should be asked about the training/workshops they currently do (e.g., topics, materials)

Organisations with a comprehensive approach to TUR should:

- ✓ compile an inventory of their own materials and training/workshop topics, information about campaigns/activities and current networks and partners;
- ✓ share the analysis and inventory via an on-line database; and
- ✓ ask for feedback about the database, including missing voices and possibilities for links and networks, sharing resources and co-ordinated activities.

Unions should collect bargaining language, workplace policies and agreements, training materials, newsletter articles, promotional materials, etc., through federations of labour, etc. Business/employer-oriented organisations, and those working with them, should collect similar

documents. Both collections should be put into a database of workplace-related resources and information.

Look for reports such as the *Application of Toxics Use Reduction to OSHA Policy and Programs* that integrate TUR, occupational and environmental health. Add them to the database.

4.2.2.3 Evaluate past experiences and current government activities to identify lessons to inform future efforts

- ✓ evaluate and discuss experiences and lessons learned from networking and multi-organisational activities about:
 - TUR and cancer prevention (e.g., southern Ontario),
 - cosmetic pesticide bans, and
 - healthy schools;
- ✓ legal clinics and others with regulation development experience should review current government laws, policies and/or programmes, for possibilities to expand interpretations and uses for TUR and related strategies, and opportunities to do so in every jurisdiction; and
- ✓ to identify best practices for TUR in general and specific settings, those with a comprehensive understanding of TUR should co-operatively analyse their materials, others found in this scan and those prepared by organisations outside the country.

4.2.2.4 Propose a way forward

Issues to consider include:

- ✓ networking is a tool or strategy, not the “end product”;
- ✓ how to link hinterland activities and materials with more national efforts;
- ✓ inclusion of representation of Aboriginal Peoples, those with environmental illnesses and labour;
- ✓ be aware of the needs of those with environmental illnesses, including difficulties in working full-time;
- ✓ what the interviewees said about networking, their needs and the offers of assistance; and
- ✓ how to fund face-to-face discussions at local, regional and national levels, to include those who usually cannot attend.

Things to be done include:

- ✓ organise discussions amongst representative stakeholder groups and institutions to:
 - review the TUR report and its findings, along with follow-up activities like those in the recommendations,
 - determine ways to build on themes in current activities (e.g., air and water quality, sustainable consumption and green purchasing trends) to move towards more systematic approaches to reduce production of and exposures to toxics, especially inside workplaces,
 - brainstorm ways to deal with “language” issues (e.g., frequency of using TUR) raised by the scan, and
 - determine how the recommendations about training/workshops could be implemented;
- ✓ national organisations and networks also should ask their local and regional groups to work with others in their area to analyse the report and appendices, looking for common themes and inspiration for possible activities and networking opportunities in their area; and
- ✓ move on from the discussions to set priorities that fit with current projects, campaigns, other recent analyses about TUR and/or needs assessments done in this process.

4.2.2.5 Along the way, use opportunities to network and work together

Networks are built on experiences of working together. The above recommendations should not stand in the way of using opportunities to network and work together about particular topics. They may be on the periphery of TUR, or more central to its goals. As an interviewee said about networking, “What else could we do? .. The biggest network we live in is our environment.”

Therefore, national organisations, networks and partnerships, as well as government departments and agencies, need to

- ✓ encourage local, regional and provincial networking about TUR topics and activities;
- ✓ look for opportunities to network about TUR topics and activities at national and international events; and

- ✓ include TUR networking and topics in their planning processes.

4.2.3 Take advantage of so many organisations doing training or workshops

Whatever else is done, it makes sense to take advantage of the many training events and/or workshops involving the people and organisations found in the scan. (See the discussion in sections 2.4.14 and 3.4.1.) Again, the work could be done by organisations, partnerships, networks, etc. that already have a presence and voice on the topic, those with a comprehensive approach to TUR, the RCEN and/or a committee similar to the NCEO.

To present TUR as a pollution prevention tool, and to further its development and use across the country, activities and approaches should include:

- ✓ a needs assessment, following compilation of the inventory of training and workshop topics and materials;
- ✓ develop participatory workshops and train-the-trainer sessions for different situations (e.g., types of organisations, time available);
- ✓ objectives such as:
 - “seeing” TUR in the context of life cycle thinking, and the precautionary and informed substitution principles,
 - situating participants’ current activities in the life cycle of chemicals,
 - discussing how to shift the effects of those activities closer to the production points on the life cycle,
 - expanding participants’ “language” about preventing and reducing exposure to and harm from toxic substances, and
 - discussing opportunities for changes to or new laws and government programmes;
- ✓ integrate occupational and environmental experiences and issues to:
 - show how and why to avoid “shifting” hazards and risks,
 - better situate current activities in a life cycle, and
 - broaden the lenses used in TUR activities;
- ✓ share training materials through national organisations and regional ones that reach out to a wide range of potential partners;

- ✓ reach out to existing environmental and labour educational efforts;
- ✓ inquire about the Sustainability Network's capacity building and leadership training;
- ✓ benefit from the many materials about "knowledge transfer" (e.g. *Collaborative knowledge exchange: Enhancing CDPAC's capacity*);
- ✓ offer presentations about TUR at annual meetings, conferences or other events planned by health and safety, environmental, public health and pollution prevention organisations (e.g. CEN gatherings, union conventions/ health and safety conferences, the Canadian Association for Research on Work and Health annual meeting, and local provincial and national public health associations); and
- ✓ a multi-disciplinary and multi-sectoral "speakers bureau" to do these presentations and workshops, using materials developed as a result of this recommendation.

4.3 Final considerations

Follow-up and evaluation are key ingredients of whatever the Partnership and others decide to do based on this report and its findings. They can be done in the context of seeking opportunities to advance toxic use reduction and support those who implement and advocate for this pollution prevention strategy in many ways.

In the end, the scan findings provide opportunities to start conversations, build on experiences, follow leads and develop collaboration. They offer ways to move towards preventing harm using the strategy of toxics use reduction, and the possibility of networking and sharing resources about the topic.

While there is much to be done, the glass is more than half-full in terms of interest, enthusiasm and actions. Helping to fill it would be a positive step for public health and the environment.

5. Appendices

Appendix 1: Toxics use reduction (TUR) activities in Canada - Governments

Appendix 2: By the numbers: Provincial and territorial TUR activities

Appendix 3: Toxics use reduction (TUR) activities in Canada - People and organisations (national/federal and provincial/regional)

Appendix 4: Toxics use reduction (TUR) activities in Canada -- Summaries of non-government activities

4.1 Summary of non-government TUR activities by jurisdiction, organisation and keywords

4.2 Summary of non-government TUR activities by jurisdiction and keywords

4.3 Keywords explained

Appendix 5: Sample TUR workplace policies and contract language