CANADIAN PARTNERSHIP AGAINST CANCER | PARTENARIAT CANADIEN CONTRE LE CANCER

# Asbestos Surveillance & Disease Compensation Think Tank

Sutton Place Hotel

Toronto, Ontario

Thursday March 4, 2010

CANADIAN PARTNERSHIP AGAINST CANCER | PARTENARIAT CANADIEN CONTRE LE CANCER

# Asbestos Surveillance and Disease Compensation Meeting - March 4, 2010

The reviews expressed herein represent the views of the research and writing team and as such, do not necessarily represent the views of the Partnership.

March 2010

The Alder Group Inc.

Introduction
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## Executive summary

In recent years, leading Canadian organizations have strived to reduce asbestos exposure and eradicate asbestos-related diseases through a variety of strategies. Important questions have been raised about the need for a pan-Canadian framework on asbestos surveillance and more consistent compensation policies across provinces and territories. On March 4, 2010, experts and interested stakeholders gathered in Toronto to identify measures to improve asbestos surveillance and disease compensation in Canada. The one-day meeting was organized by the Canadian Partnership Against Cancer (CPAC)'s National Committee on Environmental and Occupational Exposures (NCEOE) to provide an opportunity to explore best practices for dealing with asbestos-related exposure and illness issues.

The NCEOE invited a series of guest speakers to present on asbestos surveillance and disease compensation in order to promote information-sharing and generate new ideas about potential next steps. Overall, participants expressed their enthusiasm and commitment in tackling the difficult issues surrounding asbestos, highlighting the value of networking and exchanging lessons learned. They also confirmed their readiness to confront the challenges inherent to asbestos surveillance and compensation including: access to quality data, physician and public awareness, and the potential to generate consistent policies nation-wide. Participants emphasized the importance of continuing to engage in strategic partnerships and collaborations both across the country and internationally.

Participants provided varied viewpoints regarding the viability of a pan-Canadian framework on asbestos exposure surveillance and the possibility of more consistent, nation-wide compensation strategies. In their assessment of current asbestos surveillance mechanisms in Canada, they identified the following three key themes:

Creating a national registry of asbestos exposures and related diseases;
Leveraging existing initiatives to minimize cost and maximize efficiencies;
Promoting national collaborations between medical experts and researchers.

In terms of the barriers to asbestos-related disease compensation and the establishment of more effective policies, they identified the following three themes:

Integrating compensation systems across the country by combining data administratively and
Ensuring benefits and requirements for compensation are the same;
Enhancing communication between experts around successful strategies;
Increasing education, awareness and mobilization programs.

This report outlines the expert presentations and the participants' exchanges, including the prevailing themes in their ideas about improving asbestos surveillance and compensation initiatives in Canada.

# 1. Introduction

## 1.1 Background details

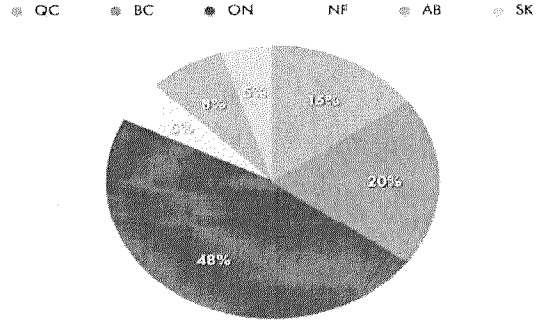
Asbestos is the term used to designate six types of fibrous minerals found in serpentinite and silicate rocks. Due to its tensile strength and heat resistance, asbestos became a very popular material in 20th century construction, notably in the creation of building insulation and various automobile parts. When inhaled, however, asbestos fibers can cause serious health conditions, including cancers. Workers in fields with high occupational exposure risks to asbestos are especially at high risk for health effects.

Certain asbestos-related concerns raise policy issues at both provincial and federal levels. These include prevention of further exposure to asbestos-containing materials in asbestos-related industries, the construction sector and the home environment; effective diagnosis of asbestos-related illnesses and cancers; and compensation for workers exposed to asbestos.

To address these concerns, the NCEOE hosted an Asbestos Surveillance and Disease Compensation Think Tank composed of diverse experts and stakeholders working towards the reduction of environmental and occupational asbestos exposures, as well as consistent compensation policies for occupational diseases resulting from asbestos exposure. The primary goal of the Think Tank was to increase knowledge about asbestos exposure surveillance and compensation policies, as well as identify key elements in the development of an asbestos exposure surveillance framework for Canada. In terms of specific objectives, the meeting sought to:

- provide an overview of international exposure registries and national, provincial/territorial asbestos exposure surveillance efforts in Canada;
- provide an overview of existing compensation policies in Canada, with reference to compensation schemes in other jurisdictions;
- identify the key elements for the development of a functional Canadian asbestos exposure surveillance framework;
- provide a forum for laying the foundational work for a network to explore in greater detail the themes of the Think Tank, including exposure and disease registries and compensation policies for asbestos-related disease.

The meeting brought together experts and stakeholders from across the country allowing for a diversity of perspectives from different fields and geographical regions. International speakers were also invited to the event in order to showcase existing global best practices. The following pie chart illustrates this diversity:



## 1.2 Purpose of report

The purpose of this report is to highlight the principal themes and key ideas that emerged from the presentations, participant discussions and breakout groups during the Asbestos Surveillance and Disease Compensation Think Tank.

## 1.3 Overview of event

The meeting took place at the Sutton Place Hotel in downtown Toronto from 8:30 a.m. to 5:00 p.m. on Thursday, March 4, 2010. Larry Stoffman, chair of the NCEOE, kicked off the meeting by setting the context for asbestos-related concerns and priorities in Canada. Subsequently, Dr. Jon F. Kerner, chair of CPAC's Primary Prevention Action Group, welcomed participants and expressed his appreciation for their active involvement in addressing asbestos-related diseases through surveillance and compensation initiatives.

Following the opening address and introductions, the morning sessions focused on the burden of asbestos as well as asbestos surveillance issues from both a global and national perspective. In the afternoon, the focus turned to disease compensation in both the Canadian and international contexts, before participants split into small breakout groups to discuss the issues that arose during the presentations. To conclude the meeting, participants identified the key themes from their breakout sessions and explored potential next steps in dealing with asbestos-related diseases in Canada.

# 2. Disease Burden of asbestos

## 2.1 Global perspective: Overview of presentation

The first session, entitled "Burdens of asbestos," aimed to provide participants with a conceptual framework on asbestos to help guide their ideas and participation throughout the day. Dr. Leslie Stayner, director of the University of Illinois's Division of Epidemiology and Biostatistics School of Public Health, raised several key issues:

- The world faces a pandemic of asbestos-related diseases, with 90,000 people dying annually from occupational exposure to the mineral.
- Rates of asbestos-related diseases are still on the rise in many parts of the world, including Canada, Europe and Japan.
- The worldwide production of asbestos is not decreasing and high exposures still occur in developed countries and increasingly in developing countries, where data are scarce.
- Exposure to chrysotile is not safe and is associated with an increased risk of mesothelioma, lung cancer and asbestosis.
- The best approach for preventing future pandemics of asbestos-related diseases is to eliminate the production and use of asbestos.

For Dr. Leslie Stayner's full presentation please see Appendix C.

### 2.2 Canadian perspective: Overview of presentation

To further illustrate the burdens of asbestos, Dr. Paul Demers, scientific director of CAREX Canada and Director of the University of British Columbia School of Environmental Health, presented the case of asbestos-related diseases in British Columbia. Though he stressed that the British Columbian experience with asbestos cannot be generalized to the whole country, certain trends remain relevant:

- Historically, asbestos exposure levels have been very high in mining, construction and building environments, despite knowledge of their adverse affects as early as the 1900s.
- Compensation difficulties stem from the lack of knowledge about occupational diseases and their causes.
- Each major asbestos-related disease—notably mesothelioma, asbestosis and lung cancer—presents different surveillance challenges, including long latency periods, multiple contributing sources and unrelated causes of death.
- Many other cancers are caused in part by asbestos, but the link is difficult to establish.
- International models measure the dangers of asbestos too conservatively, especially in terms of predicting the potential disasters looming in developing countries like India.

For Dr. Paul Demer's full presentation please see Appendix D.

Together, these two opening presentations clearly illustrated that asbestos exposures and related diseases are a pressing global and Canadian challenge.

## 3. Asbestos surveillance

### 3.1 Global perspective: Overview of presentation

In the mid-morning session on asbestos surveillance, Dr. Thomas Bateson, epidemiologist at the USA Environmental Protection Agency, elaborated on the situation in Libby, Montana, detailing its decades-long experience with mine-related asbestos issues as the foremost producer of vermiculite for the United States. He noted the following observations as they pertain to the tragic health outcomes of Libby's population:

- Asbestos surveillance tends to focus on workers and household contacts, but the Libby case shows that larger populations within towns and neighbouring areas are also adversely affected.
- Despite multiple types of surveillance activities, challenging questions remain: How is exposure measured? How are outcomes defined? What aspects of asbestos (dust, fibres, etc.) are being assessed?
- Traces of asbestos linger in buildings and materials transformed for public use.
- Libby-produced vermiculite has had far-reaching effects in the United States, where it was transported to hundreds of processing plants nationwide on open rail cars.
- The Agency for Toxic Substances and Disease Registry (ATSDR) conducted community medical screenings in Libby in 2000-2001, finding that close to 20 per cent of inhabitants had lung abnormalities. Despite community awareness initiatives, follow-up medical screenings have not been maintained.

Overarching themes in participant responses to this presentation included the level of government involvement, concerns over fear-mongering, awareness of responsibilities, compensation and access to free healthcare, exposure control and property rights, and natural occurrences of asbestos.

For Dr. Thomas Bateson's full presentation please see Appendix E.

### 3.2 Canadian perspective: Overview of presentations

Transitioning to Canadian surveillance issues, Dr. Louise De Guire, public health physician at the Institut national de santé publique du Québec, presented the context of asbestos-related diseases and asbestos exposure surveillance in Quebec, where rates of malignant mesothelioma are significantly higher than in the rest of the country. After summarizing her recent studies, she outlined her pilot surveillance project proposal, which will obtain data on malignant mesothelioma and asbestosis from physician assessments and medical archives in two Quebec hospitals. This pilot will require the collaboration of regional public health departments, physicians and medical archivists and, if successful, will be extended province-wide. Participants responded enthusiastically to the pilot study idea—their feedback included ideas about medical registries, gender differences in asbestos exposure, incentives for medical staff and consistency of surveillance data. Environmental exposures were also mentioned, comparing public levels of exposure in Thetford to US figures collected by EPA.

For Dr. Louise De Guire's full presentation please see Appendix F.

Echoing the situation in Canada, Dr. Loraine Marrett, Director of Surveillance at Cancer Care Ontario, presented her research on asbestos-related cancers. She noted that the incidence of mesothelioma—the cancer most closely associated with asbestos—continues to rise, and only 40 per cent of these cases actually file for compensation. One challenge is that many asbestos-related cancers develop late in life, often after retirement, making compensation claims less likely. Dr. Marrett shared her goal of using the new Occupational Cancer Research Centre to help identify and eliminate cancers in the workplace by enhancing surveillance and epidemiological research and by raising physician awareness of the role of occupational exposures. A planned feasibility study will examine whether a brief exposure questionnaire, focusing on asbestos, can be administered by lung cancer specialists to identify potentially exposed workers who would then be offered assistance in verifying exposure and, if appropriate, filing for compensation. The Centre is also developing projections of the future burden of mesothelioma in Ontario and Canada—for how much longer will mesothelioma incidence continue to rise, given that asbestos exposure declined dramatically decades ago.

For Dr. Loraine Marrett's full presentation please see Appendix G.

### 3.3 Surveillance breakout group discussion: Highlights

During the breakout session on asbestos surveillance, participants assessed current asbestos surveillance mechanisms in Canada and identified some of the key components and benefits of developing an effective pan-Canadian asbestos exposure surveillance framework. The following ideas emerged from their discussions:

- **Create a national registry:**
  - identify and integrate current registry systems;
  - include registries that cover disease-tracking, hot spots, corporate violation registries and workplace exposure;
  - collect occupational as well as residential histories through comprehensive screenings;
  - generate an inventory of asbestos containing materials in schools, public buildings and businesses;
  - update data regularly to ensure validity;
  - determine potential cohort studies;
  - complement medical registries with workers compensation data;
  - address privacy issues inherent in registry work;
  - reach national agreement on measurement approaches and central filing system.

- **Leverage existing initiatives to minimize cost and maximize efficiencies:**
  - explore past research results and questions;
  - link available data on cancer, workers compensation and public health;
  - facilitate collaboration between national centers and Statistics Canada on collection of asbestos disease data;
  - build on findings by CAREX Canada;
  - identify priority sectors;
  - track innovations across provinces and territories;
  - incorporate relevant practices from other countries, like France's model.

- Promote national collaborations between medical experts and researchers:
  - raise physician awareness about occupational diseases related to asbestos;
  - develop a community prevention agenda;
  - obtain access to past claims and medical archives;
  - determine purpose of surveillance initiatives from scientific, social and environmental standpoints;
  - involve experts from large organizations, like Environment Canada and the Public Health Agency of Canada.

## 4. Disease compensation

### 4.1 Global perspective: Overview of presentation

In the afternoon session, the focus turned to disease compensation, with Dr. Annie Thébaud-Mony, Director of Research from the University of Paris XIII's National Institute for Health and Medical Research, commenting on compensation approaches in France. She presented the two complementary programs that make up the French compensation system for asbestos victims:

- The **workers' compensation program** offers free medical assessments for exposed workers, provided their employers can issue a signed certificate of exposure. The program also enables early retirement plans and has instigated the development of new legislation to protect workers against occupational

exposures to asbestos. It also opens the right to compensation for occupational diseases and to act against the employers for inexcusable fault. Though the program has reached many public administration units and universities since 1997, a large number of workers have not gained access to compensation due to persisting health inequalities.

- The **FIVA (Fonds d'indemnisation des victimes de l'amiante) compensation program** provides automatic compensation to all victims who suffer from occupational and environmental diseases related to asbestos, especially for diseases specific to asbestos exposure contracted in France. Despite good intentions, the program experiences delays in managing compensation claims and faces major financial burdens.

Dr. Thébaud-Mony concluded by summarizing criminal complaints that workers can make against employers who break labor laws. Participants asked Dr. Thébaud-Mony targeted questions about the French programs, with prevailing themes like the applicability of job history assessments, occupational cancer prevention efforts, and the burden of proving causation.

For Dr. Thébaud-Mony's full presentation please see Appendix H.

## 4.2 Canadian perspective: Overview of presentation

In terms of Canadian disease compensation efforts, Katherine Lippel, Canada Research Chair on Occupational Health and Safety Law at the University of Ottawa, presented a comparative legal perspective on the right to workers' compensation in various parts of the country. She described legislation, policy and case law regarding compensation for work-related illnesses attributable to asbestos exposure. Some of her main findings included:

- To determine whether the disease is work-related, tribunals consider the preponderance of evidence supporting the causal link between occupational asbestos exposure and the onset of disease.
- To meet territorial requirements for compensation, victims must present some evidence that their exposure to asbestos occurred within their home province, and requirements in this regard vary between provinces.
- In terms of temporal requirements, victims must meet various conditions relating to their exposure to asbestos and the latency of their asbestos-related disease in order to be eligible for compensation, and requirements in this regard vary between provinces.
- Asbestosis claims are clearly acknowledged to be related to asbestos exposure, which is also true of mesothelioma, although this is not explicitly acknowledged in law and policy of all provinces. Lung cancer presents a special challenge since compensation claims from smokers, although often accepted, are less likely to be accepted than those from non-smokers.
- Concerns about equity arise in cases where access to specialists is limited and proof of exposure is difficult to establish.

For Dr. Katherine Lippel's full presentation please see Appendix I.

Following the presentation, participants responded to some specific issues raised, including jurisdictional limitations, lack of worker knowledge about compensation eligibility, and the challenges inherent in proving disease causation.

### 4.3 Disease compensation breakout group discussion: Highlights

During the breakout session on disease compensation, participants determined some of the barriers to asbestos-related disease recognition in an effort to establish why compensation rates have been so low and how new policies can be set up to assuage these deficiencies. The following key ideas emerged from their discussions:

- Integrate compensation systems across the country:
  - review science recommendations relating to asbestos-related disease;
  - address community access to healthcare and specialists;
  - support compensation boards consistently with cost-recovery mechanisms;
  - standardize compensation and benefits nationally;
  - make compensation data more readily accessible;
  - encourage physicians to learn more about occupational disease diagnosis and compensation;
  - generate physician incentives for e-records on occupational history;
  - develop occupational disease funding strategy with prevention and research components;
  - consider universal disability system;
  - assess advantages of France's no-fault system;
  - ensure legislation reflects up-to-date scientific and medical findings.

- Enhance communication between experts and success strategies:
  - promote dialogue between academic disciplines—notably science and law—through common language;
  - improve overall education and awareness about occupational diseases to refine mobilization and recognition;
  - build on current understanding of occupational disease diagnosis and claim filing;
  - provide funding for specialists that help workers with their diagnosis and compensation requests;
  - consider role of Helsinki criteria and similar systems;

- Increase education, awareness and mobilization programs
  - determine high-risk groups and monitor them;
  - investigate labour force covered by various worker compensation boards;
  - raise public awareness through nurse practitioners and community workers;
  - promote better understanding of asbestos exposure in high-risk communities;
  - overcome barriers to minimum degree of compensation for workers with asbestos-related illness.

The most prevalent theme of the session was enhancing awareness and understanding of asbestos-related diseases in both the workforce and the medical system.

## 5. Conclusion

### 5.1 Meeting wrap-up

In closing, Alec Farquhar, Managing Director of the Occupational Health Clinics for Ontario Workers, thanked participants for their active participation throughout the day, and noted the sense of vision and solidarity that emerged from discussions between experts from various jurisdictions and expertise areas. He also acknowledged the efforts of NCEOE in planning and organizing the meeting to initiate a Canada-wide dialogue on important asbestos-related issues.

### 5.2 Review of meeting objectives

The meeting achieved its primary goal of increasing knowledge about asbestos exposure surveillance and compensation policies, while also identifying some of the first steps towards the development of an asbestos exposure surveillance framework for Canada. Through presentations that summarized both national and international surveillance and compensation efforts, participants were able to get an overall sense of existing initiatives and generate ideas to improve efforts that address asbestos-related issues across provinces and territories. Overall, participants found the meeting fulfilling and useful: based on the evaluation results, 85 per cent agreed the meeting provided a good overview of the burden of asbestos and 90 per cent felt the meeting successfully created a forum for networking with asbestos experts. Further, participants thought the presentations were highly informative—"Excellent choice of speakers"—and that the knowledge they acquired was applicable to their work—"This was very interesting and something I can follow up with". (Full results of participant evaluations regarding the meeting's success appear in Appendix B.)

### 5.3 Next steps

The breakout sessions and plenary discussion produced a range of ideas, as well as important areas of consensus, regarding asbestos surveillance and compensation. CPAC will ensure that this final report is circulated to all participants so that they may continue to enhance this discussion in the future.

Open file Asbestos

Gmail by Google

Sharon Fleishman <sharon@cela.ca>

# Fw: Hansard-Ban Asbestos

3 messages

**theresa@cela.ca <theresa@cela.ca>** **Tue, Apr 13, 2010 at 3:46 PM**
Reply-To: theresa@cela.ca
To: "sharon@cela.ca" <sharon@cela.ca>

Sharon please pass on to anne thompson and print for my file. Thanks. T

Sent from my BlackBerry device on the Rogers Wireless Network

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**From:** "Kaitlyn Mitchell" <kmitchell@ecojustice.ca>
**Date:** Mon, 12 Apr 2010 14:29:26 -0400
**To:** <theresa@cela.ca>
**Subject:** Hansard-Ban Asbestos

Hi Theresa,

In reading through the hansard debates from March 31st I came across this statement by NDP MP Pat Martin re a petition to ban asbestos. Passing it on in case you have not already seen it:

**Mr. Pat Martin (Winnipeg Centre, NDP):**

Mr. Speaker, I would like to table today a petition signed by thousands of Canadians who call upon Parliament to take note of the fact that asbestos is the greatest industrial killer that the world has ever known. In fact, they point out that more Canadians die from asbestos than from all other causes combined in the workplace.

They also point out that, in spite of this, Canada remains one of the largest producers and exporters of asbestos in the world, dumping nearly 200,000 tonnes per year into underdeveloped and third world countries.

Therefore, these petitioners from all over Canada call upon the government to ban asbestos in all of its forms and institute a just transition program for the workers who still work in that industry, to end all government subsidies to asbestos, both in Canada and abroad, and to stop blocking international health and safety conventions designed to protect workers from asbestos, such as the Rotterdam convention.

(URL: http://www2.parl.gc.ca/HousePublications/Publication.aspx?Pub=Hansard&Doc=21&Language=E&Mode=1&Parl=40&Ses=3)

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Sierra Legal is now Ecojustice Canada. For more information, please visit our new website at www.ecojustice.ca



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**Sharon Fleishman <sharon@cela.ca>** **Tue, Apr 13, 2010 at 4:52 PM**
To: annethompson@osgoode.yorku.ca

Hi Anne,
As per Theresa's message below she asked that I pass this on to you. Regards. Sharon
[Quoted text hidden]

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~~~~~~~~~~~~~~~~~~~~~~~~
Sharon Fleishman, Administrative Assistant
sharon@cela.ca
T: 416-960-2284 ext. 211, F: 416-960-9392
Canadian Environmental Law Association (CELA)
130 Spadina Ave., Suite 301, Toronto, ON M5V 2L4
CELA website: www.cela.ca

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**Sharon Fleishman <sharon@cela.ca>** **Tue, Apr 13, 2010 at 4:54 PM**
To: annethompson@osgoode.yorku.ca

Anne - I don't think my previous message captured the email from Kaitlyn Mitchell. Sharon

---------- Forwarded message ----------
From: <theresa@cela.ca>
Date: Tue, Apr 13, 2010 at 3:46 PM
Subject: Fw: Hansard-Ban Asbestos
To: "sharon@cela.ca" <sharon@cela.ca>

[Quoted text hidden]

[Quoted text hidden]
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Gmail by Google

**Sharon Fleishman <sharon@cela.ca>**

# Fwd: [pic-list] EHP: Renewed call for Asbestos Ban

1 message

**Theresa McClenaghan <theresa@cela.ca>** **Mon, Sep 20, 2010 at 12:49 PM**
To: sharon@cela.ca

and print this article too for the asbestos file. Thanks T

---------- Forwarded message ----------
From: **Fe de Leon** <deleonf@cela.ca>
Date: Thu, Jul 8, 2010 at 1:54 PM
Subject: Fwd: [pic-list] EHP: Renewed call for Asbestos Ban
To: Theresa McClenaghan <theresa@cela.ca>, "Sarah Miller (CELA)" <millers@lao.on.ca>, Kathleen Cooper <kcooper@cela.ca>, Joe Castrilli <jcastrilli@cela.ca>, Renee Griffin <rgriffin@cela.ca>

FYI- good article on call for asbestos ban.

Fe

---------- Forwarded message ----------
From: **Joe DiGangi** <joe@ipen.org>
Date: Wed, Jul 7, 2010 at 12:47 PM
Subject: [pic-list] EHP: Renewed call for Asbestos Ban
To: pic-list@npogroups.org

Below is the news article. You can see the full journal article here:

http://ehp03.niehs.nih.gov/article/fetchArticle.action;jsessionid=DB0AB81A258EC7A06F0724B5B0D842CE?articleURI=info%3Adoi%2F10.1289%2Fehp.1002285

## The Case for a Global Ban on Asbestos

Joseph LaDou[1], Barry Castleman[2], Arthur Frank[3], Michael Gochfeld[4], Morris Greenberg[5], James Huff[6], Tushar Kant Joshi[7], Philip J. Landrigan[8], Richard Lemen[9], Jonny Myers[10], Morando Soffritti[11], Colin L. Soskolne[12], Ken Takahashi[13], Daniel Teitelbaum[14], Benedetto Terracini[15], Andrew Watterson[16]

"The asbestos industry argues that chrysotile can be safe with "controlled use,"[9] but multiple studies[10] have indicated it is unsafe under any circumstances..."

http://ehp03.niehs.nih.gov/article/fetchArticle.action;jsessionid=DB0AB81A258EC7A06F0724B5B0D842CE?articleURI=info%3Adoi%2F10.1289%2Fehp.118-a298

Environmental Health Perspectives

1 July 2010

# A Worn-Out Welcome: Renewed Call for a Global Ban on Asbestos

Rebecca Clay Haynes

When Iceland became the first country to ban most forms of asbestos in 1983,[1] global use hovered around 4.3–4.7 million metric tons per year.[2] Twenty-five years later, with several dozen countries now implementing some form of ban,[1] that number had dropped to 2.1 million metric tons.[3] Today, while demand has plummeted in most developed countries, it continues to rise in those countries now rapidly industrializing. This is the backdrop for the Collegium Ramazzini's renewal[4] of its 1999 call[5] for a global ban on the mining and use of asbestos, which joins a growing chorus from national and international science, health, and labor organizations seeking to ban the mineral worldwide once and for all.

"We're encouraged by how many countries now ban asbestos, but when you line up those that do not, including the United States, they encompass the majority of the population in the world," says Joseph LaDou, director of the International Center for Occupational Medicine at the University of California, San Francisco, an emeritus fellow of the Collegium Ramazzini, and lead author of "The Case for a Global Ban on Asbestos" in this issue of *EHP*.[6] "This problem of asbestos continues to persist where there is the most vulnerable population and the least governmental regulation and enforcement."

## The Nature of Asbestos Top

A naturally occurring silicate mineral, asbestos is classified in two forms: amphibole (which includes amosite, crocidolite, tremolite, anthophyllite, and actinolite) and serpentine (also known as chrysotile). Long recognized for its insulating, fire-resisting, and sound-absorbing qualities, asbestos may be mixed with cement or woven into fabric and mats for building construction, vehicle parts, shipbuilding, and other uses. Chrysotile accounted for 95% of all the asbestos used in the twentieth century[7] and accounts for nearly 100% of the asbestos still mined and in circulation worldwide.[8] Amphibole, although rarely mined anymore, is found in vermiculite mined from certain deposits, perhaps most notably the W.R. Grace Mine in Libby, Montana, which closed in 1990.

The asbestos industry argues that chrysotile can be safe with "controlled use,"[9] but multiple studies[10] have indicated it is unsafe under any circumstances. The International Agency for Research on Cancer,[11] U.S. Environmental Protection Agency (EPA),[12] and National Toxicology Program[13] have declared all forms of asbestos to be known human carcinogens. In 2006, the International Labour Organization and the World Health Organization both called for asbestos use, including all use of chrysotile, to cease worldwide.[14,15]

Microscopic asbestos fibers are easily inhaled and ingested, and the longer and more often one is exposed, the higher the risk for diseases such as asbestosis, lung cancer, and mesothelioma (a rare cancer of the cells lining internal organs, which is believed to develop only with asbestos exposure). Those at greatest risk for exposure and disease include asbestos miners, construction workers, and shipbuilders, followed by family members exposed to residue on workers' clothing and people living or working near asbestos mines and factories.

An estimated 125 million people continue to be exposed to asbestos in the workplace,[15] with thousands of deaths and new diagnoses of asbestos-related disease each year.[6] But many experts believe current death and disease estimates are too low. "Since mesothelioma was not given an International Classification of Diseases code until the mid-1990s, this estimate and other estimates for all countries are probably underestimates," says Richard Lemen, retired deputy director of the U.S. National Institute for Occupational Safety and Health. "Since many asbestos-related deaths were not coded as such . . . the bottom line is nobody really knows how many such deaths occur each year." Lemen says he is encouraged

that more than 50 countries now ban asbestos but is "greatly discouraged that the U.S. is not in the leadership on this issue."

Most countries that completely ban the use, extraction, manufacture, and processing of all forms of asbestos began with bans on certain forms or on certain uses such as in schools or ships. "When a country reaches a certain level of economic well-being, it makes sense to ban asbestos," says environmental consultant Barry Castleman. "They realize there are alternatives, and they don't need to risk public health. That said, global consumption is now edging back up because countries such as India and China, which have little or no government regulation and protection for workers, are using more of it."

## Asbestos Abroad Top

The world's largest producers of asbestos include Russia, China, Brazil, Kazakhstan, and Canada;[3] top users are China, Russia, India, Kazakhstan, and Brazil.[16] The battle over asbestos has occasionally pitted otherwise friendly countries against each other. In 1997, when France banned all forms and uses, including chrysotile, the move set off an international dispute with Canada, which was the world's third-largest producer at the time. Canada took its case to the World Trade Organization, claiming the ban damaged its economic interests and impeded free trade, and that chrysotile posed no danger with controlled use. After three years of debate, the World Trade Organization ruled that chrysotile was indeed dangerous, that claims about the safety of controlled use could not be supported, and that the French ban was legal to protect public health.[17]

"This was a landmark case," says Laurie Kazan-Allen, editor of the *British Asbestos Newsletter* and coordinator of the International Ban Asbestos Secretariat, which tracks asbestos-related legislation and other activities worldwide. "The successfully defended ban in France then tipped the European Union [EU] to ban asbestos in 2005. From then on, each country seeking to enter the EU must also ban it. Outside of the EU, we've also seen bans introduced by governments forced to take action through a buildup of pressure from citizens opposed to the continued use of an acknowledged carcinogen."

Canada has a long history with asbestos, starting with its first mine in Quebec in 1874.[18] Approximately 340 miners now work in Canada's sole remaining open-pit asbestos mine,[19] and public pressure has nearly eliminated its use nationwide. However, Canada continues to export chrysotile overseas, especially to developing countries, such as India. Earlier this year, the Canadian Public Health Association and the Canadian Cancer Society called for a ban of chrysotile.[20,21]

Most of the asbestos India imports from Canada is used to make corrugated asbestos-cement sheets for building construction. "Anti-asbestos activists in India have staged hunger strikes and written to political leaders in Quebec accusing them of racism for allowing asbestos to be shipped to India when it's no longer used in Canada," Castleman says. "But the asbestos industry maintains a close relationship with the government in India—and in Canada, I might add—which makes it hard to reach them with a call for a global ban. Frankly, many importing and exporting countries just blow off these attempts to ban asbestos." Representatives from the Asbestos Information Association and Canada's Chrysotile Institute declined to comment for this article.

Although India has banned tremolite and amosite, and some states have imposed moratoriums on new mines, the use of chrysotile is still widespread, according to Madhumita Dutta, a member of the Occupational Health and Environment Network of India, a public health advocacy group. "Asbestos is found everywhere in India, from the shanty towns and urban slums to rural homes and even in middle-class households," Dutta says. "The battle over asbestos is rooted in the politics and economics of a building material that is considered cheap but only because the price doesn't reflect the cost to human health and the environment. We're not sure what effect the Ramazzini call for a global ban might have on the government here, but it may at least provide a good advocacy point for us with medical- and health-related agencies."

In the rebuilding of Japan after World War II, asbestos was widely used in construction and in the manufacture of ammonium sulfate fertilizer to boost rice production.[22] But public health concerns began to grow, and by the late 1980s newly formed activist groups started lobbying for a ban, according to Kazan-Allen. In 1995, the government prohibited the use of crocidolite and amosite, and in 2004 chrysotile in new buildings also was banned.[22] That same year, acting in part on media reports about asbestos,

mesothelioma victims and their families began to seek information from the asbestos-cement pipe factories where they had worked. That prompted the Kubota Corporation, a major asbestos-cement pipe producer, to publicly admit that hundreds of its employees as well as people living near factories and mines had become sick or died as a result of exposure.[23] Within days, other asbestos companies followed with similar announcements, and in 2005 the Japanese government announced a complete phase-out of asbestos over the next three years.[1]

"That scandal, known as the 'Kubota Shock,' became an overnight sensation and had a great impact on the national government and public," says Kazan-Allen. "Finally, after victims' groups had been trying to raise awareness of the asbestos hazard for so long, asbestos-using corporations were not only admitting their guilt but offering to compensate victims, including widows whose husbands had worked in factories and shipyards. The Japanese government also started covering some medical costs and providing payments to family members." By one estimate, there could be about 100,000 Japanese deaths from mesothelioma in the next 40 years.[24]

## Asbestos in the United States Top

Although the United States stopped mining and producing asbestos in 2002, the country imported 1,460 metric tons of chrysotile in 2008, mostly from Canada.[3] An estimated one- to two-thirds of that imported asbestos is used in roofing products,[3,25] but the greater concern, Castleman says, is for continuing imports of asbestos products no longer made in the United States such as cement pipe, brake pads, and gaskets. "Although the amount used here is minuscule compared to twenty or thirty years ago, we still have auto brakes coming in from Mexico and Asia, for example, with asbestos-lined pads," says Lemen. "The EPA, other government agencies, and some in Congress have tried to ban asbestos over the years, but industry trade associations have argued such a move would negatively affect their business and the economy."

The EPA and other federal agencies regulate the use of asbestos, and have attempted full and partial bans since the 1970s, but LaDou and others say trial attorneys and insurance companies have had a greater impact on diminishing nationwide use. Over the past four decades, patients with mesothelioma and other diseases have brought hundreds of thousands of lawsuits against companies that use asbestos, and most insurance companies now refuse to insure projects that include any form of asbestos. "The cost to profit margin has basically pushed asbestos out of the United States," says LaDou. "The litigation business is very active, and actuaries often have better information to determine risk than we have." Castleman adds that "regulation, public awareness, and liability have all but ended the use of asbestos in the United States."

Still, Senator Patty Murray (D–WA) and others have tried since 2002 to pass a "Ban Asbestos in America Act," legislation that, in addition to implementing a full ban on asbestos under the Toxic Substances Control Act, would also provide federal funds for research and for public education on the dangers of asbestos in the home and workplace. This year, trade organizations again succeeded in keeping the bill from coming to a full vote, according to LaDou, by calling for the continuation of a long-standing exemption for products and materials containing less than 1% asbestos, a level of contamination critics say is not acceptable. "That is hardly a ban on asbestos because it would allow products that contain this small but still dangerous amount," LaDou says.

Public health advocates in the United States continue to push for a complete ban, according to Linda Reinstein, who co-founded the Asbestos Disease Awareness Organization when her husband was diagnosed with mesothelioma in 2003. "The United States and Canada are the last two major industrialized countries, not counting Russia, that haven't banned asbestos," she says. "The impact of this lack of a ban affects not only those of us in North America, of course, but also policies in Asia, Africa, South America, and elsewhere. Asbestos is a proven carcinogen, and there are many safe alternatives. It should be banned entirely here in the United States and worldwide."

Lemen agrees, saying that a "U.S. and Canadian ban would have a major impact worldwide. Whenever we meet with industry representatives or even scientists from, say, Russia and China, they always throw it in our face, asking why they should bother when our own country doesn't ban it. '[Your lawmakers] don't listen to you,' they say, 'so why should we?'"

## What Are the Alternatives? Top

As alternative materials to asbestos, the U.S. Geological Survey lists calcium silicate, carbon fiber, cellulose fiber, ceramic fiber, glass fiber, steel fiber, wollastonite, and several organic fibers, such as aramid, polyethylene, polypropylene, and polytetrafluoroethylene.[25] Cellulose and synthetic polyvinyl alcohol and polypropylene fibers used in nonasbestos fiber-cement sheets are mostly of such large diameters that they cannot be breathed into the lungs, according to Castleman. But because these and other alternatives tend to cost 10–15% more than asbestos, large-scale buyers in developing countries still often choose asbestos over an alternative even though, as LaDou argues, "the cost of treating and compensating sick people should more than outweigh the extra cost of an asbestos alternative."

As awareness of the dangers of asbestos spreads worldwide, consumers increasingly seek products made without it. For example, a public health advocacy group in Brazil sets up public education tables in local parks to inform passersby that asbestos kills," according to Kazan-Allen. "So when consumers learned that rooftop water storage tanks were made of asbestos-cement, they began to demand an alternative. That led manufacturers to start making them with plastic instead, and slowly but surely, the asbestos industry in Brazil began to lose some of its power, and four of Brazil's states moved to ban [asbestos] within their borders."

Collecting precise data on illnesses and deaths caused by asbestos exposure has been a challenge around the world, especially in developing countries. Because of the long latency period between asbestos exposure and mesothelioma diagnosis, LaDou says, an average miner in, say, Brazil may die without any clinician ever making the connection that he had worked with asbestos. To help track the incidence of disease, many countries have created mesothelioma registries whose data, they hope, will convince government officials to ban asbestos. "The registries are part of a two-pronged attack," says LaDou. "On the public awareness side, activists around the world are working to educate physicians and the public. On the clinical side, we now have data beyond anything we had before because more countries have now set up cancer and specifically mesothelioma registries."

Even though producer nations continue to send asbestos into the poorest parts of the world, LaDou says there's clearly a momentum toward a global ban, and he has no doubt asbestos will eventually be banned worldwide. "The main influence on governments to ban asbestos comes from the public," he says. "It can often be difficult to get the asbestos story into the media, but we do see the greatest success when the public is informed and acts on the information. As a professional organization, however, the Collegium's call for a global ban will most likely have its greatest impact on other professional groups around the world. Its effect is one part of the puzzle."

## Chronology of National Asbestos Bans[1]

**1983** Iceland bans all types of asbestos (with exceptions); updated in 1996.

**1984** Norway bans all types of asbestos (with exceptions); updated in 1991.

**1986** Denmark bans chrysotile (with exceptions).

Malaysia bans crocidolite.

Sweden introduces the first of a series of bans (with exceptions) on various uses of chrysotile.

**1988** Hungary bans amphiboles.

**1989** Switzerland bans crocidolite, amosite, and chrysotile (with exceptions).

Singapore bans raw asbestos.

**1990** Austria bans chrysotile (with exceptions).

**1991** The Netherlands introduces the first of a series of bans (with exceptions) on various uses of chrysotile

**1992** Italy bans chrysotile (with exceptions until 1994).

**1993** Finland bans chrysotile (with exceptions).

Germany bans chrysotile (with exceptions until 2011).

Croatia bans crocidolite and amosite; updated in 2006 to include all types of asbestos, although that decision was overturned six weeks later.

**1994** Brunei implements administrative rules on asbestos.

**1995** Japan bans crocidolite and amosite.

Kuwait bans all types of asbestos.

**1996** France bans chrysotile (with exceptions).

Slovenia bans production of asbestos-cement products.

Bahrain bans all types of asbestos.

**1997** Poland bans the production and use of asbestos products.

Monaco bans the use of asbestos in all building materials.

**1998** Belgium bans chrysotile (with exceptions).

Saudi Arabia bans all types of asbestos.

Lithuania restricts asbestos use.

**1999** United Kingdom bans chrysotile (with exceptions).

**2000** Ireland bans chrysotile (with exceptions).

Argentina bans amphiboles; updated in 2001 to ban chrysotile.

**2001** Latvia bans new uses of asbestos; installed asbestos products must be labeled.

The first in an eventual series of Brazilian states ban asbestos.

Chile bans all types of asbestos.

Oman bans amosite and crocidolite; updated in 2008 to include chrysotile.

**2002** Spain bans chrysotile, crocidolite, and amosite.

Luxembourg bans chrysotile, crocidolite, and amosite.

The Slovak Republic bans all types of asbestos.

New Zealand bans the import of raw asbestos (import of asbestos-containing materials and secondhand asbestos products still allowed).

Uruguay bans all types of asbestos.

**2004** Honduras bans all types of asbestos (with exceptions).

South Africa announces a phase-out of chrysotile over the next three to five years.

Japan bans the new use of chrysotile in building and friction materials.

## **2005** Bulgaria bans all types of asbestos.

Cyprus, the Czech Republic, Estonia, Greece, Hungary, Lithuania, Malta, Portugal, Romania, and Slovakia pledge to prohibit the new use of chrysotile, other forms of asbestos having been banned previously, under European Union rules.

Japan announces a ban on all types of asbestos within three years.

Egypt bans all types of asbestos.

Jordan bans amosite and crocidolite; updated in 2006 to include all types of asbestos.

## **2007** New Caledonia bans all types of asbestos.

## **2008** South Africa bans all types of asbestos.

Taiwan bans the use of asbestos in construction materials; updated in 2010 to include virtually all remaining uses of asbestos.

## **2009** Republic of Korea (South Korea) bans all types of asbestos.

## **2010** Qatar "strictly prohibits" the import of asbestos.

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**Theresa McClenaghan (CELA)**

**From:** Theresa McClenaghan [theresa@cela.ca]
**Sent:** June 18, 2010 3:33 PM
**To:** Theresa McClenaghan (CELA)
**Subject:** Fwd: Australia: URANIUM IS THE NEW ASBESTOS - UNION BAN ON NUCLEAR WORK

---------- Forwarded message ----------
From: **Gordon Edwards** <ccnr@web.ca>
Date: Fri, Jun 18, 2010 at 1:19 PM
Subject: Australia: URANIUM IS THE NEW ASBESTOS - UNION BAN ON NUCLEAR WORK
To: Gordon Edwards <ccnr@web.ca>

# URANIUM IS THE NEW ASBESTOS
## *UNION BAN ON NUCLEAR WORK*

http://www.brisbanetimes.com.au/queensland/uranium-is-the-new-asbestos-union-ban-on-nuclear-work-20100531-wonk.html

*AAP, Brisbane Times, May 31 2010,*

Australia - The Electrical Trades Union has banned its members from working in uranium mines, nuclear power stations or any other part of the nuclear fuel cycle.

The union says uranium is the new asbestos in the workplace.

The ban will apply to ETU members in Queensland and the Northern Territory and breaching it could lead to expulsion, said ETU state secretary Peter Simpson.

"We are sending a clear message to the industry and the wider community that vested interests in the uranium and nuclear industries are trying to hoodwink us about this dangerous product and industry," Mr Simpson said in a statement.

"Corporate interests, and their political supporters in the Labor and Coalition parties, are also trying to buy working families off with high wages, while denying the true short-term and long-term health risks of such jobs."

The union will launch a video in Brisbane tonight, warning of the dangers of the nuclear industry.

The ETU expects other unions to follow its lead and join its campaign against the uranium and nuclear industries.

Australia has about 20 per cent of the world's known uranium deposits and the largest known deposits of high-grade uranium ore."

--
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E-mail theresa@cela.ca

**Memorandum**

To: William Amos

From: Neida Gonzalez

Date: March 19, 2009

Re: Legislation Governing Asbestos Exports from Canada

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**Facts:**

The type of asbestos that Canada mines, consumes and exports is chrysotile. Canada's chrysotile production was estimated for 2006 at 175,000 tonnes. Total chrysotile fibre exports were 161,000 tonnes or 92% of the total estimated production. In 2006, Canada was ranked the world's fifth largest producer of chrysotile fibre. In 2006, Canada exported chrysotile fibre, as well as manufactured products to at least 70 different countries.

Exports of manufactured goods containing chrysotile totaled $30 million. 83% of these chrysotile-based products manufactured in Canada went to the United States. It estimated that 93% of chrysotile-based products are used by the chrysotile-cement industry for building materials, however other products may include brake linings, as well as water and sewer pipes.

The total export value of chrysotile in its raw fibre form is estimated at $82 million for 2006. Canada's leading foreign markets for chrysotile fibres are Asian countries, which account for more than 77% of its total exports. The reason given for the export of fibres as opposed to manufactured products, where the fibres are sealed in within the products, is that chrysotile fibres make up only a small percentage of the total content of the finished products(between 8% and 10%) and therefore, it is more cost effective to manufacture these products near the end-user countries. However, chrysotile fibres pose the highest health risk in its raw state when chrysotile fibres can be dispersed in air allowing the fibres to be breathed in by people.

Export facts from: "Chrysotile", Minerals and Metals Sector, Natural Resources Canada http://www.nrcan-rncan.gc.ca/mm-smm/busi-indu/cmy-amc/content/2006/20.pdf.

**Issues:**

1. What legislation currently regulates chrysotile fibre exports?

2. What changes to existing legislation could be made to better regulate chrysotile fibre exports?

**Conclusions:**

1. The *Customs Act* regulates all exports in Canada and requires general export reporting requirements for all exports including chrysotile fibre exports.

   The *Canadian Environmental Protection Act, 1999* and the *Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (EIHWHRMR)* apply to chrysotile fibre exports only to the extent that these fibres are part of waste products to be disposed of, and therefore fit the definition of hazardous waste.

2. To better regulate the export of chrysotile fibre the *Canadian Environmental Protection Act, 1999* could be amended to regulate not only the export of hazardous waste, but also dangerous goods that by definition includes chrysotile fibres.

   The federal government control over the end uses of exported chrysotile fibre could be strengthened if chrysotile fibre was listed under the Export Control List pursuant to the *Export and Import Permits Act*. There are a number of criteria that allow a good to be listed under the Export Control List that should be further investigated in relation to chrysotile fibre.

**Discussion:**

**1. What legislation regulates chrysotile fibre exports?**

The main piece of legislation that regulates exports generally is the *Customs Act*. Chrysotile fibre mined and exported from Canada is generally considered a non-restricted good. This means there are no additional controls or regulations under federal legislation other than basic requirements that apply to all exports. The only exception to this is when chrysotile fibres are found in what is defined as hazardous waste under the *Canadian Environmental Protection Act, 1999.*

The following outlines what is required for the exportation of goods generally under the *Customs Act* and the implications of these requirements for the export of chrysotile fibre. After which the specific requirements under the *Canadian Environmental Protection Act, 1999* will be discussed

*A. Customs Act*

Subsection 95 (1) of the *Customs Act* requires that all goods that are exported shall be reported in the manner prescribed by in regulation.[1] The *Reporting of Goods Regulation* in force since 2005 under the *Customs Act* requires that exporters submit an export declaration prior to exportation.[2] This applies to all non-restricted goods where the commercial value is more than $2,000 Canadian and the final destination of the goods is a country other than the United States, Puerto Rico or the U.S. Virgin Islands. The regulatory framework suggests that exports of chrysotile fibre and chrysotile-based products exported from Canada would require that they be declared before exportation. However, there are no other federal regulatory requirements that have been found for the export of chrysotile fibre or chrysotile-based products generally.

*B. Canadian Environmental Protection Act, 1999* (CEPA, 1999) and the *Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations* (EIHWHRMR)

Chrysotile fibre exports when defined as hazardous waste are more stringently regulated under CEPA 1999 and EIHWHRMR. However, to meet the definition of hazardous waste the chrysotile fibres must be intended for waste disposal and meet one of the categories under section 1(1) of the EIHWHRMR.[3] Chrysotile fibers meet the category requirement under Section 1(1) (b) as chrysotile fibres are included in Class 9 of the *Transportation of Dangerous Goods Regulations* (TGDR).[4] The TGDR lists asbestos white fibres, including chrysotile, under Class 9 as a dangerous good when "not fixed in a natural or artificial binder material or included in a manufactured product".[5]

However, as the majority of chrysotile fibres are not being exported for waste disposal, and instead the fibres are being used to create new products these fibres do not meet the definition of hazardous waste. In conclusion, chrysotile fibres exported to Asian countries for manufacturing are not currently covered under CEPA, 1999 or the EIHWHRMR.

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[1] *Customs Act* at Part V, Sections 95 to 97.2; See also Canadian Border Services Agency Memoradum D20-1-1, Export Reporting at http://www.cbsa.gc.ca/publications/dm-md/d20/d20-1-1-eng.pdf.

[2] *Reporting of Goods Regulation* under the *Customs Act*.

[3] Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations, SOR/2005-149, May 17, 2005 pursuant to subsection 332(1) of the *Canadian Environmental Protection Act, 1999* (in force nas of November 1st, 2005). See also Canadian Border Services Agency Memoradum D19-7-3, Export and Import of Hazardous Waste and Hazardous Recyclable Material at <http:// www.cbsa-asfc.gc.ca/publications/dm-md/d19/d19-7-3-eng.pdf>.

[4] The transportation of chrysotile fibres in Canada is regulated under the *Transportation of Dangerous Goods Act*, 1992 ( 1992, c. 34 ) and the *Transportation of Dangerous Goods Regulations*, however this legislation and regulations does not impact on the export of goods classified as dangerous.

[5] The official number for asbestos white fibres (chrysotile) is UN2590 under the *Transportation of Dangerous Goods Regulations*.

## 2. What changes to existing legislation could be made to better regulate chrysotile fibre exports?

Existing legislation and regulations that could be amended to better regulate chrysotile fibre exports include CEPA 1999 and its regulations, as well as the *Export and Import Permit Act* and its related Export Control List.

### *A. CEPA, 1999 and the EIHWHRMR*

The scope of CEPA, 1999 could be expanded. Currently, CEPA 1999 states in subsection 185 (1) (b) (i) that no person shall export hazardous waste or hazardous recyclable material without receiving from the Minister a permit.[6] Moreover, subsection 185 (2) states that:

> If the Minister is of the opinion that the waste or material will not be managed in a manner that will protect the environment and human health against the adverse effects that may result from that waste or material, the Minister may refuse, in accordance with the criteria set out in the regulations, to issue a permit even if the relevant authorities have given their authorization.

If subsection 185 (1) (b) (i) was amended to require a permit for the exportation of "dangerous goods" in addition to hazardous wastes or hazardous recyclable material then chrysotile fibre exports would be better regulated. As chrysotile fibre is already defined as a dangerous good under the TDGR and is referenced in the EIHWHRMR, therefore an amendment to subsection 185 (1) (b) (i) technically would not be difficult.

The advantages of regulating chrysotile fibres as a dangerous good under CEPA 1999 are the powers of the Minister. The Minister may refuse to issue a permit taking into account the criteria set out in subsection 39 (a) of the EIHWHRMR. The current criteria allow the Minister to consider:

> (*a*) the implementation of an environmental management system at the authorized facility that includes
>
> (i) procedures for ensuring the protection of the environment and human health against the adverse effects that may result from the disposal of the hazardous waste or the recycling of the hazardous recyclable material including measures for monitoring the efficiency of the procedures and modifying them in the event that they do not protect the environment and human health,
>
> (ii) measures to monitor and ensure compliance with applicable laws with respect to the protection of the environment and human health, and
>
> (iii) a certification that the system includes those procedures and measures;
>
> (*b*) the implementation of a plan at the authorized facility to prevent, prepare for and respond to an uncontrolled, unplanned or accidental release of hazardous waste or hazardous recyclable material; and
>
> (*c*) the existence of prohibitions or conditions relating to the disposal of hazardous waste or the recycling of hazardous recyclable material in Canada or abroad.

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[6] *Canadian Environmental Protection Act, 1999* at ss 185 1(b)(i).

There are also more stringent conditions for the exports of materials meeting the definition of hazardous waste. The following conditions under subsection 9 of the EIHWHRMR have to be met now before a permit to export hazardous waste and hazardous recyclable material is issued:

- the export is not prohibited under Canadian law [subsection 9 (a)(i)];
- the material is not prohibited by the importing country and its movement is not prohibited by any countries when the material is in transit [subsection 9 (a)(ii)(iii)];
- the importing country is a party to the Basel Convention, the Canada-USA Agreement, or OECD Decision C(2001)107/Final [subsection 9 (a)(ii)];
- the exporter must be a resident of Canada or, in the case of a corporation, have a place of business in Canada [subsection 9 (d)];
- the exporter must be the owner/operator of the facility from which the hazardous waste or hazardous recyclable material will be exported [subsection 9 (e)(i)];
- there is a signed, written contract between the Canadian exporter, the foreign receiver, and the authorized facilities which:
    - requires the foreign receiver to complete Part C of the movement document, or authorize the exporter to complete Part C on the foreign receiver's behalf if the waste or material is not considered or defined as hazardous under the legislation of the country of import, and to provide a copy of the movement document and a copy of the export permit to the exporter on delivery of the hazardous waste or hazardous recyclable material to the authorized facility,
    - contains a requirement that the foreign receiver submit written confirmation to the Canadian exporter of the completion of the disposal operation within 30 days after the date on which it occurs,
    - contains a statement that, if the material is accepted but disposal cannot occur, the foreign importer will help the Canadian exporter meet his or her obligations under the Regulations [subsection 9 (f) (i) to (vi)];
- No shipment can proceed unless the Minister is notified and an export permit is issued.

B. *Export and Import Permits Act* and its related Export Control List

Significant federal tools for regulating exports from Canada are the *Export and Import Permits Act* and the Export Control List (ECL) that falls under this legislation. If a good is on the ECL then an exporter must obtain a federal export permit from the Department of Foreign Affairs and International Trade.[7] An export permit describes the quantity, description, and nature of the items to be exported, as well as the final destination country and final party receiving the good.[8] In addition, the exporter must provide at least one end-use assurance document and may be required to provide an import licence issued by the government of the destination country.[9] An export permit constitutes a legally-binding authorization to export controlled goods. Currently, chrysotile fibres are not on the ECL.

A good must meet one of the criteria under subsection 3 (1) of the *Export and Import Permits Act* to be placed on the ECL:

> **3.** (1) The Governor in Council may establish a list of goods and technology, to be called an Export Control List, including therein any article the export or transfer of which the Governor in Council deems it necessary to control for any of the following purposes:
>
> (a) to ensure that arms, ammunition, implements or munitions of war, naval, army or air stores or any articles deemed capable of being converted there into or made useful in the production thereof or otherwise having a strategic nature or value will not be made available to any destination where their use might be detrimental to the security of Canada;
>
> (b) to ensure that any action taken to promote the further processing in Canada of a natural resource that is produced in Canada is not rendered ineffective by reason of the unrestricted exportation of that natural resource;
>
> (c) to limit or keep under surveillance the export of any raw or processed material that is produced in Canada in circumstances of surplus supply and depressed prices and that is not a produce of agriculture;...
>
> (d) to implement an intergovernmental arrangement or commitment;
>
> (e) to ensure that there is an adequate supply and distribution of the article in Canada for defence or other needs; or
>
> (f) to ensure the orderly export marketing of any goods that are subject to a limitation imposed by any country or customs territory on the quantity of the goods that, on importation into that country or customs territory in any given period, is for the benefit provided for goods imported within that limitation.[10]

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[7] Foreign Affairs and International Trade Canada, *A Guide to Canada's Export Controls*, June 2006 at < http://www.international.gc.ca/controls-controles/assets/pdfs/documents/exportcontrols2006-en.pdf>.
[8] Foreign Affairs and International Trade Canada, *Export Controls Handbook*, February 2009 at <http://www.international.gc.ca/controls-controles/assets/pdfs/documents/ExportControlHandbook-eng.pdf >.
[9] *Ibid.*
[10] *Export and Import Permits Act* ( R.S., 1985, c. E-19 ) at ss. 3(1).

Subsection 3 (1) (c) of the *Export and Import Permits Act* may be a possible basis for adding chrysotile fibre to the ECL as chrysotile fibre is produced under circumstances of surplus in Canada as 92% of chrysotile fibre mined in Canada is exported.

It may also be worth investigating whether chrysotile fibre given its intrinsic characteristics may possibly serve a dual purpose for construction products, as well as a component of materials used in relation to arms. If this is the case chrysotile fibre could fall under subsection 3 (1) (a) of the *Export and Import Permits Act.* Under the *Guide to Canada's Exports Controls, 2006* there are materials listed under "Group 1 – Dual Use List, Category 1 – Advanced Materials" that possibly could include chrysotile fibre such as "fibrous or filamentary materials".[11]

Lastly, if an intergovernmental arrangement or commitment relating to chrysotile fibre has been made, or is made in the future, then chrysotile fibre could be added under subsection 3 (1) (d). Typically, these exports are relegated under "Group 5- Miscellaneous Goods and Technologies" and have included forest products, medical products, agricultural and food products, U.S. origin goods, anti-personnel land mines and goods for which controls were deemed necessary under a bilateral arrangement with the U.S.[12]

It may fruitful to investigate further whether Canada has made any commitments with respect to chrysotile fibres with other governments.

[11] Foreign Affairs and International Trade Canada, *A Guide to Canada's Export Controls*, June 2006 at < http://www.international.gc.ca/controls-controles/assets/pdfs/documents/exportcontrols2006-en.pdf>.
[12] Foreign Affairs and International Trade Canada, *A Guide to Canada's Export Controls*, June 2003 at < http://www.international.gc.ca/controls-controles/assets/pdfs/military/documents/exportcontrols2003-en.pdf>.

# *Canadian Asbestos: In Search of a Ban*

By Anne Thompson

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## Introduction

Canada has been mining and producing chrysotile asbestos products since the second half of the 19th century. The Jeffrey Mine, in Asbestos, Quebec, which has been a source of chrysotile asbestos since 1878, is now a heritage site.[1] During and after the Second World War, the use of asbestos was largely uncontrolled. According to statements made by the Government of Canada, "during the War, asbestos was sprayed onto the walls of warships to protect them from fire, and used in making gas masks."[2] Other applications that took advantage of the fire-resistance and insular properties of asbestos included the spraying of thermal and acoustic insulation for buildings, and the manufacture of asbestos-cement products.[3] Asbestos is also used "in brake linings and clutches, or in the form of spun fibres for the production of insulating tissues or cords."[4] While there are several different types of asbestos,[5] ninety-nine percent of current world asbestos production and trade consists of chrysotile asbestos. This is the only type of asbestos produced and exported from Canada.[6] In fact, as of 2008, Canada was the fifth largest producer

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[1] Natural Resources Canada, "Backgrounder On The Risk Management of Chrysotile" online: <http://www.ec.gc.ca/nopp/docs/consult/rotterdam/ca/en/chrysotileRM-BG.cfm> ["Backgrounder"]. See also Matthew Farfan, "The Jeffrey Mine, Asbestos" online: <http://www.townshipsheritage.com/Eng/Hist/Industries/jeffrey.html>.

[2] *Supra* note 1.

[3] *Ibid.*

[4] Robert Howse and Elizabeth Turk, "The WTO Impact on Internal Regulations: A Case Study of the *Canada-EC Asbestos* Dispute" in George A. Bermann and Petros C. Mavroidos, eds., *Trade and Human Health and Safety* (New York: Cambridge University Press, 2006) at 83.

[5] The term "asbestos" is a general commercial term that encompasses six different types of asbestos fibres, divided into two mineralogical categories: amphibole and serpentine. The amphibole category is made up of five types of asbestos fibres, none of which are produced in Canada. The serpentine category is made up only of chrysotile. See Natural Resources Canada, "Main Minerals and Metals Produced in Canada" online: <http://www.nrcan.gc.ca/smm-mms/busi-indu/mmp-mmp-eng.htm#asbestos>.

[6] *Ibid.*

of chrysotile, producing one hundred and fourty nine thousand metric tonnes of the mineral.[7] The top producer by far was Russia, producing 1072 thousand metric tonnes of asbestos, followed by China (380 thousand), Brazil (270 thousand), and Kazakhstan (175 thousand).

Despite the fact that well-respected international bodies (including the World Health Organization) have recognized that asbestos is a "highly toxic material,"[8] it continues to be mined in and exported from Canada. More than ninety percent of Canadian chrysotile is exported to sixty countries, with the primary markets being Asia, Africa, and Latin America.[9] Canada has put in place domestic regulations governing acceptable uses and applications of asbestos, but has not established an outright ban of the substance, nor has it regulated the export of asbestos from Canada. Despite a strong national and international movement to ban asbestos, Canada has refused to move beyond its "controlled-use" approach to the mining and export of chrysotile. Given that these lobbying efforts of civil society have not attained their desired result, it may be time to explore a different approach to achieving a ban on asbestos. This paper will explore one such approach, namely litigation as an accountability tool for government action. Starting from the premise that asbestos is indeed a dangerous substance, I will explore the various legal regimes governing asbestos mining and use in Canada, as well as its export abroad. I will then look at whether or not an argument could be made, in court, that the Canadian government is breaching its legal obligations with regard to the mining, use, and export of asbestos, in the hopes of identifying a workable cause of action that could be pursued in Canadian courts.

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[7] Leslie Stayner, "The Worldwide Asbestos Disease Pandemic" Presentation made at the Canadian Partnership Against Cancer Meeting on Asbestos Surveillance and Disease Compensation, Toronto, Canada, March 4, 2010.
[8] Howse and Turk, *supra* note 4 at 83.
[9] *Supra* note 5.

In the first part of this paper, I will provide context of the Canadian asbestos industry, as well as demonstrate why asbestos is a dangerous substance and why the Canadian government should not be allowed to continue its mining and export. This discussion will focus on the human health impacts of chrysotile asbestos, as well as the environmental justice implications of the export of such a dangerous substance to poorer countries that are less likely or able to use it in a safe manner. Following this, I will engage in a brief discussion of some challenges relating to the regulation of toxic substances in general. The goal of this discussion is to provide a conceptual framework upon which to base the discussion of the current regulation of asbestos in Canada. This framework will be used to demonstrate the ways in which these initiatives might be falling short. Third, I will look at both the domestic and international legal framework governing the mining, use, and export of chrysotile asbestos, as it relates to Canada. This will focus primarily on the domestic regulation of chrysotile through the *Canadian Environmental Protection Act, 1999* ("CEPA"),[10] and the proposed international regulation of chrysotile through the *Rotterdam Convention* (the "Convention").[11] Relying on the conceptual framework provided in the previous section, I will highlight some of the failures of these initiatives, and why litigation may be desirable at this point. Finally, I will explore what causes of action may be feasible to bring in Canadian courts in order to ensure that the Canadian government is regulating the asbestos industry in a way that is consistent with both its domestic and international legal obligations. Ultimately, my argument is that it may be desirable to seek a declaration in Canadian courts that the government is acting inconsistently with its domestic and international legal obligations in its regulation of chrysotile asbestos, with particular reference to its failure to apply the

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[10] *Canadian Environmental Protection Act, 1999*, S.C. 1999, c. 33 ["CEPA"].

[11] *Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade*, 10 September 1998, 2244 U.N.T.S. 337, (entered into force 24 February 2004, accession by Canada 26 August 2002) ["Convention"].

precautionary principle with regard to this substance. Chrysotile asbestos is a harmful substance that has been banned in a number of industrialized countries, and condemned by the World Health Organization. Canada should be doing the same.

## Putting Chrysotile In Context – The Industry and Its Effects

Chrysotile asbestos has historically been mined in Quebec, Newfoundland, British Columbia and the Yukon. In fact, between 1900 and 2000, mines in these four provinces produced sixty one million tonnes of chrysotile asbestos.[12] Currently, however, there are only two remaining asbestos mines in Canada, both located in Quebec and run by only two companies: LAB Chrysotile and J.M. Asbestos.[13] Their operations occur along "a 100-km-long belt of rock in the Eastern Townships of Quebec extending from the town of Asbestos in the west to East Broughton in the east."[14] As discussed above, Canada is one of the most significant chrysotile asbestos producers in the world, in the company of Russia, China, Brazil, and Kazakhstan. Canadians themselves are reluctant to continue using asbestos. In fact, many government buildings in Canada, including Parliament itself, are undergoing extensive (and expensive) renovations in order to remove the asbestos contained in the building's materials.[15] More than fourty countries worldwide have banned asbestos, including Australia and 25 members of the European Union, because of the known health risks associated with the

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[12] Laurie Kazan-Allen, "Canadian Asbestos: A Global Concern" (2004) 10 *International Journal of Occupational and Environmental Health* 121, online: <http://www.ibasecretariat.org/lka_ottawa_conf_rep_03_plus.php>.
[13] The Asbestos Institute, online: <http://www.asbestos-institute.ca/main.html>.
[14] *Supra* note 5.
[15] Martin Mittelstaedt, "Asbestos Shame" Globe and Mail, Saturday October 27, 2007 (Toronto, Canada), F4.

product.[16] As such, the market for Canadian asbestos is primarily in developing nations, including India (our biggest customer), Indonesia, South Korea, Sri Lanka, and Thailand.[17]

### *Chrysotile Health Risks*

The Canadian government just recently convened an expert panel on chrysotile asbestos, with the aim of considering "at the request of Health Canada the relationship of lung cancer, pleural mesothelioma, and peritoneal mesothelioma to exposure to chrysotile asbestos."[18] The health risks associated with exposure to amphibole asbestos (asbestosis, lung cancer, mesothelioma) are generally well accepted and for the most part have been acted on through regulatory mechanisms. For example, there are limitations on the amount of crocidolite (an amphibole) that can be present in consumer products under the *Asbestos Products Regulations* (to be discussed further below), including import restrictions and labeling requirements.

The scientific community appears less able to reach a consensus on the health risks associated with chrysotile asbestos. Nonetheless, recent research is demonstrating that "toxicologic and epidemiologic studies provide strong evidence that chrysotile is associated with an increased risk of lung cancer and mesothelioma. Chrysotile may be less potent than some amphiboles for inducing mesothelioma, but there is little evidence to indicate lower lung cancer risk."[19] As such, while current studies seem to show a lower risk for mesothelioma from

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[16] David R. Boyd, "There's No Way Around It, Even Canada's Chrysotile Form of Asbestos Is A Major Health Hazard" Globe and Mail, October 9, 2006.
[17] *Supra* note 15.
[18] Chrysotile Asbestos Expert Panel, "Chrysotile Asbestos Consensus Statement and Summary," Convened by Health Canada in Montreal, Quebec, November 13-14, 2007. The Statement is not available online but can be requested by emailing panel@hc-sc.gc.ca.
[19] L. T. Stayner, D. A. Dankovik, and R. A. Lemen, "Occupational Exposure to Chrysotile Asbestos and Cancer Risk: A Review of the Amphibole Hypothesis" (1996) 86 Am. J. Public Health 179.

exposure to chrysotile than exposure to amphiboles, the same cannot be said for the risk of lung cancer.[20]

Furthermore, despite this apparent uncertainty, several well-renowned international organizations have acknowledged the cancer-causing potential of chrysotile. In 1977, the International Agency for Research on Cancer identified chrysotile asbestos as a known human carcinogen.[21] The World Health Organization ("WHO") has recognized asbestos as "one of the most important occupational carcinogens causing about half of the deaths from occupational cancer."[22] The WHO stated that, "bearing in mind that there is no evidence for a threshold for the carcinogenic effect of asbestos and that increased cancer risks have been observed in populations exposed to very low levels, the most efficient way to eliminate asbestos-related diseases is to stop using all types of asbestos."[23] It is important to note that the WHO is calling for a ban on ***all*** types of asbestos because it has been found that they ***all*** have to potential to cause cancer and other asbestos-related diseases, including mesothelioma.

### *Why Should We Care?*

There are a number of reasons why Canada should work towards ending its asbestos industry. The most obvious reason for banning the substance is its health effects. As discussed above, chrysotile asbestos has serious human health effects and is a known carcinogen. Despite Canada's claims that it is taking a "controlled-use" approach[24] to asbestos mining and export, "there is no evidence that controlled use has been implemented successfully anywhere in the

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[20] Stayner, *supra* note 7.
[21] Boyd, *supra* note 16.
[22] World Health Organization, "Elimination of Asbestos-Related Diseases" online: <http://www.who.int/occupational_health/publications/asbestosrelateddisease/en/>.
[23] *Ibid.*
[24] The "controlled-use" approach will be discussed further on in this paper.

world."[25] There are continuing diagnoses of asbestos-related diseases in workers who were exposed to asbestos after the "controlled-use" policy was implemented.[26] While this policy encompasses an understanding that Canadian companies will not export asbestos to countries that do not handle asbestos in a "safe" manner, the Canadian government has itself admitted that it is "not aware of any instances of a company refusing to export to a client."[27] According to Barry Castleman, "anyone who says there's controlled use of asbestos in the Third World is either a liar or a fool."[28] According to Mittelstaedt, in India, one of the biggest markets for Canadian asbestos, it is "easy to find workers using one of the most dangerous materials in the world clad only in T-shirts, shorts and flip-flops."[29] As such, the human health impacts of Canadian asbestos, both domestic and international, remain significant issues that are not adequately addressed through the current regulatory framework.

Moving beyond just the health risks, it is also important to recognize the significant environmental justice implications of Canada's export of chrysotile to developing countries. Canada has been roundly criticized in a number of different arenas for not only continuing its asbestos program, but for actively promoting asbestos on the global stage.[30] Commentators have noted that the fact that asbestos is mined in Quebec has had a real impact on its continued production and export. Robert Howse and Elisabeth Turk note that "partly for national unity reasons, but also because of the importance of support from Quebec to any political party in Canada that seeks to form a majority government, Quebec has frequently been the beneficiary of

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[25] Ban Asbestos Canada, "Why ban asbestos" online: <http://www.bacanada.org/main.html>.
[26] *Ibid.*
[27] Office of the Auditor General of Canada, "Canada's Use and Export of Chrysotile Asbestos" online: <http://www.oag-bvg.gc.ca/internet/English/pet_226_e_30172.html>.
[28] Castleman qtd. in Mittelstaedt, *supra* note 15. Castleman was a consultant to the Europeans in a dispute between Canada and France, over the French ban on Canadian asbestos in 2000.
[29] *Ibid.*
[30] See Mittelstaedt, *supra* note 15 and Boyd, *supra* note 16 as examples.

many industrial assistance and protective measures by the Canadian government."[31] Data from 2003 demonstrates that the mining of chrysotile is no longer a significant industry in Canada: there were less than nine hundred and fifty workers employed in Quebec mines, and these are the only operating asbestos mines in Canada.[32] Supporting asbestos as a way to appease the small Quebec asbestos industry should not be a invoked as a justification for an industry whose impacts are so severe and so widespread.

Trevor Ogden has noted that Canada's stance as "a promoter of asbestos seems inconsistent with its international image as a supporter of the weak."[33] Miningwatch Canada has been very vocal in its criticism of Canada's policy on asbestos. In an article titled, "Exporting Death: Asbestos and Canada," Miningwatch proposes that the money spent on subsidies to keep asbestos mines afloat in Quebec "would be better spent on remediation of the dangerous tailings in Thetford and on alternative forms of economic development including agriculture in the region."[34] Miningwatch also references the international Ban Asbestos movement, saying that "Canada is deluding itself to keep pursuing [asbestos] as source of export earnings. Canada's role in supporting science and in discrediting those scientists who oppose asbestos exports is well documented, and is increasingly becoming a scandal in Europe and the developing world."[35] Canada's insistence on maintaining its asbestos industry flies in the face of a growing international consensus on the risks of asbestos and statements by international organizations, including the World Health Organization, that asbestos should be banned. Given the very small

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[31] Howse and Turk, *supra* note 4 at 85.
[32] Miningwatch Canada, "Exporting Death: Asbestos and Canada" (March 7, 2004) online: <http://www.miningwatch.ca/en/exporting-death-asbestos-and-canada>.
[33] Trevor Ogden, "Canada, Chrysotile, and the Search for Truth" (2008) 52 *Ann. Occup. Hyg.* 8 at 673.
[34] "Exporting Death: Asbestos and Canada," *supra* note 32.
[35] *Ibid.*

role that asbestos mining plays in Canada (the industry currently employs less than 1000 people), it is difficult to understand why Canada is so adamant about maintaining it.

## Regulating Toxic Substances

Instrument choice in environmental policy making is governed by three primary considerations: cost-effectiveness, distributional equity, and political feasibility.[36] In assessing cost-effectiveness, regulators will look at whether the proposed policy instrument will achieve the stated goal or standard, whether it will do this at the lowest possible cost, whether it will provide the government with the information it needs to implement the policy, whether it will provide flexibility, and whether it will provide "dynamic incentives for research, development, and adoption" of better technologies.[37] In terms of distributional equity, the concern is whether or not the "implementation of the policy [will] result in an equitable distribution of the benefits and costs of environmental protection."[38] Finally, regulators are concerned with the political feasibility of the "enactment and implementation" of environmental policies.[39]

In terms of asbestos regulation, and the regulation of any toxic substance for that matter, a major concern is finding a balance between an acceptable level of risk, and the cost in achieving that level.[40] Gathering the requisite information required to assess what is an acceptable level of risk is in and of itself one of the major costs in the regulation of toxic substances.[41] This is the case in large part because of the uncertainty about the health risks

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[36] Revesz, Richard L. and Stavins, Robert N., "Environmental Law and Policy" (September 13, 2004) NYU Public Law Research Paper 82, online: <http://ssrn.com/abstract=552043 or doi:10.2139/ssrn.552043>.
[37] *Ibid.* at 31.
[38] *Ibid.*
[39] *Ibid.*
[40] John S. Applegate, "The Perils of Unreasonable Risk: Information, Regulatory Policy, and Toxic Substances Control" (1991) 91 Colum. L. Rev. 261 at 261.
[41] *Ibid.*

associated with toxic substances, and the indefinite point at which these substances in fact become toxic, or carcinogenic.[42]

The primary policy instruments employed in environmental regulation are command-and-control approaches, market-based instruments, and "market friction reduction" instruments.[43] Market-based instruments are generally used for emissions reduction initiatives, and are not employed in the context of asbestos regulation. As such, these will not be discussed here. Rather, the focus will be on command-and-control approaches, which are used in the domestic regulation of Canadian asbestos, and market friction reduction initiatives, namely informational policy instruments, which are used in the international regulation of Canadian asbestos.

Command and control is the most frequently employed type of environmental regulation (though market mechanisms are becoming increasingly popular). These types of policy instruments involve the setting of some sort of standard and associated penalties for failing to meet that standard. As explained by Steinzor, "command and control rules impose detailed, legally enforceable limits, conditions, and affirmative requirements on industrial operations, generally controlling sources that generate pollution on an individual basis."[44] Command and control standards are based on a determined "safe" level of exposure to whatever substance is being regulated. In the case of asbestos, as will be seen in the following discussion of current policy instruments, a command and control approach has been used to determine the "safe" level of asbestos that can be emitted through the mining and milling of the substance. A similar approach has also been used to determine how much and what type of asbestos can be used in consumer products.

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[42] *Ibid.*
[43] See Revesz and Stavins, *supra* note 36.
[44] Rena I. Steinzor, "Reinventing Environmental Regulation: The Dangerous Journey From Command to Self-Control" (1998) 22 Harv. Envtl. L. Rev. 103 at 104.

One of the biggest criticisms of command and control approaches to environmental regulation is their cost-effectiveness.[45] Because they generally set a uniform standard for all covered entities, they do not take into account the heterogeneity of abatement costs.[46] As such, some firms will face significant abatement costs while others will be able to achieve the standard in a reasonably affordable manner. In the asbestos context, however, this criticism may not be too strong given that the industry is so small. It is likely that the abatement costs are similar between the only two operating asbestos companies in Canada.

However, setting an appropriate standard may itself be high cost, given the scientific uncertainty surrounding asbestos and its links to cancer and other related diseases. The uncertainty surrounding these risks may even make it inappropriate to be taking an approach to regulation that *allows* for asbestos mining and export. Indeed, through an application of the precautionary principle, which will be discussed further below, it could be argued that these activities should not be allowed at all.

Informational policy instruments are intended to "foster market-oriented solutions to environmental problems."[47] The idea is that forcing firms to disclose information about the environmental aspects of their products (largely through labeling or reporting requirements, but also through prior informed consent procedures) will allow consumers or end-users to make appropriate decisions on whether or not they want to use such products. Research carried out relating to the U.S. Toxic Release Inventory, which was established in 1986, demonstrates that requiring firms to "make available to the public information on use, storage, and release of specific hazardous chemicals" can lead to an increased "public awareness of firms' actions, and

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[45] Revesz and Stavins, *supra* note 36 at 34.
[46] *Ibid.*
[47] Revesz and Stavins, *supra* note 36 at 40.

consequent public scrutiny may encourage firms to alter their behaviour, although the evidence on outcomes is mixed."[48]

While these initiatives may be less costly to implement, they can often face significant political resistance, as can be seen with Canada's strong lobby against the inclusion of chrysotile as a substance requiring prior informed consent under the *Rotterdam Convention*. When we are talking about a toxic substance, simply providing information about its use and associated risks is likely insufficient, even more so if you take into account the strong lobby working against such a policy instrument.

## Regulating Canadian Asbestos

There are a number of mechanisms though which the Canadian government regulates the mining, production, import and consumption of asbestos in Canada. This section will describe the primary legal instruments that govern asbestos in Canada and will include both domestic and international regulatory instruments. Domestically, the primary approach is through command and control regulation. As discussed above, this involves the setting of standards and associated prohibitions or punishments for failing to meet these standards. Internationally, an informational policy approach is proposed under the *Rotterdam Convention*, using prior informed consent as a governance mechanism for the export of asbestos.

As will be seen in the following section, neither of these approaches is successful in finding the appropriate balance between the cost of regulation and the risk associated with chrysotile asbestos. Given the small scale of the asbestos industry in Canada, there is no significant economic loss if both the mining and export of the substance were banned. Furthermore, given that the market for Canadian asbestos is primarily developing nations whose

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[48] *Ibid.* at 41.

regulatory frameworks likely do not meet the "controlled-use" approach advocated by the Canadian government, Canadian asbestos exports are putting the lives of many individuals at risk for a relatively insignificant benefit. The continuing regulation of the Canadian asbestos industry under the current framework is likely a response to a strong asbestos lobby, rather than a reflection of the real human health impacts of the substance or the economic benefits the industry provides.

## *Domestic Regulation of Canadian Asbestos*

Regulation of asbestos in Canada is carried out primarily through regulations under the *Canadian Environmental Protection Act, 1999* and the *Hazardous Products Act*.[49] These regulations are intended to reflect a "controlled-use" policy approach to the Canadian asbestos industry. Each of these regulatory initiatives will be described in turn, in order to demonstrate the mechanisms through which the Canadian asbestos industry is currently governed.

### Canadian Environmental Protection Act, 1999

As the primary legislation dealing with the identification, screening, and assessment of substances that could pose a risk to the environment or to human life and health, the *Canadian Environmental Protection Act, 1999* (CEPA) is an important legal mechanism governing asbestos in Canada. Under CEPA, the federal government is able to regulate risks posed by toxic and other harmful substances, as well as the "environmental and human health impacts of products of biotechnology, marine pollution, disposal at sea, vehicle, engine and equipment emissions, fuels, hazardous wastes, environmental emergencies and other sources of pollution."[50]

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[49] *Hazardous Products Act*, R.S.C. 1985, c. H-3.

[50] Environment Canada, "A Guide to Understanding the *Canadian Environmental Protection Act, 1999*, online: <http://www.ec.gc.ca/CEPARegistry/the_act/guide04/s2.cfm>.

For the purposes of this paper, the most important part of CEPA is the power it gives the federal government to regulate toxic substances. Section 64 of the Act defines a substance as "toxic if it is entering or may enter the environment in a quantity or concentration or under conditions that (a) have or may have an immediate or long-term harmful effect on the environment or its biological diversity; (b) constitute or may constitute a danger to the environment on which life depends; or (c) constitute or may constitute a danger in Canada to human life or health."[51] Once a substance is deemed toxic under CEPA, the government has the authority to control it in a number of ways, including:

- Placing it on a List of Toxic Substances in a Schedule to the Act;
- Imposing by regulation requirements respecting the terms and conditions under which listed toxic substances may be released into the environment;
- Requiring the preparation and implementation of pollution prevention plans regarding listed toxic substances;
- Virtually eliminating from the environment certain toxic substances that are also persistent, bioaccumulate, and result primarily from human activity.[52]

Furthermore, the federal government has the authority under CEPA "to impose controls on the export of substances that are prohibited or restricted in Canada or that require prior informed consent from the country of destination."[53]

As such, CEPA gives the federal government a relatively broad discretion to regulate substances that are deemed harmful to the environment and/or human health. However, it is important to note that the power provided under CEPA is a discretionary one. It is up to the federal government to decide whether or not a substance fits the definition of "toxic" under s. 64, and subsequent to this determination, the regulation (if any) of the substance is also at the

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[51] CEPA, *supra* note 10, s. 64.
[52] Joseph F. Castrilli, *Annotated Guide to the Canadian Environmental Protection Act* (September 2008), p. I-9.
[53] *Ibid.*

discretion of the federal government. Though "asbestos" is on the "List of Toxic Substances" in Schedule 1 of CEPA, there is no explicit mandatory requirement under CEPA for the federal government to regulate, much less ban asbestos.

Nonetheless, the federal government has promulgated one regulation governing asbestos in Canada, the *Asbestos Mines and Mills Release Regulations*.[54] These regulations were first issued under the *Clean Air Act* and were "intended as a precautionary measure, to limit the concentration of asbestos fibres in gases emitted into the ambient air at asbestos mines or mills from crushing, drying, or milling operations."[55] As the name suggests, the Regulations set out limits on the concentration of asbestos fibres that can be released during milling operations. The Regulations also "contain provisions whereby the Minister of the Environment may request to the owner or operator of a facility to submit: information and samples respecting the operation of the facility (release measurement reports); information on malfunctions and breakdowns; and information on air pollution control equipment."[56]

With regards to the export of asbestos from Canada, CEPA also provides for an "Export Control List." Under section 100 of the Act, the Minister of the Environment and the Minister of Health may, jointly, "(a) add to Part 1 of the Export Control List in Schedule 3 any substance the use of which is prohibited in Canada by or under an Act of Parliament, and delete any substance from that Part; (b) add to Part 2 of the Export Control List in Schedule 3 any substance that is subject to an international agreement that requires notification or requires the consent of the country of destination before the substance is exported from Canada, and delete any substance from that Part; and (c) add to Part 3 of the Export Control List in Schedule 3 any substance the

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[54] *Asbestos Mines and Mills Release Regulations*, SOR/90-341.
[55] Environment Canada, "Current Regulation: *Asbestos Mines and Mills Release Regulations*" online: <http://www.ec.gc.ca/CEPARegistry/regulations/DetailReg.cfm?intReg=56>.
[56] *Ibid.*

use of which is restricted in Canada by or under an Act of Parliament, and delete any substance from that Part."[57] Substances listed in the Export Control List are subject to regulation, including potentially a complete export prohibition of that substance. However, once again, the Ministers maintain their regulatory discretion with regards to substances on the Export Control List and are not explicitly required to regulate in any particular manner. Though crocidolite asbestos can be found in Part 2 of the Export Substances List (therefore subject to consent before export), chrysolite asbestos remains absent. As such, its export from Canada is as of yet unregulated under CEPA.

**Hazardous Products Act**

Health Canada's mandate under the *Hazardous Products Act* includes "any product, material or substance that is or contains a poisonous, toxic, flammable, explosive, corrosive, infectious, oxidizing, or reactive product ... (which) is or is likely to be a danger to the health and safety of the public; or any product designed for household, garden or personal use, for use in sports or recreational activities, as lifesaving equipment or as a toy, plaything or equipment for use by children ... (which) is or is likely to be a danger to the health or safety of the public because of its design, construction or contents."[58] Products that are listed in Part II of Schedule I of the Act must meet specific regulations in order to be imported, sold or advertised in Canada.[59]

Under the *Asbestos Products Regulations*, promulgated by virtue of the *Hazardous Products Act*, the advertising, sale and importation of asbestos products are regulated.[60] The Regulations authorize certain uses of crocidolite and non-crocidolite asbestos, as long as certain

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[57] CEPA, *supra* note 10, s. 100.
[58] Health Canada, "Quick Reference Guide to the *Hazardous Products Act* for Manufacturers, Importers, Distributors and Retailers – 2009" online: <http://www.hc-sc.gc.ca/cps-spc/pubs/indust/reference_guide-consultation_rapid/intro-eng.php>.
[59] *Hazardous Products Act*, *supra* note 49, s. 15.
[60] *Asbestos Products Regulations*, SOR/2007-260, s. 2.

requirements are met.[61] The Regulations do prohibit certain asbestos products, namely: "(a) a product for use in modeling or sculpture; (b) a product for use in simulating ashes or embers; and (c) a consumer product that is composed entirely of asbestos."[62] Interestingly, despite very public initiatives to remove asbestos from government and other public buildings, the government has still not banned the use of asbestos in construction. In the Table to Section 3 of the Regulations, which outlines the permitted non-crocidolite asbestos products, "a product that is used in construction, repair or renovation as a drywall joint cement or compound or as a spackling or patching compound" is permitted as long as "airborne asbestos cannot become separated from the product during its post-manufacture preparation, application or removal."[63]

**The Controlled-Use Approach**

Before any of this regulation came into effect, the Canadian government gave itself a mandate to "develop a consistent, science-based approach to regulating asbestos in Canada."[64] In 1979, a federal-provincial working group (FPWG) was convened with this mandate, and published a document entitled "Current Approach to the Regulation of Asbestos in Canada" in 1982. This document set out what has come to be known as the "controlled-use approach" to asbestos. This approach maintains that "through the implementation of appropriate regulations aimed at rigorously controlling exposure, the risks associated with exposure to chrysotile during extraction, crushing, transportation and handling and in manufacturing processes can be reduced to acceptable levels (i.e. levels at which no increased risk exists of contracting lung diseases). Conversely, applications involving exposure that cannot be controlled in an appropriate manner

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[61] *Asbestos Products Regulations*, *supra* note 60, Table to Section 3 and Table to Section 4.
[62] *Ibid.*, s. 3(3).
[63] *Ibid.*, Table to Section 3.
[64] *Supra* note 1.

should be prohibited."[65] This controlled-use approach was reaffirmed and expanded to the use of all minerals and metals in 1996, with the adoption of the "safe-use principle" for minerals and metals by the Government of Canada. Like the controlled-use approach, the safe-use principle focuses on risk management, by ensuring that the human health and environmental risks associated with asbestos are controlled and minimized to 'acceptable' levels. According to the Canadian Government, "it is essentially a strict risk management approach to ensure that people are not exposed to significant levels of asbestos, particularly amphibole fibres."[66] The Government goes on to note that the safe-use principle "guides product stewardship programs, monitoring, and product based regulation in Canada."[67]

Looking back on the regulatory mechanisms discussed above, one can see how the safe-use principle has been actualized. The use of crocidolite asbestos (an amphibole, so more clearly linked with lung diseases) is much more severely restricted than the use of chrysotile asbestos (which is, according to the Government, "considered to be a less potent carcinogen"[68]). However, it is important to note, as pointed out by Leslie Stayner, "safer is not the same as safe."[69]

What can be seen through this outline of the domestic regulation of Canadian asbestos is an approach to regulation that focuses primarily on balancing the risk associated with chrysotile asbestos and the cost of regulating the substance. The government has obviously concluded that the risk associated with chrysotile is not enough to warrant a ban on the substance, given the uncertainty associated with its link to cancer and other lung diseases, and potentially also given

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[65] *Ibid.*
[66] *Ibid.*
[67] *Ibid.*
[68] *Ibid.*
[69] Stayner, *supra* note 7.

the strong asbestos lobby. While the science may remain uncertain, as discussed above, it is increasingly demonstrating a strong link between chrysotile and lung cancer, and even chrysotile and other asbestos-related lung diseases. Given these new scientific developments, it may be time to reassess the risks and take heed of an international movement towards the banning of asbestos.

## *International Regulation of Canadian Asbestos*

### The Rotterdam Convention

The *Rotterdam Convention* was adopted on September 10, 1998 in Rotterdam, Netherlands. Canada acceded to the treaty on August 26, 2002, and it came into force on February 24, 2004. The Convention has two stated objectives. First, "to promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm."[70] Second, "to contribute to the environmentally sound use of those hazardous chemicals, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties."[71]

Commentators have noted that the primary goal of the Convention is the exchange of information, particularly through a legally-binding Prior Informed Consent (PIC) procedure.[72]

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[70] Rotterdam Convention, online: < http://www.pic.int/home.php?type=t&id=5&sid=16>.
[71] *Ibid.*
[72] See Environment Canada, online: <http://www.ec.gc.ca/international/multilat/rotterdam_e.htm>.; Richard W. Emory, Jr., "Probing the Protections in the Rotterdam Convention on Prior Informed Consent" (2001) 12 Colo. J. Int'l Envtl. L. & Pol'y 47.

The PIC procedure is triggered when a chemical[73] is listed in Annex III of the Convention, "Chemicals Subject to the Prior Informed Consent Procedure."[74] In order for a chemical to be listed on Annex III, two things must happen. First, two PIC regions must ban or "severely restrict" the same chemical, and notify the Convention Secretariat of that regulatory action. A banned chemical is defined as "a chemical all uses of which [...] have been prohibited by final regulatory action, in order to protect human health or the environment."[75] A "severely restricted chemical" means "a chemical virtually all use of which [...] has been prohibited by final regulatory action in order to protect human health or the environment, but for which certain specific uses remain allowed."[76]

Once the Secretariat is notified of this regulatory action, it will forward these notifications to the Chemical Review Committee (CRC).[77] The CRC "is a group or government-designated experts from various participating countries"[78] that will review the notifications of the regulating Parties, which contain information regarding their reasons for regulating the chemical in question. Based on this information, the CRC will recommend "to the Conference of the

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[73] Because asbestos is listed as an "Industrial Chemical," I will deal only with the process for the listing of chemicals in Annex III. There is a different process for the listing of "severely hazardous pesticide formulations," particularly with regards to "any Party that is a developing country or a country with an economy in transition and that is experiencing problems caused by a severely hazardous pesticide formulation under conditions of use in its territory." See *Rotterdam Convention*, *supra* note 11, Article 6.1.

[74] *Ibid.*, Annex III.

[75] *Ibid.*, Article 2(b). Note that the definition "includes a chemical that has been refused approval for first-time use or has been withdrawn by industry either from the domestic market or from further consideration in the domestic approval process and where there is clear evidence that such

[76] *Ibid.*, Article 2(c). Note that the definition "includes a chemical that has, for virtually all use, been refused for approval or been withdrawn by industry either from the domestic market or from further consideration in the domestic approval process, and where there is clear evidence that such action has been taken in order to protect human health or the environment."

[77] *Ibid.*, Article 5.5.

[78] Environment Canada, *supra* note 72.

Parties whether the chemical in question should be made subject to the Prior Informed Consent procedure and, accordingly, be listed in Annex III."[79] The Conference of the Parties then reviews the CRC's recommendation and makes a "final decision to add a chemical to the list of substances subject to the PIC procedure, on a consensus basis."[80]

Once a chemical is listed in Annex III, a decision guidance document (DGD) is prepared by the CRC and is sent to all Parties. Parties then have nine months to make a decision as to whether or not they want to continue imports of the listed chemical. Their import response "can consist of either a final decision (to allow import of the chemical, not to allow import, or to allow import subject to specified conditions) or an interim response. Decisions by an importing country must be trade neutral (i.e., apply to domestic production for domestic use as well as to imports from any source.)"[81]

For chemicals subject to the PIC procedure, exporters of the Parties are required:

- To apply for a permit to export the substance to countries that are Parties to the Convention. A permit is issued if the importing country accepts those imports. The export permit incorporates any conditions included in the importing country's consent;
- To carry liability insurance for each shipment of PIC substances;
- To provide health and environmental information with each shipment, such as material safety data sheets and labels; and
- To take back shipments when conditions of the permit have been violated.[82]

As such, the listing of a chemical in Annex III creates real obligations on the part of exporting countries to ensure that Party importing countries have consented to the imports and are aware of the risks involved with the chemical.

Commentators have noted that, if the ultimate goal is to ensure that risks to human health and the environment are minimized (if not eradicated), there are serious flaws with the PIC

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[79] *Rotterdam Convention*, *supra* note 11, Article 5.6.
[80] Environment Canada, *supra* note 72.
[81] Rotterdam Convention, *supra* note 70.
[82] Environment Canada, *supra* note 72.

procedure as set out in the *Rotterdam Convention*. First of all, it is noted that the Convention does not establish any obligations on exporting countries toward non-Parties to the Convention.[83] As such, an exporting country can export a listed chemical to a non-Party and not be in violation of the Convention. This is "in contrast to the ban on both imports from and exports to non-Parties contained in the Montreal Protocol (controlling trade in ozone depleting substances, primarily chlorofluorocarbons), the Basel Convention (controlling trade in hazardous waste), and CITES (controlling trade in endangered species)."[84] The Convention clearly does not have as much bite as other international treaties established to deal with equally pressing environmental issues. Richard W. Emory, Jr. notes that "the reality of the [Convention] is that trade in its banned and severely restricted chemicals is not seen as a global threat but merely as a matter of local policy for importing nations where the chemicals are used."[85]

Another, more fundamental problem with the *Rotterdam Convention* is the fact that it relies on importing countries to make an accurate assessment of the risks involved with listed chemicals and make an import decision accordingly. Paula Barrios notes that "developing countries have been and continue to be a favoured destination of hazardous chemicals, since they are less aware of the risks involved and they often depend on them to earn foreign currencies or to control vector-borne diseases."[86] These countries do not necessarily have the capacity to create, much less enforce environmental laws and regulations. As such, as recipients of dangerous chemicals or other hazardous products, they may not have to capacity to deal with them in a way that protects both human health and the environment.

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[83] Emory, *supra* note 72 at 50.
[84] *Ibid.*
[85] *Ibid.* at 51.
[86] Paula Barrios, "The Rotterdam Convention on Hazardous Chemicals: A Meaningful Step Toward Environmental Protection" (2003-2004) 16 Geo. Int'l. Envtl. L. Rev. 679 at 681.

Furthermore, the reliance in the *Rotterdam Convention* on information exchange and prior informed consent as mechanisms to control harmful chemicals presupposes that developing countries would choose not to import these products if given the proper information. Here, Barrios argues that "even if the countries in the South are concerned about the environmental and health implications of importing hazardous chemicals that they will not be able to handle in a safe manner, they might still choose to import them because they are constrained by more pressing economic and social problems, which go beyond the short-term economic pressures borne by every Northern government in its pursuit of environmental protection."[87] Essentially, the Convention avoids a complete ban on certain hazardous products because that could be seen as paternalistic, in the sense that Northern countries are imposing their environmental and health standards on countries of the South. Yet the Convention fails to address the real issue that most of these hazardous substances are produced in the North for export and consumption in the South. The ethical challenges that this poses are ignored in the PIC procedure.

The Rotterdam Convention now lists fourty chemicals in Annex II, including twenty-five pesticides, four severely hazardous pesticide formulations, and eleven industrial chemicals.[88] Among those are five types of asbestos: crocidolite, actinolite, anthophyllite, amosite, and tremolite (all amphiboles).[89] Noticeably absent from this list is chrysotile asbestos. In fact, the Chemical Review Committee recommended that chrysotile be listed in Annex III at its first meeting, as a result of four notifications provided to the Convention Secretariat from three PIC regions (South West Pacific – Australia; Latin America and the Caribbean – Chile; Europe –

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[87] *Ibid.* at 699-700.
[88] Rotterdam Convention, *supra* note 70.
[89] *Rotterdam Convention*, *supra* note 11, Annex III.

European Community and Latvia).[90] Canada, along with Indonesia, India, Iran, Kyrgyzstan, Peru, Russia, Ukraine, and Zimbabwe, opposed the addition of chrysotile to Annex III.[91] Because this requires the consensus of the COP, chrysotile asbestos remains absent from Annex III of the *Rotterdam Convention* and is not subject to the binding PIC procedures such a listing attracts.

While an informational policy instrument such as a prior informed consent procedure is intended to allow consumers or end-users to make informed decisions about their use or consumption of a toxic substance, such an instrument seems inappropriate in the context of chrysotile asbestos. The international trade in Canadian asbestos is currently structured in a way that allows the export of the substance from Canada, where the risks of the substance are known, documented, and to a degree regulated, primarily to developing nations where such knowledge and regulatory framework is unlikely to exist. Canada's refusal to allow the listing of asbestos as a substance subject to prior informed consent under the *Rotterdam Convention* fails to recognize the different capacities of developed and developing nations to deal with toxic substances, and does so in a way that flies in the face of any concept of environmental justice. How can the Canadian government justify both the removal of asbestos from government buildings and the

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[90] United Nations Environment Programme and Food and Agriculture Organization of the United Nations, Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, Chemical Review Committee, First Meeting, Geneva, 11-18 February 2005, Item 7(m) of the provisional agenda, Inclusion of chemicals in Annex III of the Rotterdam Convention: review of notifications of final regulatory actions to ban or severely restrict a chemical: chrysotile asbestos. Online: <http://www.pic.int/home.php?type=t&id=237&sid=75>.

[91] Christopher P.H. Bitonti, "Exporting Ignorance: Canada's Opposition to the Regulation of the International Chrysotile Asbestos Trade Under the Rotterdam Convention," online: <http://ssrn.com/abstract=1418075>. Bitonti makes an interesting comment regarding Canada's allies in opposition to the listing of chrysotile, stating that several of these countries "have highly questionable international reputations in the areas of human rights and public health." He contrasts this with "Canada's usual allies in international and economic relation, such as the European Union, the United States, Australia, New Zealand, Brazil, and Argentina [which] have all supported the addition of chrysotile to the Convention."

strong push for maintaining asbestos exports at the same time, without recognizing the inherent ethical conflict this creates?

**The Precautionary Principle**

The precautionary principle is a principle that has evolved, particularly in the context of environmental regulation, aiming to ensure that environmental and human health are most effectively protected. Though many formulations of the principle exist, it stands for the idea that scientific uncertainty should not be reason to refrain from the regulation of substances or activities that may cause harm to human health or the environment. Malgosia Fitzmaurice speaks of two versions of the precautionary principle – the weak and the strong. The weak version can be found in Principle 15 of the Rio Declaration on Environment and Development, which states, "in order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."[92] The strong version of the precautionary principle is reflected in the 1982 United Nations World Charter for Nature, which states that when "potential adverse effects are not fully understood, the activities should not proceed."[93] Another statement of the strong precautionary principle can be seen in the 1998 Wingspread Declaration, which states that "[w]hen an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically."[94]

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[92] Malgosia Fitzmaurice, *Contemporary Issues in International Environmental Law* (Cheltenham, UK, Northhampton, MA, USA: Edward Elgar, 2009) at 9.
[93] *Ibid.*
[94] *Ibid.*

Despite these different discursive versions of the precautionary principle, the underlying normative content of the principle remains the same. It is aimed at ensuring that uncertainty is not a bar to regulation when it comes to environmental or human health. Indeed, the precautionary principle requires that "scientific uncertainty should not disadvantage those individuals who might be harmed by the activity in question, particularly if the harm is serious or irreversible as in the case of serious physical injury or death."[95] By focusing on the victims who would be protected by an application of the precautionary principle, its normative content becomes clearer in the context of environmental harms that have significant human health impacts. In such situations, whether a "weak" or "strong" version of the precautionary principle is applied becomes irrelevant – its normative content requires that potential victims are protected from harm.

I acknowledge that this protection cannot come at any cost. The precautionary principle, no matter how one frames it, involves some sort of risk assessment, generally in the form of a cost-benefit analysis. However, properly understood, it cautions that "regulatory policy should be pro-active in ferreting out potentially serious threats to human health and the environment, as confirmed by the history of human exposure to substances such as lead and asbestos."[96] Canada claims to adhere to the precautionary principle in its environmental regulation, yet has failed to ban asbestos, despite the significant evidence pointing to its devastating effects.

Canada has embraced the precautionary principle in s. 2.1(a) of the *Canadian Environmental Protection Act, 1999*, stating that, "In the administration of this Act, the Government of Canada shall, having regard to the Constitution and laws of Canada [...] exercise

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[95] Mark Geistfeld, "Implementing the Precautionary Principle" (2001) 31 Environmental Law Reporter, online: <http://ssrn.com/abstract=289146 or doi:10.2139/ssrn.289146>.
[96] Robert V. Percival, "Who's Afraid of the Precautionary Principle?" (2006) 23 Pace Environmental Law Review, online: <http://ssrn.com/abstract=831824>.

its powers in a manner that protects the environment and human health, applies the precautionary principle that, where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation, and promotes and reinforces enforceable pollution prevention approaches." Canada is also Party to a number of international treaties and conventions that adopt the precautionary principle, including the aforementioned *Rio Declaration on Environment and Development*.

There are four main sources of international law, as set out in Article 38(1) of the Statute of the International Court of Justice:

(a) international conventions, whether general or particular, establishing rules expressly recognized by the contesting states;
(b) international custom, as evidence of a general practice accepted as law;
(c) the general principles of law recognized by civilized nations;
(d) [...] judicial decisions and the teachings of the most highly qualified publicists of the various nations, as subsidiary means for the determination of rules of law.

For the purposes of this discussion, I will only be dealing with the possibility of the precautionary principle having gained the status of customary international law, under Article 38(1)(b).

Arie Trouwborst, referencing the International Law Association, explained Article 38(1)(b) as meaning a "body of rules which are 'created and sustained by the constant and uniform practice of States and other subjects of international law in or impinging upon their international legal relations, in circumstances which give rise to a legitimate expectation of similar conduct in the future'."[97] Though there are considerable challenges to identifying what sort of customs have gained the status of international law, legal commentators as well as courts

[97] Arie Trouwborst, *Evolution and Status of the Precautionary Principle in International Law* (The Hague, London, New York: Kluwer Law International, 2002) at 45.

in several jurisdictions (including Canadian ones) have posited that the precautionary principle has in fact "crystallized into a principle of general customary international law."[98]

Owen McIntyre and Thomas Mosedale point to the adoption of the precautionary principle "in a wide variety of more recent international instruments and its elaboration in the Rio Declaration as a general guiding principle for taking action to protect the environment" as evidence of its status.[99] Some of the international instruments they cite include, *inter alia*, the 1984 Bremen Ministerial Declaration of the International Conference on the Protection of the North Sea, the 1992 Baltic Sea Convention, the 1985 Vienna Convention, and the 1987 Montreal Protocol. It is important to note that the formulation of the precautionary principle in these treaties is not identical, leading to the problem that, "the precise content of the obligation, if indeed such an elusive concept can be subject to substantive definition, remains a matter of uncertainty."[100] Nonetheless, Arie Trouwborst argues that an assessment of "state practice, *opinio juris*, and expert opinion allows for the final conclusion that the assumption that nowadays the precautionary principle is a principle of customary international law is much better defensible than the contrary."[101]

Trouwbourst argues that "the current wholehearted acceptance of the [precautionary] principle by the international community is witnessed by its endorsement in numerous global and regional conventions, declarations, decisions of international organizations and domestic legal systems, as well as by its invocation by states in their mutual relations and its discussion in

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[98] Owen McIntyre and Thomas Mosedale, "The Precautionary Principle as a Norm of Customary International Law" (1997) 9 J. Envtl. L. 221 at 223.
[99] *Ibid.* at 222.
[100] *Ibid.* at 223.
[101] Trouwborst, *supra* note 97 at 276.

international and national judicial proceedings."[102] As such, Trouwborst argues, states are under an obligation to apply the precautionary principle when making decisions relating to the environment, "including the environment within the bounds of domestic jurisdiction, that is, as a minimum, their air space, land mass, internal waters and territorial sea, including the ecosystems these house and compose."[103]

Recent decisions in Canadian and international courts have also noted that the precautionary principle may be elevated to the status of customary international law. The recent decision of the Supreme Court of Canada in *114957 Canada Ltee (Spraytech Societe d'arrosage) v. Hudson (Town)*,[104] is evidence to this effect. The Hudson case dealt with the power of a municipality to set a bylaw banning the use of cosmetic pesticides in the community. While the case was decided through a division of powers analysis, the Court noted, at paragraph 32, that "scholars have documented the precautionary principle's inclusion 'in virtually every recently adopted treaty and policy document related to the protection of the environment' [...] As a result, there may be 'currently sufficient state practice to allow a good argument that the precautionary principle is a principle of customary international law."

While this decision has been lauded as "bold and fearless" in that it has given important legal validation to the precautionary principle "beyond its occurrence in the preamble or purpose sections of several statutes and occasional reference by lower courts and tribunals."[105] While there is still concern about what is exactly the content of the precautionary principle, this decision has opened the door to domestic litigation based on the precautionary principle as a

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[102] *Ibid.* at 285.
[103] *Ibid.* at 284.
[104] *114957 Canada Ltee (Spraytech Societe d'arrosage) v. Hudson (Town)*, [2001] 2 S.C.R. 241, 2001 SCC 40 ["*Hudson*"].
[105] Michael M. Weinig, "Precautionary Principle Gains a Judicial Foothold" (2003) 28 L. Now.

general norm of customary international law. In the case of asbestos, where the regulation of the substance both domestically and internationally can be argued to fall short of fulfilling this principle, such litigation may be becoming a feasible option.

## Ending the Asbestos Industry – Seeking a Declaration

### *Declaration of Inconsistency with Domestic Law*

One way that the Canadian government could be held liable for the mining and export of asbestos would be for a Court to declare the government's regulation of these activities inconsistent with its enabling legislation. As discussed above, most of the regulation of asbestos, at least the mining and export of it, happens under the *Canadian Environmental Protection Act, 1999*. CEPA has invoked the precautionary principle as one of its guiding principles. As such, any regulations made thereunder must be consistent with the application of the precautionary principle.

As discussed above, the *Asbestos Mines and Mills Regulations* establish standards for the concentration of asbestos fibres in gases emitted into the ambient air at mines or mills from crushing, drying or milling operations. These regulations were first promulgated under the Clean Air Act, and then "rolled over" under the first *Canadian Environmental Protection Act* in 1990. According to the Regulatory Impact Analysis Statement (RIAS) that accompanied the promulgation of the Regulations under the Act, "the policy established the principles for fair and consistent enforcement of the CEPA, and emphasizes the preventive approach to avoid damage to the environment."[106] When the regulations were then rolled over into the current *Canadian Environmental Protection Act, 1999*, the accompanying RIAS made no mention of the precautionary principle. The new RIAS stated that "the purpose of these Regulations is to ensure

[106] Canada Gazette, Part II, Vol. 124, No. 14 (4 July 1990).

that existing Regulations under the *Canadian Environmental Protection Act* are consistent with the new *Canadian Environmental Protection Act, 1999*. All of the amendments being put forward are of a technical nature, and do not include any substantive changes to the Regulations."[107]

Based on this, it could be argued that the Canadian government promulgated regulations under *CEPA* that do not apply the precautionary principle as per s. 2.1(a) of the Act (cited above).

### *Declaration of Inconsistency with International Law*

Another way that the Canadian government could be held liable for its activities surrounding asbestos is if it is declared that these activities are inconsistent with the country's international obligations. If the precautionary principle were to be accepted as a norm of customary international law, and I argue above that it is, an argument could be made that Canada's refusal to have chrysotile listed in Annex III of the *Rotterdam Convention* is inconsistent with the application of the precautionary principle.

Part of Canada's position on chrysotile is that there is no definitive link between chrysotile asbestos and asbestos related diseases such as asbestosis, mesothelioma, or lung cancer. Canada argues that the inclusion of chrysotile asbestos in the Rotterdam Convention is "inappropriate because it is widely recognized that chrysotile fibre can be used safely and responsible. The safe use policy implemented by the Governments of Canada and of Quebec has proven to be effective."[108]

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[107] Canada Gazette Part II, Vol. 134, No. 7 (29 March 2000)
[108] Chrysotile Institute, "Rotterdam" online: <http://www.chrysotile.com/en/chrysotile/controversy/rotterdam.aspx>.

However, more recent studies have shown a higher risk of lung cancer associated with exposure to chrysotile. Though not conclusive, this evidence could be used to invoke the application of the precautionary principle. A lack of full scientific certainty should not bar the inclusion of chrysotile asbestos in the PIC process of the *Rotterdam Convention*. Furthermore, though the Canadian government may have the ability to ensure safe and controlled use of asbestos in Canada, this ability is significantly compromised when it comes to the use of asbestos in developing countries.

## Conclusion

Despite international criticism, the Canadian government continues to promote chrysotile asbestos abroad. The Chrysotile Institute, a non-profit Canadian organization established in 1984, is a leading proponent of chrysotile use. Established in part by the governments of Canada and Quebec, and directed by a Board of directors "made up of industry, labour and government representatives," the Chrysotile Institute works to "promote the adoption and application of appropriate prevention and control measures, regulations, standards, work practices and techniques for the safe use of chrysotile."[109] These activities are being carried out in spite of the growing evidence that chrysotile asbestos is linked both to lung cancer and other lung diseases associated with asbestos exposure, such as mesotheliomia. In what can only be described as hypocrisy, they are also carrying out these funding activities out in spite of the expensive and extensive programs aimed at removing asbestos from government buildings.

The current regulatory framework is insufficient to account for the significant human health risks suffered by individuals exposed to asbestos, both in Canada and abroad. The regulations do not employ the precautionary principle in a way that recognizes these risks and

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[109] Chrysotile Institute, "About Institute" online: <http://www.chrysotile.com/en/about.aspx>.

respects the normative content of the principle – the pro-active ferreting out of unreasonable risks faced by individuals subject to environmental harms. Furthermore, Canada's strong lobby against the inclusion of asbestos as a substance subject to the prior informed consent procedure under the *Rotterdam Convention* flies in the face of Canada's generally positive international reputation. It also fails to take a precautionary approach to the international regulation of asbestos, putting the health of many individuals at risk.

One way to stop Canadian mining and export of asbestos would be to challenge these activities as contrary to Canada's domestic or international obligations. These would not be easy arguments to make, as they rely largely on the precautionary principle, a principle whose precise content can be subject to debate. Furthermore, the lack of scientific consensus on the risks of chrysotile asbestos make a human health risk based argument more challenging. Despite these difficulties, it may be possible that Canada is has breached both a domestic and international legal obligation by failing to apply the precautionary principle in its treatment of chrysotile asbestos. This would require dedication and creativity on the part of the party bringing the challenge, but may be the necessary next step given Canada's reluctance to bow to international and civil society group pressures to ban asbestos.

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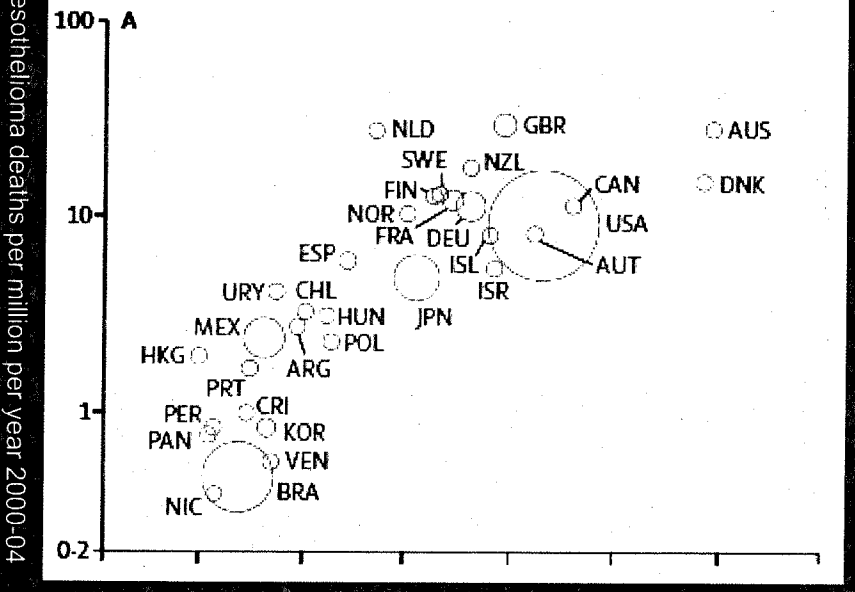
# Are Asbestos Related Diseases a Pandemic?

- A pandemic is the excessive occurrence of a disease in a large portion of the world
- H1N1 Pandemic – 14142 Deaths worldwide (WHO 2009, Update 84)
- Which is <<< 90,000 Asbestos related deaths

*Note 90,000 is probably an underestimate because it doesn't include other cancers (e.g. Larynx and Ovary)

From: Lin et al. ***Lancet 2007; 369: 844–49***

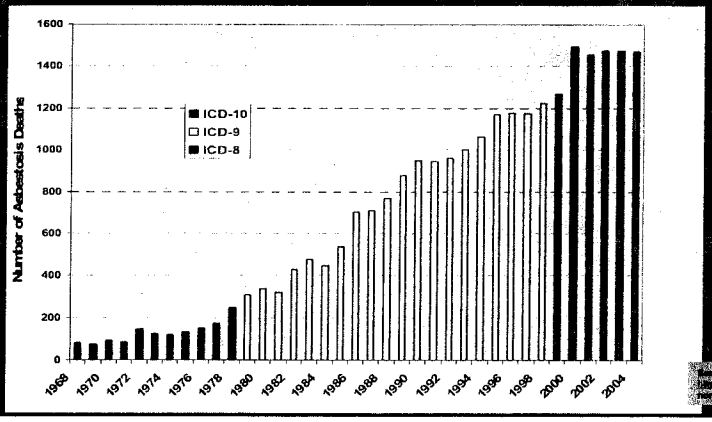


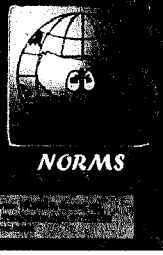
# Presentation Outline

2. Are Asbestos Disease Rates Declining in Most Parts of the World?

## Asbestos-related Disease in U.S.

- Asbestosis
  - **Deaths increased 20-fold from 1960s to 1990s**



# The Worldwide Asbestos Disease Pandemic

Leslie Stayner PhD
Professor and Director
Division of Epidemiology & Biostatistics
School of Public Health
University of Illinois at Chicago


Canadian Partnership Against Cancer Meeting on Asbestos Surveillance and Disease Compensation
Toronto, Canada March 4, 2010

## Presentation Outline

1. Is There Really a Pandemic of Asbestos Diseases?
2. Are Asbestos Diseases Declining in Most Parts of the World?
3. Is Production & Consumption Decreasing?
4. Have High Exposures Been Eliminated?
5. Is Exposure to Chrysotile Safe?

## Presentation Outline

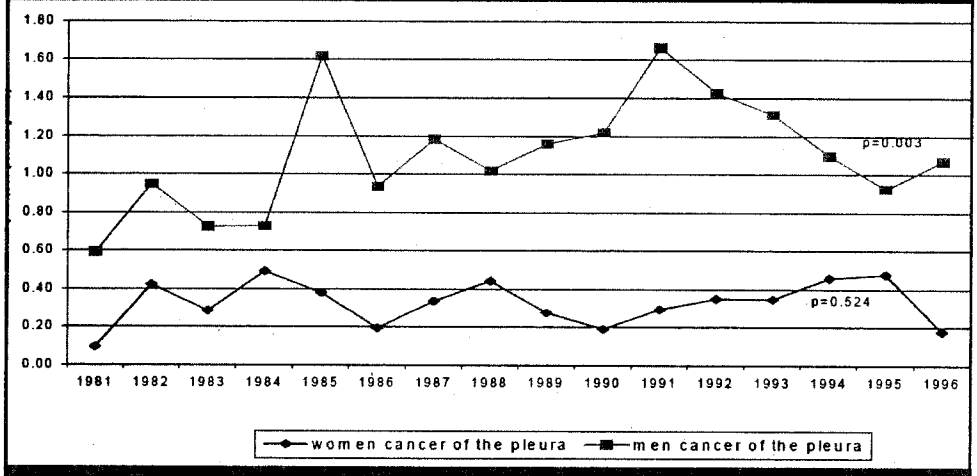
1. Is There Really a Pandemic of Asbestos Diseases?

## WHO Estimates (2006)*

- Worldwide ~ people die annually from diseases related to occupational asbestos exposures:
  - –43,000 Mesothelioma
  - –39,000 Lung Cancer
  - –7,000 Asbestosis

*Report on the Elimination of Asbestos Related Disease

## Age-standardized annual mortality rate (/100,000 person-years) for cancer of the pleura, province of Quebec, 1981 to 1996

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## Peto. **Continuing increase in mesothelioma mortality in Britain.** Lancet 1995 Mar 4;345(8949):535-9

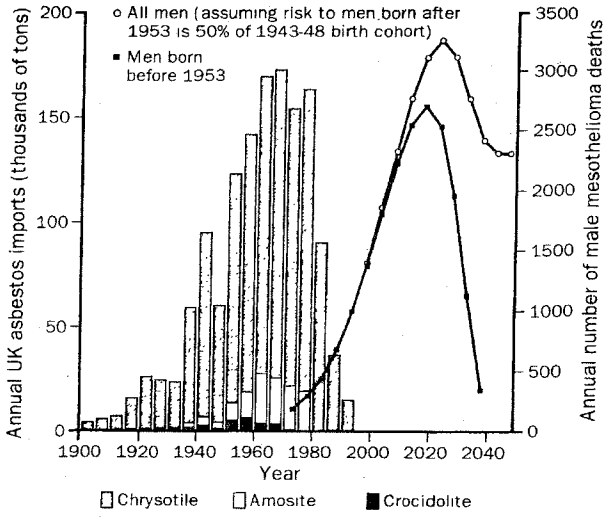
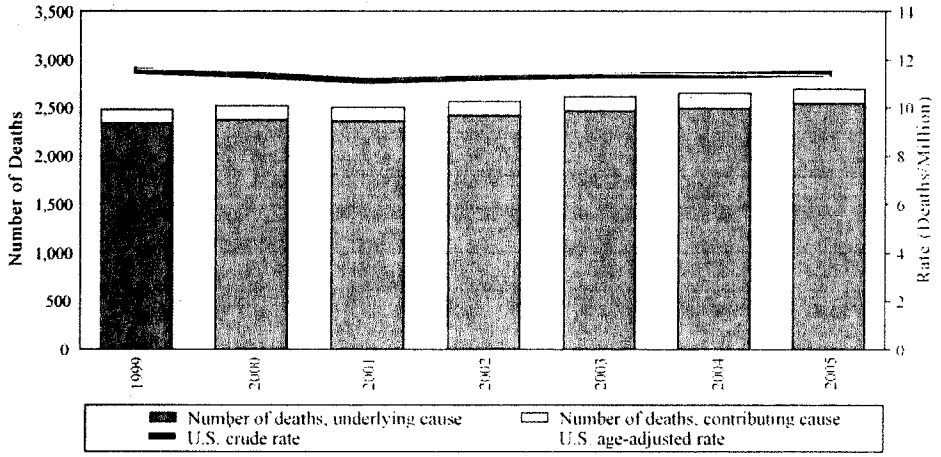


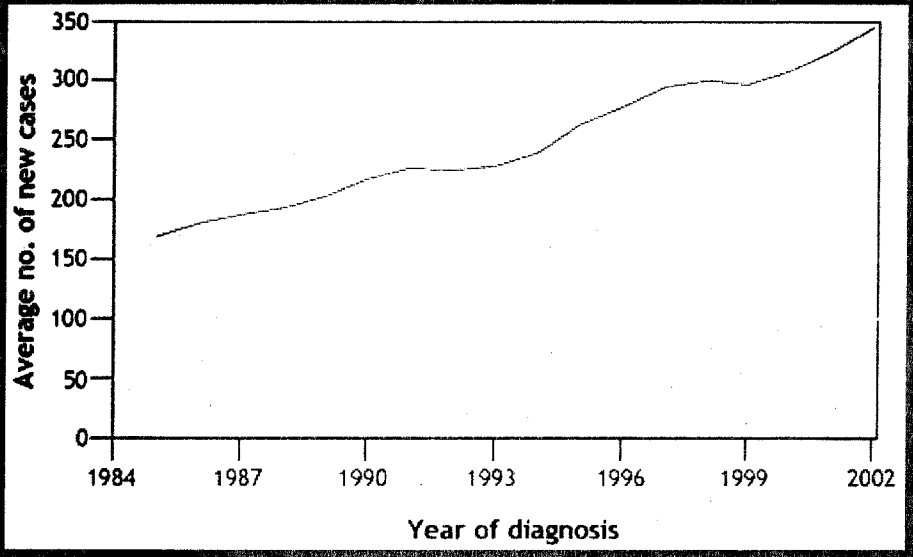

Figure 2: **Predicted mesothelioma deaths in British men and UK asbestos imports**

## US Mesothelioma Rates – NIOSH 2008
## Work-Related Lung Disease (WoRLD) Surveillance System

**Figure 7-1. Malignant mesothelioma: Number of deaths, crude and age-adjusted death rates, U.S. residents age 15 and over, 1999–2005**

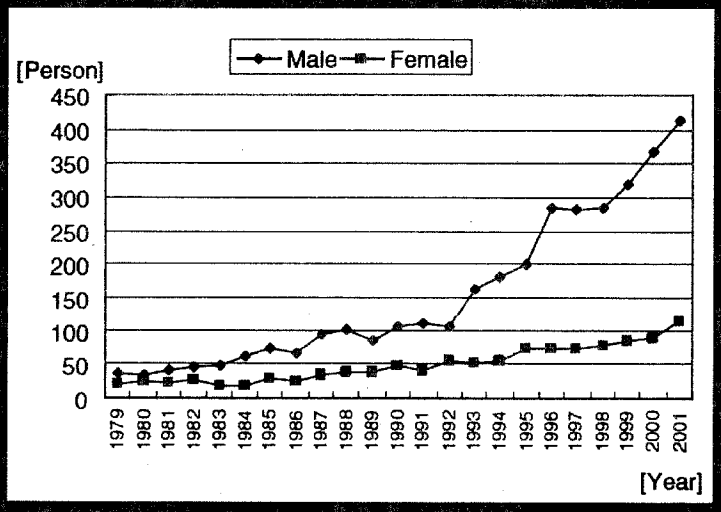



## New cases of mesothelioma in men in Canada from 1984 to 2003.



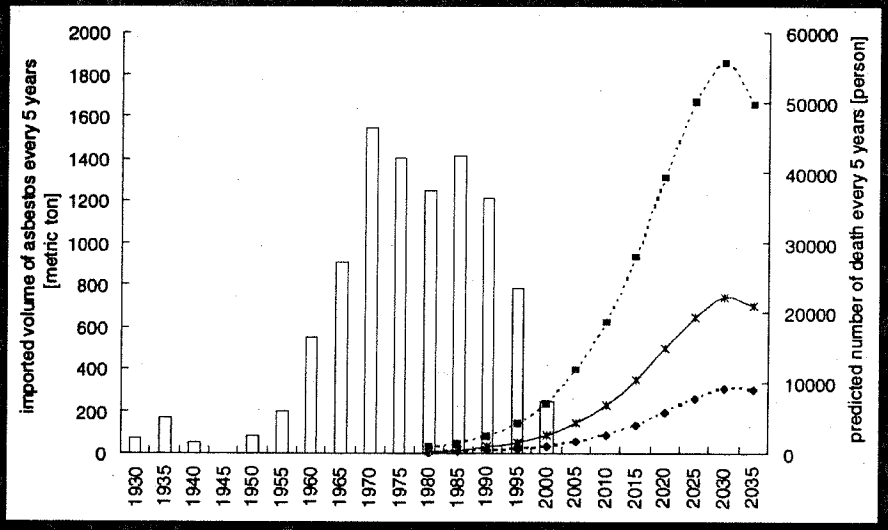

From: Marrett, Elson and Dryer 2008. CMAJ Vol. 178 Issue 6, p677-678

# Deaths from pleural mesothelioma in Japan during 1979-2001




Murayama et al. Am. J. Ind. Med. 49:1–7, 2006

# Estimated future deaths from pleural mesothelioma in Japan




Murayama et al. Am. J. Ind. Med. 49:1–7, 2006

"Unfortunately for a very large parts of the world data on mesothelioma mortality/incidence are not available"

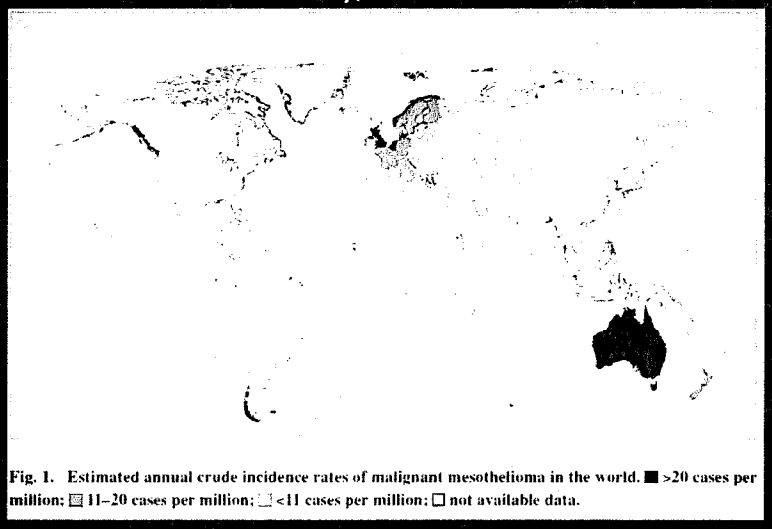
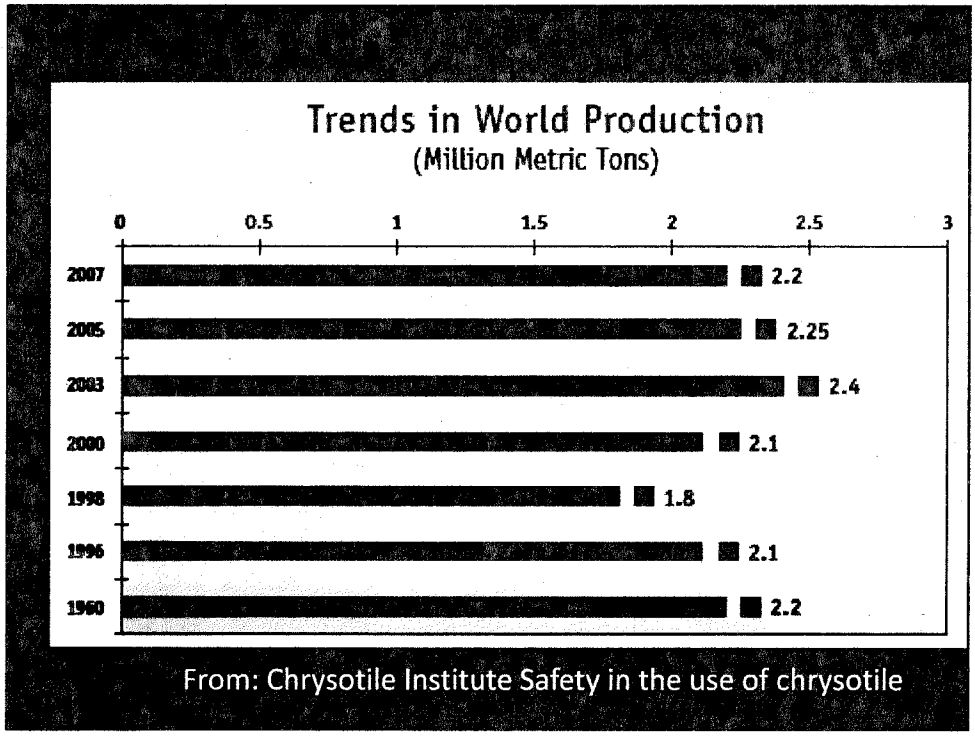


Fig. 1. Estimated annual crude incidence rates of malignant mesothelioma in the world. ■ >20 cases per million; ▨ 11–20 cases per million; ▫ <11 cases per million; □ not available data.

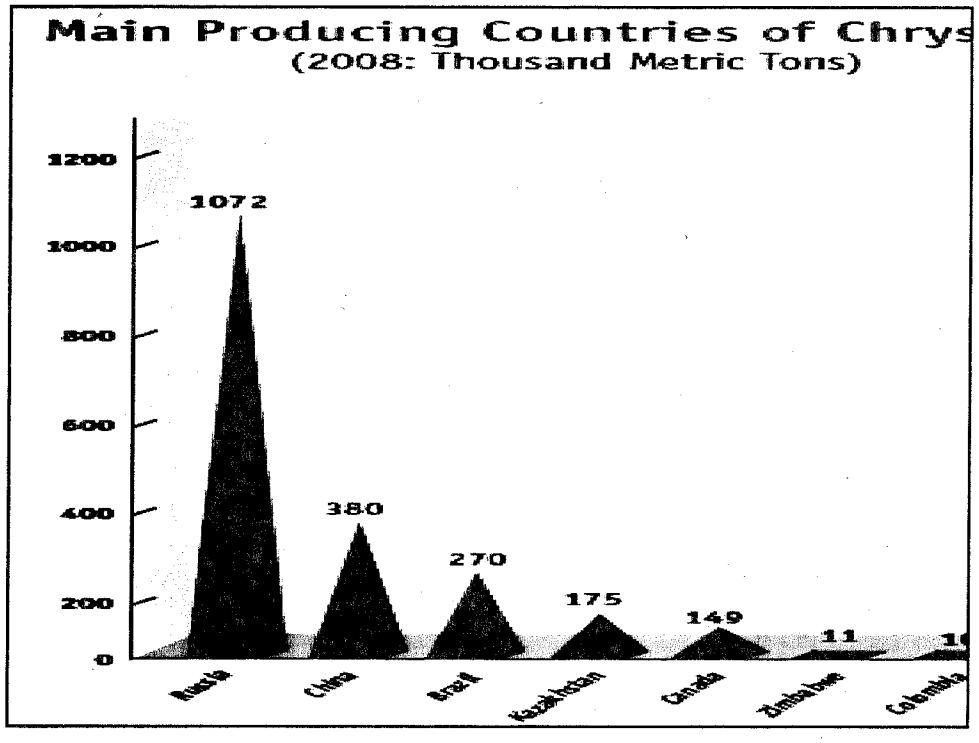
From: Bianchi (2007). Industrial Health. 45;379-387

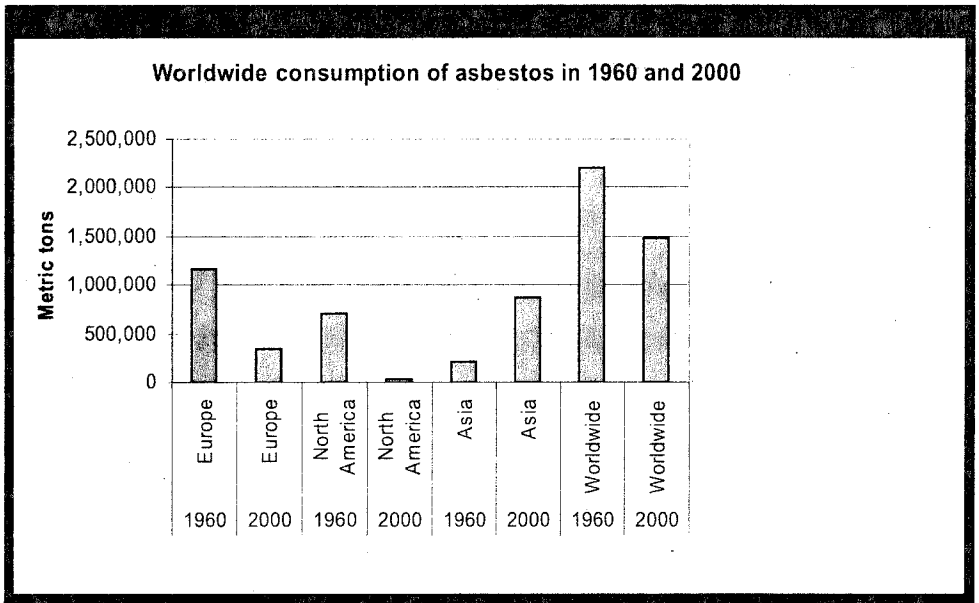
# Presentation Outline

3. Is Production & Consumption Decreasing?

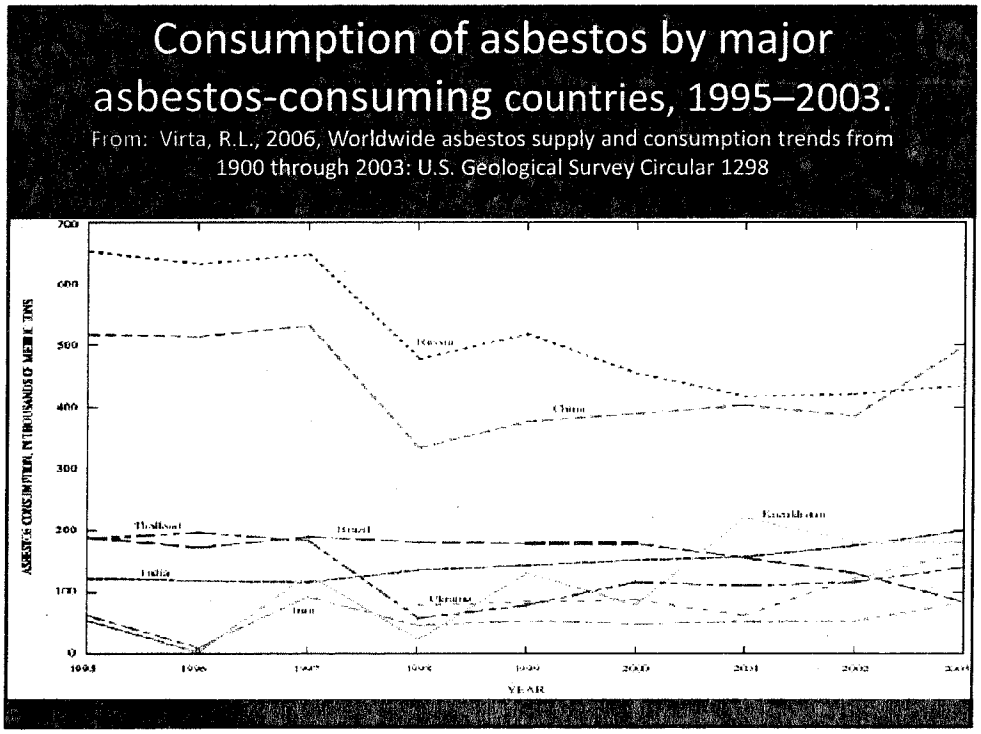



From: Chrysotile Institute Safety in the use of chrysotile



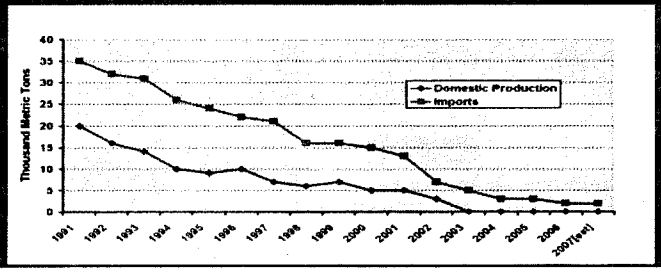



From: Robert L Virta. Worldwide asbestos supply and consumption trends 1900 to 2000. pubs.usgs.gov/of/2003/of03-083/of03-083-tagged.pdf



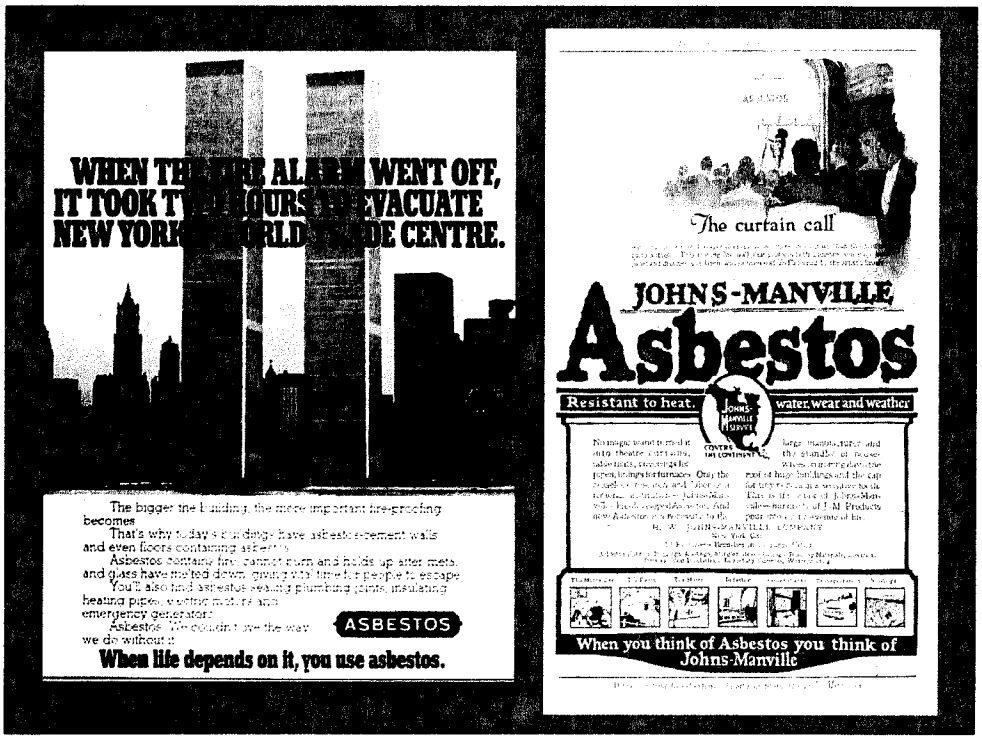
## Asbestos Use in U.S.

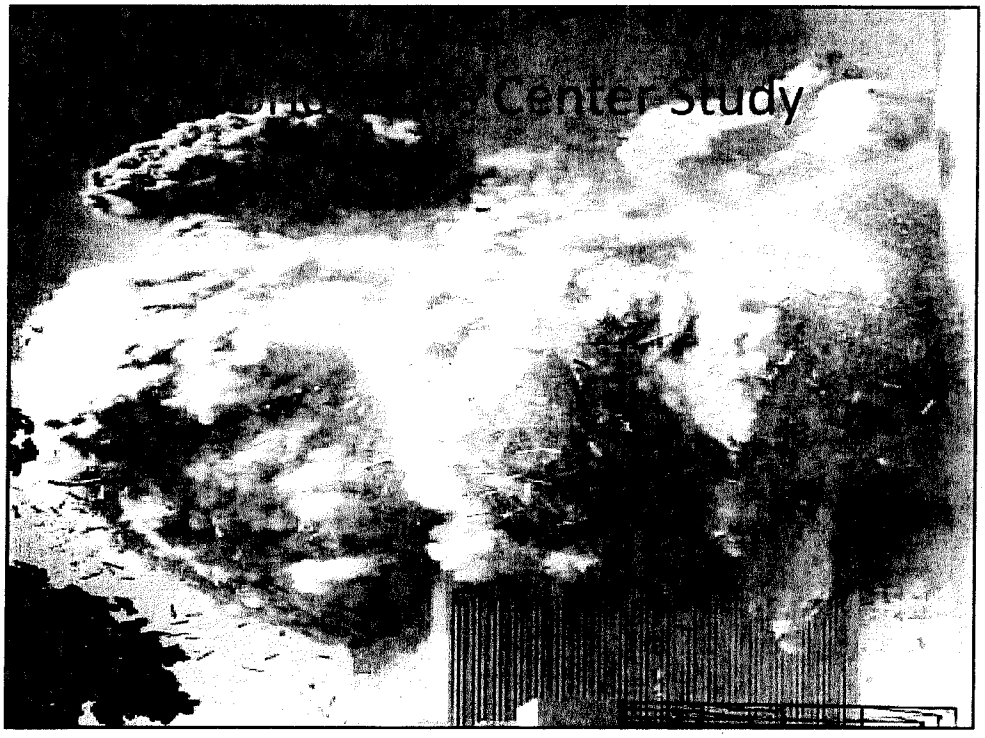
- Domestic production eliminated
- Imports of raw asbestos down
- Import of asbestos-containing products unknown
- Amount in building stock and products unknown

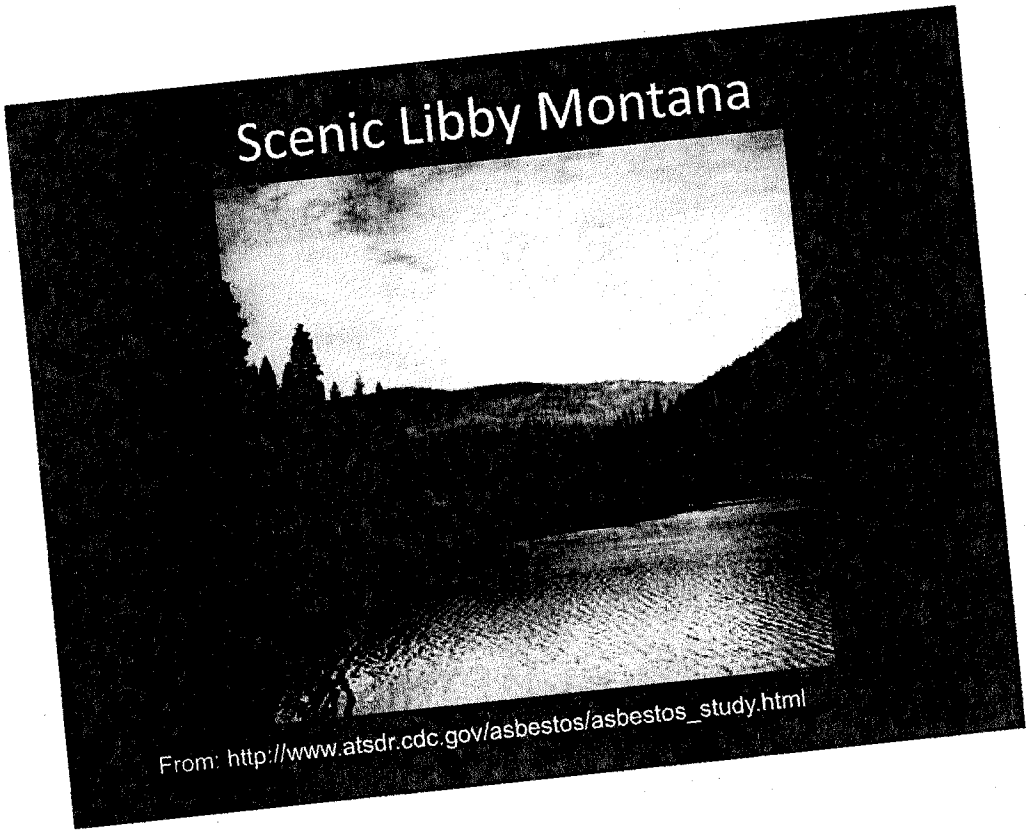



## Presentation Outline

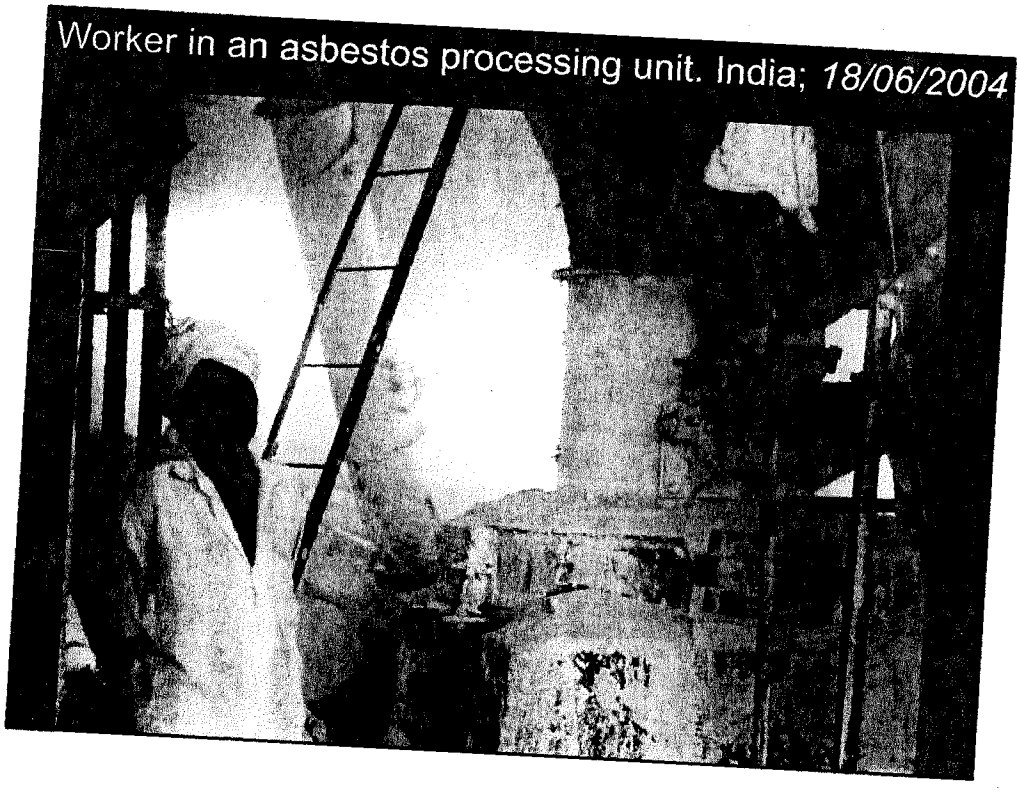
4. Haven't High Exposures Been Eliminated?


WHEN TH E AL M WENT OFF,
IT TOOK T OURS E VACUATE
NEW YORK RLD E CENTRE.
The bigger the building, the more important fire-proofing becomes
That's why today's buildings have asbestos-cement walls and even floors containing asbestos
Asbestos contains fire, cannot burn and holds up after metal and glass have melted down, giving vital time for people to escape
You'll also find asbestos sealing plumbing joints, insulating heating pipes, wiring mixture and emergency generators
Asbestos We couldn't live the way we do without it
ASBESTOS
When life depends on it, you use asbestos.
The curtain call
JOHNS-MANVILLE
Asbestos
Resistant to heat, water, wear and weather
When you think of Asbestos you think of Johns-Manville


Center-Study


Scenic Libby Montana
From: http://www.atsdr.cdc.gov/asbestos/asbestos_study.html


Libby Export Plant
circa 1950


Worker in an asbestos processing unit. India; 18/06/2004

## Asbestos Exposure in India

From: Dave and Beckett 2005. AJIM 48:137–143

- Current PEL= 1 fb/cc (US OSHA= 0.1 fb/cc)
- Asbestos Mills: 200–400 f/cc after application of controls 15-20 fb/cc
- Asbestos textiles 100 fb/cc
- Asbestosis prevalence in mills of 11.5%

Yano et al (2001) Cancer Mortality among Workers Exposed **to Amphibole-free** Chrysotile Asbestos. AJE Vol. 154, No. 6 : 538-543

- Cohort study of 515 Chinese asbestos production workers using "pure" chrysotile
- Estimated exposures 0.1 to 12.6 fibers/cc in 1999
- Lung cancer RR=8.1 for high versus low exposure
- Mesothelioma 2 cases

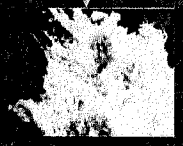
## Presentation Outline

5. Is Exposure to Chrysotile Safe?

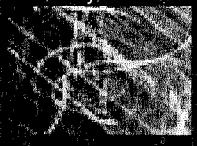
## Main Asbestos Fiber Types of Commercial Importance

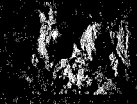
95% of all asbestos

**5% of all asbestos consumed**



Chrysotile - White fine, silky, flexible





**Amosite - Brown** straight, brittle fibers

**Crocidolite- Blue & straight**

Anthophyllite brittle, white fibers

Tremolite and Actinolite, Anthophyllite is found mainly as a contaminant in other minerals.

## The Amphibole Hypothesis

"There are two types of asbestos:
One is potentially lethal
and one is as harmless as a Cheez Doodle....
The Cheez Doodle variety of asbestos
is known as chrysotile. It accounts for
95 percent of the asbestos used
in the United States.
And it is utterly, totally harmless."

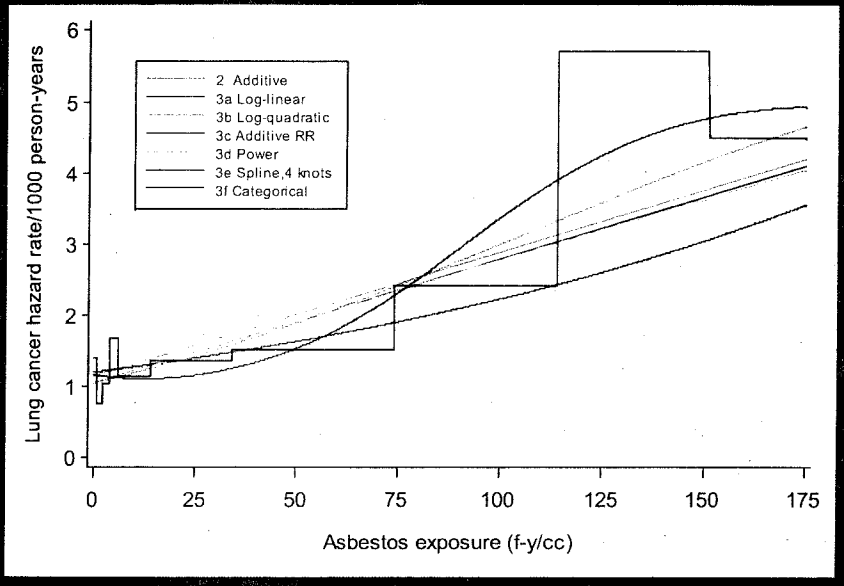
Rush Limbaugh, TV, 9/20/93

From: The Way Things Aren't: Rush Limbaugh's Reign of Error.
by Steve Rendall, Jim Naureckas, and Jeff Cohen

## Stayner, Dankovic and Lemen. AJPH. 1996 Feb;86(2):179-86.

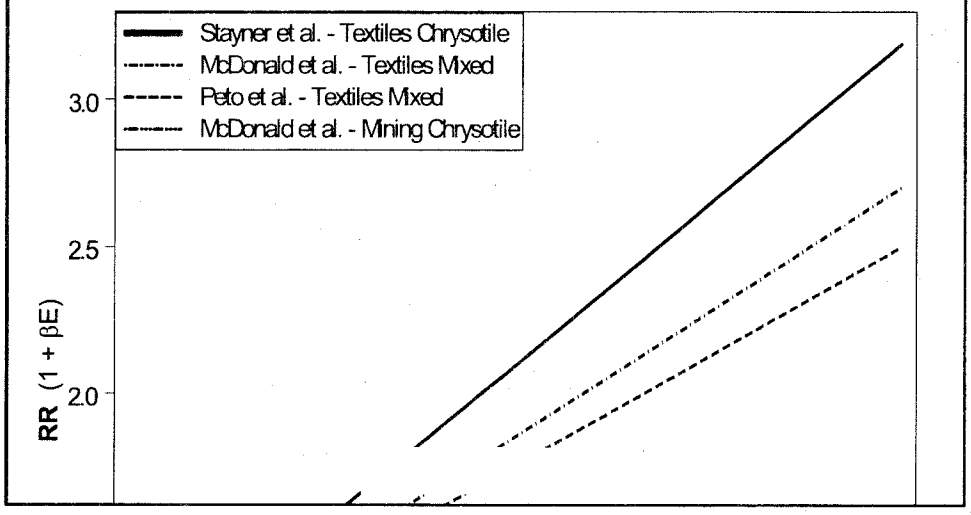
- Toxicologic and epidemiologic studies provide strong evidence that chrysotile is associated with an increased risk of lung cancer and mesothelioma. Chrysotile may be less potent than some amphiboles for inducing mesotheliomas, but there is little evidence to indicate lower lung cancer risk.

## Lung cancer mortality as a function of cumulative exposure to asbestos predicted by alternative models




From: Hein, Stayner et al. Occup Environ Med 2007;64:616–625.

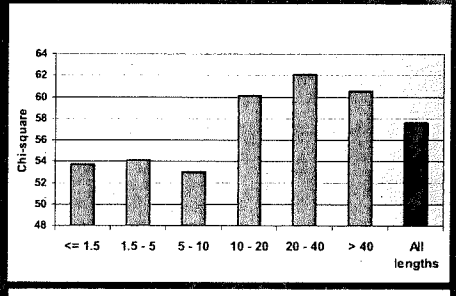
Relationship between Cumulative Exposure to Chrysotile and Relative Rate of Lung Cancer in Textile and Mining Cohorts



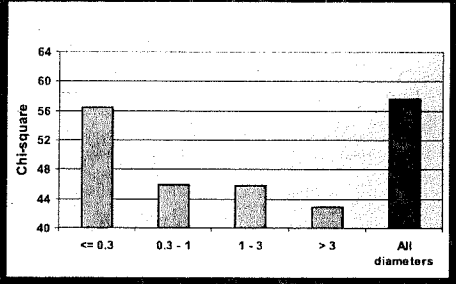

## Statistical Indicator ($X^2$) of Cox Model Fits:

Cumulative Exposure (Number of Fibers of Specified Dimension / cc Air x Days) & Lung Cancer Mortality

Fiber Length (all p-values <0.001)




Fiber Diameter (all p-values <0.001)



## Findings from new meta-analysis by Heederik et al. (2010 in prep)

- Studies with better exposure assessments and a larger contrast in exposures had larger exposure-response slopes than studies without these characteristics.
- When only these studies were considered no clear indications existed that there is a potency difference between types of asbestos

## Conclusions

- Is There Really a Pandemic of Asbestos Diseases? Yes. WHO estimates 90,000 death/year. Cases of mesothelioma have been reported in every country in the world.
- Aren't Asbestos Diseases Declining in Most Parts of the World? No. They are still rising in Europe and dramatically increasing in Japan. No data in developing world. It may be too soon to see ↑ in many countries.

## Conclusions (cont.)

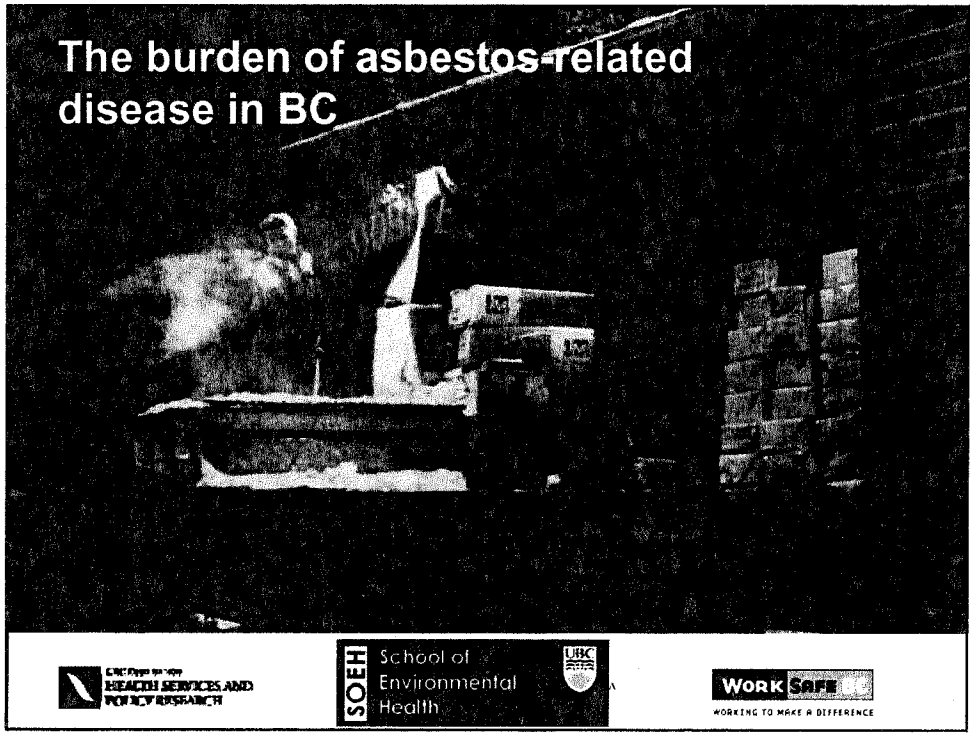
- Is Production & Consumption Decreasing? Not much. Production of chrysotile has not decreased at all. Use severely restricted or banned in developed countries, but increasing in developing countries.
- Have High Exposures Been Eliminated? No. Some high exposures still occur in developed countries. Very high exposures in developing world, although data is limited.

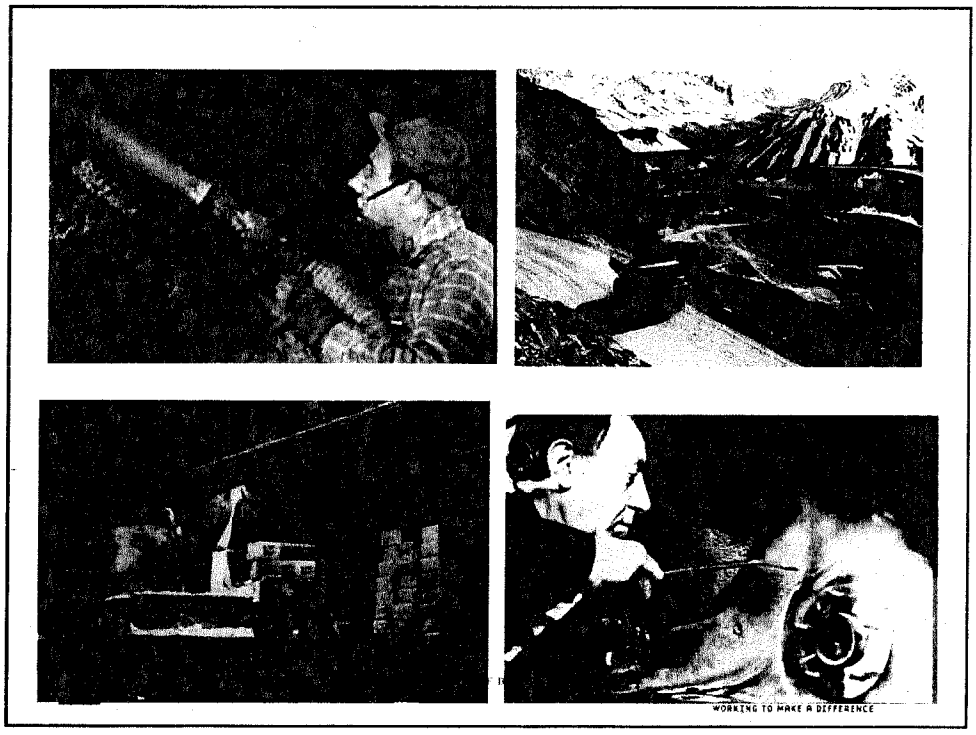
## Conclusions (cont.)

- Is Exposure to Chrysotile Safe? No. Evidence does suggest a lower risk for mesothelioma but not for lung cancer than amphiboles. But safer is not the same as safe
- What Should We Expect for the Future? The epidemic in the developing world will start to decrease in the next 10 to 20 years. Based on their consumption, we should expect to see a large increase in asbestos related diseases in developing countries

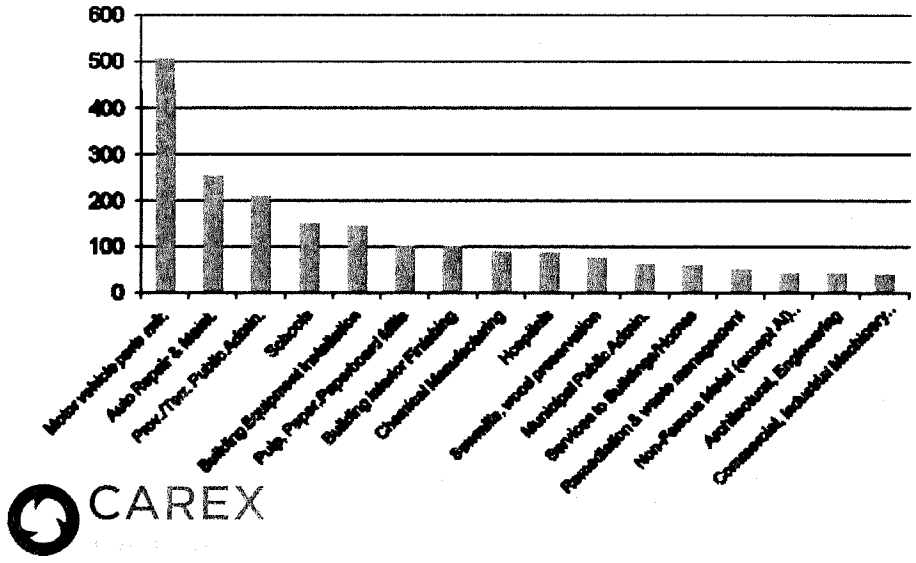
"The most efficient way to eliminate asbestos-related diseases is to stop the use of all types of asbestos"

WHO 2006. Report on the Elimination of asbestos-related diseases


The burden of asbestos-related disease in BC
HEALTH SERVICES AND POLICY RESEARCH
SOEH School of Environmental Health
UBC
WORK SAFE BC
WORKING TO MAKE A DIFFERENCE


WORKING TO MAKE A DIFFERENCE

## Top 15 industries sampled in BC and Ontario Workplaces for Asbestos



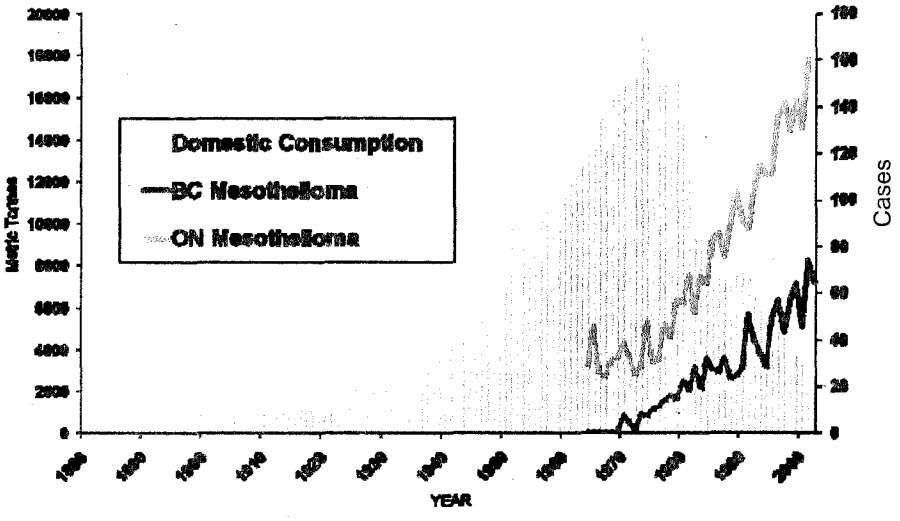

## Recognition of Asbestos-related Disease

| Health Effect | Suspected | Probable | Established |
|---|---|---|---|
| Asbestosis | ~1900 | ~1915 | ~1930 |
| Lung Cancer | ~1930 | ~1945 | ~1955 |
| Mesothelioma | ~1940 | ~1955 | ~1965 |
| Other Cancers | ~1955 | ~1970 | ? |

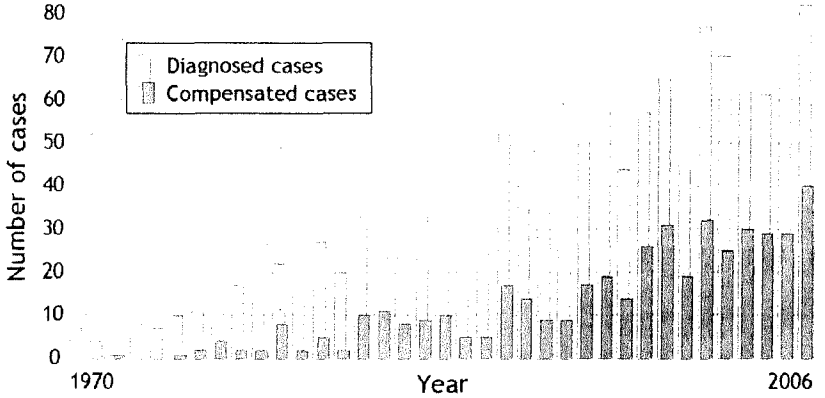
From: U.S. IOM Asbestos, Selected Cancers, 2006.

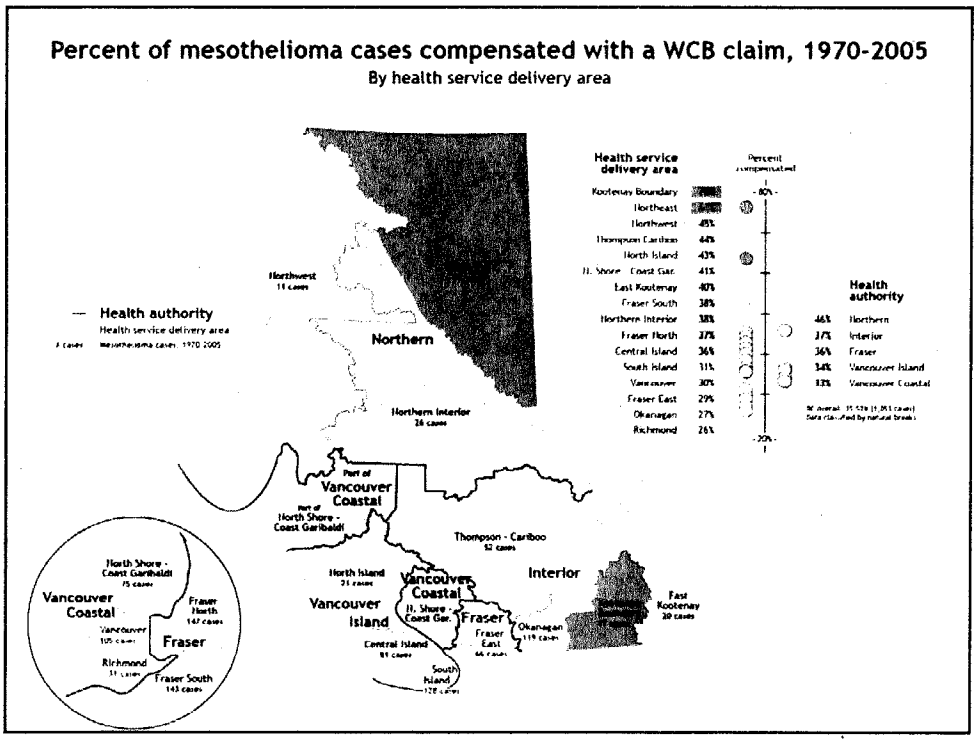
Original sources: Becklake (1976), Liddell (1997), Ross & Nolan (2003)

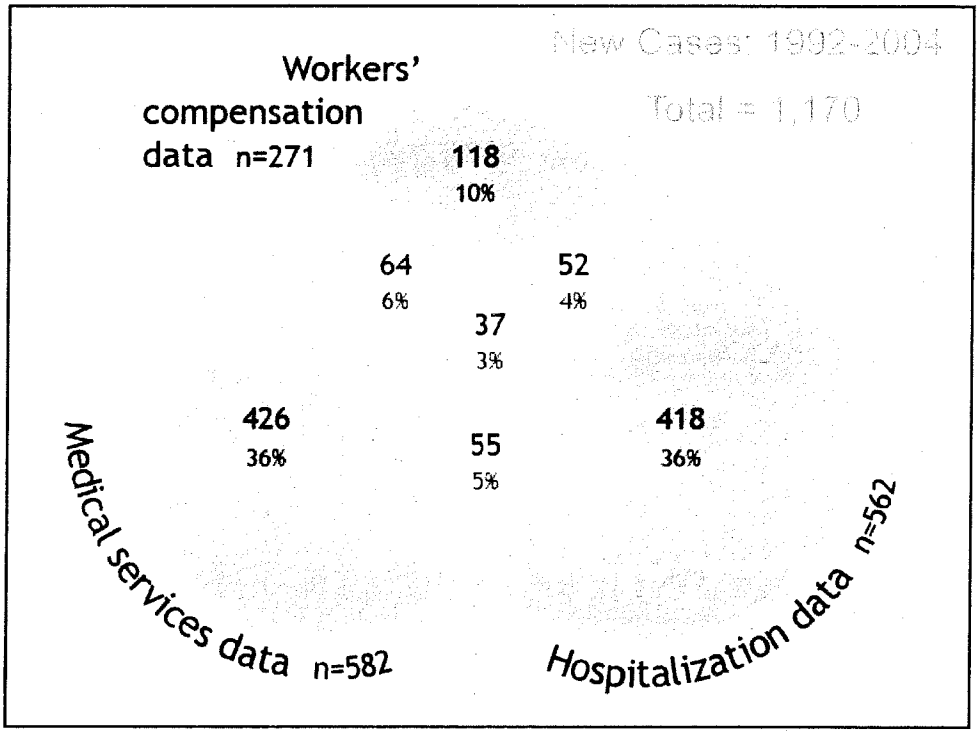
## Asbestos Use in Canada and New Cases of Mesothelioma in Ontario and British Columbia



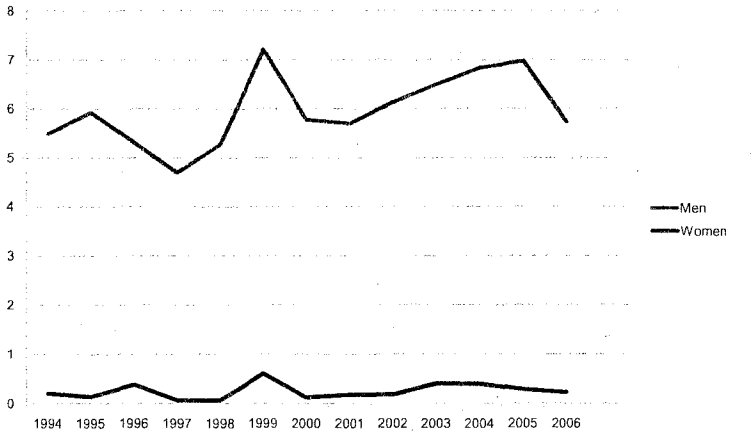

## Mesothelioma Cases, 1970-2007




Percent of mesothelioma cases compensated with a WCB claim, 1970-2005
By health service delivery area
Health authority
Health service delivery area
Northern
Northwest
Northern Interior
Vancouver Coastal
Thompson - Cariboo
Interior
Vancouver Island
Fraser
Fraser North
Fraser South
Richmond
Okanagan
Fraser East
East Kootenay
Health service delivery area
Kootenay Boundary
Northeast
Northwest
Thompson Cariboo
North Island
Coast Gar.
East Kootenay
Fraser South
Northern Interior
Fraser North
Central Island
South Island
Vancouver
Fraser East
Okanagan
Richmond
Health authority
Northern
Interior
Fraser
Vancouver Island
Vancouver Coastal


New Cases: 1992-2004
Total = 1,170
Workers' compensation data n=271
118
10%
64
6%
52
4%
37
3%
426
36%
55
5%
418
36%
Medical services data n=582
Hospitalization data n=562

## Asbestosis Incidence Rate by Sex and Year
1994-2007

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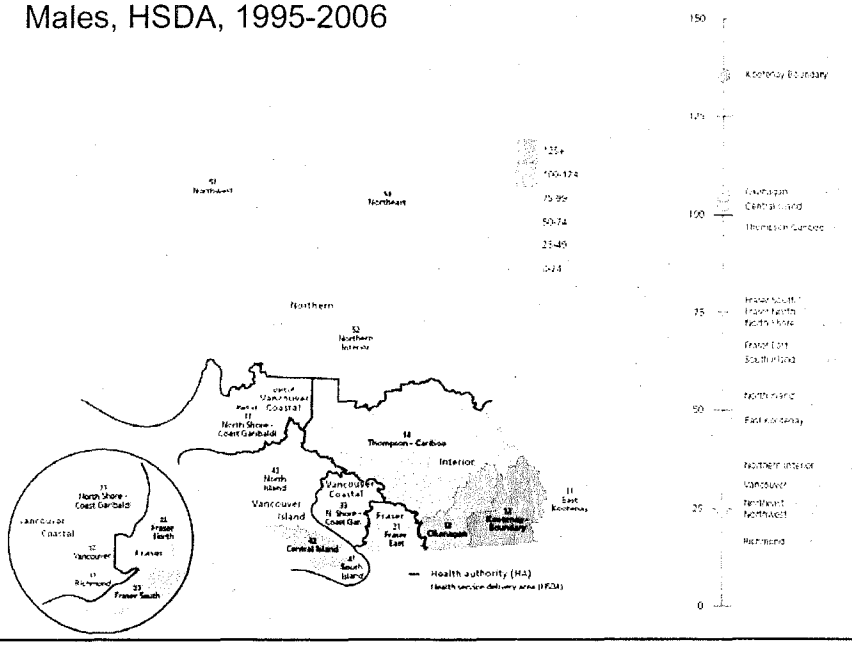
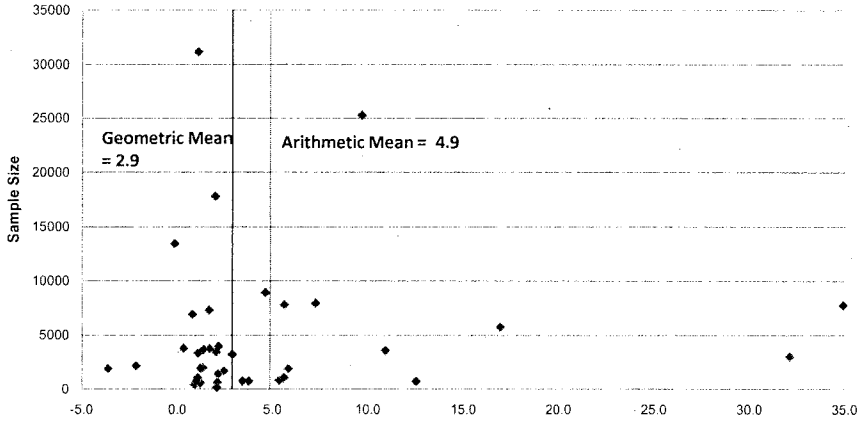
## Asbestosis Incidence
Males, HSDA, 1995-2006



## Ratio of Excess Lung Cancers per Mesothelioma Observed in Cohort Studies

Figure 1: Funnel Plot by Sample Size*

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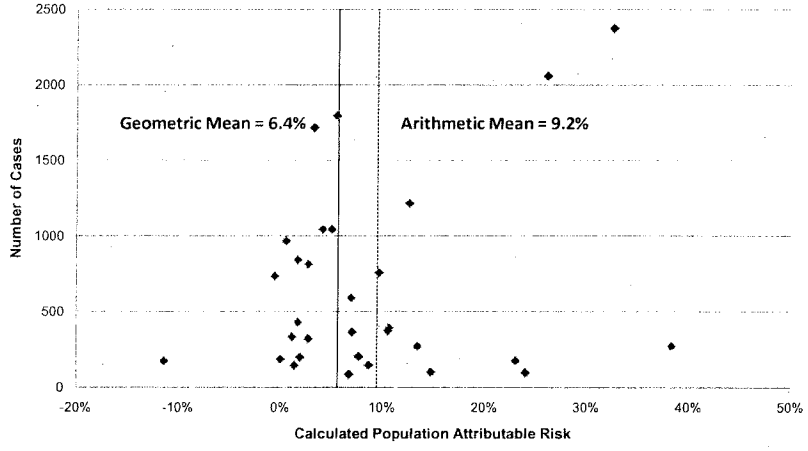
## Population Attributable Risk for Asbestos Lung Cancer Case-control Studies

Figure 3: Funnel Plot of PAR by Number of Cases

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## Excess Risk of Lung Cancer in BC

- Attributable risk of lung cancer from case-control studies
  - Based on ~2900 new cases of lung cancer annually (mean of 2005-2007): 6.4 = 190, 9.2% = 270 asbestos-related lung cancers
- Ratio of lung cancer cases to mesotheliomas in cohort studies
  - Based on 69 mesotheliomas per year (mean of 2005-2007): 2.9 = 230, 4.9 = 390 asbestos-related lung cancers

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## Other Asbestos-related Cancers

| Cancer Site | IOM, 2006 (1) | IARC, 2009 (2) |
|---|---|---|
| Larynx | Sufficient | Sufficient |
| Pharynx | Suggestive | Limited |
| Stomach | Suggestive | Limited |
| Colorectal | Suggestive | Limited |
| Esophagus | Inadequate | Inadequate |
| Ovary | Not reviewed | Sufficient |

(1) U.S. Institute of Medicine. Asbestos: Selected Cancers, 2006.

(2) International Agency for Research on Cancer, Monograph 100 Working Group, 2009.

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# US IOM 2006 Review of Other Asbestos-related Cancers

| Cancer Site | Conclusion | Cohort Overall | Cohort High expo. | Case-Control Overall |
|---|---|---|---|---|
| Larynx | Sufficient | 1.4 (1.2-1.6) | 2.6 (1.5-4.5) | 1.4 (1.1-1.8) |
| Pharynx | Suggestive | 1.4 (1.0-2.0) | 0.9 (0.2-4.2) | 1.5 (1.0-2.0) |
| Stomach | Suggestive | 1.2 (1.1-1.3) | 1.3 (1.0-1.8) | 1.1 (0.8-1.6) |
| Colorectal | Suggestive | 1.2 (1.0-1.3) | 1.4 (1.1-1.7) | 1.2 (0.9-1.7) |
| Esophagus | Inadequate | 1.0 (0.8-1.3) | 1.4 (0.8-2.6) | 1.5 (0.9-2.5) |

U.S. National Academy of Sciences. Asbestos: Selected Cancer. 2006.

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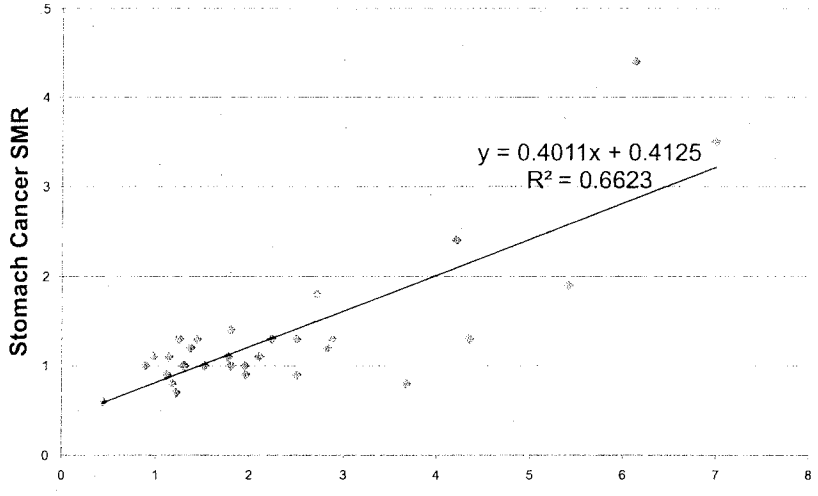
# Stomach & Lung Cancer Correlation in Asbestos Cohorts

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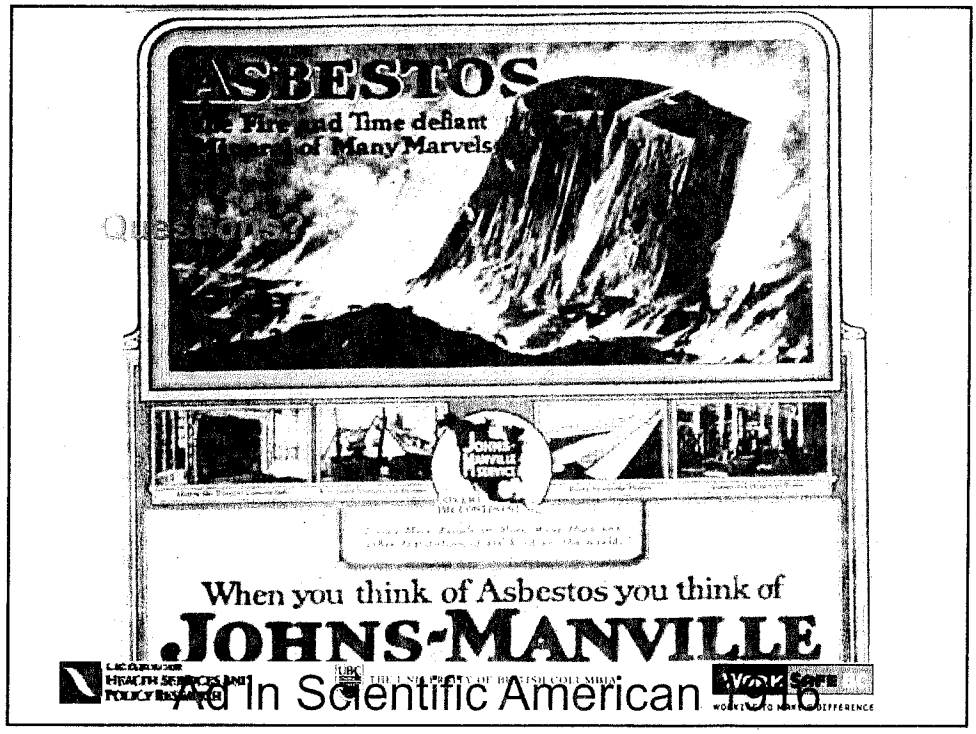
## Asbestos-Related Diseases in BC

Decades after major reductions in exposure, the burden is very high. Each year in BC there are:

- 60-80 new cases of mesothelioma
- 70-100 new cases of asbestosis
- 150-250 new cases of lung cancer
- Smaller numbers of other cancers




Ad In Scientific American 1916

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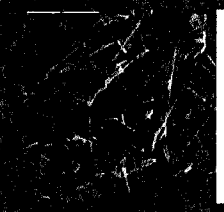
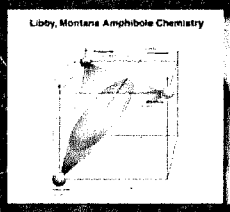
# Surveillance Activities Related to Asbestos-Contaminated Vermiculite Ore from Libby, Montana

*Thomas Bateson, ScD MPH*






Office of Research and Development
National Center for Environmental Assessment

March 4, 2010

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## Overview of surveillance activities related to Libby Amphibole Asbestos

- Multiple surveillance activities have been conducted regarding Libby
  - Different geographic scales
  - Different definitions of exposure
  - Different definitions of health outcomes
  - Different populations of interest / different locations

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## Outline

- Libby, Montana
- Vermiculite mining and milling operations
- Health effects
- Disease surveillance in Libby and outside of the Libby area
- Exposure surveillance in Libby and outside of the Libby area
- Lessons learned

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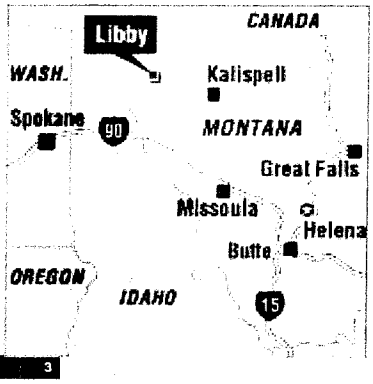
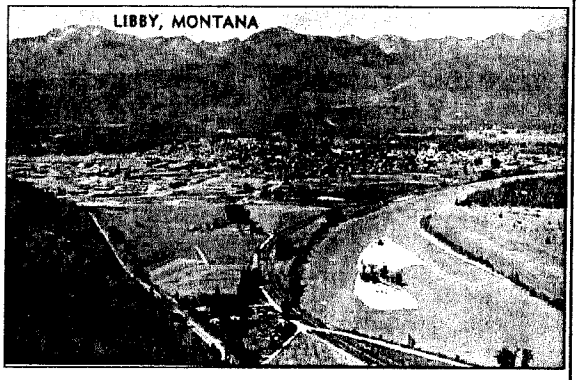
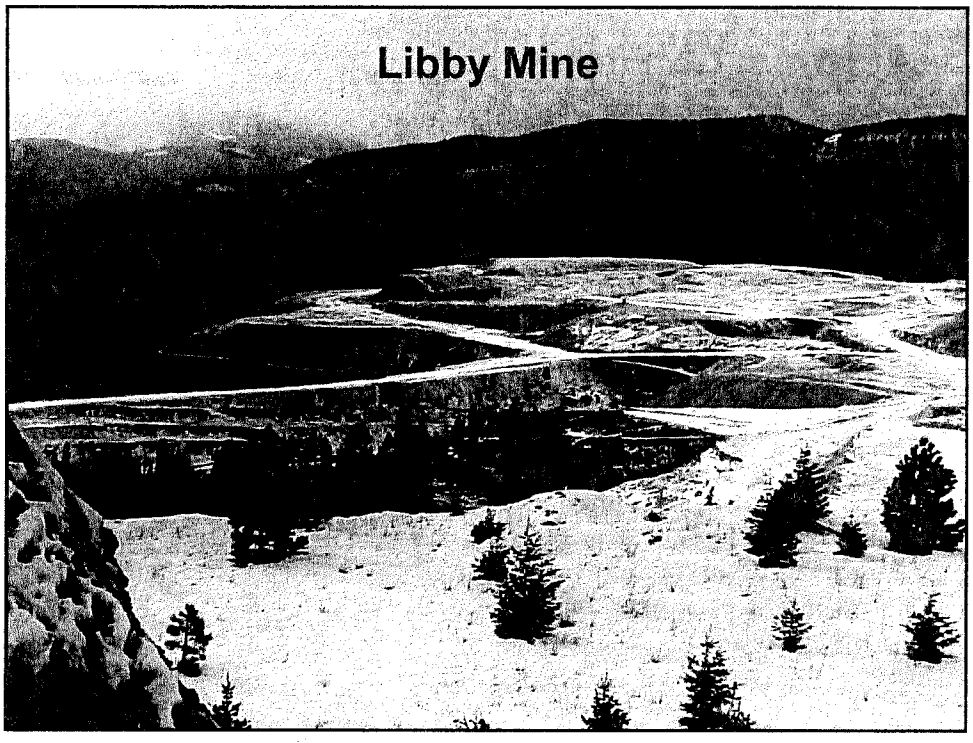
## Libby, Montana

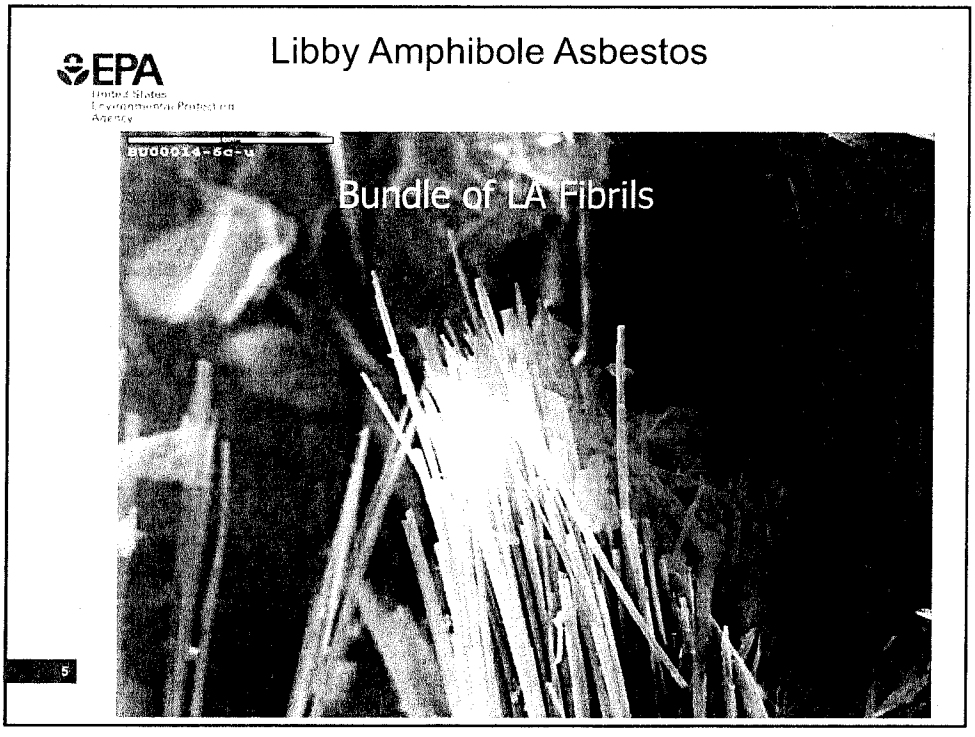
- Located in northwest Montana
- Area population: ~10,000 (City ~2,500)
- Area homes: ~2,000 (~400 City Homes)




3


Libby Mine


EPA
Libby Amphibole Asbestos
Bundle of LA Fibrils
5

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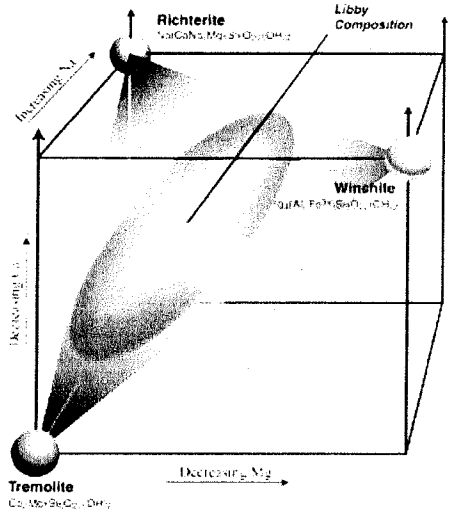
- Vermiculite from Libby, MT supplied ~70% of US demand for vermiculite for much of the 20th century
- Used as attic insulation in gardening supplies, fireproofing, etc.
- Libby vermiculite was extensively contaminated with amphibole asbestos including tremolite, winchite and richterite

Meeker et al., 2003

6

## Libby, Montana Amphibole Chemistry




Meeker et al., 2003

7

## Libby Amphibole Composition

**Based on the classification criteria of Leake et al. (1997).**

**Winchite 85%**

**Richterite 10%**

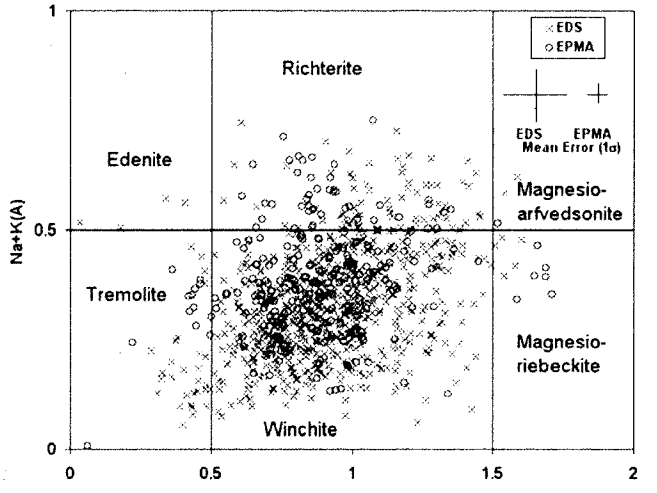
**Tremolite 5%**

**Classification Varies**

**Mineralogists**

**versus**

**Regulatory/Commercial**



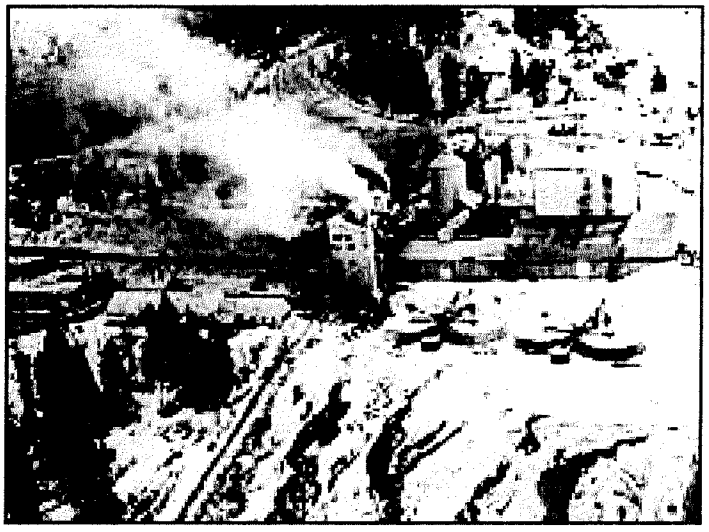

Meeker et al fig. 6

SEM/EDS <3 µm diameter

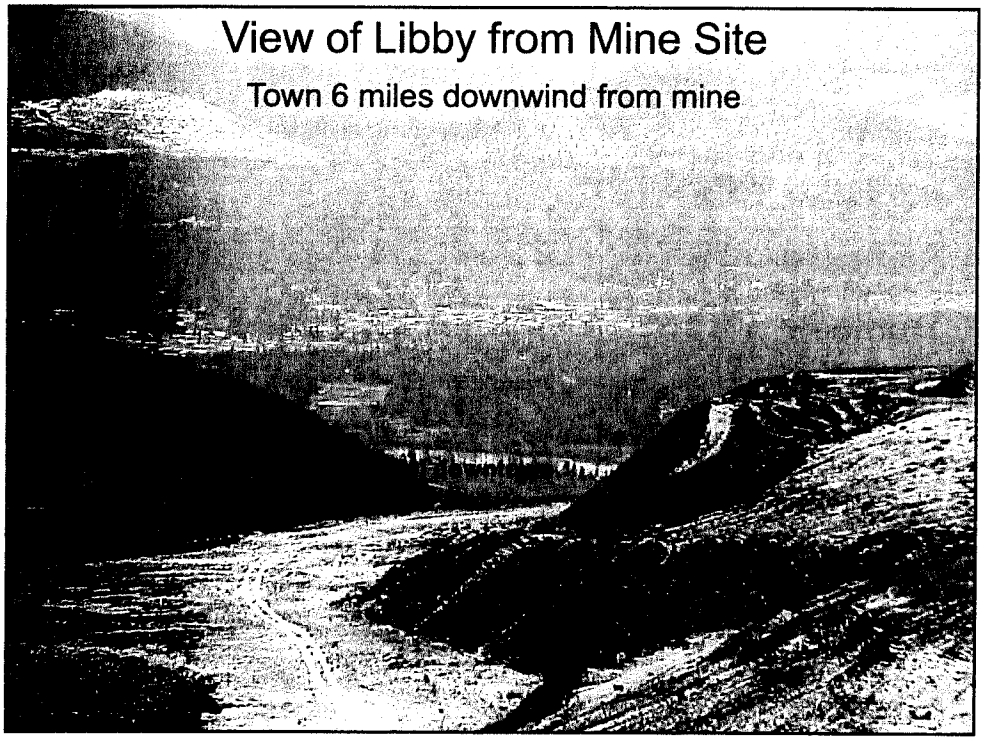
8

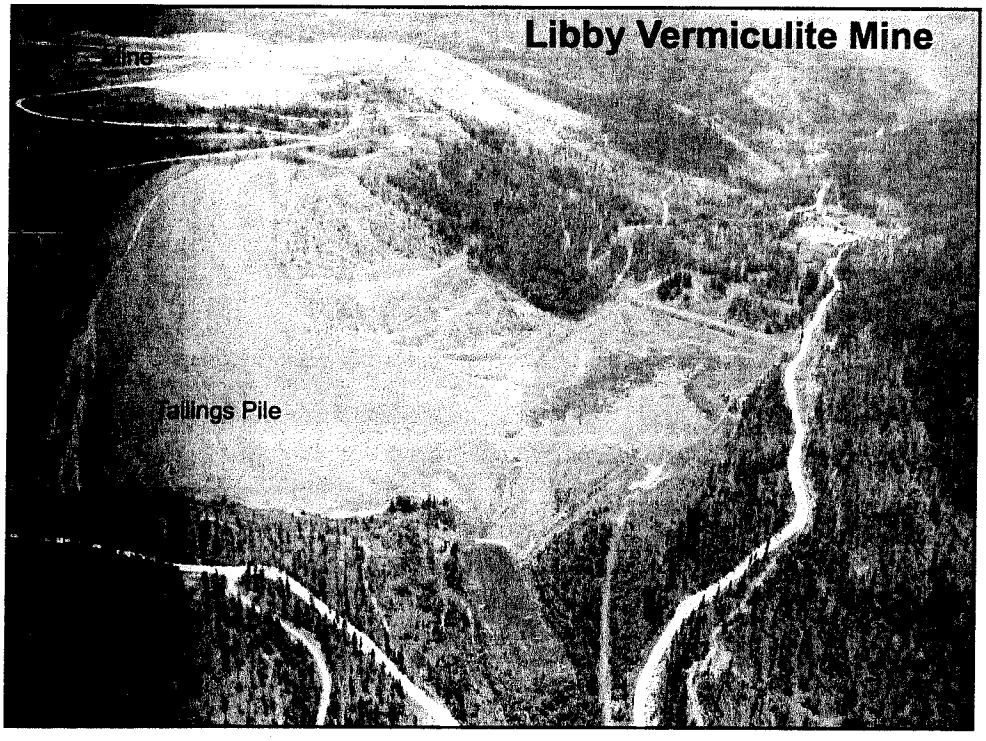
**Meeker et al. (2003). The composition and morphology of amphiboles from the Rainy Creek complex, near Libby, Montana. American Mineralogist.**

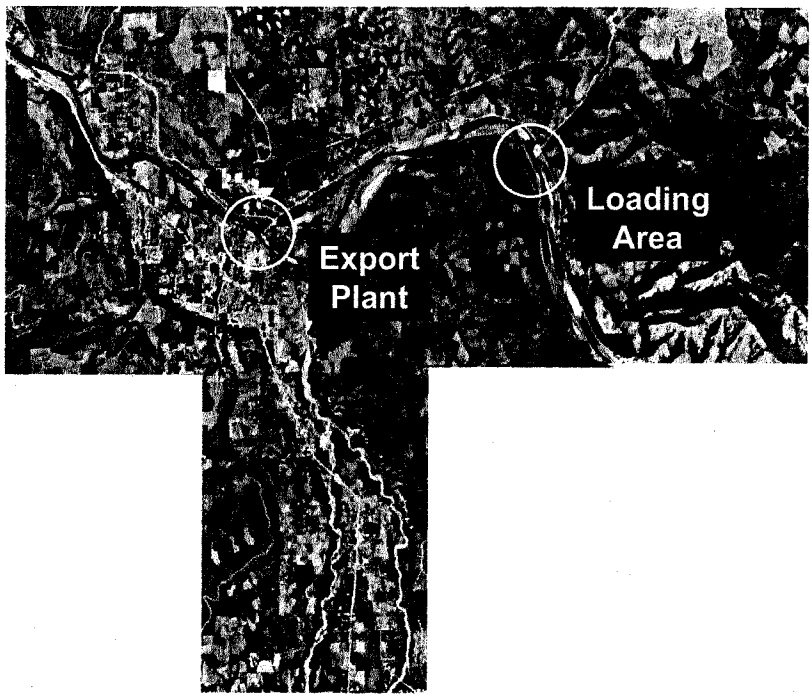
## Vermiculite Operations

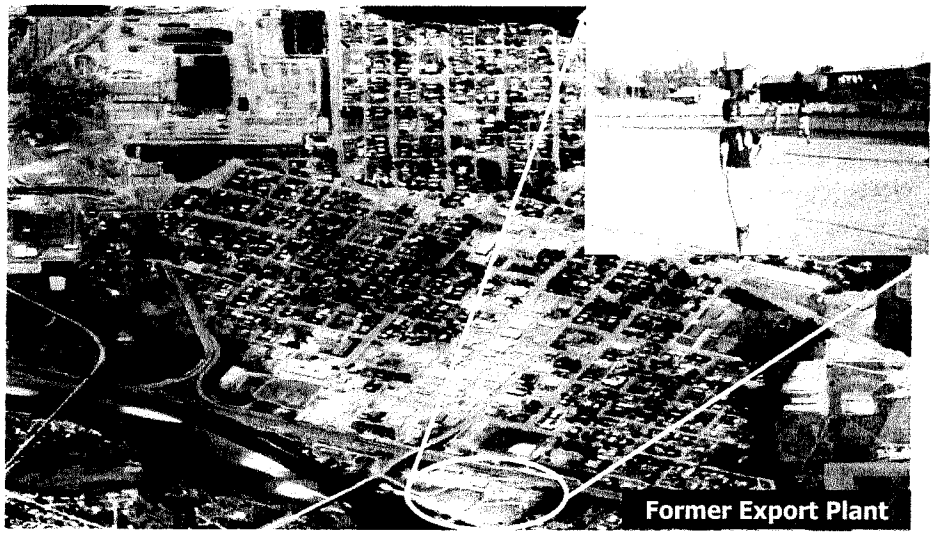


9


View of Libby from Mine Site
Town 6 miles downwind from mine


Libby Vermiculite Mine
Tailings Pile


Loading
Area
Export
Plant


Former Export Plant

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## Recent History in Libby, MT

- Mining operations cease in 1990
- Seattle Post Intelligencer breaks story
  –"A Town Left to Die" 1999
- EPA begins Libby clean-up 1999
- EPA asks Agency for Toxic Substances and Disease Registry (ATSDR) 1999
  –Evaluate human health concerns in Libby

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## Health Risks of Exposure

Multiple studies report adverse health effects of Libby amphibole asbestos

- Radiologic survey of past and present vermiculite miners exposed to tremolite
  - *McDonald et al. 1986*
- Cohort study of mortality of vermiculite miners exposed to tremolite
  - *McDonald et al. 1986*
- Cohort mortality study of vermiculite miners exposed to fibrous tremolite: an update
  - *McDonald et al. 2002*
- Mortality in a cohort of vermiculite miners exposed to fibrous amphibole in Libby, MT
  - *McDonald et al. 2004*
- The morbidity and mortality of vermiculite miners and millers exposed to tremolite-actinolite: Part 2. Mortality
  - *Amandus and Wheeler 1987*
- The morbidity and mortality of vermiculite miners and millers exposed to tremolite-actinolite: Part 3. Radiographic Findings
  - *Amandus and Wheeler 1987*
- Mortality of vermiculite miners exposed to Tremolite
  - *Amandus et al. 1988*
- Vermiculite, respiratory disease, and asbestos exposure in Libby, Montana: update of a cohort mortality study
  - *Sullivan 2007*

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## ATSDR Mortality Review

- In 2000, ATSDR conducts a mortality review comparing death rates for residents of Libby with Montana and the United States (included former workers)
- SMR for asbestosis was 40-80 times higher than MT / US
- (Note that the expected SMR is 100)

Standardized mortality ratios (SMR) by geographic area of analysis using Montana and U.S. reference populations, 1979–1998; asbestosis

| Area of analysis[a] | Observed | Montana reference | | U.S. reference | |
|---|---|---|---|---|---|
| | | SMR | 95% CI | SMR | 95% CI |
| Libby city limits | 5 | 4,084 | 1,316–9,531 | 6,355 | 2,048–14,830 |
| Extended Libby boundary | 7 | 4,730 | 1,895–9,746 | 7,495 | 3,003–15,440 |
| Air modeling | 9 | 4,980 | 2,273–9,455 | 7,986 | 3,644–15,160 |
| Medical screening | 10 | 4,514 | 2,161–8,303 | 7,347 | 3,517–13,510 |
| Libby valley | 12 | 4,221 | 2,178–7,374 | 6,948 | 3,586–12,140 |
| Central Lincoln County | 12 | 3,959 | 2,043–6,916 | 6,524 | 3,367–11,400 |

[a]All Libby areas were statistically significantly elevated ($p < .05$).

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Source: Horton et al. 2006

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## ATSDR Health Surveillance

- During 2000-2001, ATSDR conducts medical screenings for persons who had:
  - –Lived, Worked, or
  - –Engaged in recreational activities in Libby
- Designed to assess evidence of lung abnormalities
- X-rays, spirometry, in-depth interviews
- More than 7300 people screened

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## ATSDR Health Surveillance

- Results:
  - 6668 participants 18 years or older
  - 18% had pleural abnormalities
  - <1% had interstitial abnormalities
  - Risk increased with age and length of residence in Libby
  - 186 former workers received x-rays
    - 51% had pleural abnormalities
  - 358 were in household contact with a worker
    - 26% had pleural abnormalities

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Source: Peipins et al. 2003

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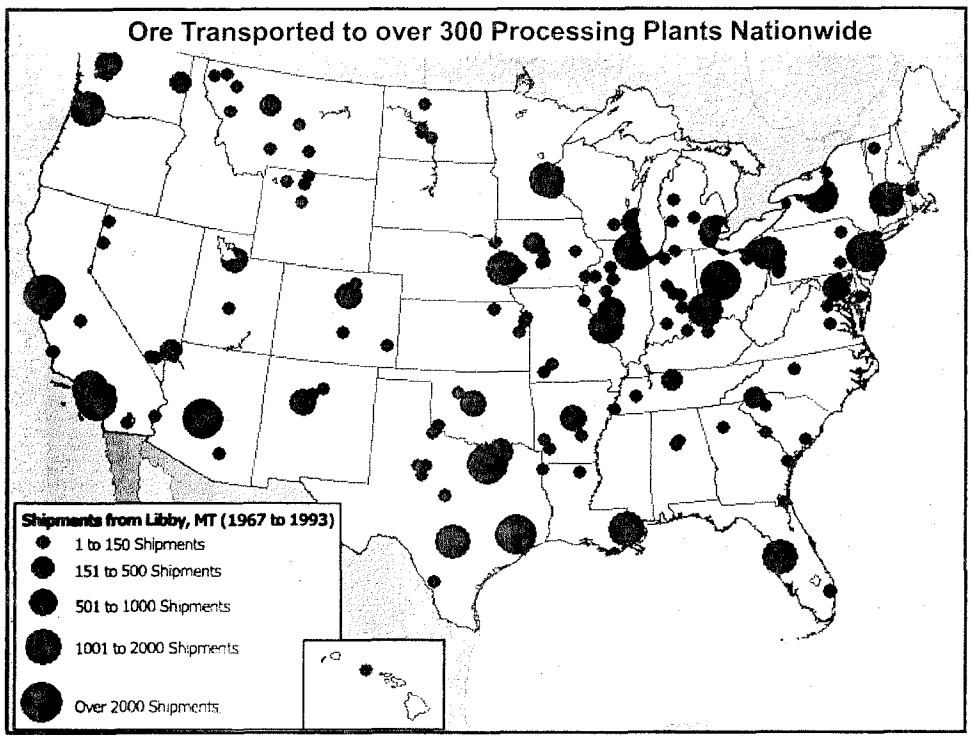
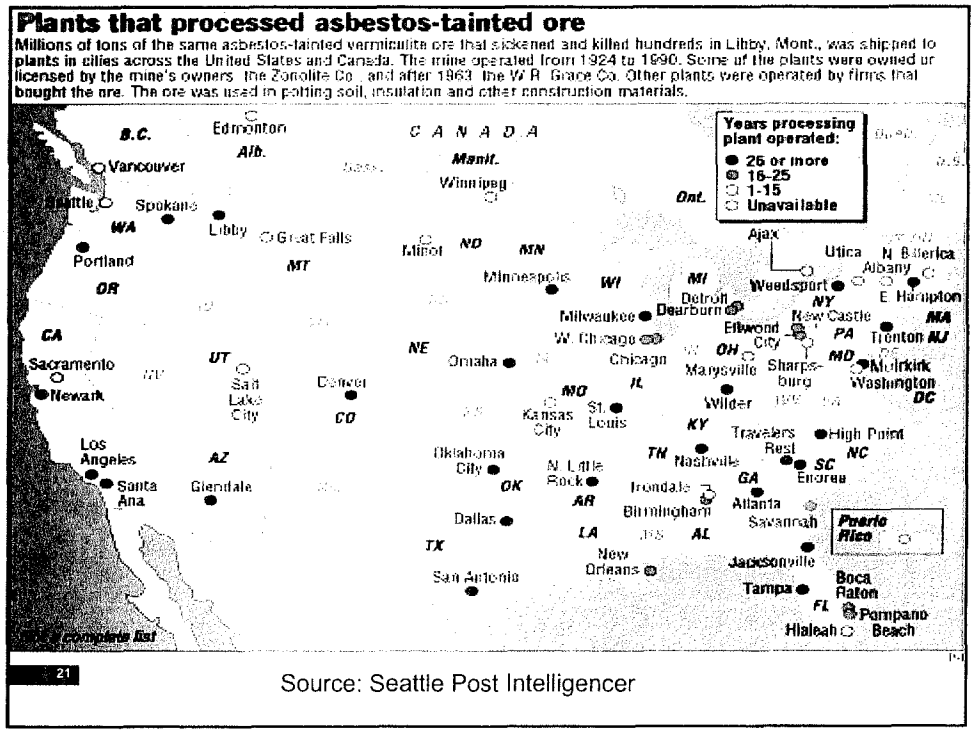
## High Resolution Computed Tomography Study

- During 2001-2002, ATSDR conducted an epidemiologic study to determine whether HRCT is useful for screening pulmonary abnormalities in exposure Libby residents

- Results:
  - Among 353 participants whose chest radiographs were classified as indeterminate, HRCT detected pleural abnormalities in 98 participants (28%)
  - 69 of those 98 participants were former workers or household contacts (70%)

19


Ore Transported to over 300 Processing Plants Nationwide
Shipments from Libby, MT (1967 to 1993)
1 to 150 Shipments
151 to 500 Shipments
501 to 1000 Shipments
1001 to 2000 Shipments
Over 2000 Shipments


Plants that processed asbestos-tainted ore
Millions of tons of the same asbestos-tainted vermiculite ore that sickened and killed hundreds in Libby, Mont., was shipped to plants in cities across the United States and Canada. The mine operated from 1924 to 1990. Some of the plants were owned or licensed by the mine's owners, the Zonolite Co., and after 1963, the W.R. Grace Co. Other plants were operated by firms that bought the ore. The ore was used in potting soil, insulation and other construction materials.
Years processing plant operated:
26 or more
16-25
1-15
Unavailable
CANADA
B.C.
Alb.
Manit.
Ont.
Vancouver
Edmonton
Winnipeg
Seattle
Spokane
Libby
Great Falls
Portland
Minot
Minneapolis
Milwaukee
Chicago
Detroit
Dearborn
Ajax
Utica
Albany
Weedsport
E. Hampton
New Castle
Trenton
Elwood City
Marysville
Sharps-burg
Washington
Wilder
Omaha
Kansas City
St. Louis
Sacramento
Newark
Salt Lake City
Denver
Los Angeles
Santa Ana
Glendale
Oklahoma City
N. Little Rock
Dallas
San Antonio
Irondale
Birmingham
Atlanta
Savannah
Nashville
Travelers Rest
High Point
Enoree
New Orleans
Jacksonville
Tampa
Boca Raton
Pompano Beach
Hialeah
Puerto Rico
WA
OR
CA
MT
ND
MN
WI
MI
NY
PA
NJ
MA
MD
DC
NC
SC
GA
FL
AL
LA
TX
OK
AR
MO
IL
NE
UT
CO
AZ
KY
TN
21
Source: Seattle Post Intelligencer

E1

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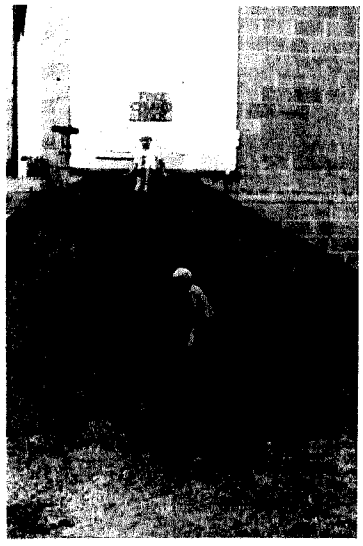
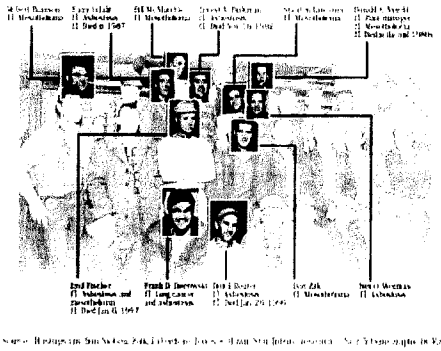
# Libby Sister Sites

>300 US Vermiculite Processors
Minneapolis major clean-up
- > 1600 properties evaluated: 250 properties cleaned
- > Public health investigations ongoing



A hard-hit plant



22

•Srebro SH, Roggli VL (1994). Asbestos-related disease associated with exposure to asbestiform tremolite. Am J Ind Med.

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# ATDSR Study of 28 Processing Sites in the United States (2008)

- Primary Conclusions:
  - Three groups of people who experienced significant exposures
    - 1) Former employees, 2) household contacts, 3) some community members, particularly children with directs contact with vermiculite or waste rock
  - Residual asbestos present in indoor settled dust
  - Residual asbestos present in exterior soil
- Many former facilities are being used for other commercial or industrial operations

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## Tremolite Asbestos Registry

- In 2004, ATSDR began maintaining a registry of persons with past potential exposure to Libby amphibole asbestos
  - –Contact Information
  - –Demographics
  - –Exposure history
  - –Health Outcomes
- Purpose:
  - –To rapidly communicate with registrant;
  - –To educate about asbestos-related disease and its diagnosis and treatment;
  - –To facilitate studies of registrant's health
- No follow-up had yet been published.

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## EPA Libby Cancer Assessment

- Existing EPA IRIS Assessment 1986
  - –Based on multiple fiber types
- Currently, EPA is conducting an agent-specific assessment of cancer risk from the Libby amphibole asbestos
- Based on epidemiologic analysis of NIOSH workers cohort (Sullivan, 2007)
- Resulting inhalation unit risk will support the clean-up in Libby

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## Lessons Learned from Libby

- Exposure assessment / surveillance
  - –Exposure throughout Libby
  - –Challenges in quantifying exposure
    - What is being measured? Dust or Fibers?
    - What is a fiber? What is an asbestiform fiber?
    - How was exposure measured?
      - –Midget impingers, PCM, PCMe, SEM, TEM
      - –How can assessments based on older metrics be applied to modern-era samples using newer technologies?
      - –New technologies may be more accurate but expensive

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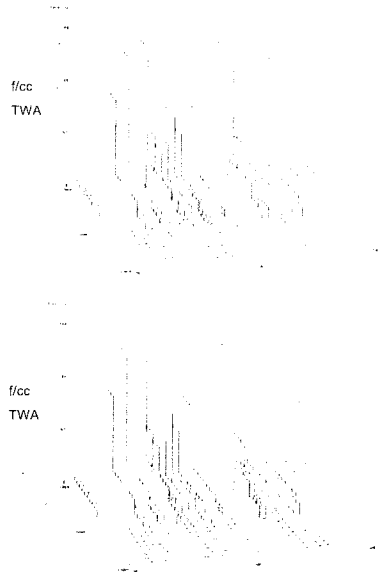
## Lessons Learned from Libby

- Exposure assessment / surveillance
  - –In what settling were measurements taken?
  - –Occupational exposures might be based on a Job Exposure Matrix and work histories
  - –EPA used NIOSH data to compute multiple exposure metrics

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## Lessons Learned from Libby

- Exposure assessment / surveillance
  - –Other occupational exposures might be limited to duration of operation and average exposure
  - –Or just duration of operation

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## Lessons Learned from Libby

- Exposure assessment / surveillance
  - –Available community exposure metrics might be limited to characterizations of exposure pathways
    - Peipins et al. (2003) used the number of exposure pathways without other quantitative exposure information to predict adverse health effects
    - Vinikoor (unpublished data) used the frequency of various activities in children to predict adverse health effects (i.e. heating vermiculite to make it pop, playing on road to mine, etc)

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EPA
United States Environmental Protection Agency

## Lessons Learned from Libby

- Exposure assessment / surveillance
  - –Residential exposures might be limited to:
    - Dust samples
    - Household contact with an exposed worker
    - Proximity to mine or processing operation
    - Presence of
      - –Insulation materials
      - –Pipe coverings
      - –Tiles
      - –Shingles

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## Lessons Learned from Libby

- Health assessment / surveillance
- Challenges:
  - –Ascertainment of health outcomes is highly dependent on severity
    - In the US, mortality is collected at the state level and must be shared with the National Death Index
    - While national-level data are available, privacy issues complicate cooperative participation
    - Cause of death coding changes over time
      - –ICD codes change periodically for lung cancer
      - –First ICD code for mesothelioma in 1999
      - –Mesothelioma shown to be under-ascertained both before and after 1999 [Kopylev (unpublished data)]
    - In the US, cancer incidence data depends whether the state has a cancer registry

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EPA
United States Environmental Protection Agency

## Lessons Learned from Libby

- Health assessment / surveillance
- Challenges:
  - –Less severe health outcomes require large population-level screening to collect x-rays, spirometry, and in-depth interviews
  - –Follow-up is costly and complicated

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United States Environmental Protection Agency

## Lessons Learned from Libby

- Health assessment / surveillance
- Even with quality exposure assessment, associations of exposure with disease are further complicated by:
  - –Latency (15-20 for lung cancer, 20-40 for mesoth.)
  - –Strength of association
  - –Competing risks from asbestosis or NMRD
  - –Confounding / effect modification of risk by smoking
  - –Background risk of mesothelioma in 'unexposed'
  - –Exposures to Libby material were widespread

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EPA

## Surveillance activities on Libby

- Different geographic scales
  - In and around Libby, sister sites, State, US
- Different definitions of exposure
  - Occupational, household, community
- Different definitions of health outcomes
  - Mortality, cancer, pleural abnormalities, spirometry, frequency of coughing
  - Prevalence, Incidence, Mortality
- Different populations of interest / different locations – i.e. Libby sister sites?

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EPA

## Conclusions

- Exposures to Libby amphibole asbestos was extensive in Libby (70+ years) and widespread (300+ sites in U.S. and some in Canada). Nonetheless:

- Quantifying occupational exposures is challenging but follow-up for severe health effects is effective; however, little is known about less severe effects
- Quantifying non-occupational exposure is extremely challenging but assessment for less severe health effects can be effective at the community level
- Methods of surveillance activities should appreciate the challenges of scope and inconsistencies in defining exposure and health outcomes

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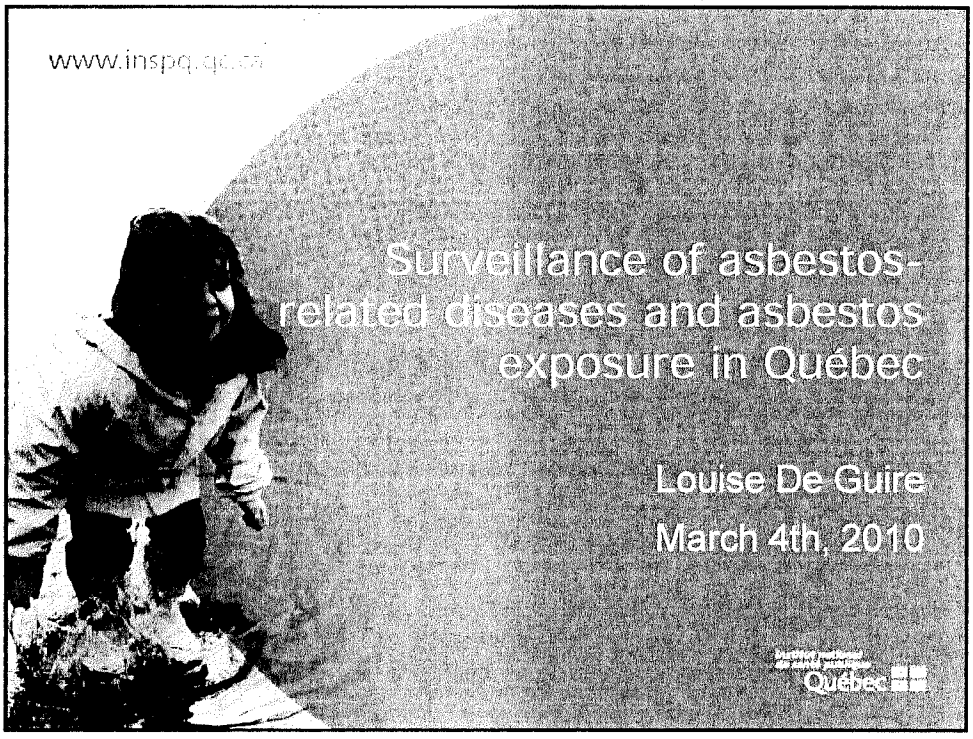


## Outline of the presentation

- Context
- Overview of studies on asbestos-related diseases (ARD) in Québec:
  1. Incidence of pleural and peritoneal malignant mesothelioma and asbestosis in the general population of Québec
  2. Comparison Québec – Rest of Canada
  3. ARD among Québec workers
  4. Percentage of ARD of occupational origin among the Québec general population
  5. Studies on the validation of diagnosis of malignant mesothelioma (MM) and asbestosis in Québec general population
- Proposal for the surveillance of ARD
- Overview of studies on asbestos exposure in Québec
- Proposal for the surveillance of asbestos exposure

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# Context

- Recent historical perspective:
  - 1997: Ban of asbestos in France
  - 2002: Policy for the increased use of chrysotile asbestos in Québec ⇒ surveillance of asbestos exposures and of asbestos-related diseases
- The Institut national de santé publique du Québec was mandated to develop and implement a surveillance system

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# Malignant mesothelioma (MM) and asbestosis in Québec general population 1982-2004: Methods

- Incident cases of pleural MM (ICD-9 163; M905) and peritoneal MM (ICD-9 158; M905) in the Québec Tumour Registry from 1982 to 2002
- Incident cases of asbestosis (ICD-9 501) in MED-ECHO from 1992 to 2004
- Cases from hospitalization files and one day surgery files in the Québec Tumour Registry and in MED-ECHO
- Standardized rates (direct standardization) for age
- Annual trend: likelihood ratio test, Poisson model

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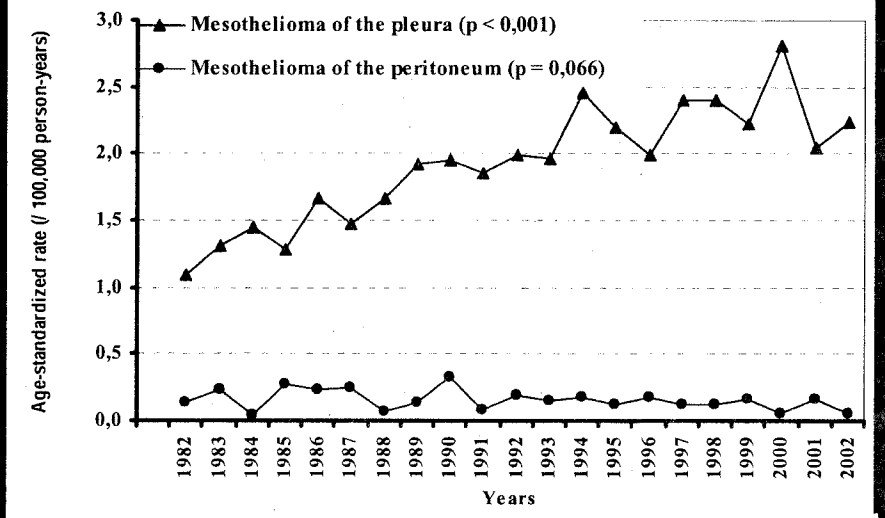
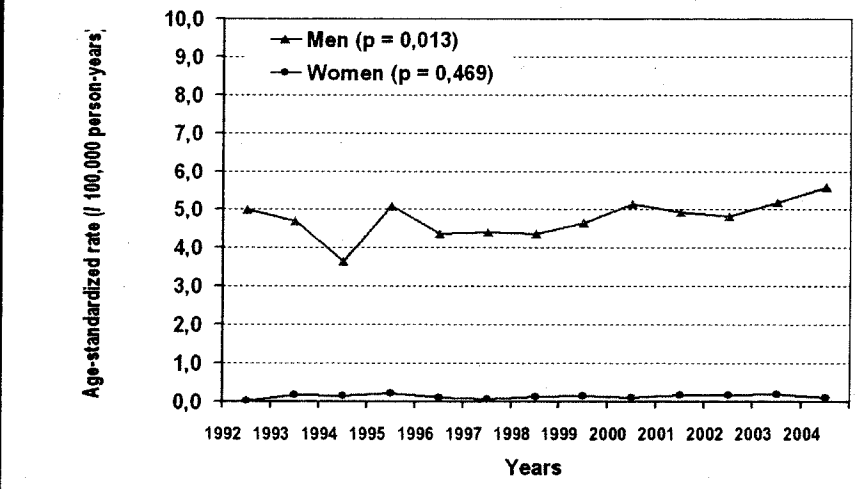
Age-standardized annual incidence rates (/100 000 person-years) of pleural and peritoneal malignant mesothelioma among men, Québec, 1982-2002



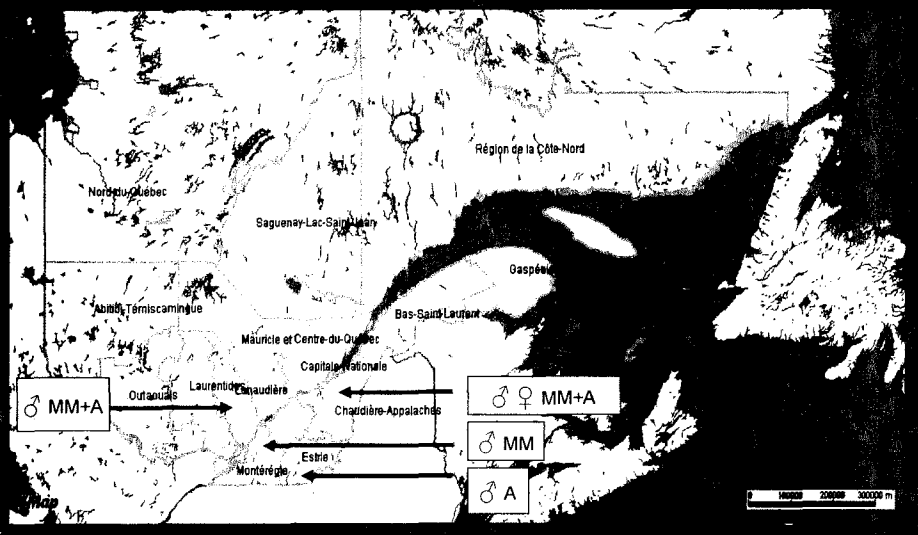

5

Age-standardized annual incidence rates (/100,000 person-years) of hospitalization with first mention of asbestosis, Québec, 1992-2004




6

## Québec areas with a statistically significant excess of pleural malignant mesothelioma (MM) and asbestosis (A), 1982-2002

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## Incidence rate (adjusted for age and year) of MM of the pleura 1984-1996 and incidence ratios relative to incidence rate among Canadian men and women

| | Women | Men |
|---|---|---|
| **Canada outside Québec** | 1.64/million | 11.3/million |
| **Québec** | 3.14/million | 15.3/million |
| **Incidence ratios: Québec/Canada outside Québec** (95% confidence interval) | **1.92 (1.56-2.36)** | **1.32 (1.20-1.46)** |

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## Asbestos-related diseases (ARD) among Québec workers 1988-2003: Methods

- Claims for ARD submitted to the Québec Workers' Compensation Board (QWCB) (Commission de la santé et de la sécurité du travail du Québec ) from 1988-2003 and recognized by a panel of physicians as a disease with an occupational origin
- Workers exposed to asbestos mainly in:
  - Mining
  - Asbestos processing industry
  - Construction
  - Maintenance and repair of structures or asbestos-containing material (ACM)
  - Other exposures; Mixed exposure; Unknown exposure

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## Asbestos-related diseases among Québec workers according to source of exposure: 1988-2003

| Source of asbestos exposure | Asbestosis | | Mesothelioma | | Lung cancer | | Total of workers* | |
|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % |
| **Mining** | 198 | 26.1 | 59 | 16.0 | 203 | 56.5 | 387 | **29.1** |
| **Processing** | 81 | 10.7 | 37 | 10.1 | 43 | 12.0 | 150 | **11.3** |
| **Construction** | 189 | 24.9 | 71 | **19.3** | 38 | 10.6 | 279 | **21.0** |
| **Maintenance and repair of ACM** | 218 | 28.7 | 148 | **40.2** | 52 | 14.5 | 377 | **28.4** |
| **Other** | 48 | 6.3 | 39 | 10.6 | 12 | 3.3 | 91 | **6.9** |
| **Mixed** | 26 | 3.4 | 14 | 3.8 | 11 | 3.1 | 44 | **3.3** |
| **Unknown** | 12 | - | 8 | - | 5 | - | 20 | - |
| **TOTAL** | **772** | 100.0 | **376** | 100.0 | **364** | 100.0 | **1348** | 100.0 |

59.5%

49.4%

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## Percentage of ARD among Québec general population

| | | |
|---|---|---|
| **Mesothelioma** | Workers/Population: **21.4%** | Asbestos exposure present in **80%** of cases |
| **Lung cancer** | Workers/Population: **0.3%** | Attributable risk to asbestos exposure : **0.5% to 15%** |
| **Asbestosis** | Workers/Population: **35.0%** | - |

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## Validation of MM diagnosis in the general population of Québec 2000-2001 : Methods

- All new pleural MM cases (ICD-9 163; M 905) from the Québec Tumour Registry, 2000-2001 (n=187)
- Data extracted from the medical files of the cases
- Classification of 187 pleural MM cases by consensus of the 3 experts (1 chest physician, 1 radiologist, 1 pathologist) as:
  - Definite or probable
  - Possible
  - Unlikely
  - Not a mesothelioma
  - Impossible to classify

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## Pleural MM cases according to the classification of the panel of physicians

| | Consensus among the 3 physicians | | "Satisfactory data" | | | |
|---|---|---|---|---|---|---|
| | | | Chest physician and radiologist (n=66) | | Pathologist (n=142) | |
| | N | % | N | % | N | % |
| **Definite / probable** | 109 | 61.9 | 51 | 77.3 | 104 | 73.2 |
| **Possible** | 34 | 19.3 | 7 | 10.6 | 20 | 14.1 |
| **Unlikely** | 14 | 7.9 | 1 | 1.5 | 5 | 3.5 |
| **Not a mesothelioma** | 19 | 10.8 | 7 | 10.6 | 13 | 9.2 |
| **Impossible to classify** | 11 | – | - | - | - | - |
| **Unsatisfactory data** | - | - | 121 | - | 45 | - |
| **Total** | 187 | 100.0 | 187 | - | 187 | - |

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## Proposal for the surveillance of asbestos-related diseases in Québec

Québec Tumour Registry and MED-ECHO data

- From hospitals
- More exhaustive
- Description of cases
- Trends
- No exposure data

Québec Workers' Compensation Board data

- From workers' files
- Not exhaustive (21% of MM; 35% of asbestosis; 0.3% of lung cancer cases)
- Description of cases
- Occupational history

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## Proposal for the surveillance of asbestos-related diseases in Québec

2003: Public Health Act; Notifiable diseases registries

- Validation of diagnosis of notifiable diseases cases
- Questionnaire addressed to the cases
- Inquiry in the workplace
- Presently: 86% of MM cases and 96% of asbestosis cases were reported by physicians examining workers for the QWCB
- Other physicians' cases: 14% of MM cases; 4% of asbestosis cases

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## Proposal for the surveillance of asbestos-related diseases in Québec

MM and asbestosis

Lung cancer

**Pilot study in 2 hospitals: declaration from the physicians by medical archives department**

Québec Workers' Compensation Board data

Notifiable diseases registries

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## Proposal for the surveillance of asbestos-related diseases in Québec

**Pilot study in 2 hospitals: declaration from the physicians by medical archives department**

Notifiable diseases registries

Collaboration of regional public health departments

Collaboration of physicians and medical archivists of the 2 hospitals

Changes of the content of the registries

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## Overview of data on occupational asbestos exposure in the mines and in the asbestos processing industries in Québec

- Mines:
  - decrease of asbestos exposure in the mines until 2000
  - Between 1995 and 2000, 8% of collected samples > 1 f/cc
- Asbestos processing industries:
  - 9 plants identified from 2007 to 2009:
    - no safe use of asbestos in the nine plants according to 6 criteria
    - 1 plant with exposure > 1f / cc although control measures were present (use of partial confinement and wet method during sawing)

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## Overview of data on occupational asbestos exposure in construction industry in Québec

- Inspection data of construction work sites entailing high risk of exposure to asbestos (QWCB data)
  - 1,126 buildings with 5,383 material samples
    - 46% with asbestos (2,475/5,383)
      - **75 % chrysotile alone (1,856/2,475)**
  - 106 buildings with 6,690 air samples:
    - 3,000/6,690 inside the working area
      - **43% (1,294/3,000) > 1 f/cc**
    - 471 samples before abatement of working area
      - **6% of samples > 0.01 f/cc**

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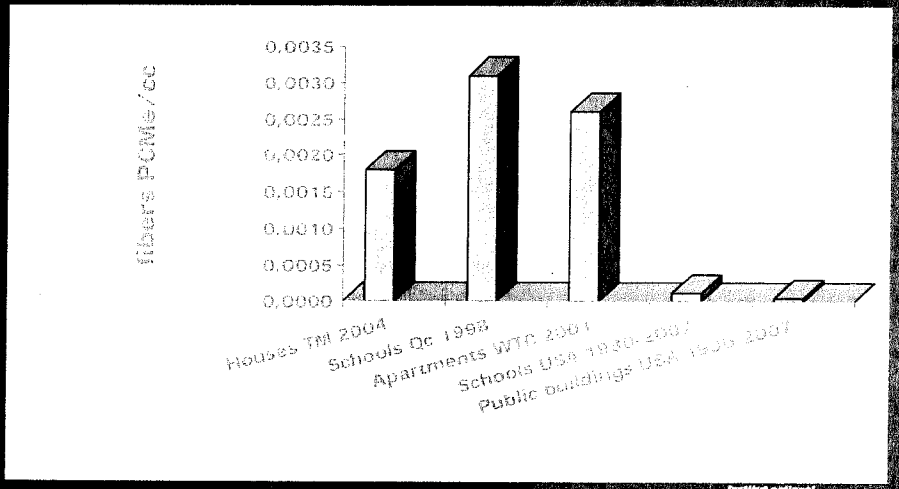
## Comparisons of asbestos concentrations inside buildings in Thetford Mines, in Québec schools and in buildings in the USA

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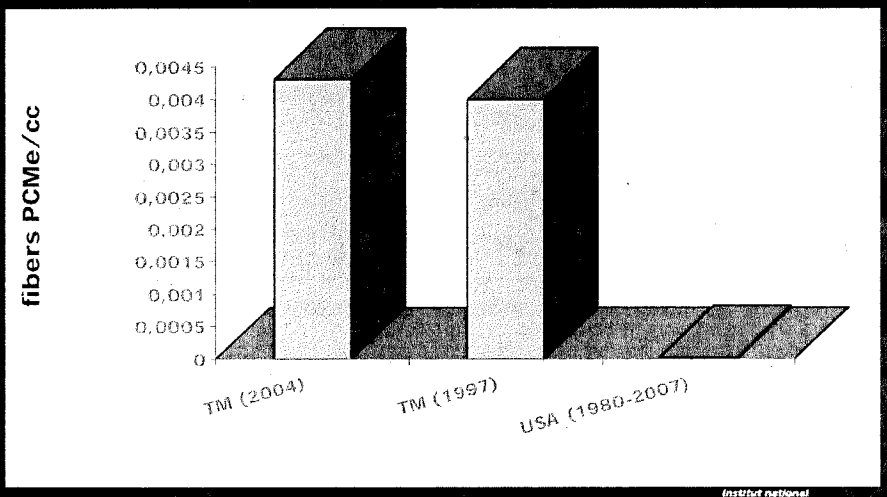
## Comparisons of asbestos concentrations in the air between Thetford Mines and USA

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## Surveillance of asbestos exposure in Québec: priorities

- Occupational exposure:
  - Mines: exposure measurements in the mines from 2000
  - Construction industry: inspection data of construction work entailing high risk of exposure to asbestos
  - Asbestos processing industries: surveillance data from the public health interventions in the plants
- Environmental exposure:
  - Asbestos concentrations in the air of the 2 Québec mining cities (Thetford Mines and Asbestos)

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## Conclusion 1

- We are at a crossroad in terms of surveillance of asbestos-related diseases
- If the pilot study previously described is conclusive, we will extend the project to all hospitals and to other notifiable diseases
- If not, we will continue to routinely analyze databases containing information on asbestos-related diseases





## Conclusion 2

- The use of surveillance data on health for prevention and public health action is important in Québec, knowing that there is a coalition of government, employers and unions to promote the use of chrysotile
- In that context, the surveillance of asbestos exposure is also important
- But surveillance of exposure is more difficult to achieve due to lack of routinely recorded data

## Acknowledgements

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Guy Perrault, consultant

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- http://www.inspq.qc.ca/publications/notice.asp?E=p&NumPublication=986
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Occupational Cancer Research Centre

# Asbestos and Cancer in Ontario
# The Occupational Cancer Research Centre

March 3 2010

A Presentation to the Asbestos Surveillance & Disease Compensation Think Tank, Toronto

**Dr. Loraine Marrett**
Associate Director, OCRC
Sr Scientist, Cancer Care Ontario

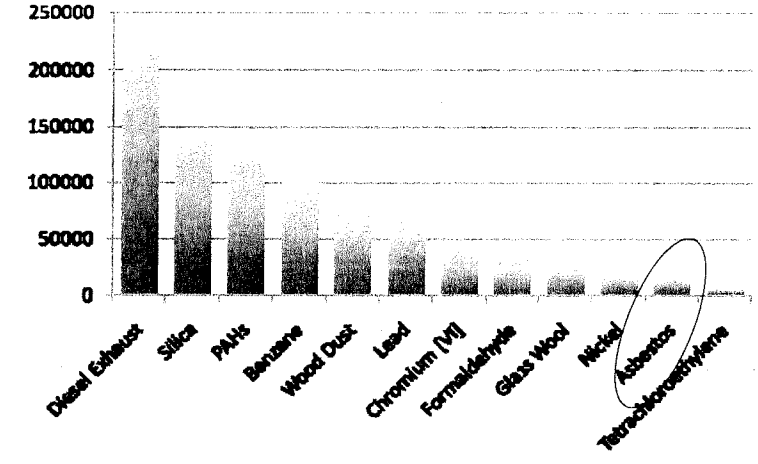
## Outline

- Mesothelioma & asbestos in Ontario
- Workers' compensation & asbestos in Ontario
- Ontario's new Occupational Cancer Research Centre (OCRC)
- OCRC's current and future work re asbestos-related cancers

# Mesothelioma & asbestos in Ontario



## Crude estimates of Ontario workers exposed to occupational carcinogens



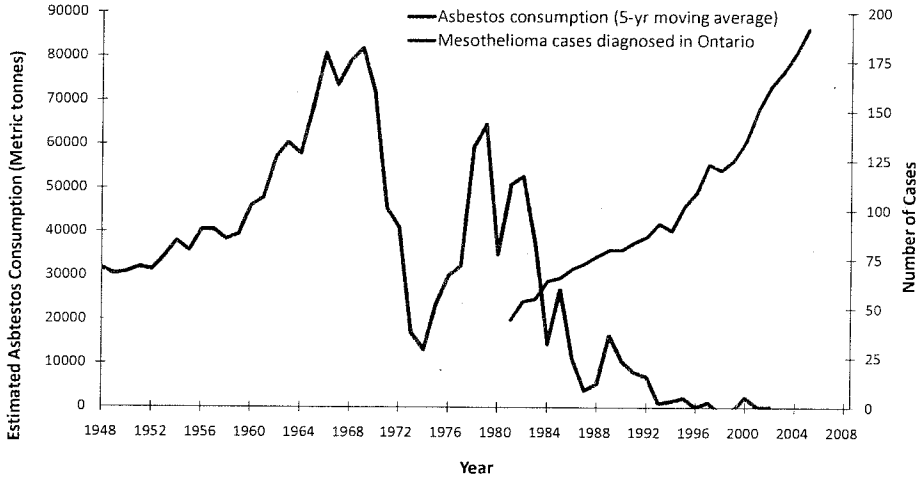

Source: CAREX Canada, 2008.

## Mesothelioma in the Ontario Cancer Registry (OCR)

- Still a relatively difficult disease to diagnose accurately
- Effective surveillance requires accurate data
- CCO has applied enhanced logic to best available data to ensure capture of *all* mesothelioma cases (resulted in increased counts for recent years)

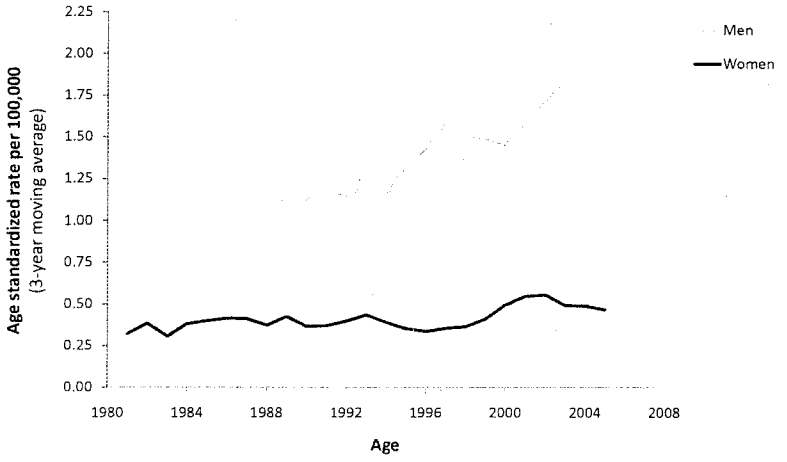


## Asbestos use in Canada and Mesothelioma in Ontario




Sources: Natural Resources Canada, Canadian Minerals Yearbook 1944-2002; Ontario Cancer Registry (2009)

## Rates of Mesothelioma in Ontario, 1980 - 2006



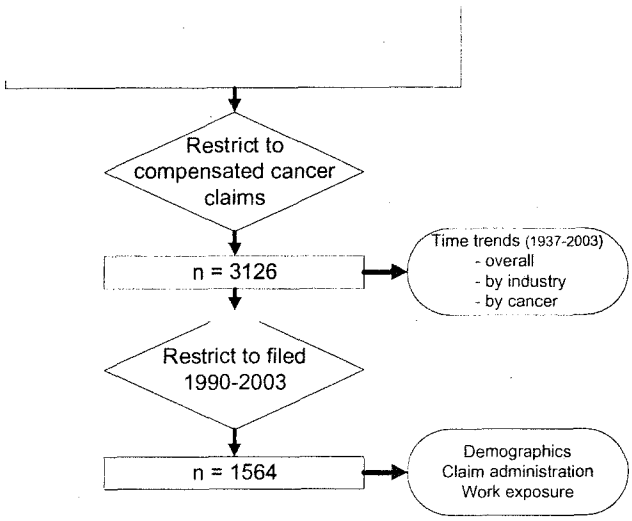

Source: Ontario Cancer Registry (2009)



## Compensation and asbestos, Ontario:

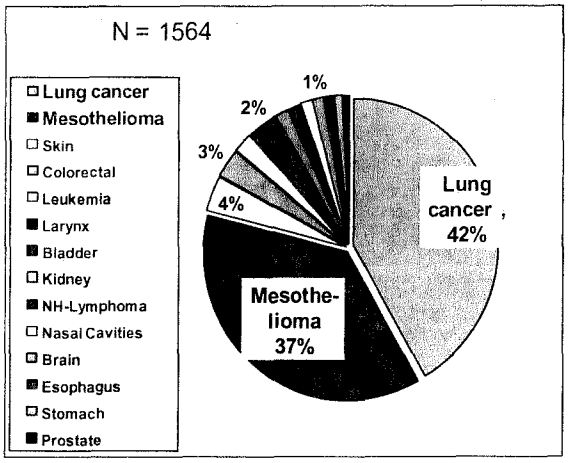
## Analysis of Occupational Disease Database (ODISS), WSIB

## 1. Descriptive Study of Cancer Compensation Claims using WSIB's ODISS



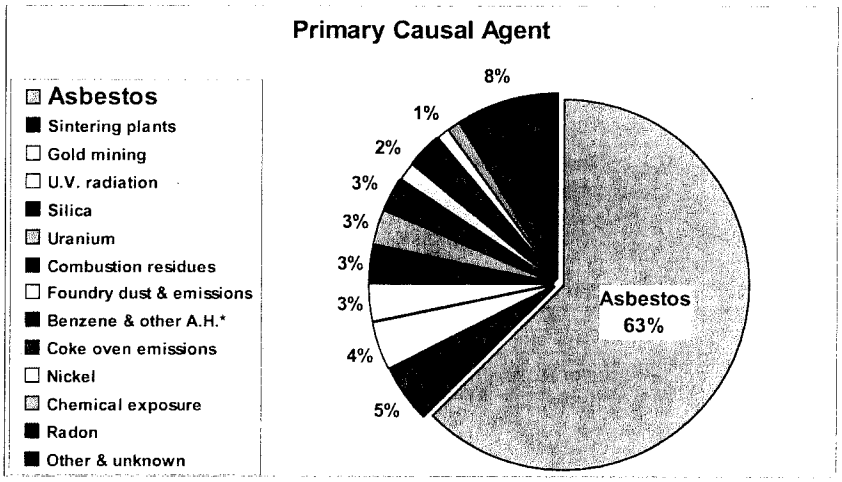



## Cancer distribution, allowed claims, Ontario, 1990-2003 (N=1564)




Source: ODISS, WSIB. Pichora E, Payne JI. Am J Ind Med 2007; 50: 980-91.

## Occupational exposure, allowed claims, all cancers, Ontario, 1990-2003 (N=1564)



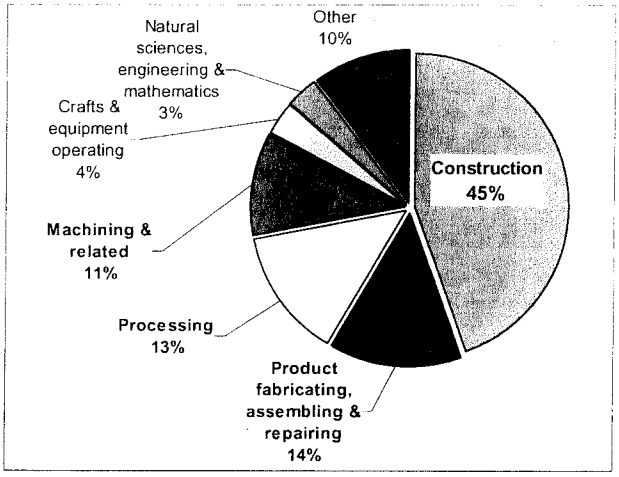

* Aromatic Hydrocarbons

Source: ODISS, WSIB. Pichora E, Payne JI. Am J Ind Med 2007; 50: 980-91.

Towards a cancer-free workplace

## Occupational exposures, allowed claims, mesothelioma, Ontario, 1990-2003 (N = 582)

Occupations with n ≥10




Causal agent

~ 100% = asbestos

Source: ODISS, WSIB. Pichora E, Payne JI. Am J Ind Med 2007; 50: 980-91.

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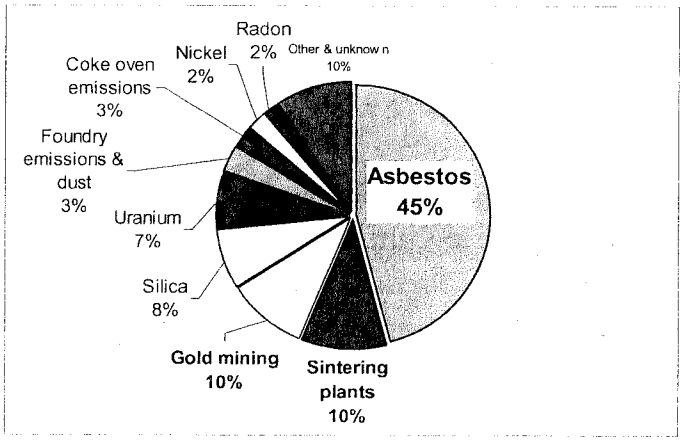
## Occupational exposures, allowed claims, lung cancer, Ontario,1990-2003 (N = 652)

Occupations with n ≥10




Source: ODISS, WSIB. Pichora E, Payne JI. Am J Ind Med 2007; 50: 980-91.



## Filing rates for lung cancer & asbestos

- Ratio of lung cancer to mesothelioma compensated claims where causal agent is asbestos is 298:582 ~ 1:2
- Cohort studies of workers exposed to asbestos report a 2:1 ratio for lung cancer to mesothelioma cases
- Suggests that number of claims for lung cancer attributable to asbestos should be four times what it currently is

Source: ODISS, WSIB. Pichora E, Payne JI. Am J Ind Med 2007; 50: 980-91.

## 2. ODISS-Ontario Cancer Registry Linkage

- Probabilistic linkage:
  - -personal identifiers: first and last name, date of birth, sex
  - -claims filed 1964-2003 (ODISS)
  - -cancers diagnosed 1964-2002 (OCR)

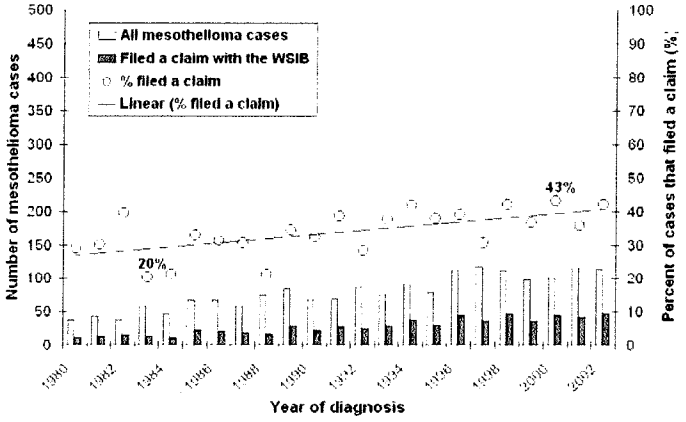
- 6564 WSIB-ODISS claim records listing a neoplasm were linked to the Ontario Cancer Registry

- Analyses restricted to cancers diagnosed in 1980-2002
  - -due to OCR data quality (e.g., pathology completeness)

Source: Payne J, Pichora E. Filing for workers' compensation among Ontario cases of mesothelioma. Cdn Respiratory J 2009; 16:148-52.



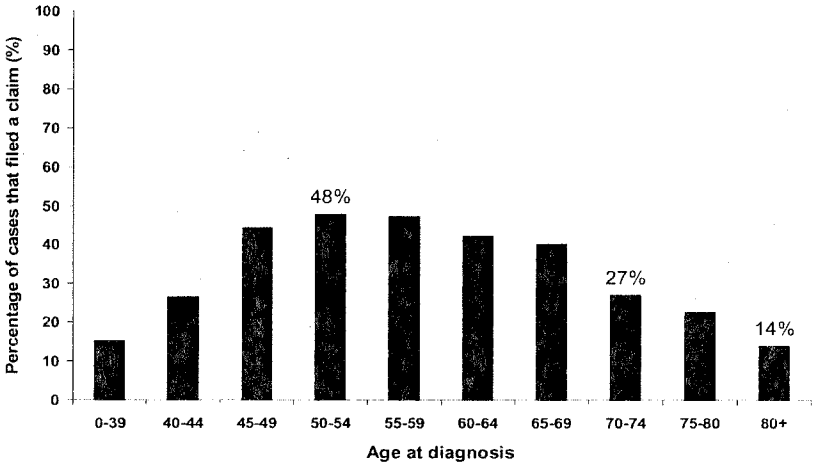
## Filing for workers' compensation, Ontario mesothelioma* cases, 1980-2002




* WSIB schedule 4 disease as of May 1992

Source: Payne J, Pichora E. Filing for workers' compensation among Ontario cases of mesothelioma. Cdn Respiratory J 2009; 16:148-52.

## % Filing by Age at Diagnosis, Mesothelioma, Ontario, 1980-2002




Source: Payne J, Pichora E. Filing for workers' compensation among Ontario cases of mesothelioma. Cdn Respiratory J 2009; 16:148-52.

Towards a cancer-free workplace

## Ontario's new Occupational Cancer Research Centre (OCRC)

Towards a cancer-free workplace

## OCRC Partners

- Workplace Safety & Insurance Board (WSIB) – funder
- Canadian Cancer Society, Ontario Division (CCS) - funder
- Cancer Care Ontario (CCO) – funder/home
- United Steelworkers - partner



## OCRC Vision

The prevention of occupational cancer through the identification and elimination of exposures to carcinogens in the workplace.

## OCRC Research Foci

- Surveillance of occupational cancers and workplace exposures
- Research into the causes of cancer in the workplace
- Intervention research to reduce exposures and prevent cancer
- Capacity-building for occupational cancer research
- Knowledge transfer and exchange to ensure relevance of research and effective use of research findings



## OCRC's current & future work in asbestos-related cancers

## Surveillance: Projected mesothelioma burden

- What is the future burden of mesothelioma in Ontario?
  - -When will the annual # of mesothelioma cases begin to decline?
  - -Mark Clements (Australian National University) has projected # of new cases to 2060 for Australia
  - -Dr. Clements has mesothelioma data (Ontario and Canada) and asbestos data (Canada) and will use to project meso cases through 2060
- Important for forecasting compensation
- Useful as a marker of asbestos exposure for predicting other asbestos-related diseases



## Surveillance: Refinement of CAREX for Ontario

- Estimate numbers of workers who continue to be exposed to asbestos by industry
- Validate estimates
- Ultimately, reduce exposures

## Research: Increasing physician awareness of asbestos-related cancers

- Pilot project submitted to WSIB with Centre for Research Expertise in Occupational Disease (CREOD) (Linn Holness)
  - Physicians in one Ontario lung cancer clinic will distribute exposure questionnaire (asbestos only) to lung/mesothelioma patients
  - Physicians of mesothelioma patients elsewhere will distribute same questionnaire to their mesothelioma patients
  - Patients who indicate asbestos exposure will be offered assistance in reviewing exposure as regards filing a claim
  - OHCOW clinic cooperating
- Ultimate purposes:
  - To increase physician awareness of asbestos as a workplace carcinogen for lung cancer and mesothelioma
  - To increase filing for compensation where appropriate

Towards a cancer-free workplace

Occupational Cancer Research Centre

Thank you!

Questions?

# Compensation of asbestos victims in France

*Annie Thébaud-Mony*
*Groupement d'intérêt scientifique*
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*INSERM, – Paris 13 university*

*Think tank workshop*
*"Asbestos surveillance & Disease Compensation"*
*March 4, 2010*
*Toronto, Canada*

# Outline of the presentation

- Some important scientific results on mechanisms
- Pathways to compensation for asbestos victims in France
  - Workers' Compensation
  - Compensation by a special fund : FIVA *("Fonds d'indemnisation des victimes de l'amiante")*
- Compensation, prevention : role played by criminal claims
- Conclusion

# Some important scientific results on mechanisms

- **Two different types of effects of asbestos, independent one from the other :**
  - Fibrosis (asbestosis, pleural plaques, diffuse bilateral pleural thickening)
  - cancer
- ***Each cancer = a complex history***
  - It is a process : long (several decades) ; complex (several events, several steps)
  - For an individual suffering from cancer, there is no scientific way to choose between different possible causes : Occupational and/or environmental and/or behavioural exposure to carcinogens
  - Synergy effects



# The French compensation system for asbestos victims : 2 complementary programs

1. **Workers with occupational exposure :**
   - Free medical follow up for ex-exposed workers
   - Early retirement of victims and ex-exposed workers
   - Compensation for occupational diseases and "inexcusable fault of the employer"
2. **Every victim with occupational or environmental exposure :**
   - Special fund for compensation of asbestos victims (In French : "*Fonds d'Indemnisation des victimes de l'amiante*" = "FIVA") created in 2000 and functioning since 2002

# Workers' compensation



## Free medical follow up for ex-exposed workers

***When workers have been exposed to asbestos*** (Labor Act, 1997)

- Employer duty : to establish a certificate of exposure, signed by him & the occupational physician
- Free medical follow up for any worker who has been exposed to asbestos (A Consensus conference of medicine has determined what examinations have to be done)

***Effectiveness*** :

- Applied in large companies & some public administrations & universities
- Inequalities between contractors' employees & sub-contracted workers, permanent & contingent workers

## Early retirement "ACAATA" of victims and ex-exposed workers :

**("Allocation de cessation anticipée d'activité des travailleurs de l'amiante")**

- Created by law 98-1194 (23 12 1998)
- 2 criteria :
  - Workers suffering from asbestos diseases (asbestosis, pleural plaques, diffuse bilateral pleural thickening)
  - Workers who were employed in companies (having used asbestos) registered on a list established by the Minister of labor
- 32 000 ex-workers are included in the program (September 2009)
- An important loss of income (60% of the salary)

[jurisprudence: claims in civil courts for compensation for "loss of chance", 2009)



## French system of Compensation for Occupational Diseases (OD)

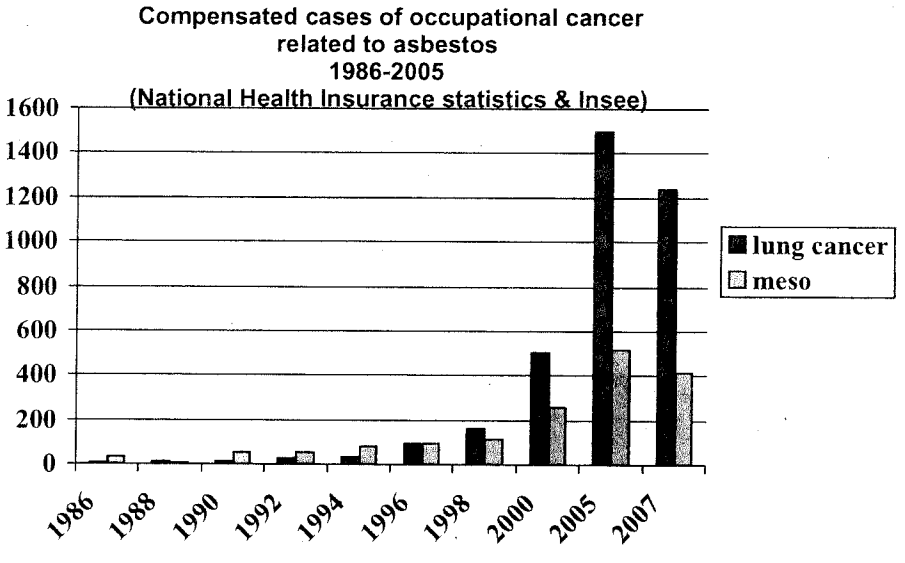
- Listed occupational diseases (in tables)
  - Presumption applies if conditions in the OD tables are met
  - No need to prove the causal relationship between work and disease
- Complementary system of recognition
  - If any of the administrative conditions in the tables are not met
  - If the disease, even known to be work related, is not on the OD list
  - Criteria : to prove the "direct & essential" link between work and disease

## Compensation for occupational diseases related to asbestos

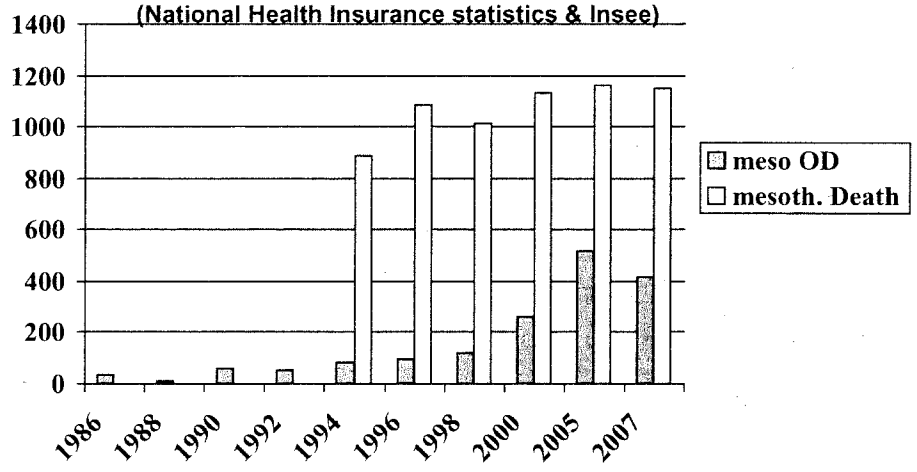
Diseases listed in tables 30 & 30bis of the OD list for which the presumption applies

- Asbestosis
- Pleural & pericardial plaques, unilateral or bilateral,
- diffuse bilateral pleural thickening
- Lung cancer
  - Associated with pleural plaques or asbestosis
  - Exposure of at least 10 years + restrictive list of jobs
- Mesothelioma



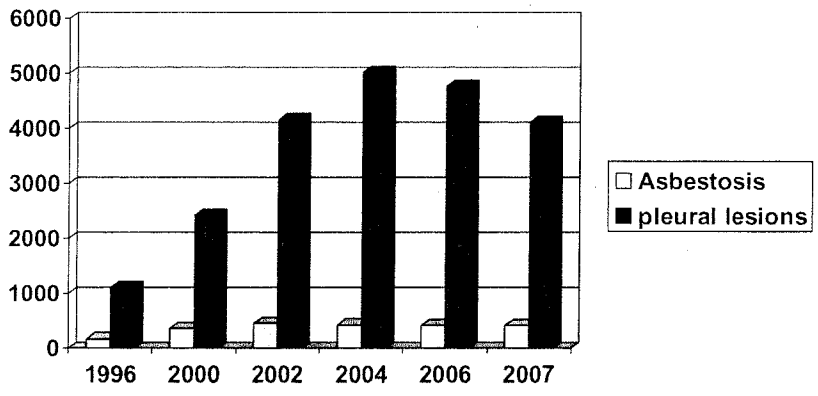


**Compensated cases of mesothelioma recognized as OD**
**Cases of Death due to mesothlioma**
**1986-2005**
**(National Health Insurance statistics & Insee)**






Compensated cases of occupational cancer related to asbestos
1986-2005
(National Health Insurance statistics)



## "The inexcusable fault of the employer"

- 1996 : claims in a special civil court - created for litigation on occupational injuries & diseases (the "*Tribunal des affaires de Sécurité sociale*") - brought by occupational asbestos victims against their employers, claims supported by the social movement and lawyers
- February 28, 2002 : the French Supreme Court *("Cour de cassation")* recognizes *«The employer's inexcusable fault »*

  2 conditions :
  - *The employer knew the risk*
  - *The employer did not respect his duty to protect the worker's health*
- 2005 : more than 1500 decisions in favor of the asbestos victims. Higher level of compensation for the victims and their families, exceeding the basic compensation for occupational disease (As high as damages granted to HIV contaminated blood victims)



## Compensation by a special fund

# FIVA

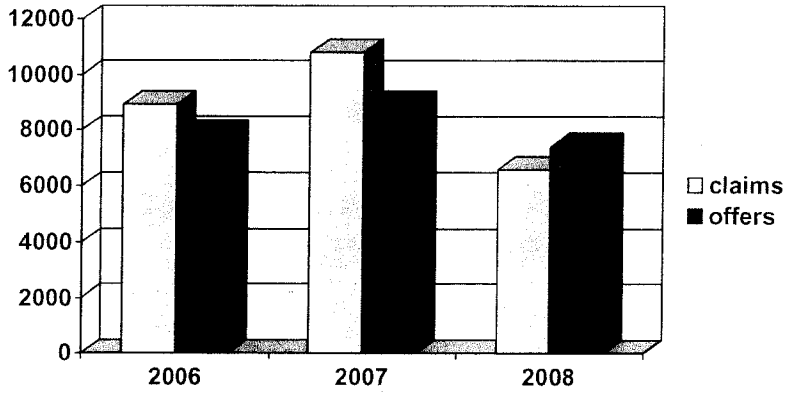
## *"Fonds d'indemnisation des victimes de l'amiante"*

## « FIVA »

- Created by Law n°200-1257 for automatic compensation of all asbestos victims
- Criteria for application :
  - All cases of asbestos victims compensated for occupational diseases related to asbestos
  - Others suffering from diseases that are specific of asbestos exposure (Mesothelioma & pleural plaques)
  - Other asbestos related diseases (lung cancer, asbestosis) if the victims or their family can prove the relation between asbestos and the disease
  - People who were exposed in France



FIVA
Number of claims and offers of compensation per year
FIVA, Rapport annuel, 2008



## « FIVA »

- 87% of the claims come from compensated cases for occupational diseases (very few non occupational cases)
- When the offer of the FIVA is disputed by the claimant, the compensation is higher
  (+ 50% in 77% of the cases)

**But :**

- 93% of the claimants accepted the first offer (2006)



## FIVA : what effectiveness?

**Report of the General Inspection of social Affairs (IGAS), 2008**

- Delay in the managment of claims :
  2006 : 24 000 claims waiting for decision of the FIVA
- Level of compensation
- The role of the fund in relation to the inexcusable fault of the employers

## No more inexcusable fault of the employer?

- Better level of compensation via claims for Inexcusable Fault of the Employer (IFE)

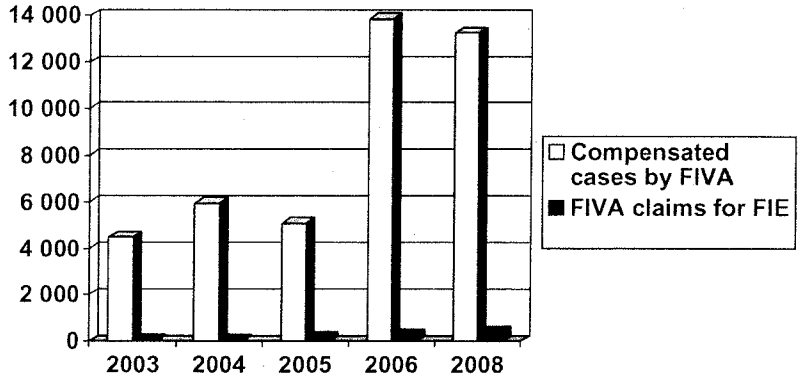
**But :**

- No right for victims to cumulate FIVA & IFE claims
- Balance between FIVA and claims for IFE :
  - Fiva : 87%
  - IFE : 13%
- By law FIVA has a duty to file claims that could have been filed by the victims in order to obtain
  - the recognition of the employer's inexcusable fault
  - the reimbursement (by the employer) to FIVA of the financial burden of compensation already paid to the victim by FIVA

**But : in fact FIVA files very few claims against employers**



## Compensated cases by FIVA and FIVA claims for FIE



## FIVA : the financial burden

In 2006 :

- The financial burden of compensation by FIVA was around 400 millions €
- The refunding by the condemned employers was only 11 millions €
  - **Failure to file FIE claims led to a very important net loss for the FIVA fund (IGAS report)**



## Compensation, prevention role played by criminal complaints

## Criminal complaints against employers who violate labour law

- Prosecution by labour inspectors may lead to criminal complaints in which workers can claims for damages of « loss of chance » : Alsthom case (Appeal court, Douai, September 4, 2007)
- Criminal complaints by victims may also include damages claims



# Conclusion

## Who pays and who does not pay for asbestos diseases in France?

- **Who pays :**
  - The employers for OD compensation
  - The special national fund for occupational injuries & diseases (supported by all the employers even though they never used asbestos) : 88.5% of the total financial burden of FIVA compensation
  - The state (tax contribution) : 12% of the total financial burden of FIVA compensation
- **Who does not pay :**
  - The asbestos companies (for example : Saint Gobain, Eternit, ...)
  - Shipyards & building companies, iron and steel industries, insulation companies & other industries who used asbestos when they were aware of the risk



## The costs of asbestos diseases
### *French official estimates*
*(Ministry of ecology, 2005)*

| | |
|---|---|
| Population | 60 millions |
| Human cost by year | 3 000 deaths |
| Expected cumulated human cost until 2025 | 100 000 deaths |
| Financial burden for compensation by year | 1,2 billion€ in 2003 [Compensation for occupational diseases; early retirement; FIVA; "inexcusable fault of the employer"] |
| Financial burden of compensation for the next 20 years | Between 26,8 and 37,2 billion€ |

## The invisible victims of the French asbestos production and use

- Thousands of contaminated migrant workers who returned to their home countries
- Contaminated workers' family members
- Sub-contracted workers whose asbestos exposure is denied
- The local residents around the former industrial plants (300 of them have been officially registered)
- Environmental exposure in schools, buildings, universities (*Jussieu Campus : 110 cases including 5 cases of mesothelioma among professors of the university*)
- Asian workers exposed in ship breaking yards
- .....



## Pros and cons of the French approach

- Compensation is provided regardless of context of exposure
- Increased visibility of the real consequences of asbestos use

- Violation of the "polluter – payer" principle
- Civil & penal impunity of those responsible
- Inequalities between victims (including inequalities between victims of occupational cancer caused by asbestos vs other contaminants)
- No real impact on prevention

# Workers' compensation for asbestos related disease in Canada

Katherine Lippel
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University of Ottawa

With the assistance of Valerie Kleinman, Friha Bdioui and Anette Sikka

Research funded by CPAC and OHCOW

Toronto, March 4th, 2010

## Outline

-Project objectives and methods

-Cross cutting issues

- Common approaches
- Divergent approaches

Concerns and challenges

Next steps for research and policy

# Overview of objectives and methods

Describe legislation, policy and case law regarding compensation for work-related illness attributable to asbestos exposure

Classic legal analysis

- Current law and policy
- Case law: 2000-2009
  - Key words: asbestos/amiante
  - Entitlement issues only

Consultations with key informants

Data from AWCBC

- 1998-2008

# Overview of objectives and methods

Alberta

British Columbia

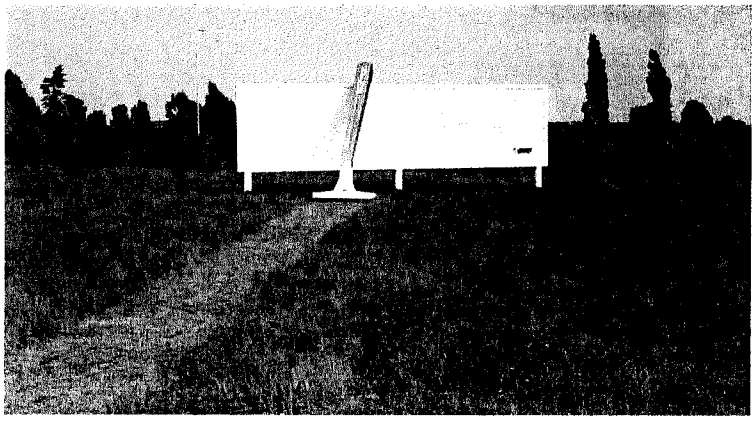
Newfoundland

Ontario

Québec

- Legislation but no official policy
- Particular medical screening and evaluation

# Cross-cutting issues



# Preponderance of evidence, not scientific certainty

Determination of work-relatedness requires that the preponderance of evidence support the conclusion that asbestos exposure at work was a significant contributing factor in the onset of disease

All jurisdictions give the benefit of the doubt to the worker

Legislative presumptions facilitate the recognition of a claim if the associated criteria in law or policy are proven to apply in the worker's case

# Diseases presumed to be related to asbestos

| | Asbestosis | Mesothelioma | Lung cancer | G.I. Cancer | Cancer of Larynx/pharynx |
|---|---|---|---|---|---|
| Al. | x | | | | |
| B.C. | x | x | x | x | x |
| Nfld. | X | x | x | X (policy only | X (policy only) |
| Ont. | X | X | X (policy only) | X (policy only) | X (policy only) |
| Qc. | x | x | x | | Case law only |

X: irrefutable presumption if conditions apply

# Territorial requirements

All provinces require some evidence that exposure occurred within the province, but there is significant variation in what this means

B.C. s. 6(10): worker must have been free from pneumoconiosis before first exposure in B.C.

- -resident of B.C. for 3 years preceding disablement or at least 2/3 of the worker's exposure in B.C.; at least 3 years exposure in B.C. unless not exposed elsewhere.

Ontario: at least two years exposure in Ontario, for asbestosis but not for mesothelioma

## Temporal requirements : work in the industry

Some provinces require activity in the industry in the province at the time of disablement or in the 12 months preceding disablement

Example: asbestosis

- Alberta
- B.C.
- Newfoundland

## Temporal requirements : Exposure and latency

Exposure and latency requirements vary between provinces for the same disease

Example: lung cancer

- Ont: 10 years exposure, 10 years latency
- Nfld: 5 years exposure, 10 years latency

# Lung cancer: policy and practice

Lung cancer is presumed to be related to asbestos exposure if

B.C.: asbestosis or fibrosis

Nfld: 5 years exposure, 10 years latency

Ontario: 10 years exposure, 10 years latency

Québec: no explicit policy

Practice: non smokers

- Claims by non-smokers will be accepted despite absence of asbestosis
- If asbestosis and smokers
  - Claims will be accepted when criteria are met or almost met
- No asbestosis in smokers
  - claims have been accepted in Ontario and Québec, if there is evidence of very significant and intense exposure

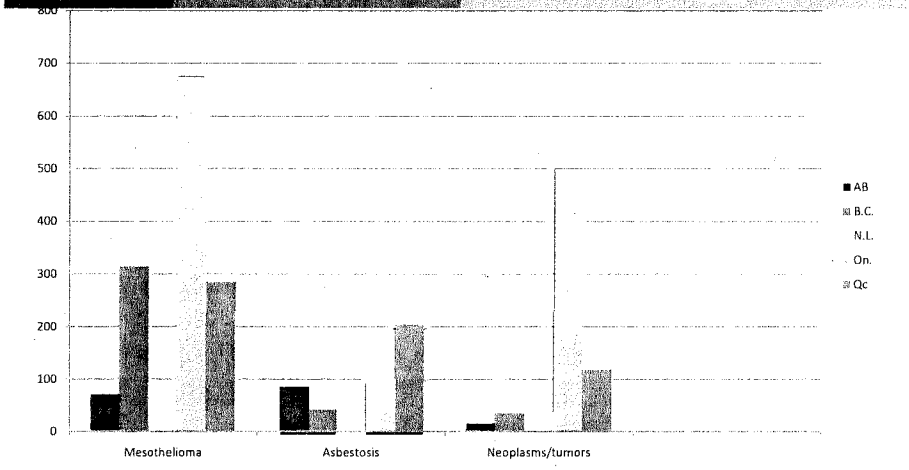
# If the criteria are not met

Compensation is available on the basis of the individual merit of each case

Decision makers in those provinces with stringent criteria in policy are often reticent to accept claims that don't meet policy requirements

Workers need to provide preponderant evidence of exposure and medical evidence regarding diagnosis and disability

# Fatality compensation: AWCBC 1998-2008




# Equity related concerns

Policy seems to be predicated on scientific certainty with regard to exposure and latency requirements and with regard to diagnostic requirements.

- Yet workers should be compensated if it's more likely than not that asbestos caused their disease
- Free access to several specialists who can provide accurate diagnoses and analyses is not available in all provinces.

## Politically related concerns Chrysotile arguments

Employer counsel and expert witnesses have (unsuccessfully) drawn attention to the type of asbestos in order to question workers' claims

Chrysotile asbestos is less bio-persistent, which the tribunal uses as an explanation for the low number of fibres in the worker's lung tissue (claim accepted)

Chrysotile asbestos is discussed in the Helsinki criteria, and those criteria are being applied by several decision makers.

## Study limitations

Team composed of jurists

No analysis of the legitimacy of the medical or scientific discourse reflected in the decisions

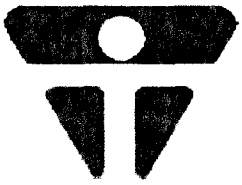
Little information on the day-to-day application of the legislation

# Issues for further study

This study does not address under-reporting and claim denial at the level of the adjudicator.

The Helsinki criteria are discussed in case law and may provide an interesting avenue for modernisation of policy requirements.

Asbestos registries do not exist in many of the provinces studied, an impediment to documentation of worker exposure to asbestos



Occupational Health
Clinics for Ontario
Workers

CANADIAN PARTNERSHIP AGAINST CANCER

PARTENARIAT CANADIEN CONTRE LE CANCER

# Workers' Compensation for asbestos related disease in five Canadian provinces

## Final Report

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Canada Research Chair in Occupational Health and Safety Law
University of Ottawa

## February 19, 2010

The views expressed herein represent the views of the research and writing team and as such, do not necessarily represent the views of the Partnership.

## ACKNOWLEDGEMENTS

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## Table of Contents

## Executive Summary

This study addresses the legal and policy frameworks for compensation of occupational diseases attributable to asbestos exposure in five Canadian provinces: Alberta, British Columbia, Newfoundland, Ontario and Québec. It aims to describe and compare criteria applied by compensation boards and appeal tribunals in each jurisdiction, for the purpose of determining entitlement to workers' compensation for asbestos related disease.

The report relies essentially on classical legal methodology including a legal analysis of legislation, publicly available policy documents of the respective workers' compensation boards, and publicly available case law and administrative decisions rendered between 2000 and 2009.

A comparative table describing legislative and policy instruments can be found in Appendix 1. Comparative tables of compensation statistics regarding injuries and fatalities for the period 1998 - 2008, based on data provided by the Association of Workers' Compensation Boards of Canada, can be found in Appendix 2.

The report examines principles of adjudication applicable to compensation for occupational disease claims, and then focuses more specifically on occupational diseases recognized in law or policy to be attributable to asbestos exposure.

### Entitlement to compensation for asbestos related diseases

Legislative presumptions govern compensation for occupational disease in all the provinces studied, but there is significant variation between provinces with regard to many issues. An overview of similarities and differences in legislation and policy with regard to specific illnesses may be found in Appendix 1.

Asbestosis is the only disease presumed to be related to work involving exposure to asbestos in Alberta, while mesothelioma is also included in the legislation of the other four provinces. Lung cancer, cancer of the larynx and gastro-intestinal cancers are targeted by legislation and policy of some provinces but not others. Ontario and Newfoundland provide for irrebuttable presumptions in the case of asbestosis and, this is also so in Ontario with regard to mesothelioma, if very specific conditions of exposure and latency are met. Other provinces

allow for the possibility that the presumptions may be overturned, and the presumptions are often overturned in the case law, notably in Québec, where the presumptions are framed in more general terms. In those provinces with policies determining specific exposure and latency requirements there is variation between provinces. Some provinces are not explicit with regard to the exposure and latency requirements, evaluating the individual situation in each case. Specialized medical evaluators (six) are systematically consulted in all claims for respiratory diseases in Québec, and Ontario provides for evaluation of individuals in the context of the appeal process, while, in other provinces, like Newfoundland, level of evidence in the case law leads us to believe that it is more difficult for workers to obtain diagnostic analyses in that province.

Cross-cutting issues

Boards and adjudicators are faced with the challenge of determining in individual cases whether workplace exposure to asbestos contributed to the worker's disease. Legally, all provinces require that it be more likely than not that the workplace exposure contributed to the worker's illness, and usually they require evidence that work was a significant contributing factor in the development of the disease. Generally, either by legislation, policy or case law, there is a consensus that the worker should be given the benefit of the doubt in cases where the evidence for and against legal causation is of equal weight.

Asbestosis claims are clearly acknowledged to be related to asbestos exposure, and this is also true of mesothelioma, although this is not explicitly acknowledged in law and policy of all provinces. With those diseases, the challenge is to determine where that exposure took place, and, in the absence of asbestos exposure registries, the burden of proving exposure falls on the worker or his estate, a difficult burden to meet. Lung cancer claims are even more challenging because tobacco can also have played a significant role in the development of the disease. Case law allows for compensation for lung cancer even when the worker smoked, if asbestosis or pleural plaques are present. Ontario and Québec allow for compensation even in the absence of asbestosis or pleural plaques, when evidence of significant exposure is clear, while Newfoundland policy has no explicit criteria in this regard. Policy in B.C., and most case law in that province, will not compensate for lung cancer if asbestosis is not present, unless there is evidence of "bilateral diffuse pleural thickening or fibrosis, over 5 mm thick and extending over more than a quarter of the chest wall", a requirement not seen in any other province.

## Concerns

The report expresses concerns with regard to fairness and equity. Given the long latency requirements for all asbestos related diseases, it is unclear why policies in some situations only apply if the worker is still active in the industry shortly before or at the time of onset of disablement, as is the case in Alberta, B.C. and Newfoundland. Requirement of significant in-province exposure, as is the case in British Columbia, is also a preoccupation, and will become even more preoccupying as workers are increasingly mobile, notably in the construction industry.

A broader concern is that some policies, particularly those that provide for explicit exposure requirements or latency periods, have been developed in a way that imports thresholds based on levels of scientific certainty, even though the appropriate legal test aims to determine whether, in a given case, it is more likely than not that workplace exposure contributed to the onset of disease. Yet the purpose of legislative presumptions is to govern behaviour in the context of scientific uncertainty; they are policy instruments that determine who should bear the cost of that uncertainty. As such, they should not be predicated on scientific certainty.

## Issues requiring further study

All members of the research team are jurists, and the study does not include an evaluation by medical specialists as to the relevance of the criteria applied and the policy orientations. Such an analysis would no doubt be useful. Furthermore, some cases have applied the "Helsinki criteria" in adjudication of individual claims. The present report does not review these criteria as such, but provides information as to the discourse of the adjudicators in this regard. Further study of these criteria and their potential relevance in adjudication could perhaps provide useful direction for the development of policy. This study, because of its methodology, does not provide information either on reporting levels or acceptance rates for compensation claims. It also cannot address inequitable access to health care professionals specialized in occupational disease related to asbestos, yet there is some concern that workers in some provinces are not receiving specialized evaluations that would improve their chances of accessing compensation. Studies on all of these issues could contribute to defining more equitable policy and practice.

## Introduction, methods and procedural considerations

This study addresses the legal and policy frameworks for compensation of occupational diseases attributable to asbestos exposure in five Canadian provinces: Alberta, British Columbia, Newfoundland, Ontario and Québec. It aims to identify criteria applied in each jurisdiction for the purpose of determining entitlement to workers' compensation for asbestos related disease, but does not discuss the nature or level of benefits payable under the various compensation schemes, nor does it discuss procedural issues such as time delays for filing of claims. We have also excluded discussion of specific policies applicable to fire fighters[1] and to workers exposed to nickel aerosol[2], as well as case law that discusses issues regarding the synergy resulting from exposures to multiple carcinogens, one of which may be asbestos[3]. We have also set aside discussion of case law's interpretation of arguments based on cancer cell type, as to do justice to this issue would require a significant review of medical evidence put forward by a variety of experts in a variety of contexts[4], a task that goes beyond the scope of the present report.

Workers' compensation in Canada falls under provincial jurisdiction and each province is sovereign with regard to its policy choices. The provinces chosen in this study include the three largest provinces (Ontario, Québec and British Columbia), the four provinces that actively mined, or continue to mine, asbestos (Québec, British Columbia, Ontario and Newfoundland) and a historically smaller province that is currently importing a significant number of migrant workers from other provinces (Alberta).

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[1] Several provinces, including Alberta, British Columbia, and Ontario have specific regulatory frameworks governing occupational diseases and fire fighters. See, for instance *Workers Compensation Act,* R.S.B.C. 1996, c.492 s. 6.1 and *B.C. Regulation 362/2005* (*Fire Fighters' Occupational Disease Regulation). In* Alberta, see s. 24.1 of the Act; in Ontario, see 2007 amendments to s. 15 of the W.S.I.A.

[2] Ontario has a specific policy in regard to combined exposure to nickel aerosol and asbestos; we have not dealt with this policy.

[3] For example, the factual situation in Ontario case 2009 ONWSIAT 1129 (May 6 2009) involved exposure to a variety of carcinogens (including radon), and this weighed in the balance, although evidence of significant exposure to asbestos (for less than the required exposure time of ten years) was present. See also WSIAT Decision No. 802/01 (2001), 2001 ONWSIAT 2646 and WSIAT Decision No. 1405/04 (2007), 2007 ONWSIAT 3326. This situation is described in a great many cases, in Ontario in particular, but elsewhere as well, and we have not explored the issues of synergy raised in the case law, issues that go beyond the scope of this report.

[4] For an illustration of this debate see, for instance an Ontario decision 2009 ONWSIAT 1129 (May 6 2009), where it was held that cancer cell type is not judged to be an accurate indicator of causation.

The report relies essentially on classical legal methodology including a legal analysis of legislation (laws and regulations), published policy documents of the respective workers' compensation boards, and publicly available case law and administrative decisions rendered between 2000 and 2009. Occasionally significant decisions rendered prior to 2000 were included in this report if they contributed information not otherwise available in the subsequent decisions. Decisions were identified through electronic databases reporting on appeal tribunal decisions in the five provinces, using "asbestos" and "amiante" as key words appearing in the full text (or the index, when available) of the database. Hundreds of decisions were identified, not all of which were relevant. In each province, decisions (when available, the synopsis of the decisions) were analysed to insure the decision addressed entitlement to compensation for an asbestos related disease. Many other issues were identified, including issues of experience rating, benefits available, and access to health care, but only those decisions addressing entitlement to compensation for the worker or the estate were retained for the purpose of this analysis. Normally procedural questions were also set aside and those issues will not be discussed in this report. Although this report relies essentially on publicly available data of a legal nature, some issues have been discussed with key informants. We also make occasional reference to scientific publications that are not part of the legal literature, although a review of the scientific literature goes beyond the scope of this report. Finally, we received statistics, for the period 1998-2008, on compensation by the Boards in the five provinces studied, from the Association of Workers' Compensation Boards of Canada (AWCBC), and we have collated some of that data with regard to compensation for injuries (Table 1) and fatalities (Table 2) in Appendix 2.

Although no firm policies circumscribe the decision making process in Québec with regard to occupational diseases, there is a specific process, unique to Québec, which insures a relative uniformity in the adjudication of these claims. Since 1985, Québec legislation provides that all claims for respiratory diseases are to be referred to two specialized medical panels (the Committee on Occupational Lung Disease, of which there are at least three in the province, and the Special Committee, comprised of three presidents of the Committees on Occupational Lung Disease that were not involved in the initial evaluation), whose opinion is binding on the Commission de la santé et de la sécurité du travail or CSST, notably with regard to diagnosis, functional limitations, level of permanent impairment, and tolerance for exposure to a

contaminant[5]. Thus six pneumologists, specialized in pneumoconioses in particular, examine the worker's X-Rays and the worker, if he is alive at the time of the claim, and provide an opinion on these four issues, and, indirectly, on compensability of the claim. The specialists receive specific accredited training. Québec also exacts, and seemingly provides resources for, systematic analysis of lung tissue to determine whether asbestos fibres are present (either through biopsy or autopsy).

The role of the appeal tribunal is different in Québec, firstly because the appeal tribunal (the Commission des lésions professionnelles or CLP) is not bound either by board policy (policy of the CSST) or by the opinion of the medical committees just described, and secondly because the appeal tribunal in Québec hears a significantly larger number of cases per year, as compared to the other appeal tribunals (over 28,000 appeals filed at the CLP in 2008-2009 as compared to slightly under 4000 filed with the WSIAT in Ontario according to the most recent annual reports[6]). Policy documents, at least those that are publicly available, are of little relevance in Québec, while they play a key role in the other four provinces. Case law in other provinces is of varying importance. Ontario and British Columbia have many cases that discuss eligibility for compensation with regard to asbestos related diseases, while, in Alberta, there are very few legal decisions of relevance. We have not, for the most part, studied lower level review board decisions, although we have integrated some information regarding first level adjudications in Appendix 2. It is important to note that it is possible and highly likely, that many claims are resolved without appeals, either because claims are refused and the claimants do not exercise their right to appeal, or because claims are accepted, and the employer does not appeal the decision as to entitlement. Information as to the number of claims filed with workers' compensation boards is not, generally, publicly available, so it is difficult to determine the acceptance rate for these claims at the level of primary adjudication. Thus, while providing informative data with regard to the number of cases compensated by the compensation boards in the five provinces studied in this report, for the

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[5] *Act respecting Industrial Accidents and Occupational Diseases*, R.S.Q. c. A-3.001, ss226-233. For an analysis of the important role played by these committees in the adjudication process, see Friha Bdioui, «La reconnaissance, à des fins de réparation, des maladies professionnelles pulmonaires liées à l'amiante au Québec», In Barreau du Québec, *Développements récents en droit de la santé et de la sécurité du travail, 2010*, Cowansville, Éditions Yvon Blais (in Press). It is of note that similar committees may be set up on an ad hoc basis in Newfoundland, although they do not examine all claims systematically, as is done in Québec. See Newfoundland WHSCRD decision 01186, August 2001.

[6] Compare COMMISSION DES LÉSIONS PROFESSIONNELLES (CLP) (2008), *Rapport annuel 2007-2008*, www.clp.gouv.qc.ca to *Workers' Safety and Insurance Appeal Tribunal (WSIAT) Annual Report*, 2007, p. 42.

period between 1998 and 2008, the information in Appendix 2 does not allow us to report on acceptance rates for disease claims related to asbestos exposure.

Information as to practices in provinces other than Québec may be gleaned from the policy manuals, yet some of those manuals provide little detail as to practices with regard to specific diseases (Alberta seemingly has no legislation or policy on either mesothelioma or lung cancer, for instance). Thus this report is preliminary in nature, and provides, it is hoped, a basis to begin discussions with regard to interprovincial comparisons with regard to practice.

## General principles governing compensation for occupational disease

### General rules with regard to adjudication of claims by the appeal tribunals

Board policy is binding on several of the tribunals studied and thus it is rare, but not unheard of[7], to find decisions that over-ride board policy. Circumstances in specific cases, such as evidence of a genetic predisposition to gastro-intestinal cancer, have served as justification for acceptance of a claim where the number of years of latency required by policy had not been met[8]. Most decisions, outside of Québec, either apply board policy or address issues that are not governed by a specific policy. In Québec, the Appeal tribunal (CLP) is not bound by policy of the CSST, and the CSST has no formal policy stipulating criteria for recognition of specific diseases as occupational diseases. All decisions are adjudicated on the basis of the legislative framework.

### Degree of certainty required for the decision: the burden of proof

In all jurisdictions studied, the issue of causation is evaluated on the basis of the balance of probabilities. The evidence must be weighed as to the probability of causation and not in light of a requirement of certainty. This approach is influenced by the position of the Supreme Court of Canada with regard to causation in the context of tort cases. In adjudicating a claim for colon cancer, the WSIAT circumscribed the rules applicable with regard to causation[9]:

> "The basic issue in this appeal is causation. *Decision No. 1386/03* (2004), 71 W.S.I.A.T.R. 95, contains a succinct overview of the Tribunal's approach to causation: In cases where it is impossible to know with certainty whether an exposure is actually the cause of a worker's illness, the Panel must weigh the different possible causes of

[7] See, for instance, 2003 ONWSIAT 156, where the appeal tribunal granted benefits to a worker suffering from colorectal cancer despite board policy criteria not having been met.
[8] WSIAT *Decision No. 1121/06* (19 years rather than 20).
[9] WSIAT *Decision No. 1121/06.*

the worker's condition and decide what is more probable than not. Some conditions may result from non-work related factors. Some conditions occur themselves. Some conditions are work-related. The issue of causation may be complicated, as it is in this case, by a lack of clear evidence as to what, exactly, the worker was exposed to, or when, or how often. Following the Supreme Court in Lawson v. Laferriere, [1991] 1 S.C.R.541, Snell v. Farrell [1990] 2 S.C.R. 311, and McGhee v. National Coal Board, [1972] 2ALL ER 1008 (HC) as adopted by tribunal jurisprudence (see Decision No. 549/95I2, for example) we note that an extremely high standard of virtual scientific certainty is not required before resolving these issues. It is not essential that the medical or scientific experts opine firmly in favour of the work-related cause(s). Rather, a Panel must be satisfied, on the balance of probabilities, that the work exposure is a significant contributing factor in the worker's condition. An inference may, in certain cases, support such a conclusion. That said, a causation theory must have some evidence to support it: it cannot be speculative. See Decision Nos. 795/95; 1558/98; and 549/95I2.

The Tribunal must decide the case on a balance of probabilities. The Panel is required to weigh the possible theories of entitlement to determine if it is more probable than not that the disease resulted from the workplace exposure. If the evidence for and against the issue is approximately equal in weight, section 4(4) of the pre-1997 Act provides that entitlement is to be allowed. This reflects the policy goals of the Act."

Similar reasoning was relied upon to accept a claim for lung cancer although the worker did not have asbestosis[10]:

"The Panel finds it is inappropriate to deny the claim based upon preferring the restrictive view in an unresolved medical debate."

With regard to epidemiological evidence, the WSIAT underlines the importance of such evidence but also the fact that it is not always available, and that the absence of such evidence does not demonstrate the absence of causation in a given case:

"The present Panel acknowledges that, where epidemiological evidence exists, it is an important piece of evidence. However, entitlement, in our opinion, cannot depend exclusively on such evidence. Conversely, its absence cannot be treated as determining that no causal relationship exists, particularly given how long it takes to develop epidemiological evidence. As we understand epidemiological evidence, it may often be the best evidence of the existence of a causal link between a disease and a substance. However, there will be many circumstances in which the absence of epidemiological evidence cannot conversely be seen as evidence of the absence of a causal link."[11]

The same approach applies in Québec[12]. Recently, an important decision was rendered that

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[10] Ontario: 2009 ONWSIAT 1129 (May 6 2009): p. 16; see also Decision No. 375/92 (1993) 28 WCATR 32.

[11] 2007 ONWSIAT 2785, paragraph 19.

[12] *Chiasson* c. *Reitmans,* [2002] CLP 875 (CAQ); *JTI-MacDonald Corp. et Côté (Succession de),* 2009 QCCLP 1676 (administrative review pending, January 31st 2010).

attempts to conjugate legal reasoning requiring causation be shown on the basis of the preponderance of evidence, a requirement that the allegation is more likely to be true than false, with epidemiological studies relevant to the determination of causation of lung cancer in workers from an aluminum smelter who had been exposed to polycyclic aromatic hydrocarbons and who were also smokers[13]. This decision reaffirmed that, in Québec, workers or their estates must show that work made a significant contribution to the development of the disease in order for their claims to be accepted; it is not necessary to show that work was the primary or dominant cause of the disease. It is not necessary that the probability of causation be greater than 50% for causation to be found. Although legislative presumptions did not apply to the lung cancer cases studied in that decision, the philosophy applied in the decision has since been evoked in cases regarding lung cancer in smokers who worked with asbestos[14].

### Benefit of the doubt

Whether or not legislative presumptions apply, some jurisdictions prescribe that the benefit of the doubt in a given case should favour the worker or his estate. Thus, when evidence for and against causation is of equal weight, explicit provisions exist in some jurisdictions providing that the benefit of doubt goes to the worker. These are found in the statutes of Newfoundland (s. 60 (1), Ontario[15], (s. 119(2)) and B.C. (s. 250(4)). Similarly, when legislation is ambiguous, it should be construed in favour of the claimant, a point made explicitly in cases from British Columbia[16] and Québec[17].

## General rules with regard to legislative presumptions

In every province studied at least some diseases related to asbestos were mentioned in the legislation as diseases presumed to be occupational diseases linked with asbestos exposure, as

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[13] Bouchard, M.J. et F. Côté, «Le cancer pulmonaire vu par un banc de trois commissaires», *Développements récents en droit de la santé et de la sécurité du travail (2009)*, vol, 303, Les Éditions Yvon Blais Inc., Cowansville, 2009, pp. 3-66. This article discusses *Lucien Tremblay (Succession) et al. et Alcan inc. et C.S.S.T.*, [2007] C.L.P. 577.

[14] *Succession German Boutin et Mine Jeffrey inc.*, 2009 QCCLP 1256.

[15] For illustrations of the application of this principle see WSIAT Decision 2990/01, 2009 ONWSIAT 1129; WSIAT Decision No. 597/99 (2000), 2000 ONWSIAT 1498. See also Benefit of Doubt: BOARD DIRECTIVES AND GUIDELINES: Operational Policy Manual, Document No.11-01-13. http://www.wsib.on.ca/wsib/wopm.nsf/Public/110113.

[16] *B.C. WCB Appeal Division Decision* #2002-1120 (2002).

[17] See for instance *Succession Guillemette et J.M. Asbestos inc.*, [1998] CALP 585 (SCC) overturning [1996] CALP 1342 (C.A.Q.) and affirming the CALP decision at [1991] CALP 309.

can be seen in Appendix I. Legislative presumptions with regard to occupational diseases are common in most countries' legislation governing workers' compensation, and are often modelled on the International Labour Organisation's convention 121, the employment injury benefits convention, which includes periodically revised lists of occupational diseases. The ILO is currently revising their list of occupational diseases and a new list is scheduled to be approved in March 2010[18].

Normally a legislative presumption with regard to a given occupational disease includes a diagnosis and the associated exposure. Some laws, like that of Ontario, provide detailed descriptions of industries where the exposure shall have taken place, for the presumption to apply, and many complete that description by further conditions described in policy, including degree of exposure and latency periods. Others, like the Québec legislation, are far more general, simply presuming a causal relationship between the diseases identified in the schedule and exposure to asbestos. The actual determination of causation is specific to each case, and determination of causation in that province is facilitated by the specialized committees responsible for identifying occupational pulmonary disease.

As we shall see, some jurisdictions, like Ontario and Newfoundland, have enacted irrebuttable presumptions applicable to specific diseases, like asbestosis or mesothelioma, while in other jurisdictions, like Québec, Alberta and B.C., all of the legislative presumptions governing disease claims are rebuttable.

The purpose of legislative presumptions with regard to occupational illness is to relieve the worker (and the Tribunal) from the obligation of canvassing the scientific literature, because to do so defeats the purpose of the policy decision to recognize disease claims when the conditions of the presumptions apply[19]. In case of doubt, these presumptions should be interpreted in favour of the claimant, according to the Supreme Court of Canada, who approved the dissenting judgement in the Québec Court of Appeal in the case of *Succession Guillemette v. J.M. Asbestos inc.*[20]. Both the Superior Court of Québec, and the Court of Appeal had held that legislative presumptions with regard to occupational diseases were to be restrictively construed, because they ascribed causation to the employer's industry without

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[18] http://www.ilo.org/global/About the ILO/Media and public information/Press releases/lang--en/WCMS 116459/index.htm, consulted January 31st 2010.

[19] See, for instance *B.C. Decision 2008-00216.*

[20] *Succession Guillemette v. J.M. Asbestos inc.,* [1998] CALP 585 (SCC) overturning [1996] CALP 1342 (C.A.Q.).

direct evidence, and were thus exceptions to the general rules of civil law. In the dissenting judgement, written in French, justice Forget of the Court of Appeal made the following statement, subsequently approved by the Supreme Court of Canada:

> "Is it more aberrant to imagine that, in certain cases, the employer will be called upon to compensate a worker when he normally should not have had to do so, than that the worker should be deprived of benefits to which he would normally have been entitled were it not for a complex scientific controversy? In the context of social legislation, I don't think so. [Our translation]"

This case reminds us that legislative presumptions are designed to govern behaviour in the context of scientific uncertainty: they are policy instruments that determine who should bear the cost of that uncertainty. As such, they are not predicated on scientific certainty.

Does the worker need to be working in the industry at the time of disablement for the condition to be presumed to be an occupational disease?

In order for the legislative presumption to apply, some provinces require the worker to be actively employed in the industry or process at the time or shortly before the onset of disablement, a surprising requirement, given the long latency periods for these diseases.

Alberta's legislation, at s. 24 (6) stipulates that, for the legislative presumption to apply, the worker who suffers disablement from or because of any occupational disease, must show employment in the industry or process deemed by the regulations to have caused that disease, within the 12 months preceding the disablement.

In British Columbia, a similar requirement found in s. 6(3) WCA applies. A worker must be working in a specified industry at time of disablement to benefit from the legislative presumption.

Section 6(3) provides that, if the worker at or immediately before the date of the disablement was employed in a process or industry mentioned in the second column of Schedule B, and the disease contracted is the disease in the first column of the schedule set opposite to the description of the process, the disease is deemed to have been due to the nature of that employment unless the contrary is proved.

A major change of significance to asbestos-related illnesses occurred in 2003. Since then, the presumption in section 6(3) of the WCA no longer recognizes latency periods after asbestos exposure as a relevant exception to the rule that a worker must be employed "at or

immediately before the date of the disablement ... in a process or industry mentioned in the second column of Schedule B". Board resolution *2004/05/18-02* removes the exception that formerly existed where

> the medical and scientific evidence has established that there is a long latency period between exposure to the process, agent or condition of employment and the time the disease first becomes manifest. ... In the circumstances of such a claim, the presumption would normally be considered only where the condition became manifest within a short period of time following the exposure. However, in a claim filed by a worker who suffers from a recent onset of a cancer listed in Schedule B but who has not worked in the process or industry described opposite such cancer for a number of years, it may be appropriate to conclude that such worker was employed in such process or industry "immediately before the date of disablement" by virtue of the long latency period which is known to exist with respect to such a cancer.

In B. C. *Decision #2008-03303* a worker's widow claimed that a review officer erred by not considering this exception when determining whether the worker's asbestos-related disease (later found in fact not to be asbestosis) appeared some years after the ending of his employment. The WCAT stated that this exception no longer existed. In British Columbia if an individual is not employed "at or immediately before the date of the disablement" they are not entitled to the presumption available in section 6(3). This does not mean that the claim will be denied or that such latency periods will not be accepted as evidence of the disease but the worker will have to provide medical evidence in each case. However, few cases have raised the issue in B.C.

If the conditions permitting the application of the presumption are not met, the claim will be decided on the merits and justice of the individual claim (B.C. Policy item #26.22, Non-Scheduled Recognition and Onus of Proof).

In Newfoundland, s. 90(3.1) of the Act provides that if the worker "at or immediately before the date of the disablement was employed in a process involving asbestos, [and] is suffering from the industrial disease known as asbestosis, the disease shall be conclusively considered to have been due to the nature of that employment". The Newfoundland regulation (23 (1b)) provides that, were the conditions of s. 90 not met, a claim for compensation is conclusively considered to be compensable if, in the case of asbestosis: "the worker was employed in any mining, manufacturing, assembling, construction, repair, alteration, maintenance, tailing, or demolition processes involving exposure to asbestos."

Claims for other types of diseases associated with asbestos will be "favourably considered" if the required past exposure is proven (see list of conditions associated with each disease in Appendix 1). Thus, in Newfoundland, a presumption applies even after the worker has ceased working at the time of onset, although the strength of that presumption is reduced.

S. 90.1 of the Newfoundland Act, explicitly provides that compensation for industrial disease is possible regardless of the worker's state of employment at the time of onset.

In Ontario we found no requirement of active employment immediately prior to onset of the disease. As we shall see, the policy requires evidence of exposure in a profession or process where asbestos fibres are produced on or before the date of diagnosis (at least 2 years of work in Ontario for asbestosis to be presumed to be work-related). No minimum requirements of this type are specified in policy with regard to mesothelioma.

In Québec, for the presumption to apply, there is no requirement with regard to being active in the industry, or for that matter, in the workforce, at the time of onset of illness or disablement.

Does asbestos exposure need to be within the province?

All provinces require some exposure within the province, although these requirements are articulated in different ways.

In Alberta the legislation is ambiguous. Disability attributable to an occupational disease is included in the definition of "accident". Sections 1(1)) and s. 28 (1) of the Act allow for compensation for out of province "accidents" in a variety of circumstances, some of which could apply to claims for occupational disease. Yet we found no clear provision in policy in this regard.

B. C. stipulates the most stringent requirements with regard to evidence of exposure within the province. The worker's exposure to asbestos in B.C. must have played a significant role in causing the worker's lung cancer[21], or asbestosis[22]. More specifically, s. 6(10) of the WCA states that the worker must have been free from pneumoconiosis before being first exposed to

[21] WorkSafe B.C. Bronchogenic Carcinoma (Lung Cancer) in Asbestos Exposed Workers, Discussion Paper, July 27, 2009. See however *B.C. WCB Appeal Division Decision* #2002-1120 (2002) that refuses to apply this exclusion to lung cancer and pleural thickening as they are not included in the category "pneumoconiosis".
[22] *B.C. WCB Appeal Division Decision* #2002-1120 (2002).

those dust conditions in the province. Additionally, they must have been a resident of BC for at least 3 years last preceding the disablement or at least 2/3 of the worker's exposure had to be in the province. Lastly they must have been exposed for a period or periods aggregating 3 years preceding his or her disablement, but this could be for a lesser period if the worker was not exposed to dust anywhere except in B.C.

S. 15(6) of the Ontario Act requires two years exposure in Ontario for the presumption to apply. Policy concludes that asbestosis is conclusively deemed to be due to the nature of employment if, at the time of diagnosis, the worker had been employed in Ontario, in a designated industry, for at least two years[23]. Case law also concludes that exposure in Ontario must be a significant contributing factor to the worker's lung cancer[24]. The fact that exposure also occurred elsewhere was not an obstacle to compensation for a claim for mesothelioma[25].

Newfoundland policy notes that "With respect to exposure intensity and duration, those workers with significant exposures in Newfoundland and Labrador before 1980 will be considered to have had higher exposure intensities than those exposed in 1980 or later." No other provisions seem to circumscribe the territorial requirements of exposure

S. 7 of the Québec legislation applies to workers who "contract an occupational disease in Québec", and whose employer when the disease is contracted has an establishment in Québec. S. 8 allows for compensation for an occupational disease contracted outside of Québec if, when the disease was contracted, the worker was domiciled in Québec and the employer had an establishment in Québec. Even if the worker was domiciled elsewhere when he contracted the disease, compensation will be provided if the employer had an establishment in Québec at the time, and the worker's absence from Québec does not exceed five years. Case law in Québec rarely mentions interjurisdictional issues with regard to asbestos-related compensation claims. In one case, a worker who had been exposed in Québec and who was found to be suffering from asbestosis in Washington State, where he was working at the time of his claim, was denied benefits both in Washington, because exposure was found

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[23] "Asbestosis in workers exposed to asbestos dust in Ontario employment is an occupational disease as peculiar to and characteristic of a process, trade or occupation involving exposure to asbestos. If the worker was employed in Ontario in any mining, milling, manufacturing, assembling, construction, repair, alteration, maintenance or demolition process involving the generation of airborne asbestos fibres for at least 2 years before the date of diagnosis of asbestosis, the asbestosis is conclusively deemed to have been due to the nature of the employment."

[24] WSIAT Decision No. 600/04 (2005), 2005 ONWSIAT 840.

[25] WSIAT Decision No. 722/00 (2002), 2002 ONWSIAT 149.

not to have taken place in that State, and in Québec, because his claim for compensation was filed in that province more than six months after he had learned that his health problem was an occupational disease. Seemingly the fact that he had delayed his claim under Québec law because he thought he was eligible for benefits in Washington was not seen as a justification for filing after the six-month deadline[26].

Is the legislative presumption irrefutable?

In Alberta[27], British Columbia[28] and Québec[29], the legislative presumptions with regard to occupational disease are refutable. Some presumptions in Newfoundland and Ontario are not. In Newfoundland, the presumption with regard to asbestosis is irrefutable if the conditions prescribed in S. 90 (3.1) of the Act are proven; thus it is necessary to show the worker worked with asbestos at or immediately before the time of disablement or was employed in a specific industry described in s. 23(1) b. It is stipulated that "the disease shall be conclusively considered to have been due to the nature of that employment." The same is true in Ontario, with regard to asbestosis and mesothelioma (schedule 4)[30]. The employer in Québec will successfully refute the presumption if it is shown that the asbestos exposure is not the probable cause of the worker's illness[31]. Some cases involving lung cancer in asbestos workers who were also smokers illustrate this principle[32].

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[26] *Lessick et Industries mondiales Armstrong Canada ltée*, [1989] C.A.L.P. 782.

[27] Alberta s. 24(6).

[28] B.C. s. 6(3).

[29] Although the Act is not explicit, case law is constant in this regard. See, for instance *Succession Guillemette v. J.M. Asbestos inc.*, [1998] CALP 585 (SCC) overturning [1996] CALP 1342 (C.A.Q.), and more generally K. Lippel, *La notion de lésion professionnelle, 4ième édition*, Les Éditions Yvon Blais Inc., Cowansville, 2002.

[30] However s. 94(7) WSIA appears to allow schedule 2 employers to refute the presumption even with regard to schedule 4 diseases. The section could only apply in quite exceptional circumstances, and we found no case law on this issue.

[31] The presumption was refuted because asbestos fibres were not found in the biopsy of the worker's lungs in *Lepage et Autolook Chicoutimi et al.*, (August 21, 2007), C.L.P. 313233-02-0703, en ligne: SOQUIJ (C.L.P. Nº AZ-50448049). It was refuted in *Chartier et Mine Jeffrey inc.*, C.L.P.E. 2002LP-22 because the lung cancer was found to be secondary to a colon cancer; there was no discussion in the decision with regard to the possible occupational nature of the colon cancer.

[32] *Raymond (Succession) et Messervier (Succession) et Mine Jeffrey* (22 août 2005), C.L.P. 177841-05-0202-2, 179345-05-0202-2 en ligne SOQUIJ (C.L.P. Nº AZ-50330277) confirmed at SOQUIJ (C.L.P. Nº AZ-5039587).

If conditions for the application of the legislative presumption are not met, is it possible to accept the claim, and if so, what is the burden of proof of the worker?

In Alberta, the situation is ambiguous, as the Board has the power to define, in regulations, the concept of occupational disease for the purpose of the Act, and the formulation used in the regulation suggests that the Board may entertain and accept claims for occupational disease that fall outside the legislative presumptions, but that the Appeal tribunal may not intervene if the Board fails to accept a claim. Section 20(10) b of the regulation[33] includes in the concept of occupational disease "any other disease or condition that the Board is satisfied in a particular case is caused by employment in an industry to which the Act applies". This formulation may imply that the review and appeal tribunals in Alberta may not decide in favour of a claimant if the Board has determined that it is not satisfied that the claimant's disease is caused by employment in an industry to which the Act applies. We did not come across case law on this issue. It is also worthy of note that Alberta has a specific provision in its policy regarding causation of respiratory diseases. S. 5 of Alberta's injury policy specifies that "when a worker has a respiratory disease due in part to occupational factors and in part to non-occupational factors, the overall disability is presumed to be related to employment".

In British Columbia, if conditions of the presumption in section 6(3) of the Act are not met, the evidence is reviewed to determine whether the case is compensable "on its merits" under section 6(1). It is at this stage the WCAT will review whether or not the disease can be determined to be an occupational disease[34] and whether or not it can be sufficiently linked to the worker's employment, either as a cause or an aggravating factor of a pre-existing condition. Finally the tribunal will determine whether or not the worker was disabled as a result of the disease or whether the condition exists but has not brought about the requisite consequences for the worker's health.

Newfoundland policy explicitly states that cases to which the presumption policy is inapplicable will be judged on the individual merits and justice of the case. It also states that such a case will not be precedent setting.

Ontario defines occupational disease at S. 2 and the definition is not restricted to diseases identified in Schedules 3 and 4, so claims for other diseases, or for the same diseases that do

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[33] *Workers' Compensation Regulation*, Alta Reg. 325/2002.

[34] Either by designation under section 6(4), by regulation, or on the evidence provided (RSCM #26.04). See also Policy item #26.22, Non-Scheduled Recognition and Onus of Proof.

not meet the policy exposure requirements, may be successfully brought forward. Ontario allows for cases to be accepted on the basis of the merit and justice of each case, a principle that supports the eligibility of claims that do not fall within the ambit of the legislative presumptions. Judging from the number of cases that accept claims that do not meet policy requirements, it appears that the Tribunal is often reticent to accept claims that fall below the thresholds identified in policy.

Québec explicitly allows for claims for compensation for occupational disease that do not meet the presumptive criteria, under s. 30 of the AIAOD, and many cases are declared compensable by the appeal tribunal under this provision, either because the diagnoses are not included in the legislative presumptions, or because the presumptions do not apply given the specific circumstances of the worker's exposure[35].

### Protective removal of workers exposed to asbestos in the workplace

Ontario[36] and Québec[37] provide for the possibility of removing and compensating workers whose health may be compromised because of exposure to a "substance", or a "contaminant", even though the health condition would not yet be considered to be a "disease" from a medical perspective.

### Recognition of specific diseases

#### Recognition of asbestosis as an occupational disease related to asbestos exposure

Asbestosis is presumed to be an occupational disease in all jurisdictions studied. The presumption is irrefutable in Ontario (if diagnosed on or after May 28th, 1992) and Newfoundland, with regard to specific types of employment. It is refutable in the other three jurisdictions.

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[35] See Friha Bdioui, «La reconnaissance, à des fins de réparation, des maladies professionnelles pulmonaires liées à l'amiante au Québec», In Barreau du Québec, *Développements récents en droit de la santé et de la sécurité du travail, 2010,* Cowansville, Éditions Yvon Blais (in Press).

[36] In Ontario, see s. 2 of the WSIA. The definition of occupational disease includes "(c) a medical condition that in the opinion of the Board requires a worker to be removed either temporarily or permanently from exposure to a substance because the condition may be a precursor to an occupational disease", and, for discussion of this section, see WSIAT Decision No. 597/99 (2000), 2000 ONWSIAT 1498.

[37] In Québec, see s. 32ss of the *Occupational Health and Safety Act*, R.S.Q. c. S-2.1. Other provinces may provide for similar support, but we did not find references to the legal framework governing these types of preventive removals from work.

Alberta

In Alberta, for the presumption to apply, the worker must show occupational exposure to airborne asbestos dust within the 12 months preceding disablement from an occupational disease, in this case asbestosis. Few cases were identified. In one, possible pleural plaques did not suffice to convince the tribunal of a diagnosis of asbestosis in a worker suffering from chronic obstructive lung disease who was also a smoker[38].

British Columbia

Asbestosis is deemed by Schedule B to be a work-related pneumoconiosis where there is exposure to airborne asbestos dust. "Other pneumoconiosis" is also listed in Schedule B as being work related where there is "exposure to the airborne dusts of coal, beryllium, tungsten carbide, aluminum or other dusts known to produce fibrosis of the lungs" of which asbestos may be one. As we saw in the previous section, B.C. has some very restrictive requirements with regard to in province exposure, and these have been used to decline a claim for asbestosis in a worker who was shown to have had five years of exposure to asbestos in B.C., although the estate's claim for other diseases (lung cancer and pleural thickening) were held to be exempt from the more stringent requirements applicable to pneumoconiosis[39].

As we have seen, for the presumption to apply the worker must be engaged in work that exposes him to asbestos within the 12 months of diagnosis[40].

In B.C., the most common reason for appealing a refusal for compensation based on asbestos-related claims seems to be the diagnoses themselves. The presumption engaged by section 6(3) has quite specific criteria, and it is often the lack of the specific diagnosis relating to those criteria that is the subject of the appeal. The WCAT has been clear that the existence of asbestos in the workplace will not immediately lead to a finding that an individual suffers from an asbestos-related disease, particularly those outlined in Schedule B. In some cases workers have argued that there is a necessary link between certain ailments and the exposure to asbestos, and thus where diagnoses have been inconclusive or conflicting, they have argued that the presence of asbestos in the workplace should provide a basis for finding that the disease was one listed in Schedule B such as asbestosis or pleural thickening. The WCAT has firmly refused to follow this reasoning, holding that:

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[38] *AB WC Appeals Commission Decision* #2003-428 (2003).
[39] *B.C. WCB Appeal Division Decision* #2002-1120 (2002).
[40] B.C. *Decision #2008-03303.*

> "Schedule B does not assist in making a diagnosis. By that, I mean the fact that a worker was exposed to asbestos dust does not mean that lung difficulties experienced by that worker must have been a result of the worker's having asbestosis. The diagnosis of the disease is made separately."[41]

In *B.C. Decision 2004-01682* a miner applied for compensation for respiratory illness, and his physician had indicated that he suffered from "chronic pneumoconiosis related to the inhalation of dust and carbonaceous material in the mines, and chronic obstructive pulmonary disease". His claim was denied, and on appeal the WCAT found that CT scans performed by internal medicine specialists found that: "there were no abnormalities on CT scan or an echocardiogram to suspect pulmonary hypertension, lung lesions due to asbestos exposure or lung cancer. A small lesion in the endobronchial area was the most likely cause of his intermittent bleeding (hemoptysis)." The lack of these specific lesions was found by the tribunal to be persuasive that the worker did not suffer from a pneumoconiosis (asbestosis). His claim was denied on this basis.

In *B.C. Decision 2008-03303* the tribunal outlines the differences between a finding of asbestosis and other (restrictive) lung impairments. For a finding of asbestosis, the tribunal noted that there must be "diffuse interstitial fibrosis of the lower lobes of the lungs leading to a restrictive lung disorder." This will be revealed through a showing of a decrease in forced vital capacity during pulmonary function testing. Where forced vital capacity is normal, the tribunal has found that the tests are more compatible with obstructive, as opposed to restrictive (asbestosis-related) lung impairment. Where there is no decrease in forced vital capacity the presumption is that there is insufficient interstitial fibrosis to be indicative of asbestosis. The worker's appeal in *2008-03303* was denied on this basis.

In *B.C. Decision 2003-03864* an appeal based on a claim for compensation for asbestosis-related lung disease was allowed where a respirologist found that there was no other locatable cause for the interstitial lung disease, including medications, connective tissue disorder or anything noticeable through serology testing. The worker did not show the "usual hallmarks" of asbestos lung disease such as pleural thickening and calcification. The respirologist provided a differential diagnosis of idiopathic fibrosing alveolitis or asbestos-related interstitial lung disease. Because of section 250(4) W.C.A. the tribunal found in favour of the worker, resolving in favour of the diagnosis of asbestos related lung disease.

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[41] B.C. *Decision #2008-03303.*

Due to the disability requirements for compensation based on other asbestos-related diseases such as pleural thickening, a worker sought a finding of asbestosis in *B.C. Decision 2006-00232* in order to receive full disability benefits for his condition[42]. The worker had been diagnosed with asbestos-related pleural disease, consistent with Schedule B, but not with asbestosis, and thus he received health care benefits only. Initially the worker's doctor noted that "chest x-ray showed pleural changes ... suggestive of asbestosis" but the board medical consultant stated that these x-rays showed pleural thickening and calcification "consistent with asbestos-related pleural disease" but no evidence of interstitial disease and thus asbestosis wasn't present. Similarly in *B.C. Decision 2004-06474* a worker's appeal on a ruling finding no asbestosis was denied where he was diagnosed with pleural thickening but not asbestosis and was thus awarded only health care benefits. The tribunal member found that the only diagnosis of asbestosis on the worker's file was inconsistent with the evidence and the opinions of two other doctors. Particularly the lack of pleural calcification or fibrosis was noted as evidence against finding asbestosis, ultimately failing to establish the presence of "interstitial pulmonary abnormality". No asbestosis was found because of the lack of interstitial disease.

In *B.C. Decision 2007-03595* the WCAT was required to determine whether or not a worker's ailment was idiopathic Usual Interstitial Pneumonia (UIP) (also referred to as Idiopathic Pulmonary Fibrosis - IPF) or pulmonary fibrosis due to asbestos (asbestosis). Medical reports were inconsistent, and the panel member noted several diagnoses and reports indicating that IPF is often indistinguishable from asbestosis except that the presence of pleural plaques "increases the likelihood" that asbestos is responsible for the fibrosis, and, naturally, the "patients with asbestosis always have a history of heavy occupational asbestos exposure". There were some factors that the physicians focused on in finding against a diagnosis of asbestosis, particularly that the "mid-lung" location of the disease, the presence of smooth muscle hyperplasia and fibroblast foci, and the "ground glass opacity found on the HRCT [high-resolution computed tomography] are seen more frequently in IPF than in asbestosis, however, and rapidly progressive fibrosis is more likely in IPF than in asbestosis. However, in

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[42] The worker must be "disabled from earning full wages at the work" at which he or she was employed as a result of the disease. In the case of a deceased worker, his or her death must have been caused by such disease. Policy #26.30 discusses this requirement and specifies that it does not apply to claims for silicosis, asbestosis, or pneumoconiosis (see #29.40). Further, a worker need not be disabled by the disease in order to be entitled to health care benefits. The issue of disability, that is the moment when other benefits may be payable, is also the subject of appeals. See for instance *BC WCAT Decision* 2007-01370.

this case, the presence of pleural plaques and the worker's history of exposure weighed in favour of a finding of asbestosis. In contrast, in *B.C. Decision 2006-03442,* despite the worker's known exposure to asbestos and despite the fact that there were at least some pleural plaques, he was diagnosed with IPF, based on the "ground glass changes seen on the CT scan" which are "most characteristic of the inflammatory changes seen with end-stage IPF ... not seen in asbestos." The panel member noted emphatically that the causes of IPF are unknown and can therefore not be conclusively linked to asbestos exposure without other hallmarks of asbestosis.

In *B.C. Decision 2003-03864* the panel member accepted a finding of "asbestos-related interstitial lung disease" even where there were no pleural plaques or thickening, but the doctor "had failed to come up with any etiological agent for his interstitial lung disease, ...there was no history of any medication that might cause fibrosis, no clinical history to suggest any connective tissue disorder and the serology testing was negative. Dr. Nakielna did find a definite history of exposure to asbestos." However, in *B.C. Decision 2007-03360* the fact that there were only "two asbestos bodies" found in the worker at the time of autopsy led the panel member to rule out the possibility of asbestosis as a cause for the worker's IPF. Additionally, in *B.C. Decision 2008-02047* the panel member found that, in the absence of any evidence of pleural asbestos change (pleural thickening or pleural fibrosis), and no overt proof of asbestos exposure from the CT scan, the findings were most in keeping with a UIP type of fibrosis and not asbestosis. In this case the worker was found to have problems in the interstitial tissue but not in the pleura, and this was found to be determinative of a diagnosis of UIP as opposed to asbestosis, and the claim was denied.

In *B.C. Decision 2002-1830* the WCAT did not accept a worker's appeal because the diagnoses spoke only to "bilateral pleural thickening," "calcified pleural plaques," and "scarring," and the member noted that "only the objectively supported diagnosis of "bilateral pleural thickening" brings the worker within the ambit of schedule B considerations." The panel member further found that the diagnosing physician

> used the term 'bilateral pleural disease' and ... even used the term 'extensive pleural disease secondary to asbestosis.' In context, however, ... I find Dr. McC's comments must be understood as including non-technical expressions and not as records of the diagnoses necessary to trigger schedule B.

Aside from decisions relating to the actual diagnosis of asbestosis, there are numerous decisions in appeal regarding the moment of onset of permanent disability[43]. A few decisions address exposure issues. One such decision refused the worker's claim as exposure to asbestos was from outside the province[44]. Another accepted the claim by the worker's estate, finding that five months of exposure to asbestos in British Columbia, as well as evidence that the worker had been present during a fire in his workplace where asbestos was present sufficed to conclude that his asbestosis was attributable to his work. There was no evidence of other exposure to asbestos from outside the province[45]. Several appeals relate to work-relatedness of the worker's death, given that legislation in B.C. facilitates recognition of death from occupational lung disease. If no lung disease is found, the presumption does not apply, even though a worker may be suffering from other occupational diseases at the time of his death[46].

### Newfoundland

Despite the fact that the presumption is irrefutable, there are very few compensated claims for asbestosis in Newfoundland (see Appendix 2) and very few review and appeal decisions. Diagnosis of asbestosis is occasionally a litigious issue in Newfoundland. Cases in this province sometimes appear to be less technical than cases in other provinces, analysing the compensability of the worker's "Lung disease" in fairly broad terms. A worker's estate was compensated for such a claim, where there was evidence that the worker, who, for more than twenty years, worked as a cook in the galley of a ship containing asbestos was found to have sufficient asbestos exposure to justify the conclusion he had died of an occupational lung disease (seemingly asbestosis, although this is stated indirectly)[47]. Cases in which evidence of exposure to asbestos is clear have been denied if the diagnosis retained is chronic obstructive lung disease attributed to smoking[48], even when there is evidence of "asbestos lung disease"[49].

### Ontario

Schedule 4 of the Ontario WSIA presumes asbestosis to be an occupational disease where the worker worked in "mining, milling, manufacturing, assembling, construction, repair,

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[43] See for instance *BC WCAT Decision* 2007-01370.
[44] *B.C. WCB Appeal Division Decision* #2002-1120 (2002).
[45] *B.C. WCB Appeal Division Decision* #2001-0681 (2001).
[46] See section on survivor benefits and *B.C. WCB Appeal Division Decision* 2002-1130.
[47] Workers' Compensation Review division, Newfoundland, Decision 98360, December, 1998.
[48] NL WHSCRD Decision #02203 (2002).
[49] See for instance NL WHSCRD Decision #04249 (2004).

alteration, maintenance or demolition process involving the generation of airborne asbestos fibres", and policy adds, in conformity with s. 15 of the Act, that if the worker has been employed in these conditions in Ontario for at least two years before the diagnosis of asbestosis, then the presumption is conclusive. Policy also refers to the evidentiary criteria of the American Thoracic Society, and recognizes histopathalogical evidence of lung fibrosis due to asbestos.

Ontario cases on asbestosis mostly address either diagnostic[50] or exposure issues[51], the latter particularly with regard to claims where the worker does not meet the two-year exposure requirement[52]. Sometimes, the worker is diagnosed with several chronic pulmonary conditions (other than lung cancer, which we examine in the next section) some related to asbestos exposure and others related to tobacco use. In some cases, the interaction between asbestosis, including pleural plaques, on the one hand and other non-work related conditions, leads to a disabling respiratory condition that will be found to be compensable[53], even though the asbestosis in itself would perhaps not have been disabling[54]. In other cases where asbestos is a factor along with several others, the claim will be refused in the absence of evidence that asbestos exposure played a significant role in the respiratory condition[55].

The irrefutable presumption of Schedule 4 applies to conditions diagnosed after May 4th 1992, and some cases discuss the applicability of schedule 4 when the diagnostic process was undertaken before May 1992 but finalized after that date[56].

Cases do not often discuss latency periods. In a 2000 WSIAT decision a latency period of 15 years between likely first exposure and onset of symptoms was found to be appropriate[57].

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[50] WSIAT Decision No. 1236 02 (2003), 2003 ONWSIAT 2227 (claim denied, not asbestosis but fibrosing alveolitis); WSIAT Decision No. 2692/01 (2002), 2002 ONWSIAT 2370 (claim denied, not asbestosis because no fibres found in the areas of the lung showing alveolar damage); WSIAT Decision No. 2127/06 (2008), 2008 ONWSIAT 588 (claim denied, pleural plaques but not impairment); WSIAT Decision No. 2740/01 (2002), 2002 ONWSIAT 1720 (claim allowed for pleural thickening and asbestos-related pleural fibrosis leading to a restrictive lung impairment that was compensable).

[51] WSIAT Decision No. 1770/99 (2000), 2000 ONWSIAT 110, claim allowed because the worker was exposed to significant levels of asbestos and suffered from pleural thickening.

[52] The following claims were denied: WSIAT Decision No. 1271/01 (2002), 2002 ONWSIAT 741; WSIAT Decision No. 1655 02 (2003), 2003 ONWSIAT 1314.

[53] WSIAT Decision No. 1744/01 (2002), 2002 ONWSIAT 1220.

[54] WSIAT Decision No. 597/99 (2000), 2000 ONWSIAT 1498.

[55] WSIAT Decision No. 496/08 (2008), 2008 ONWSIAT 1829; WSIAT Decision No. 2009/05 (2006), 2006 ONWSIAT 2351.

[56] WSIAT Decision No. 288/97R2 (2000), 2000 ONWSIAT 2922, claim accepted as final diagnosis made in November 1992.

Aside from cases addressing diagnosis or causation, there are a few cases that address issues we will not explore here, including the date of commencement of disability[58].

Québec

As in B.C., most Québec appeal cases on asbestosis claims seek to determine whether the worker was actually suffering from asbestosis, a diagnosis of pleural plaques being insufficient to constitute asbestosis, precluding the application of the legislative presumption[59].

A few question the diagnosis of asbestosis if evidence of significant exposure is not convincing. One case concluded that evidence that exposure was below the exposure limits applicable in 1999 meant that evidence of exposure in the previous decades was insufficient to justify the application of the legislative presumption[60]. Another found that the latency period of eight years fell far below the 15-30 years expected, and, although the same worker had also been exposed to asbestos during the relevant period that complied with latency requirements, that exposure had been mild, and insufficient to justify a diagnosis of asbestosis[61]. In *Succession Germain Boutin et Mine Jeffrey inc*[62], the diagnosis of asbestosis was only ascertained at the time of the worker's death from lung cancer. It became significant, in that a diagnosis of lung cancer, without evidence of asbestosis, required evidence of a more intense exposure to asbestos than was required in cases where asbestosis was confirmed.

In another case involving intense exposure of a worker who had worked for 38 years in an asbestos mine, controversy over the cause of her condition was raised because she also suffered from "polyarthrite rhumatoïde" (rheumatoid arthritis), which could also have caused her lung condition (severe pulmonary fibrosis). The tribunal concludes that on a balance of probabilities the worker's illness is attributable to her intense and prolonged exposure to

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[57] WSIAT Decision No. 288/97R2 (2000), 2000 ONWSIAT 2922.
[58] WSIAT Decision No. 399/05 (2005), 2005 ONWSIAT 561.
[59] See for instance *Riopel et Dominion Acoustic Tile ltd et al*, 2009 QCCLP 5928; *Pronovost et 2172-2095 Québec inc. et al.*, (C.L.P., 2005-10-31), SOQUIJ AZ-50341568. *Labarre et Ventimétal* (25 août 2005), C.L.P. 264793-61-0506 en ligne SOQUIJ (C.L.P. Nº AZ-503308800).
[60] *Hôpital du St-Sacrement et Succession Dubreuil* (28 septembre 2001), C.L.P. 134483-32-0003 en ligne SOQUIJ (C.L.P. Nº AZ-01303731).
[61] *Commission scolaire des Affluents et Riopelle* (22 février 2006), C.L.P. 221027-63-0311, 221028-63-0311 en ligne SOQUIJ (C.L.P. Nº AZ-50357645). This decision is particularly troubling given that the six pneumonologists (CMPP and CSP) were unanimous in concluding the worker suffered from compensable asbestosis. Even Dr. Renzi, the employer's expert witness, suggested asbestosis may have been contracted at the previous employer, but the tribunal concludes that evidence of asbestos exposure was insufficient to justify the diagnosis.
[62] 2009 QCCLP 1256.

asbestos, and that the absence of pleural plaques is not in itself significant, given that the worker comes from the asbestos mine region where this is often the case. Nor is the long latency period an obstacle to the application of the presumption (the worker's symptoms appeared six years after her retirement)[63].

The same asbestos mine also contested a claim for asbestosis by a worker who had worked in the mine for slightly over four years in the nineteen fifties, after which he had become a farmer. He also smoked. The CLP concluded that the presumption applies, given the diagnosis and the evidence of four years exposure, and that neither the worker's smoking history, nor the hypothesis that the worker's condition was attributable to dust to which he had been exposed as a farmer sufficed to rebut the presumption[64].

A few decisions, reiterating the importance of relying on preponderant evidence rather than scientific certainty, accept claims for asbestosis despite the fact that diagnostic certainty would require further tests that could harm the workers' health[65].

Recognition of lung cancer as an occupational disease related to asbestos exposure

Lung cancer is presumed to be an occupational disease associated with asbestos exposure in legislation in British Columbia, Newfoundland and Québec, while policy in Ontario allows for compensation for lung cancer when exposure and latency requirements are met, or on the merits of the individual case. The specific criteria in legislation and policy are available in Appendix 1. Alberta legislation does not presume lung cancer to be an occupational disease associated with asbestos exposure, although a very small number of claims for asbestos-related cancer other than mesothelioma have been accepted[66]. No case law was identified on this issue in Alberta, so we will not examine the situation in that province in this section.

Many crosscutting issues emerge, and an overview of these issues follows. Of all the occupational diseases commonly associated with asbestos exposure, lung cancer gives rise to the most complex cases because causation is multi-factorial. We will examine particular

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[63] *Croteau et Mine Jeffrey Inc.*, 2008 QCCLP 3535.
[64] *Mine Jeffrey inc. et Roulx* (22 juin 2004), C.L.P. 224462-05-0401 en ligne SOQUIJ (C.L.P. Nº AZ-50259785).
[65] *Desrochers et Mine Jeffrey*, [2002] C.L.P. 838; *Croteau et Mine Jeffrey Inc.*, 2008 QCCLP 3535.
[66] AWCBC data (see Tables 1 and 2 in Appendix 2) suggests that in the period 1998 – 2008, 9 claims for cancer, other than mesothelioma, related to asbestos were accepted in Alberta with regard to claims by workers, and a further 14 were accepted for survivor benefits. It is unclear whether these include the same case, and it is unclear how many, if any involved lung cancer.

criteria applied with regard to exposure requirements, the necessity of proving asbestosis or pleural plaques and will also summarily address specific questions that arise when tobacco exposure is also present.

Is there a minimum exposure requirement?

British Columbia

B.C. legislation does not require a minimum exposure period, nor does it specify a latency period. For the legislative presumption to apply to pneumoconiosis, however, it must be shown that the exposure took place in B.C., as we saw in an earlier section of this report. It was held that the particular exposure requirements in s. 6 of the Act, with regard to pneumoconiosis do not apply to claims for lung cancer, even when the same worker's claim for asbestosis was denied because exposure was not exclusively or primarily in British Columbia[67].

As we shall see in the next section, for the B.C. presumption to apply, there must be evidence of either asbestosis or bilateral diffuse pleural thickening or fibrosis, over 5 mm thick and extending over more than a quarter of the chest wall. A review of criteria is currently underway in B.C., and the discussion paper underpinning that review has suggested that the latter requirement is not scientifically grounded[68].

That discussion paper also mentions the possibility of introducing a cumulative exposure approach, citing policy in Newfoundland (5 years), Nova Scotia, Ontario and Saskatchewan (10 years). It will be important to follow the evolution of these discussions. It is seemingly the intent of the discussion to add an additional option to the presumptions (a third possibility to relieve claimants or their estate of the burden of proving causation) and not to require an additional obligation of proving a to-be-specified number of years of exposure to benefit from the existing legislative presumption. The report notes that at least one study has found increased cases of lung cancers in workers who have been exposed to as little as one year of heavy exposure[69].

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[67] *B.C. WCB Appeal Division Decision* #2002-1120 (2002).

[68] The report discusses the option of eliminating this criteria, but suggests this to be problematic. Reduction to 2 mm of bilateral pleural thickening (rather than 5mm) as an alternative requirement to asbestosis is suggested as a possible approach. See WorkSafe B.C. Bronchogenic Carcinoma (Lung Cancer) in Asbestos Exposed Workers, Discussion Paper, July 27, 2009, p. 13.

[69] See WorkSafe B.C. Bronchogenic Carcinoma (Lung Cancer) in Asbestos Exposed Workers, Discussion Paper, July 27, 2009, at note 42: even one year of heavy exposure or 5-10 years of moderate exposure can increase

Newfoundland

Newfoundland policy presumes compensability for lung cancer either if the worker was employed in an industry exposing him to asbestos immediately before disablement or the worker is exposed in a process that involves a repeated or constant risk of exposure to asbestos, and that this employment is of a duration of five years, and there is a latency of 10 years from the time of first exposure to the diagnosis of lung cancer. Policy also permits acceptance of claims on the merits of the case if these criteria are not met.

Ontario

Although exceptions are possible, Ontario policy regarding lung cancer requires 10 years of occupational exposure to asbestos and a latency period of 10 years. It is unclear whether the same requirements apply when there is evidence of asbestosis. Expert testimony in Ontario affirms that if asbestosis is proven, "no one disputes that lung cancer in a person with asbestosis is due to asbestos exposure"[70]. Workers who are considered to be "asbestos workers", presumably those involved in the listed industries in the Schedule, are more likely to meet the policy requirements. An illustration of a case where the worker was not an "asbestos worker" involved a claim by a graphic artist with indirect exposure, whose place of work exposed him to asbestos wrapped around pipes. Exposure was found to be insufficient, and his case was found to not fall within the policy, even though he had pleural plaques[71].

Policy does not prescribe the intensity of the exposure, and uncontrolled exposure of a school custodian for six years, followed by several years of controlled exposure was held to meet the policy requirements[72]. However, in another case, light exposure was held to support the conclusion that the worker's lung cancer was not work related. The tribunal found the worker's exposure levels ranged from 0.07 to 0.25 f/cc and added that the exposure regarded as the minimal dose for increased risk of lung cancer is 25 f/cc[73]. Similar reasoning was applied in a case where the worker worked at least 100 feet away from the source of asbestos[74].

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risk of developing lung cancer, citing: *The "Helsinki Criteria" for Attribution of Lung Cancer to Asbestos Exposure, How Robust Are the Criteria?,* Allen Gibbs, MD; Richard Luther Attanoos, MD; Andrew Churg, MD; Hans Weill, MD, February 2007.

[70] Dr. Ahmad's testimony cited at p. 14: 2009 ONWSIAT 1129 (May 6 2009).

[71] WSIAT Decision No. 1978/04 (2008), 2008 ONWSIAT 1192.

[72] WSIAT Decision No. 1917/06 (2007), 2007 ONWSIAT 490.

[73] WSIAT Decision No. 600/04 (2005), 2005 ONWSIAT 840.

[74] WSIAT Decision No. 871/02 (2003), 2003 ONWSIAT 1903.

In line with policy, which allows for cases that do not meet those criteria to be evaluated on their own merit, with regard to intensity of exposure and the individual merit of each case, some decisions have accepted claims where exposure was less than 10 years. Thus, in a case where the worker is a non-smoker who had no family history of lung cancer, the claim was accepted after 7 years of occupational exposure, the alternative hypothesis as to causation being even less likely than the hypothesis that the asbestos exposure was the probable cause[75]. Another claim by the estate of a non-smoker was accepted with evidence of significant exposure for 2 years and 3 months, as well as evidence of other occupational exposures[76].

With regard to latency, a shorter latency period did not defeat the claim of the estate of a worker who died of lung cancer at the age of 44. He had been exposed to asbestos and a variety of other carcinogens at work, but he also smoked. The panel gave the claimant estate the benefit of the doubt[77]. Latency of 20-30 years is average and therefore a longer latency period has been held to support the conclusion of work-relatedness[78].

Québec

Aside from the broadly framed legislative presumption, Québec has no explicit policy on this issue, but the medical specialists from the committees on occupational lung disease developed criteria they used to evaluate these cases. Although the criteria were developed in 1986, and are not binding either on the doctors themselves, the CSST or the appeal tribunals, it appears from some appeal cases that some of these criteria are still in use[79].

In that case it was found that when workers have asbestosis, the committees will recognize that their lung cancer was caused by exposure to asbestos without minimum exposure requirements. When the workers, in the case in point two electricians working for an asbestos mine, do not have asbestosis, under the 1986 criteria, which are still seemingly applied by the committees of specialists, lung cancer will be compensable if there is evidence of intense exposure to asbestos of more than twenty years, or over a shorter period if the exposure was

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[75] Decision no. 1443/04 (2005) 75 WSIATR online, 2005 ONWSIAT 2127.
[76] 2009 ONWSIAT 1129 (May 6 2009).
[77] WSIAT Decision No. 968/97 (2000), 2000 ONWSIAT 334.
[78] Decision no. 134/89 1993, 26 WCATR 32 and 138/94, June 9th 1997.
[79] See for instance *Raymond (Succession) et Messervier (Succession) et Mine Jeffrey* (22 août 2005), C.L.P. 177841-05-0202-2, 179345-05-0202-2 en ligne SOQUIJ (C.L.P. Nº AZ-50330277) confirmed at SOQUIJ (C.L.P. Nº AZ-5039587).

exceptionally intense. Intense exposure is described as 2f/cc and over. The case involved a worker who smoked cigarettes (42 package years) and who had what was qualified as "very light" exposure to asbestos (0.34 f/cc during 29 years). It was found that the worker had a relative risk of developing lung cancer attributable to asbestos exposure of 1.1, while the risk associated with his tobacco consumption was 25-30 times higher than that of a non-smoker. The estate's claim was denied. In the same decision, the same result was reached with regard to a claim by the estate of a worker who was found to have pleural plaques, but the number of asbestos fibres in his lung specimens was fewer than in the reference population. Because he was a heavy smoker, and given the evidence with regard to asbestos exposure (6-26 f/cc for the first 3.5 years of his working history, a level judged to be "intense" but not "exceptionally intense"; subsequent exposure was qualified as "light") the committees concluded that the relative risk of asbestos-related cancer was 1.2 or 1.5, while with regard to tobacco exposure, the risk was 25 to 30 times higher. In the case of this second worker, the tribunal subscribed to the opinion of a witness that the presence of pleural plaques was not necessarily associated with an increased risk of lung cancer.

There is some evidence that the relatively conservative approach of the tribunal in the *Raymond* case, based on the opinion of the specialists, is not followed in subsequent decisions. In *Veillette (Succession) et John F. Wickenden & cie ltée*[80], the Tribunal accepted the occupational disease claim for lung cancer despite the opinion of the CMPP that asbestos exposure was not significant. This opinion was based on the small number of fibres found in the worker's lungs (10-20 times more than the general population, but fewer than usually found in those with asbestosis). Setting aside this opinion, and relying on evidence of density of "substance ferrugineux par gramme de tissu" of 1100-2400 corps/gramme, the Tribunal concluding that exposure was significant. The worker was deemed to have been exposed to asbestos for the equivalent of a total cumulative exposure of 6 years at 40 hours per week, which meets the requirement of the Helsinki criteria of 5-10 years of moderate exposure to Chrysotile asbestos with a 10-year latency period[81]. The fact he was a smoker was not found to rebut the legislative presumption.

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[80] 2009 QCCLP 7219, decision under review.

[81] Citing *"Asbestos, Asbestosis, and Cancer: the Helsinki Criteria for Diagnosis and Attribution"*, (1997) 23 Scandinavian Journal of Work, Environment and Health p. 311-316; D. W. HENDERSON, K. RÖDELSPERGER, H. J. WOITOWITZ & J. LEIGH, *"After Helsinki: a Multidisciplinary Review of the Relationship between Asbestos Exposure and Lung Cancer, with Emphasis on Studies Published During 1997-2004"*, (2004) 36 Pathology p. 517-550.

In *Duchesneau*, exposure was deduced from the worker's employment history: 43 years of employment as a welder in the shipbuilding industry in Québec[82]. However, when evidence of exposure is plausible but unclear and no pleural plaques or asbestosis are present, the legal presumption will not be applied[83].

Do you need to prove pleural plaques or asbestosis for recognition of lung cancer as an occupational disease?

British Columbia

Currently evidence of asbestosis is one of two alternatives required by Schedule B of the Act for the legislative presumption to apply. Schedule B of the Act under item 4A lists carcinoma of the lung with (i) Asbestosis or (ii) Bilateral diffuse pleural thickening or fibrosis, over 5 mm thick and extending over more than a quarter of the chest wall. The 2009 WorkSafe BC discussion paper on Lung Cancer concludes that presence of Asbestosis is a defendable requirement, but questions the requirement of bilateral pleural thickening or fibrosis over 5 mm, suggesting that 2 mm may be sufficient as an alternative to evidence of asbestosis[84].

Contrary to case law in other provinces[85], most B.C. case law seems to concur. There are numerous decisions in the past 10 years from the WCAT on the relationship between lung cancer and asbestos exposure. Most discuss whether there is a requirement for a finding of asbestosis in order to conclusively link lung cancer with asbestos and review the extensive literature available on the relationship, with particular reference to the "Helsinki criteria". The case law generally discusses whether asbestosis is a necessary link to any or all four types of lung cancer identified in the Helsinki Report, and whether or not other reports conclusively require a finding of asbestosis in order to make the link. In general members of the WCAT have preferred the "asbestosis is necessary" stance when assessing cases of lung cancer, although not without reservation, and it is worth noting that the same individual rendered most of the decisions of the WCAT on this issue. More recently, as noted by the *Lung Cancer Discussion Paper*, several Review Division decisions have allowed claims for lung cancer in workers exposed to asbestos even in the absence of asbestosis or pleural thickening that

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[82] *Duchesneau (Succession) et Industries Davies inc.*, 2009 QCCLP 4692.

[83] *Succession Couture et Industries Davies inc.*, 2009 QCCLP 4677 (decision under review).

[84] WorkSafe B.C. Bronchogenic Carcinoma (Lung Cancer) in Asbestos Exposed Workers, Discussion Paper, July 27, 2009. At p. 12 the report notes that none of the Canadian jurisdictions canvassed use this criteria.

[85] See for instance, in Québec: *J.M. Asbestos et Hamel et al*, AZ-4999038505, CALP, February 16th, 1998, and many subsequent cases; in Ontario, see, for instance, 2009 ONWSIAT 1129 (May 6 2009).

meets the requirements of Schedule B. One case examined the claim of a worker with pleural plaques who had some, unquantified, exposure to asbestos, and accepted the claim under s. 6(1) of the act, despite the evidence that the worker's smoking history had probably played a more significant role in the development of the cancer than had the asbestos exposure. The adjudicator noted that it sufficed that "although both occupational and non-occupational factors existed...the worker's asbestos exposure had causative significance for the development of his primary lung cancer". Of note in this decision is the reliance on the opinion of the Review Division Medical Advisor to the effect that the "newer model" of carcinogenesis, (referring notably to the Helsinki criteria) does not require evidence of asbestosis[86]. Thus, it is possible that the case law of the WCAT that we will now examine may evolve in light of the more recent decisions at the review level with regard to the Helsinki criteria.

In B. C. *2004-04988* a worker was denied compensation for lung cancer because he showed no signs of asbestosis. Though the panel member (Randy Lane, Vice Chair) noted that even in smokers, asbestos exposure significantly increases the worker's risk of lung cancer, this fact alone was not persuasive in the particular case, because there were no specific indicators that sufficiently established the link between the worker's exposure and the cancer. Asbestosis or pleural thickening are diseases that must be present in a worker who has contracted lung cancer in order for that worker to benefit from the presumption in section 6(3). However, in this case, it appears that the WCAT also considers it necessary for asbestosis to be present for a finding under 6(1) on the "merits" of the individual case:

> "I consider that, aside from whether "most experts" support the hypothesis that asbestosis must be present before lung cancer in an asbestos-exposed worker can be attributed to asbestos exposure, the reviews and comments of such authors as Weiss and Cagle support a conclusion that asbestosis is the only consistently reliable marker for asbestos-related lung cancer, especially in asbestos workers who are also tobacco smokers. I am aware of the contrary views of other authors noted above, but I am persuaded by the comments of Weiss and Cagle. ... I do not doubt that smokers who are exposed to asbestos have a higher incidence of lung cancer than patients who smoke or who were not exposed to asbestos. However, that state of affairs does not address the issue of asbestosis. I find that while the worker was exposed to asbestos and he developed lung cancer, the evidence is insufficient to find that the worker's lung cancer is due to his exposure to asbestos as part of his employment. I consider that the absence of asbestosis means that it is more likely that the worker's lung cancer is due to his history of cigarette smoking."

[86] B.C. Review division decision # 0097154, April 1st, 2009. See also B.C. Review division decision #0093129; B.C. Review division decision # 0093172.

The same panel member, in *2005-06208*, reviewed the literature as well as reports that were produced after *2004-04988* - one of which was authored by an individual who participated in the Helsinki Report - in re-deciding the issue of whether "asbestosis is necessary". Ultimately he decided similarly to the previous decision and denied compensation to a worker who showed no signs of asbestosis.

Decision *2006-00551* is a recent review of the available literature and analysis of the "asbestosis is necessary" argument against the criteria for determining the link as set out in the Helsinki Report. The same panel member (Randy Lane, Vice Chair) was the decision maker on this case, as well as in *2005-06227*, and *2005-06374*. Given the detail of the analysis and comparison we have included large sections of the panel member's discussion:

> "The Helsinki Consensus Report listed relative risks associated with fibre-years, fibre burdens in lungs, and occupational exposure durations, and noted that the relative risk was roughly doubled at an exposure of 25 fibre-years, at which level asbestosis may or may not be present. Only De Vuyst's paper presented at the Helsinki expert meeting asserted that, according to epidemiological studies, there was an increased relative risk when there were no radiological signs of asbestosis and that the relative risk was lower than 2.0. His paper does not list the epidemiological studies. The Helsinki Consensus Report also did not list studies in support of the view that asbestosis is not necessary.
>
> ...
>
> Henderson *et al.* considered that cumulative exposure assessed pathologically or by estimates of exposure should be the main criterion. They did accept that the presence of asbestosis could be a criterion, and that high relative risks are associated with the presence of asbestosis. In that sense, the presence of asbestosis is a reliable factor for determining that a particular lung cancer is due to asbestos exposure. A decision-maker would rarely go astray in accepting a claim for lung cancer from an asbestos-exposed worker who was also a smoker and who suffered from asbestosis. Indeed, Schedule B and subsection 6(3) of the Act establish acceptance of such a claim as the starting point for any adjudication.
>
> Should the absence of asbestosis be a bar to acceptance of a claim for lung cancer? Certainly, in the case of a worker who was not a smoker, one might argue that the absence of the predominant non-occupational cause of lung cancer is a compelling circumstance, given that the life-time risk for lung cancer in a non-smoker is small. However, as noted by many authors, most workers exposed to asbestos are smokers. In the case of workers with asbestosis, smoking is not considered to be a significant concern when matters of causation are assessed.
>
> Whether the Helsinki criteria should be formally adopted by the Board is not before me for decision. Adoption of criteria concerning the presence of cancer, a lag time of ten years, the presence of asbestosis or the presence of asbestos fibres or asbestos bodies would not be that difficult. At this stage I do not consider that I can be satisfied that the Helsinki criteria should be the basis of the adjudication of the appeal before me.

...

> An assessment of the presence of asbestosis, pleural plaques, bilateral diffuse pleural thickening or asbestos fibres and asbestos bodies involves, for the most part, an assessment of objective data. Their presence confirms that a worker was indeed exposed to asbestos. (I appreciate that the formulation of a diagnosis of asbestosis may involve some subjective element.) The Helsinki criteria regarding fibre-years and years of employment are more subjective. Further, the applicability of such criteria to British Columbia has not been established. As well, I am not aware of any evaluations of employment in British Columbia that would permit the assessment of the worker's employment with a view to establishing reliable figures as to his fibre-years and employment exposure intensity."

In the worker's case in this decision his appeal was denied on both criteria, since the calculation of "fibre-years" did not meet the designated criteria, and there were no other signs of asbestosis, pleural thickening or other identified asbestos-related diseases.

In one of the reported cases on asbestos and lung cancer over which Mr. Lane did not preside, *2006-03774,* there was also an absence of asbestosis, pleural thickening and mesothelioma, and the worker suffered from Chronic Obstructive Pulmonary Disease primarily based on his smoking history. The panel noted that the absence of those diseases required a conclusion that the presumption in 6(3) did not apply, but they did not officially decide on the "asbestosis is necessary" question, finding instead that given the lack of any other conclusive evidence linking the cancer to asbestos exposure they attributed the disease to the worker's smoking history. The panel stated that speculatively, even if the asbestos exposure played some role, the contribution was minimal:

> "[W]e are required to apply law and policy, which requires that occupational exposures play a significant causative role. The medical opinions on file are not supportive of a conclusion that occupational exposures played a significant role in the worker developing lung cancer. The Board internal medicine consultant said that while it was possible they may have played some role, cigarette smoking was by far the most important carcinogen."

Given that the case law precedes the decisions by the review Division of the WCB with regard to the Helsinki criteria, it is possible that WCAT's position may change on this issue.

Newfoundland

Nothing explicit exists in Newfoundland policy with regard to lung cancer and asbestosis, and lung cancer will be compensable if there is evidence of five years exposure and ten years latency. One case, in which the worker's employment history did not meet the five years exposure requirement of policy, found that in the absence of asbestosis and in the presence of

a significant smoking history, the worker's lung cancer was not attributable to his work. It is interesting in that case, that mention is made of environmental exposure in the region of Baie Verte, although this is not commented upon by the decision maker[87].

Ontario

There is no official policy on this issue in Ontario, and some cases have been accepted despite the absence of pleural plaques or asbestosis[88]. When there is no evidence of asbestosis, panels have specified that a case may be nonetheless compensable if there is evidence of asbestos fibres in the worker's lungs[89]. A recent decision questioned the appropriateness of denying a claim for lung cancer on the basis of the absence of asbestosis: "the Panel finds it is inappropriate to deny the claim based upon preferring the restrictive view in an unresolved medical debate."[90] When there is no asbestosis and the worker is a heavy smoker, it is less likely the panel will accept the claim, particularly if asbestos exposure was low[91]. Presence of pleural plaques, rather than asbestosis, has been considered as evidence supporting a claim[92].

Québec

In Québec the appeal tribunal has, in several cases, accepted claims for lung cancer without evidence of asbestosis or pleural plaques[93]. In perhaps the most significant, *Succession Guillemette et J.M. Asbestos inc.*, the appeal tribunal (at that time the CALP) held that, the worker, a miner with significant and prolonged exposure to asbestos, did not need to prove causation to benefit from the legislative presumption, despite the awkwardly worded presumption[94]. The tribunal also acknowledged that the scientific community was divided with regard to the issue as to whether lung cancer could be attributed to asbestos exposure without evidence of asbestosis, and held that the worker's claim should be accepted, the worker, a smoker, receiving the benefit of the doubt as to causation. This decision of the

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[87] NL WHSCRD Decision #01260 (2001).
[88] WSIAT Decision No. 1387/98 (2004), 2004 ONWSIAT 220.
[89] WSIAT Decision No. 948/96 (2005), 2005 ONWSIAT 225.
[90] 2009 ONWSIAT 1129 (May 6 2009), p. 16. See also Decision No. 375/92 (1993) 28 WCATR 32 and Decision no. 1443/04 and Decision no. 1815/05, November 16, 2005.
[91] WSIAT Decision No. 600/04 (2005), 2005 ONWSIAT 840.
[92] WSIAT Decision No. 1917/06 (2007), 2007 ONWSIAT 490.
[93] This principle was clearly set out in a decision involving several claims of workers who had worked in asbestos mines: See *J.M. Asbestos et Hamel et al.*, AZ-4999038505, CALP, February 16th, 1998. See also *Terminus Racine Montréal ltée et Lucien Paquette Succession*, [2000] C.L.P. 1181, where the Tribunal confirms the relevance of the Helsinki Criteria, despite the employer's argument that they are biased because no asbestos-producing country was represented in the multi-disciplinary group that established them. See, for a recent example, *Duchesneau (Succession) et Industries Davies inc.*, 2009 QCCLP 4692.
[94] Schedule 1 of the AIAOD refers to "asbestosis, lung cancer, or mesothelioma caused by asbestos".

administrative tribunal (CALP) led to a series of decisions in judicial review, culminating in a decision of the Supreme Court of Canada, favourable to the worker's estate, that overturned a Quebec court of appeal decision that had preferred a restrictive interpretation of the legislative presumption[95].

However, when exposure is unclear and the worker is a smoker, the absence of asbestosis or pleural plaques has been invoked to justify the decision not to apply the legislative presumption[96], while other decision makers conclude that evidence of the absence of pleural plaques may be used to rebut the legislative presumption if the worker was a heavy smoker and asbestos exposure was not shown to be significant and prolonged[97].

The intensity of exposure required to conclude that the legislative presumption regarding lung cancer and asbestos exposure is not refuted is lower when asbestosis is present[98]. In this case, assuming the absence of asbestosis, an expert witnesses for the employer, an asbestos mine, suggested that an intense and prolonged exposure was required for the worker's lung cancer to be considered to be caused by asbestos exposure. This expert suggested that 11 years of exposure at 3 times the admissible levels at the time (exposure was found to be 14.90 f/cc in 1970, when admissible level was 5f/cc, for an average exposure over 11 years of 9,50f/cc), in addition to twenty subsequent years of less intense exposure, was insufficient to explain the worker's lung cancer, even though the legislative presumption was clearly applicable. The CLP accepted the claim by the estate, and refused to rebut the legislative presumption, concluding that the expert witness' premise was unsound, given there was evidence of asbestosis.

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[95] *Succession Guillemette et J.M. Asbestos inc.*, [1998] CALP 585 (SCC) overturning [1996] CALP 1342 (C.A.Q.) and affirming the CALP decision at [1991] CALP 309.

[96] *Succession Couture et Industries Davies inc.*, 2009 QCCLP 4677 (decision under review). The worker was a painter in shipyards where exposure to asbestos was known to be significant, but the worker did not work in the areas where the heaviest exposure had been documented.

[97] *Ross (Succession de) et Commission de la santé et de la sécurité du travail*, 2008 QCCLP 3763.

[98] *Succession German Boutin et Mine Jeffrey inc.*, 2009 QCCLP 1256.

Exposure to asbestos and tobacco

Although tobacco use is of little relevance in compensability of asbestosis and mesothelioma[99], it is obviously of significance when the worker is diagnosed with lung cancer. In jurisdictions studied, tobacco use did not usually refute the legislative presumption of causation. Thus, in Ontario, when the worker had a history of smoking but exposure to asbestos was greater than the policy criteria of 10 years, the smoking history of the worker, although it may be a significant contributing factor, will not defeat the claim[100]. The reasoning is the same in Québec[101].

In cases where the policy requirements are not met, if the worker was not a smoker, this weighs in the balance and supports acceptance of a claim[102]. When the worker is a smoker and asbestosis or pleural plaques are not present[103], it is more difficult to obtain compensation, although several cases have been accepted when exposure to asbestos is shown to be significant[104]. In an Ontario case where exposure did not meet the ten years required by policy, evidence of the worker's very important smoking history was relied on to justify the refusal of the claim[105], although in another case where the exposure requirement was not met, the worker's claim was accepted as it was found that asbestos and tobacco were equally likely to have caused his cancer[106]. If the worker stopped smoking many years prior to diagnosis of cancer, this strengthens the conclusion that his cancer was attributable to asbestos exposure[107]. If the worker was young at the time he developed cancer[108], and

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[99] Some cases show employers trying to impute mesothelioma to smoking history, but these arguments are not successful. See, in B.C. *B.C. WCAT Decision* #2009-01445 (2009); in Québec see, for instance, *Mittal Canada inc.*, 2008 QCCLP 1475, where the CLP transfers the costs of some of the disability related to the worker's asbestosis to the general fund, because it is seen to be exacerbated by his smoking history, but refuses to transfer costs related to the mesothelioma that caused his death.

[100] WSIAT Decision No. 2308 03 (2005), 2005 ONWSIAT 1080.

[101] *Veillette (Succession) et John F. Wickenden & cie ltée*, 2009 QCCLP 7219, decision under review.

[102] In Ontario see 2009 ONWSIAT 1129 (May 6 2009).

[103] *Succession Couture et Industries Davies inc.*, 2009 QCCLP 4677 (decision under review).

[104] In Québec, see for instance *Succession Guillemette et J.M. Asbestos inc.*, [1998] CALP 585 (SCC) overturning [1996] CALP 1342 (C.A.Q.) and affirming the CALP decision at [1991] CALP 309. *Terminus Racine Montréal ltée et Lucien Paquette Succession*, [2000] C.L.P. 1181.

[105] WSIAT Decision No. 648/03 (2009), 2009 ONWSIAT 493.

[106] WSIAT Decision No. 968/97 (2000), 2000 ONWSIAT 334.

[107] In Ontario, see WSIAT Decision No. 2778 01 (2001), 2001 ONWSIAT 3621. In Québec, see *Duchesneau (Succession) et Industries Davies inc.*, 2009 QCCLP 4692.

depending on the type of lung cancer diagnosed, Ontario decision makers have concluded that the cancer is more likely to be attributable to asbestos exposure, even if the worker smoked[109].

### Mesothelioma as a compensable disease

#### Alberta

Neither legislation nor policy mention mesothelioma and no cases were identified, although the board has accepted a number of such claims[110]. Significant underreporting has been documented[111]. It is interesting to note that Alberta's WCB compensates more cases of asbestosis than cases of mesothelioma, a pattern that differs from that in other jurisdictions (see Tables 1 and 2 in Appendix 2). Perhaps this could be explained by the absence of a presumption regarding mesothelioma in Alberta.

#### British Columbia

In British Columbia, few cases have considered appeals with regard to mesothelioma, most probably because these claims are accepted by the Board[112]. In all but one case[113], the appeal tribunal accepted the claim[114]. Most appeals with regard to mesothelioma are brought by employers who try to invoke smoking history to rebut the legislative presumption[115]. The claim that was denied in appeal concerned a diagnosis of "Benign mesothelioma". The WCAT discusses whether or not benign mesothelioma is a compensable disease attributed to asbestos or whether the definition of mesothelioma should be confined to malignant forms of the

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[108] Workers were in their early forties in the following decisions: WSIAT Decision No. 968/97 (2000), 2000 ONWSIAT 334; WSIAT Decision No. 1365/04 (2008), 2008 ONWSIAT 3251. Note however that several cases involving workers of this age who develop lung cancer were also denied, so age in itself is not a determining factor. See for instance WSIAT Decision No. 871/02 (2003), 2003 ONWSIAT 1903.

[109] WSIAT Decision No. 1365/04 (2008), 2008 ONWSIAT 3251.

[110] AWCBC statistics for the period 1998-2008 register 29 compensated claims by workers and a further 68 accepted claims for survivor benefits. It is unclear how many refer to the same worker, all are classified as mesothelioma cases (See Appendix 2).

[111] M.W. Cree, M. Lalji, B. Jiang and K. Carrière, "*Under-Reporting of Compensable Mesothelioma in Alberta*", (2009) 52 American Journal of Industrial Medicine p, 526-533.

[112] AWCBC statistics for the period 1998-2008 show that 316 claims for fatalities attributable to mesothelioma were compensated between 1998 and 2008, in British Columbia, and 121 claims by workers were also accepted, although it is unclear if these claims relate to the same individuals (See Appendix 2).

[113] *B.C. Decision 2006-01674.* There are also decisions at the Review Division level that rebut the presumption. See for instance Review Reference # R0086766, http://www.worksafebc.com/review_search/decisions/compensation_decisions/r0086766_decision_letter.pdf, where the presumption was rebutted by evidence that the latency period of eight years was too short.

[114] See for instance *B.C. WCAT Decision* #2003-01897 (2003); *B. C. Decision 2008-02542.*

[115] *B.C. Decision 2009-01445.*

disease. The presumption in section 6(3) was discussed, and ultimately the panel member decided that given that mesothelioma as identified in Schedule B comes under the heading "cancer", only malignant forms of the disease would engage the presumption. Additionally, the panel member noted that the causes of non-malignant mesothelioma have not been formally established and cannot be conclusively linked to asbestos exposure. The worker's diagnosing physician initially indicated that such mesothelioma could not be attributed to asbestos but then changed her opinion given the amount of exposure the worker claimed to have had. Ultimately the panel member found that the worker was not exposed to as much asbestos as she had initially claimed, and that a diagnosis based on such exposure was inherently faulty. The member preferred the initial opinion that was based solely on the disease itself. Thus at the moment benign mesothelioma does not appear to be a compensable disease related to asbestos exposure in British Columbia[116].

Newfoundland

Both pleural and peritoneal mesothelioma are presumed to be caused by exposure to asbestos in Newfoundland, and policy specifies that, "With respect to exposure intensity and duration, those workers with significant exposures in Newfoundland and Labrador before 1980 will be considered to have had higher exposure intensities than those exposed in 1980 or later." It further specifies that a claim will be "favourably considered" if it is shown, as per s. 90(3.1) that the worker, at or immediately before the date of the disablement was employed in a process involving asbestos, is suffering from the industrial disease known as asbestosis. In other circumstances, evidence of a clear and adequate history of occupational exposure to asbestos is required. A minimal interval of 15 years between first exposure to asbestos and the appearance of mesothelioma is also required. No cases were identified with regard to claims for mesothelioma.

According to data gathered by the AWCBC, found in Tables 1 and 2 in Appendix 2, six cases brought by workers suffering from mesothelioma were accepted by the Board between 1998 and 2008; in the same period thirteen fatalities were also accepted, although it is unclear whether these represented some of the same workers.

[116] *B.C. Decision 2006-01674.*

Ontario

Schedule B of the Ontario WSIA, presumes that "Primary malignant neoplasm of the mesothelium of the pleura of peritoneum" is an occupational disease related to "Any mining, milling, manufacturing, assembling, construction, repair, alteration, maintenance or demolition process involving the generation of airborne asbestos fibres". "Mesothelioma was entered into Schedule 4 on May 28, 1992. An irrefutable presumption that the mesothelioma is due to the nature of the employment applies to all claims with diagnosis dates on or after May 28, 1992."

Several WSIAT decisions examined claims regarding mesothelioma, mostly in order to determine whether the worker had been exposed to airborne asbestos. The claim of a cook who had worked in a variety of restaurants where asbestos boards had been used was found to be compensable, even though his work did not necessarily fall within the legislatively stipulated employment categories[117]. A claim from a custodian in a school where asbestos was used in a stucco ceiling was accepted, exposure being judged to be probable[118]. Evidence of exposure during a film production at the unfinished Ontario Science Centre in 1967 was held to be sufficient to uphold the claim by the worker's estate[119]. A baker exposed to deteriorating asbestos insulation was found to have shown sufficient evidence of asbestos exposure to uphold his claim. The panel confirmed that evidence of significant asbestos exposure is not required to cause mesothelioma[120]. Even though some exposure was outside Canada, if exposure at the employer was proven, the presumption applies[121]. In a case where the worker was employed in three occupations where he could have been exposed to asbestos at times that corresponded to the expected latency period, the WSIAT held his claim to be compensable[122]. WSIAT has also held that there was no need to show violation of regulatory threshold limit values for the presumption to apply[123].

According to the AWCBC, between 1998 and 2008, data that can be found in Tables 1 and 2 in Appendix 2, the WSIB accepted 689 claims for fatalities related to mesothelioma, and a

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[117] WSIAT Decision No. 2077/08 (2009), 2009 ONWSIAT 56.
[118] WSIAT Decision No. 2244/01 (2004), 2004 ONWSIAT 1054 (latency period of 38 years).
[119] WSIAT Decision No. 320/02 (2002), 2002 ONWSIAT 2513 (latency period of 29 years).
[120] WSIAT Decision No. 817/01 (2001), 2002 ONWSIAT 915.
[121] WSIAT Decision No. 722/00 (2002), 2002 ONWSIAT 149.
[122] WSIAT Decision No. 1906/99 (2001).
[123] WSIAT Decision No. 1290/02 (2008), 2008 ONWSIAT 935. Québec applies the same principle, see *JTI-MacDonald Corp. et Côté (Succession de)*, 2009 QCCLP 1676 (administrative review pending).

further 330 claims by workers suffering from the disease, although it is unclear how many claims involve the same workers.

Québec

Since 2000, the appeal tribunal in Québec, the CLP, has rendered eleven decisions regarding admissibility of claims for mesothelioma, eight of which have accepted the claims. The employer was the appellant in seven of the appeals, and succeeded in overturning the acceptance of the claim in two cases. Since 2005, all seven decisions were favourable to the worker or the estate, an indication that the appeal tribunal is more open to the application of the legislative presumption (s. 29 AIAOD). Earlier decisions had refused to apply the presumption because evidence of exposure had been held to be insufficient[124], or because peritoneal mesothelioma was held to require significant exposure to asbestos, with exposure to long fibres[125]. A disturbing decision from 2003 rejects the worker's claim because there was no evidence of asbestosis or pleural plaques and a medical expert witness, Dr. Renzi, is quoted as stating that the Helsinki criteria are unfounded opinions, that no Canadian scientist was found among the authors, and that they were not developed in consideration of exposure to Chrysotile asbestos[126]. The witness also is quoted as stating that 50% of cases of mesothelioma are not attributable to asbestos exposure and that in the case of Chrysotile, exposure required is between twenty and twenty five years.

More recently, and despite the testimony of the same medical expert, the CLP found that even moderate or light exposure to Chrysotile asbestos justifies compensation for mesothelioma in a worker judged to have had a genetic predisposition to the disease. Evidence of pleural plaques was relied upon to confirm exposure to asbestos[127]. The Tribunal,

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[124] The CLP overturned the decision of the CMPP and the CSP with regard to a teacher who had worked in schools where asbestos was present, the tribunal concluding that exposure was insufficient to justify compensation: *Commission Scolaire de la Jonquière et Ghislain Vachon (Succession)* (19 mars 2003), C.L.P. 154116-02-0012 et 154525-02-0101 en ligne: SOQUIJ (C.L.P. Nº AZ- AZ-02307133).

[125] *Succession David C. Paterson et Shell Canada Ltée* (7 novembre 2000), C.L.P. 112604-73-9903 en ligne: SOQUIJ (C.L.P. Nº AZ- AZ-00303955).

[126] «Quant aux Critères de Helsinki, le docteur Renzi souligne que cet article de doctrine médicale n'est qu'une opinion sans aucune référence à l'appui; qu'on ne retrouve aucun scientifique canadien parmi les coauteurs, lesquels ont travaillé surtout avec des expositions à l'amosite, un carcinogène beaucoup plus puissant que la chrysotile, principale fibre d'amiante retrouvée au Québec.» *Cargill ltée et Succession Caron*, CLP, January 23rd, 2003, AZ-02305723, par. 44.

[127] *JTI-MacDonald Corp. et Côté (Succession de),* 2009 QCCLP 1676 (administrative review pending). The employer's expert witness, Dr. Renzi submitted that an important exposure to Chrysotile asbestos was required both in terms of dose and duration for mesothelioma to develop. He suggested a required latency of between 30-50 years, although he acknowledged that, in 10 % of cases, the delay could be between 20-30

in that case, held that the worker was not required to demonstrate that his exposure had exceeded the legal exposure limits, nor did he need to prove that exposure was "important and continuous, for a prolonged period" given that no such conditions were made explicit in the legislative presumption. Other cases have also confirmed that there is no minimum exposure requirement for claims for mesothelioma, as long as there is some evidence of exposure to asbestos[128]. In one case, the CLP refuted the legislative presumption because latency periods were judged to be insufficient (less than 20 years)[129], while, in others, the worker's claim was accepted, but the Tribunal absolved the employer because exposure was presumed to have occurred over 20 years ago, prior to employment with the appellant employer[130]. Similar reasoning led the Tribunal to relieve an employer of responsibility for costs because the level of exposure was much more significant in the worker's previous employment[131]. Latency periods in cases accepted in recent years have varied between 27 and 38 years, but aside from the *Bouchard* case in 2000, no claim was denied in appeal because of an insufficient latency period.

It is important to note that the AWCBC reports that 297 fatality claims were accepted by the CSST between 1998-2008 with regard to a diagnosis of mesothelioma, and 104 claims by workers were also accepted (see Tables 1 and 2 in Appendix 2). There is good evidence that there is still significant underreporting[132].

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years. His opinion was not followed by the Tribunal, who preferred the opinions of the 6 members of the CMP and CSP who recommended compensation. The quote is drawn from paragraph 60 of the decision.

[128] *Pierre Wazir et Les Quatre Saisons* (12 juillet 2001), C.L.P. 144960-62A-0008 en ligne: SOQUIJ (C.L.P. Nº AZ-AZ-01302193); *Canadian Technical Tape ltée et Murphy*, 2008 QCCLP 2919; *Massicotte et Aliments Dare ltée*, 2008 QCCLP 3612 (nurse exposed to asbestos during a three month period of hospital renovations 38 years prior to manifestation of symptoms); *Morin (succession) et CSSS de Sept-Îles*, 2008 QCCLP 1622.

[129] *Bouchard et Galeries de Modes Jonquiére 1984 et C.S.S.T.* (January, 18th, 2000), C.L.P. 102093-02-9806 en ligne: SOQUIJ (C.L.P. Nº AZ-99304216), confirming decision AZ-98303464.

[130] *Mécanique Kingston inc.* (16 janvier 2006), en ligne: SOQUIJ (C.L.P. Nº AZ-50351980); *Commission Scolaire Région de Sherbrooke et C.H.U.S. Hôpital Fleurimont* (June 29th, 2005), C.L.P. 242625-05-0409 et 244413-05-0409 en ligne: SOQUIJ (C.L.P. Nº AZ- AZ-50321609); *Harcon Inc.* (16 juin 2003), C.L.P. 185412-05-0206 en ligne: SOQUIJ (C.L.P. Nº AZ-50179749).

[131] *Commission scolaire du Lac-St-Jean et Bourget (Succession) et Mil Davie inc.*, 2008 QCCLP 3472.

[132] G. Lebel, S. Gingras, L. De Guire, *Jumelage des cas de mésothéliome et d'amiantose reconnus comme maladies professionnelles pulmonaires aux nouveaux cas de cancer et aux hospitalisations avec amaintose*, Institut national de santé publique du Québec, 2009; L. De Guire et S. Provencher, *Étude des nouveaux cas de maladies professionnelles pulmonaires reliées à l'exposition à l'amiante au Québec de 1988 à 1997*, Direction de la santé publique de Montréal-Centre, 2001.

Are pleural plaques a compensable disease?

We have seen the importance of pleural plaques in the recognition of asbestosis and occasionally with regard to claims for lung cancer. Here the question is raised differently. When the worker has pleural plaques, but has neither asbestosis nor other recognized lung diseases, is the pleural plaque condition in itself an occupational disease? In some provinces, like Alberta, British Columbia and Newfoundland, claims will be allowed, but for health care benefits only. Others, like Québec, seem to deny the claims.

Alberta

In one case, pleural plaques were acknowledged as an occupational disease, but the worker was not entitled to benefits other than health care benefits, given the evidence with regard to impairment[133].

British Columbia

B.C. does accept claims for pleural plaques under occupational disease provisions[134]. In *B.C. Decision 2004-00516* a worker's appeal was denied because though there were some pleural plaques, they were not sufficiently "diffuse" as required by Schedule B and thus did not engage the section 6(3) presumption. In *B.C. Decision 2002-0954* the panel member allowed a worker's appeal, when initially he had been denied compensation because the claims adjudicator stated that pleural plaques by themselves are not considered to be a compensable disease. The member noted several decisions in which the pleural plaque condition had been designated a disease, though not by regulation or by Schedule B. In the worker's case, the Tribunal found that he did have pleural plaques, understood to be "small areas of thickening or scarring of the pleura" and "discrete, raised, grey-white lesions distributed on the inner surface of the rib cage and the diaphragm" and was thus entitled to health care benefits.

It is not quite clear how the WCAT interprets the relationship between pleural plaques and pleural thickening. In some cases the two appear to be used synonymously and in others the plaques themselves are noted as a different disease worthy of compensation on its own. However, it is clear that in order for a worker's disease to be found to fall within the ambit of the presumption in 6(3) the diagnosis must almost identically mirror the specific terms

[133] AB WC Appeals Commission Decision #2003-784 (2003). New evaluations may be requested as the worker's condition deteriorates: AB WC Appeals Commission Decision #2003-155 (2003).
[134] See, for instance *B.C. WCAT Decision* #2006-04225 (2006).

outlined in Schedule B. When the claim is accepted with regard to pleural plaques, as we have seen, this gives rise to health care benefits but not to wage replacement.

Newfoundland

Claims by workers with pleural plaques will be accepted for health care benefits only, in Newfoundland[135], although further benefits will be payable if there is evidence of impairment[136].

Ontario

Claims for pleural plaques do not give access to compensation without proof of permanent impairment[137], although in some cases impairment may be caused by other factors that, in conjunction with the pleural plaques, compromise respiratory capacity[138].

Québec

The majority of the decisions refuse to recognize pleural plaques as a disease[139], and as such even health care benefits would seemingly not be provided. Nothing in the Act refers to pleural plaques as such. One decision[140], however, made the distinction between the recognition of the condition as an occupational disease, and the access to benefits. In accepting the worker's claim, the CLP concluded that evidence of disability was not an essential ingredient in the definition of occupational disease, thus overturning a fairly constant approach in the previous case law. The issue has not been discussed clearly since then, so it is difficult to determine whether health care is now being provided through the CSST for workers with pleural plaques, if their asbestos related condition is not otherwise disabling.

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[135] See, for instance NL WHSCRD Decision #08031 (2008).
[136] NL WHSCRD Decision #06199 (2006).
[137] WSIAT Decision No. 2127/06 (2008), 2008 ONWSIAT 588.
[138] WSIAT Decision No. 510/06 (2006), 2006 ONWSIAT 1950.
[139] See for instance *Pronovost et 2172-2095 et al*, AZ-50341568 (CLP), October 31st 2005; *Riopel et Dominion Acoustic Tile ltd et al.*, 2009 QCCLP 5928.
[140] *Côté et CSST*, AZ-50186652 (CLP), 05/08/2003.

## Recognition of gastro-intestinal cancer as an occupational disease related to asbestos exposure

British Columbia has a legislative presumption with regard to gastro-intestinal cancer, while Ontario and Newfoundland have explicit policy on this issue. Neither Alberta nor Québec has either legislation, policy, or case law. We found no claims for gastro-intestinal cancers in the appeal decisions in Québec. However, in one case, the worker's claim for lung cancer was denied because it was found that the lung cancer was secondary to a gastro-intestinal cancer and therefore, seemingly by definition, non-compensable. The issue as to compensability of the gastro-intestinal cancer, in that case a colon cancer, was not even raised, despite the fact that the worker had 35 years of exposure to asbestos in an asbestos mine[141].

### British Columbia

Schedule B in British Columbia's legislation applies to "Gastro-intestinal cancer (including all primary cancers associated with the oesophagus, stomach, small bowel, colon and rectum excluding the anus, and without regard to the site of the cancer in the gastro-intestinal tract or the histological structure of the cancer)". B.C. legislation provides that "Where there is exposure to asbestos dust if during the period between the first exposure to asbestos dust and the diagnosis of gastro-intestinal cancer there has been a period of, or periods adding up to, 20 years of continuous exposure to asbestos dust and such exposure represents or is a manifestation of the major component of the occupational activity in which it occurred." Only two successful cases were identified in appeal during the period studied, and both involved fire fighters[142]. A recent review division decision returned a file to the Board for further study, stating that the Board was required to actively investigate the worker's exposure to asbestos even if the worker had framed his claim for colorectal cancer on the basis of exposure to diesel fumes[143].

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[141] *Chartier et Mine Jeffrey inc.*, C.L.P.E. 2002LP-22.

[142] A variety of cancers in fire fighters are now the subject of specific legislative presumptions that go beyond the scope of this study. See for instance. S. 6.1(2) of the Workers' Compensation Act of B.C. The following diseases are listed by *B.C. Regulation 362/2005 (Fire Fighters' Occupational Disease Regulation)* as being "prescribed" in accordance with s. 6.1 and the minimum cumulative period that a fire fighter has to be working in order for the presumption in s. 6.1(2) to be engaged: Primary leukemia (5 years); Primary non-Hodgkin's lymphoma (20 years); Primary site bladder cancer (15 years); Primary site brain cancer (10 years); Primary site colorectal cancer (20 years); Primary site kidney cancer (20 years); Primary site ureter cancer (15 years).

[143] B.C. Review Division decision R0108599.

Newfoundland

Newfoundland's policy targets the same diagnoses as those named in British Columbia: "Gastro-intestinal cancer (including all primary cancers associated with the oesophagus, stomach, small bowel, colon and rectum excluding the anus, and without regard to the site of the cancer in the gastro-intestinal tract or the histological structure of the cancer)" and requires 20 years exposure to asbestos. Case law is sparse, and suggestive of difficulties in establishing the necessary exposure requirements.

Newfoundland's policy on this issue changed in 2004 and now provides that the claim "will be judged on its individual merit". In particular, factors such as exposure intensity and duration, latency between first exposure and diagnosis of gastrointestinal cancer, familial history of gastrointestinal cancer, and lifestyle factors will be weighed in accordance with section 60 of the Act. Previously, policy required evidence of 20 years of exposure, and claims by the estates of two employees of asbestos mines that did not meet that threshold were denied on that basis[144].

The Review division also denied a claim, on the basis of that policy, because the worker had only worked for 18 years, with "a very significant heavy asbestos fibre exposure", two years short of the policy exposure requirement of 20 years. In rejecting the appeal, the Newfoundland Workplace Health Safety & Compensation Review Division, shows its reticence to go beyond board policy, and shows some confusion between exposure requirements and latency requirements:

> "As the latency periods are established by a Board decision and policy directives, it is not within the jurisdiction of the Review Division to alter the stated period directed by the board for latency periods. Common sense would direct that it would be difficult to define a period precisely. However, such latency periods have to be established. In this case, outside of looking at the latency and policy guidelines at 20 years, there is no other medical evidence to suggest a causal relation in order to apply a benefit of the doubt to the worker. Unfortunately, given the Board's policy directive and lack of any further medical evidence with regard to these matters, the Commission's decision by the Internal Review Specialist is in keeping with the policy directives and is therefore binding on the Commission and the Review Division."[145]

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[144] See discussion in NL WHSCRD Decision #03210 (2003). It is of interest that expert testimony also emphasized that workers had been exposed to Chrysotile asbestos, as opposed to other more dangerous forms of asbestos.

[145] NL WHSCRD Decision #01275 (2001).

Even though the 20 year requirement was replaced in 2004, workers exposed prior to that date seem to have been required to meet that evidentiary burden even after the policy was replaced, as evidenced by a decision that was eventually set aside in appeal[146].

> "Review of your file confirms that your employment history with [the employer] is confirmed for the period September 13, 1963 to October 13, 1981 and also for a one month period in 1986 as a Carpenter, Pumpman, Shovel Operator. This employment information would confirm a total employment record of 18 years, 2 months, 13 days. This is less than the 20 years required under the old Policy EN-14..., as a result, the May 14, 2004, and August 28, 2004 decisions have been rescinded. An overpayment will not be setup on your file."

Ontario

Ontario's policy covers "Gastro-intestinal cancer" and has explicitly included "all primary cancers associated with the oesophagus, stomach, small bowel, colon and rectum"[147].

Ontario policy specifies the evidentiary requirement with regard to exposure: "there is a clear and adequate history of occupational exposure to asbestos dust, and while such occupational exposure cannot be quantitatively described, it should be of a continuous and repetitive nature, and should represent or be a manifestation of the major component of the occupational activity". Policy also requires a 20-year latency period. There are a few successful cases in appeal. One claim was accepted although the latency period was only 19 years, given that the worker was shown to have a genetic predisposition[148]. At issue in many of these cases was the evidence of sufficient exposure[149]. The broadly framed criteria seem to provide the Tribunal with considerable discretion.

Policy in Ontario is rooted in the recommendations of the Royal Commission Report on asbestos[150]. The exposure criteria applied by the Tribunal are very demanding, requiring

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[146] NL WHSCRD Decision #05339 (2005). The issue as to whether a favourable new policy with regard to workers' compensation for industrial disease should apply to all workers has been clear for a very long time, from the legal perspective. Given the long latency periods involved in contracting occupational disease, to purport that new policy would only apply to those exposed after the policy was changed was held by the Privy Council to defeat the purpose of workers' compensation legislation: *Sunshine Porcelain Potteries* v. *Nash*, [1961] A.C. 927.

[147] See, for example, WSIAT *Decision No. 1121/06*. The decision confirms that policy applicable to the case at hand included an exception: "The policy provides an exception to the above-noted criteria, stating that claims which do not meet these criteria will be individually judged on their own merit having regard to the nature of the occupation, the extent of the exposure and other factors peculiar to the individual case."

[148] WSIAT *Decision No. 1121/06*.

[149] WSIAT Decision No. 2748/01 (2001), 2001 ONWSIAT 3883.

[150] Note discussion in WSIAT Decision No. 1054/02 (2003), 2003 ONWSIAT 1502.

greater exposure than is required in cases of lung cancer or mesothelioma[151]. When criteria in the policy are not met, the WSIAT may nonetheless accept the claim on the basis of the real merit and justice of the case. In this context, few cases acknowledge causation, and some comment on the uncertainty in the scientific community with regard to asbestos exposure and gastro-intestinal cancer[152].

Recognition of Cancer of the Larynx as an occupational disease related to asbestos exposure

As can be seen in Appendix 1, British Columbia, Newfoundland[153] and Ontario have legislative or policy presumptions acknowledging laryngeal cancer to be an occupational disease related to asbestos exposure. Ontario and Newfoundland policy stipulates 10 years of exposure (although the level of exposure required by Newfoundland seems more intense than in Ontario) and both require at least a 15-year latency period. In Ontario, if the worker has been diagnosed with asbestosis, the claim may be accepted even if the other criteria are not met. No presumptions exist in Québec, but a few cases have been successful either at the level of the CSST[154] or in appeal[155], all involving workers with significant exposure to asbestos.

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[151] WSIAT Decision No. 2128/04 (2005), 2005 ONWSIAT 2523.

[152] See for example WSIAT Decision No. 1915/06 (2007), 2007 ONWSIAT 2785, although the Tribunal found that the evidentiary requirements of the policy had not been met, it suggested that the link between gastro-intestinal cancer and asbestos exposure that did not meet the threshold of the policy was not well supported by the current state of the epidemiological literature. A similar conclusion was drawn in WSIAT Decision No. 550/55 (2005), 2005 ONWSIAT 1679 and WSIAT Decision No. 1788/05 (2006), 2006 ONWSIAT 493; WSIAT Decision No. 2128/04 (2005), 2005 ONWSIAT 2523.

[153] In Newfoundland, we found only one appeal case that addressed the issue of carcinoma of the larynx, and the worker's claim was denied on procedural grounds (no impairment at the time of the claim); *Newfoundland decision 98073.*

[154] *Succession Omer Lévesque et Mine Jeffrey inc.*, [2006] C.L.P. 848. The appeal, on issues regarding access to benefits, provides the history of the claims: five claims refused and a sixth, post mortem, accepted. The CLP held that benefits that should have accrued to the worker when he was alive should be paid by the CSST, even if the decision to accept the claim was made after his death. This is in line with the position of the Québec Court of Appeal in *McKenna v. C.L.P.*, [2001] C.L.P. 491.

[155] *Charbonneau et Alloytec mécanique ltée et CSST*, AZ-50362933 (CLP), March 16th 2006; *Houle et Construction L.M. Bouchard inc et CSST*, [1999] C.L.P. 288. Both cases involved workers who had a history of smoking. The first case to be accepted was *Cloutier (Succession Maurice Breton) et Société Asbestos ltée et CSST*, [1994] CALP 1460. In 1989 the tribunal had refused the claim for survivor benefits from the widow of a worker who had been compensated for asbestosis but who had died from cancer of larynx, a disease held by the tribunal in that case to be unrelated to asbestos exposure: *Couture-Poisson et J.M. Asbestos et CSST*, [1989] CALP 547.

## Other issues of interest

### Chrysotile asbestos: are causation issues different?

A number of expert witnesses and lawyers have raised arguments based on the type of asbestos to which workers were exposed, and we thought it useful to mention this development and report on some of the outcomes in those cases.

Several Québec cases raised arguments based on the type of asbestos to which the workers were exposed, and in each case we identified, the argument did not succeed in defeating the worker's claim. Sometimes, the fact that exposure was to Chrysotile has been found to facilitate access to compensation, explaining why fewer fibres were found in the worker's lung tissue. In *Veillette (Succession) et John F. Wickenden & cie ltée*[156], the estate's occupational disease claim for lung cancer was accepted despite the opinion of the CMPP that asbestos exposure was not significant. This opinion was based on the small number of fibres found in the worker's lungs (10-20 times more than the general population, but fewer than the number usually found in lungs of workers with asbestosis). One reason given by the Tribunal for accepting the claim and setting aside the opinion of the specialized committee, is that lower bio-persistence of Chrysotile could explain the reduced number of fibres in the worker's lungs. Exposure to asbestos was proven by other means (between 7 - 10 years of exposure, evaluated by the tribunal as a total cumulative exposure of 6 years at 40 hours per week). The tribunal concludes that it is improbable that the exposure of the worker to Chrysotile asbestos was less than that required to meet the Helsinki criteria applicable to Chrysotile asbestos. The tribunal retains the relevant Helsinki criteria to be 5-10 years of moderate exposure to Chrysotile asbestos with a 10-year latency period[157]. The fact he was a smoker does not rebut the legislative presumption.

In *JTI-MacDonald Corp. et Côté (Succession de)*[158] the Tribunal concluded that the worker's mesothelioma could be attributed to a moderate, even light and indirect exposure to Chrysotile asbestos, despite medical arguments put forward by Dr. Renzi as to scientific

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[156] *Veillette (Succession) et John F. Wickenden & cie ltée*, 2009 QCCLP 7219, decision under review.

[157] Citing *"Asbestos, Asbestosis, and Cancer: the Helsinki Criteria for Diagnosis and Attribution"*, (1997) 23 Scandinavian Journal of Work, Environment and Health p. 311-316; D. W. HENDERSON, K. RÖDELSPERGER, H. J. WOITOWITZ & J. LEIGH, *"After Helsinki: a Multidisciplinary Review of the Relationship between Asbestos Exposure and Lung Cancer, with Emphasis on Studies Published During 1997-2004"*, (2004) 36 Pathology p. 517-550.

[158] 2009 QCCLP 1676 (administrative review pending). See in particular (par. 145).

controversy regarding a possible causal relationship between mesothelioma and Chrysotile asbestos. The Tribunal accepted that it was plausible that the Chrysotile could have been contaminated by Trémolite, and that the medical controversy did not justify the conclusion that there was no risk of mesothelioma in the workplace because it was Chrysotile that had been detected in the workplace. The Tribunal also refused to conclude that the worker's genetic predisposition to mesothelioma (his brother had died of the disease but had not worked with the worker) constituted an obstacle to the acceptance of the claim for occupational disease, given that the Thin skull rule, which maintains the right to compensation of more vulnerable workers exposed to occupational hazards, was also applicable to occupational disease.

In Newfoundland, the fact that workers were exposed to Chrysotile asbestos was raised by an expert witness who testified in favour of denial of two claims for gastro-intestinal cancer, although the Tribunal did not rely on that argument when it denied the claim[159].

In a British Columbia case, an employer attempted to overturn acceptance of a claim for mesothelioma by relying on arguments to the effect the Chrysotile asbestos was not associated with development of that disease, but this argument failed to persuade the tribunal[160].

In Ontario, evidence associating Chrysotile asbestos to a variety of cancers, including mesothelioma, lung cancer and stomach cancer, was put forward, without contest[161].

This short overview is far from exhaustive, but it shows that the arguments as to a theoretically less dangerous nature of Chrysotile asbestos are being raised, on the one hand, but are not being favourably considered by the Tribunals specialized in workers' compensation claims.

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[159] See discussion in NL WHSCRD Decision #03210 (2003).

[160] *B.C. WCAT Decision* #2009-01445 (2009).

[161] WSIAT Decision No. 234/06 (2006), 2006 ONWSIAT 95; although the claim was denied based on the overall evidence, no one contested that Chrysotile asbestos was associated with an increase in these cancers.

Specific rules with regards to claims by survivors

Several provinces presume causation when a worker who suffers from an occupational disease subsequently dies. In B.C. legislative presumption s. 6 (11) WCA provides:

> Where a deceased worker was, at the date of his or her death, under the age of 70 years and suffering from an occupational disease of a type that impairs the capacity of function of the lungs, and where the death was caused by some ailment or impairment of the lungs or heart of non-traumatic origin, it must be conclusively presumed that the death resulted from the occupational disease.

If the worker does not suffer from lung disease, the B.C. presumption does not apply[162].

Québec legislation (s. 95 A.I.A.O.D.) presumes the cause of death to be the compensable occupational disease if the worker who is suffering from an occupational disease that could be fatal is receiving income replacement benefits at the time of death, as long as there is an opportunity for an autopsy at the time of death. Although this provision was introduced to answer complaints brought by an association of widows whose husbands had all suffered from asbestos related diseases, the appeal tribunals, for a variety of reasons, rarely apply the presumption[163].

If there is no presumption, or if it doesn't apply, claims will be accepted according to the criteria established in each province. In Ontario, the compensable occupational disease must be a significant contributing factor in the worker's death, and benefits will be paid if that is the case, even though the direct cause of death was a heart condition[164]. In a case where the primary cause of the worker's death was cirrhosis due to non-compensable hepatitis C, with renal failure, WSIAT was satisfied that the compensable mesothelioma was also a significant contributing factor. The worker would have died of renal failure at some point even if he did not have mesothelioma. However, the medical documentation on file indicated that the worker died when he did because his already poor condition was significantly weakened by the presence of the mesothelioma[165].

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[162] B.C. Appeal Decision 2002-1130.

[163] K. Lippel, «Les présomptions relatives au caractère professionnel des lésions: interprétation et application», *Développements récents en droit de la santé et sécurité du travail (2001)*, Éditions Yvon Blais, Cowansville, 2001, pp. 1-72; Friha Bdioui, "La reconnaissance, à des fins de réparation, des maladies professionnelles pulmonaires liées à l'amiante au Québec", In Barreau du Québec, *Développements récents en droit de la santé et de la sécurité du travail, 2010,* Cowansville, Éditions Yvon Blais (in Press).

[164] WSIAT Decision No. 1411/99 (2000), 2000 ONWSIAT 2819.

[165] WSIAT Decision No. 577/04 (2005), 2005 ONWSIAT 666.

More recent case law in Québec applies the same criteria, determining whether the occupational disease was a significant contributing factor, although earlier decisions tended to require evidence that the occupational disease was the direct cause of death[166].

Request for cost transfers to secondary injury funds

Québec case law often favourably considers requests by employers whose workers were exposed to asbestos and who request that some or all of the costs of compensation be transferred to the general fund, to which all employers contribute, something like the Secondary injury fund in Ontario. The tribunal often considers that their smoking history constitutes a "handicap" under section 329 of the Act and as such the costs of compensation should not be totally imputed to the employer. Superior court in Québec has gone much farther than the appeal tribunal in this regard, rebuking the Tribunal for its hesitation in relieving the asbestos mine who had employed nineteen workers suffering from lung cancer, who were also smokers, of over half the costs of compensation[167].

In one case of mesothelioma, the Tribunal held that the worker's genetic predisposition to the disease constituted a handicap that justified the cost transfer of 98% of the value of the claim to the general fund[168].

Although this practice may also exist in other provinces, we did not come across any evidence in this regard.

## Conclusion

This report describes the legal and policy frameworks governing access to workers' compensation for occupational diseases related to asbestos exposure and the application of these frameworks by the relevant appeal tribunals.

While some practices, such as giving the benefit of doubt to workers and other claimants, are consigned in law, policy or case law in all jurisdictions, others vary, sometimes quite

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[166] Friha Bdioui, «La reconnaissance, à des fins de réparation, des maladies professionnelles pulmonaires liées à l'amiante au Québec», In Barreau du Québec, *Développements récents en droit de la santé et de la sécurité du travail, 2010,* Cowansville, Éditions Yvon Blais (in Press).

[167] *Mine Jeffrey inc.* c. *Commission des lésions professionnelles,* 2009 QCCS 981.

[168] *JTI-MacDonald Corp. et Côté (Succession de),* 2009 QCCLP 1676 (administrative review pending).

significantly, from province to province. For example, legislative presumptions regarding asbestosis and mesothelioma are irrefutable in Newfoundland and Ontario, under certain circumstances, while this is not the case in British Columbia and Québec. Alberta seemingly does not presume mesothelioma to be an occupational disease, while Ontario legislation does not include a presumption with regard to lung cancer, although policy does address the issue. Gastro-intestinal cancers are targeted by policy in Ontario, Newfoundland and B.C. and are not even discussed in case law in Québec, leading one to believe that there are few if any claims for these diseases in Québec, perhaps because of beliefs of treating physicians in that province. Some presumptions only apply when the worker is still active in the industry, while in other provinces they will apply even if the worker retired many years before the onset of illness.

When legal presumptions exist either in law or policy, years of exposure and prescribed latency periods may vary between provinces, for the same disease. Appeal tribunals in some provinces appear hesitant to go beyond what is stipulated in policy, so that a conservative policy will have a very real impact on access to compensation, even when new scientific findings are available at the time of hearing. In Québec, where there is no official policy on these issues, albeit that the specialized committees on lung disease have a long and rich practice and experience, the appeal tribunal regularly goes beyond the legislative presumptions to accept unlisted diseases or to apply criteria that did not exist at the time the schedules were drawn up, including the Helsinki criteria for lung cancer. This appears to be so to a lesser extent in other provinces.

Other significant inter-provincial disparities relate to the obligation and the extent to which claimants are required to show in-province exposure, an issue that will become increasingly important with increased interprovincial migration, notably in the construction industry. British Columbia appears to be particularly exacting in this regard.

One issue of concern applies, to various degrees, in all provinces studied. Difficulties in proving exposure for workers who are not considered to be "asbestos workers" are quite prolific. Even in cases where all medical evaluators agree that the worker's mesothelioma was caused by exposure to asbestos at work, tribunals have been known to refuse the claim when the claimant's exposure is indirect. This report provides examples where claims are being denied when workers were exposed in buildings insulated with asbestos or worked near, but not at, work stations where asbestos exposure was significant. Sometimes the obstacles are

associated with prescribed exposure criteria, but at other times they seem to arise from scepticism on the part of decision makers when the worker is not a typical "asbestos worker". The statistics in Appendix 2 show that very few claims by women are accepted in any jurisdiction. Although it is clear that most traditional "asbestos workers", those who worked in mines, construction and manufacturing, for instance, were far more often men, a disease like mesothelioma does not require evidence of a very significant exposure. It is of note that women represent 7% of accepted claims for injury (Table 1) and 9% of fatalities (Table 2); this might be in part because of very conservative adjudication when the worker was not an "asbestos worker", or it may be that medical interventions are less likely to focus on asbestos causation when the worker's profession is not usually associated with asbestos exposure.

This study, because of its methodology, does not provide information either on reporting levels or acceptance rates for compensation claims. It also cannot address inequitable access to health care professionals specialized in occupational disease related to asbestos, yet there is some concern that workers in some provinces are not receiving specialized evaluations that would improve their chances of accessing compensation.

All members of the research team are jurists, and the study does not include an evaluation by medical specialists as to the relevance of the criteria applied and the policy orientations. Such an analysis would no doubt be useful. Furthermore, some cases have applied the "Helsinki criteria" in adjudication of individual claims. The present report does not review these criteria as such, but provides information as to the discourse of the adjudicators in this regard. Further study of these criteria and their potential relevance in adjudication could perhaps provide useful direction for the development of policy.

A final issue is worth noting: to what extent do policy makers and tribunals require scientific certainty before determining a disease to be an occupational disease for the purpose of the relevant compensation Act? Case law from the Supreme Court of Canada is quite clear that the burden of proof to be met by claimants in cases of civil liability is that of the preponderance of evidence[169], and this judgement is favourably referred to by appeal tribunals specialized in workers' compensation in most of the jurisdictions studied (both common law and civil law). It is also clear that the benefit of the doubt should be given to claimants of workers' compensation, when the resolution of the case depends on complex scientific issues that are

[169] *Snell v. Farrell,* [1990] 2 S.C.R. 311.

not yet the object of consensus in the scientific community[170]. In many cases the appeal tribunals rely on these principles in determining the cases before them. It is less clear that they will consider these principles when a pre-existing policy prescribes exposure levels or latency periods. It is also less clear whether policy makers apply these principles when determining policy, as discussion papers on these issues are sometimes framed in terms of scientific consensus and, to a certain extent, scientific certainty. The choice of including a given disease in a list of occupational diseases, and the choice of exigencies associated with that disease are policy choices, not necessarily required to be irrefutably grounded in scientific certainty. The reason such policies exist is, after all, to manage uncertainty and to determine who will bear the cost of scientific uncertainty when decisions need to be taken today and science will have answers perhaps only decades from now[171].

[170] *Succession Guillemette v. J.M. Asbestos inc.*, [1998] CALP 585 (SCC) overturning [1996] CALP 1342 (C.A.Q.) and affirming the CALP decision at [1991] CALP 309.

[171] This was part of the reasoning of Québec court of appeal dissenting justice Forget in the Guillemette case, whose reasoning was upheld by the Supreme Court of Canada.

# Appendix 1 Legislative and policy instruments

# Portrait of legislation and policy on compensation for asbestos related disease in five Canadian provinces

Policy/Legislation Comparison

## Table of Diseases

| Disease | Schedule B (B.C.) | Policy (B.C.) | Schedule 4 (ON)* | Policy (ON) | Schedule B (AB) | Policy (AB) | Section 23, Regulation (NF) | Policy (NF) | Annex 1 (Qc) |
|---|---|---|---|---|---|---|---|---|---|
| Asbestosis | yes | #29.46 | yes | 16-02-05 | yes | | Yes (#1) (see also s. 90 (3.1) of the Act | EN-14 | yes |
| Mesothelioma | yes | #29.48 | yes | 16-02-12 | | | Yes (#28) | EN-14 | yes |
| Lung Cancer | yes | | | 16-02-13 | | | Yes (#28) | EN-14 | yes |
| Pleural Thickening or Fibrosis and Benign Pleural Effusion | yes | #29.47 | | | | | | "non-malignant conditions caused by asbestos exposure, such as diffuse pleural fibrosis, rounded atelectasis, and benign pleural effusion" EN-14 | |
| Pleural Plaques | | | | | | | | | |
| Gastro-intestinal Cancer | yes | #30.20 | | 16-02-11 | | | | EN-14 | |
| Larygneal Cancer | yes (includes Pharyngeal) | | | 23-02-02, 16-02-10 (asbestos and nickel) | | | | EN-14 | |

*Note: "Cancer" is included in Schedule 3 however there is no description of specific cancers nor of work corresponding to the listing.

## ASBESTOSIS

| Requirement | Alberta | British Columbia | Ontario | Newfoundland & Labrador | Québec |
|---|---|---|---|---|---|
| Profession | Schedule B:<br>under "Industry or process": "(b) where there is occupational exposure to airborne asbestos dust;" | Schedule B:<br>under "Description of Process or Industry": "Where there is exposure to airborne asbestos dust."<br><br>Policy:<br>"The worker need not necessarily have worked with asbestos for the presumption to apply. The exposure may be secondary exposure, such as working in an area where asbestos was used as insulation which was for years in a friable or decayed condition." | Schedule 4:<br>under Process: "Any mining, milling, manufacturing, assembling, construction, repair, alteration, maintenance or demolition process involving the generation of airborne asbestos fibres"<br><br>Policy:<br>"Asbestosis in workers exposed to asbestos dust in Ontario employment is an occupational disease as peculiar to and characteristic of a process, trade or occupation involving exposure to asbestos.<br><br>If the worker was employed in Ontario in any mining, milling, manufacturing, assembling, construction, repair, alteration, maintenance or demolition process involving the generation of airborne asbestos fibres for at least 2 years before the date of diagnosis of asbestosis, the asbestosis is conclusively | Section 23, Regulation under "Description of Process*":<br>"All work involving exposure to the risk concerned."<br><br>Policy:<br>"23. Pursuant to section 90(3.1) asbestosis is conclusively considered to have been contracted through employment where there is exposure to asbestos in that employment" and "1. A claim for asbestosis will be conclusively considered to be compensable when: a. the presumption clause in Section 90(3.1) is applicable; or<br>b. where the worker was employed in any mining, manufacturing, assembling, construction, repair, alteration, maintenance, tailing, or demolition processes involving exposure to asbestos." | Annex 1, Division V (1)<br><br>«any work involving exposure to asbestos fibre» |

| | | | | | |
|---|---|---|---|---|---|
| | | | deemed to have been due to the nature of the employment." | | |
| Exposure period | | | Policy:<br>"The legislative requirements of sections 15(5) and 15(6) of the *Workplace Safety and Insurance Act* for 2 years of asbestos dust exposure in Ontario apply to this policy." | Policy:<br>"With respect to exposure intensity and duration, those workers with significant exposures in Newfoundland and Labrador before 1980 will be considered to have had higher exposure intensities than those exposed in 1980 or later." | |
| Latency | | | | | |
| Other evidentiary | | | Policy:<br>"has a diagnosis of asbestosis," and "To diagnose asbestosis, the WSIB recognizes histopathological evidence of lung fibrosis due to asbestos and the current diagnostic criteria established by the American Thoracic Society (ATS)*." | Policy:<br>"In cases where the individual circumstances of a case are such that the provisions of this policy cannot be applied or to do so would result in an unfair or unintended result, the Commission will decide the case based on its individual merits and justice. Such a decision will be considered for that specific case only and will not be precedent setting." | |
| Presumption | Policy:<br>"**2. *What are the presumptions regarding occupational disease?***<br>Under s.24(6) of the Act, if a worker suffers a disablement from an occupational disease and was employed in an industry or process listed in Schedule B of the Regulations within the preceding 12 months, the employment is | s.6:<br>(3) If the worker at or immediately before the date of the disablement was employed in a process or industry mentioned in the second column of Schedule B, and the disease contracted is the disease in the first column of the schedule set opposite to the description of the process, the | s.15(3):<br>**"Causation of disease**<br>(4) If, before the date of the impairment, the worker was employed in a process set out in Schedule 4 and if he or she contracts the disease specified in the Schedule, the disease shall be deemed to have occurred due to the nature of the | s. 90:<br>"(3.1) Where a worker referred to in subsection (1), who, at or immediately before the date of the disablement was employed in a process involving asbestos, is suffering from the industrial disease known as asbestosis, the disease shall be conclusively considered to have been due to the nature of that employment." | s.29: The diseases listed in Schedule I are characteristic of the work appearing opposite each of such diseases on the schedule and are directly related to the risks peculiar to that work.<br>A worker having contracted a disease contemplated in Schedule I is presumed to have contracted an occupational disease if he has |

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| | presumed to have caused the disease, unless the contrary is shown. Section 24.1 of the Act and the *Fire Fighters' Primary Site Cancer Regulation* include presumptions specific to fire fighters." And "**5. *How does the WCB adjudicate respiratory disease claims?*** Respiratory disease claims are adjudicated like any other occupational disease claim. However, when a worker has a respiratory disease due in part to occupational factors and in part to non-occupational factors, the overall disability is presumed to be related to employment. Special provisions are provided for cases when a worker with a pre-existing non-compensable cardiac condition suffers a compensable respiratory disease (see Policy 04-04, Permanent Disability, Part II, Application 6: Enhancement Factor)." | disease is deemed to have been due to the nature of that employment unless the contrary is proved." | worker's employment."<br><br>Policy: "Asbestosis was entered into Schedule 4 on May 28, 1992. An irrebuttable presumption that the asbestosis was due to the nature of the employment applies to all claims with diagnosis dates on or after May 28, 1992.[172]" | | | done work corresponding to that disease according to the Schedule.<br><br>[note this is a rebuttable presumption]<br><br>Schedule 1: «asbestosis, lung cancer or mesothelioma caused by asbestos» are each presumed to be an occupational disease if there is evidence of «any work involving exposure to asbestos fibre».<br><br>Administrative tribunal case law has interpreted the meaning of each of the terms in the presumption. |

## MESOTHELIOMA

| Requirement | Alberta | British Columbia | Ontario | Newfoundland & Labrador | Québec |
|---|---|---|---|---|---|
| Profession | | Schedule B: "mesothelioma (pleural or peritoneal)": Where there is exposure to airborne asbestos dust." | Schedule B: "Primary alignant neoplasm of the mesothelium of the pleura of peritoneum" : "Any mining, milling, manufacturing, assembling, construction, repair, alteration, maintenance or demolition process involving the generation of airborne asbestos fibres"<br><br>Policy: "has worked in any mining, milling, manufacturing, assembling, construction, repair, alteration, maintenance or demolition process involving the generation of airborne asbestos fibres." | Section 23, Regulation: "28. Lung cancer or mesotheliomas caused by asbestos." "All work involving exposure to the risk concerned." | Schedule 1: «asbestosis, lung cancer or mesothelioma caused by asbestos» are each presumed to be an occupational disease if there is evidence of «any work involving exposure to asbestos fibre».<br><br>Administrative tribunal case law has interpreted the meaning of each of the terms in the presumption. |
| Exposure period | | | | Policy: "With respect to exposure intensity and duration, those workers with significant exposures in Newfoundland and Labrador before 1980 will be considered to have had higher exposure intensities than those exposed in 1980 or later." | |
| Latency | | | | Policy: "2. A claim for pleural and/or peritoneal mesothelioma will be favourably considered | |

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| | | | | when the following circumstances apply: a. the presumption clause in Section 90 is applicable; or b. where there is a clear and adequate history of occupational exposure to asbestos and there is a minimal interval of 15 years between first exposure to asbestos and the appearance of mesothelioma." | |
| Other evidentiary | | Policy: "[T]he exposure to airborne asbestos dust may be a secondary exposure." | Policy: "has a histopathologically confirmed diagnosis of primary malignant neoplasm of the mesothelium of the pleura or peritoneum," | Policy: "In cases where the individual circumstances of a case are such that the provisions of this policy cannot be applied or to do so would result in an unfair or unintended result, the Commission will decide the case based on its individual merits and justice. Such a decision will be considered for that specific case only and will not be precedent setting." | |
| Presumption | Policy: "**5. *How does the WCB adjudicate respiratory disease claims?*** Respiratory disease claims are adjudicated like any other occupational disease claim. However, when a worker has a respiratory disease due in part to occupational factors and in part to non-occupational factors, the overall disability is presumed to be related to employment. Special provisions are provided for cases | (3) If the worker at or immediately before the date of the disablement was employed in a process or industry mentioned in the second column of Schedule B, and the disease contracted is the disease in the first column of the schedule set opposite to the description of the process, the disease is deemed to have been due to the nature of that employment unless | **s.15(3): "Causation of disease** (4) If, before the date of the impairment, the worker was employed in a process set out in Schedule 4 and if he or she contracts the disease specified in the Schedule, the disease shall be deemed to have occurred due to the nature of the worker's employment." | s. 90(3)Where a worker referred to in subsection (1) at or immediately before the date of the disablement was employed in a prescribed process and the disease contracted is the prescribed disease associated with the description of the process, the disease shall be considered to have been due to the nature of that employment unless the contrary is proved. Policy: "Lung cancer and mesothelioma caused by asbestos are | s.29: The diseases listed in Schedule I are characteristic of the work appearing opposite each of such diseases on the schedule and are directly related to the risks peculiar to that work. A worker having contracted a disease contemplated in Schedule I is presumed to have contracted an occupational disease if he has done work corresponding to that disease |

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| | when a worker with a pre-existing non-compensable cardiac condition suffers a compensable respiratory disease (see Policy 04-04, Permanent Disability, Part II, Application 6: Enhancement Factor)." | the contrary is proved." | Policy: "Mesothelioma was entered into Schedule 4 on May 28, 1992. An irrebuttable presumption that the mesothelioma is due to the nature of the employment applies to all claims with diagnosis dates on or after May 28, 1992." | prescribed industrial diseases pursuant to Section 90." | according to the Schedule.<br><br>[note this is a rebuttable presumption]<br><br>Schedule 1: «asbestosis, lung cancer or mesothelioma caused by asbestos» are each presumed to be an occupational disease if there is evidence of «any work involving exposure to asbestos fibre».<br><br>Administrative tribunal case law has interpreted the meaning of each of the terms in the presumption. |

## LUNG CANCER

| Requirement | Alberta | British Columbia | Ontario | Newfoundland & Labrador | Québec |
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| Profession | | | Policy:<br>"Lung cancer in asbestos workers is accepted as an occupational disease under sections 2(1) and 15 of the Workplace Safety and Insurance Act as peculiar to and characteristic of a process, trade or occupation involving exposure to asbestos." | Section 23, Regulation:<br>"Lung cancer or mesotheliomas caused by asbestos."<br>"All work involving exposure to the risk concerned." | Schedule 1:<br>«asbestosis, lung cancer or mesothelioma caused by asbestos» are each presumed to be an occupational disease if there is evidence of «any work involving exposure to asbestos fibre».<br><br>Administrative tribunal case law has interpreted the meaning of each of the terms in the presumption. |
| Exposure period | | | Policy:<br>"there is a clear and adequate history of at least 10 years occupational exposure to asbestos," | Policy:<br>"With respect to exposure intensity and duration, those workers with significant exposures in Newfoundland and Labrador before 1980 will be considered to have had higher exposure intensities than those exposed in 1980 or later." | |
| Latency | | | Policy:<br>"there is a minimum interval of 10 years between first exposure to asbestos and the appearance of lung cancer." | Policy:<br>"3. A claim for cancer of the lung will be favourably considered when:<br>a. the presumption clause in Section 90 is applicable; or,<br>b. the worker is exposed in a process that involves a repeated or constant risk of exposure to asbestos, and that this employment is of a duration of five years, and there is a latency | |

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| | | | | of 10 years from the time of first exposure to the diagnosis of lung cancer." | |
| Other evidentiary | | Schedule B: "Carcinoma of the lung when associated with:" "(i) asbestosis": "Where there is exposure to airborne asbestos dust." [or] "(ii) bilateral diffuse pleural thickening or fibrosis, over 5 mm thick and extending over more than a quarter of the chest wall": "Where there is exposure to airborne asbestos dust and the claimant has not previously suffered collagen disease, chronic uremia, drug-induced fibrosis, tuberculosis or other infection or trauma capable of causing pleural thickening or fibrosis." | Policy: "Claims which do not meet these guidelines will be individually judged on their own merit, having regard to the intensity of exposure and other factors peculiar to the individual case." | Policy: "In cases where the individual circumstances of a case are such that the provisions of this policy cannot be applied or to do so would result in an unfair or unintended result, the Commission will decide the case based on its individual merits and justice. Such a decision will be considered for that specific case only and will not be precedent setting." | |
| Presumption | Policy: ***5. How does the WCB adjudicate respiratory disease claims?*** Respiratory disease claims are adjudicated like any other occupational disease claim. However, when a worker has a respiratory disease due in part to occupational factors and in part to non-occupational factors, the overall disability is presumed to be related to employment. Special provisions | s.6: "(3) If the worker at or immediately before the date of the disablement was employed in a process or industry mentioned in the second column of Schedule B, and the disease contracted is the disease in the first column of the schedule set opposite to the description of the process, the disease is deemed to have been due to the nature of that employment unless the contrary is proved. | | Policy: "Lung cancer and mesothelioma caused by asbestos are prescribed industrial diseases pursuant to Section 90." s.90: "(3) Where a worker referred to in subsection (1) at or immediately before the date of the disablement was employed in a prescribed process and the disease contracted is the prescribed disease associated with the description of the process, the disease shall be considered to have been due to the nature | s.29: The diseases listed in Schedule I are characteristic of the work appearing opposite each of such diseases on the schedule and are directly related to the risks peculiar to that work. A worker having contracted a disease contemplated in Schedule I is presumed to have contracted an occupational disease if he has done work corresponding to that disease according to the Schedule. [note this is a |

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| | are provided for cases when a worker with a pre-existing non-compensable cardiac condition suffers a compensable respiratory disease (see Policy 04-04, Permanent Disability, Part II, Application 6: Enhancement Factor). | | | of that employment unless the contrary is proved." | rebuttable presumption]<br><br>Schedule 1: «asbestosis, lung cancer or mesothelioma caused by asbestos» are each presumed to be an occupational disease if there is evidence of «any work involving exposure to asbestos fibre».<br><br>Administrative tribunal case law has interpreted the meaning of each of the terms in the presumption. |

## PLEURAL THICKENING OR FIBROSIS AND BENIGN PLEURAL EFFUSION

| Requirement | Alberta | British Columbia | Ontario | Newfoundland & Labrador | Québec |
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| Profession | | Schedule B:<br>"Diffuse pleural thickening or fibrosis, whether unilateral or bilateral": "Where there is exposure to airborne asbestos dust and the claimant has not previously suffered and is not currently suffering collagen disease, chronic uremia, drug-induced fibrosis, tuberculosis or other infection, trauma, or disease capable of causing pleural thickening or fibrosis." And "Benign pleural effusion, whether unilateral or bilateral": "Where there is exposure to airborne asbestos dust and the claimant has not previously suffered and is not currently suffering collagen disease, chronic uremia, tuberculosis or other infection, trauma, or disease capable of causing pleural effusion."<br><br>Policy:<br>"These items in Schedule B recognize that diffuse pleural thickening or fibrosis whether unilateral or bilateral, and benign pleural effusion, whether unilateral or bilateral, are likely to be due to the nature of the employment of workers exposed to airborne asbestos | | Policy:<br>"Other non-malignant conditions caused by asbestos exposure, such as diffuse pleural fibrosis, rounded atelectasis, and benign pleural effusion, may be considered where they arise out of and in the course of employment." | |

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| | | dust where the other known causes of the disease can be excluded." | | | |
| Exposure period | | | | Policy:<br>"With respect to exposure intensity and duration, those workers with significant exposures in Newfoundland and Labrador before 1980 will be considered to have had higher exposure intensities than those exposed in 1980 or later." | |
| Latency | | | | | |
| Other evidentiary | | | | Policy:<br>"In cases where the individual circumstances of a case are such that the provisions of this policy cannot be applied or to do so would result in an unfair or unintended result, the Commission will decide the case based on its individual merits and justice. Such a decision will be considered for that specific case only and will not be precedent setting." | |
| Presumption | | s.6: (3) If the worker at or immediately before the date of the disablement was employed in a process or industry mentioned in the second column of Schedule B, and the disease contracted is the disease in the first column of the schedule set opposite to the description of the process, the disease is deemed to have been due to the nature of that | | | |

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| | | employment unless the contrary is proved. | | | |

## GASTRO-INTESTINAL CANCERS

| Requirement | Alberta | British Columbia | Ontario | Newfoundland & Labrador | Québec |
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| Profession | | Schedule B: "Gastro-intestinal cancer (including all primary cancers associated with the oesophagus, stomach, small bowel, colon and rectum excluding the anus, and without regard to the site of the cancer in the gastro-intestinal tract or the histological structure of the cancer)": "Where there is exposure to asbestos dust if during the period between the first exposure to asbestos dust and the diagnosis of gastro-intestinal cancer there has been a period of, or periods adding up to, 20 years of continuous exposure to asbestos dust and such exposure represents or is a manifestation of the major component of the occupational activity in which it occurred." | Policy: "Gastro-intestinal cancer in asbestos workers is accepted as an occupational disease under sections 2(1) and 15 of the *Workplace Safety and Insurance Act* as peculiar to and characteristic of a process, trade or occupation involving exposure to asbestos." And "there is a clear and adequate history of occupational exposure to asbestos dust, and while such occupational exposure cannot be quantitatively described, it should be of a continuous and repetitive nature, and should represent or be a manifestation of the major component of the occupational activity," | | |
| Exposure period | | Schedule B: 20 years (see above). | Policy: "continuous and repetitive nature" | Policy: "With respect to exposure intensity and duration, those workers with significant exposures | |

| Requirement | Alberta | British Columbia | Ontario | Newfoundland & Labrador | Québec |
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| | | | | in Newfoundland and Labrador before 1980 will be considered to have had higher exposure intensities than those exposed in 1980 or later." | |
| Latency | | | Policy:<br>"there is a minimum interval of 20 years between the first exposure to asbestos and the diagnosis of gastro-intestinal cancer." | | |
| Other evidentiary | | Policy:<br>"Where there has been less than 20 years of continuous exposure to asbestos fibres, such that the presumption in Section 6(3) does not apply, but there had been substantial compliance with the requirements in the second column of Schedule B, the Adjudicator will consider whether the evidence indicates that the gastro-intestinal cancer is due to the nature of the worker's employment. Whether or not the compliance is substantial is a matter of judgment for the adjudicator. The greater the gap between the worker's period of exposure and the 20-year period, the less likely the compliance to be substantial and the less likely the disease to be due to the nature of the | | Policy:<br>A claim for gastro-intestinal tract cancer (cancer of the oesophagus, stomach, small bowel, colon and rectum) will be judged on its individual merit.<br><br>Policy:<br>"In cases where the individual circumstances of a case are such that the provisions of this policy cannot be applied or to do so would result in an unfair or unintended result, the Commission will decide the case based on its individual merits and justice. Such a decision will be considered for that specific case only and will not be precedent setting." | |

| Requirement | Alberta | British Columbia | Ontario | Newfoundland & Labrador | Québec |
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| | | employment." (References a decision: Decision No.232, 3 W.C.R. 91).[173] | | | |
| Presumption | | s.6:<br>(3) If the worker at or immediately before the date of the disablement was employed in a process or industry mentioned in the second column of Schedule B, and the disease contracted is the disease in the first column of the schedule set opposite to the description of the process, the disease is deemed to have been due to the nature of that employment unless the contrary is proved. | | | |

[173] WorkSafe BC *Rehabilitation Services and Claims Manuel*, Volume I, Policy item #30.20.

## LARYNGEAL CANCER

| Requirement | Alberta | British Columbia | Ontario* | Newfoundland & Labrador | Québec |
|---|---|---|---|---|---|
| Profession | | Schedule B: "Carcinoma of the larynx or pharynx associated with asbestosis": "Where there is exposure to airborne asbestos dust." | Policy: "Laryngeal cancer in workers exposed to asbestos fibres in industrial processes which generate airborne asbestos is an occupational disease under the *Workplace Safety and Insurance Act* (the Act)." | | |
| Exposure period | | | Policy: "the worker has worked for at least ten years in an environment which has been documented to have generated asbestos in respirable form," – if this requirement has not been met, see "other evidentiary" | Policy: "where there is a repeated or constant actual exposure to asbestos, or a repeated or constant risk of exposure to asbestos, for a duration of at least 10 years."<br><br>Policy: "With respect to exposure intensity and duration, those workers with significant exposures in Newfoundland and Labrador before 1980 will be considered to have had higher exposure intensities than those exposed in 1980 or later." | |
| Latency | | | Policy: "the worker has been employed in an industrial process which generates airborne asbestos at least 15 years before the diagnosis of the disease," | Policy: "a latency of 15 years or more between the time of first employment with asbestos exposure and the development of laryngeal cancer" | |
| )ther evidentiary | | Schedule B "Carcinoma of the | If the exposure period has not | Policy: "In cases where the | |

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| | | larynx or pharynx associated with asbestosis" | been met:<br>Policy:<br>"the worker has been diagnosed with asbestosis in accordance with 16-02-05, Asbestosis."<br><br>Policy:<br>"In considering the individual merits of each case, a claimant's cigarette smoking and alcohol consumption habits before the diagnosis of laryngeal cancer should be considered." | individual circumstances of a case are such that the provisions of this policy cannot be applied or to do so would result in an unfair or unintended result, the Commission will decide the case based on its individual merits and justice. Such a decision will be considered for that specific case only and will not be precedent setting." | |
| Presumption | | s.6:<br>(3) If the worker at or immediately before the date of the disablement was employed in a process or industry mentioned in the second column of Schedule B, and the disease contracted is the disease in the first column of the schedule set opposite to the description of the process, the disease is deemed to have been due to the nature of that employment unless the contrary is proved. | | | |

# Appendix 2

Compensation by the Workers' Compensation Boards for Mesothelioma, Asbestosis and Neoplasms/Tumors 1998-2008

TABLE 1
Injuries compensated between 1998-2008

| 1998-2008 | Ab | B.C. | N.L. | ON | Qc |
|---|---|---|---|---|---|
| Mesothelioma | | | | | |
| Male | 29 | 111 | 6 | 320 | 103 |
| Female | 0 | 10 | 0 | 10 | 1 |
| Total | 29 | 121 | 6 | 330 | 104 |
| Asbestosis | | | | | |
| Male | 50 | 41 | 0 | 23 | 262 |
| Female | 1 | 0 | 0 | 0 | 5 |
| Total | 51 | 41 | 0 | 23 | 267 |
| Neoplasms/tumors | | | | | |
| Male | 9 | 7 | 5 | 117 | 46 |
| Female | 0 | 0 | 0 | 1 | 0 |
| Total | 9 | 7 | 5 | 118 | 46 |

Source: AWCBC, January 2010.

TABLE 2
Fatalities compensated between 1998-2008

| 1998-2008 | Ab | B.C. | N.L. | ON | Qc |
|---|---|---|---|---|---|
| Mesothelioma | | | | | |
| Male | 66 | 298 | 13 | 675 | 287 |
| Female | 2 | 18 | 0 | 14 | 10 |
| Total | 68 | 316 | 13 | 689 | 297 |
| Asbestosis | | | | | |
| Male | 86 | 42 | 1 | 101 | 204 |
| Female | 0 | 0 | 0 | 0 | 5 |
| Total | 86 | 42 | 1 | 101 | 209 |
| Neoplasms/tumors | | | | | |
| Male | 14 | 34 | 37 | 490 | 116 |
| Female | 0 | 0 | 0 | 9 | 1 |
| Total | 14 | 34 | 37 | 499 | 117 |

Source: AWCBC, January 2010.