

Senate



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The Canadian Environmental Protection Act (1999, c. 33)

Rx: Strengthen and Apply Diligently

Sixth Report
of the
Standing Senate Committee on
Energy, the Environment and Natural Resources

The Honourable Tommy Banks, *Chair*
The Honourable Pierre Claude Nolin, *Deputy Chair*

March 2008

Ce rapport est aussi disponible en français

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TABLE OF CONTENTS

MEMBERS OF THE STANDING SENATE COMMITTEE ON ENERGY, THE ENVIRONMENT AND NATURAL RESOURCES	i
ORDER OF REFERENCE – 39-1.....	ii
ORDER OF REFERENCE – 39-2.....	iii
INTRODUCTION	1
What We Learned from the Review Exercise	3
a. <i>Sound Legislation But Inadequate Implementation</i>	3
b. <i>Too Soon To Tell If CEPA 1999 Is Effective</i>	5
c. <i>Two Houses – Two Approaches to the CEPA 1999 Review</i>	6
MERCURY CASE STUDY.....	7
Introduction.....	7
a. <i>How Do We Use Mercury and How Does It Get Into the Environment?</i>	7
b. <i>What Is Mercury?</i>	8
c. <i>Why Are We Worried About Mercury?</i>	8
Is CEPA 1999 Working to Manage Mercury in Our Environment?	9
a. <i>CEPA 1999 Is Not Alone</i>	9
b. <i>CEPA 1999 Still Primary Tool</i>	10
c. <i>Recent Steps to Manage Mercury</i>	10
d. <i>Canada-Wide Standards</i>	12
e. <i>Has CEPA 1999 Been Successful in Reducing Mercury Emissions?</i>	12
Mercury Recommendations	14
a. <i>Regulation</i>	14
b. <i>Virtual Elimination of Mercury</i>	17
c. <i>Monitoring and Reporting</i>	18
d. <i>Waste Disposal, Waste Management and Existing Contaminated Sites</i>	21
e. <i>Public Participation</i>	22
i. <i>Environmental Protection Action</i>	23
ii. <i>Private Prosecution</i>	23
f. <i>Timelines in CEPA 1999</i>	24
g. <i>Pollution Prevention Plans</i>	27
PERFLUORINATED COMPOUNDS (PFC) CASE STUDY	29
Introduction.....	29
a. <i>What Are PFCs?</i>	29
b. <i>How Do We Use PFCs?</i>	30
c. <i>Why Are We Concerned About PFCs?</i>	30
Is CEPA 1999 Working to Manage PFCs in Our Environment?	31
a. <i>Some Action Has Been Taken</i>	32

<i>b.</i>	<i>Action on PFOS</i>	32
<i>c.</i>	<i>Action Under Way on PFOA</i>	33
	PFC Recommendations	35
<i>a.</i>	<i>Timelines</i>	36
<i>i.</i>	Shorter Timelines Needed to Spur Action	36
<i>ii.</i>	Not Everyone Agrees	37
<i>b.</i>	<i>Improving Definitions and Concepts</i>	37
<i>i.</i>	Bioaccumulation	37
<i>ii.</i>	Equivalency Agreements	38
<i>c.</i>	<i>Giving CEPA 1999 Teeth</i>	39
<i>i.</i>	Cumulative Effects Need Attention	39
<i>ii.</i>	Vulnerable People and Places	40
<i>d.</i>	<i>Using Existing CEPA Powers More Effectively</i>	41
	LIST OF RECOMMENDATIONS	43
	GLOSSARY	48
	CHEMICAL NAMES AND ACRONYMS	51
	APPENDIX A	52
	List of witnesses who appeared before the Committee	52

MEMBERS OF THE STANDING SENATE COMMITTEE ON ENERGY, THE ENVIRONMENT AND NATURAL RESOURCES

The Honorable Tommy Banks – Chair

The Honorable Pierre Claude Nolin – Deputy Chair

The Honorable Willie Adams

The Honorable Lorna Milne

The Honorable Bert Brown

The Honorable Grant Mitchell

The Honorable Ethel M. Cochrane

The Honorable Nick G. Sibbeston

The Honorable Colin Kenny

The Honorable Mira Spivak

The Honorable Elaine McCoy

The Honorable Marilyn Trenholme
Counsell

Ex-officio members of the Committee:

The Honourable Senators Hervieux-Payette, P.C., (or Tardif) and LeBreton, P.C., (or Comeau).

In addition, the Honourable Senators Angus, Campbell, Carney, Chaput, Cordy, Cowan, Dawson, Fox, Fraser, Grafstein, Hubley, Lavigne, Mercer, Nolin, Nancy Ruth, Peterson, Robichaud, Segal and Tkachuk were members of the Committee or participated from time to time during this study.

Staff of the Committee:

Ms. Kristen Douglas, principal, Ms. Lynne C. Myers and Ms. Sam Banks, Analysts and Amelia Bellamy-Royds, research assistant, Parliamentary Information and Research Services, Library of Parliament;

Mr. Eric Jacques, Clerk of the Committee, Committees Directorate;

Ms. Nicole Bédard, Administrative Assistant, Committees Directorate.

ORDER OF REFERENCE—39-1

Extract from the *Journals of the Senate*, Thursday, April 27, 2006:

The Honourable Senator Comeau moved, seconded by the Honourable Senator Forrestall:

That the Standing Senate Committee on Energy, the Environment and Natural Resources be authorized to undertake a review of the *Canadian Environmental Protection Act* (1999, c. 33) pursuant to Section 343(1) of the said Act; and

That the committee submit its final report no later than October 2, 2006.

After debate,

The question being put on the motion, it was adopted.

Extract from the *Journals of the Senate*, Wednesday, September 27, 2006:

The Honourable Senator Banks moved, seconded by the Honourable Senator Bryden:

That, notwithstanding the Order of the Senate adopted on Thursday, April 27, 2006 the Standing Senate Committee on Energy, the Environment and Natural Resources, which was authorized to examine and report on the review of the *Canadian Environmental Protection Act* (1999, c. 33) pursuant to Section 343(1) of the said Act, be empowered to extend the date of presenting its final report from October 2, 2006, to March 31, 2007.

After debate,

The question being put on the motion, it was adopted.

Extract from the *Journals of the Senate*, Thursday, March 22, 2007:

The Honourable Senator Banks moved, seconded by the Honourable Senator Corbin:

That, notwithstanding the Order of the Senate adopted on September 27, 2006, the date for the presentation of the final report by the Standing Senate Committee on Energy, the Environment and Natural Resources on the review of the *Canadian Environmental Protection Act* (1999, c. 33) pursuant to Section 343(1) of the said Act; be extended from March 31, 2007 to October 31, 2007.

The question being put on the motion, it was adopted.

Paul C. Bélisle

Clerk of the Senate

ORDER OF REFERENCE—39-2

Extract from the *Journals of the Senate*, Wednesday, December 12, 2007.

The Honourable Senator Comeau moved, seconded by the Honourable Senator Tkachuk:

That the Standing Senate Committee on Energy, the Environment and Natural Resources be authorized to undertake a review of the *Canadian Environmental Protection Act* (1999, c. 33) pursuant to subsection 343(1) of the said Act;

That the papers and evidence received and taken and work accomplished by the Committee on this subject during the First Session of the Thirty-ninth Parliament be referred to the Committee; and

That the Committee submit its final report no later than February 29, 2008.

The question being put on the motion, it was adopted.

Extract from the *Journals of the Senate*, Tuesday, February 26, 2008.

The Honourable Senator Banks moved, seconded by the Honourable Senator Day:

That, notwithstanding the Order of the Senate adopted on December 12, 2007, the date for the presentation of the final report by the Standing Senate Committee on Energy, the Environment and Natural Resources on the review of the *Canadian Environmental Protection Act* (1999, c. 33) pursuant to Section 343(1) of the said Act be extended from February 29, 2008 to March 31, 2008.

After debate,

The question being put on the motion, it was adopted.

Paul C. Bélisle

Clerk of the Senate

INTRODUCTION

The *Canadian Environmental Protection Act, 1999* (CEPA 1999) is the primary federal legislation for preventing pollution to protect the environment and human health and for promoting sustainable development.

Source: Environment Canada and Health Canada, *Canadian Environmental Protection Act, 1999- Issues Paper*, September, 2006, p.4

The original *Canadian Environmental Protection Act* (CEPA) was passed in 1988. In 1994 and 1995 it was the subject of a comprehensive Parliamentary review. That review resulted in significant amendments being made to the Act, many of which reflected the changes in environmental management practices triggered by the 1992 United Nations Conference on Sustainable Development. CEPA 1999 includes many of the principles of sustainable development which call for the integration of environmental and economic decision-making. The concept of pollution prevention is a critical part of sustainable development and it features prominently in the provisions of CEPA 1999.

Given the scope and complexity of the changes made in the 1990s, those reviewing the Act at that time decided that it would be wise to conduct another review in seven years time, to assess how the Act was being implemented and whether or not it was being effective in protecting human health and the environment. While the First Reading Version of CEPA 1999 included the requirement for a mandatory review of the Act every seven years, the final version which received Royal Assent reduced the mandatory review period to five years.

On 27 April 2006, the Standing Senate Committee on Energy, Environment and Natural Resources first received an Order of Reference from the Senate to conduct its review of CEPA 1999 pursuant to the provisions of section 343 of the Act. Specifically, the legislation calls for a review of the "...provisions and operation of this Act" and for the Committee to report back to Parliament on "...any changes to this Act or its administration that the committee would recommend."

Canadian Environmental Protection Act, 1999, c. 33

343. (1) The administration of this Act shall, every five years after the coming into force of this Act, stand referred to such committee of the House of Commons, of the Senate or of both Houses of Parliament as may be designated or established for that purpose.

(2) The committee designated or established for the purpose of subsection (1) shall, as soon as practicable, undertake a comprehensive review of the provisions and operation of this Act and shall, within one year after the review is undertaken or within such further time as the House of Commons, the Senate or both Houses of Parliament, as the case may be, may authorize, submit a report to Parliament thereon, including a statement of any changes to this Act or its administration that the committee would recommend.¹

Source: *Canadian Environmental Protection Act, 1999, c.33*

CEPA 1999 is still a new piece of extremely complex legislation. Given the major changes made to the Act in 1999, including affording the federal government some of the most far reaching authorities of any environmental legislation on the books today, CEPA 1999 is a work in progress. Your Committee's mandate was to ascertain how well the provisions of the Act are being applied and enforced in pursuit of meeting the stated objectives of the legislation.

In preparation for the Parliamentary Review, Environment Canada and Health Canada each commissioned independent evaluations of their implementation of the Act. In addition, starting in the spring of 2004, the two departments began a series of public consultations and workshops across the country to elicit the views of the public with respect to CEPA 1999 implementation. They compiled the information gathered into a "scoping paper" and published an Issues Paper in September 2006.

With the departmental documents as a background, the Standing Senate Committee on Energy, Environment and Natural Resources started its review by holding a series of "scoping" meetings to ascertain how best to conduct its review to make the most effective contribution to the overall review process. In order to avoid duplication of effort and outcome, these meetings were held with an eye to the progress and approach by the House of Commons Standing Committee on Environment and Sustainable Development in its review of the Act.

¹ The Senate approved several extensions to the reporting deadline including an Order of Reference received on 12 December 2007 with a reporting date of 29 February 2008

What We Learned from the Review Exercise

In a paper summarizing the observations of Environment Canada and Health Canada based on the first four years of experience in implementing CEPA 1999, the Act was described as “an integral component of a complex regime of inter-related laws, policies and institutions that ensure the effective and comprehensive management of risks to human health and the environment.”² In other words, CEPA is vitally important to Canada and to all of us. But despite the importance of the legislation the departments learned in the course of a public consultation that much more needs to be done to **implement and enforce** the Act effectively to ensure that it delivers on its full potential, so that faster and more effective action can be taken to reduce those risks.

In early 2005, web-based consultations and public workshops, all informed by the departmental “scoping” paper, were conducted by the departments to learn of the public's views on the issues that should be addressed by the Parliamentary Review. A summary of what was heard in those processes made clear the first overarching message; that CEPA 1999 is fundamentally sound **but it requires better implementation and enforcement**.

Many participants across sectors and across the country generally felt that CEPA 1999 is fundamentally sound and does not require significant amendment to ensure effective and ongoing protection of human health and the environment. However, many participants were also generally of the view that much more needs to be done to effectively implement the Act to ensure that it delivers on its full potential, including taking faster action to reduce risks.³

a. Sound Legislation But Inadequate Implementation

Your Committee believes that the lack of will to implement and enforce the Act, and a shortage of necessary resources for that implementation and enforcement, are the weak links in the effectiveness of the CEPA environmental protection regime. This view was echoed by some of the witnesses who testified before your Committee, particularly during the “scoping” part of our CEPA Review. It was argued that resources and time devoted to legislative review should not be taken from the limited resources available for implementation and enforcement of the Act, and that important momentum might be lost if the legislation were to be profoundly amended before it has been allowed to actually do its work. In deciding how it would approach its review, the Committee took this important note of caution into account.

² Environment Canada and Health Canada, *Scoping the Issues: Preparation for the Parliamentary Review of the Canadian Environmental Protection Act, 1999: Strengthening Legislation for a Sustainable Environment, a Healthy Population and a Competitive Economy*, December 2004, http://www.ec.gc.ca/CEPARRegistry/review/CR_participation/CR_Scope/CEPA_Scope_e.pdf.

³ Hajo Versteeg, submitted to Environment Canada and Health Canada, *Summary Report on the Public Workshops Assisting Environment Canada and Health Canada in Preparing for the Parliamentary Review of The Canadian Environmental Protection Act, 1999*, 15 March 2005

A number of comments made by Anna Tilman, Save the Oak Ridges Moraine (STORM) Coalition were consistent with this theme of sound legislation, weak implementation.

It is striking that the preamble of CEPA contains good clauses, but there are several elements, when it comes to the application, that have not been implemented or enforced. That is a major issue for us. ... I think that we have really lagged behind as a country in bringing in regulatory measures, and we do have the powers under CEPA to do that. ... I would say that we have that capability under CEPA, but it has not been exercised.⁴

Dr. Kapil Khatter of PollutionWatch also noted the extensive range of mechanisms available under CEPA that have not yet been utilized.

CEPA gives the federal government the powers to regulate any substance that it deems to endanger our health or the environment. It offers the government a range of tools to reduce pollution and to prevent harm. CEPA, though, has not been effective in reducing pollution in Canada or in getting the worst chemicals off the market.⁵

The sense that the greatest weakness of CEPA 1999 is in its implementation and not in its content was also well expressed by Ken Ogilvie of Pollution Probe who concluded that:

...Canada has a significant performance gap vis-à-vis some other nations, despite having legislation that could have enabled us to be a leader, or at least right up there in the pack. There are some good features of CEPA, and there are some awkward features that do not parallel legislation and practice in other jurisdictions.⁶

The Honourable Charles Caccia, former Parliamentarian and long-time Chair of the House of Commons Standing Committee on Environment and Sustainable Development, put it this way.

To summarize it, CEPA, unfortunately, is not a success story, but it can be, which brings me to analyze the question of why, and who is the enemy. What is the obstacle to success? ... as a society, we tend to react and cure rather than to anticipate and prevent. We also tend to look at the short term rather than the long term. CEPA's lack of success so far reflects these propensities. It is weak on anticipating and preventing, and also not very strong on reacting and curing.⁷

⁴ Anna Tillman (Save the Oak Ridges Moraine), Proceedings (Evidence) of the Standing Senate Committee on Energy, Environment and Natural Resources, Issue #4, 15 June 2006

⁵ Kapil Khatter (PollutionWatch), Proceedings (Evidence) of the Standing Senate Committee on Energy, Environment and Natural Resources, Issue #3, 8 June 2006

⁶ Ken Ogilvie (Pollution Probe), Proceedings (Evidence) of the Standing Senate Committee on Energy, Environment and Natural Resources, Issue #4, 15 June 2006

⁷ Charles Caccia (Individual), Proceedings (Evidence) of the Standing Senate Committee on Energy, Environment and Natural Resources, Issue #5, 20 June 2006

Although many witnesses agreed that the legislation was fundamentally sound but needs better implementation, some did advocate a more thorough review of the Act. For example, Robert Wright of the Sierra Legal Defence Fund (now known as EcoJustice), argued that more than tinkering was required to improve the legislation, and that a comprehensive review was necessary. However, even he concluded that, in respect of the part of the Act of greatest concern to his organization (that dealing with enforcement and citizen participation) even simply tinkering with the legislation would be of significant benefit.⁸

b. Too Soon To Tell If CEPA 1999 Is Effective

Some witnesses cautioned the Committee that drastic changes to CEPA 1999 could have a negative impact on stakeholders who have been working to operate under the legislation since its passage. Nancy Coulas, of the Canadian Manufacturers and Exporters (CME), cautioned that some aspects of the legislation have not yet been in operation long enough to achieve their full effectiveness.

On the scope of the review, CME believes that the government should not undertake a full rewrite of the legislation as per the last review in 1999. Many of the provisions have not been in place long enough to determine how effective they are. For example, the Domestic Substances List categorization is not yet complete and changing the provisions during this exercise would be difficult.⁹

Her message was echoed by Brian Maynard of the Canadian Association of Petroleum Producers.

We advocate a focused as opposed to a fundamental review of CEPA. The act has only been functioning for a limited period since the extensive parliamentary review of the original act. CEPA 1999 has been operating for insufficient time for implementation and detailed testing of the previous review amendments. We believe there is a general consensus that a focused — not comprehensive — review is required, and we also understand that Environment Canada and Health Canada support this view.¹⁰

Having considered all of the evidence it received during the “scoping” meetings, and taking into account the time and resources necessary for a broadly-based review of CEPA 1999 in its entirety, the Committee concluded that it should instead carry out a review of the efficacy of the legislation in one or two specific areas. Members agreed

⁸ Robert Wright (Sierra Legal Defence Fund), Proceedings (Evidence) of the Standing Senate Committee on Energy, Environment and Natural Resources, Issue #3, 8 June 2006

⁹ Nancy Coulas, Director Environmental Policy, Canadian Manufacturers and Exporters, Proceedings (Evidence) of the Standing Senate Committee on Energy, Environment and Natural Resources, Issue #3, 6 June 2006

¹⁰ Brian Maynard, Vice President, Stewardship and Public Affairs, Canadian Association of Petroleum Producers, Proceedings (Evidence) of the Standing Senate Committee on Energy, Environment and Natural Resources, Issue #3, 6 June 2006

that the Act contains many powerful tools which have either not yet been adequately used or have not been in use for a sufficiently long period of time to fully assess their effectiveness.

c. Two Houses – Two Approaches to the CEPA 1999 Review

In April 2006 both the House of Commons Standing Committee on Environment and Sustainable Development and the Standing Senate Committee on Energy, the Environment and Natural Resources were given Orders of Reference for this review.

Both committees began their reviews with a series of “scoping” meetings to better inform them on which aspects of CEPA they might wish to examine and how best to proceed with designing their review. At the conclusion of their respective meetings, the two committees decided to approach their respective reviews from rather different angles.

The House of Commons Standing Committee on Environment and Sustainable Development examined a broad range of topics including measuring the success of pollution prevention, the assessment and management of substances, cooperation with the provinces, territories and aboriginal peoples, international activities and interdepartmental cooperation and legislative overlap. The “scoping” meetings, together with evidence from witnesses and stakeholders, revealed that the control of toxic substances was a subject of significant interest and concern. Therefore, the majority of their study focused on controlling toxic substances, as set out in Part 5 of the Act, and the way in which that part of the Act has been implemented.¹¹

The Standing Senate Committee on Energy, the Environment and Natural Resources took a different tack. This Committee undertook to examine CEPA 1999 by means of two comprehensive case studies. In so doing we selected two particular substances of concern and tracked whether, how and to what extent they are currently being managed under the Act, and how successful that management has been in protecting the health and well being of Canadians and the environment.

The substances selected for this study were mercury and perfluorinated compounds (PFCs). Mercury was chosen because it is an element that occurs naturally in the Earth’s crust, is used in a wide variety of products and processes and is emitted into the environment both naturally and by human activity. PFCs, on the other hand, are man-made chemicals that would not exist if not for certain chemical and manufacturing processes. In selecting mercury and PFCs, the Committee hoped to better understand and illustrate in what manner and how effectively CEPA 1999 is managing the risks associated with such disparate substances. In the process, the Committee hoped to identify specific areas in which the Act may need amendment and/ or more effective monitoring, implementation and enforcement.

¹¹ House of Commons Standing Committee on Environment and Sustainable Development, *The Canadian Environmental Protection Act, 1999 – Five-Year Review: Closing the Gaps*, April 2007, <http://cmte.parl.gc.ca/cmte/CommitteePublication.aspx?COM=10471&Lang=1&SourceId=204099>

MERCURY CASE STUDY

Introduction

Before looking at how well CEPA 1999 is addressing the issue of mercury in our environment, it is useful to understand the basics. Where does mercury come from? What do we use it for? Should we be worried about it and if so, why? And how does it get into the environment?

a. How Do We Use Mercury and How Does It Get Into the Environment?

Mercury is an element. We can neither create nor destroy it. It has rare properties, and we use it in a range of consumer products and industrial processes because of those properties. It is one of only a few metals that are liquid at room temperature in their pure form. It conducts electricity and expands at a constant rate in response to changes in pressure and temperature. Ubiquitous products including thermometers, barometers and electrical switches take advantage of these properties. Mercury vapour combined with other gases emits light when charged with electricity, hence its use in fluorescent lighting fixtures.¹²

Furthermore, mercury easily combines with most other metals to form malleable alloys, a trait that led to its widespread use in dental filling amalgam. Its propensity for attaching to other metals, and the ease with which it can again be separated from the desired metal, makes mercury a useful product in metal mining and smelting operations.¹³ Mercury has also been used in some pesticides and fungicides.¹⁴ In addition, thimerosal (which is 60% mercury) is used in minute quantities as a preservative in some vaccines, although it is no longer used in Canada in most common childhood vaccines.¹⁵

Mercury gets into the environment by both natural and anthropogenic means. Natural emissions of mercury occur, for example, when mercury vapour is vented in a volcanic eruption or by the erosion of mercury-containing rocks. When humans use it in industrial processes such as mining and smelting, mercury can be released into the atmosphere or into water in waste streams. It is also found in the waste stream of some sewage treatment plants and other industrial facilities.

When the above noted consumer products are broken or disposed of, either by incineration or by being dumped in land fill sites, the mercury they contain can enter the atmosphere (incineration) or be released into the soil or water. Mercury also enters the

¹² Ken Ogilvie (Pollution Probe), (2006)

¹³ *Ibid.*, p.51

¹⁴ Anna Tilman, *Mercury: A Global Toxin*, A Tribute to Warner Troyer, author "No Safe Place" 1977, October 2005

¹⁵ Health Canada, *Canadian Immunization Guide*, Sixth Edition, 2002, p. 4

environment through “incidental releases” such as when coal, which contains mercury, is burned to generate electricity or is used in another industrial process.¹⁶ A recent UN study estimated that, between 50% and 80% of the mercury cycling through Earth’s ecosystems today comes from anthropogenic sources, while natural sources account for the rest.¹⁷

b. What Is Mercury?

Mercury (Hg) is a relatively scarce, naturally occurring element found in small concentrations in many rocks. Natural background levels can be detected in soils, air, and water around the world.¹⁸ It is also the main component of the mineral cinnabar (HgS) which is mined and processed to extract mercury for commercial use. Today, Spain is the world’s leading producer. Canada’s last mercury producing mine closed in 1975.¹⁹

Mercury exists in three forms – elemental, inorganic and organic. The most familiar form of elemental mercury is “metallic mercury” used in products such as thermometers and thermostats. Inorganic mercury is normally bound to particulate matter, and is therefore not available for direct uptake by organisms. However, in soil or in water, inorganic mercury can undergo a process called “methylation,” resulting in the creation of methylmercury, an organic compound easily taken up by living organisms where it accumulates faster than the organism can eliminate it (bioaccumulation). It also builds up in quantity through the food chain in a process known as biomagnification.²⁰

c. Why Are We Worried About Mercury?

Once mercury enters the ecosystem it may cycle indefinitely. It can be transported over very long distances through the atmosphere. It can evaporate from oceans, be both absorbed and released by plants and can bioaccumulate in the bodies of fish, animals and humans and biomagnify up the food chain.²¹ Highly toxic methylmercury, which forms most easily in aquatic environments, bioaccumulates in fish. This puts predatory species of fish and wildlife, which rely on those fish for food, at increasing risk of mercury poisoning as the amount of mercury biomagnifies up the food chain. Humans who consume contaminated fish can then also suffer from mercury’s adverse impacts.

¹⁶ Progress has been made in reducing mercury emissions from the base metal smelters. The introduction of new technology helped this sector reduce mercury emissions by some 93% between 1988 and 2000

¹⁷ Pollution Probe, *Mercury in the Environment: A Primer*, June 2003, p.17

¹⁸ Environment Canada, *Sources of Mercury in the Environment*, <http://www.ec.gc.ca/MERCURY/SM/EN/sm-i.cfm?SELECT=SM> , accessed 6 September 2006

¹⁹ Pollution Probe, (2003), p.10

²⁰ *Ibid.*, p.11

²¹ *Ibid.*, p.15

Much of the disproportionate amount of mercury in Canada's north does not come from Canadian sources, either natural or "man-made". It gets there by being transported in air and water from elsewhere.

Wherever it comes from and however we come into contact with it, mercury can have serious impacts on human health whether exposure is acute or chronic. Mercury and methylmercury in particular, are neurotoxic. That is to say, they can affect the central nervous system, cause permanent brain damage and/or memory loss depending on the nature and quantity of exposure. Mercury can also affect the reproductive system and is suspected of being an endocrine disruptor. Acute exposure to a high level of mercury can also cause cardiovascular disease, weaken the immune system, or result in kidney or liver failure.²²

Those most vulnerable to the impact of chronic, low-level methylmercury poisoning are children and developing fetuses in communities where contaminated fish are an important part of the diet. "The health effects of low-level exposure include neurological damage, reproductive system damage, behavioural problems and learning disabilities."²³

Is CEPA 1999 Working to Manage Mercury in Our Environment?

a. CEPA 1999 Is Not Alone

The goal of the Committee in examining mercury was to determine whether CEPA 1999 contains all the tools needed to safely manage mercury, and whether or not the tools that are there are being used effectively. However, it is important to note that, while CEPA 1999 is the principal environmental protection law in Canada, it is not alone in addressing the management of mercury in the environment. In fact, the Committee heard that the Government of Canada has also taken action under numerous other federal statutes to address the issue of mercury entering our environment through anthropogenic means. For example, certain aspects of mercury production, use, storage, transport and/or disposal are managed under the *Fisheries Act*, the *Hazardous Products Act*, the *Food and Drugs Act* and the *Pest Control Products Act*.²⁴

In addition to using available legislation, a variety of other measures are also being used at the federal level, ranging from federal/provincial management plans to bi-national and international agreements. On the international front, Canada has signed three agreements related to mercury management, namely, the *North American Regional Action Plan on*

²² Tilman (2005), p.11

²³ Pollution Probe (2003), p.36

²⁴ Environment Canada, *Mercury Management : Federal Regulations and Guidelines*, <http://www.ec.gc.ca/MERCURY/MM/EN/mm-flg.cfm?SELECT=MM>, accessed 6 September 2006; also see James Riordan and Steve Clarkson, Environment Canada and Health Canada, *Presentation to the Standing Senate Committee on Energy, Environment and Natural Resources Review of the Canadian Environmental Protection Act – Mercury Case Study*, 17 October 2006

Mercury (with the United States and Mexico), the *Great Lakes Binational Toxics Strategy* (with the United States) and the *UNECE (United Nations Economic Commission for Europe) Aarhus Protocol on Heavy Metals* (international). In addition to these agreements, the Eastern Canadian Premiers/New England Governors have signed on to a *Mercury Action Plan*.²⁵ Such international action is important since Environment Canada and Health Canada estimate that domestic emissions account for only 17% of total mercury in Canada's atmosphere.

b. CEPA 1999 Still Primary Tool

Despite all these other statutes and agreements, CEPA 1999 remains the primary tool used by the Government of Canada to address mercury releases to the environment. The Committee learned that mercury is listed on Schedule 1 (List of Toxic Substances) of CEPA 1999. Under CEPA 1999 a number of regulations address mercury, either directly or indirectly. For example, the *Chlor-Alkali Mercury Release Regulations* are aimed specifically at reducing atmospheric mercury releases from chlor-alkali plants.²⁶ The *Import and Export of Hazardous Waste and Hazardous Recyclable Materials Regulations*, the *Disposal at Sea Regulations*, the *Environmental Emergency Regulations* and the *National Pollutant Release Inventory (NPRI)* cover many substances, and mercury is among them.

Under the provisions of CEPA 1999 a number of pollution prevention plans²⁷ and Environmental Codes of Practice²⁸ governing industries that emit mercury in the course of normal operations have been or are being developed.

c. Recent Steps to Manage Mercury

Since the Committee started its study, the Government of Canada has taken additional steps to use CEPA 1999 to address the leading sources of mercury emissions. In April 2006, a notice was published in the *Canada Gazette*, under Part 4 of CEPA 1999 "...requiring the preparation and implementation of pollution prevention plans in respect of specified toxic substances released from base metal smelters and refineries and zinc plants."²⁹ Mercury is one of the substances that will have to be addressed in these plans.

In December 2006, the Minister of Environment took action, again using the provisions of CEPA 1999, to address mercury entering the environment from the recycling of

²⁵ Pollution Probe (2003), p.60

²⁶ Environment Canada, *Risk Management Strategy(RMS) for Mercury- Containing Products*, CEPA Environmental Registry, 2006, p.6,

http://www.ec.gc.ca/ceparegistry/documents/part/Merc_RMS/Merc_RMS.cfm

²⁷ See CEPA 1999, Part 4, Pollution Prevention, sections 56 to 60

²⁸ See CEPA 1999, Part 3, Information Gathering, Objectives, Guidelines and Codes of Practice

²⁹ Canada Gazette, Part I, *Notice Requiring the Preparation and Implementation of Pollution Prevention Plans in Respect of Specified Toxic Substances Released from Base Metal Smelters and Refineries and Zinc Plants*, Volume 140, No. 17, 29 April 2006, <http://canadagazette.gc.ca/partI/2006/20060429/html/notice-e.html>

automobiles by the iron and steel industry. Mercury is found primarily in switches for convenience lighting, while a small amount is also present in antilock braking systems and active ride control systems. This mercury is released to the environment when vehicles are crushed and recycled through the iron and steel making process. A notice was published in the *Canada Gazette* that will require the preparation of pollution prevention plans to ensure that the automotive recycling and steel sectors remove all mercury from scrap cars before the vehicles are recycled.³⁰

Also in December 2006, Environment Canada launched a public consultation process aimed at providing input to the finalization of its comprehensive Risk Management Strategy (RMS) for mercury in consumer products. Mercury-containing products are responsible for about one-quarter of domestic mercury emissions. Technical and socio-economic background studies of mercury-containing products and their alternatives have been completed. Analysis of those studies led the government to propose that regulation under CEPA 1999 is the most effective means of managing the risk.³¹

As a result of this strategy, Environment Canada issued a consultation document in December 2007, on *Proposed Risk Management Instruments for Mercury-Containing Products*.³² Key elements of the proposal include the following:

- A regulation under section 93 of CEPA 1999, to come into force by 2012, banning all import or manufacture of mercury-containing products except for lamps and dental amalgam.
- A regulated limit on the quantity of mercury in compact fluorescent light bulbs of 5 mg per unit, also to come into force by 2012.
- Limits to be determined following additional research, on the quantity of mercury in other types of lighting.
- Labelling, reporting and end-of-life management requirements for all mercury-containing lamps.
- Mandatory pollution prevention plans and implementation reports, to come into effect by 2010, for all dentists using mercury-containing dental amalgam who have not already implemented best management practices under an existing Canada-Wide Standard.
- Mandatory reporting requirements for all manufacturers and importers of mercury-containing products.

Other exceptions to the general prohibition may be considered, based on the criticality of the product use and the availability of alternatives; any exceptions would be subject to other pollution prevention measures and labelling requirements. The consultation document will be open for comments until 7 March 2008.

³⁰ Environment Canada, *Environment Minister Announces Initiative to Reduce Mercury Pollution and Charts the Path for Clean Air*, http://ec.gc.ca/press/2006/060611_n_e.htm; and *Canada Gazette*, Part I, Volume 140, No. 49, 9 December 2006, <http://canadagazette.gc.ca/partI/2006/20061209/html/notice-e.html>

³¹ Environment Canada, *Risk Management Strategy(RMS) for Mercury- Containing Products*, CEPA Environmental Registry, 2006, p.6, http://www.ec.gc.ca/ceparegistry/documents/part/Merc_RMS/Merc_RMS.cfm

³² Environment Canada, *Proposed Risk Management Instruments for Mercury-Containing Products*, CEPA Environmental Registry, 2007, <http://www.ec.gc.ca/CEPARegistry/documents/part/wmd-dgd/pro-ris.cfm>

d. Canada-Wide Standards

The Canada-Wide Standard (CWS) for dental amalgam is just one of many such standards developed under the aegis of the Canadian Council of Ministers of Environment (CCME). These standards, developed by coordinated work of the federal and provincial governments, set "... nationally unified environmental objectives and allow participating jurisdictions to implement complimentary plans in a way that suits their individual circumstances." Part 1, Section 9 of CEPA 1999 provides the legislative authority for the Government of Canada to enter such agreements.

Currently there are Canada-Wide Standards covering mercury emissions from base-metal smelters and waste incinerators, from dental amalgam wastes, from end-of-life fluorescent lamps and, most recently from coal-fired power plants. The process of developing Canada-Wide Standards can be a long and difficult one. For example, it was eight years ago that the CCME began discussions about a CWS for mercury emissions from coal-fired electric power plants - the largest remaining single source of mercury emissions in Canada, responsible for 35% of the Canadian total.³³ Agreement in principle on the draft standard was reached in 2005, and the standard was finally endorsed by the CCME in October 2006.³⁴

e. Has CEPA 1999 Been Successful in Reducing Mercury Emissions?

According to testimony before the Committee and a review of the actions taken by the government since our study began, the answer to the above question is, to a large degree, yes. The two departments responsible for administering CEPA 1999, Environment Canada and Health Canada, told the Committee that between 1970 and 2003, domestic emissions of mercury were reduced by 90% from 80 tonnes per year down to 7 tonnes per year.³⁵ Most of this reduction was due to a major change in the technology used in chlor-alkali plants, implemented primarily in response to the introduction of stringent regulations which are now under CEPA 1999 (Chlor-alkali Mercury Release Regulations) as well as the *Fisheries Act* (Chlor-alkali Mercury Liquid Effluent Regulations). Together, these regulations have resulted in a 95% reduction in atmospheric emissions and a 99% reduction in mercury emissions to water from the chlor-alkali industry, which in the 1970s accounted for the lion's share of Canadian mercury emissions.

Domestic emissions of mercury today come from a variety of sources, as shown in the following chart.³⁶ As outlined in the preceding section of this report, there are plans under development or already being implemented, mainly under the provisions of CEPA 1999, to address the vast majority of these emissions.

³³ Environment Canada, *Risk Management Strategy(RMS) for Mercury- Containing Products*, CEPA Environmental Registry, 2006, p.6,

http://www.ec.gc.ca/ceparegistry/documents/part/Merc_RMS/Merc_RMS.cfm

³⁴ Canadian Council of Ministers of the Environment, *Canada-Wide Standards for Mercury Emissions from Coal-Fired Electric Power Generation Plants*, 11 October 2006,

http://www.ccme.ca/assets/pdf/hg_epg_cws_w_annex.pdf

³⁵ Riordan and Clarkson (2006)

³⁶ *Ibid.*

While many plans, regulations, and standards are in place to address mercury in the environment, witnesses told the Committee that not all of the actions are being taken in a timely manner, nor are some of them as effective as they could be. The following sections outline what the Committee heard along with our recommendations for actions that need to be taken to address the identified gaps.

Canadian Mercury Emissions in 2003

Electricity Generation	36%
Non-ferrous Mining and Smelting	19%
Incineration	17%
Asphalt and Cement Industries	7%
Steel Industry	6%
Other Miscellaneous Sources	15%

James Riordan and Steve Clarkson, Environment Canada and Health Canada,
*Presentation to the Standing Senate Committee on Energy, Environment and Natural Resources
Review of the Canadian Environmental Protection Act – Mercury Case Study*, 17 October 2006

Mercury Recommendations

As the preceding sections of this report highlight, there has already been government action on a number of the issues raised by witnesses during the course of our hearings. Many witnesses believe that CEPA 1999 as it stands has the tools to do the job – but they need to be used much more effectively. Others believe that amendments to the Act are necessary. The following section of this report presents the Committee’s recommendations on how CEPA 1999 and/or its implementation can be improved with respect to addressing mercury in the environment.

a. Regulation

CEPA already provides the government with a variety of tools with which to address the dangers of mercury in the environment. However, a number of witnesses suggested to the Committee that, to date the government has failed to make full use of its powerful regulatory authority, preferring instead to use pollution prevention plans, environmental codes of practice and Canada-Wide Standards. The Committee learned that at this time there is only one set of CEPA regulations dealing with mercury. The *Chlor-Alkali Mercury Release Regulations* (SOR/90-130) limit the release of mercury into ambient air from mercury cell chlor-alkali plants, and also include provisions with respect to reporting releases, malfunctions and breakdowns.

Several witnesses called for new regulations to deal with mercury in thermometers and other mercury-containing consumer products, emissions from power plants, clean-up and decontamination, monitoring, and disposal of mercury-containing waste products.³⁷ While many of these items are currently managed via other mechanisms including Canada-Wide Standards (under CEPA) and actions under other federal statutes, they are not managed by means of CEPA 1999 regulation and, as a result some people doubt their effectiveness.

For example, several witnesses suggested that Canada-Wide Standards, as established under the auspices of the Canadian Council of Ministers of the Environment, are not as effective in managing toxic substances as they should be.³⁸ Their implementation is the jurisdiction of provincial and territorial governments and there are no consequences for any jurisdiction failing to reach its targets set under a CWS. This begs the question of

³⁷ Bruce Lourie, President, Ivey Foundation, Proceedings (Evidence) of the Standing Committee on Energy, Environment and Natural Resources, Issue #6, 5 October 2006; Hugh Wilkins, Staff Lawyer, Sierra Legal Defence Fund, Proceedings (Evidence) of the Standing Committee on Energy, Environment and Natural Resources, Issue #8, 31 October 2006

³⁸ Anna Tilman, Co-Chair, Toxics Caucus, Canadian Environmental Network, Proceedings (Evidence) of the Standing Committee on Energy, Environment and Natural Resources, Issue #6, 5 October 2006; Hugh Wilkins, Staff Lawyer, Sierra Legal Defence Fund, Proceedings (Evidence) of the Standing Committee on Energy, Environment and Natural Resources, Issue #8, 31 October 2006

the usefulness of a “standard” that is either not being enforced, or indeed may be unenforceable.

As noted earlier in this report, there are CWS regarding mercury emissions from base metal smelters and waste incinerators, from dental amalgam, from end of life fluorescent lights and from coal-fired power plants. While it may be too soon after the CWS were released to reach a final conclusion on their effectiveness, or lack thereof, some witnesses told the Committee that early indications for some of the standards are not encouraging. For example, we heard that in 2001 the CCME established a national standard for the reduction of mercury releases from dental amalgam waste. The national goal is to achieve a 95% reduction by 2005 from a base year of 2000. However, as of 2007, only 70% of dentists in Canada were using ISO certified amalgam separators, the best available technology for reducing releases from this source. This represented a significant improvement over 2004, when only 27% of dentists used the technology. Nonetheless, the question remains – how long should we wait before assessing progress?

While your Committee believes that federal/provincial/territorial co-operation is a sound way to address many environmental problems, we do have some misgivings about the lack of teeth in the CWS approach. We believe that the federal government should use CEPA 1999 to provide a greater incentive for other levels of government to take timely action to meet their commitments. A regulatory “hammer” would seem appropriate.

Recommendation 1:

The Committee recommends that the Government of Canada amend CEPA 1999 to ensure that, if provinces and territories fail to take action to implement Canada-Wide Standards and/or show measurable progress towards achieving the objectives of a Canada-Wide Standards within a specified timeframe, the Government of Canada shall propose and implement regulations.

With respect to mercury in consumer products, the Committee heard a number of arguments supporting strong regulatory action under CEPA 1999. For example, several witnesses suggested that mercury thermometers should be banned.³⁹ There has been reluctance on the part of government to take regulatory action under either the *Hazardous Products Act* (HPA) or under CEPA 1999, while both statutes are viable options. Health Canada, which administers the HPA seems to prefer to let Environment Canada deal with thermometers, because the thermometer itself (the “product”) is not

³⁹ Bruce Lourie, President, Ivey Foundation, Proceedings (Evidence) of the Standing Committee on Energy, Environment and Natural Resources, Issue #6, 5 October 2006; Kapil Khatter, Director of Health and Environment, Pollution Watch, Proceedings (Evidence) of the Standing Committee on Energy, Environment and Natural Resources, Issue #8, 31 October 2006; Victoria Lee, Board Member, Canadian Association of Physicians for the Environment, Proceedings (Evidence) of the Standing Committee on Energy, Environment and Natural Resources, Issue #9, 9 November 2006

hazardous, while the mercury inside it, being a toxic substance, is. According to witnesses Environment Canada had also failed to act. Some witnesses also suggested that, with respect to thermometers or any other mercury-containing product, wherever there is an acceptable non-toxic substitute, the mercury-containing version should be banned under CEPA 1999.

After considering this testimony the Committee was inclined to make a specific recommendation that regulations under CEPA 1999 be used as the primary tool for managing the risk from mercury-containing products (as well as products containing other toxic substances). Fortunately, such a recommendation is no longer necessary since, as noted in an earlier part of this report, the government is already taking action in this regard. In developing its Risk Management Strategy and Proposed Risk Management Instruments for Mercury-Containing Products, the government has concluded that regulation under the provisions of CEPA 1999 is the best tool to use. The Committee commends the government for making this decision and for publishing a consultation document on this issue. Your Committee urges that they move ahead quickly to finish developing and implementing the necessary regulations.

Recommendation 2:

The Committee recommends that the Government of Canada move immediately to develop and implement regulations under CEPA 1999 to manage the risk posed by consumer products containing mercury.

Not all witnesses supported the idea of greater federal regulation alone as being the answer, citing a need for a combination of voluntary actions and regulation. For example, it was argued that both well-designed regulations and the encouragement of voluntary action are necessary – without that encouragement, the regulations become a ceiling rather than a floor.⁴⁰ The Committee agrees that more than one tool can be used to effectively manage mercury in the environment. Nevertheless, a carrot (voluntary action) without the threat of a stick if action is not forthcoming (regulation) is not likely to be as effective as a combination of the two.

Regulations, while a good tool, should not be seen as being static if the ultimate goal is to move toward virtual elimination⁴¹ of toxic substances such as mercury. A group of witnesses recommended that regulations under CEPA include clauses providing that standards must be continuously improved.⁴² The five-year review clause included in the

⁴⁰ Brief submitted by the Mining Association of Canada, 17 May 2006

⁴¹ “Virtual elimination” has a very specific definition under CEPA 1999. It is defined in section 65 of the Act as the reduction of releases to the environment of the most dangerous toxic substances to a level below which these releases cannot be accurately measured. To be added to the Virtual Elimination List, a substance must be toxic (according to section 64 of the Act). In addition, a substance that, following an assessment under section 77 of CEPA 1999, is determined to be persistent and bioaccumulative, and it enters the environment primarily as a result of human activity, and it is not a naturally occurring radionuclide or a naturally occurring inorganic substance, shall be proposed for virtual elimination under subsection 65(3) of CEPA 1999

⁴² Brief submitted by the Canadian Public Health Association, 7 November 2006

Province of Alberta's mercury regulations for coal-fired power plants is a good example to follow in order to ensure continuous improvement. The Committee believes that the federal government should adopt this or a similar model and include it in CEPA 1999. The application of this requirement should not be limited to mercury but extended to regulations governing all toxic substances.

Recommendation 3:

The Committee recommends that CEPA 1999 be amended to require a review of all of its regulations every five years to ensure that they are continuously improving.

b. Virtual Elimination of Mercury

Mercury is a toxic substance. However, under the definitions contained in the federal government's *Toxic Substances Management Policy* (TSMP), it is not targeted for virtual elimination because, while it is persistent, bioaccumulative, and toxic, it is not primarily the result of human activity. Instead, as a naturally occurring substance it is slated for "full life-cycle management". In the terminology used in the TSMP mercury is a Track 2 substance and not a Track 1 substance.

A witness urged the Committee to recommend that the government revise the *Toxic Substances Management Policy* to include mercury with Track 1 substances, stating, "No one knows what life cycle management really means. Under this policy, if a toxic substance is released primarily due to human activity, one should look for means to reduce this substance to naturally occurring levels."⁴³

Recommendation 4:

The Committee recommends that the Government of Canada revise the *Toxic Substances Management Policy* (TSMP) to permit the inclusion of natural substances in Track 1 and subsequently to target mercury for virtual elimination with the goal of reducing it to naturally occurring background levels.

The exclusion of mercury from substances slated for virtual elimination under the TSMP (and CEPA 1999) is troublesome for another important reason as well. Since 1997 Canada has been implementing virtual elimination under the *Great Lakes Water Quality*

⁴³ Anna Tilman, Co-Chair, Toxics Caucus, Canadian Environmental Network, Proceedings (Evidence) of the Standing Committee on Energy, Environment and Natural Resources, Issue #6, 5 October 2006

*Agreement (GLWQA)*⁴⁴. Mercury is among the substances being addressed. In this case, there is obviously a different application of virtual elimination as contemplated in the TSMP on the one hand, and in CEPA 1999 on the other. While your Committee did not examine the issue of virtual elimination in depth, we do believe that the concept of virtual elimination under CEPA 1999 needs to be revisited to make it more effective.

Recommendation 5:

The Committee recommends that the definition and implementation of the concept of “virtual elimination” under CEPA 1999 and the *Toxic Substances Management Policy* be brought into alignment with that of the *Great Lakes Water Quality Agreement*.

c. Monitoring and Reporting

During the course of its review of CEPA 1999, the Committee heard from a number of witnesses who argued that in order to fully assess the impact that CEPA 1999 is having on preventing pollution and protecting human health and the environment, some changes must be made to the way in which environmental data is monitored and reported. In some cases their arguments are specific to mercury, but in most instances, they have a more general application to the implementation of the Act as a whole.

One such issue is the fact that industry is often required to report virtually the same information to different orders of government. Concern was expressed about this duplication of reporting. Some industry representatives, therefore, recommended that the government look for efficiencies in reporting.⁴⁵

Recommendation 6:

The Committee recommends that the Government of Canada examine overlapping reporting requirements to avoid unnecessary duplication.

Another issue raised before the Committee was the fact that Environment Canada has significantly reduced its state-of-the-environment reporting program in the last decade. Some witnesses advocated its restoration.⁴⁶ Detailed, high-quality State of the Environment reporting, it was argued, would make it easier for Canadians to stay

⁴⁴ Implementation is being pursued through a strategy under the GLWQA known as the *Canada-United States Strategy for the Virtual Elimination of Persistent Toxic Substances in the Great Lakes Basin*

⁴⁵ Mark Nantais, President, the Canadian Vehicle Manufacturers' Association, Proceedings (Evidence) of the Standing Committee on Energy, Environment and Natural Resources, Issue #7, 24 October 2006

⁴⁶ Justyna Laurie-Lean, Vice-President, Environment and Health, the Mining Association of Canada, Proceedings (Evidence) of the Standing Committee on Energy, Environment and Natural Resources, Issue #7, 24 October 2006

informed about the ongoing impacts of substances on the environment and to gauge the successes and failures of environmental statutes including CEPA 1999. Section 44(1)(f) of CEPA 1999 requires the Minister to publish a periodic report on the state of the Canadian environment. “Periodic” is not defined in the statute. CEPA 1999 does not specify the frequency with which such a report must be made nor the information that it must include. Your Committee would like to see that change.

Recommendation 7:

The Committee recommends that CEPA 1999 be amended to require the Government of Canada to publish a comprehensive State of the Environment Report no less frequently than every ten years.

The Committee also heard that CEPA 1999 lacks the specific power to require companies to carry out ongoing monitoring of the environmental effects of substances they release into the environment. Such power exists under the provisions of the *Fisheries Act* as a condition for permission to deposit a “deleterious substance”.⁴⁷

The Committee believes that the Minister of Environment should be given the same power, under CEPA 1999, to require that organizations/companies monitor the effects on the environment or human life and health caused by substances they use or release. This would avoid having the quality and frequency of ongoing monitoring dependent on Environment Canada’s budget, and would permit the Minister to require monitoring and reporting be done to certain specific standards. Accordingly:

Recommendation 8:

The Committee recommends that the Government of Canada amend CEPA 1999 to require organizations/companies to monitor the effects on the environment or human life and health caused by substances they use or release, and to report results to the Minister.

The absence of Canadian data on mercury exposure among the human population was identified by witnesses as a weakness in the Canadian system. Witnesses proposed the establishment of a national human health monitoring program for mercury and all other toxic chemicals. They further suggested that the information gathered on human exposure should be made public.⁴⁸

Section 45 of CEPA 1999 does empower the Minister of Health to collect information on the impacts of chemicals and other substances on humans. If interpreted broadly,

⁴⁷ See, for example section 36(6) of the *Fisheries Act*

⁴⁸ Timothy Lambert, Volunteer, the Canadian Public Health Association, Proceedings (Evidence) of the Standing Committee on Energy, Environment and Natural Resources, Issue #9, 9 November 2006

this section could be used to require ongoing human health monitoring. The Government of Canada has begun to address this need for data on human health. In February 2007 Health Canada and Statistics Canada began a national human measures survey. The Canadian Health Measures Survey will be carried out over 24 months beginning in winter 2007, and will involve a sample of 5,000 Canadians, both male and female in the age span of 6 to 79 years. This will go some way toward addressing the need for human health monitoring and reporting, but it is limited in time and excludes one of the most vulnerable populations in the country – children under the age of six years.

The Committee prefers to see the establishment of an ongoing, legislatively mandated human health monitoring program. This could be accomplished by amending section 55 to make the timing and standards for collection of such information explicit. This would ensure that data are available on human exposure to all toxic substances, including mercury. The Committee also believes that it is important that the data be made publicly available through the CEPA Registry.

Recommendation 9:

The Committee recommends that the Government of Canada amend CEPA 1999 to require the establishment of a National Human Health Monitoring Program and that the information gathered be made publicly available on the CEPA 1999 Registry. In light of current information, particular attention should be paid to Canada's Arctic peoples and regions.

A number of witnesses commented on the need to consider vulnerable populations, especially young children, when assessing risk and regulating or managing mercury levels in products - and in the environment in general. They recommended that children be explicitly considered when determining acceptable levels of mercury in products. The Committee agrees that such consideration is essential and urges that Environment Canada and Health Canada do so. No legislative amendment would be necessary, but a specific policy is needed. In addition, a National Human Health Monitoring Program, established in response to Recommendation 9 should monitor and report separately on the health of children of all ages.

Recommendation 10:

The Committee recommends that the Government of Canada adopt child-specific uncertainty factors in its child-oriented risk assessment processes.

d. Waste Disposal, Waste Management and Existing Contaminated Sites

During Committee discussions concerning mercury, the issue of the safe disposal of mercury-containing products was raised a number of times. Although waste disposal is within the legislative purview of provinces, disposal of listed toxic substances is arguably a federal concern, and improvements in hazardous waste disposal processes could fall within federal jurisdiction, although a shared approach is certainly the most appropriate.

Committee members were concerned by evidence that, although being urged by governments to replace their incandescent light bulbs with compact fluorescent bulbs, the public is largely unaware of the fact that these bulbs contain mercury and should not be disposed of in household garbage. They should be collected separately and handled as the hazardous waste that they are. Greater public education is clearly required about the importance of proper disposal of such commonly used, mercury-containing products. In addition, even if members of the public are aware of the need for proper disposal, it is not always easy for them to find the location of specialized disposal facilities.

The Committee believes that the Government of Canada should work with other governments through the CCME and its Working Group on Hazardous Wastes to ensure more public education is done on the subject, that hazardous waste disposal or recycling facilities are readily available and known to the public and that action is taken to reduce the mercury-containing wastes in the first place. CEPA 1999, specifically section 93(1)(*o*), (*q*) and (*r*) could be used to require manufacturers and retailers of products such as compact fluorescent bulbs to improve the information on product packaging regarding safe disposal and/or require them to set up a take-back program so that they can safely handle disposal.

Recommendation 11:

The Committee recommends that the Government of Canada work to improve public education on the safe disposal of mercury-containing products and improve hazardous waste disposal processes and availability.

The Committee also heard that, while CEPA 1999 as currently written could require the management of ongoing disposal of mercury-containing products, it does not mention or deal with existing contaminated sites. The Committee proposes that a regulatory power be added to section 93(1) of CEPA 1999 to deal with the clean-up, decontamination and/or restoration of mercury-contaminated sites.

Recommendation 12:

The Committee recommends that the Government of Canada amend CEPA 1999 to address the clean-up of existing mercury-contaminated sites.

e. Public Participation

Your Committee was told that in addressing mercury-related issues, one of the best ways to ensure more effective use of the tools already in CEPA 1999 would be to bolster the provisions that encourage or allow public participation. Witnesses told the Committee that public participation is an effective means of convincing politicians to take regulatory action such as ensuring the virtual elimination of human-caused mercury in the environment.⁴⁹ CEPA 1999 has some provisions for such participation but they need to be strengthened and made more transparent.

Specifically, witnesses suggested that mechanisms should be created to permit citizens to “petition the government to enact regulations, pollution prevention plans and equivalency agreements under the Act.”⁵⁰ Furthermore, they feel that reporting and publishing provisions should be strengthened to allow the public to better monitor progress being made on pollution prevention plans, CWS and the enforcement of regulations. The Committee agrees with the importance of public participation and the need for public access to relevant monitoring information. However, we do not believe that an amendment to CEPA 1999 in this respect is essential. There is already a public petition process in place within the office of the Commissioner of Environment and Sustainable Development. This allows citizens to request action by the government on environmental matters and sets specific timelines within which the government must respond.

With respect to the availability of information to the public, CEPA 1999 already gives the Ministers of Health and Environment broad powers to collect data.

Recommendation 13:

The Committee recommends that the Government of Canada to make wider use of these data-collection powers and to ensure that all

⁴⁹ Robert Wright, Managing Counsel, Sierra Legal Defence Fund, Proceedings (Evidence) of the Standing Committee on Energy, Environment and Natural Resources, Issue #3, 8 June 2006; Anna Tilman, Chair, Save the Oak Ridge Moraine (STORM) Coalition, Proceedings (Evidence) of the Standing Committee on Energy, Environment and Natural Resources, Issue #4, 15 June 2006; Hugh Wilkins, Staff Lawyer Sierra Legal Defence Fund, *Written Submission to the Standing Senate Committee on Energy, Environment and Natural Resources: CEPA Review: Mercury*, 31 October 2007, p.11-12

⁵⁰ Wilkins (2006)

information that is not of a strictly proprietary nature be made available to the public in a timely fashion.

***i.* Environmental Protection Action**

With respect to public participation, the Committee heard the same sort of comments as were heard with respect to the Act in general. The tools are there, but they are not being used. As an example, while CEPA 1999 (section 22(1)) allows the public to launch a civil suit known as an environmental protection action if they have previously requested the Minister investigate an offence under the Act (section 17 (1)) and either the Minister has failed to investigate and report within a reasonable time or the Minister's response to the investigation is unreasonable. To date, there has not been a single environmental protection action launched under the Act.⁵¹

It was suggested that there are serious barriers within the Act preventing citizens from proceeding with such an action and that these barriers must be examined and removed if the public is to be able to take full advantage of its rights under the Act to participate in CEPA 1999 implementation.⁵² One weakness of the provisions is that citizens do not have access to sufficient, accurate information about emissions and impacts that would allow them to meet the criteria of evidence needed before they can proceed with an environmental protection action. As it now stands, a citizen must establish both an offence under the Act and that there has been "significant harm to the environment." It is impossible to do the latter without access to the proper information. It is obviously a burden no citizen has so far been willing or able to bear.

The Committee would like to see action taken on this front, as public participation is a key to pushing government to take preventive action. One means of addressing the issue would be to remove the requirement for a citizen to show that an action has caused significant harm to the environment. This would permit a citizen to bring an action "against a person who committed an offence under this Act."

Recommendation 14:

The Committee recommends that CEPA 1999 be amended by removing the need for a citizen to show that an action has caused significant harm to the environment before being able to proceed with an environmental protection action.

***ii.* Private Prosecution**

The Committee received other useful suggestions to encourage public participation and to ensure that CEPA regulations are enforced. One possibility is to use private

⁵¹ We note that "reasonable time" and "unreasonable" response are not defined.

⁵² Robert Wright, Managing Counsel, Sierra Legal Defence Fund, Proceedings (Evidence) of the Standing Committee on Energy, Environment and Natural Resources, Issue #3, 8 June 2006

prosecutions and fine splitting similar to provisions found in the *Fisheries Act*.⁵³ Under the *Fisheries Act*, individuals who go forward with a private prosecution and who are successful, are entitled to split the fines. That is, they receive half the fines awarded and the government receives the other half.

It was further suggested that CEPA should be amended to allow the courts to order the recovery of costs incurred in the investigation and prosecution of offences under CEPA 1999 in relation to such private prosecutions. The Committee feels that these steps would promote greater public interest in pursuing private prosecution under CEPA 1999 and hence improve its effectiveness.

Recommendation 15:

The Committee recommends that the Government of Canada amend CEPA 1999 to permit fine splitting and court cost recovery in cases of private prosecution.

f. Timelines in CEPA 1999

Timelines within CEPA 1999 have been identified by a number of witnesses as a particular source of concern, either because many are not mandatory or because risk assessment and information gathering processes appear to take too long, while potential environmental damage continues. Where they exist in CEPA 1999, mandatory deadlines have proven their effectiveness.

As an example, under CEPA 1988 a Domestic Substances List was established. It included any substance that, between 1 January 1984 and 31 December 1986, was manufactured in or imported into Canada or that was in Canadian commerce or used for commercial manufacturing in Canada. Some 23,000 substances were on that list. When CEPA 1999 was drafted, section 73(1) was added, obligating the Ministers to categorize those substances to identify those which:

- (a) may present, to individuals in Canada, the greatest potential for exposure; or
- (b) are persistent or bioaccumulative in accordance with the regulations, and inherently toxic to human beings or to non-human organisms, as determined by laboratory or other studies.⁵⁴

A mandatory deadline for completing this task was set at seven years after Royal Assent. The deadline (14 September 2006) was met and some 4000 substances met the categorization criteria. The next step, according to CEPA 1999 is that all identified substances must undergo a “screening level assessment” to determine if they also meet the definition of toxic under section 64 of the Act. This is where the problem begins,

⁵³ Robert Wright, Managing Counsel, Sierra Legal Defence Fund, Proceedings (Evidence) of the Standing Committee on Energy, Environment and Natural Resources, Issue #3, 8 June 2006

⁵⁴ *Canadian Environmental Protection Act 1999*, section 73(1)(a) and (b)

since *there is no timeline in the legislation* within which the screening assessments must be completed.

During the time that the Committee was conducting its review of CEPA 1999, the Government of Canada introduced a new Chemicals Management Plan which does answer some of the concerns about dealing with the categorized substances. While this policy is to be commended on principle, it does not provide for mandatory action. It remains a policy direction and not a legislated requirement. Policies can be more easily changed than can statutory obligations.

The Government, to its great credit, has given high priority to assessing the approximately 200 substances that meet either of two criteria. They are substances that are:

- (a) ...Persistent, bioaccumulative, **and** inherently toxic to the environment **and** that are known to be in commerce in Canada; **and/or**
- (b) ...A high hazard to humans **and** as having a high likelihood of exposure to individuals in Canada.⁵⁵

For these substances, the Government will issue notices setting out the information it currently has, and describing what information is needed to make a decision. Where necessary, industry will be required to submit relevant data, using section 71(1). These notices will be issued in batches of 15-30 substances, every three months starting in January 2007. Using these timelines, the Government should be able to assess the 200 substances within 3 years.

Industry will be given six months to submit the necessary information and if they fail to do so, the Government will, within 90 days, publish a notice recommending the substance be added to Schedule 1 of CEPA 1999 (the List of Toxic Substances). This approach was, coincidentally, recommended by witnesses before your Committee. If requested information is submitted, the government will assess that information within an additional six months, and decide whether or not the substance should be added to Schedule 1 or, to the Priority Substance List.

In another response to criticism about the lack of timelines for dealing with substances once they are listed on Schedule 1, the new plan calls for discussions with stakeholders regarding risk management strategies to start immediately after the substance is added to the list. Whatever the proposed action (including proposing no action required), there will be the mandated 60-day comment period, and the Government has committed to publishing the final decision of the assessment within six months of the initial proposal, along with a proposed risk management approach, where applicable. However, no deadline for implementation of the proposed action is included. Your Committee believes that there should be a reasonable deadline.

A second aspect of the proposed strategy covers substances that are believed to either not be used in Canada, or to only be used in restricted, well-managed applications. For

⁵⁵ *Canada Gazette*, 9 December 2006

these substances, the Government will be using the “significant new activity” provisions under subsections 87(3) and 81(3) of CEPA 1999. This will mean that, before anyone uses a substance in a new way, it would be required to undergo a complete assessment, as if it were completely new to Canada. No deadlines are involved in this part of the plan. Again, your Committee believes that there should be a reasonable deadline.

A new rapid screening approach is also being introduced to address substances that meet the environmental risk categorization criteria, but are considered “lower concern” based on the level of use (less than 1000 kg per year total for all companies). There are some substances in the category that do not belong to special groups of organic compounds or complex mixtures, do not pose a potential risk to the aquatic environment based on models of use, and do not show up in various databases and lists as having reports of hazards or of recent increases in use. These will be determined to require no further action at this time.

The proposed strategies only address fewer than 1700 of the approximately 4000 substances identified as meeting the criteria set out for the categorization process. The remainder of those substances also must be screened. In addition, other substances that did not meet the specific categorization criteria will need to be examined at some point. This includes substances that pose a high hazard to humans but were not classified as having the “greatest potential for exposure.” Without reasonable, mandated timelines, further action will be slow in coming.

Your Committee congratulates the Government for having taken action to clarify the timelines it plans to use in dealing with the categorized substances. We believe, though, that the timelines need to be enshrined in the legislation, rather than left as a policy or strategy. This would ensure that progress continues without political considerations coming into play.

In addition, firm and reasonable deadlines/timelines are required in the Act to deal with substances to be assessed through CEPA provisions other than the categorization process, such as a recommendation by any person (subsection 76 (3)); information about severe restrictions or prohibitions of a substance by another jurisdiction (section 75); or a report by a company or other person (section 70)).

Recommendation 16:

The Committee recommends that the government amend CEPA 1999 by introducing specific timelines for action to screen the 4000 substances identified by the categorization process as requiring screening assessments and to develop and implement the specified management plans.

Recommendation 17:

The Committee recommends that CEPA 1999 be amended by adding specific timelines for dealing with substances identified as requiring

further assessment under any provisions of the Act, and for the development and implementation of the specified management plans.

g. Pollution Prevention Plans

Witnesses told the Committee that pollution prevention plans should be used more extensively than has been the case to date and that they need to be given more teeth. As one witness noted:

Pollution Prevention (P2) plans are non-binding, unenforceable codes of conduct that are designed to encourage polluters to take action on reducing their emissions to the environment. ... If a specified target or other factor in the P2 plan is not met, an explanation setting out why is required. However, despite the fact that this would result in non-compliance with CEPA, there are no mechanisms to address such violations and there are no provisions for auditing or monitoring facilities with respect to performance or compliance with their P2 plans.⁵⁶

Clearly, while section 56 of CEPA 1999 empowers the Minister to send a notice requiring the preparation of pollution prevention plans, it does not provide for an express penalty for failure to comply. Failure to prepare, file and implement such a plan when required to do so by the Minister may be offences under section 272 of the Act; however, the Act does not make this explicit. It should.

Recommendation 18:

The Committee recommends that CEPA 1999 be amended to explicitly make it an offence under the Act to fail to prepare, file and implement an ordered pollution prevention plan.

An additional concern with pollution prevention plans brought to your Committee's attention lies with what is ultimately included in the plan. In issuing the Notice to prepare a P2 plan, CEPA 1999 empowers the Minister to specify the "factors to be considered" in preparation of the plan. This wording only requires that each factor be considered, not that it be included in the plan. That is, factors may be "considered" and then rejected. The Committee believes that it is important to address this problem by changing the wording of this section. Accordingly,

Recommendation 19:

⁵⁶ Hugh Wilkins, Staff Lawyer Sierra Legal Defence Fund, *Written Submission to the Standing Senate Committee on Energy, Environment and Natural Resources: CEPA Review: Mercury*, 31 October 2007

The Committee recommends that section 56 (2)(c) of CEPA 1999 be amended to replace the words “factors to be considered” with “factors to be included” in a pollution prevention plan.

PERFLUORINATED COMPOUNDS (PFC) CASE STUDY

Introduction

As in the mercury case study, a review of how CEPA 1999 is doing at managing PFCs in the environment will be better appreciated by first understanding a bit about what these chemicals are, what they are used for and how they enter the environment. Unlike mercury, PFCs are man-made compounds that first came into production in the 1940s. Also unlike mercury, the way they enter the environment and how they affect human health has only recently been understood. In this case, regulators are using many of the provisions of Part 5 (Controlling Toxic Substances) of CEPA 1999 as the science evolves and our knowledge of PFCs and their impact improves. As departmental representatives told the Committee, “Science is catching up with an issue and governments are running to catch up as well.”

a. What Are PFCs?

Organofluorines are chemicals that contain atoms of both carbon and fluorine. About 30 organofluorine molecules occur in nature. In each of these naturally-occurring molecules, *one* of the carbon-hydrogen bonds is replaced by a carbon-fluorine bond. In contrast, many man-made organofluorines contain *numerous* fluorine atoms and are thus said to be polyfluorinated organic compounds. When not just some, but *all* of the carbon-hydrogen bonds are replaced by carbon-fluorine bonds, the chemicals are known as perfluorinated compounds or PFCs.⁵⁷

PFCs consist of a fluorocarbon chain, usually with eight or more carbon atoms attached to a functional group, the nature of which depends on the application for which the compound will be used. The resultant compounds present a bewildering array of acronyms. When a carboxylic acid group is attached to the fluorocarbon chain the resulting family of chemicals are known as PFCAs or perfluorinated carboxylic acids.⁵⁸ One of the most commonly used PFCAs is known as PFOA or perfluorooctanoic acid. If a sulfonic acid group, rather than a carboxylic acid group, is attached to the fluorocarbon chain, then the resulting compounds are known as perfluoroalkyl sulfonates or PFASs.⁵⁹ Of this class of chemicals, one compound of concern is PFOS (perfluorooctane sulfonate).

⁵⁷ M. Allsopp, D. Santillo, A. Walters and P. Johnston, *Perfluorinated Chemicals: An Emerging Concern*, Greenpeace Research Laboratories, University of Exeter, Exeter, U.K., Technical Note: 04/2005, April 2005, p.9 (http://greenpeace.to/publications_pdf/perfluorinated_chemicals_2005.pdf)

⁵⁸ These chemicals are sometimes also referred to as perfluoroalkyl carboxylates.

⁵⁹ These chemicals are sometimes also referred to as perfluorinated sulfonates.

b. How Do We Use PFCs?

PFCs have specific physical and chemical properties that make them highly useful compounds. Some of them repel water and oil while others act as surfactants (i.e., they reduce surface tension). Because they repel both oil and water, certain PFCs are widely used in protective coatings for carpets, textiles, leathers, paper plates and fast food containers. Other specifically formulated PFCs are used in the manufacture of paints, adhesives, waxes, polishes, metals and electronics. PFOA, as an example, is used to make two very well known products, namely, Teflon non-stick coatings for cookware and Gortex textiles.

The surface-tension reduction provided by some PFCs (especially PFOS-related compounds) has resulted in their widespread use in products including including fire-fighting foams, mining and oil well surfactants, acid mist suppressants for metal plating and electronic etching baths, alkaline cleaning products, floor polishes, photographic film and denture cleaners.

The carbon-fluorine bond in all of the PFC family of compounds is a very strong one, and gives the range of PFCs both thermal and chemical stability. This is a mixed blessing, since it is precisely these characteristics that, while important for product performance, also make PFCs persistent in the environment.

c. Why Are We Concerned About PFCs?

It was only in 1999 to 2000, that scientific evidence began to emerge demonstrating the widespread global presence of PFOS in human blood and in some animals. Canadian research scientists tracking the environmental occurrence of PFCAs reported finding long-chain perfluorochemicals (PFOA, in particular) in polar bears, arctic foxes, ringed seals, mink, birds and fish collected in the Arctic. This was puzzling since none of these man-made substances are manufactured in the Arctic, few of them are used there and the chemicals themselves are not volatile and so were not expected to be transported over long distances.

Evidence also started to raise concerns that PFCs were persistent, bioaccumulative and toxic. The findings of these studies also added to the mystery of how these generally non-volatile chemicals could have been transported around the globe and about the health implications of their ubiquitous presence.⁶⁰

Research is continuing into the exact mechanism by which PFOS, PFOA and other PFCs are transported over long distances.⁶¹ It is now suspected that the most likely source is the more volatile fluorotelomer alcohols (FTOH) which are used in the

⁶⁰ United States Environmental Protection Agency, *Perfluorooctanoic Acid (PFOA) and Fluorinated Telomers: Basic Information*, <http://www.epa.gov/opptintr/pfoa/pubs/pfoainfo.htm> , accessed 29 July 2006

⁶¹ For example, see *Proceedings of a Workshop on the Environmental Fate of Fluorotelomer-Based Polymers*, Sponsored by Canadian Environmental Modelling Network, Environment Canada and DuPont Canada, Toronto, 12-14 April 2004, CEMN Report No. 200401

manufacture of perfluorinated chemicals, which in turn are used in numerous consumer products. These alcohols are volatile and therefore can be transported in the air over long distances. They are produced and may be released into the air from some manufacturing processes and products (residual emissions), and they may also result from the degradation of products in which they are found. People and animals far from the point on the globe at which FTOH have originated, can be exposed to them.

Merely finding certain PFCs to be widespread in the environment and in humans is not in itself alarming. It is a growing concern, however, since empirical evidence has now demonstrated that some PFCs are bioaccumulative and persistent in the environment and are associated with adverse effects in laboratory animals. For example, animal testing has shown that PFOA is tumourigenic in rats, immunotoxic in mice, and showed reproductive or developmental toxicity and sub-chronic oral toxicity in rodents and monkeys.^{62 63} In addition, based on wildlife tissue samples archived over the last 30 years, there appears to be a trend toward increasing concentrations of long chain PFCAs in wildlife in the Arctic.⁶⁴

PFOA, the PFC for which the most experimental data is available, is based on an eight-carbon chain. Even though there is less toxicity data available regarding other, longer chain PFCAs, they are reasonably expected to be of even greater concern, given that they are also environmentally persistent, and have even slower clearance rates and thus higher bioaccumulation potential than does PFOA. Environment Canada has noted that: “Bioaccumulation potential appears to be proportional to the length of the fluorinated carbon chain.”⁶⁵

Is CEPA 1999 Working to Manage PFCs in Our Environment?

In the mercury case study, your Committee found that action to manage mercury in our environment was being taken under a number of Canadian statutes, including CEPA 1999. In the case of PFCs, CEPA 1999 has, so far, been the exclusive tool of choice for federal action. The Act has been used to gather information to inform assessment and risk management (section 71), to perform assessments (section 74), to add PFOS to the list of toxic substances (section 64(a)) and to develop regulations (section 90). The regulations are being developed to eliminate exposure sources and to prevent the re-entry of PFOS into the Canadian market (section 93). The New Substances Provisions

⁶² R. Renner, “Another Piece of the Perfluorinated Puzzle,” *Environmental Science and Technology*, 26 November 2003 (http://pubs.acs.org/subscribe/journals/esthag-w/2003/nov/science/rr_piece.html)

⁶³ Department of Environment and Department of Health, “Notice of Action Plan for the Assessment and Management of Perfluorinated Carboxylic Acids and their Precursors,” *Canada Gazette*, June 2006, p.1

⁶⁴ Environment Canada, *Action Plan on Perfluorocarboxylic Acids and Precursors*, 17 June 2006, <http://www.ec.gc.ca/nopp/DOCS/rpt/PFCA/en/actionPlan.cfm> accessed 11 July 2007

⁶⁵ *Ibid.*

of CEPA 1999 have also been used to stop the introduction of new PFCs into the Canadian market.⁶⁶ The following paragraphs provide more detail.

a. Some Action Has Been Taken

In 2004, Environment Canada and Health Canada received notification from a manufacturer of its intention to introduce four new perfluorinated chemicals into the Canadian market. Under CEPA 1999, new substances are subject to the provisions of sections 80 to 89 - Substances and Activities New to Canada. These sections seek to assess human and environmental impacts *before* a substance is introduced – a step towards CEPA’s goal of pollution prevention. During their reviews of this notification, the two departments took into account the emerging science linking similar substances to the presence of PFCAs in Arctic wildlife. As a result of evidence gathered in the assessment process, the substances were suspected to be “toxic” and were immediately made subject to a temporary prohibition under section 84(1)(b) of CEPA 1999. The prohibition took effect in June 2004 for three of the substances and in February 2005 for the other.

Under the provisions of CEPA 1999, such a prohibition expires after two years unless the government proposes a regulation to control the substance. As a result, on 17 June 2006, the Government published, in the *Canada Gazette*, a proposed “Order Adding Toxic Substances to Schedule 1 to the *Canadian Environmental Protection Act, 1999*”. The order would cover all four of the new substances. This proposed order gave the Government the authority to propose corresponding regulations, which then have the effect of extending the ministerial prohibition until such time as the regulations come into force to replace it. The regulatory proposal would amend the *Prohibition of Certain Toxic Substances Regulations* to include a list of: “Prohibited toxic substances unless present in certain manufactured items,” with the four new substances as its first items. This would allow the Government the discretion to exclude from the prohibition any specific manufactured items in which the toxic substances are present and for which no viable alternative currently exists.⁶⁷ To date, final orders and regulations have not yet been registered.

b. Action on PFOS

Action has also been taken by Canada with respect to PFOS and its salts. PFOS has never been manufactured in Canada, but was imported from the United States. Subsequent to the U.S. decision in 2000 to eliminate the manufacture of PFOS by 2003, Canada undertook a screening assessment of PFOS and its salts and its precursors and published the results under Subsection 74 of CEPA, 1999 in 2004. These substances are not new to Canada, and are on the Domestic Substances List (substances already in

⁶⁶ Environment Canada and Health Canada, *Polyfluorinated Substances: Use of CEPA 1999 to Address an Emerging Class of Pollutants*, Presentation to the Standing Senate Committee on Energy, Environment and Natural Resources, 1 February 2007

⁶⁷ Government of Canada, *Order Adding Toxic Substances to Schedule 1 to the Canadian Environmental Protection Act, 1999*, Canada Gazette Part I, Vol. 140 No. 24, 17 June 2006

commerce when CEPA was proclaimed). On 1 July 2006, Environment Canada and Health Canada published the final results and a decision.

The report concluded that PFOS and its salts meet the criteria for persistence under the CEPA 1999 *Persistence and Bioaccumulation Regulations*. It also concluded that, while the weight of scientific evidence indicates that PFOS and its salts are also bioaccumulative "... the relevant data for these substances do not meet the numeric criteria for bioaccumulation as defined in the CEPA 1999 *Persistence and Bioaccumulation Regulations*. Therefore, PFOS and its salts do not meet the conditions set out under subsection 77(3) for mandatory addition to the Virtual Elimination (VE) list."⁶⁸ This conclusion led some witnesses to suggest to your Committee that it would be wise to redefine "bioaccumulation" in the regulations. It also led a Member of Parliament to introduce a Private Member's Bill (Bill C-298) to add PFOS to the VE list notwithstanding CEPA's inability to otherwise do so. This Bill has been passed by the House of Commons and is currently before the Senate. As passed by the House of Commons, it would put PFOS on the Virtual Elimination List without the normal CEPA 1999 requirement to specify a limit of quantification and issue regulations prescribing release limits.

As a result of the assessment report's conclusions, PFOS and its salts and its precursors were added to Schedule 1 of CEPA, 1999 (List of Toxic Substances).⁶⁹ On 16 December 2006, proposed regulations were published in Part I of the *Canada Gazette*, with a 60-day consultation period to follow. These would phase in prohibitions on most existing uses of PFOS, with exceptions for some industries (e.g. semi-conductor chip manufacturing) where there are no suitable alternatives, and would also prohibit any new uses. Final regulations were expected to be published in Part II of the *Canada Gazette* in September 2007, but have not yet been posted.⁷⁰

Action on PFOS is also being undertaken internationally, through the *Stockholm Convention on Persistent Organic Pollutants* (POPs), of which Canada is a party. A review committee which considers possible new substances for management under the Convention agreed at the committee's third meeting in November 2007 to recommend that PFOS and its precursors be added to either Annex A or Annex B of the Convention as either prohibited or restricted substances, respectively.⁷¹

c. Action Under Way on PFOA

Having initiated the CEPA 1999 process to deal with PFOS, attention has turned to PFOA, which the U.S. *Environmental Protection Act* (EPA) also has in its sights. In the U.S. in fact, manufacturers of PFOA are working under a voluntary agreement that will

⁶⁸ CEPA Registry, *Perfluorooctane Sulfonate (PFOS), Its Salts and Its Precursors: Risk Management Strategy*, <http://www.ec.gc.ca/CEPARegistry/documents/part/PFOS/s1.cfm>

⁶⁹ Government of Canada, *Order Adding Toxic Substances to Schedule 1 to the Canadian Environmental Protection Act, 1999*, Canada Gazette Part II, Vol. 140, No. 26, 27 December 2006

⁷⁰ CEPA Registry, *Perfluorooctane Sulfonate (PFOS), Its Salts and Its Precursors: Risk Management Strategy*, <http://www.ec.gc.ca/CEPARegistry/documents/part/PFOS/s1.cfm>

⁷¹ Persistent Organic Pollutants Review Committee, *Stockholm Convention on Persistent Organic Pollutants*, Decisions POPRC-3/11 and POPRC-3/5, 2007

see them eliminate PFOA emissions and its use in products by 2015. In this country, a Screening Assessment of PFOA is underway under CEPA 1999's Existing Substances Program. This was prompted by the emergence of many new studies on the persistence and potential impacts of PFOA on the environment and human health, on its continued importance as a commercial chemical, on regulatory activity in other jurisdictions, and on increasing public concern. The PFOA assessment by Health Canada and Environment Canada has not yet reached a conclusion. The Existing Substances Program has also initiated some data collection and data generation on other PFCAs."⁷²

With many long-chain PFCs similar to the four new, newly-prohibited substances and to PFOS and PFOA already on the Domestic Substances List, Environment Canada and Health Canada announced, on 17 June 2006, a comprehensive Action Plan that will ultimately address all PFCs. Although there is a sense that other long-chain PFCs may well present similar problems to those identified for PFOS and PFOA, the government is not yet considering an outright prohibition on all such substances.

Canadian Action Plan for Assessment and Management of PFCAs

Environment Canada (EC) and Health Canada (HC) have developed this Action Plan to provide a broad perspective on the Departments' approach to PFCAs and their precursors.

This Action Plan addresses:

- substances currently prohibited under the New Substances provisions of the *Canadian Environmental Protection Act, 1999* (CEPA 1999);
- the approach by the New Substances Program in addressing such substances in the future;
- members of this class already in commerce; and
- engagement of the research community and international regulators in contributing to assessment and management issues.

Environment Canada, *Action Plan on Perfluorocarboxylic Acids and Precursors*, 17 June 2006, <http://www.ec.gc.ca/nopp/DOCS/rpt/PFCA/en/actionPlan.cfm>

Prohibiting all existing long-chain PFCA precursors is not considered a viable strategy at this time. Further information gathering and assessment activities are required to determine whether this should be considered as a viable management strategy in the long term.⁷³

⁷² Environment Canada, *Action Plan on Perfluorocarboxylic Acids and Precursors*, 17 June 2006, <http://www.ec.gc.ca/nopp/DOCS/rpt/PFCA/en/actionPlan.cfm>

⁷³ *Ibid.*

PFC Recommendations

In the course of its hearings on PFCs, your Committee received numerous suggestions for improving both the provisions of CEPA 1999 and the use of the provisions already contained in the legislation. As can be seen from the preceding sections of this report, the Government has been making extensive use of CEPA 1999 to manage the emerging scientific concerns about PFCs in the environment. Members of your Committee asked officials from both Environment Canada and Health Canada whether CEPA 1999, as it now stands is adequate to do what is necessary to address these concerns. They responded that they feel it is generally adequate, especially as they gain experience in implementing its provisions.

...with respect to CEPA. Is it adequate? We seem to be able to work within the framework of the current act; in broad brush, it seems to work.

What this example (PFCs) has indicated to us, though, is that we need to be much smoother and more quickly adaptable in being able to deal with certain types of risks and substances from both a new substance and an existing substance point of view. I think the different provisions and styles of operating within the act will converge somewhat over time. We can do that in the way we operate our program, do our science and perform our job, but it had not been the way we had done it in the past.

We are starting to break new ground to be able to do that. We do not believe anything in the act prevents us from doing that.

John Arseneau, Director General, Science and Risk Assessment Directorate, Environment Canada, *Proceedings (Evidence) of Standing Senate Committee on Energy, Environment and Natural Resources*, Issue #11, 1 February 2007

Other witnesses though, made a number of suggestions on how they believe CEPA 1999 could be improved in substance and in implementation to better protect human health and the environment from the potential adverse effects of PFCs. Your Committee has examined these suggestions and from them has developed a number of specific recommendations. As in the mercury case study, a number of witnesses also made suggestions of a more general nature for improving CEPA 1999, sometimes repeating what was recommended in that part of the Committee study. The recommendations that overlap will be referenced but not repeated in this section of the report.

a. Timelines

i. Shorter Timelines Needed to Spur Action

One of the areas in which testimony concerning PFCs overlapped with that concerning mercury was the issue of timelines. The science of PFCs is still emerging and is developing new insight into the impact that these chemicals are having. While departmental officials believe that they have the tools they need to keep the regulatory system in tune with the scientific revelations in a timely fashion, not all witnesses agree. For instance, one witness pointed to the fact that the Act currently requires three trips to Cabinet before a substance is assessed and a management plan can be put in place. The delays involved in this process are, according to this witness, are unnecessary and unacceptable. Even though it seems that CEPA 1999 has been used appropriately to begin dealing with emerging concerns about PFOS, not everyone agrees that action has been quick enough. We are, in fact, some *seven years* behind the United States in drafting regulations to stop the use of PFOS. To be fair though, PFOS is not manufactured in Canada and so the U.S. action to ban its manufacture has reduced the amount of PFOS entering this country. Nevertheless, CEPA 1999 should be amended so that efficient, made-in-Canada measures can be taken as and when needed.

...three trips to cabinet, which is necessary with the assessment and management of a substance, is too many and causes unnecessary delays. ...

PFOS is a good demonstration of how slow the Canadian system works. One need only ask why PFOS was banned in the United States in 2000, yet now, in 2007, we have finally reached the draft regulation stage. ... but the assessment and management stages in CEPA either lack timelines or have timelines that are too long. Currently the government has five years, plus a potential two-year extension, just to assess a substance.

K. Khatter (PollutionWatch), *Proceedings (Evidence) of the Standing Senate Committee on Energy, Environment and Natural Resources*, Issue #3, 8 June 2006

The entire risk assessment and risk management process came under fire from several witnesses. They argue that the process needs to be streamlined and that the addition of fixed timelines would greatly assist in accomplishing this. It was also noted that shorter timelines force companies to take action that they otherwise would not take, or would delay taking. The example was given of how quickly the 3M Corporation, a major manufacturer of PFOS, was able to stop production of PFOS when its production was banned in the U.S., and quickly introduce a substitute product. Nothing focuses the mind more than a firm deadline. These witnesses agree, in effect, with Recommendation 17 in the mercury case study. Your Committee would like to reiterate its support for

changes to CEPA 1999 that would add more specific and/or shorter timelines for required actions.

With respect to risk assessment, the current system under CEPA has not been able to address the issues of risk and safety for substances in a timely manner. Timelines are not well-defined, and the entire process, including risk management measures, can take too long. There needs to be provisions or mechanisms within the act to reduce this lengthy process.

S. Madray, Chemical Sensitivities Manitoba Caucus, Canadian Environmental Network, *Proceedings (Evidence) of the Standing Senate Committee on Energy, Environment and Natural Resources*, Issue #3, 8 June 2006

ii. Not Everyone Agrees

Of course not all witnesses agreed that CEPA 1999 should be changed to legislate more timely action. One witness noted in fact, that CEPA 1999 is much more “nimble” than comparable legislation in the United States or in Europe; that it allows more timely action on emerging substances of concern. When asked if the Government of Canada was using CEPA 1999 effectively to begin addressing the many PFCA on the domestic substances list and in use today in our country a witness replied:

Yes....None of them (i.e., Europeans, U.S. EPA) are able to move as quickly and as nimbly as Environment Canada. CEPA has allowed them to recognize the problem and to incorporate the latest research into it. They tell me they are more constrained in what they can do. ... They have not been able to move quickly on the precursor idea.⁷⁴

It appears that CEPA 1999 allows for timely action, but does not *require* it. In the case of PFCA, government action has been fairly timely. Without mandated deadlines, however, future action may not be as timely. Your Committee would like to see certainty and clarity added to the Act (see Recommendations 16 and 17).

b. Improving Definitions and Concepts

i. Bioaccumulation

In addressing PFOS through the application of CEPA1999, the need for a change to the definition of bioaccumulation was identified. PFOS was the subject of an Ecological Screening Assessment Report (ESAR) by Environment Canada. That study determined

⁷⁴ Scott Mabury, University of Toronto, *Proceedings (Evidence) of Standing Senate Committee on Energy, Environment and Natural Resources*, Issue # 11, 8 February 2007

that PFOS and its salts and precursors are toxic based on the criteria set out in section 64 of CEPA 1999. This conclusion resulted in its addition to Schedule 1 of CEPA 1999. The study also showed that PFOS is persistent, bioaccumulative and inherently toxic. Meeting all three of these criteria would ordinarily mean that PFOS would also be added to the Virtual Elimination (VE) List of CEPA 1999. However, witnesses pointed out to the Committee that PFOS does not meet the CEPA 1999 criteria for being bioaccumulative because, rather than accumulating in fat, which is common for many toxic substances, PFOS accumulates in protein in the body.

...According to the ESAR for PFOS, PFOS meets the persistence criteria under the Persistence and Bioaccumulation Regulations of CEPA 1999...and the weight of scientific evidence is sufficient to conclude that PFOS and its salts are bioaccumulative. However, the criteria for bioaccumulation under the regulations of CEPA cannot adequately predict bioaccumulation of PFOS, and as a result PFOS and its salts do not meet the conditions set out under subsection 77(4) for mandatory addition to the Virtual Elimination List.

Rick Smith, Executive Director, Environmental Defence, *Letter sent to Minister Ambrose, 22 August 2006, copy provided to the Standing Senate Committee on Energy, Environment and Natural Resources*

As noted earlier in our Report, this situation prompted a Member of Parliament to introduce a Private Member's Bill (Bill C-298) to add PFOS to the VE list. The Committee would like to see CEPA 1999 amended to fix this problem rather than having to see separate legislation introduced for each substance that falls through this crack.

Recommendation 20:

The Committee recommends that the definition of bioaccumulation in the *Persistence and Bioaccumulation Regulations* of CEPA 1999 be amended to ensure that no substance that is found to be persistent, bioaccumulative and inherently toxic is left off the Virtual Elimination List.

***ii.* Equivalency Agreements**

Another improvement that would make CEPA 1999 more effective was raised during the Committee's hearings on PFCs, but is generally applicable to any substance. CEPA 1999 provides for equivalency agreements between the federal and provincial governments. The Government of Canada can develop a national standard or rule and, if the province enacts regulations to implement that standard, then the two orders of government can enter into an equivalency agreement to enforce the standard. To date, these provisions of the Act have not been used to any great extent. One of the reasons is the requirement for a province to have a "regulation" in place. Many provinces

however, operate using permits or certificates of approval rather than regulation. They may have the same effect as a regulation but do not qualify for an equivalency agreement as the Act is now written. This issue needs to be addressed.

Recommendation 21:

The Committee recommends that the Equivalency Agreements section of CEPA 1999 be amended to include, in addition to provincial regulations, other provincial measures that have at least equivalent effect.

c. Giving CEPA 1999 Teeth

i. Cumulative Effects Need Attention

In this day and age there are many new substances being introduced into our environment. Some of them have adverse effects and CEPA 1999 is intended to monitor, assess and manage those substances. One thing it does not do, according to some witnesses, is take into account the possible cumulative effects of groups of related substances, especially those chemical families such as PFCs, of which many have similar impacts and routes of exposure. Some 185 of a total known class of 255 PFCs are on CEPA 1999's Domestic Substances List. There is considerable information available on some of these substances (such as PFOS and PFOA) while very little data are available on many others. It would improve the effectiveness of the Act if cumulative impacts of substances were taken into account when assessing risk. It would also improve the Act's effectiveness if classes of substances were assessed together rather than the current practice of dealing with them one at a time. Your Committee was urged to recommend that the approach to assessing classes of pesticides with similar actions used under the *Pest Control Products Act* be adopted for use in CEPA 1999. Your Committee agrees with this suggestion.

There is sufficient evidence to suggest that the class of perfluorinated substances demonstrates similar if not the same modes of action, sites of toxicity, unique modes of bioaccumulation and modes of environmental transport that warrant attention as a class.

G. Krantzberg, Professor and Director, Dofasco Centre for Engineering and Public Policy, McMaster University, *Proceedings (Evidence) of Standing Senate Committee on Energy, Environment and Natural Resources*, Issue 12, 15 February 2007

Recommendation 22:

The Committee recommends that CEPA 1999 be amended to include a requirement for the assessment of the cumulative impact on the environment and/or human health of substances or classes of substances with similar modes of action.

Recommendation 23:

The Committee recommends that substances with similar modes of action, sites of toxicity, unique modes of bioaccumulation and modes of environmental transport be assessed as a class, as is currently required for pesticides under the *Pest Control Products Act*.

ii. Vulnerable People and Places

The same discussion which raised the issue of cumulative impact also raised the issue of the need for CEPA 1999 to have real teeth to protect both vulnerable populations (children, pregnant women, and the elderly) and vulnerable regions of Canada. Recommendation 10 in the mercury case study addresses the issue of specific assessments for risk to children. The same caution needs to be included in CEPA 1999 to address all vulnerable populations.

I reaffirm a continuing and relentless call for special provisions within CEPA to accelerate aggressive action on chemical pollutants like the perfluorinated compounds in the Great Lakes region, home to 8 million Canadians and, as I just mentioned, an area that generates two thirds of Canada's manufacturing output, for which natural resource protection is essential.

We ask that this be done by providing the minister the power to designate the region as a significant area, given that this region is particularly vulnerable to the effects of substances and that it generates a particularly large volume of these substances released into the environment.

G. Krantzberg, Professor and Director, Dofasco Centre for Engineering and Public Policy, McMaster University, *Proceedings (Evidence) of Standing Senate Committee on Energy, Environment and Natural Resources*, Issue 12, 15 February 2007

The Committee heard that there are at least two regions in need of special protection - the North and the Great Lakes Region. With respect to PFCs and other toxic substances, the North is the recipient of their long-range atmospheric transport and their deposition. The Great Lakes Region is subject to a bilateral agreement with the United States – the Great Lakes Water Quality Agreement – and a strong CEPA 1999 will be essential to ensuring that Canada will do its part to protect this important ecosystem.

Recommendation 24:

The Committee recommends that CEPA 1999 be amended to give the Ministers of Environment and Health explicit power to designate areas and populations in need of special protection under the Act.

d. Using Existing CEPA Powers More Effectively

While CEPA 1999 seems to be addressing, or at least beginning to address, most of the emerging concerns about PFCs, witnesses offered a number of specific suggestions that would speed up and otherwise improve actions already being taken. For example it was suggested that there are a number of measures that could be taken using provisions already in CEPA 1999 to accelerate the development of safer alternatives to existing PFCs. These could include extended producer warranties to address safe disposal, more stringent labelling requirements, mandatory requirements for data generation by producers and users of these substances and education programs aimed at retailers and consumers.⁷⁵ But of course, as one witness pointed out banning or prohibiting the use of a substance is the quickest way to accelerate change to safer alternatives. The Committee urges the Government of Canada to look into all of these alternative measures and make use of them where feasible to provide an impetus to find safe alternatives to PFCs.

If the substance was prohibited under CEPA that would accelerate the change. It is that simple.

G. Krantzberg, Professor and Director, Dofasco Centre for Engineering and Public Policy, McMaster University, *Proceedings (Evidence) of Standing Senate Committee on Energy, Environment and Natural Resources*, Issue 12, 15 February 2007

The Government of Canada has announced an Action Plan to deal with PFCAs and their precursors.⁷⁶ While this is a commendable step in the right direction, the Committee understands that the plan deals only with perfluorinated chemicals comprised of nine or more carbons – the so-called long chain PFCs. This means that one of the substances of greatest concern, PFOA, which has an eight-carbon chain, is excluded from the plan. The Government of Canada is conducting an assessment of PFOA and

⁷⁵ G. Krantzberg, Professor and Director, Dofasco Centre for Engineering and Public Policy, McMaster University, *Proceedings (Evidence) of Standing Senate Committee on Energy, Environment and Natural Resources*, Issue 12, 15 February 2007

⁷⁶ Environment Canada, *Action Plan on Perfluorocarboxylic Acids and Precursors*, 17 June 2006, <http://www.ec.gc.ca/nopp/DOCS/rpt/PFCA/en/actionPlan.cfm>

announced its intention to develop a separate Action Plan to deal with it by late 2007. It had still not been published as of the date of this report.

It is assumed that as new substances are developed to replace PFCs, the New Substances Review provisions of CEPA 1999 and the prudent application of the Precautionary Principle will ensure that they are not introduced into Canada until the producers and/or importers can show government officials that they are safe.

LIST OF RECOMMENDATIONS

Recommendation 1:

The Committee recommends that the Government of Canada amend CEPA 1999 to ensure that, if provinces and territories fail to take action to implement Canada-Wide Standards and/or show measurable progress towards achieving the objectives of a Canada-Wide Standards within a specified timeframe, the Government of Canada shall propose and implement regulations.

Recommendation 2:

The Committee recommends that the Government of Canada move immediately to develop and implement regulations under CEPA 1999 to manage the risk posed by consumer products containing mercury.

Recommendation 3:

The Committee recommends that CEPA 1999 be amended to require a review of all of its regulations every five years to ensure that they are continuously improving.

Recommendation 4:

The Committee recommends that the Government of Canada revise the *Toxic Substances Management Policy* (TSMP) to permit the inclusion of natural substances in Track 1 and subsequently to target mercury for virtual elimination with the goal of reducing it to naturally occurring background levels.

Recommendation 5:

The Committee recommends that the definition and implementation of the concept of “virtual elimination” under CEPA 1999 and the *Toxic Substances Management Policy* be brought into alignment with that of the *Great Lakes Water Quality Agreement*.

Recommendation 6:

The Committee recommends that the Government of Canada examine overlapping reporting requirements to avoid unnecessary duplication.

Recommendation 7:

The Committee recommends that CEPA 1999 be amended to require the Government of Canada to publish a comprehensive State of the Environment Report no less frequently than every ten years.

Recommendation 8:

The Committee recommends that the Government of Canada amend CEPA 1999 to require organizations/companies to monitor the effects on the environment or human life and health caused by substances they use or release, and to report results to the Minister.

Recommendation 9:

The Committee recommends that the Government of Canada amend CEPA 1999 to require the establishment of a National Human Health Monitoring Program and that the information gathered be made publicly available on the CEPA 1999 Registry. In light of current information, particular attention should be paid to Canada's Arctic peoples and regions.

Recommendation 10:

The Committee recommends that the Government of Canada adopt child-specific uncertainty factors in its child-oriented risk assessment processes.

Recommendation 11:

The Committee recommends that the Government of Canada work to improve public education on the safe disposal of mercury-containing products and improve hazardous waste disposal processes and availability.

Recommendation 12:

The Committee recommends that the Government of Canada amend CEPA 1999 to address the clean-up of existing mercury-contaminated sites.

Recommendation 13:

The Committee recommends that the Government of Canada to make wider use of these data-collection powers and to ensure that all information that is not of a strictly proprietary nature be made available to the public in a timely fashion.

Recommendation 14:

The Committee recommends that CEPA 1999 be amended by removing the need for a citizen to show that an action has caused significant harm to the environment before being able to proceed with an environmental protection action.

Recommendation 15:

The Committee recommends that the Government of Canada amend CEPA 1999 to permit fine splitting and court cost recovery in cases of private prosecution.

Recommendation 16:

The Committee recommends that the government amend CEPA 1999 by introducing specific timelines for action to screen the 4000 substances identified by the categorization process as requiring screening assessments and to develop and implement the specified management plans.

Recommendation 17:

The Committee recommends that CEPA 1999 be amended by adding specific timelines for dealing with substances identified as requiring further assessment under any provisions of the Act, and for the development and implementation of the specified management plans.

Recommendation 18:

The Committee recommends that CEPA 1999 be amended to explicitly make it an offence under the Act to fail to prepare, file and implement an ordered pollution prevention plan.

Recommendation 19:

The Committee recommends that section 56 (2)(c) of CEPA 1999 be amended to replace the words “factors to be considered” with “factors to be included” in a pollution prevention plan.

Recommendation 20:

The Committee recommends that the definition of bioaccumulation in the *Persistence and Bioaccumulation Regulations* of CEPA 1999 be amended to ensure that no substance that is found to be persistent, bioaccumulative and inherently toxic is left off the Virtual Elimination List.

Recommendation 21:

The Committee recommends that the Equivalency Agreements section of CEPA 1999 be amended to include, in addition to provincial regulations, other provincial measures that have at least equivalent effect.

Recommendation 22:

The Committee recommends that CEPA 1999 be amended to include a requirement for the assessment of the cumulative impact on the environment and/or human health of substances or classes of substances with similar modes of action.

Recommendation 23:

The Committee recommends that substances with similar modes of action, sites of toxicity, unique modes of bioaccumulation and modes of environmental transport be assessed as a class, as is currently required for pesticides under the *Pest Control Products Act*.

Recommendation 24:

The Committee recommends that CEPA 1999 be amended to give the Ministers of Environment and Health explicit power to designate areas and populations in need of special protection under the Act.

GLOSSARY

acute exposure: exposure to a high level of a substance or condition over a short time period.

bioaccumulation: the increase of concentration of a substance in the tissues of a living organism due to the rate of absorption or ingestion of that substance being greater than the rate at which the organism eliminates it.

biomagnification: the process whereby organisms higher on the food chain exhibit higher concentrations of bioaccumulative substances than do their prey, due to the fact that the predator ingests the life-time accumulation of the substance in every prey organism it consumes.

chronic exposure: exposure to a substance or condition over a long period of time, generally at lower levels than would be considered when assessing acute exposure.

cinnabar: the common name for mercury sulphide (HgS), the most prevalent mercury ore.

dental amalgam: an alloy (mixture of metals dissolved together) of mercury, silver and other metals used to fill dental cavities.

endocrine disruptor: a chemical which interferes with the endocrine (sex hormone) system in animals, generally by mimicking the effect of natural sex hormone molecules.

immunotoxic: the property of a substance which interferes with the proper functioning of the immune system in animals exposed to it at some concentration.

inherently toxic: a property of a substance, such that it could have toxic effects on living organisms at some concentration or mode of use. It is used in CEPA 1999 and its regulations to distinguish it from other uses of the term “toxic” in the Act.

inorganic compound: a chemical compound that does not include carbon-carbon molecular bonds and/or carbon-hydrogen molecular bonds.

level of quantification: defined in CEPA 1999 as “the lowest concentration (of a substance) that can be accurately measured using sensitive but routine sampling and analytical methods.” (Section 65.1)

mercury: a naturally occurring metallic element, element 80 on the periodic table; represented by the chemical symbol Hg.

methylmercury: the simplest organic mercury compound, an ion with the chemical formula CH_3Hg^+ .

neurotoxicity: the property of a substance which (at some concentration or mode of use) causes damage to the brain or nervous system.

organic compound: a chemical compound defined by having carbon-carbon molecular bonds and/or carbon-hydrogen molecular bonds.

persistence: the continued presence in the environment of a complex compound which does not readily degrade into simple substances when exposed to environmental conditions or biological organisms.

Priority Substance List: A list to be compiled by the Ministers of the Environment and of Health specifying “substances in respect of which the Ministers are satisfied priority should be given in assessing whether they are toxic or capable of becoming toxic” (CEPA 1999, subsection 76(1)).

salt: a compound made out of positively and negatively charged ions in fixed proportions such that the overall compound is electrically neutral.

surfactant: a substance, such as soap, which reduces the surface tension of a liquid and/or helps oils and water to mix.

toxic substance: a substance that “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.”
(CEPA 1999, section 64)

tumourigenic: the property of a substance which causes the development of tumours in animals exposed to it at some concentration. If the tumours are cancerous, the substance would also be considered carcinogenic.

Virtual Elimination List: A list to be compiled by the Ministers of Health and of the Environment under subsection 65(2) of CEPA 1999, consisting of toxic substances which are to be regulated to limit their release into the environment with the goal of reducing such releases to below detectable levels.

volatile: the property of a substance which readily evaporates under standard temperature and pressure.

CHEMICAL NAMES AND ACRONYMS

CCME – Canadian Council of Ministers of the Environment

CEPA 1999 – *Canadian Environmental Protection Act, 1999* (S.C. 1999, c. 33)

CWS – Canada-Wide Standard

DSL – Domestic Substance List

FTOH – fluorotelomer alcohol: a compound consisting of a perfluorinated carbon chain with an even number of carbon atoms, connected to a two-carbon primary alcohol group.

HPA – *Hazardous Products Act* (R.S., 1985, c. H-3)

PFC – perfluorinated compound (or perfluorocarbon): general name for a class of synthetic organic chemicals that contains a chain of carbon atoms surrounded by fluorine atoms, to which a “functional group” of chemicals is added.

Some examples are:

- **PFCA** – perfluorinated carboxylic acid (or perfluoroalkyl carboxylate): a perfluorinated compound where the added functional group is a carboxylic acid (COOH).

An example is:

- **PFOA** – perfluorinated octanoic acid: a perfluorinated carboxylic acid in which the carbon chain has eight atoms.

- **PFAS** – perfluoroalkyl sulfonate (or perfluorinated sulfonate): a perfluorinated compound where the functional group is a sulfonate (SO₃⁻) or sulfonic acid (SO₃H) group. in the non-acid form, the negatively charged sulfonate ion will always be balanced by a positively charged ion (e.g. potassium, ammonium) to form a salt.

An example is:

- **PFOS** – perfluorooctane sulfonate: a perfluoroalkyl sulfonate in which the carbon chain has eight atoms.

RMS – risk management strategy

TSMP – Toxic Substance Management Policy

VE – virtual elimination

APPENDIX A:

List of witnesses who appeared before the Committee:

May 16, 2006

Department of Justice:

Daniel Blasioli, Senior Counsel.

Environment Canada:

Cécile Cléroux, Assistant Deputy Minister, Environment Stewardship Branch;

John Moffet, Acting Director General, Systems and Priorities.

Health Canada:

Paul Glover, Director General, Safe Environments.

June 6, 2006

Canadian Association of Petroleum Producers

Brian Maynard, Vice President, Stewardship and Public Affairs.

Canadian Chemical Producers' Association:

Gordon Lloyd, Vice President, Technical Affairs.

Canadian Consumer Specialty Products Association:

Shannon Coombs, Executive Director.

Canadian Manufacturers and Exporters:

Nancy Coulas, Director, Environmental Policy.

June 8, 2006

PollutionWatch:

Hugh Benevides, Staff Counsel.

Kapil Khatter, Director of Health and Environment.

Sierra Legal Defence Fund:

Robert Wright, Managing Counsel.

June 13, 2006

Office of the Auditor General of Canada:

Johanne Gélinas, Commissioner of the Environment and Sustainable Development.

John Reed, Principal.

June 15, 2006

Pollution Probe:

Ken Ogilvie, Executive Director.

Reach for the Unbleached Foundation:

Delores Broten, Senior Policy Advisor.

Save the Oak Ridge Moraine (STORM) Coalition:

Anna Tilman, Chair.

June 20, 2006

Environment Canada:

Nadine Levin, Senior Policy Specialist, Head, Regulations and Strategies Section, Enforcement Services Directorate.

As an individual:

The Honourable Charles Caccia, P.C.

October 3, 2006

Office of the Auditor General of Canada:

Johanne G  linas, Commissioner of the Environment and Sustainable Development;

Neil Maxwell, Principal;

Richard Arseneault, Principal;

David McBain, Director;

Kim Leach, Director.

October 5, 2006

Canadian Environmental Network:

Anna Tilman, Co-Chair, Toxics Caucus.

Ivey Foundation:

Bruce Lourie, President.

Sierra Legal Defence Fund:

Elaine MacDonald, Staff Scientist.

October 17, 2006

Health Canada:

Steve Clarkson, Director, Risk Impact Assessment Bureau.

Environment Canada:

James Riordan, Executive Director, National Office of Pollution Prevention.

October 24, 2006

Association of International Automobile Manufacturers of Canada:

David C. Adams, President.

Canadian Electricity Association:

Victoria S. Christie, Senior Advisor, Environmental Affairs.

Canadian Vehicle Manufacturers' Association:

Mark Nantais, President.

Coal Association of Canada:

George White, Consultant and Senior Advisor, Sherritt International.

Mining Association of Canada:

Justyna Laurie-Lean, Vice President, Environment and Health.

- October 26, 2006 **Canadian Dental Association:**
Wayne Halstrom, President;
Benoit Soucy, Director, Membership and Professional Services.
- October 31, 2006 **Pollution Watch:**
Kapil Khatter, Director of Health and Environment.
- Sierra Legal Defence Fund:**
Hugh Wilkins, Staff Lawyer.
- November 2, 2006 **Environment Canada:**
James Riordan, Executive Director, National Office of Pollution Prevention.
- Health Canada:**
Steve Clarkson, Director, Risk Impact Assessment Bureau.
- November 9, 2006 **Canadian Association of Physicians for the Environment:**
Victoria Lee, Board Member.
- Canadian Public Health Association:**
Timothy Lambert, Volunteer.
- Canadian Strategy for Cancer Control:**
David Bennett, Member of the National Environmental and Occupational Exposures Committee.
- November 23, 2006 **As an individual:**
Linda F. Duncan
- November 28, 2006 **Senate of Canada:**
The Honourable Jerahmiel S. Grafstein, Senator, Sponsor of the Bill.
- February 1, 2007 **Environment Canada:**
John Arseneau, Director General, Science and Risk Assessment;
Derek M. Muir, Chief, Atmospheric Contaminant Impacts.
- Health Canada:**
Steve Clarkson, Associate Director General, Safe Environments Programme;
Myriam Hill, Section Head, New Chemical Substances 1, New Substances Assessment & Control Bureau Product Safety Programme HECS.
- February 8, 2007 **University of Toronto:**
Scott Mabury, Professor of Environmental Chemistry and Chair, Department of Chemistry.
- February 13, 2007 **Senate of Canada:**
The Honourable Jerahmiel S. Grafstein, Senator, Sponsor of the Bill.

- February 15, 2007 **As an individual:**
Gail Krantzberg, Professor and Director, Dofasco Centre for Engineering and Public Policy, McMaster University.
- As an individual:**
Joe Schwarcz Director, McGill University Office for Science and Society.
- February 20, 2007 **Canadian Environmental Network:**
Sheila Cole, Environment and Health Educator - Environmental Health Association of Nova Scotia - Board of Directors, Co-Chair, Health Caucus;
Sandra Madray, Research and Education - Chemical Sensitivities Manitoba, Caucus Member.
- Pollution Watch:**
Kapil Khatter, Director of Health and Environment;
Kathleen Cooper, Senior Researcher, CELA.
- As an individual:**
Richard Purdy, Toxicologist.
- February 22, 2007 **Canadian Chemical Producers' Association:**
Gordon Lloyd, Vice President, Technical Affairs.
- E. I. du Pont Canada Company:**
Paul Marriott, Technical Manager.