

**SUBMISSION TO THE STANDING SENATE COMMITTEE ON ENERGY, THE  
ENVIRONMENT AND NATURAL RESOURCES**

**MERCURY AS IT RELATES TO THE CANADIAN ENVIRONMENTAL  
PROTECTION ACT (CEPA 1999)**

**October 5, 2006**

Anna Tilman  
Co-Chair,  
Toxics Caucus, Canadian Environmental Network

## **Introduction**

I am pleased to have the opportunity to make a presentation to the Standing Senate Committee on Energy, the Environment and Natural Resources on the issue of Mercury as it relates to the Canadian Environmental Protection Act. I feel this subject requires some careful consideration and in-depth analysis and very pleased at your committee's interest in this topic.

Given that mercury is a global pollutant, setting regulations under CEPA would fit into the national interests as well as provide a platform for international obligations. At the outset, I contend that CEPA 1999 has not been well utilized in terms of regulation with respect to mercury emissions and mercury in consumer products.

Furthermore, where equivalency agreements have come into play, such as the Canada-wide Standards (CWS) for Mercury, I will site specific examples to point out the problems with the CWS from the point of view of coverage, effectiveness and implementation. These examples are intended to answer questions that the Committee has put forthwith respect to the successes and shortcomings of CEPA 1999.

## **Preface**

Mercury is widely recognized to be one of the most pervasive multi-media toxins known. A natural element buried deep in the earth's crust, and a trace element in fossil fuels, mercury is highly volatile, unpredictable and indestructible. Once released into the environment, it is readily transformed into different forms, found in air, water and soil, and travels the globe eluding capture. Its unique properties have led to a wide array of applications in consumer products and industrial processes.

Since the industrial age, emissions of mercury resulting from human activity, such as combustion sources and the use and disposal of mercury-containing products, have led to more than tripling mercury levels in the atmosphere. And with every passing year, the global pool of mercury increases as these activities continue. The worldwide contamination of fish with mercury is perhaps the best-known litmus test of the damage done by this toxin to the ecosystem.

The neurological and developmental effects of mercury exposure on human health and wildlife are well documented. Such effects range from subtle but permanent nerve damage to losses of sensory or cognitive ability, learning disabilities, birth defects, tremors, multiple sclerosis, to death. As well, it can lead to alterations to the immune system, liver degeneration, kidney toxicity and cardiovascular disease; Populations at greatest risk are women of child-bearing age, young children, the fetus, and communities reliant on fish and wildlife in their traditional diets.

The insidious symptoms of mercury poisoning may not readily manifest themselves, and may often be undetected or misdiagnosed especially in cases of exposure at low doses. Even smaller exposures may cause subtle and irreversible damage to the brain and central

nervous system, particularly among children and during fetal development. And there is likely no threshold at which effects cannot be observed.

The use and release mercury into the environment have impacted the most vulnerable, compromised and least powerful communities in the world. For example, many communities in the Arctic suffer a disproportionate and unfair burden of pollutants such as mercury and PCBs - pollutants whose presence in the Arctic is mainly due to their long-range transport from industrial sources thousands of kilometres away.

The longer and the more extensive the anthropogenic use and emissions of mercury continue, the greater the global loading and cumulative impact of mercury will be. The simple reality is that we are unleashing a highly toxic element into the environment that we cannot not capture, contain or destroy.

International commitments, agreements and initiatives (for example the UNEP Mercury Global Assessment 2003) have arisen in response to concerns over exposure to mercury and in an attempt to reduce the continuing usages and increasing emissions of mercury globally, regionally and locally. *Many environmental organizations have called for the virtual elimination of all uses and releases of human-induced mercury pollution (within a specified time period).* The question is – what is Canada doing in this regard and is it appropriate and even adequate in considering the nature of this toxin.

### **Mercury and CEPA - Designation**

Under the Toxics Substance Management Policy 1995 (TSMP), a substance that is persistent, bioaccumulative, toxic (CEPA-toxic or equivalent) and primarily the result of human activity, is targeted for virtual elimination from the environment and is designated a Track 1 substance. Substances that don't satisfy all these criteria are designated Track 2 which, in turn, “requires life-cycle management to prevent or minimize its release into the environment”. Mercury has been designated a Track 2 substance, since it is a “naturally” occurring substance as distinguished from a substance derived mainly from human activity.

However the increases in mercury in the environment to triple levels found before the industrial age is a result of human activity. According to the TSMP, “a Track 2 substance in the environment as a result of human activity relating to specific products, uses or releases may be targeted for virtual elimination from the environment if it poses unacceptable risks to the environment or human health. Elements and naturally occurring substances that are used or released as a result of human activity may be targeted under Track 2 for reduction to naturally occurring levels.”<sup>1</sup>

The distinction between Track 1 and Track 2 substances is rather specious, particularly in the case of mercury. While mercury has been released into the environment for eons from natural sources such as volcanoes and forest fires, nonetheless it is human activity that has more than tripled the levels of mercury in the environment and has given cause to the

---

<sup>1</sup> <http://www.ec.gc.ca/toxics/TSMP/en/track1.cfm>

concern of the rising mercury burden throughout the world. The term “life-cycle management” is vague and not conducive to dealing with this substance. Clearly, mercury is a case for seeking reduction to naturally occurring levels.

Unfortunately, the policy has resulted in treating mercury as a Track 2 substance without considering the impact of human activity. The fixation on this approach has likely hindered appropriate regulatory action. This is an area that needs examination. Is there any validity (legal) to the Track 2 designation or to the TSMP?

The TSMP is only policy framework for making decisions on managing toxic substances. It is not a CEPA requirement. Policy should not override law.

### **Harmonization – (Canada-wide Standards) – CEPA 1999**

Part 1 of CEPA 1999 includes provisions that allow for equivalency agreements as a means of harmonizing environmental standards. The primary vehicle for “harmonization” to date has been Canada-Wide Standards (CWS) for 6 priority substances, one of which is mercury<sup>2</sup>.

The CWSs are intended to be achievable targets based on science, social and economic impacts and technical feasibility. Each jurisdictional government is responsible for the implementation of the CWS. CWS have no legal force unless a jurisdiction issues a regulation or permit specifying the CWS. Facilities are expected to make “determined efforts” to attain the CWS.

Decisions of the CCME on the CWS are reached through consensus. Differences in jurisdictional priorities and political will-power make such a process unwieldy and result in delays, deadlock and a less-than-satisfactory outcome, i.e., the lowest common denominator. Implementation of the CWS is in the hands of each individual jurisdiction which can result in inconsistency amongst jurisdictions. Furthermore, any jurisdiction can withdraw from the CWS upon a 3-month notice<sup>3</sup>.

The outcome of harmonization through the CCME via Canada-wide Standards (CWSs) has led to low-level unenforceable “standards” that do not give adequate protection of the health and environment of Canadians and has severely compromised the role of the federal government in setting national environmental standards.<sup>4</sup>

---

<sup>2</sup> CWS fall under the aegis of the Canadian Council of Ministers of the Environment (CCME), under the framework of the Canada-wide Accord on Environmental Harmonization and the Standards Sub-Agreement (1998). Québec is not a signatory to the Accord or any CWS.

<sup>3</sup> Recent administrative changes in the CCME by the formation of the Air Management Committee (AMC), has severely reduced multi-stakeholder engagement opportunities.

<sup>4</sup> A preliminary five-year review of the harmonization agreement prepared for the CCME in 2003 did show the problems of outcomes based on the lowest common denominator and of deadlock flowing from the CCME’s consensus-based decision-making processes.

## Canada-wide Standards (CWS) for Mercury

### Background

The CWS for mercury has focused on *atmospheric releases* from designated sectors that account for most of such releases. These sectors include base metal smelters, waste incinerators (medical, municipal solid waste and hazardous waste), coal-fired electrical power generating facilities (EPG) as well as some of the mercury-containing products. To date, CWSs for mercury have been endorsed for base metal smelters, incinerators, mercury-containing lamps and dental amalgam waste<sup>5</sup>. However, after a rather contentious 7 year period, a mercury-CWS for the EPG sector is still in-waiting.

CWS have been the major activity in Canada for mercury. But the weaknesses of this approach are apparent. Not only are CWS limited in that they are restricted to certain sectors and air emissions, they have no legal force. Mercury requires an approach that considers the use, release and disposal issues with respect to all media.

### Case 1 - Electric Power Generating Sector

Coal-fired power plants are the largest single anthropogenic source sector of atmospheric mercury emissions in Canada, emitting in the order of 2 695 kg, approximately 40% of all atmospheric emissions in Canada. Of the total amount of mercury in coal that is burned in these facilities, less than 30% on a national average is captured by pollution control devices and the level of capture is highly variable amongst the various facilities.

Considering that mercury is such a highly toxic, persistent and bioaccumulative substance and the role of coal-fired plants as a dominant contributor to increasing mercury levels worldwide, strong enforceable measures would seem essential to make any headway to minimize mercury emissions from these facilities. However, the instrument to implement such measures in Canada was not federal regulation, but a Canada-wide Standard.

The development of the CWS for this sector has followed a thorny and tortuous path since it onset in 1999. One could cite several factors for the lack of progress in this regard – strong reluctance on the part of industry at the onset to move forward on the issue, watching and waiting for U.S. regulatory action on mercury standards for coal-fired plants before proceeding with a “Canadian” solution<sup>6</sup>, jurisdictional differences with respect to the role of coal-fired power plants, lack of information available on these facilities to best inform a CWS, and so on. All of these factors and many more, contributed to inordinate delays in the development of a CWS which made it unlikely that there would be significant reductions of mercury emissions by 2010.

---

<sup>5</sup> CCME website – [www.ccme.ca](http://www.ccme.ca)

<sup>6</sup> During the consultation process (June 2003), the CCME indicated that it would be seeking alignment of the CWS with the U.S. regulatory actions on mercury emissions from coal-fired power plants. The feasibility of an alignment seemed unlikely and unwise with the outcome of the U.S. final mercury rule.

The failure to curb emissions earlier means that the cumulative amount of mercury released to the atmosphere from these facilities would exceed 13,000 kg over a 5-year period.

From the very beginning of this process, Environmental Non-Government Organizations (ENGOS) supported strong measures to achieve reductions in mercury emissions from these facilities by about 90% within a 10-12 year time frame (originally by 2010)<sup>7</sup> and repeatedly stressed the need for a regulatory instrument under CEPA 1999. Reductions in mercury emissions from this sector in a timely manner were deemed essential if there was to be an impact on the cumulative mercury burden.

In addition to specific timelines and targets, ENGOS recommended pollution prevention measures, measures to deal with mercury in ash residues, renewable energy strategies, energy efficiency and conservation, and stricter standards for new facilities as key items for inclusion in the CWS.<sup>8</sup>

In July 2005, a draft CWS for the Electric Power Generating (EPG) sector was finally published. However, the contents and several elements of this draft failed to address the seriousness of the problem appropriately and did not elicit confidence that it will have a dramatic impact on mercury emissions from coal-fired plants. [One of the most striking shortcomings of the proposed CWS is that it perpetuates the use of coal with high mercury content, presumably to avoid jurisdictional issues of using indigenous coal.]

At this stage, the draft has yet to materialize into a final CWS. So we are in a limbo as far as this sector goes.<sup>9</sup>

Certainly lessons learned in this process show that nothing can be taken for granted, not even the anticipated closure of coal plants in Ontario in 2009 which would have meant the target of zero mercury emissions for 2010, or the failure to consider a growth in this industry from the beginning of the process. Had there been a regulation on the mercury limit to begin with, failure to close plants or introduce new plants would not have been the issue.

## **Case 2 - Mercury Switches: Canada-wide Standards or CEPA**

In 2002, the CCME began a multi-stakeholder process to explore possible mechanisms to address a significant “reservoir” of mercury in vehicles and appliances that contain mercury switches under the existing framework of the mercury CWS.

The essential problem with these switches revolves around avoiding releases of mercury from this “reservoir” to the environment as these vehicles and appliances reach their

---

<sup>7</sup> This recommendation, submitted in 2002 to the CCME, represented the views of many environmental organizations in Canada.

<sup>8</sup> Refer to “Mercury...A Public Concern” A. Tilman March 2002, for a CWS that was proposed and supported by ENGOS at that time.

<sup>9</sup> Refer to Comments by A. Tilman on the draft CWS (September 12, 2005)

“end-of-life” and are scrapped, shredded in the numerous scrap yards and “recycled” as a feed source in the production of steel in Electric Arc Furnaces (EAFs)<sup>10</sup>.

While removal of mercury switches from convenience lighting applications is a fairly simple procedure, very little known recovery actually occurs. The automotive industry indicated that it would phase out the primary uses of mercury such as convenience lighting (or other applications) in most models by 2004<sup>11</sup>. However, since most mercury switches, in particular from automobiles, are unlikely to have been removed prior to shredding, virtually all mercury from these products will be released as air emissions when they are recycled in EAFs.

The CCME multi-stakeholder committee initiated discussions and proposals on various approaches regarding life-cycle management of mercury switches to reduce and avoid the emissions and release of mercury from these switches. Discussions ranged from actions and regulations underway in various regions and proposals for collection and disposal of mercury switches and producer responsibility.

Upon reviewing the work of this committee, the Development Committee (DC) of the mercury CWS decided that “jurisdiction-based mercury switch management programs, with or without recognition of early action, would be the most effective, flexible and timely approach and that a CWS in this case was not feasible”. With no resolutions forthcoming, and lack of cooperation on some parties, in particular the auto industry representatives, the stakeholder committee was officially terminated a year after it began and the possibility of developing any national program seemed remote.

In 2006, Environment Canada decided to use its powers under CEPA and require Pollution Prevention Planning for Mercury Releases from Electric Air Furnaces and mercury-containing components and switches in vehicles. The P2 instrument in this case is most likely an appropriate instrument for the sectors involved.

This case indicates the unworkable forum of CWSs and the wasted time and effort in trying to deal with issues on mercury through equivalency non-regulatory agreements.

### **Pollution Prevention (P2) Planning under CEPA 99**

The main mechanism under CEPA 99 applied to date with respect to pollution prevention is the P2 planning instrument (Sections 56-63). Pollution prevention (P2) plans are non-regulatory tools although they may contain elements that are covered under regulation (e.g., jurisdictional permits, etc.).

P2 planning has been applied in two cases with respect to mercury, namely, base metal smelters and mercury switches in automobiles (as indicated above). Comments with respect to the P2 instrument (CEPA) in general along with examples of the issues specifically related to the base metal sector follow.

---

<sup>10</sup> Refer to Chtr 3: Mercury A Global Toxin (A. Tilman) for background on this issue.

<sup>11</sup> Canadian Vehicle Manufacturers' Association (CVMA) Poster on “Mercury Switch Removal”, 2002.

The preparation of a P2 plan includes a number of “factors to consider”, such as the risk management objective and site specific targets. There is no legal requirement to meet factors specified in the Notice, only to consider them in the preparation of a plan. Where a specified target or other factor is not met, an explanation as to why that is the case is required.

Failure to comply with the P2 planning notice, that is not filing a declaration, means non-compliance with CEPA 99. However, it is not clear what this entails. There are no provisions or plans for auditing or monitoring facilities with respect to performance and/or compliance with their P2 plans.

P2 planning requirements cease at the time of implementation of the Plan. Unless otherwise specified on the Notice, it is not clear what measures will be in place to assess whether CEPA-toxic substances continue to be managed following implementation and ensure accountability to government as well as the public.

The overriding question is whether P2 planning under CEPA 99 is an effective and efficient tool that reflects the principle of pollution prevention and whether or in what case it is appropriate for mercury. This question is particularly pertinent in light of P2 planning being the Federal Government’s preferred risk management instrument for CEPA-toxic substances in their expectation to minimize the need for regulatory interventions. To date, only eight such pollution prevention plans are underway and none have been implemented.

#### **Issues to Consider in improving P2 Planning:**

- What can be done to promote the development of safe alternatives and techniques in a pollution prevention strategy?
- What improvements are needed to the time schedule from inception of the plans to implementation?
- What mandatory elements need to be introduced into P2 planning?
- What can be done to improve the application of pollution prevention?
- What provisions can be added to make the plans (not just the declarations) publicly available and allow for public input?

#### **Case 3 - Base Metals Smelters (Mercury)**

These facilities represent the single largest industrial source of emissions of sulphur dioxide in Canada as well as a major source of CEPA toxic metals (including mercury, lead, cadmium, nickel and arsenic). P2 planning is the designated risk management tool for the base metal smelter sector<sup>12</sup>.

---

<sup>12</sup> Refer to the P2 Notice in the Canada Gazette, Part 1, April 29, 2006

## Mercury Emissions

Hudson Bay Mining and Smelting (HBMS) in Flin Flon Manitoba accounts for about 80% of emissions of mercury to air from this sector in Canada. Further to that, it is the largest point source of mercury emissions in North America. In the past 5 years, emissions from HudBay have been routinely in the order of 1200-1500 kg per annum<sup>13</sup>.

This facility is the only one cited in the P2 Notice for a specific mercury target (Table 4). The target specified is 373 kg annually by the December 31, 2008, a value derived from the Canada-wide Standard (CWS) for Mercury Emissions from the Base Metal Sector. This target represents about a 70% reduction in mercury emissions relative to the 2002 value. However, there are no targets specified after that date.

There are no targets cited for other smelters. Mercury emissions from these facilities as well as new facilities are to be addressed by the CWS for Mercury Emissions from the Base Metal Sector<sup>14</sup>. This is unfortunate as some of these facilities have exhibited relatively larger emissions of mercury (e.g., Teck-Cominco, Noranda-Horne and Noranda-New Brunswick) as well as a substantive variation in mercury emissions<sup>15</sup>.

As well, the target for **total releases of CEPA-toxic metals (including mercury)** are based on the Strategic Options Report (SOR), 1997 and are in the order of 80% by 2008 and 90% (based on 1988 levels)<sup>16</sup>.

Significant issues with the treatment of mercury are:

- ✓ Mercury emissions from HBMS HudBay result solely from its copper smelter operation, not its zinc operation. However, the target of 373 kg per annum was based on the total production of copper and zinc. This value should be revised to about 170 kg to reflect copper production only.
- ✓ CWS: The only date specified in the CWS is 2008. Further, existing facilities are expected to make a *determined effort* to meet the standard by 2008. This is vague language. There is no mechanism to judge how or whether such efforts were made and whether “effort” suffices even if the “standard” is not met. The CWS requires implementation by provincial jurisdictions, but so far, it is not clear how some provinces intend to implement the CWS.
- ✓ The application of the Strategic Options Report (SOR) Recommendation for CEPA-toxic metals (lead, cadmium, mercury, arsenic and nickel) is unacceptable. Not only is it not legally enforceable, it backdates levels of metal emissions to a base year of 1988. At that time the total metal releases added up to approximately 4000 tonnes, mercury alone was at 28 tonnes. Total reductions fell to less than

---

<sup>13</sup> Source: National Pollutant Release Inventory (NPRI).

<sup>14</sup> The CWS is to achieve an environmental source performance guideline through the application of “best available pollution prevention and control techniques” of 2 grams mercury per tonne total production of finished metals. The performance guideline for new and expanding facilities is 0.2 g per tonne production of finished zinc, nickel and lead and 1 g mercury per tonne production of finished copper when in full-scale operation. Refer to [www.ccme.ca](http://www.ccme.ca) for information on the Canada-wide Standards for Mercury.

<sup>15</sup> For example, mercury emissions from Teck-Cominco were 690 kg (2001) and 136 kg (2002) (NPRI).

<sup>16</sup> Recommendation 1, [www.ec.gc.ca/toxics/docs/sor/bms/en.toc.cfm](http://www.ec.gc.ca/toxics/docs/sor/bms/en.toc.cfm)

50% by 1993-5. Each of these metals exhibit very different amounts of releases and degrees of toxicity. They should never be totaled. And mercury emissions, being the smallest amount, would be swamped by the emissions of the other metals.

While the P2 Plan could address the application of regulatory measures as a factor to consider, the Notice (factor 4(5)) indicates that “it is the intention of the Minister of the Environment and the Minister of Health to recommend release regulations for base metal smelters and refineries, and zinc plants, effective 2015, with possible Equivalency Agreements with provinces”. This is no guarantee that there will be regulation under CEPA.

### **Conclusion**

It has taken almost 2 decades of discussions with the base metal sector to arrive at a quasi-regulatory instrument under CEPA 99. There is little comfort that real and significant reductions will be made with respect to mercury and other substances. Can one expect that HBMS would reduce emissions within 2 years (from 1400 kg to 373 or less), based on their track record? And the protracted date of implementation, 2015, of this tool is too far in the horizon to see any appreciable improvements.

Emissions from this sector should have and could have been regulated years ago under CEPA 99. Regulated release limits should have and could have been specified for mercury and the other CEPA-toxic substances as well as a host of other toxic substances (for example, beryllium) that continue to escape scrutiny. This is indicative of regulatory negligence.

Likewise, the application of the CWS for mercury for the electric power generating sector has proven to be ineffective. The lack of resolution in the present day could have been avoided by approaching the issue from a regulatory view and looking for means of addressing other pollutants from these facilities. Basically, the failure to utilize regulatory instruments under CEPA as a means of reducing mercury emissions speaks of lack of political will to address one of the most difficult and dangerous pollutants.

In considering that mercury is a global pollutant and that Canada plays a role in international agreements with respect to mercury, it is fitting that the federal government be the responsible party to apply appropriate regulations at a national level. It is also necessary to consider that human activity has resulted in vastly increasing the bio-availability of mercury. Thus, this would mean working toward a goal of elimination of anthropogenic sources of mercury and seeking to eliminate products containing mercury.

CEPA 1999 does have the powers to regulate consumer products that contain mercury and to regulate mercury emissions from industrial sources. Often cited is the time required to bring in regulation as a deterrent to enact legislation. This issue needs to be addressed. As well, the ability to enforce such regulations needs to be enhanced.

The lack of appetite to employ CEPA and rely on Canada-wide Standards (CWS) is disturbing. As some of the cases cited in this brief have demonstrated, the time spent on these processes has been severely protracted with very limited or no results. I question both the effectiveness of these agreements vis-à-vis regulation under CEPA. Basically, government(s) (provincial and federal) has lacked the political to apply appropriate and strong regulatory action where it is so clearly needed.

There are many outstanding issues with respect to mercury, including the continuing uses of mercury in consumer products where alternatives could be employed, as well as issues concerning trade, waste, and the storage and retirement of mercury that require investigation. Since these global issues require cooperation at the international level, federal measures are imperative.

In closing, I thank the Senate for the opportunity to present my views and look forward to providing assistance and cooperation in this case study.

Sincerely,

Anna Tilman