Order Adding Toxic Substances to Schedule 1 to the Canadian Environmental Protection Act, 1999

Statutory authority

Canadian Environmental Protection Act, 1999

Sponsoring departments

Department of the Environment and Department of Health

REGULATORY IMPACT ANALYSIS STATEMENT

(This statement is not part of the Order.)

Issue and objectives

In 2003, the United Nations Environment Programme (UNEP) Global Mercury Assessment Report (2003) concluded that all forms of mercury (which includes mercury compounds) are “highly toxic substances” that have caused a variety of significant adverse impacts on human health and the environment throughout the world. The scientific evidence provided by the UNEP report is sufficient to conclude that mercury compounds constitute or may constitute a danger to human health or to the environment as per the criteria set out under section 64 of the Canadian Environmental Protection Act, 1999 (CEPA 1999).

The objective of the proposed Order Adding Toxic Substances to Schedule 1 to the Canadian Environmental Protection Act, 1999 (hereinafter referred to as the proposed Order) is to add mercury compounds to the List of Toxic Substances, Schedule 1 to CEPA 1999. The proposed Order made under subsection 90(1) of CEPA 1999 would amend Item 8 of the list which currently references “mercury” to read “mercury and its compounds.” This addition would allow Ministers to develop other proposed regulations or instruments to manage the risks posed by these substances under CEPA 1999. The Ministers may also choose to develop non-regulatory instruments to manage these risks.

One of these proposed risk management instruments was pre-published in the Canada Gazette, Part I, in February 2011. The proposed Regulations Respecting Products Containing Certain Substances Listed in Schedule 1 to the Canadian Environmental Protection Act, 1999 would restrict the import, sale and manufacture of products that contain mercury and mercury compounds. (see footnote 1) The inclusion of products which contain mercury compounds (such as batteries) in this proposal is dependent upon the listing of mercury compounds to Schedule 1 of CEPA 1999. The Government of Canada is considering comments received on the proposed Regulations during the consultation period. All comments received will be taken into consideration in the development of regulatory control actions for products containing mercury and mercury compounds. Under the Risk Management Strategy for Mercury, the Government of Canada is committed to taking further actions to ensure it makes an ongoing and meaningful contribution to mercury emission reductions at home and internationally. (see footnote 2)

Description and rationale

Background

Canadians depend on chemical substances that are used in hundreds of goods, from medicines to computers, fabrics and fuels. Unfortunately, some chemical substances can negatively affect our health and environment when released in a certain quantity or concentration in the environment. Scientific assessments of the impact of human and environmental exposure have determined that a number of
these substances constitute or may constitute a danger to human health or to the environment as per the criteria set out under section 64 of CEPA 1999.

The addition of substances to Schedule 1 of CEPA 1999 allows the Ministers to develop risk management instruments to manage substances that constitute or may constitute a danger to human health and/or the environment as per the criteria set out under section 64 of CEPA 1999. The Act enables the development of risk management instruments which may be both regulatory and non regulatory (such as guidelines and codes of practice) to protect the environment and human health. These instruments can be developed to address any stage of the substance’s life cycle from the research and development stage through manufacture, use, storage, transport and ultimate disposal or recycling.

In 1988, "Mercury" was added to the List of Toxic Substances, Schedule 1 to the original Canadian Environmental Protection Act (later repealed and replaced by CEPA 1999). Mercury is currently listed as Item 8 on the List of Toxic Substances in Schedule 1 to CEPA 1999.

The Risk Management Strategy for Mercury, published on October 19, 2010, provides a comprehensive and consolidated description of the Government of Canada’s progress to date in managing the risks associated with mercury and its compounds (under CEPA 1999 and other legislation). It also outlines objectives, priorities, current and anticipated actions, and monitoring programs in place to address the ongoing risks associated with mercury and its compounds (www.ec.gc.ca/doc/mercure-mercury/1241/index_e.htm).

Substance description

Mercury occurs naturally in the environment and is also released as a result of human activity. Mercury in the environment is found in the following three general forms:

- pure mercury, which is also known as elemental or metallic mercury;
- inorganic mercury compounds; and
- organic mercury compounds.

The most common natural forms of inorganic mercury compounds found in the environment are mercuric sulphide, mercuric oxide, and mercuric chloride. Methyl mercury constitutes the most common form of organic mercury.

Mercury and its compounds persist in the environment in various inorganic and organic forms that can contribute to the overall loading in the environment. Mercury and its compounds circulate in air (sometimes over long distances), water, sediments, soil, and plant and animal life. (see footnote 3) Some micro-organisms and natural processes can change the mercury in the environment from one form to another. Methyl mercury, which is formed in the environment from the methylation of inorganic mercury, is of particular concern because it can build up (bioaccumulate and biomagnify) in many edible freshwater and saltwater fish and marine mammals to levels that are many thousands of times greater than levels in the surrounding water.

Mercury and its compounds have been used in a variety of products such as batteries, fireworks, explosives, pharmaceuticals, agricultural applications, pesticides, and in the treatment of fur and pelts. They have also been used as pigments, catalysts, preservatives, insecticides, fungicides, slimicides, general antibiotics, and medicine. Most uses of mercury compounds and domestic manufacturing of products containing them have been phased out or are being phased out due to concerns about toxicity. However, some products which may contain mercury compounds are still imported into the Canadian marketplace such as catalysts in polyurethane manufacturing, and various types of batteries (e.g. alkaline cell, manganese oxide, mercuric oxide, silver oxide, zinc air, and primary cell). (see footnote 4)

Mercury and its compounds released into the environment from both natural and anthropogenic sources such as product manufacturing, use and disposal, contribute to the levels of total mercury detected in the Canadian environment.

Health and environmental effects of mercury compounds

All forms of mercury and its compounds are toxic. Human exposure can cause brain, nerve, kidney, lung
and cardiovascular damage and, in extreme cases, coma or death. The primary route of human exposure to mercury and its compounds is by consumption of fish and fish-eating mammals with heightened levels of methyl mercury. Children exposed to methyl mercury while in the womb may experience developmental difficulties, delays in walking, lack of coordination and blindness. There is particular concern for subsistence fishers who eat large quantities of fish as part of their traditional lifestyles. (see footnote 5)

Environment Canada reports that high levels of mercury and its compounds are responsible for many recreational fish advisories in Canada each year (see footnote 6) and levels of mercury and its compounds found in many freshwater fish and lakes surpass the guidelines for human subsistence or commercial sale. High concentrations of mercury and its compounds in fish are also harmful to fish-eating wildlife. In 1994, it was shown that approximately 30% of Ontario lakes sampled contained small fish (< 250 g) with total mercury concentrations averaging more than 0.3 p.p.m., (see footnote 7) the level suggested as the dietary threshold for severe reproductive impairment in fish-eating birds. (see footnote 8) Fish-eating mammals such as mink and river otter are also known to be sensitive to the effects of mercury and its compounds.

As mercury and its compounds tend to accumulate in polar regions, concentrations measured in Canada’s Arctic lakes have increased by two- to three-fold over the past century. Canadian research shows that the levels of total mercury in Arctic ringed seals and beluga whales have increased two- to four-fold over the last 25 years in some areas of the Canadian Arctic and Greenland. The population of Ivory Gulls, a rare marine bird breeding at remote sites in the High Arctic, has declined by 80% since the early 1980s due at least in part to mercury (Ivory Gulls are now listed under the Species at Risk Act). Furthermore, recent research indicates significantly higher levels of total mercury in the blood of Inuit mothers in comparison with the general adult population. (see footnote 9)

UNEP global assessment

At the international level, the United Nations Environment Programme (UNEP) published the Global Mercury Assessment Report on mercury and its compounds in 2003. (see footnote 10) The report concluded that mercury and its compounds are “highly toxic substances” that have caused a variety of documented, significant adverse impacts on human health and the environment throughout the world. These substances are part of a global cycle and all contribute to the environmental loadings of the more harmful forms of mercury such as methyl mercury, which persists in the environment, accumulates in organisms, and is harmful to humans and organisms in the environment. Specifically, the UNEP global assessment concluded that sufficient evidence exists to warrant further immediate international action to reduce the risks of mercury and its compounds.

The Canadian Government played an important role in the development of the UNEP global assessment by submitting research and monitoring data as well as analysis used in the report. Data submitted included the Canadian guidelines for the human consumption of total mercury in fish and extensive data on total mercury concentrations in fish, mammals and birds from across Canada. For example, the UNEP report cites the following:

- total mercury concentrations in Canadian loon blood are highest in Eastern Canada and often in excess of concentrations thought to produce reproductive and behavioural effects; (see footnote 11)
- total mercury concentrations in fish muscle from the Arctic were demonstrated to be in excess of levels set to protect fish-eating birds and mammals;
- two major Canadian reviews (see footnote 12) of contaminants in the North that show that rates of accumulation of total mercury are 1.5 to 2.5 times higher in recent samples of ringed seals and belugas than they were 10 to 20 years ago;
- belugas in contaminated environments (St. Lawrence estuary) had higher content of total mercury in the kidney and liver than belugas from five Arctic locations; and
- a number of lakes in the Northwest Territories and northern Quebec have fish populations with levels of total mercury exceeding the human consumption guidelines.

Due to the depth of international and Canadian data and analysis on mercury and its compounds presented in the UNEP global assessment and the well-documented hazardous effects and exposure pathways of mercury and mercury compounds, it was decided that a separate Canadian assessment of...
Conclusions

The scientific evidence provided in the *Global Mercury Assessment Report* produced by the UNEP is sufficient to conclude that mercury compounds are found to be entering or have the possibility of entering the environment in a quantity or concentration or under conditions that have or may have an immediate or long-term harmful effect on the environment or its biological diversity, or that constitute or may constitute a danger to the environment on which life depends, as defined under paragraphs 64(a) and (b) of CEPA 1999.

Based on sufficient evidence of significant global adverse impacts from mercury and its compounds, it has been demonstrated that mercury compounds may be entering the environment in a quantity or concentration or under conditions that constitute or may constitute a danger in Canada to human life or health as set out in paragraph 64(c) of CEPA 1999.

Alternatives

The Government of Canada considered the option of not adding mercury compounds to Schedule 1. However, the status quo would not allow for a broad range of risk management action on mercury compounds and would limit Canada’s ability to manage the risks associated with mercury effectively. For example, the status quo would not allow the proposed mercury product regulations to control batteries and polyurethane catalysts which contain mercury compounds. In response to the broad international acceptance of the significant global adverse impacts associated with mercury and its compounds, the Government of Canada determined that the status quo would not allow it to take action on mercury and its compounds as may be required by the fact that they are considered to meet the criteria set out in section 64 of CEPA 1999.

Adding mercury compounds to Schedule 1 of CEPA 1999 would enable the Ministers to recommend the development of other proposed regulations or other instruments to reduce the risks to human health and to the environment associated with mercury compounds. It will also allow Canada to consider risk management options that may be proposed at the international level to reduce risks associated with mercury and mercury compounds to human health and the environment. For example, Canada is currently participating in a series of United Nations (UN) negotiations towards a legally binding instrument on mercury and its compounds for 2013.

Adding mercury compounds to Schedule 1 of CEPA 1999 by replacing Item 8 with “mercury and its compounds” would enable the development of regulations or other risk management options and is therefore the best option.

Benefits and costs

Adding mercury compounds to Schedule 1 of CEPA 1999 enables the Ministers to develop regulations or instruments for mercury compounds. The Ministers may, however, choose to develop non-regulatory instruments (such as pollution prevention plans, environmental emergency plans, guidelines, codes of practice) to help protect human health and the environment. The Ministers will assess costs and benefits and consult with the public and other stakeholders during the development of risk management proposals.

Consultation

On June 12, 2010, a *Notice of intent to recommend that mercury compounds be added to Schedule 1 of the Canadian Environmental Protection Act, 1999 under subsection 90(1) of the Act* was published in the *Canada Gazette*, Part 1, for a 60-day public comment period. Prior to this publication, Environment Canada and Health Canada informed the governments of the provinces and territories through the CEPA National Advisory Committee (NAC) of the release of the Notice of Intent, and the public comment period mentioned above. No comments were received from CEPA NAC.

During the 60-day public comment period, a total of two submissions were received, from an industry association and an electric utility company. All comments were considered in the development of the proposed Order.
Below is a summary of comments received for the Notice of Intent, as well as responses to these comments.

**Comment:** One industry association indicated that the use of mercury compounds in vehicle manufacturing has decreased due to a phase-out by vehicle manufacturers and that management activity for mercury and mercury compounds should be consistent with global approaches and give sufficient and necessary lead time for those impacted by potential regulatory actions.

**Response:** The Government of Canada recently published the *Risk Management Strategy for Mercury*, which provides information to stakeholders on objectives, priorities, current and anticipated actions, and monitoring programs in place to address the ongoing risks associated with mercury and its compounds. This strategy identifies proposed management actions that are currently being considered for mercury and its compounds.

Proposed risk management measures which flow from this strategy will be developed in consultation with industry and other impacted stakeholders. Issues related to lead time, implementation, and alignment with other jurisdictions will all be given due consideration throughout the risk management process.

**Comment:** One electric utility company suggested that methyl mercury should not be added to Schedule 1 of CEPA 1999 since it is already managed during electric dam construction through the Canadian Environmental Assessment Act and exposure is low or has low impact after the construction of a dam.

**Response:** Methyl mercury is one of the most harmful mercury compounds to humans and other organisms as it is persistent, it bioaccumulates and it can readily enter the brain and cross the placental barrier.

The presence of methyl mercury in the environment is not due solely to electric dam construction as it is formed by the methylation of mercury in the environment. This mercury could have originated from any source of mercury or mercury compounds.

As outlined in the *Cabinet Directive on Streamlining Regulation*, the federal government aims to minimize duplication throughout the regulatory process by consulting, coordinating, and cooperating across the federal government, with other governments in Canada and abroad, and with businesses and Canadians. As such, this concern will be taken into consideration during the development of any proposed regulatory action targeting mercury and its compounds.

**Implementation, enforcement and service standards**

The proposed Order would add mercury compounds to Schedule 1 of CEPA 1999, thereby allowing the Ministers to recommend the making of proposed regulations or other instruments respecting preventive or control actions in relation to mercury compounds to reduce the associated risks to human health and to the environment. An appropriate assessment of implementation, compliance and enforcement will be undertaken during the development of a proposed regulation or control instruments respecting preventive or control actions for these substances.

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Tina Green
PROPOSED REGULATORY TEXT

Notice is hereby given, pursuant to subsection 332(1) (see footnote a) of the Canadian Environmental Protection Act, 1999 (see footnote b), that the Governor in Council, on the recommendation of the Minister of the Environment and the Minister of Health, pursuant to subsection 90(1) of that Act, proposes to make the annexed Order Adding Toxic Substances to Schedule 1 to the Canadian Environmental Protection Act, 1999.

Any person may, within 60 days after the date of publication of this notice, file with the Minister of the Environment comments with respect to the proposed Order or a notice of objection requesting that a board of review be established under section 333 of that Act and stating the reasons for the objection. All comments and notices must cite the Canada Gazette, Part I, and the date of publication of this notice, and be sent by mail to the Executive Director, Program Development and Engagement Division, Department of the Environment, Gatineau, Quebec K1A 0H3, by fax to 819-953-7155 or by email to substances@ec.gc.ca.

A person who provides information to the Minister of the Environment may submit with the information a request for confidentiality under section 313 of that Act.

Ottawa, September 22, 2011

JURICA ČAPKUN
Assistant Clerk of the Privy Council

ORDER ADDING TOXIC SUBSTANCES TO SCHEDULE 1 TO THE CANADIAN ENVIRONMENTAL PROTECTION ACT, 1999

AMENDMENT

1. Item 8 of Schedule 1 to the Canadian Environmental Protection Act, 1999 (see footnote 13) is replaced by the following:

8. Mercury and its compounds

COMING INTO FORCE

2. This Order comes into force on the day on which it is registered.

Footnote 1

Footnote 2

Footnote 3
In this report, the phrase “mercury and its compounds” is used to reflect that mercury exists in both elemental and compound form. This will hold unless the specific impacts or characteristics being discussed are unique to an individual form of mercury.
Footnote 4

Footnote 5

Footnote 6

Footnote 7
It is important to note that most field studies only report levels of total mercury which is the sum of all mercury compounds in a sample.

Footnote 8

Footnote 9

Footnote 10

Footnote 11

Footnote 12

Footnote 13
S.C. 1999, c. 33

Footnote a
S.C. 2004, c. 15, s. 31

Footnote b
S.C. 1999, c. 33

NOTICE:
The format of the electronic version of this issue of the Canada Gazette was modified in order to be compatible with extensible hypertext markup language (XHTML 1.0 Strict).

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