North American Regional Action Plan on Mercury

North American Working Group on the Sound Management of Chemicals

North American Task Force on Mercury

Final Approved Version

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Preface

This *North American Regional Action Plan (NARAP)* is one of a number of such regional undertakings that stem from the *North American Agreement on Environmental Cooperation* between the governments of Canada, the United Mexican States and the United States of America. The Agreement established the Commission for Environmental Cooperation (CEC) to "facilitate cooperation on the conservation, protection and enhancement of the environment in their territories." The Council (of Ministers) of the Commission agreed to Resolution #95–5 on the Sound Management of Chemicals on 13 October 1995 at its second regular meeting held in Oaxaca, Mexico. The Resolution established "a working group comprised of two senior officials selected by each Party whose duties pertain to the regulation or management of toxic substances and who shall work with the Commission for Environmental Cooperation (CEC) to implement the decisions and commitments set out in this Resolution." The Resolution specifically calls for the development of regional action plans for selected persistent and toxic substances as a first priority in the Parties' common desire to address national and regional concerns associated with the sound management of chemicals.

The action plans developed under the Resolution reflect a shared commitment by the Parties to work cooperatively by building upon international environmental agreements and existing policies and laws; by bringing a regional perspective to international initiatives that are in place or being negotiated with respect to persistent toxic substances; by promoting cooperation with Latin American and Caribbean nations and with countries that have territories in the high Arctic; and by encouraging mutually consistent trade and environment policies that are conducive to the conservation, protection and enhancement of the environment in their territories. At the same time, each action plan is unique and reflects the differentiated responsibilities of each of the countries, consistent with their respective production, use, and disposal practices for the particular substance. The Resolution and the action plans arising from it also take into account each country's respective natural endowments, climate and geographical conditions, and economic, technological and infrastructure capabilities.

An important dimension as regards development and implementation of the action plans is development of close working relationships among the intergovernmental bodies that address persistent and toxic substances in the three countries. As well, the North American Working Group on the Sound Management of Chemicals will work closely during the implementation of the plans with another CEC working group, the North American Working Group on Environmental Enforcement and Compliance Cooperation. In addition, when action plans are proposed on substances used as pesticides, cooperative arrangements will be developed and maintained with the Technical Working Group on Pesticides established under the North American Free Trade Agreement.

The action plans reflect a long-term commitment to regional action. The sharing and transfer of information and best practices are seen as an important means of enhancing national capacity for the sound management of chemicals. Other important elements and outcomes of these

cooperative initiatives include collaboration and cooperation in the measurement, monitoring, modeling, research and assessment of selected persistent and toxic substances in environmental media. Such cooperation will improve the quality, availability and relevance of the "environmental information" needed to make informed and responsible decisions throughout the implementation of the action plans.

These action plans are also intended to help facilitate the meaningful participation of the public, including nongovernmental organizations; business and industry; provincial, state and municipal governments; academia; and technical and policy experts, in accordance with the spirit of cooperation and guidance reflected in the North American Agreement on Environmental Cooperation and in Council Resolution #95–5 on the Sound Management of Chemicals. Regular public reporting of the progress that has occurred with respect to each action plan will be important to its eventual success.

1 Introduction

The North American Task Force on Mercury (Task Force), under the general direction of the North American Working Group on the Sound Management of Chemicals (Working Group), the intergovernmental body that was established under Council Resolution #95–5, and with the assistance of the Secretariat of the CEC, had the primary responsibility for developing the *North American Regional Action Plan (NARAP) on Mercury*. Following public comment, subsequent revision, and approval by the CEC Council of Ministers, this *NARAP on Mercury* constitutes formal agreement amongst the Parties to proceed with initial implementation of the plan. The Working Group, on behalf of the Parties, shall work with the CEC in this implementation process. The Task Force will recommend additional specific actions to the CEC Council by June 1999 [see Section 5.5.1 below].

2 Purpose

The purpose of the *North American Regional Action Plan on Mercury* is to provide the governments of Canada, Mexico and the United States, the Parties to the North American Agreement on Environmental Cooperation and to this *NARAP,* with a path forward in their joint and differentiated efforts to reduce the exposure of North American ecosystems, fish and wildlife, and especially humans, to mercury through the prevention and reduction of anthropogenic releases[1] of mercury to the North American environment.

The *NARAP on Mercury* outlines initial specific steps and joint actions that the Parties shall undertake. These include:

1) Providing a strategic framework and approach that the Parties intend to use throughout the life of the *NARAP on Mercury*;

2) Expanding some of the challenges presented under *The Great Lakes Binational Toxics Strategy* to a regional scale;

3) Establishing the ultimate goal of preventing or minimizing anthropogenic inputs of mercury to the environment through the General Ambient Mercury Objective [Section 4.1] and the General Mercury Release Objective [Section 4.2];

4) Identifying areas requiring further technical or scientific background information.

The *NARAP on Mercury* further stipulates that the Parties forward to the CEC Council for its approval by June 1999 a proposed amendment to the *NARAP* for additional specific actions, together with applicable targets and time frames for implementing these actions.

The *NARAP on Mercury* is part of an evolving process that shall be ongoing until such time as the purpose and objectives set forth in this *NARAP on Mercury* are achieved. The *NARAP* provides a strategic framework and approach that the Parties intend to use throughout the life of the *NARAP* to promote the general regional adoption of regulatory, government-sponsored and non-regulatory best practices for preventing and reducing anthropogenic releases of mercury to

[1] Anthropogenic releases of mercury include those generated by or released as a result of human activity.

the North American environment and for the sound management of mercury. This *NARAP* reflects the conclusion that public-private and stakeholder partnerships for the sharing and transfer of best practices are likely to be the most efficient and effective means of strengthening national abilities to make substantial progress towards achieving the purpose and objectives outlined in the *NARAP*.

3 The Path Forward

Implementation of the *North American Regional Action Plan (NARAP) on Mercury* is predicated upon the following:

3.1 Building upon Existing Initiatives

The Parties reaffirm their support of CEC Council Resolution #95–5, and their respective commitments under national and international initiatives pertaining to mercury. This *NARAP on Mercury* provides a means of supporting and building upon the commitments that the Parties have made through existing regulatory and government-sponsored non-regulatory programs undertaken at the international, national and local levels. Some relevant initiatives are summarized in Annex II. Examples include the 1990 Council of the OECD *Decision/ Recommendation C(90) 163/Final on the Cooperation, Investigation, and Risk-reduction of Existing Chemicals;* and *The Great Lakes Binational Toxics Strategy: Canada-United States Strategy for the Virtual Elimination of Persistent Toxic Substances in the Great Lakes.*

Under the terms of *The Great Lakes Binational Toxics Strategy*, Canada and the United States have individually agreed to the following challenges as they relate to the reduction of anthropogenic releases of mercury to the Great Lakes Basin:[2]

> US Challenge: Seek by 2006, a 50 percent reduction nationally in the deliberate use of mercury and a 50 percent reduction in the release of mercury from sources resulting from human activity. The release challenge will apply to the aggregate of releases to the air nationwide and of releases to the water within the Great Lakes Basin. This target is considered an interim reduction target and, in consultation with stakeholders, will be revised if warranted, following completion of the Mercury Study Report to Congress.
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> Canadian Challenge: Seek by 2000, a 90 percent reduction in the release of mercury, or where warranted the use of mercury, from polluting sources resulting from human activity in the Great Lakes Basin. This target is considered as an interim reduction target and, in consultation with stakeholders in the Great Lakes Basin, will be revised if warranted, following completion of the 1997 COA [Canada-Ontario Agreement] review of mercury use, generation, and release from Ontario sources.

Agreed-upon joint challenges are:[3]

[2] *The Great Lakes Binational Toxics Strategy: Canada-United States Strategy for the Virtual Elimination of Persistent Toxic Substances in the Great Lakes,* 27 March 1997, signature draft, p. 8.
[3] *Ibid.,* p. 9.

> US and Canadian Challenge: Assess atmospheric inputs of Strategy substances to the Great Lakes. The aim of this effort is to evaluate and report jointly on the contribution and significance of long-range transport of Strategy substances from world-wide sources. If ongoing long-range sources are confirmed, work within international frameworks to reduce releases of such substances....
>
> US and Canadian Challenge: Complete or be well advanced in remediation of priority sites with contaminated bottom sediments in the Great Lakes Basin by 2006.

In order to build on this bilateral initiative, Canada and the United States will promote adoption of these challenges throughout their national territories. As a future initiative, regional challenges will be assessed and developed in partnership with Mexico as stated in the objectives of this *NARAP* [Sections 4, 4.1, 4.2].

3.2 Promoting North American Regional and Global Activities

The Parties will endeavor to promote regional actions on mercury taken pursuant to CEC Council Resolution #95–5 as a means by which they can supplement and build upon their commitments made through regional, bilateral and international fora and advance the objectives of this *NARAP on Mercury.* The Parties further anticipate that the *NARAP on Mercury* will serve as an example for initiatives under development throughout the region and globally.

3.3 Best Practices

The Parties, working with stakeholders, will promote the sharing, transfer and general adoption across North America of "best practices" for the prevention and reduction of anthropogenic releases of mercury and for the sound management of mercury. Included in the sound management of mercury is the supposition that waste management will be addressed.

Best practices, as used in this *NARAP on Mercury*, include regulatory, government-sponsored, and non-regulatory efforts, and, as such, include leading policies, programs, technologies, and other measures that the Parties, jurisdictions, local governments, industries, communities, and others have found to be cost-effective and environmentally-appropriate measures. Best practices encompass and build upon measures that are embodied within existing and new local, national and international initiatives. Best practices will evolve on an on-going basis, in light of experience and improved understanding of pollution prevention, and reduction and management techniques, inclusive of processes and technologies.

3.4 Challenging Stakeholders to take Cooperative Action on Mercury

Through participation or encouragement, the Parties will assist in the establishment of stakeholder partnerships. The purpose of these partnerships is to further the objectives of the *NARAP* through activities such as information and technology exchanges for the prevention and reduction of anthropogenic releases of mercury and the sound management of mercury. The Parties challenge the stakeholder partnerships to take a leading stewardship role in identifying potential interim targets for specific industry sectors, geographic areas, etc. These interim targets could form an integral part of the additional actions that the Parties will forward to the CEC Council by June 1999 as part of their proposed amendment to the *NARAP*.

3.5 Improving Scientific Understanding

The Parties, working with stakeholders, will establish public/private-sector partnerships to identify and implement the necessary research, development and monitoring programs that will advance the scientific and technological state-of-knowledge for mercury and enable the Parties to set more refined targets. The *North American Research Strategy for Tropospheric Ozone* (NARSTO*)* is a notable example of such a partnership. The partnerships will include those governmental and private-sector participants capable of funding research, development and monitoring, and those in the scientific community who would carry out these programs.

3.6 Capacity Building in Mexico

The Parties, in accordance with the *North American Agreement on Environmental Cooperation* (NAAEC) and CEC Council Resolution #95–5, are committed to working cooperatively to build Mexico's capacity with respect to the prevention and reduction of anthropogenic releases of mercury and the sound management of mercury. The emphasis of capacity-building will be to encourage and enable Mexican governments, industries and institutions to take advantage of, and adapt, as appropriate, Canadian and US regulatory and non-regulatory experiences. The Parties anticipate that capacity-building, in addition to assisting Mexico, will contribute to their joint efforts to work toward comparability of data on mercury in North America. The Parties further envision that stakeholder partnerships in the region, especially industry-to-industry partnerships, will serve as an important vehicle for capacity-building exchanges.

3.7 Extended Americas

The Parties anticipate that processes and actions promoted within this *NARAP on Mercury,* including those for sharing, transfer and general adoption of best practices; assisting with establishment of stakeholder partnerships; improving scientific understanding; and building capacity, will be of use to other Latin American and Caribbean nations. The Parties agree to actively promote cooperation with these countries so that pertinent initiatives carried out under this *NARAP on Mercury* will have utility for these other countries.

4 Objectives

The overall objectives of this *NARAP on Mercury* are to specify long-term, common and clear directions for the Parties to take as a result of this action plan. Its ultimate goal is to prevent or minimize anthropogenic inputs of mercury to the environment. Accordingly, the following two specific objectives are presented:

4.1 General Ambient Mercury Objective

Reduce mercury levels in, and fluxes among, selected indicative environmental media in order to approach natural levels and fluxes, thereby preventing or minimizing exposure of North American ecosystems, fish and wildlife, and humans to levels in excess of those that can be attributed to naturally occurring levels and fluxes of mercury in environmental media.

4.2 General Mercury Release Objective

Recognizing that mercury is a naturally occurring element that can never be eliminated from the environment, reduce, or when warranted, target for reduction through a life-cycle management approach, the sources of anthropogenic mercury pollution so as to achieve naturally-occurring levels.

5 Mercury *NARAP* Actions

5.1 Partnerships/Voluntary Initiatives Workshop

The Parties will sponsor a Partnerships/Voluntary[4] Initiatives Workshop for the prevention and reduction of anthropogenic releases of mercury and the sound management of mercury. The workshop, to be convened by the CEC between 1 January–31 March 1998, will be hosted by Mexico. The purposes of the workshop will be to:

- Share, transfer and promote the adoption of best practices for reducing and preventing anthropogenic releases of mercury, and the sound management of mercury, including waste management strategies;

- Encourage and establish linkages among stakeholders**;**

- Present a proposed project for a mine tailings site at Zacatecas, Mexico, which will serve as the initial phase in the development of Mexico's national plan for cost-effective sampling and analysis of mercury and other heavy metals and advance efforts to establish a North American comparative database on mercury [see Section 5.4.1 below];

- Identify potential pilot projects that advance the purpose and objectives of this *NARAP on Mercury* for public-private and stakeholder implementation; and

- Initiate proposals for standardized reporting protocols by industry and governments for activities generated under this *NARAP* to facilitate the comparability of data, and ultimately, for the assessment and reporting of progress under this *NARAP*.

Workshop participants will include experts from various sectors of society, including industry, nongovernmental organizations, academia, indigenous peoples and government. The list of invitees should include experts from federal, state/provincial, municipal and local levels of government as well as from industry and industry associations. Of particular importance would be experts from industry and industry associations who could share information on best practices and could establish stakeholder linkages. Representatives of the CEC Joint Public Advisory Committee will also participate.

5.1.1 Partnerships/Voluntary Initiatives Working Group

Following the workshop and taking into account recommendations and initiatives arising from it, the Parties, working with stakeholders, will organize a Partnerships/Voluntary Initiatives Working Group. The tasks of this Working Group will be to facilitate partnerships/initiatives—assisting, when requested, by establishing contacts with stakeholders and informing the Parties of progress resulting from the workshop. The Working Group will also formulate recommendations to the Parties for integrating with the *NARAP on Mercury* efforts arising from voluntary

[4] Voluntary, for the purposes of this *NARAP,*constitutes only non-regulatory activities and, as such, includes formal government-sponsored initiatives, government-sponsored non-regulatory programs, and initiatives that industries, consumers or others undertake on their own.

initiatives, including development of interim targets for industrial sectors, geographical areas, etc.

5.2 Improving Scientific Understanding

The Parties recognize that there are many scientific and technological uncertainties that hinder both the assessment of the risk associated with the anthropogenic releases of mercury and the development of cost-effective technologies and mitigation approaches for mercury release reduction. Parties need to be aware that in certain circumstances energy efficiency programs have benefited from continued use of mercury-containing products. An example is energy efficient fluorescent lighting when compared to incandescent lighting. Discontinued use of mercury-containing fluorescent lights would lead to an increase in electric power consumption and therefore an increase in mercury emissions from the electrical generation sector. Such opposing considerations need to be assessed through improved scientific understanding. Although the Parties will not let these uncertainties delay actions under the *NARAP*, they acknowledge that these uncertainties need to be addressed with effective research, development and monitoring programs. It is clear to the Parties that it will be the products of these research, development and monitoring programs that will enable the Parties to promote and assess progress toward the achievement of the *NARAP's* General Ambient Mercury Objective [Section 4.1].

5.2.1 Workshop on the State of Scientific Knowledge Related to Mercury

The Parties, working with the stakeholders, will promote effective research, development and monitoring programs in part through a Workshop on the State of Scientific Knowledge Related to Mercury to be convened in 1998 by the CEC and hosted by the United States. The purpose of this workshop will be to (1) share scientific knowledge related to mercury and (2) seek expert advice from the specialized scientific disciplines that will assist the North American Working Group on the Sound Management of Chemicals with implementation of this *NARAP*, including identification of scientific and technological uncertainties. In performing this task, the Parties will collaborate, where possible, with related international activities.

5.2.2 Science Experts Group on Mercury in North America

Following the workshop, and taking into account the workshop findings and recommendations, the Parties, working with stakeholders, will organize a Science Experts Group on Mercury in North America. The Science Experts Group, drawing from the Workshop on the State of Scientific Knowledge Related to Mercury [Section 5.2.1] and the Sampling and Analysis Plan for heavy metals in Mexico [Sections 5.1 and 5.4.1], will develop a North American Strategy for the Research, Development and Monitoring of Mercury for consideration by the Parties.

The Parties intend that the strategy will focus on activities that will enhance the implementation of the *NARAP on Mercury* and lead to establishment of a trinational North American baseline on mercury concentrations and fluxes that can be used as a basis for detecting and assessing spatial and temporal trends and for measuring progress relative to the General Ambient Mercury Objective [Section 4.1].

5.3 Information Systems for Mercury

The Parties will establish a Knowledge Network on Mercury to assist with the creation and maintenance of a North American Electronic Library and analysis of data.

The initial core of experts forming the Knowledge Network will be drawn from participants at the mercury sciences and partnerships/voluntary initiatives workshops. Network members will be available to provide information on mercury to the Parties and interested stakeholders during the establishment and maintenance of the North American Electronic Library, inclusive of interpretation of information available through the North American Electronic Library.

It is the intent of the Parties that the Electronic Library serve as a North American repository of best practices information for the prevention and reduction of anthropogenic releases of mercury and for the sound management of mercury. As such, the North American Electronic Library will provide, on a "living document" basis, publicly accessible and up-to-date information on science pertaining to mercury, regulatory and non-regulatory activities, risk-assessment data, and stakeholder case studies. During implementation, consideration should be taken to ensure that the public and especially industry and its associations are aware of the existence of the best practices repository.

The Parties expect that the library will eventually be expanded to include information on other chemical substances as identified by each of the Parties. The library will include an on-line "card catalogue" of documents. Mexico will take the lead, in partnership with Canada and the United States, in the development of the library, which will be accessible through the Internet. Mexico's Institute of National Ecology (INE—*Instituto Nacional de Ecología*) has agreed to serve as the repository for the North American Electronic Library.

The Parties anticipate that both the Knowledge Network and the North American Electronic Library will have utility throughout the Extended Americas.

In addition to information placed in the North American Electronic Library, and available to the public, the Parties will share among themselves information on developing government initiatives, consistent with domestic policies.

5.4 Creation of a Comparative Database

5.4.1 Sampling and Analysis Plan

Building on a recently initiated bilateral project, the Parties will jointly develop a plan for the cost-effective sampling and analysis of mercury and other heavy metals to facilitate the development of a Mexican monitoring database on heavy metals. Existing experience and activities within the countries and internationally will be taken into account in the development of future databases and proposed plans. A project proposed for managing mine tailings at a site in Zacatecas, Mexico, to be featured at the Partnerships/ Voluntary Initiatives Workshop [see Section 5.1], will serve as the first phase in developing the national plan.

Initial funding has been provided for the first phase of this project: identification of options for a heavy metals sampling and analysis program for the Zacatecas area. The second phase of the project, developing a plan to look at metal sampling nationally, will involve substantial amounts of funding over the next several years. Mexico, Canada and the United States, together with the CEC, will solicit the support of bilateral and multilateral aid agencies, such as the Pan American Health Organization (PAHO) and the World Health Organization (WHO) for funding of the national plan. Funds for performing sampling and analysis will be provided by Mexico.

After its development for Mexico, the plan could serve as a model for other developing countries elsewhere in the Americas.

5.4.2 North American Comparative Database

The Parties intend that the North American Comparative Database will consist of up-to-date, publicly accessible information on mercury maintained by the Parties and incorporate data collected as an outcome of *NARAP* action on Improving Scientific Understanding [Section 5.2]. The North American Comparative Database will be incorporated into the North American Electronic Library [Section 5.3], Information Systems for Mercury. It is anticipated that this project will be useful to other developing countries in the Americas. Standardization of data in order to facilitate comparison is critical to the success of this action item.

5.5 *NARAP* Implementation

5.5.1 Future Actions

The Parties agree to:

Forward to the CEC Council by June 1999 a proposed amendment to the *North American Regional Action Plan on Mercury* that shall contain additional specific actions that the Parties shall undertake to further reduce anthropogenic releases of mercury generated within North America, together with specific targets and time frames for meeting these actions. The actions proposed shall include measures for preventing or minimizing anthropogenic releases of mercury generated by major sources of anthropogenic mercury within each of the three countries.

5.5.2 North American Working Group on the Sound Management of Chemicals

The Parties direct the North American Working Group on the Sound Management of Chemicals to:

1. Work with the CEC to implement the *North American Regional Action Plan on Mercury,* inclusive of the preceding actions noted herein;

2. Work with the CEC, when new and additional resources are required, to develop detailed proposals for this *NARAP on Mercury,* as well as for other *NARAP* initiatives, with the intention of seeking assistance from national and international aid and technical cooperation agencies, foundations, industry and industrial associations, and others, as appropriate; and

3. Report publicly to the CEC Council one year after signature and on an annual basis thereafter on progress made toward implementing the commitments and actions in the *North American Regional Action Plan on Mercury.*

5.5.3 Implementation Committee

The North American Task Force on Mercury recommends that it be reconstituted as an Implementation Committee to assist the Working Group with implementation of the *North American Regional Action Plan on Mercury*. The Committee will provide implementation oversight for the Working Group's annual public assessment of actions adopted by the Parties under the *NARAP.*

ANNEX I: North American Task Force on Mercury

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ANNEX II: Related Initiatives

Initiatives related to the *North American Regional Action Plan (NARAP) on Mercury* include, but are not limited to, the following:

- *Agenda 21: A Global Action Plan for the 21st Century.* The plan was adopted at the *1992 United Nations Conference on Environment and Development. Agenda 21* and was reaffirmed as the fundamental program for action at the UN Special Session, June 1997;

- *Decision 18/32* of the *United Nations Environment Programme (UNEP) Governing Council* (May 1995), and the Governing Council's adoption of decisions at its Nineteenth Session (January-February 1997) recommended by the International Forum on Chemical Safety (IFCS), including international action to protect human health and the environment through measures that will reduce and/or eliminate emissions and discharges of persistent organic pollutants, and the development of an international legally-binding instrument for persistent organic pollutants;

- The United Nations Economic Commission for Europe (UNECE) *Convention on Long-range Transboundary Air Pollution (LRTAP)*;

- *The Great Lakes Binational Toxics Strategy: Canada-United States Strategy for the Virtual Elimination of Persistent Toxic Substances in the Great Lakes.* The strategy is inclusive of a zero-discharge demonstration project to eliminate mercury entering the Great Lakes Basin that Canada and the United States, along with Ontario, Michigan, Minnesota and Wisconsin, have begun implementing through the *Lake Superior Binational Program*;

- *The Arctic Environmental Protection Strategy* to which Canada and the United States are signatories, and which includes heavy metals as one of its six priority areas for action;

- The International Joint Commission's *Binational Virtual Elimination Strategy*;

- The *1983 Agreement between the United States of America and the United Mexican States on Cooperation for the Protection and Improvement of the Environment in the Border Area (La Paz Agreement),* which establishes a general framework for the prevention, reduction and elimination of sources of air, water and land pollution;

- The *Accelerated Reduction/Elimination of Toxics* (ARET) voluntary program in which Canadian industries, health and academic associations, and federal and provincial governments participate;

- The Canadian *Strategic Options Process* (SOP), a consultative mechanism through which stakeholders are invited to identify and develop management options for toxic substances;

- The US EPA's *33/50 Program*, a national voluntary program in which industries participated from its inception in 1991 until its conclusion in 1996;

- The work of the Minnesota Pollution Control Agency's Mercury Task Force and the Michigan Mercury Pollution Prevention Task Force;
- The *Mercury Elimination and Reduction Challenge Project*, a multi-stakeholder program that the Canadian government sponsors with Pollution Probe, an environmental nongovernmental organization; and
- The *US Mercury Report to Congress*.

ANNEX III: Summary of Country Status Reports on Mercury

Substantial progress has been made in Canada and the United States since the 1970s in reducing, and in some cases eliminating, mercury from products and processes. Mexico is now in the process of establishing a heavy metals program that will enhance its efforts to monitor and assess sources of anthropogenic releases of mercury. This capability will help accelerate Mexico's efforts to identify and initiate activities for preventing and reducing anthropogenic releases of mercury. Developments in the three countries pertaining to mercury are summarized below. The Summaries are based on the country status reports presented in Annex IV of this report.

Canada

In Canada, industry-led voluntary initiatives, together with federal and provincial regulations, have resulted in significant declines of mercury in products and mercury emitted to the atmosphere. Mercury imports to Canada have fallen from 40-50 tonnes in 1985 to about six tonnes in 1995. Canada is a net exporter of mercury. Anthropogenic emissions of mercury to the atmosphere dropped from 39 tonnes in 1990 to about 20 tonnes in 1995, a 49 percent reduction.

Mercury in paint is being phased out by voluntary programs within industry and with encouragement from the federal government. The final phase-out of mercury based antimicrobial paints for exterior use is scheduled for 1998. The Canadian trade in mercury cell batteries has decreased from about three million units in 1990 to 0.7 million units in 1995, a 76 percent reduction. Elimination of mercury in household batteries by 1996 is a goal under Canada's Environmental Choice Guidelines, a voluntary program for industry. Targets have been set that will reduce the mercury content of batteries to a minimum using best available technology. Mercury consumption in Canada is attributed mainly to two sectors, electrical apparatus, including control instruments, and the one remaining mercury cell chlor-alkali plant. Mercury consumption in Canada was 6 tonnes in 1994 and was further reduced to 2.9 tonnes in 1995.

There is only one operating chlor-alkali plant in Canada that uses the mercury cell process. This plant is in compliance with Canadian legal requirements. In the 1970s, Canada had 15 mercury cell chlor-alkali plants, with a reduction to five plants by 1989. Canadian federal and provincial regulations were developed such that maximum permissible releases of mercury were prescribed but process elimination was not. Industry responded in the manner best suited to its needs, generally by replacing mercury cells with diaphragm or membrane cells.

In a program started in 1985, fluorescent lamps have been reconfigured by industry to reduce mercury. The average mercury content has fallen from 48.2 milligrams in 1985 to 27.0 mg in 1995, a 44 percent reduction. Further industry plans include efforts to reduce the mercury content to 15.0 mg, a 69 percent reduction from 1985.

In 1990, mercury emitted into the atmosphere by anthropogenic sources in Canada, estimated at 39 tonnes, was dominated by primary base-metal production (77 percent) in contrast to coal-fired power generating point sources (10 percent). Medical waste incineration accounted for about 1 percent of the total atmospheric emissions. The primary base-metal production sector in 1993-

1994 incorporated process changes (wet process versus roasting) that have resulted in a significant reduction (60 percent) of its atmospheric emissions from 1990 levels.

At present, there do not appear to be any large stockpiles of mercury. However, recent surveys have indicated that Canada has about six tonnes of mercury in existing lighthouse facilities. This mercury is used to float the lenses that operate in the lighthouses. As these lighthouses are being converted to electronic operation, this mercury will become surplus to Canada's needs. It is anticipated that this mercury will be recycled in an environmentally appropriate manner.

Mexico

Extraction of mercury, recorded since 1891, reached a peak of 1,118 tonnes in 1942. Thereafter it continuously decreased; in 1994, Mexico produced 11 tonnes or 0.5 percent of world production, with no official report of any production in 1995. The amount of existing mercury stocks needs to be determined. Mercury is also used in the recovery of gold and silver from mine tailings. Importation of mercury ranged from 276 tonnes in 1989 to 5.8 tonnes in 1995, with a peak in 1991 of 2,151 tonnes.

Many of the industries in Mexico producing goods containing mercury are multinational. Examples of such goods include batteries (primarily zinc-carbon and alkaline batteries) and precision instruments. Research is now underway to determine if the multinational companies that manufacture products containing mercury, including those that export batteries, are Canadian or US firms, as considerable potential exits for reducing mercury content through initiatives such as those proposed in this *NARAP*. In addition, there is a need to determine the proportion of batteries (550 million units in 1993), thermometers (73,000 kilograms in 1993), and manometers (400,000 units in 1993) produced in Mexico that contain mercury. Production of light bulbs in 1993 used 2.2 tonnes of mercury. A study prepared by the National Association of Electrical Producers in the United States indicates that mercury in electric lamps has decreased in Mexico more than 53 percent in the last ten years. Mexico also imports some products containing mercury. In 1994, for example, 258,406 mercury oxide alkaline electric batteries were imported.

It is known that three producers of chlorine or caustic soda in Mexico use the mercury-cell process. Production of inorganic chemical products consumes two tonnes of mercury as raw material. Mercury is used in dental amalgams. In 1993, 24,036 kilograms of amalgams were produced; it is not known how many of these contained mercury.

There is no systematic inventory of mercury emissions in Mexico. Existing data on mercury emissions are gathered by different laboratories, which do not have uniform methodology to monitor and analyze mercury. A pilot study is underway to establish a multi-media inventory of anthropogenic mercury emissions to the atmosphere under Mexico's Emissions and Pollution Transfer Registry (RETC). The first phase of the study has been carried out in the State of Queretaro, where mercury is used by companies that manufacture car and truck engines and car accessories.

Mexico's different laws, regulations and standards include provisions that support the prevention and control of mercury releases to the environment and establish maximum permissible levels in environmental media and consumer products. Nevertheless, no policy or program specifically addresses reduction of the risks of mercury exposure.

United States

Industrial manufacturers in the United States are shifting away from the use of mercury largely as a result of federal bans and regulations. Domestic demand for mercury in the United States has declined from 720 tonnes in 1990 to 483 tonnes in 1994, a 33 percent reduction.

Mercury has been eliminated from paint manufacturing since 1994. Mercury in batteries, which declined from 106 tonnes in 1990 to just 6 tonnes in 1994, a 91percent reduction, will be phased out under a law passed by the US Congress in May 1996. Today, mercury consumption in the United States is attributed to a few products and processes, e.g., chlorine and caustic soda manufacture (28 percent), wiring devices and switches (16 percent), and measuring and control instruments (11 percent).

While 14 chlor-alkali plants remain in operation in the United States using the mercury-cell process, these plants are required to construct on-site facilities for treatment and recycling of mercury wastes or ship it off-site to be processed. Consumption of refined mercury by chlorine and caustic soda manufacturers has declined from 247 tonnes in 1990 to 135 tonnes in 1994, a 45 percent decrease.

Recycling of certain mercury-containing products, such as batteries and switches, is promoted through the Universal Waste Rule (UWR) promulgated by the US Environmental Protection Agency in May of 1995. The UWR promotes recycling and sound waste disposal practices. In EPA Region 5 (the Great Lakes), all states are planning on adopting the UWR and adding mercury thermostats to the list of recyclable products. The program is occurring with the cooperation of Honeywell, which will use the recycled mercury in manufacturing new thermostats.

Mercury emitted annually into the atmosphere by anthropogenic sources in the United States (220 tonnes) is dominated by combustion point sources (85 percent) in contrast to manufacturing point sources (13 percent). Final air emission standards and guidelines regulating mercury emissions for new and existing medical waste incinerators, which contribute an estimated 27 percent of the mercury emitted to the atmosphere, are scheduled to be issued by the US EPA by 25 July 1997.

Unresolved issues of potential continental concern include Federal stockpiles of mercury (5200 tonnes) [5] and final resolution of the US Clean Air Act Report to Congress. The US Department of Defense is developing an Environmental Assessment under the National Environmental

[5] All three nations will determne what, if any, quantities of surplus mercury, in addition to those noted in the NARAP and its annexes, are available in their jurisdictions.

Protection Act (NEPA) to review the potential impact of sales of mercury. In section 112(n)(1)(B) of the Clean Air Act as amended in 1990, Congress requires the US EPA to report on mercury emission sources, the rate and mass of such emissions, the health and environmental implications of such emissions, technologies available to control such emissions and the costs of such control. In June 1996, the EPA asked its Science Advisory Board (SAB), composed of independent, non-Federal scientists, to review the draft Mercury Report. A draft of the SAB report was expected in July 1997, with a final report to the EPA Administrator by October 1997. A revised schedule for release of the final report will be determined through ongoing negotiations with the litigant, the Sierra Club, subject to approval of the US District Court for the Eastern District of New York.

ANNEX IV: Country Status Reports on Mercury

[This annex will be available in the near future.]