

North American Regional Action Plan on Mercury

PHASE II

North American Implementation Task Force on Mercury

16 March 2000

PREFACE

The North American Regional Action Plan (NARAP) on Mercury is one of a number of such regional undertakings that stem from the North American Agreement on Environmental Cooperation (NAAEC) between the governments of Canada, Mexico and the United States of America. As a parallel side agreement to the North American Free Trade Agreement, the NAAEC came into force on 1 January 1994 as an overarching framework for environmental cooperation. The NAAEC 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 95-05 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 composed 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 four 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. Mercury, as well as DDT, chlordane and PCBs, is one of the four priority substances identified by the Parties for Action Plan development.

The Council directed the Working Group in its development of the Action Plans to incorporate, as appropriate, pollution prevention principles and precautionary approaches in making recommendations to reduce risks associated with toxic substances. The Working Group was further instructed under Resolution 95-05 to recommend:

- concerted activities to reduce risks presented by toxic chemicals, taking into account the entire life cycle of the chemicals; and
- policies, regulatory and non-regulatory measures to identify and minimize exposure to toxic chemicals by replacing them with less toxic substitutes and ultimately phasing out the chemicals that pose unreasonable and otherwise unmanageable risks to human health and the environment and those that are toxic, persistent and bioaccumulative and whose use cannot be adequately controlled.

The Action Plans developed under Resolution 95-05 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 recognizes the differentiated responsibilities of each of the countries. The Resolution and the Action Plans also take into account each country's respective natural endowments, climate and geographical conditions, and economic, technological and infrastructure capabilities.

An important dimension of the Action Plans is the formation 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 development and implementation of the plans with another CEC working group, the North American Working Group on Environmental Enforcement and Compliance Cooperation.

The Action Plans reflect a long-term commitment to regional action. The sharing and transfer of information and best practices are seen as 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.

The Action Plans are also intended to help facilitate the meaningful participation of the public, including non-governmental organizations; business and industry; native North Americans; provincial, state and municipal governments; academia; and technical and policy experts, in accordance with the spirit of cooperation reflected in the NAAEC and in Council Resolution 95-05 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.

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PREAMBLE

The North American Implementation Task Force on Mercury, in the fall of 1997, submitted to the CEC Council for approval an overarching Phase I Action Plan to proceed with preliminary implementation of actions based on the following objectives:

- a) reduce mercury levels in and fluxes among, selected indicative environmental media in order to approach natural levels and fluxes and;
- b) target for reduction, through life cycle management approaches, the sources of anthropogenic mercury pollution.

Taking into account the precautionary approach as outlined in Principle 15 of the 1992 Rio Declaration on Environment and Development and recognizing the concerns expressed by stakeholders related to the general nature of the Phase I Mercury Action Plan, the Task Force on Mercury was reconstituted as an Implementation Committee and has developed this Phase II amendment to the initial plan.

The Action Items listed in this Phase II Action Plan represent recommendations of the Council to the Parties of the North American Agreement on Environmental Cooperation and directions of the Council to the Sound Management of Chemicals Working Group.

This *Phase II North American Regional Action Plan on Mercury* represents the considered recommendations of many contributors to three major workshops, and is fully supported by the Council.

INTRODUCTION

Background

Phase II of the North American Regional Action Plan (NARAP) on Mercury fully endorses the ultimate goals and overarching objectives of the first phase of the plan, approved in October 1997, while providing additional guidance in the form of specific goals, objectives and actions.

This NARAP on Mercury, in providing a strategic framework for action on mercury within North America, does not preclude individual countries from taking action beyond what is set forth herein, including development of national targets and timelines for reducing and eliminating anthropogenic sources of mercury among sectors that utilize mercury in products and processes or which generate mercury as a byproduct of a process. As well, the Parties are committed to develop country-specific implementation plans one year after adoption of this Action Plan by Council. The country implementation plans will elaborate

upon how and when each nation, in accordance with its unique regulatory framework and capacity, will implement the actions noted herein.

The Task Force for this NARAP on mercury is composed of government representatives of the three Parties and participant observers representing industry, environmental non-governmental organizations and academia.

In developing this Action Plan, the Task Force made considerable use of recommendations received, during three 1998 CEC workshops, from participants, including representatives of governments, industry, environmental, healthcare and other interest groups, and North American scientists with expertise in mercury. These recommendations are noted in Appendix 1 of this plan.

This document is a framework for action and does not preclude Parties, individually or collaboratively, from setting their own cooperative targets and timelines.

Purpose

The purpose of the North American Regional Action Plan (NARAP) on Mercury is to provide the governments of Canada, Mexico and the United States 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 of mercury to the North American environment.

Goals

The ultimate goal of the North American Regional Action Plan on Mercury is to achieve a reduction in the anthropogenic releases of mercury to the North American environment through appropriate national and international initiatives, to amounts that can be attributed to naturally occurring levels and fluxes. The Council notes that the Parties intend to attain this goal by seeking to:

- reduce mercury releases from specific human activities. This includes, but is not limited to, reductions of mercury releases from combustion sources, commercial processes, operations, products and waste streams;
- develop an enhanced capacity to measure and manage mercury, assess its impacts and communicate concerns and successes;
- establish an equitable implementation and compliance protocol; and

- promote continued appropriate and responsible mercury management initiatives on behalf of the governments, the industries and the citizens of North America. This goal will be attained through:
 - recognition of the benefits of both regulatory and voluntary/non-regulatory mercury management options;
 - recognition as regards mercury use and generation of releases of the need for stewardship and extended product responsibility, which includes suppliers, manufacturers, distributors, retailers, customers, recyclers, and the waste management community; and meaningful participation of the public in overseeing and furthering the development of a sound management program for mercury.

OBJECTIVES

In keeping with the objectives specified in the original North American Regional Action Plan on Mercury, of October 1997, the Council notes that the Parties have re-stated their resolve to achieve the following;

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.

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.

This Phase II amendment to the original Action Plan also recognizes the requirement to prevent or minimize releases of mercury used in commerce within the North American economy and adds the following:

General Mercury Use Objective:

Reaffirming the direction provided in Resolution 95-05, consider initiatives such as promotion and use of products and technologies that pose less risk than those used at present. Facilitate product stewardship, product labeling, extended product responsibility, use limitations, economic incentives, recycling, and, where there is an unreasonable or otherwise unmanageable risk of release to the environment or risk to human health, phase-out or ban specific mercury uses.

COMMON ACRONYMS

CEC: Commission for Environmental Cooperation. The Commission is a trinational organization established under the North American Agreement on Environmental Cooperation and has highlighted the importance of "cooperation on the conservation, protection and enhancement of the environment in [the] territories" of Canada, Mexico and the United States.

NAAEC: North American Agreement on Environmental Cooperation. Through this Agreement Canada, Mexico and the United States commit to effectively enforce their environmental laws, to publicly report on the state of the environment within North America and to other actions aimed at conservation, protection and enhancement of the environment. The NAAEC came into force on 1 January 1994, at the same time as the North American Free Trade Agreement (NAFTA).

NAFTA: North American Free Trade Agreement. This a trinational accord between Canada, Mexico and the United States to establish a free trade area by eliminating trade barriers, promoting fair competition and increasing investment opportunities.

NARAP: North American Regional Action Plan. The development of various NARAPs is mandated under Council Resolution 95-05 for the Sound Management of Chemicals of the Commission for Environmental Cooperation.

SMOC: Sound Management of Chemicals Working Group. This working group was established under Council Resolution 95-05 of the Commission for Environmental Cooperation. The SMOC Working Group is composed of six senior officials, two from each Party, whose duties pertain to the regulation or management of toxic substances identified by the Parties for trinational action within North America.

DEFINITIONS

Annex. Any of the annexes attached to and forming an integral part of this NARAP.

Appendix. Any of the appendices attached to this NARAP and not integral to it.

Anthropogenic releases of mercury. Mercury discharged or released to air, water or land as a result of human activities.

Best practices. Describe regulatory, and voluntary/non-regulatory efforts, including policies, programs, technologies, and other measures that have been found to be cost-effective and environmentally appropriate. Best practices encompass and build upon measures that are embodied within, local, national and international initiatives.

Capacity building. Refers to the development and re-enforcement of the different elements required to improve and sustain the ability of governments and stakeholders to facilitate the advancement of the SMOC (Sound Management of Chemicals) obligations and commitments, particularly in promoting the North American Regional Action Plans (NARAPs). This may include any process leading to the enhancement or strengthening of a knowledge or skill base through the transfer, reciprocation or exchange of information between organizations or Parties.

Council (of Ministers). The governing council of the Commission for Environmental Cooperation. The Council is composed of cabinet-level or equivalent representatives of the three CEC Parties.

Emission. A release to the atmosphere from a point or nonpoint source to the receiving environment.

Flux. The rate of transfer of mercury and mercury compounds across all environmental media.

Global atmospheric pool. The amount of mercury vapor suspended in the troposphere at any given time.

Regulatory jurisdictions. Those levels of government within the borders of Canada, Mexico and the United States that have responsibility for promulgating legislation and enforcing regulations therein.

Life cycle management. Refers to both process and product management and their associated risks based on assessments of all stages in the cycle of initial mercury production and product manufacturing through to final disposal.

Major stationary source. Any fixed building, structure, facility, installation, or equipment that emits or may emit mercury directly or indirectly into the environment and which meet the criteria described in Annex 1.

Mercury. Refers to both elemental mercury and any mercury compounds, including methylmercury.

Neurotoxin. A substance poisonous to nerve cells.

New mercury. Mercury produced from any mineral, mining, or processing activities not previously generated as a result of human activities.

North American Working Group on the Sound Management of Chemicals. See SMOC under *Common Acronyms*.

Parties. The Government of Canada, the Government of the United Mexican States Mexico and the Government of the United States of America.

Region. North America (Canada, Mexico and the United States) unless otherwise specified.

Risk. The potential for a chemical or physical agent to cause adverse effects on the environment or human health.

Task Force. The North American Implementation Task Force on Mercury, directed by the North American Working Group for the Sound Management of Chemicals, formed to develop and implement this Action Plan.

Virtual elimination of mercury. Reduction, through a life cycle management approach, of sources of anthropogenic mercury pollution so as to approach naturally occurring levels and fluxes of mercury in environmental media.

COMMITMENT TO ACTION

The Council recognizes that, during the public consultation period, many North Americans expressed serious concern regarding the degree to which the recommendations in the plan may be implemented. While it is acknowledged that the regional Action Plans developed under the Sound Management of Chemicals initiative are not legally binding upon any one or all of the Parties to the North American Agreement on Environmental Cooperation, there is a strong national commitment by each member country and an equally determined resolve by the Parties as leaders in this important environmental initiative to ensure that this Action Plan results in significant reductions of mercury contamination to the environment.

Additional concerns were raised regarding the emphasis on voluntary/non-regulatory actions and the possibility that these actions may not be adequate to substantially reduce mercury use and release. If it is determined that voluntary/non-regulatory mercury control actions recommended in this Phase II Mercury Action Plan are not adequate for the well-being of the health and environment of North Americans, then Action item 6a,ii will be invoked.

The Council further directs the Sound Management of Chemicals Working Group to ensure that the actions outlined in this plan are undertaken through the oversight of an Implementation Task Force.

ACTIONS

The Parties acknowledge that anthropogenic releases of mercury to North American and global environmental media pose risks to human health and the environment. The Parties seek to reduce these risks by reducing exposure to mercury, based on the following risk-management approaches.

Action item 1 **Management of atmospheric emissions of mercury**

The Council notes that the Parties will adopt policies and programs to enhance North American capacity aimed at controlling and minimizing atmospheric emissions of mercury from anthropogenic sources with the goal of effectively and efficiently reducing these emissions to naturally occurring levels and fluxes, and that

Action item 1a Guidelines/Regulations for major stationary source emissions

Recognizing the need to promote the development and use of regulatory and voluntary/non-regulatory initiatives to minimize anthropogenic atmospheric emissions of mercury from major stationary sources noted in Annex 1, and with due consideration of national interests and capacities, the Parties will:

- i) endeavor to attain a 50 percent reduction nationally in mercury emissions by the year 2006 from existing major stationary sources based on 1990 or equivalent emissions inventories. This cumulative target represents a minimum aggregate level of reductions that may be achieved through application of differential levels of control on emission sources; and
- ii) implement by no later than 2005, the most appropriate recommendations in Action Item 1a iii below or an alternate maximum achievable atmospheric emission reduction technology or strategy, which is at least as effective for new major stationary emission sources noted in Annex 1.

Accordingly, the Council

- iii) directs the North American Working Group on the Sound Management of Chemicals to collaborate with other regional jurisdictions in North America regarding their relevant mercury management programs. The objective will be to evaluate and prepare appropriate recommendations for the adoption of the most efficient/effective atmospheric emission reduction protocols available throughout North America. The North American Working Group on the Sound Management of Chemicals will ensure that recommended control

technologies for mercury also promote significant reductions of a range of other pollutants, such as organics, acid gases and particulates.

Action item 1b Electric power generating sector

Recognizing, in particular, that emissions from the electric power generating sector account for a large portion of the current anthropogenic emissions of mercury, the Parties will:

- i) investigate various options and strategies to obtain reductions in mercury emissions from the electric power generating sector, consistent with the 50 percent reduction target described in Action 1a,i, and including an evaluation of multi-pollutant approaches described in Action 1 a, iii above.

Action item 1c Industrial/commercial and other atmospheric emission sources

Recognizing that appropriate management techniques will, over time, reduce atmospheric emissions from major contributing sources and thus that lesser anthropogenic sources will proportionally assume greater prominence, the Council directs the North American Working Group on the Sound Management of Chemicals to:

- i) develop uniform data collection and reporting protocols to determine the significance of atmospheric mercury emissions from other regional sources. Some of the sources may include, but are not limited to, motor vehicle emissions, electronic assembly facilities, residential wood burning, petroleum and natural gas extraction and processing, landfill leachate/gases, iron and steel processing, steel scrap recycling, smelting, mining/taconite production, device manufacturing and crematoriums.

Action item 2
Mercury management in processes, operations and products

The Council welcomes the fact that the Parties will promote policies and programs to reduce and, where warranted, eliminate mercury in processes, operations and products where there is a likelihood of releases throughout their life cycle and that

Action item 2a **Life cycle management practices and substitution options for mercury**

Recognizing the need to promote the development and use of voluntary/non-regulatory and regulatory initiatives to minimize anthropogenic releases of mercury to the environment, the Parties will:

- i) review and assess the adequacy of existing methodologies and processes for tracking imports and exports of mercury designated for manufacture or use in processes and products, with the goal of stimulating life cycle management practices at the national level;
- ii) promote life cycle management practices through recognized environmental management systems, such as ISO 14,000;
- iii) further stimulate life cycle management practices within their various regulatory jurisdictions by developing a North American protocol for reporting a comprehensive inventory of the amounts of mercury being introduced, used, stored, lost and replenished in processes, operations and products; and

taking into account the risk of release to the environment, the Parties will:

- iv) support programs and consider incentives to encourage the substitution or phase-out of mercury use in products or processes. Substitutes should be cost effective and must pose less risk throughout the life cycle than the original mercury-containing product or processes; and
- v) where no substitutes to the use of mercury are available, promote the use of recycled or recovered mercury.

Action item 2b Automotive vehicle and equipment manufacturing sector

Recognizing that the automotive vehicle and equipment manufacturing sector in North America has acknowledged the need to address anthropogenic sources of mercury and is currently engaged in mercury management efforts, the Parties will:

- i) encourage the automotive vehicle and equipment manufacturing sector to adopt best practices across North America, in a manner consistent with the Society for Automotive Engineers International Technical Paper Series 960409;
- ii) encourage the automotive vehicle and equipment manufacturing sector to extend best practices mentioned in Action item 2a to vehicles imported into North America under the auspices of the International Automobile Manufacturing Association;
- iii) work in partnership with the automotive vehicle and equipment manufacturing sector to develop, where warranted, substitutes for mercury. Where substitution is not possible, develop and implement a voluntary/non-regulatory identification system (i.e., labeling, color coding) for automotive devices containing mercury; and
- iv) work in partnership with the automotive vehicle and equipment manufacturing sector to assist in the removal of mercury-containing devices prior to undertaking scrapping or recycling operations by developing an outreach program and exploring other incentives targeted at scrap and recycling operators in order to improve awareness and provide assistance in identifying and removing mercury-containing devices on existing vehicles.

Action item 2c Mercury cell chlor-alkali sector

Noting that the mercury cell chlor-alkali sector recognizes its role as a significant contributor of mercury emissions and that sector members of the Chlorine Institute have made important voluntary/non-regulatory commitments to reduce such use, the Parties will:

- i) monitor the industry-developed voluntary/non-regulatory program to reduce mercury usage in the mercury cell chlor-alkali industry by 50 percent to 80 tonnes, as defined by the Chlorine Institute, by the year 2005; and
- ii) collaborate to ensure that any new chlor-alkali facilities constructed after the year 2000 meet the limit value of 0.01g Hg/tonne chlorine production capacity, or, where warranted, ban the mercury-cell process. This limit value

effectively eliminates chlor-alkali production by the mercury cell process but leaves other production technologies as possible process options.

Accordingly, the Council

- iii) directs the North American Working Group on the Sound Management of Chemicals to develop comparable guidelines for the decommissioning of mercury cell chlor-alkali sites, in a manner that respects the different economic, political and regulatory circumstances of the Parties.

Action item 2d Dry cell battery manufacturing sector

Recognizing that most North American manufacturers of dry cell batteries have effectively eliminated intentionally introduced mercury, the Parties will:

- i) ensure, as a minimum, that either of the two product control measures specified in Annex 2 for alkaline manganese batteries are applied to manufacturers in North America, and will consider options for ensuring that similar batteries imported into North America meet the same or more stringent control values as may be set out for manufacturers in North America;
- ii) consider the development of a standardized and uniform sampling and analysis protocol, for the purpose of ensuring that levels of mercury content in dry cell batteries imported to the NAFTA region do not exceed levels of mercury content agreed to by the Parties for the NAFTA region; and
- iii) consider incentive programs, in cooperation with their various regulatory jurisdictions and industry, to encourage the development of technologies to find alternatives for mercury-containing dry cells, particularly mercury button cells.

Action item 2e Electrical switches and relays sector

Recognizing that substantial reductions in mercury emissions may be achieved through pollution prevention programs, including product stewardship and mercury substitution, and that energy savings can be realized through upgrading to programmable electronic devices, the Parties will:

- i) encourage the substitution/replacement of mercury-containing electrical devices, such as switches, relays and thermostats, with non-mercury-containing devices through voluntary/non-regulatory programs and partnerships with manufacturers and users;

- ii) collaborate by cooperating in the development of a public awareness program and encouraging the establishment of recovery and recycling initiatives within their various regulatory jurisdictions;
- iii) work in partnership with the electrical switches and relays sector to develop and implement a voluntary/non-regulatory identification system (i.e., labeling, color coding) for mercury-containing electrical devices, to assist in the removal of these devices prior to replacement or substitution;
- iv) encourage the establishment of electrical products collection and recovery programs consistent with Action item 3 (Mercury waste management approaches).

Action item 2f Lamp manufacturing sector

Recognizing that mercury in lamps (i.e., fluorescent, high-intensity discharge and neon) represents a significant contribution to North American mercury-in-use inventories and may be released to the environment through improper life cycle management, the Parties will:

- i) take actions to promote use of high efficiency low-mercury lamps; work in partnership with lamp manufacturers to develop a uniform standard for the maximum mercury concentration in the most common fluorescent lamp types manufactured in North America;
- ii) work in partnership with lamp manufacturers to assess and develop management options for other mercury containing lamps, such as specialty lamps and lamps used in “neon” signs; and
- iii) encourage sound life cycle management, including the removal and recycling of mercury from waste lamps, and the disposal of these lamps in a manner that precludes release to the environment.

Action item 2g **Health and dental care sectors**

Recognizing that the provision of health and dental care to North Americans should include adoption of pollution-prevention measures by the institutions and professionals that provide such care, the Parties will:

- i) cooperate with their various regulatory jurisdictions and the health care sector in developing programs to encourage further development of mercury alternatives and establish programs to reduce, and, when warranted, eliminate mercury use in this sector;
- ii) collaborate in the development of a trilateral strategy for achieving the goal of virtual elimination of mercury-containing waste from the health care sector waste stream by 2005; and
- iii) promote advocacy programs within the dental care sector to minimize emissions to air and water from mercury used in dental processes

Action item 2h **Cultural and artisanal uses**

Aware that certain members of North American society consider mercury to be a symbol of health and prosperity but may be unaware of the potential health hazards of exposure to mercury, the Parties will:

- i) assist their various regulatory jurisdictions to identify populations whose cultural and artisanal practices involve the use of mercury and will assist with educational programs to raise awareness among these populations of the hazards of mercury exposure; and
- ii) consider voluntary/non-regulatory, regulatory or other management options to eliminate uses of mercury in cultural and artisanal settings, such as apparel, jewelry and children's toys and games.

Action item 2i **Analytical, testing, measurement, calibration and education sector**

Recognizing that various testing and calibration facilities and equipment, educational centers and laboratories may have stores of mercury or mercury-containing devices and reagents, the Parties will:

- i) promote the establishment of initiatives to ensure that persons handling mercury are adequately trained to minimize their exposure and eliminate release to the environment;

- ii) implement programs, in facilities for which they are directly responsible, to assess the feasibility of replacement of mercury or mercury-containing devices and reagents with non-mercury containing alternatives, and initiate subsequent recommendations where appropriate alternatives are indicated;
- iii) encourage similar programs, as described above, at facilities for which the Parties are not directly responsible;
- iv) assist with the development of programs to inventory stores of mercury or mercury-containing devices and reagents in this sector, including such uses as dairy manometers, gas pipeline pressure manometers and sewage treatment trickling-filter plants, and recommend alternatives; and
- v) work with standard-setting organizations (such as the American Society for Testing and Materials) to determine the feasibility of setting equivalent standards without requiring mercury as a component of the standard setting equipment or procedure.

Action item 3
Mercury waste management approaches

The Council notes that the Parties acknowledge that mercury-containing wastes are generated from combustion and industrial processes, pollution control operations and from disposal of mercury-containing products in quantities sufficient to warrant the development of mercury waste management programs and, therefore:

Action item 3a **Wastes from combustion and industrial processes and pollution control operations**

Recognizing that the management of mercury-containing wastes is an integral part of the life cycle management of the materials combusted or treated, and that quantities of mercury stocks may be generated as a consequence of this Action Plan, the Parties will:

- i) encourage the development of waste-management programs to address the storage, handling, processing and disposal of wastes from combustion and industrial processes and pollution-control operations in order to minimize or eliminate mercury emissions to the environment;
- ii) encourage the treatment of wastes from combustion and industrial processes and pollution-control operations to recover, stabilize, or retire mercury in the waste where there is a risk of mercury being released to the environment through any subsequent waste storage, transfer or disposal operation; and
- iii) encourage the maintenance of waste-management records from combustion and industrial processes and pollution-control operations as described in Action item 6 (Implementation and Compliance), to enable public disclosure of the operations' waste-management practices.

Accordingly, the Council

- iv) directs the North American Working Group on the Sound Management of Chemicals to undertake a review of national programs to determine the adequacy of national reporting mechanisms used to track the ultimate fate of mercury-containing wastes within North America, particularly waste transported across national boundaries for storage, handling, processing, disposal or long-term containment, and to make recommendations to improve such mechanisms.

Action item 3b Incinerator waste streams

Recognizing that it can be technically difficult to remove mercury from combustion source emissions, the Parties will:

- i) collaborate with their various regulatory jurisdictions in the coordination of pollution prevention programs outlining the hazards of mercury and suggesting methods to reduce risks through source separation programs and other public involvement initiatives;
- ii) develop waste management policies and programs within their regulatory jurisdictions to ensure that, to the degree possible, mercury is separated and segregated prior to entering the waste stream; and
- iii) endeavor to develop comparable emission standards based on best practices for waste incinerators.

Action item 3c Wastewater treatment

Recognizing that wastewater treatment facilities, by the nature of their operation, accumulate mercury in both wastewater and biosolids that may become bioavailable or be emitted when discharged, applied to land or incinerated, the Parties will:

- i) develop pollution-prevention policies and programs within their regulatory jurisdictions aimed at reducing the amount of mercury entering wastewater treatment facilities;
- ii) initiate protocols for identifying, analyzing and reducing these sources of mercury to wastewater treatment facilities; and
- iii) encourage the development of appropriate management techniques to reduce the release of mercury from biosolids or effluents from wastewater treatment facilities.

Action item 3d Mercury waste collection and handling

Recognizing that the collection of mercury is essential to controlling its release, and that proper handling of mercury-containing wastes is needed to prevent accidental releases of mercury, the Parties will:

- i) encourage sectors noted in this Action Plan to develop product stewardship

programs for the collection, recovery, recycling and permanent retirement of mercury in mercury-containing products;

- ii) assist their various regulatory jurisdictions with the establishment of mercury collection depots and incentives to encourage the collection, recovery, recycling and permanent retirement of holdings of mercury; and
- iii) encourage mercury reduction and collection programs, including proper cleaning, handling, replacing or storing procedures for all mercury-containing devices and equipment.

Action item 3e Mercury retirement program

Recognizing that North American anthropogenic activities contribute to the increasing global burden of mercury and that there is a need to consider options for removal and permanent disposal of mercury from contributing sources and stockpiles so that it is no longer available to the global pool, the Parties will:

- i) encourage development and use of effective mercury waste-stabilization and disposal techniques and methods; and
- ii) consider development of an initiative to promote mercury retirement whereby emission sources that meet required standards but continue to emit residual amounts of mercury are able to counterbalance their residual emissions by removing and retiring an equal or greater amount of mercury from the North American pool.

Accordingly, the Council

- iii) directs the North American Working Group on the Sound Management of Chemicals to evaluate and assess the technical and socio-economic feasibility of consolidating and permanently retiring quantities of mercury removed from commerce in North America.

Action item 3f Continuation of reduction measures

Understanding that the application of the proposed action items is essential to the continued reduction of anthropogenic inputs of mercury to the environment, the Parties will make financial and scientific resources available to further promote reductions of anthropogenic mercury to the environment with the goal of ultimately approaching naturally occurring levels.

Specifically, the Parties will:

- i) promote the development of research into new reduction technologies;
- ii) promote incentives to encourage adoption of emerging technologies for release reductions; and
- iii) promote research on remediation of mercury-contaminated sites.

Action item 4
Research, monitoring, modeling, assessment and inventories

The Council notes that the Parties acknowledge that there is a need to develop and refine a collective North American capacity and capability to assess ambient levels, exposure and toxicity of mercury to minimize human health and ecosystem effects through appropriate research, monitoring, modeling, assessment and inventory programs.

Action item 4a **Development of consistent/comparable data**

Recognizing the importance of having and sharing comparable data and information on mercury and recognizing the critical importance of developing the trinational capacity to generate, share and use such data and information, the Council directs the North American Working Group on the Sound Management of Chemicals to:

- i) improve the comparability, precision, availability, reporting and quantity of data on mercury through increased trinational cooperation in the planning, collection, use and assessment of data on mercury releases to the environment, its atmospheric deposition, its ambient levels in environmental media, and the exposure of, and risks to, humans, fish and wildlife; and
- ii) initiate a trinational quality assurance/quality control program to produce comparable and mutually acceptable analytical measurements of mercury in samples of environmental media.

Action item 4b **North American Mercury Monitoring Network**

Aware that adequate long-term monitoring is important for the development of scientifically sound information to guide policies and programs aimed at reducing levels and fluxes of mercury in the environment, the Council directs the North American Working Group on the Sound Management of Chemicals to:

- i) coordinate the planning, development and implementation of a North American Regional Action Plan on Monitoring that includes mercury in support of the Sound Management of Chemicals initiative.

Action item 4c North American Mercury Research Program

Recognizing that well planned and coordinated research can contribute substantially to improved understanding of the impacts of mercury on human health and the environment and to the collective capacity of Canada, Mexico and the United States to develop and implement policies and programs to prevent and minimize the exposure of North American ecosystems, fish and wildlife, and humans to mercury, the Council directs the North American Working Group on the Sound Management of Chemicals to:

- i) work with the Commission for Environmental Cooperation and others, as appropriate, to promote collaborative mercury research programs to increase our understanding of bio-geochemical cycling, speciation, bioavailability, exposure pathways, environmental fate and transport, source-receptor relationships, toxic effects, environmental indicators, and risks to wildlife and humans, and, in particular, susceptible populations;
- ii) explore the development of best practices for reservoir design and management that mitigates the generation or release of toxic mercury compounds;
- iii) collaboratively, with North American experts, assess:
 - a) the relative contributions of natural and anthropogenic inputs to the global atmospheric pool and fluxes of mercury;
 - b) differences, if any, in the relative toxicity and bioavailability of the various forms and compounds of mercury to receptor ecosystems;
 - c) the impact of atmospheric dynamics (e.g., ozone depletion, acidification, and global warming) on characterization of mercury speciation and reactions; and
 - d) releases of mercury from contaminated soils and sediments and the need to control such releases;
- iv) develop more cost-effective approaches for reducing releases of mercury from anthropogenic sources; and
- v) encourage research directed towards the development of cost-effective substitutes for mercury that pose less risk.

Action item 4d North American modeling of the atmospheric transport of mercury

Recognizing the importance of atmospheric modeling in linking information on both local and long-range sources and receptors of mercury, in calculating back trajectories of

atmospheric transport pathways after deposition events and in the understanding of global mercury cycling, the Council :

- i) directs the North American Working Group on the Sound Management of Chemicals to work with the Commission for Environmental Cooperation to increase cooperation between and among experts involved in monitoring and modeling the anthropogenic emission and atmospheric transport and transformation of mercury and those involved in monitoring and research on the atmospheric deposition of mercury.

Action item 4e Inventories, reporting standards and criteria

Recognizing that standardized and comparable reporting of mercury release and waste management is critical to the development of a comprehensive and effective mercury Action Plan, the Parties will:

- i) identify ways to increase comparability of mercury release and waste management reporting standards and criteria. and
- ii) encourage the timely adoption, for the purposes of obtaining release and waste management data, of a 10 pounds/5 kilograms reporting threshold for facilities that manufacture, process or use mercury on an annual basis through the national pollutant release and transfer registers, namely, the National Pollutant Release Inventory (NPRI), the Toxics Release Inventory (TRI), and the *Registro de Emisiones y Transferencia de Contaminantes* (RETC).

Accordingly, the Council directs the North American Working Group on the Sound Management of Chemicals to:

- iii) coordinate a trilateral plan of action for the monitoring and assessment of mercury release and waste management in the North American region and make the results of such a plan publicly available;
- iv) identify ways to increase comparability of data in order to assess, in the case of mercury, progress toward the national goal of a 50 percent emission reduction by 2006; and
- v) initiate the development of a North American inventory of sites where elevated levels of mercury may occur due to either human activities or natural geological influences, (e.g., former mercury cell chlor-alkali facilities, former weapons production facilities, mercury stockpiles, mercury/precious metal amalgamation sites, mining sites that have used or produced mercury,

contaminated sediments, and natural mercury “hot spots”). The geographical locations of these sites should be indicated on maps and considered under Action item 3f,iii.

Action item 4f **New major construction initiatives**

Recognizing that new major construction initiatives have the potential to increase the amount of mercury released to the environment, the Council directs the North American Working Group on the Sound Management of Chemicals to:

- i) assess whether existing environmental impact assessment processes include the necessary criteria whereby an evaluation of potential mercury releases and the consequent impacts of such releases are included in the evaluation of any new major construction initiatives (e.g., hydroelectric reservoirs, new power generating facilities, new mining/smelting developments) in North America and are considered under Action item 4c,ii.

Action item 5
Communication activities

The Council notes that the Parties recognize that an important element of this Action Plan is the need to inform and educate North Americans, particularly sensitive sub-groups, such as pregnant women and subsistence fishermen, of the human and environmental risks associated with exposure to mercury, such that informed assessments and decisions can be made to reduce the risk of such exposures. Such a strategy must take into consideration sources, sites, exposure routes, toxic effects, risks to occupational and consumer health, environmental and risk management options and, furthermore;

Action item 5a **Trinational educational awareness strategy**

Recognizing that the diverse societies of North America need to be made fully aware of the human and environmental risks related to mercury, the Council directs the North American Working Group on the Sound Management of Chemicals to:

- i) develop a trinational communications strategy researching and outlining options for informing the North American public of how to reduce the risks of and exposure to mercury; building capacity to develop outreach programs and communicating this plan to the North American public.

Action item 5b **Communication of best practices**

Recognizing that communication of successes and problems is an effective and efficient mechanism to share technological advances, the Council directs the North American Working Group on the Sound Management of Chemicals to:

- i) establish mechanisms for sharing success stories in mercury reductions, for developing an inventory of technological advances, such as a data bank of industry best practices, and for maintaining an archive of other international mercury-reduction initiatives;
- ii) establish a recognition program to publicly acknowledge those entities that are contributing to the reduction of mercury use and releases, and/or contributing to public education, including, but not limited to, initiating and/or participating in a voluntary/non-regulatory initiative with their respective government; establishing partnerships with their international counterparts; incorporating life cycle management practices in manufacturing or use processes and operations and products; creating and/or participating in public awareness and education initiatives aimed at minimizing health and environmental effects of mercury and mercury compounds;

- iii) generate and maintain a contact list of scientific, technical and sector-specific experts and organizations who may be contacted for assistance with mercury control initiatives; and
- iv) develop exchange programs to facilitate the advancement of technologies and techniques aimed at reducing mercury releases, including the creation of favorable conditions for promoting capacity building within the geographical scope of the North American Free Trade Agreement.

Action item 5c Recycling directory

Recognizing the need to establish permanent disposal/retirement options for mercury in North America, the Parties acknowledge that there may be a need to maintain an inventory of those facilities that are capable of recycling mercury. Thus, the Council directs the North American Working Group on the Sound Management of Chemicals to:

- i) generate a database of North American enterprises interested in ventures to recycle mercury from various sources of mercury products and processes.

Action item 6
Implementation and compliance

The Council notes that the Parties are aware that comprehensive actions to minimize the amount of mercury in the environment require confirmation that programs and initiatives are achieving the anticipated results and, that;

Action item 6a **Country implementation**

Recognizing that the NARAP provides a framework for action agreed to by the Council, and that each Party has unique regulatory frameworks and capacities to implement the actions described herein, the Parties will:

- i) develop country-specific implementation plans, one year after adoption of this Action Plan by Council, to address how and when the actions described in this NARAP will be undertaken. This will include the application of their existing regulatory and voluntary/non-regulatory programs; and
- ii) request their respective government agencies to consider the development of, to the extent possible under their statutory or regulatory authorities, regulations/guidelines for mercury use- and release-reduction if voluntary/non-regulatory reduction programs and commitments fail to achieve their stated objective.

Accordingly the Council

- iii) directs the North American Working Group on the Sound Management of Chemicals to report publicly to the CEC Council one year after adoption and on a biannual basis thereafter on progress made toward implementing the commitments and actions in this Phase II North American Regional Action Plans on Mercury.

Action item 6b **Verification of success**

Recognizing that detailed implementation plans will be initiated, procedures are required to verify compliance with voluntary/non-regulatory commitments, guidelines, and regulations. Accordingly, the Council directs the North American Working Group on the Sound Management of Chemicals to:

- i) coordinate the development of appropriate audit processes among the Parties to ensure mercury reduction initiatives are meeting the objectives of this Action Plan based in part on information developed from Action item

2a,iii;

- ii) develop a capacity-building strategy that meets the long-term needs and priorities of each country to implement the NARAP; and
- iii) periodically and collaboratively assess the effectiveness of voluntary/non-regulatory and regulatory considerations to further enhance capacities for reducing anthropogenic releases of mercury.

ANNEXES

Annex 1: Major stationary sources

The North American Regional Action Plan on Mercury incorporates by reference the major stationary source categories as described in Annex II, Item 2, (reproduced below) of the 1998 Aarhus Protocol on Heavy Metals developed under the mandate of the Convention on Long-range Transboundary Air Pollution for the United Nations Economic Commission for Europe.

Excerpt from Aarhus Protocol on Heavy Metals, Annex II:

I. INTRODUCTION

1. Installations or parts of installations for research, development and the testing of new products and processes are not covered by this annex.
2. The threshold values given below generally refer to production capacities or output. Where one operator carries out several activities falling under the same subheading at the same installation or the same site, the capacities of such activities are added together.

II. LIST OF CATEGORIES

Category	Description of the category
1	Combustion installations with a net rated thermal input exceeding 50 MW.
2	Metal ore (including sulfide ore) or concentrate roasting or sintering installations with a capacity exceeding 150 tonnes of sinter per day for ferrous ore or concentrate, and 30 tonnes of sinter per day for the roasting of copper, lead or zinc, or any gold and mercury ore treatment.
3	Installations for the production of pig-iron or steel (primary or secondary fusion, including electric arc furnaces) including continuous casting, with a capacity exceeding 2.5 tonnes per hour.
4	Ferrous metal foundries with a production capacity exceeding 20 tonnes per day.
5	Installations for the production of copper, lead and zinc from ore, concentrates or secondary raw materials by metallurgical processes with a capacity exceeding 30 tonnes of metal per day for primary installations and 15 tonnes of metal per day for secondary installations, or for any primary production of mercury.
6	Installations for the smelting (refining, foundry casting, etc.), including the alloying, of copper, lead and zinc, including recovered products, with a melting capacity exceeding 4 tonnes per day for lead or 20 tonnes per day for copper and zinc.
7	Installations for the production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day.
8	Installations for the manufacture of glass using lead in the process with a melting capacity exceeding 20 tonnes per day.

Category	Description of the category
9	Installations for chlor-alkali production by electrolysis using the mercury cell process.
10	Installations for the incineration of hazardous or medical waste with a capacity exceeding 1 tonne per hour, or for the co-incineration of hazardous or medical waste specified in accordance with national legislation.
11	Installations for the incineration of municipal waste with a capacity exceeding 3 tonnes per hour, or for the co-incineration of municipal waste specified in accordance with national legislation.

Annex 2: Product control measures

The Parties may adopt either one of the following measures to control mercury in batteries outlined in Action Item 2 d) i):

- 1) U. S. Mercury-Containing and Rechargeable Battery Management Act: Title II – Mercury-Containing Battery Management Act (Public Law 104-142-May 13, 1996), or
- 2) The mercury concentration limits as specified in the UN ECE Convention on Long-Range Transboundary Air Pollution, Aarhus Protocol on Heavy Metals; Annex VI, Product Control Measures, Item 5 a) and 5 b).

Excerpt from Aarhus Protocol on Heavy Metals, Annex VI, Product Control Measures, Item 5:

5. Each Party shall, no later than five years, or ten years for countries with economies in transition that state their intention to adopt a ten-year period in a declaration to be deposited with their instrument of ratification, acceptance, approval or accession, after the date of entry into force of this Protocol, achieve concentration levels which do not exceed:

- (a) 0.05 per cent of mercury by weight in alkaline manganese batteries for prolonged use in extreme conditions (e.g. temperature below 0°C or above 50°C, exposed to shocks); and
- (b) 0.025 per cent of mercury by weight in all other alkaline manganese batteries.

The above limits may be exceeded for a new application of a battery technology, or use of a battery in a new product, if reasonable safeguards are taken to ensure that the resulting battery or product without an easily removable battery will be disposed of in an environmentally sound manner. Alkaline manganese button cells and batteries composed of button cells shall also be exempted from this obligation.