

**North American Regional Action Plan
on
Environmental Monitoring and Assessment**

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PREFACE

The North American Regional Action Plan (NARAP) on Environmental Monitoring and Assessment is a unique regional undertaking stemming 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 (NAFTA), 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."

Council Resolution 95-05 on the Sound Management of Chemicals (SMOC) was agreed to on 13 October 1995, at the Council's second regular meeting, held in Oaxaca, Mexico. The Council, made up of cabinet level appointees or their designates, is the governing body of the Commission for Environmental Cooperation (CEC). The Resolution commits the Parties to regional cooperation for the sound management, throughout their life cycles, of the full range of chemical substances of mutual concern, including by pollution prevention, source reduction and pollution control.

The Resolution assigns priority to the management and control of substances of mutual concern that are persistent and toxic. It calls for the development of a regional action plan for the management and control of polychlorinated biphenyls (PCBs). It also directed that regional action plans be developed for three additional substances selected from among a group of substances, including the 12 persistent, bioaccumulative organic chemicals identified in the United Nations Environment Programme Governing Council Decision 18/32 of May 1995 and certain heavy metals. The Resolution also 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 "

North American Regional Action Plans (NARAPs) for PCBs, as well as for DDT, chlordane and mercury have been developed and are now in the implementation stage. Under the guidance of the SMOC Working Group a "Process for identifying candidate substances for regional action under the Sound management of Chemicals" was also developed. Following review under this process, NARAPs for dioxins and furans, hexachlorobenzene, and lindane are under development and lead is currently being assessed as a potential candidate for regional action.

The NARAPs developed under Council 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 NARAP is unique and recognizes the differentiated responsibilities of each of the countries. Council Resolution 95-05 and the Action Plans developed pursuant to it 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 NARAPs 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 for 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 NARAPs are also intended to help facilitate the meaningful participation of the public, including nongovernmental 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.

The NARAPs reflect a long-term commitment to cooperative 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 is considered essential to improve the quality, comparability, availability and relevance of the "environmental information" needed to make informed and responsible decisions throughout NARAP implementation.

The SMOC Working Group has recognized the importance of having and maintaining effective monitoring, modeling and research programs to help guide the Sound Management of Chemicals initiative and to help in assessing progress being achieved under the initiative. In October 1998, it directed that a concept paper on environmental monitoring and assessment in support of the initiative be written prior to developing a formal proposal for Council. Following development of the concept paper and subsequent meetings of experts and the SMOC Working Group, the Council of the CEC approved Council Resolution 99-02, which directed that a North American Regional Action Plan on Environmental Monitoring and Assessment be developed. Subsequently in Council Resolution 00-10 the Council directed that the Sound Management of Chemicals ensure a strong children's health focus in development of the draft NARAP on environmental monitoring and assessment.

The substance-specific NARAPs developed under the Sound Management of Chemicals initiative all have monitoring implications and the mercury NARAP includes specific obligations related to the monitoring, research, modeling and assessment of mercury in the environment and its implications for human health and the environment. The NARAP on Environmental Monitoring and Assessment provides an important means of helping to address these obligations. The implementation of this NARAP will involve extensive consultation and collaboration with the Implementation Task Forces established to oversee the implementation of the substance-specific NARAPs.

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PREAMBLE

Certain persistent, toxic, and bioaccumulative substances released to the environment as a result of human activity are transported long distances through air and water and pose unacceptably high risks to the environment, to ecosystems, to human health and to sustainable development. The Sound Management of Chemicals (SMOC) initiative developed by the Commission for Environmental Cooperation (CEC) under the North American Agreement for Environmental Cooperation (NAAEC) targets specific substances for phase out, stringent controls or virtual elimination through North American Regional Action Plans (NARAPs).

Convenient and dependable access to and dissemination of relevant, reliable and comparable monitoring information, along with sound interpretive assessments based, in part, on that information are crucial to the confirmation and quantification of progress made with respect to substances being addressed under other North American Regional Action Plans. The North American Regional Action Plan on Environmental Monitoring and Assessment will, through the standing committee established to oversee its implementation, provide regular assessments and other advice to the SMOC Working Group and its implementation task forces. These assessments will help in assessing progress under the initiative and in identifying and explaining important emerging issues related to persistent toxic substances in the North American Environment. They will also help inform and guide future activities under the Sound Management of Chemicals initiative.

This NARAP on Environmental Monitoring and Assessment will be implemented in conjunction with the monitoring aspects of the substance-specific NARAPs developed under the Sound Management of Chemicals initiative. Together they will help promote collaboration and cooperation among the Parties for the purpose of upgrading monitoring and assessment functions and related activities to support the Sound Management of Chemicals initiative, including the acquisition of relevant, reliable and comparable data and information for purposes of assessing the exposure to targeted substances and the risks that they pose to the environment and human health

The primary focus of this NARAP is on the monitoring and assessment activities, but it is recognized that our capacity to fully address these activities is directly limited by our overall understanding of the many factors affecting the behavior of persistent toxic substances in the environment and the risks they pose to ecosystems and human health. This NARAP does provide a framework, a forum and mechanisms to promote collaborative action for the monitoring and assessment of persistent toxic substances and it also provides a means of focussing attention on important related surveys, and research and modeling activities that are available or that need to be done to improve our capacity to monitor and assess persistent toxic substances in North America. In some instances, especially when little information is available, carefully planned baseline surveys are likely to be very important when attempting to assess the nature, extent and significance of one or more persistent and toxic substances. The results of such surveys can also help identify spatial patterns and correlations amongst different human health and environmental parameters and inform and guide future monitoring, research and modeling activities.

The NARAP on Environmental Monitoring and Assessment provides a framework for a regional-scale strategy (based on geographic-climatic regions) for monitoring and assessing persistent toxic substances in the North American environment. The framework reflects a “nested approach” in which a basic set of parameters would be monitored, using representative sampling considerations, at integrated

monitoring sites comprising a North American Reference Network. They would be linked to information generated by other satellite sites, networks and data sets to provide useful and representative information of status and trends within each regional area and which can be aggregated to comprise a continent-wide picture. It is anticipated that representative sampling will, to the extent feasible, be of a stratified probabilistic design to avoid bias while still incorporating known bases of atmospheric and ecological patterns.

This North American Regional Action Plan stems directly from Council Resolution 95-05 on the Sound Management of Chemicals (Annex 1) and more recently from Council Resolution 99-02 on Developing a North American Regional Action Plan on Environmental Monitoring and Assessment (Annex 2). In addition, the Council has, in Council Resolution 00-10 on Children's Health and the Environment, directed that the Secretariat of the Commission for Environmental Cooperation work with the Parties to develop a CEC agenda on children's health and the environment in North America. The Resolution also directed that the "Sound Management of Chemicals ensure a strong children's health focus in development of the draft NARAP on environmental monitoring and assessment and, where appropriate, identify initiatives that will decrease the impacts on children's health from bioaccumulative, persistent and toxic substances addressed in other NARAPs."

As documented in Council Resolution 99-02, the Council of the Commission for Environmental Cooperation recommends to the Parties that this North American Regional Action Plan on Environmental Monitoring and Assessment be adopted and that the action items identified herein be implemented.

PURPOSE

This North American Regional Action Plan on Environmental Monitoring and Assessment was developed to assist the Working Group for the Sound Management of Chemicals and its Implementation Task Forces in meeting the monitoring and assessment obligations identified and implied under Council Resolution 95-05, or in substance-specific NARAPs developed pursuant to that Resolution.

At a more general level, the NARAP on Environmental Monitoring and Assessment is intended to provide Canada, Mexico and the United States with an agreed-upon course of action to increase the comparability, reliability, relevance and availability of data and information on persistent toxic substances in the North American Environment. This NARAP provides an overall strategic framework to assist in achieving this purpose and the North American Standing Committee on Monitoring and Assessment, established under this action plan, will in addition to its expert advisory roles also serve as a primary forum for advancing the implementation of this plan. It will also foster and encourage cooperation and collective action in planning, conducting and reporting of baseline surveys and monitoring, modeling and research programs on the status, trends and effects of persistent and toxic substances. A major priority is capacity building and international cooperation, with a particular emphasis placed on increasing the capacity of Mexican scientists to measure, monitor and assess persistent and toxic substances in Mexico.

An important initial responsibility of this Committee is to assist the Parties in establishing a Reference Network of designated integrated monitoring sites in North America. It is anticipated

that most of these sites or areas will be selected from sites already in operation. The network and the sites that it contains are envisaged as being a core or index network, addressing similar questions using agreed-upon protocols for collecting, analyzing and sharing data and information. Planning, developing and maintaining of the network will serve as a focus for cooperation and capacity building. The network will provide comparable information on the status, trends and effects of persistent toxic substances at a limited number of sites and will, it is anticipated, serve as a catalyst to encourage managers and scientists working at other locations to follow the reporting of results from the reference network and to increase the likelihood that the data that they generate can be compared with data from the reference network.

GENERAL OBJECTIVES

1. To assist the Working Group for the Sound Management of Chemicals and its Implementation Task forces in addressing the obligations and commitments contained in Council Resolution 95-05 on the Sound Management of Chemicals and in the North American Regional Action Plans developed pursuant to that Resolution;
2. To ensure that the interests and needs of the Working Group for the Sound Management of Chemicals and its Implementation Task Forces are taken into account in the implementation of this NARAP on Environmental Monitoring and Assessment and, in collaboration with these entities, to develop appropriate measures and mechanisms, for implementing specific action items contained in this NARAP.
2. To enhance the capacity of Canada, Mexico and the United States to work together in advancing international initiatives on the Sound Management of Chemicals including the signing and eventual ratification of the Stockholm Convention on Persistent Organic Pollutants.
3. To enhance the ability of policy makers, officials, managers and others to make informed and responsible decisions to reduce and virtually eliminate the anthropogenic releases of persistent and toxic substances to the North American Environment;
4. To produce authoritative assessments of the implications of persistent and toxic substances to human health and the environment for use within the Sound Management of Chemicals initiative and for general distribution.
5. To establish a trilateral forum, a framework and mechanisms to improve trilateral cooperation and collaboration in the planning and implementation of monitoring, modeling, and research programs in support of the Sound Management of Chemicals initiative;
6. To increase the comparability, reliability, relevance and availability of data and information on persistent and toxic substances in North America;
7. To provide an effective focus for capacity building with respect to measuring, monitoring and assessing the status and risks of persistent and toxic substances in the North American environment, through sharing and exchange of information, experience, expertise, personnel, methodology and technology;
8. To stimulate cooperation between experts and officials involved in monitoring, modeling, research, and assessment of bioaccumulative, persistent and toxic substances in the environment and those involved in monitoring and assessing the exposure to, and effects of, bioaccumulative, persistent and toxic substances on humans, with particular reference to children's health and the environment;

SPECIFIC OBJECTIVES

1. To assess progress towards meeting the monitoring, research, modeling and assessment obligations and commitments contained within Council Resolution 95-05 on the Sound Management of Chemicals and in the North American Regional Action Plans developed pursuant to that Resolution.
2. To produce biennial progress reports on the status, trends and significance of persistent and toxic substances in North America with particular reference to those substances being addressed under existing and anticipated North American Regional Action Plans;
3. To plan and initiate a synoptic, baseline survey of the levels of selected persistent and toxic substances in selected environmental media at selected locations in Mexico. This survey is to provide data on the status of selected persistent toxic substances in Mexico with particular reference to those substances being addressed under existing and anticipated North American regional Action Plans. It shall be designed to contribute to an overall assessment of the exposure to, and risks of, persistent toxic substances to humans and the environment in Mexico;
4. To prepare an assessment of the levels of persistent toxic substances in environmental media in Mexico together with an initial assessment of the exposure to, and risks of, Persistent Organic Pollutants and certain heavy metals to humans and the environment in Mexico;
5. To plan and initiate a baseline survey in the North American region of the exposure of newborn children and infants to persistent toxic substances;
6. To plan and recommend a baseline survey in the North American region of the exposure of reference communities or occupations which are believed to have a higher than average exposure to persistent toxic substances;
7. To establish a North American Reference Network of designated Integrated Index Sites for the systematic collection of data and information on the concentrations, fluxes and effects of persistent and toxic substances in the North American Environment, with particular reference to North American Ecosystems and Human Health;
8. To identify and recommend Satellite Sites to be directly associated with the North American Reference Network in addressing one or more key considerations related to monitoring or understanding concentrations, fluxes and effects of persistent toxic substances;
9. To identify and recommend other existing or planned Reference Data Sets to be directly associated with the North American Reference Network, including baseline environmental surveys, epidemiological surveys and studies, and important research findings related to monitoring and understanding concentrations, fluxes and effects of persistent toxic substances;

COMMON ACRONYMS

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

NAAEC: The 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 is a trilateral 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: the North American Sound Management of Chemicals initiative arising from Council Resolution 95-05 of the Commission for Environmental Cooperation.

SMOC Working Group: The North American Working Group for the Sound Management of Chemicals, established under Council Resolution 95-05 of the Commission for Environmental Cooperation.

DEFINITIONS

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

Assessment. An evaluation of the nature, extent and significance of an issue or matter of concern. In the context of this NARAP, this would typically involve the description, interpretation and evaluation of information on the status and trends of selected persistent toxic substances in the environment and of the exposure to, and risks of, these substances to human health and the environment. Information from monitoring activities would typically provide an important input to this assessment and would be supplemented, as needed, with information and understanding gained from other activities including research, modeling, surveys and analysis.

Capacity building. Refers generally 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 Sound Management of Chemicals obligations and commitments, particularly in promoting the NARAPs. In the context of this NARAP, it also applies specifically to building a greater joint capacity to measure, monitor, model and assess the concentrations, fluxes, fates

and effects of the persistent toxic substances being addressed under the SMOC initiative. 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. The governing council of the Commission for Environmental Cooperation established under the North American Agreement on Environmental Cooperation (NAAEC). The Council is composed of cabinet-level or equivalent representatives of the three Parties to the NAAEC.

Integrated Index Sites. The primary index sites within the “North American Reference Network” for the systematic collection of data and information on the concentrations, fluxes and effects of persistent and toxic substances in the North American Environment, with particular reference to North American ecosystems and human health. These selected sites are sites where, at a minimum, the wet/and or dry atmospheric deposition of three or more targeted substances at one or more locations within the geographic area encompassed by the site are monitored and where the fluxes, fate and accumulation of targeted substances within the area are monitored and assessed, including at a minimum, the concentrations of the targeted substances in biota and other environmental media. The geographic area encompassed by an Integrated Index Site is a “North American Reference Area.” The Integrated Index Sites shall cooperate as part of the Reference Network and shall follow agreed-upon protocols and procedures for the collection of samples, the laboratory analyses of samples, and the storage, management and reporting of data and information.

Monitoring. A scientifically designed system of continuing standardized measurements and observations and the evaluation thereof to identify and quantify the status and trends over time of selected environmental parameters. In the context of this NARAP, the monitoring would typically focus primarily on measuring the concentrations, fluxes and effects of persistent toxic substances and the environmental and other factors likely to influence the status and trends of these parameters over time.

North American Reference Area. A North American Reference Area for Monitoring and Assessment is a geographical area, such as a watershed or ecoregion, which contains one or more “Integrated Index Sites,” which together with other such sites comprise a network of cooperating sites for the systematic collection of data and information on the concentrations, fluxes and effects of persistent and toxic substances in the North American Environment, with particular reference to North American ecosystems and human health.

North American Reference Network. The North American Reference Network for Monitoring and Assessment consists of network of cooperating sites for the systematic collection of data and information on the concentrations, fluxes and effects of persistent and toxic substances in the North American Environment, with particular reference to North American ecosystems and human health. The Network is to consist, at least initially, of existing or planned “Integrated Index Sites” in Canada, Mexico and the United States. In addition “Satellite Sites” and “Reference Data Sets” will be included to increase the scope and potential of the Network.

Parties. The governments, respectively, of Canada, the United Mexican States and the United States of America.

Reference Data Sets. Data sets which while not necessarily monitoring data, are considered to be of particular value in interpreting and assessing data generated by the Reference Network. Major research investigations, baseline surveys of persistent toxic substances in biota and in human tissue or in air, water and sediments are envisaged as being likely candidates to be selected as Reference Data Sets. Each Reference Data Set shall include information related to the collection and laboratory analyses of samples and in addition all such data sets collected in the future shall, to the extent practical, follow the agreed-upon protocols and procedures for the collection of samples, the laboratory analyses of samples, and the storage, management and reporting of data and information developed for integrated index sites and satellite sites.

Region. North America (Canada, Mexico and the United States], unless otherwise stated.

Satellite Sites. These selected sites are cooperating sites associated with the North American Reference Network, which while not meeting all the criteria of an integrated index site do monitor at least one of the targeted substances in wet and/or dry deposition or which monitor the fluxes, fate and accumulation of at least one targeted substances within an area or region. All Satellite Sites will cooperate with the Reference Network and shall follow agreed-upon protocols and procedures for the collection of samples, the laboratory analyses of samples, and the storage, management and reporting of data and information.

Survey. A scientifically designed investigation, based on standardized measurements and observations collected during a restricted time period and the evaluation thereof in order to identify and quantify spatial patterns and spatial trends of selected environmental parameters. . In the context of this NARAP a survey would typically focus primarily on measuring the concentrations, fluxes and effects of persistent toxic substances and the environmental and other factors likely to influence spatial patterns and spatial trends of these parameters. Three baseline surveys (Action items 5,7 and 8) are identified in this action plan and, in future, other surveys may be carried out for other purposes or to compare with the initial surveys called for in this action plan.

Targeted substances. Persistent and toxic substances targeted for regional action under the Sound Management of Chemicals initiative, in particular those for which North American Regional Action Plans have been developed or are being developed. The substances currently targeted for regional action are: PCBs, DDT, chlordane, lindane, dioxins and furans, hexachlorobenzene and mercury.

Standing Committee. The North American Standing Committee on Monitoring and Assessment established under this NARAP on Environmental Monitoring and Assessment to facilitate, under the general direction of the SMOC Working Group, the implementation of this NARAP.

Task Force. The North American Task Force on Monitoring, directed by the North American Working Group for the Sound Management of Chemicals to develop this Action Plan.

ACTIONS¹

Action item 1. North American Standing Committee on Monitoring and Assessment

Establish a continuing international forum, herein referred to as the North American Standing Committee on Monitoring and Assessment or the Standing Committee to facilitate, coordinate and oversee the ongoing implementation of the North American Regional Action Plan on Environmental Monitoring and Assessment, in accordance with the following:

The Standing Committee shall be established upon the approval of this North American Regional Action Plan by the Council of the Commission for Environmental Cooperation. The Standing Committee shall:

- be composed of three officials and/or science experts selected by each Party, whose duties pertain to the management or conduct of monitoring, modeling or research programs on the status, trends and effects of persistent toxic substances with particular attention to assessing the risks that they pose to ecosystems and to human health. The chairs of the Task Forces charged with overseeing the implementation of other North American Regional Action Plans shall be ex-officio members of the Standing Committee. The Committee may at its discretion add up to six observer participants who are representative of major stakeholder groups and/or who have expertise that is particularly germane to the work of the Committee, taking into account national representation;
- work under the general direction of the Working Group for the Sound Management of Chemicals;
- receive professional and administrative support from the Secretariat of the Commission for Environmental Cooperation;
- carry out a range of functions in accordance with the terms of reference included as Annex 3 of this NARAP; and
- undergo a review of its functioning and its terms of reference no less frequently than once every four years and then, as appropriate, be discontinued or its mandate extended under the terms of reference as then approved.

Action item 2. Preparation and approval of an implementation work plan

Prepare and adopt by December 2002, a comprehensive work plan for the implementation of action items identified in this Action Plan. This work plan shall, with respect to the implementation of each action item, provide details as to its components, interim targets, timeframe, assignment of responsibilities, and anticipated funding needs and sources of funds. The Standing Committee established under Action item 1 shall, as its principal initial task, and in consultation the Sound Management of Chemicals Working Group, its Implementation Task Forces and others as appropriate, develop drafts of this work plan for review, revision and approval. The Standing Committee shall identify gaps and uncertainties where such exist and seek guidance as to how these deficiencies are to be addressed. This work plan shall be reviewed

¹ The timing for initiating or completing actions called for in this action plan are initial estimates, based on a number of considerations, including the expectation that this action plan and the Standing Committee on Monitoring and Assessment (Action item 1) will be approved by the Council of the Commission for Environmental Cooperation in June 2002. Detailed timelines, deliverables, responsibilities and anticipated funding requirements and sources are to be included in the comprehensive work plan for implementing this action plan (Action item 2).

and revised in conjunction with the biennial progress reports called for as Action item 4 of this NARAP.

Action item 3. Biennial assessments of persistent toxic substances

Prepare by May 2004, and biennially thereafter, concise but comprehensive assessments of persistent and toxic substances in North America for submission to the Working Group for the Sound Management of Chemicals and subsequent public release. These assessments are to assess the status, trends and significance of selected persistent and toxic substances in North America with particular reference to those substances being addressed under existing and anticipated North American Regional Action Plans. The assessments shall, to the extent feasible, address the exposure to, and risks of, persistent toxic substances to the environment and human health, with particular emphasis on the exposure to, and risks of, these substances to children and other vulnerable populations. These assessments shall be written for a general audience and be relevant to the development and implementation of policies for the management and control of persistent toxic substances.

Action item 4. Implementation of NARAP

Prepare by May 2004, and biennially thereafter, an assessment of progress being made in the implementation of the actions called for in this North American Regional Action plan on Environmental Monitoring and Assessment. This initial assessment shall include, for each country, a concise summary of major programs and activities contributing to this assessment of the status, trends and effects of persistent toxic substances.

Action item 5. Synoptic baseline survey of persistent toxic substances in Mexico

Plan and initiate, by December 2002, a synoptic, baseline survey of the levels of selected persistent and toxic substances in Mexico. This survey shall include the collection and chemical analysis of samples from selected environmental media at selected locations in Mexico and the subsequent evaluation of these data. Particular attention is to be given to the potential for chronic and acute exposure of humans to persistent and toxic substances through the ingestion of persistent and toxic substances, such as through the eating of subsistence and commercial foods containing these substances. Existing data, information and expertise are to be taken into account in planning this survey with particular emphasis given to opportunities to assist Mexico in meeting its domestic needs related to persistent toxic substances and its related international obligations, including those outlined in this action plan, those included under the North American Sound Management of Chemicals program and the Stockholm Convention on Persistent Organic Pollutants. The survey shall be completed not later than December 2004 and it shall, to the extent feasible, be integrated with Action item 7, the baseline survey of the exposure of newborn children and infants to persistent and toxic substances. It shall address selected Persistent Organic Pollutants and heavy metals being addressed under the Sound Management of Chemicals initiative and shall be designed to contribute to an overall assessment of the exposure to, and risks of, persistent toxic substances to humans and the environment in Mexico. An interim report and initial evaluation of information from this survey is to be completed by May 2004 and provide important input to the first biennial assessment (Action item 3).

Action item 6. Initial assessment of persistent toxic substances in Canada and the United States

Carry out, by December 2002, a concise, but inclusive, initial assessment of persistent toxic substances in Canada and the United States. This assessment shall be based on existing information and assessments and shall be designed for a general audience. To the extent feasible it shall be designed to inform and complement the synoptic baseline survey in Mexico (Action item 5) and other international assessments such as the UNEP/GEF: Regionally Based Assessment of Persistent Toxic Substances. This initial assessment shall provide important input to the first biennial assessment (Action item 3).

Action item 7. Exposure of newborn children and infants to persistent toxic substances

Plan and initiate, by December 2002, a baseline survey in the North American region of the exposure of newborn children and infants to persistent toxic substances. Health professionals shall play a central role in the development of this initiative with the expectation that this survey it shall include, at a minimum, the collection, analysis and interpretation of blood samples from a representative group of pregnant women from locations in Canada, Mexico and the United States. In planning and conducting this survey care shall be taken to ensure that the data generated can be compared to data generated in recent and planned studies conducted in other areas. To the extent practical this Action item is to be coordinated with Action items 3, 5 and 8.

Action item 8. Exposure of communities, populations and occupations to persistent toxic substances

Plan and recommend, by May 2003, a baseline survey in the North American region of the exposure of reference communities or occupations which are believed to have a higher than average exposure to persistent toxic substances. This action item will, to the extent feasible, be carried out in conjunction with or the survey of the exposure of children to selected persistent toxic substances (Action item 7).

Action item 9. Mercury pilot study

Plan and conduct, together with the North American Task Force on Mercury, a pilot study to assess the exposure to, and risks of mercury, to human health and the environment and to estimate the fluxes of mercury to and from a locations in Mexico where large amounts of mercury have been used or released to the environment. This location are to be selected by Mexico, in consultation with experts and officials from the United States and Canada. The timing and specific elements of the study are to be developed in collaboration with local citizens and officials. An initial report on this pilot study, including a preliminary assessment of the potential relevance of the findings to other regions in Mexico, is to be forwarded to the Working Group for the Sound Management of Chemicals not later than December 2004.

Action item 10. Initial collaborative monitoring sites

Establish, by December 2002, initial collaborative monitoring sites for monitoring certain persistent toxic substances currently being addressed under other North American Regional Action Plans. These sites are to be extensions of existing networks in the United States and Canada and they may or may not be eventually designated as “Integrated Index Sites” (Action item 11) or “Satellite Sites” (Action item 12). These initial collaborating sites shall include:

- one or more sites, to be established in Mexico, for measuring the wet deposition of mercury. These sites are to be established in collaboration with Mexican experts and officials as well as other experts and officials who are familiar with the mercury deposition network in the United States and Canada. The Standing Committee shall work in collaboration with the Implementation Task Force for the NARAP on mercury and the Secretariat of the CEC to facilitate the establishment of these sites;
- one or more sites, to be established in Mexico, for measuring dioxin concentrations in ambient air. These sites are to be established in collaboration with Mexican experts and officials as well as experts and officials who are familiar with the dioxin monitoring network in the United States. The Standing Committee on Monitoring and Assessment shall work in collaboration with the North American Task Force on Dioxins and Furans, and Hexachlorobenzene and the Secretariat of the CEC to facilitate the establishment of these sites.

The collaborating sites may include:

- one or more integrated atmospheric deposition sites to extend the Integrated Atmospheric Deposition Network in the Great Lakes Region to other regions of North America, and especially to Mexico. In working to facilitate the establishment of these sites, the North American Standing Committee on Monitoring and Assessment established under Action item 1 shall look for opportunities to encourage academic and/or industry proposals to establish and operate such sites.

Action item 11. North American Reference Network of Integrated Index Sites

Identify and designate a North American Reference Network of “Integrated Index Sites” for the monitoring and assessment of persistent toxic substances in North America. These are multimedia sampling sites intended to be the primary index or reference sites within the network that is intended to promote and facilitate the systematic collection of data and information on the concentrations, fluxes and effects of persistent toxic substances in the North American environment, with particular reference to North American ecosystems and human health. The Index Sites will be in locations where, at a minimum, the wet and/or dry atmospheric deposition of three or more targeted substances are monitored at one or more spots within the geographic area encompassed by the site, along with the fluxes, fate and accumulation of targeted substances, including at a minimum, the concentrations of the targeted substances in biota and other environmental media. The geographic area encompassed by an Integrated Index Site is a “North American Reference Area.” The Integrated Index Sites shall cooperate as part of the Reference Network and shall follow agreed-upon protocols and procedures for the collection of samples, the laboratory analyses of samples, and the storage, management and reporting of data and information.

The Parties each agree to select and designate a number of Integrated Index Sites, together with accompanying descriptions and rationale, including reference to the guidelines outlined in Annex 4 to this regional action plan. The designated sites are intended for inclusion in a North American Reference Network on persistent and toxic substances. The Parties shall work with their national representatives on the Working Group for the Sound Management of Chemicals and on the Standing Committee on Monitoring and Assessment, established under Action Item 1,

in selecting sites to be designated for inclusion in the Reference Network. It is anticipated that most of these designated Integrated Index Sites will be selected from monitoring and/or research sites that are currently in existence.

- Canada shall, by 31 December 2003, nominate six or more Integrated Index Sites or networks, for inclusion in a North American Reference Network, from among its existing or planned sites and networks.
- Mexico shall, by 31 December 2003, nominate three or more Integrated Index Sites or networks, for inclusion in a North American Reference Network, from among its existing or planned sites and networks.
- The United States shall, by 31 December 2003, nominate nine or more Integrated Index Sites or networks, to be included in a North American Reference Network, from among its existing or planned sites and networks.

In designating these integrated index sites the Parties shall take into account the explanatory note and interim guidelines outlined in Annex 4 of this North American Regional Action Plan.

Action item 12. Satellite Sites

Identify and designate “Satellite Sites” to be associated with the North American Reference Network on Persistent and Toxic substances.

The Parties will, taking into account recommendations by the North American Standing Committee on Monitoring and Assessment, identify by December 2003, an initial set of “Satellite Sites” to be associated with the North American Reference Network. While not considered as primary sites in the North American Reference Network, these sites will have generated, or be generating, data and information that are nevertheless very relevant to this regional action plan.

These selected sites are active cooperating sites to be associated with the North American Reference Network which, while not meeting all the criteria of an Integrated Index Site, do monitor at least one of the targeted substances in wet and/or dry deposition or monitor the fluxes, fate and accumulation of at least one targeted substances within an area or region. All Satellite Sites will cooperate with the Reference Network and shall follow agreed-upon protocols and procedures for the collection of samples, the laboratory analyses of samples, and the storage, management and reporting of data and information.

Action item 13. Reference Data Sets

Identify and designate “Reference Data Sets” to be associated with the North American Reference Network on Persistent and Toxic substances.

The Parties will, taking into account recommendations by the North American Standing Committee on Monitoring and Assessment, identify by December 2003, an initial group of Reference Data Sets. These sets, while not necessarily monitoring data, are considered to be of particular value in interpreting and assessing data generated by the Reference Network. Major research investigations, baseline surveys of persistent toxic substances in biota and in human tissue or in air, water and sediments are envisaged as being likely candidates to be selected as

Reference Data Sets. Each Reference Data Set shall include information related to the collection and laboratory analyses of samples and in addition all such data sets collected in the future shall, to the extent practical, follow the agreed-upon protocols and procedures for the collection of samples, the laboratory analyses of samples, and the storage, management and reporting of data and information developed for integrated index sites and satellite sites.

Action item 14. Cooperation and capacity building

Promote and encourage cooperation to build capacity, especially in Mexico, where capacity building refers generally 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 Sound Management of Chemicals obligations and commitments, particularly in promoting the NARAPs. In the context of this NARAP, it also applies specifically to building a greater joint capacity to measure, monitor, model and assess the concentrations, fluxes, fates and effects of the persistent toxic substances being addressed under the SMOC initiative. 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. The Standing Committee established under this NARAP shall, on behalf of the Parties and the Commission for Environmental Cooperation:

- by May 2003, convene and co-sponsor a conference or workshop to explore a wide range of options and opportunities for facilitating and encouraging capacity building with respect to this NARAP. The attendees shall include experts and officials involved in the monitoring and assessment of persistent toxic substances, international funding agencies, foundations involved in funding environmental initiatives, spokespersons from universities currently involved in binational and/or trinational cooperative programs, spokespersons from University granting agencies, and spokespersons from industries and industrial associations with an interest in promoting capacity building related to this NARAP;
- by May 2004, convene and co-sponsor a workshop bringing together environmental and human health experts and officials who are involved in the environmental monitoring of persistent toxic substances including individuals involved in research, analytical chemistry, modeling and data management to consider and develop recommendations to facilitate the exchange of information and personnel to improve the capacity to compare, interpret and assess data and information on persistent toxic substances in North America.

ACCOUNTABILITY AND COMMITMENT TO ACTION

This North American Regional Action Plan on Environmental Monitoring and Assessment includes an extensive list of action items and is an ambitious plan to support of the Sound Management of Chemicals initiative. It has broad support among its many stakeholders, which include the governments of Canada, Mexico and the United States, and the Commission for Environmental Cooperation. It also has support amongst members of the general public and from experts involved in monitoring and research on persistent and toxic substances. There is confidence that this plan and the steps that will be taken to implement it will help maintain public, governmental and scientific support for this initiative.

The North American Working Group for the Sound Management of Chemicals and its Implementation Task Forces are the primary clients for this plan and will provide continuing oversight and input as the plan is implemented. The Standing Committee is the institution with the primary responsibility and opportunity for overseeing and coordinating the ongoing implementation of this action plan. It can expect the support of the SMOC Working Group and the Commission for Environmental Cooperation. Also, while recognizing that North American Regional Action Plans developed under the Sound Management of Chemicals initiative are not legally binding, the Parties to the North American Agreement on Environmental Cooperation are expected to continue to support this initiative. This support will include political, official and, when necessary, financial support.

Ultimately, the success of this unique North American Regional Action Plan will depend on developing and maintaining strong public support and strong support from the monitoring and science communities. Public communication, through the release and dissemination of progress and other reports, will be one means of encouraging this support. Public consultation events, sponsored by the Standing Committee, the Working Group for the Sound Management of Chemicals, and the Council and the Joint Public Advisory Committee of the Commission for Environmental Cooperation, will provide other means of being accountable to the public.

ANNEXES

ANNEX 1: Council Resolution 95-05 on the Sound Management of Chemicals

Oaxaca, Mexico. 13 October 1995

COUNCIL RESOLUTION 95-05

Sound Management of Chemicals

THE COUNCIL:

RECOGNIZING that the territories of the Parties comprise shared regional ecosystems in which the land, air, water, flora and fauna are linked and interdependent;

RECOGNIZING that transport of toxic substances across national boundaries is a major and shared concern;

NOTING WITH CONCERN that certain persistent toxic substances bioaccumulate in living organisms and have been associated with immune system dysfunction, reproductive deficits, developmental abnormalities, neurobehavioral impairment and cancer, as well as acutely toxic and other harmful effects on human, plant, and animal health and the environment;

NOTING FURTHER that some of these harmful effects are irreversible and that remedial measures to improve degraded environments and treat pollution-associated diseases even when feasible can often place considerable strain on local, regional and national economies;

RECOGNIZING the need to assess and develop strategies for addressing new and existing chemicals in North America, throughout their life cycles, to reduce and prevent adverse effects to human health and the environment;

RECOGNIZING the important contributions that producers and/or users can make to the sound management of chemicals;

REAFFIRMING the Parties' commitment to the sound management of chemicals, as stated in *Agenda 21* and adopted at the *1992 United Nations Conference on Environment and Development*;

REAFFIRMING the Principles of the *1992 Rio Declaration*, noting in particular those Principles that have special importance for the promotion of chemical safety, including:

Principle 14, *States should effectively cooperate to discourage or prevent the relocation and transfer to other States of any activities and substances that cause severe degradation or are found to be harmful to human health; and*

Principle 15, *In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific evidence shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation;*

RECOGNIZING that the Intergovernmental Forum on Chemical Safety has recommended that regional cooperation and information exchange networks should be established in all regions as soon as possible;

FURTHER RECOGNIZING that this resolution should build upon existing bilateral and multilateral commitments related to the sound management of chemicals, to which at least two of the *North American Agreement on Environmental Cooperation* (NAAEC) countries are Party, including, for example, the commitments made in Article II (a) of the *Great Lakes Water Quality Agreement of 1978* (Canada-United States of America) that, *“The discharge of toxic substances in toxic amounts be prohibited and the discharge of any or all persistent toxic substances be virtually eliminated”*;

ACKNOWLEDGING the responsibility of the Council, under Article 10(5)(b) of the NAAEC to promote and, as appropriate, develop recommendations regarding appropriate limits for specific pollutants, taking into account differences in ecosystems and other responsibilities for the sound management of chemicals included under other relevant provisions of the NAAEC;

FURTHER ACKNOWLEDGING Article 10(3) of the NAAEC, which calls upon the Council to strengthen cooperation on the development and continuing improvement of environmental laws and regulations, including by: *“(a) promoting the exchange of information on criteria and methodologies used in establishing domestic environmental standards; and (b) without reducing levels of environmental protection, establishing a process for developing recommendations on greater compatibility of environmental technical regulations, standards and conformity assessment procedures in a manner consistent with the NAFTA”*;

COGNIZANT of the need to consider the unique circumstances of NAFTA Partner economies and ecosystems and to develop regional approaches for the sound management of chemicals, particularly to reduce the risks posed by persistent, toxic substances of mutual concern;

CONCLUDING that prevention of pollution and reduction of risk through cooperative actions for the sound management of chemicals, particularly of persistent, toxic substances, is both desirable and imperative in order to protect and improve the environment of North America;

COMMITTS to regional cooperation for the sound management, throughout their life cycles, of the full range of chemical substances of mutual concern including by pollution prevention, source reduction and pollution control;

DECIDES to give priority to the management and control of substances of mutual concern that are persistent and toxic beginning with the development of a regional action plan for the management and control of polychlorinated biphenyls (PCBs). Regional action plans will also be developed for a short list of three additional substances selected from among a group of substances, including the 12 persistent bioaccumulative organic chemicals identified in the recent United Nations Environment Programme Governing Council Decision 18/32 of May 1995 (see Annex I to this resolution) and certain heavy metals;

FURTHER DECIDES that regional action plans for such substances of mutual concern be developed as specified below, taking into consideration different national approaches and timetables for the sound management of chemicals in a manner that respects the different economic, political and regulatory circumstances of the Parties.

HEREBY ESTABLISHES 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, including development of:

1. a regional action plan for the management and control of PCBs;
2. criteria for identifying additional persistent and toxic substances for regional action by 15 November 1995;
3. a regional seminar to be held in December 1995 in Mexico for discussion of ongoing actions and experiences on the matter;
4. a short list of three priority persistent and toxic substances in addition to PCBs to be developed by 15 January 1996, for which regional action plans will be prepared;
5. regional action plans covering each of the persistent and toxic substances on this short list to be submitted to the Council for approval by 15 December 1996; and
6. refined criteria for identifying persistent and toxic substances for regional action, an updated short list, and recommendations on other persistent and toxic substances to be the subject of action plans on an annual basis, beginning in 1996.

DIRECTS the SMOC Working Group, in addressing the abovementioned decisions and commitments, to:

- a) develop recommendations for improving the capacity for monitoring, research and information sharing with respect to the sound management of chemicals;

- b) identify and recommend measures for improving capacity and capabilities for the sound management of chemicals, including measures relating to technical cooperation, information sharing and joint approaches;
- c) consider ways and, if practicable, develop recommendations for promoting the exchange of information on criteria and methodologies used in establishing domestic standards for the sound management of chemicals;
- d) incorporate, as appropriate, pollution prevention principles and precautionary approaches in making recommendations to reduce risk associated with toxic substances;
- e) recommend, as set out in Chapter 19 of *Agenda 21*:

1) concerted activities to reduce risks presented by toxic chemicals, taking into account the entire life cycle of the chemicals. These activities could encompass both regulatory and non-regulatory measures, such as promotion of the use of cleaner products and technologies; emission inventories; product labeling; use limitations; economic incentives; and phasing out or banning of toxic chemicals that pose an unreasonable and otherwise unmanageable risk to the environment or human health and those that are toxic, persistent and bio-accumulative and whose use cannot be adequately controlled; and

2) policies and 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 bio-accumulative and whose use cannot be adequately controlled;

- f) coordinate activities with, avoid duplicating the efforts of, and where possible utilize the expertise of existing workgroups and other organizations whose efforts are pertinent, e.g., the *Technical Working Group on Pesticides* established under the *U.S.-Canada Free Trade Agreement*, the *Ad Hoc Working Group on Persistent Organic Pollutants (POPs)* of the *Inter Organizational Program for the Sound Management of Chemicals (IOMC)*, the *Intergovernmental Forum on Chemical Safety*, the *United Nations Economic Commission for Europe/Long Range Transport of Air Pollutants (UNECE/LRTAP) Ad Hoc Workgroups on POPs and Heavy Metals* and the *Organization for Economic Cooperation and Development (OECD) Chemicals Programme*;
- g) build upon existing bilateral and multilateral commitments related to the sound management of chemicals;
- h) encourage and provide for meaningful participation of the public, including non-governmental organizations; business and industry; provincial, state, and municipal

governments; academia; and technical and policy experts in developing its recommendations;

- i) recommend measures for assessing progress with respect to action programs undertaken through this resolution;
- j) encourage complementary national approaches and timetables for the sound management of chemicals in a manner that respects the different economic, political and regulatory circumstances of the Parties.

APPROVED BY THE COUNCIL:

Carol Browner
Government of the United States of America

Julia Carabias
Government of the United Mexican States

Sheila Copps
Government of Canada

Annex 1 to the Council Resolution 95-5 on Sound Management of Chemicals

List of 12 persistent organic pollutants identified in the United Nations Environment Programme Governing Council Decision 18/32 of May 1995:

1. PCBs
2. dioxins
3. furans
4. aldrin
5. dieldrin
6. DDT
7. endrin
8. chlordane
9. hexachlorobenzene
10. mirex
11. toxaphene
12. heptachlor

ANNEX 2: Council Resolution 99-02 on developing a North American Regional Action Plan on Environmental Monitoring and Assessment

Banff, Canada. 28 June 1999

COUNCIL RESOLUTION: 99-02

Developing a North American Regional Action Plan on Environmental Monitoring and Assessment

THE COUNCIL:

RECOGNIZING that certain persistent, toxic, and bioaccumulative chemicals released to the environment as a result of human activity pose high risks to the environment, to ecosystems, to human health and to sustainable development in North America, and that some of these substances are being or are likely to be addressed under the Sound Management of Chemicals (SMOC) initiative, in accordance with Council Resolution 95-05;

FURTHER RECOGNIZING that convenient and dependable access to and dissemination of relevant, reliable and comparable monitoring information, along with sound interpretive assessments based on that information, are crucial to the effective management of such substances as well as to the confirmation and quantification of progress in respect to such management;

ALSO RECOGNIZING that the operational integration of modeling and research components with monitoring and assessment functions is necessary for the sound management of such substances;

CONSCIOUS of a need for ongoing assurance that scientifically-based data and interpretations derived by the NAFTA countries with respect to such substances are accessible, comparable, continuing, and of known quality, as well as of a need for ongoing assurance that this information is adequate and appropriate for its intended purposes;

NOTING Council Resolution 95-05, which creates the North American Working Group for the Sound Management of Chemicals (the “Working Group”);

TAKING INTO ACCOUNT the advice of the SMOC Working Group on the need to develop a North American Regional Action Plan (NARAP) promoting collaboration and cooperation between and among the Parties for the purpose of upgrading monitoring and assessment functions and related activities to support the SMOC initiative;

HEREBY DIRECTS the SMOC Working Group to develop a NARAP on Environmental Monitoring and Assessment in support of the SMOC initiative which, among other things, promotes collaboration with regard to the acquisition of environmental data and

information for purposes of assessing the exposure to such substances and the risks they pose to human health and the environment;

FURTHER DIRECTS that the SMOC Working Group should focus on substances currently covered by the SMOC initiative, although it should also look to identify other substances to be possibly considered under the SMOC initiative; and

ENCOURAGES the SMOC Working Group to build upon existing infrastructure and institutional arrangements in developing the NARAP.

APPROVED BY THE COUNCIL:

Carol M. Browner
Government of the United States of America

Julia Carabias Lillo
Government of the United Mexican States

Christine Stewart
Government of Canada

ANNEX 3: Terms of Reference for the North American Standing Committee on Monitoring and Assessment

The North American Standing Committee on Monitoring and Assessment shall be established upon the approval of the North American Regional Action Plan on Environmental Monitoring and Assessment by the Council of the Commission for Environmental Cooperation. The Standing Committee shall, under the guidance of the Working Group for the Sound Management of Chemicals, facilitate, coordinate and oversee the ongoing implementation of this North American Regional Action Plan;

1. The Standing Committee shall:

- be composed of three officials and/or science experts selected by each Party whose duties pertain to the management or conduct of monitoring, modeling or research programs on the status, trends and effects of persistent toxic substances with particular attention to assessing the risks that they pose to ecosystems and to human health. The chairs of the Task Forces charged with overseeing the implementation of other North American Regional Action Plans shall be ex-officio members of the Standing Committee on Monitoring and Assessment. The Committee may at its discretion add up to six observer participants who are representative of major stakeholder groups and/or who have expertise that is particularly germane to the work of the Committee, taking into account national representation.
- work under the general direction of the Working Group for the Sound Management of Chemicals;
- receive professional and administrative support from the Secretariat of the Commission for Environmental Cooperation.
- have its terms of reference reviewed no less frequently than once every four years and, as appropriate, be discontinued or have its mandate extended under the terms of reference as then approved.

2. The general responsibilities of the Standing Committee are:

- to promote, oversee and guide the ongoing implementation of the North American Regional Action Plan on Environmental Monitoring and Assessment by working, as required, with the Parties, the Working Group for the Sound Management of Chemicals and its implementation task forces and others to address the action items contained in this action plan;
- to provide expert advice on persistent toxic substances in support of the Sound Management of Chemicals initiative, especially as related to considerations being addressed by the Working Group for the Sound Management of Chemicals or by the Council of the Commission for Environmental Cooperation;
- to produce, or arrange for the production of, regular assessments of progress being made with respect to the Sound Management of Chemicals initiative, especially related the monitoring and assessment of persistent toxic substances and the

implementation of Action items outlined in this NARAP on Environmental Monitoring and Assessment;

- to serve as a trilateral forum for promoting cooperation and capacity building between and among officials and experts involved in monitoring and assessing persistent toxic substances in the North American Environment;
- to foster, and encourage the temporary transfer and exchange of personnel among organizations and institutions involved in monitoring, modeling and research on the status, trends and effects of persistent toxic substances;
- to work with the monitoring, research and modeling communities in Canada, Mexico and the United States to improve the comparability, quality, relevance and availability of environmental information on the status, trends and effects of persistent toxic substances in the North American Environment, through measures such as quality assurance/quality control of sampling and analytical procedures, and the storage and management of data and information;
- other ongoing responsibilities, including: 1) an alerting function to alert the countries to new emerging issues, 2) a planning function to identify and propose specific projects to address important gaps in the understanding of persistent toxic substances in North America, 3) a convening function to periodically convene scientific/monitoring conferences/workshops on matters within the scope of this North American Regional Action Plan, 4) a sponsoring function including the sponsoring of meetings and workshops to address specific questions of concern to the Sound Management of Chemicals Working Group or the Council of the Commission for Environmental Cooperation, 5) a promoting function including actively seeking cosponsors and partners to support work consistent with the regional action plan.

3. Specific responsibilities of the North American Standing Committee on Monitoring and Assessment shall also include:

- having lead responsibility for developing and reviewing the work plan for implementing the specific actions called for in this NARAP in accordance with Action item 2.
- convening and cosponsoring, on behalf of the Parties, meetings of the Working Group for the Sound Management of Chemical and the Commission for Environmental Cooperation, specific conferences and workshops to support the implementation of specific action items included in this action plan, primarily to promote capacity building and to facilitate and promote improved interdisciplinary and international communication and cooperation;
- developing and recommending guidelines for adding or deleting “designated” sites from a North American Reference Network on persistent toxic substances;
- recommending and overseeing use of sampling strategies and protocols to improve the comparability of data and information;
- recommending and overseeing the development of protocols, including minimum “core” metadata requirements, to facilitate the management and sharing of data generated by the reference network;

- providing updates of the Standing Committee's work at regular meetings of the SMOC Working Group.

ANNEX 4: Explanatory note and initial guidelines for identifying and designating “Integrated Index Sites” for inclusion in a North American Reference Network for the monitoring and assessment of persistent toxic substances in North America

1. Foreword: The following terms: North American Reference Network, North American Reference Area, Integrated Index Site, Satellite Site, Reference Area and targeted substance, all of which are particularly pertinent to Action Item 1 are defined more completely in the definitions section of this NARAP. The North American Reference Network is envisaged as consisting of a relatively small number of “Integrated Index Sites,” of various geographic areas, which will serve as primary index sites for the monitoring and assessment of persistent toxic substances in North America. It is expected that each site will, at one or more locations, monitor wet and/or dry deposition of three or more persistent toxic substances that are being targeted under the Sound Management of Chemicals initiative. The fluxes, fate and accumulation of these targeted substances will also be monitored at locations within the Reference Area encompassed by the Integrated Index Site.

The Integrated Index Sites will be part of a cooperating network using agreed-upon protocols for collecting, analyzing and sharing data and information. They will serve as a focus of cooperation and capacity building for experts and managers involved in monitoring and modeling of, and research on, persistent toxic substances. The sites will serve as locations for establishing linkages among different monitoring networks so that inter-comparability of monitoring results among countries and different monitoring networks can be established. They are places where a number of different monitoring networks intersect by having sites where measurements and observations are obtained in relatively close spatial and temporal proximity. Laboratory inter-comparison exercises among the laboratories working at these various sites would be conducted to determine how well results from different sites and countries could be combined in carrying out continent wide assessments.

At many or all of the Integrated Index Sites comprising the North American Reference Network, a number of parameters and properties will be measured with compatible data collection and analysis techniques. This is intended to allow the results to be used as a basis for a continent-wide overview to help identify cause and effect relations and assess continent-wide distribution and trends in baseline limits of specific contaminant-related properties.

The North American Reference Network will not in itself provide sufficient data and information for a comprehensive assessment of the status and trends of targeted substances in North America. The number of Integrated Index Sites is clearly inadequate to draw detailed conclusions regarding geographic differences, at least for some monitored parameters. The targeted substances are all persistent, toxic and bioaccumulative, although their pathways and effects can be quite different. They are also all transported in the atmosphere, but the distances traveled vary and the factors influencing their atmospheric transport are complex and only partially understood. A continuing challenge is to develop better source/receptor models to relate atmospheric

emissions and atmospheric deposition of targeted persistent toxic substances. Improvements in this area will assist in extrapolating data from existing monitoring sites and will help in the selection of future integrated monitoring sites.

The monitoring activities addressed in this action plan range from those that are relatively well established and routine to others that are clearly in the research and development stage. Sampling and measuring the concentrations of some persistent toxic substances in some media are relatively routine. Others, such as sampling and measuring the atmospheric deposition rates of persistent toxic substances, especially their dry deposition rates, involve cutting-edge research and modeling, as does much of the work on the pathways and fluxes of persistent toxic substances within and between ecosystem compartments. The assessments called for in this action plan will require that the authors be familiar with both the available monitoring data and information as well as with the new insights, understanding and tools that will result from related research and modeling activities.

In addition, this action plan, in addressing and linking both human health and environmental monitoring, is venturing into an important and challenging area where there are few role models and collaboration amongst experts currently is limited. This action plan provides an opportunity to increase cooperation in this area.

2. Initial guidelines to assist in the identification and designation of Integrated Index Sites for inclusion in a North American Reference Network

1. A designated integrated monitoring site for the North American Reference Network on persistent toxic substances shall:
 - be a) an existing monitoring or research station, or b) an existing or planned network of monitoring or research stations, that has collected or expects to collect reliable data on atmospheric deposition of persistent toxic substances and on concentrations, fluxes, fate and effects of persistent toxic substances within the receptor ecosystem;
 - focus initially on persistent and toxic substances, including PCBs, DDT, chlordane, dioxins and furans, hexachlorobenzene, lindane and mercury, which are being addressed under North American Regional Action Plans developed under the Sound Management of Chemicals initiative;
 - contribute to a) measuring and interpreting air pollution/deposition, b) tracking the movement and accumulation of persistent and toxic substances in receptor ecosystems, c) monitoring and assessing the impacts of these substances on receptor ecosystems and their components, and d) assessing the exposure and risks to humans of persistent and toxic substances.

2. The Parties, in designating integrated monitoring sites for inclusion in the North American Reference Network on persistent toxic substances, agree that the site is part of a shared North American initiative and agree that site managers and participating scientists:
 - have a responsibility to cooperate with managers and scientists working on other designated integrated monitoring sites;
 - will work together to enhance the comparability of data generated at designated sites, including the use of compatible sampling and laboratory analytical methods and procedures;
 - will develop and participate in quality assurance/quality control initiatives to increase confidence in the quality of information generated at the site or network;
 - will, in accordance with agreed-upon criteria, share data and information generated at the site with site managers and participating scientists;
 - will ensure that data and information generated at the site are available for inclusion in biennial and other reports prepared as part of the Sound Management of Chemicals initiative and that they are made available to the public;
 - will collaborate with other site managers and participating scientists and data management specialists to develop appropriate data management and data sharing systems to enhance the use and availability of data and information generated by the Reference Network;
 - will participate in workshops, conferences and other fora, including those sponsored by the North American Standing Committee on Monitoring and Assessment, on the monitoring, modeling and assessment of persistent and toxic substances;
3. The Parties in designating integrated monitoring sites for inclusion in the North American Reference Network shall work with the Standing Committee on Monitoring and Assessment established under the North American Regional Action Plan on Environmental Monitoring and Assessment to:
 - select integrated monitoring sites so that individually they contribute to meeting one or more the guidelines outlined under paragraph 1 of this annex and collectively they contribute to meeting most or all the guidelines outlined in paragraph 1 of this annex;
 - endeavor to maintain and enhance designated sites to ensure that ongoing sampling and data collection is continued and, when required and when reasonable, to increase sampling at specific designated sites to address gaps in the coverage of targeted persistent and toxic substances.

4. The Parties, in considering the suitability of a particular integrated monitoring site for designation, are encouraged to take into account a full range of considerations that are likely to have a bearing on its long-term suitability. The following questions are illustrative of considerations that might be considered:
 - a. Is the site physically located so as to be unambiguously representative of:
 - a particular ecological region?
 - a particular ecosystem within that ecological region?
 - b. Is the site physically located so as to be unambiguously influenced by:
 - multiple contaminant sources?
 - multiple and interacting contaminant vectors?
 - c. Is the site physically located within an ecosystem or ecological region that:
 - encompasses human, environmental, political or other values of a priority nature?
 - lends itself to extrapolation to a broader geographic context?
 - d. Is there a long-term commitment to support the site:
 - by the operative agency or agencies?
 - by the local population?
 - by the academic community?
 - by funding sources?
 - e. Is the site adequately protected from or secured against:
 - physical alteration, alienation or encroachment?
 - exploitation or extraction of biological resources?
 - unexpected, inadvertent or capricious perturbations?
 - f. Is the site already incorporated into an active network:
 - as a primary site?
 - as a nodal site?
 - g. Are long-term arrangements in place and reliably functional in respect to:
 - funding support?
 - operational support?
 - intellectual partnerships?
 - interpretive capacity?
 - research support?
 - h. Is the site well understood, in terms of such matters as:
 - background geology?
 - species' representation and biodiversity?
 - ecosystem structure and function?
 - biological productivity?

- natural variability?
 - biotic and ecosystemic vulnerability to perturbations?
- i. Does the site harbor any natural long-term contaminant repositories such as:
- sediments?
 - old trees?
- j. Are there long-term databases with respect to:
- climatic parameters?
 - meteorological parameters?
 - hydrological parameters?
 - biological parameters?
- k. Are there archived materials from the site in respect to:
- water?
 - biota?
 - tissues?
 - sediments?
- l. Is the site appropriately instrumented for:
- meteorological measurements and interpretations?
 - hydrological measurements and interpretations?
 - quantitative documentation of wet and dry atmospheric deposition?
- m. Is the site accredited and fully operational in respect to:
- quality assurance?
 - quality control?
- n. Are data-handling provisions adequate in respect to:
- reliability?
 - electronic and hard-copy archiving?
 - safeguarding?
 - regular aggregation, assessment and updating?
 - accessibility?
 - availability?
- o. Could the site support controlled experimental manipulations:
- involving deliberate chemical introductions?
 - involving deliberate ecosystem modifications?
- p. Are the physical amenities and infrastructure at the site:
- adequate?
 - up-to-date?
- q. Are the scientific facilities at the site:

- adequate?
 - up-to-date?
- r. Does the site have capacity to absorb some incremental workload and activity with reference to:
- costs?
 - human power?
 - infrastructure?
 - equipment?
 - interpretive activities?
 - research activities?
- s. Does the site have a tradition and a capacity to support research:
- of a fundamental nature?
 - to elucidate monitoring and assessment functions specifically?
- t. Does the site have a history of achievement and quality as demonstrated by:
- publications?
 - influence?
 - graduate students?
 - visiting scientists and collaborative projects?