

**PCB  
Regional Action Plan**

**Sound Management of Chemicals Project**

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**PCB Task Force**

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## ACRONYMS

CEC = Commission for Environmental Cooperation  
CEPA = Canadian Environmental Protection Act  
CFE = *Comisión Federal de Electricidad* (Federal Electricity Commission)  
EPA = United States Environmental Protection Agency  
INE = *Instituto Nacional de Ecología* (National Institute of Ecology)  
NAFTA = North American Free Trade Agreement  
OECD = Organization for Economic Cooperation and Development  
PCBs = Polychlorinated Biphenyls  
ppm = parts per million  
RAP = Regional Action Plan  
RCRA = Resource Conservation and Recovery Act  
SEMARNAP = *Secretaría de Medio Ambiente, Recursos Naturales y Pesca* (Secretariat of the Environment, Natural Resources and Fisheries)  
TSCA = Toxic Substances Control Act  
US = United States of America

## GLOSSARY OF TERMS

The following definitions have been prepared to assist the reader in understanding terms referenced in the Regional Action Plan on PCB Management. These definitions are intended to convey a general understanding of the terms. These definitions are not regulatory in nature and are not intended to replace or override regulatory definitions established in each of the three countries. For a specific legal and regulatory understanding of these concepts, please refer to the relevant statutory and regulatory language in place in Mexico, Canada, and the US.

**dispersive v. non-dispersive uses:** certain uses of PCBs may result in the inadvertent dispersion (i.e., scattering, distribution) of the PCBs. Examples of such dispersive uses include the application of PCB-contaminated oil to roadways as a dust-suppressant and the burning of PCB-contaminated oil in waste heaters. Examples of non-dispersive uses include PCBs in electrical equipment such as transformers and capacitors. PCB uses, whether dispersive or non-dispersive, are regulated in North America as described in the RAP.

**high-concentration PCB liquids:** fluids containing high concentrations of PCBs that were utilized because of the dielectric or other properties of the PCBs. An example is askarel fluids used in electrical transformers. Typically, the PCB concentrations in these fluids decrease over time, as the level of fluid in the equipment is maintained by adding non-PCB materials (e.g., transformer fluid levels have been maintained in the past by adding chlorobenzenes).

**incidental generation:** this term refers to the unintentional generation of low-concentration PCBs in the course of certain manufacturing processes. Incidental generation of PCBs is regulated in North America as described in the RAP.

**PCB-containing equipment:** equipment such as electrical transformers and capacitors that contains PCBs in regulated concentrations. The use of PCB-containing equipment is regulated in North America as described in the RAP.

**PCB waste:** spent equipment and discarded material that contains regulated concentrations of PCBs that is required to be disposed or has been disposed of; e.g. any PCB liquid, PCB solid, PCB mixture, PCB equipment, PCB contaminated soil, or electrical equipment that contains 50 ppm or more of PCBs.

**sensitive sites:** sites in which there is a higher risk of involuntary human exposure to PCBs, either through direct exposure or as a result of PCB-contamination of food or feed. Examples of sensitive sites include hospitals, schools, and food preparation centers. The use of PCBs in sensitive sites is regulated in North America as described in the RAP.

**recycling/decontamination/treatment/disposal/:** this term has been used to refer to the recycling, decontamination, treatment, or disposal of PCB equipment and the treatment and disposal of PCB wastes.

**recycling:** PCBs cannot be recycled for reuse *as PCBs*. According to country-specific regulations, recycling may be conducted as follows: the chemical treatment of PCBs to recover, for use, certain elemental constituents of the PCB molecule; or, the recovery of materials such as metals from electrical equipment that contained PCBs, *only after* decontamination or the application of a disposal technology to remove the PCBs from the equipment.

**decontamination:** PCB-containing equipment may be decontaminated by removing the PCBs to below regulated concentrations. This is done either so that the equipment may be reclassified as non-PCB containing equipment for continued use, or so that the non-PCB materials in the decontaminated equipment may be recycled or disposed of.

**treatment:** this refers to processes designed to change the physical, chemical, or biological character or composition of PCB waste; and/or to render that waste non-hazardous or less hazardous, and/or safer or more amenable to handling. Treatment activities for PCB wastes are regulated in North America as described in the RAP.

**disposal:** this refers to actions intended to terminate the useful life of PCBs. Disposal of PCB wastes is regulated in North America as described in the RAP, and includes the mode of destruction of PCBs wastes, or the depositing of residues on or into land in order to isolate the residues from pathways that may harm human health or the environment.

## I. VISION, PURPOSE, AND GOALS

### I.1 VISION

Canada, Mexico, and the US recognize the need to cooperate on a range of environmental management issues to protect human health and the environment in the region. One area of cooperation is the sound management of chemicals of concern. To that end, the PCB Task Force has developed this "Regional Action Plan (RAP) on PCB Management" to organize and encourage individual and joint actions by the three countries that will promote sound life cycle management of PCBs in the region.

Working through the Commission for Environmental Cooperation (CEC) established under the North American Agreement on Environmental Cooperation (NAAEC), the three countries established the PCB Task Force to develop the RAP for implementation. Once the RAP is finalized, ongoing implementation activities and monitoring of that implementation by the three countries will be coordinated by the CEC as described in Section IV, "Infrastructure for Implementation of the Action Plan," below.

### I.2 PURPOSE AND BACKGROUND OF THE PCB RAP

The RAP establishes a framework for environmentally sound management and control of polychlorinated biphenyls (PCBs) in North America. PCBs are a class of persistent, toxic chemical compounds that bioaccumulate in the environment and are recognized as potential carcinogens.

The CEC is supporting the development of the PCB RAP in accordance with Council [CEC] Resolution #95-5, "Sound Management of Chemicals." That Resolution established a framework to promote regional cooperation for the sound management, throughout their life cycles, of chemical substances of mutual concern. The PCB RAP will be one of several Regional Action Plans for chemicals of concern.

To implement the decisions and commitments outlined in the Resolution, the Countries formed a Working Group of representatives from Environment Canada (EC), the *Instituto Nacional de Ecología* of Mexico (INE), and the United States Environmental Protection Agency (EPA). The Working Group selected a series of chemicals of concern - DDT, chlordane, and mercury, as well as PCBs - for consideration. The Working Group then established the PCB Task Force to develop the PCB RAP; other task forces are working on RAPs for the other chemicals selected.

The PCB RAP is being developed through a deliberative process. To support initial consideration of issues regarding regional PCB management, the Task Force directed the development of a Discussion Paper on transboundary waste

issues and a subsequent Scoping Paper to present a framework for the RAP. The Task Force has given careful consideration to the risks to human health and the environment from PCBs, and to the domestic laws, policies, and circumstances of each country, and relevant international agreements. The Task Force as well has sought the input of experts and the general public throughout the process. Consultative review was invited on the Scoping Paper and is invited on this draft RAP. As a result of the consultative process, the Task Force believes that the RAP will be reasonable, achievable, and protective of human health and the environment. To ensure that implementation of the RAP continues to support the goals set forth for it (discussed below), periodic review and reassessment of the RAP is provided for in Section II, Principles, below. In developing the RAP, the Task Force recognizes that other efforts, such as the Great Lakes Bi-National Strategy, are ongoing to address the sound management of PCBs and to eliminate their release. The Task Force encourages such regional initiatives to proceed, and the action items identified in the RAP are intended to complement such efforts on a broader scale.

### **I.3 GOALS**

Because PCBs are persistent, highly toxic, bioaccumulative, and result from human activity, the PCB RAP has the following over-arching goals:

1. Virtual elimination of PCBs in the environment. Through implementation of the RAP, the countries should seek to achieve no measurable release of PCBs to the environment and the phase-out of PCB uses for which release cannot be contained. Strategies adopted for virtual elimination of PCBs should account for risks to human health and the environment and should consider economic and technical factors.
2. Environmentally sound management of existing PCBs throughout their life cycle. This should take into account usage, storage, domestic and transboundary movement, and treatment/ disposal of PCBs.
3. Management of PCBs as one element of comprehensive environmental management programs. Through implementation of the RAP, the countries will consider appropriate PCB management decisions as an integral part of comprehensive regional environmental management objectives.

## **II. PRINCIPLES**

The following seven principles will guide implementation of the RAP. The principles are listed in no particular order. In applying the principles, the rights and responsibilities of the three countries must be considered. The principles will be applied in a broad, integrated manner, reflecting the complementary range of values and objectives represented.

### **Principle #1: Sound Regional Environmental Management**

The countries share responsibility for protecting and enhancing the region's ecosystems and reducing risks of harm to human health and the environment from exposure to chemicals throughout North America. This responsibility applies to domestic management and transboundary movement of all chemicals of concern, not just PCBs. Management strategies for PCBs must be consistent with and designed to advance the overall goal of sound environmental management for all chemicals of concern in North America.

### **Principle #2: Life Cycle Management of PCBs**

Proper management of chemicals of concern cannot rely only on assuring environmentally sound management of treatment/disposal of wastes. The PCB RAP will address "cradle to grave" management of PCBs. This should include managing PCB use, the appropriate phase-out of uses, and the transport, storage, and treatment/disposal of PCB wastes.

### **Principle #3: Pollution Prevention**

An essential element of sound management of PCBs is *preventing* pollution that may be caused by the release of PCBs to the environment. Pollution prevention involves the use of processes, practices, materials, or products that avoid or minimize the creation of pollutants and waste and that reduce the overall risk to human health or the environment. The universe of PCBs is finite in the sense that PCB manufacture has been banned; to ensure that the universe grows ever smaller and to protect human health and the environment, those PCBs that do exist must be

managed appropriately to prevent any inadvertent releases. The countries, through implementation of the RAP, will promote pollution prevention as an effective strategy for managing PCBs and protecting human health and the environment.

#### **Principle #4: Shared Regional Management of PCB Wastes**

In ensuring sound regional management of PCBs, the countries recognize and seek to uphold three complementing principles that underlie the Basel Convention through the "Framework Document on the Preparation of Technical Guidelines for the Environmentally Sound Management of Wastes": the "proximity principle," the "self-sufficiency principle," and the "least transboundary movement principles." The Framework Document emphasizes that these three principles should be considered jointly and in balance in recognition of their inherent interrelationships. The principles may be summarized briefly as follows. The proximity principle encourages the management of hazardous wastes in greatest possible proximity to their point of generation, recognizing that economically and environmentally sound management of some wastes will be achieved at specialized facilities located at greater distances from the point of generation. The self-sufficiency principle encourages countries to ensure that the disposal of waste generated within their territory is undertaken in an environmentally sound manner, recognizing that economically sound management of some wastes outside of national territories also may be environmentally sound. The least transboundary movement principle encourages countries to reduce the transboundary movements of hazardous waste to a minimum consistent with efficient and environmentally sound management.

In applying these principles to the management of PCBs in North America, the countries recognize that the existing infrastructure for PCB management throughout the region influences the management decisions made. The countries recognize that there currently exists a disparity in the distribution of fixed PCB treatment/disposal capacity in the region. The countries therefore seek to apply the above-mentioned principles in a balanced manner to ensure the environmentally sound management of PCBs in the region, optimizing PCB management overall in light of factors that currently may constrain management options in individual countries. On an ongoing basis, the countries agree to address PCB management needs, in light of the above three principles, proactively and for the long term.

In considering current regional PCB management capacity specifically, the countries recognize that the universe of PCB wastes is finite and diminishing over time (PCB manufacture has ended and most PCB uses eventually will be phased out). The countries therefore believe that PCB management infrastructure needs must be considered in the context of overall hazardous waste management. The countries believe, however, that delaying the management of existing PCB wastes until new PCB management capacity is developed in currently unserved areas could prolong the risks posed to human health and the environment by those stored wastes.

In considering the proximity principle and the least transboundary movement principle in light of the current distribution of PCB management capacity, the countries agree that the shared use of existing PCB and multiple-use (i.e., both general hazardous waste and PCB waste) treatment/disposal capacity will ensure the environmentally sound management of PCB wastes. The proximity principle, in particular, takes on special dimensions when applied to North America: treatment/disposal facilities in the US or Canada clearly are closer to PCB wastes in Mexico than the European facilities on which Mexico currently relies. Similarly, some US management capacity may be closer to some Canadian wastes than current Canadian fixed capacity, and vice versa. The countries will support the objective of environmentally sound regional management of PCBs by implementing a managed border approach that ensures environmentally sound transboundary waste movement within North America for those wastes that must cross borders to proximate PCB management capacity. The countries as well recognize that mobile destruction systems, currently in various stages of development and commercialization in the three countries, also can help to address the proximity principle and least transboundary movement principle.

The implementation of the RAP, as detailed in the action items described in Section III, Regional PCB Management Strategies, therefore will ensure that these three principles are applied in concert to ensure the environmentally sound management of PCB wastes in reasonable proximity to their current location.

#### **Principle #5: Consistency with International and Domestic Obligations**

The RAP takes into account consistency with international obligations as well as the specific domestic requirements in each of the three countries. Existing international obligations (including United States/Canadian and United States/Mexican bilateral agreements dealing with hazardous waste movement; the Basel Convention on the control of transboundary movements of hazardous waste and their disposal, governing obligations between Canada and

Mexico; and OECD Council Decisions accepted by the three countries) already address some aspects of hazardous waste and PCB management, including transboundary shipment. These international obligations and agreements will guide the implementation of the RAP.

Domestic regulations must also be satisfied in each country and taken into account in the implementation of the PCB RAP. The PCB RAP will provide for exchange of information and transfer of technology among the Countries to facilitate understanding of domestic requirements and promote international consistency where appropriate.

#### **Principle #6: Transfer of Technology**

A key component of the RAP will be regular exchange of information on PCB management among the three countries. By promoting a common understanding of the environmental impacts of PCBs and environmentally sound PCB management techniques, the countries will promote consistency in PCB management and contribute to a "level playing field" throughout North America.

#### **Principle #7: Periodic Review and Reassessment**

To ensure that implementation of the RAP achieves the goals set for it and that those goals continue to remain relevant to the environmental management needs of the three countries, the RAP and progress under the RAP will be reviewed periodically. The mechanism and frequency for such review will be established by the three countries in coordination with the CEC through implementation of the RAP. Such review will provide for participation and comment by the public in the three countries.

### **III. REGIONAL PCB MANAGEMENT STRATEGIES**

Sound environmental management of PCBs requires a consideration of PCBs throughout their life cycle -from manufacture to destruction/disposal. It also requires a current, updated knowledge of PCB locations and amounts. In addition, because the goal of this Action Plan is sound regional environmental management, it requires specific consideration of transboundary issues in the region.

The RAP will address six primary strategies:

- establish a PCB information base;
- manage the use of PCBs;
- manage the storage of PCB wastes;
- promote PCB waste reduction and recycling;
- assure proper treatment/disposal of PCB wastes; and
- manage the transboundary shipment of PCB wastes.

In developing these strategies, described in detail below, the PCB Task Force has considered the domestic and international obligations of the three countries. While the strategies will require continuing cooperation and transfer of technology, there appear to be no significant domestic or international legal barriers to implementation.

A series of action items, with associated time-frames for completion, is identified for each strategy. Depending on the nature of the action item and of the country-specific actions that may be warranted in response to the RAP, the suggested time-frames may be adjusted somewhat during implementation of the RAP to accommodate variables in the countries' administrative and regulatory procedures (for example, different administrative procedures triggered during a rulemaking process may lengthen the time required to resolve the rulemaking issue).

For background information on the countries' current regulatory requirements, the reader may refer to Appendix A, Overview of PCB Management in North America, and the tables that follow Appendix A to summarize each country's requirements on PCB use, information, storage, and treatment/disposal. This background information should help the reader understand how the action items discussed below may relate to the circumstances in the individual countries.

#### **III.1 ESTABLISH A PCB INFORMATION BASE**

To characterize the scope of the PCB problem in the three countries and to monitor continued progress at reducing risk of PCB wastes to human health and the environment, it is important to establish an information base that can

serve as the basis for target-setting, transfer of technology, and ongoing tracking. Each country has information on PCB status that can be shared now, and the Task Force members did so at their meeting in June 1996 in Mexico City. The countries also recognize that regular exchange of newly available information will be necessary to support implementation of the RAP.

All three countries have established or currently are developing inventories of PCBs in use and in storage. Mexico currently is developing its inventory through discussions with Mexican industries. Canada monitors the PCB inventory through annual tracking of in-use and in-storage PCBs. An estimated inventory of PCBs in the US was conducted in 1988; since 1990, EPA has monitored PCB treatment/disposal through annual reports. EPA currently has no plans to update the 1988 estimated inventory. These existing inventories and ongoing tracking activities in the countries provide a basis for initial and continued future information exchange among the three countries on PCBs in-use and PCB waste storage. The information collected by the three countries on an ongoing basis is available to the public on request according to country-specific procedures and/or is made public through government publications. These country-specific information dissemination activities will be supplemented by the periodic assessment of the RAP.

Action 1.1: (Ongoing from June 1996) The countries will exchange information regarding:  
PCBs in-use;  
PCB wastes in storage;  
PCB waste shipments;  
PCB wastes treated/disposed; and  
PCB waste treatment/disposal facilities.

The initial exchange of this information took place in June 1996 at the PCB Task Force meeting in Mexico City.

Action 1.2: (Ongoing) Each country will maintain information regarding the location of PCB treatment/storage/disposal facilities, according to country-specific regulations and methods.

Action 1.3: (Baseline by 1998; ongoing exchange annually thereafter) The countries will establish a 1996 information baseline for the PCB RAP and will annually exchange information relative to that baseline. Each country will maintain the information so that it remains current.

The following information will be included in the baseline:

*use:* baseline information to include:

- estimated or actual quantities of transformers and capacitors in use in 1996
- estimated quantities of PCBs in use, as available
- location of PCB-containing transformers, using country-specific identification methods (e.g., surveys of companies, reporting requirements, etc.)

*storage:* quantities of all PCB wastes in storage in 1996; if possible, subdivide quantities into the following:

- capacitors/transformers
- soil
- ballasts
- liquids
- other solids

*treatment/disposal facilities:* information about treatment/disposal (including recycling/ decontamination) facilities in operation in 1996, to include:

- company name
- location
- management methods used
- types and concentrations of wastes managed
- amounts of PCB wastes treated/disposed in 1996
- estimated annual capacity to manage PCB wastes



*international shipments*: information about international PCB waste shipments between the three countries in 1996; information should identify aggregate quantities of shipments by waste type and by management method or destination facility, if such information is available.

Annually, beginning in 1999, the countries will exchange information to monitor the circumstances of PCB waste management relative to the goals of and needs for the RAP. To accommodate information collection/processing time requirements, the information exchanged will have a two-year time lapse (i.e., the 1999 exchange will use 1997 information). The information exchanged will include:

*treatment/disposal volumes*: aggregate quantities, by waste type, of all PCB wastes (>50 ppm) going from storage to treatment/disposal facilities in the year in question;

*treatment/disposal facility status*: information about approvals, closures, expansions, and modifications of PCB waste treatment/disposal facilities; and

*international shipments*: aggregate quantities, by waste type and by management method or destination facility, if available, of waste shipments among the three countries.

Action 1.4: (Ongoing) The countries, through implementation of the RAP, will communicate and exchange information with other organizations involved with PCB-related initiatives (e.g., the Great Lakes Bi-National Strategy) to foster cooperation and mutual learning.

## **III.2 MANAGE THE USE OF PCBs**

In keeping with the RAP goals of virtual elimination of PCBs and environmentally sound PCB management throughout their life cycle, the countries will cooperate and exchange information to promote greater consistency in their individual regulatory approaches on PCB use.

The countries will address the use of PCBs in the following areas as detailed below:

- dispersive uses;
- non-dispersive uses;
- sensitive sites;
- reclassification;
- repair and reuse; and
- labeling.

### **III.2.1 Dispersive Uses of PCBs**

*Objective: to eliminate dispersive uses of PCBs (including, but not limited to, the burning of PCB-contaminated oil in waste heaters, the application of PCB-contaminated oil to roadways).*

In each of the three countries, rules have been or currently are being proposed and/or implemented to limit dispersive uses of PCBs. The actions identified here are designed to reinforce such regulations.

Action 2.1: (Ongoing through 2000) The countries will engage in transfer of technology to one another to combat dispersive uses.

Action 2.2: (1997) Any country that does not have regulations to eliminate dispersive uses will promulgate them.

Action 2.3: (2000) Each country will strive for the complete elimination of dispersive uses.

### **III.2.2 Non-Dispersive Uses of PCBs**

*Objective: to eliminate non-dispersive uses of high-concentration PCB liquids (i.e., in askarel transformers and in PCB capacitors containing pure PCBs).*

Action 2.4: (Completion in 1998) Each country will develop a strategy for achieving this objective.

Action 2.5: (Completion in 2008) Each country will strive to achieve the full elimination of such non-dispersive uses as are here specified.

Action 2.6: As an interim measure prior to achieving the full elimination of specified non-dispersive uses, the countries will establish standards (which may be regulatory or non-regulatory, depending on the country) for the environmentally sound management of *all* non-dispersive uses of PCBs. Such standards may include inspections, spill prevention and cleanup requirements, and equipment maintenance and servicing requirements.

(Completion in 1997) The countries will transfer technology as necessary to help one another in the formulation of appropriate protocols and standards for all non-dispersive uses of PCBs.

(1998) Each country that does not have rules in place for the environmentally sound management of all non-dispersive uses of PCBs will develop them.

(Ongoing) The management protocols for all non-dispersive uses of PCBs will be reviewed on an ongoing basis to ensure that they remain current and appropriate.

### **III.2.3 PCB-Containing Equipment in Sensitive Sites**

*Objective: to eliminate PCB-containing equipment in sensitive sites (defined as including hospitals, schools, senior citizen centers, food and feed processing plants).*

Action 2.7: (Completion in 1998) The countries will share technology and information with one another to understand the uses of PCB-containing equipment in sensitive sites, and the regulatory approaches for controlling and eliminating them.

Action 2.8: (Completion in 1998) Each country that does not already have rules in place regarding PCB-containing equipment in sensitive sites will develop them.

Action 2.9: (Completion in 2000) Each country that has not already done so will achieve the full phase-out of PCB-containing equipment in sensitive sites, based on the rules developed in that country.

### **III.2.4 Reclassification of PCB-Containing Equipment**

*Objective: to promote the reclassification of PCB-containing equipment to >50 ppm, according to the regulatory requirements and protocols in each country.*

Action 2.10: (Completion in 1997) The countries will exchange information on their existing protocols and standards for reclassifying PCB-containing equipment.

Action 2.11: (Completion in 1997) The countries will make compatible their protocols and standards for the reclassification of PCB-containing equipment .

### **III.2.5 Repair/Reuse of PCB-Containing Equipment**

*Objective: to regulate the repair/reuse of PCB-containing equipment in order to encourage the phase-out of PCB uses.*

Action 2.12: (Ongoing) As part of the ongoing management of PCB uses, the countries will consider approaches to encourage equipment reclassification prior to or as part of the repair or rebuilding (excluding routine maintenance) of PCB-containing equipment. Such reclassification requires the decontamination of the equipment.

Action 2.13: (Ongoing) As part of the ongoing management of PCB uses, the countries will strive to ensure that repair of PCB-containing equipment is performed by qualified personnel. The countries will achieve this through

appropriate regulatory and non-regulatory methods that are available (e.g., liability incentives, rules requiring certification/registration, industry stewardship, etc.).

### **III.2.6 Labeling PCB -Containing Equipment in-Use**

*Objective: to label all PCB-containing equipment in use to alert officials and handlers that the equipment requires special handling and to forewarn in the event of an incident requiring special response.*

Action 2.14: (1997) Each country that does not already have labeling requirements will establish a rule requiring the labeling of PCB-containing equipment.

## **III.3 MANAGE THE STORAGE OF PCB WASTES**

There are two key components to managing the storage of PCB wastes properly: the regulation of storage facilities, and the transfer of PCB wastes from storage to treatment/disposal. Domestic regulations have been developed in each of the three countries.

The Task Force has developed two objectives, with associated action items, for the sound storage of PCB wastes.

*Objective 1: to ensure environmentally sound management of storage facilities (e.g., through structural standards, siting requirements, fire protection and emergency preparedness requirements, recordkeeping requirements, access restrictions, and signage and labeling requirements).*

Action 3.1: (Completed) Each country has established regulatory requirements for PCB waste storage facilities.

Action 3.2: (Completion in 1998) The three countries will compare and make compatible their requirements for PCB waste storage facilities.

*Objective 2: to encourage the environmentally sound transfer of PCB wastes from storage to treatment/disposal.*

Action 3.3: (Completion in 1997) The three countries will review their storage requirements and any time limits imposed on PCB waste storage. Based on this review, the countries will consider relevant regulatory and non-regulatory approaches for encouraging the transfer of PCB wastes from storage to treatment/disposal.

Action 3.4: (Completion in 1998) The three countries will establish time limits on PCB waste storage, taking into account different waste handling scenarios that may arise for generators, transporters, and treatment/disposal facilities.

## **III.4 ASSURE PROPER TREATMENT AND DISPOSAL OF PCB WASTES**

The countries each regulate the treatment/disposal of PCB wastes and have procedures for authorizing the siting and operation of treatment/disposal facilities (these vary across the three countries). A crucial element of the PCB management strategy is to ensure that PCB wastes are treated and disposed only at permitted/authorized facilities that meet environmentally sound regulatory standards and that are monitored by the proper governmental authorities. The countries recognize the benefit in promoting greater consistency in their individual regulatory regimes to foster an overall coherent and adequate level of protection to human health and the environment in North America. To that end, the countries will consider the development of a Code of Practice for the management of PCB wastes. Such a Code would identify guidelines for the handling and management of PCB wastes in North America. Any such guidelines or standards developed will be designed to ensure an appropriately high level of health and environmental protection. Efforts to develop compatible standards, described below, will be done in such a way as not to reduce any government's existing regulatory standards or limit options for disposal.

*Objective: to make compatible environmentally sound treatment/disposal requirements in North America by establishing a basic Code of Practice for the management of PCB wastes.*

Action 4.1: (Completed June 1996) The countries exchanged information on their regulations and approved technologies.

Action 4.2: (Completion in 1997) The countries will hold a workshop to exchange information and conduct in-depth discussion of regulatory changes (since the initial June 1996 meeting), existing standards and practices for PCB management (e.g., best available technologies), etc., in order to define elements of a Code of Practice. In so doing, consideration will be given to management practices developed under various international auspices to determine applicability to North America and the goals and objectives of the PCB RAP. Elements considered for the Code may include: minimum performance standards for various types of treatment/disposal facilities; evaluation of the types and concentrations of PCB wastes suitable for various treatment/disposal methods; appropriate siting criteria for various types of treatment/disposal facilities; and monitoring, recordkeeping, and reporting requirements.

Action 4.3: (Completion in 1998) The countries will develop the Code of Practice to make compatible environmentally sound management of PCB wastes in North America.

Action 4.4: (Completion after 1998) The countries will implement the Code of Practice through available regulatory and non-regulatory means, as appropriate.

The Code of Practice may define the time-frames according to which the countries will address specific matters identified by the Code.

Depending on the contents of the Code once developed, relevant actions and time -frames may be specified for individual countries, relative to their unique circumstances.

Action 4.5: (Completion after 1998, ongoing) The countries will regularly review technologies and management practices relative to the Code and will update the Code as appropriate.

### **III.5 MANAGE THE TRANSBOUNDARY SHIPMENT OF PCB WASTES**

The Task Force believes that existing domestic regulatory programs and applicable international agreements provide an adequate foundation and framework for the regional management of PCBs. The countries believe, in particular, that the regional management of PCB wastes, including a more open but well-managed and controlled border policy among the three countries, could increase the pace of proper treatment/disposal of PCB wastes and the associated reduction of risk to human health and the environment. Further, by removing certain barriers to transboundary shipments and providing for greater use of existing, environmentally sound treatment/disposal facilities, resources that otherwise would be needed to develop new treatment/disposal capacity can be dedicated instead to other environmental needs, benefiting overall regional ecological management.

The following text describes additional objectives and actions for the three countries to build on the existing domestic and international frameworks in order to enhance cooperation for the environmentally sound transboundary shipment of PCB wastes for in-region treatment/disposal.

#### **III.5.1 Open, Controlled Border**

*Objective: to establish an open, controlled border to facilitate access to environmentally sound PCB treatment/disposal facilities. As such, the countries will ensure that PCB wastes are transported and treated/disposed in an environmentally sound manner.*

Action 5.1: 1997. The countries will review their existing regulations and will develop new rules or modify existing rules to address import and export of PCB wastes.

#### **III.5.2 PCB Classification**

All three of the countries have provisions for designating PCB wastes, although these vary among the countries. The PCB Task Force believes that understanding and reconciling these variations are important ways to foster cooperation and to ensure that PCB wastes are directed to facilities authorized to manage them.

*Objective: to make compatible the countries' classification of PCB wastes.*

Action 5.2: (Completion in 1996) The countries will exchange information on their PCB waste types (e.g., transformers) to understand variations among the three countries.

Action 5.3: (Completion in 1997) The countries, on the basis of the initial information exchange and review, will make compatible their PCB waste classifications.

Action 5.4: (Completion in 1997) The countries will exchange and review information on their respective waste sampling and analysis methods.

(Ongoing) The countries will regularly update one another on changes in waste sampling and analysis methods.

Action 5.5: (Completion in 1998) The countries, as appropriate based on the initial review, will either develop a protocol for standard sampling and test methods to be used in North America or establish mutual recognition of each others protocols and requirements.

### **III.5.3 Safe Transportation Rules**

All three of the countries have comprehensive programs governing the shipment of PCB and other hazardous wastes. These programs include: transport vehicle standards, guidelines for preparation of waste shipments, emergency response capability along transportation routes, provisions for authorizing qualified carriers, and labeling/placarding requirements for vehicles and containers. The countries believe that understanding and continuing to monitor these requirements is important to ensure continued safe transportation of PCB wastes.

*Objective: to ensure compliance with applicable domestic and international requirements for the shipment of PCB wastes.*

Action 5.6: (Ongoing) The countries will notify one another of any changes to existing shipment requirements.

### **III.5.4 Notice and Consent**

Each of the countries is party to international agreements governing their relationships to one another for purposes of formulating inter-governmental notice and consent procedures for PCB waste imports and exports. While the specific provisions of these agreements vary, they generally are adequate to provide a framework for environmentally sound management of transboundary PCB waste shipments. The countries believe that understanding and harmonizing the requirements is important to ensure continued safe and well-managed transportation of PCB wastes.

*Objective: to make compatible inter-governmental transboundary shipment notice and consent procedures and time-frames among the three countries.*

Action 5.7: (Completion in 2000) The countries will adopt the OECD form for shipment notice, to ensure consistency both within the region and with relevant international practices.

Action 5.8: (Completion in 1998) The countries will make compatible their consent procedures (e.g., written v. tacit consent) and relevant time -frame (e.g., to 45 days).

Action 5.9: (Completion in 1998) The countries will consider appropriate electronic and paper mechanisms and relevant procedures to enhance and expedite notice and consent for PCB waste shipments.

### **III.5.5 Tracking and Manifesting**

Each of the countries has provisions in place to assure that information on exports and imports is maintained. The PCB Task Force believes that understanding and harmonization of the requirements is important to ensure continued safe and well-documented transportation of PCB wastes.

*Objective: to ensure the tracking of PCBs from the site of origin to the site of treatment/disposal.*

Action 5.10: (Completion in 1998) The countries will make their shipment tracking information requirements compatible with those contained in the OECD form for waste shipment tracking.

Action 5.11: (Completion in 1998) The countries will consider appropriate electronic and paper mechanisms and relevant procedures to enhance and expedite communications regarding tracking and manifesting of PCB waste shipments.

### **III.5.6 Financial Assurance/Liability**

Each of the countries has requirements establishing the financial responsibility of generators, carriers, and/or treatment/disposal facilities, as appropriate, to ensure that emergencies and facility closures will be properly handled. The PCB Task Force recognizes the importance of clarity in these requirements to ensure that liability and jurisdictional issues associated with transboundary shipments are well understood.

*Objective: to ensure the clear assignment of responsibility/liability for transboundary shipments of PCB wastes, from the site of origin to the final destination.*

Action 5.12: (Completion in 1997) The countries will review their existing environmental liability insurance requirements for PCB waste importers and exporters.

Action 5.13: (Completion in 1998) The countries will assess their environmental liability insurance requirements to ensure complete and clearly defined coverage for transboundary shipments of PCBs.

### **III.5.7 "Stranded" Shipments**

While transboundary shipments ordinarily can be expected to move smoothly to an approved treatment/disposal facility, the Task Force recognizes the importance of planning for all possibilities, including a shipment that might be refused by the intended treatment/disposal facility due to unanticipated problems at the facility or for some other reason.

*Objective: to ensure that stranded shipments are addressed expeditiously and in an environmentally sound manner.*

Action 5.14: (Ongoing) The countries will continue to require that alternative interim storage/treatment/disposal sites be identified for all transboundary PCB shipments.

Action 5.15: (Completion in 1997) Each country that does not already have regulations allowing the return of stranded shipments will develop such regulations.

### **III.5.8 Transit Shipments**

The Task Force recognizes that shipments moving through a country, but not originating or terminating in that country, can present special issues.

*Objective: to allow transit shipments of PCB wastes as an essential element of an open, controlled border.*

Action 5.16: (Completion in 1996) The countries will review current rules to identify an appropriate procedure to authorize transit shipment of PCB wastes.

Action 5.17: (Completion in 1997) The countries will establish rules (or the appropriate remedy) to clarify the import/export question and definitions to allow transit shipments of PCB wastes.

### **III.5.9 Transport Incidents**

Although there is strong historical evidence that PCB waste shipments can and do occur over long distances without causing harm to human health or the environment, shipments should be monitored for any incidents that may occur so that appropriate remedial and preventive measures may be taken.

*Objective: to ensure the continued safe shipment of PCBs.*

Action 5.18: (Ongoing) The countries periodically will notify one another of any transport-related incidents to monitor the continued safety of transboundary shipments and to determine whether any additional measures may be appropriate to prevent incidents in the future.

### **III.5.10 Border Crossing Points**

Each country has procedures for designating border crossing points for PCB and other hazardous waste shipments. Depending on the country, multiple crossing points should be identified by the export notice to accommodate unpredictable variations in road and traffic conditions and other factors. The identification of border crossing points is important to ensure that proper inspections are conducted at border crossings and will remain an important element of the PCB management strategy.

*Objective: to ensure the proper management of PCB waste shipments at border crossings.*

Action 5.19: (Ongoing) The countries will continue to require export notices to identify border crossings.

### **III.5.11 Treatment/Disposal-Related Requirements**

Each country has domestic requirements for approval of PCB treatment/disposal facilities, which include fixed or mobile technologies. The countries believe that it is important to understand in detail certain aspects of these requirements as they are particularly relevant to transboundary PCB waste shipments for purposes of treatment/disposal, including:

assurances of waste shipments' acceptance by the intended authorized receiving treatment/ disposal facility;  
the conformity of facility operations with the Code of Practice that will be developed;  
monitoring of treatment/disposal facilities that receive imported PCB wastes; and  
knowledge of the compliance history of treatment/disposal facilities seeking to receive wastes.

*Objective: to ensure environmentally sound management of PCB wastes subject to transboundary movement for treatment/disposal.*

Action 5.20: (Ongoing) The countries will monitor treatment/disposal facilities (through federal or delegated state/provincial regulatory programs) to ensure that transboundary shipment notice and other requirements are satisfied. The countries will notify one another of any issues that arise from this monitoring.

Action 5.21: (Ongoing) The countries will periodically share information with one another regarding the compliance history of treatment/disposal facilities seeking to receive transboundary PCB waste shipments.

Action 5.22: (Completion in 1999) The countries will review treatment/disposal facility operations to ensure conformity with environmentally sound management practices as outlined in a Code of Practice (per Action 4.3).

As described under Section III.1, Establish a PCB Information Base, the countries also will monitor and regularly exchange information about treatment/disposal facilities, their permitted capabilities, and the amounts of PCB wastes treated/disposed of annually (Action 1.4). This will help the countries to manage treatment/disposal capacity for the long-term, in light of domestic management needs as well as the objectives of the RAP.

## **III.6 WASTE REDUCTION AND RECYCLING**

Each of the countries recognizes, alternatively through policy and legislation, a hierarchy for the preferred management of wastes. In keeping with this hierarchy, the countries recognize that waste reduction and recycling is preferred to treatment and subsequent disposal of wastes generated. Through this strategy, the countries will explore and enhance the use of environmentally sound reduction and recycling methods for PCB wastes. In the context of PCB wastes, recycling refers to the recovery of non- or de-contaminated metals and valuable materials from PCB equipment (such as transformer decontamination with the recycling of uncontaminated metals); PCB-contaminated materials removed or remaining from the equipment are treated/disposed of.

Action 6.1: (Completion in 1997) As part of the projected workshop for discussing a Code of Practice for PCBs, the countries will consider the reduction and recycling of PCB wastes as one element of overall PCB practices.

Action 6.2: (Ongoing) The countries will exchange information on PCB waste reduction and recycling as one element of their regular information sharing practices.

Action 6.3: (Completion in 1998) Each country that does not already have regulations or protocols in place to address the reduction and recycling of PCB wastes will develop such regulations/ protocols.

### **III.7 OTHER ENVIRONMENTAL MANAGEMENT STRATEGIES**

The PCB Task Force has identified additional strategies for the environmentally sound management of PCB wastes. This section presents additional long-range strategies that the countries believe support the goals of regional management of PCBs.

#### **III.7.1 Manage the Incidental Generation of PCBs**

The PCB Task Force recognizes that PCBs may be unintentionally generated, at very low levels, incidental to other manufacturing processes. To address such incidental generation and ensure the continued environmentally sound management and virtual elimination of PCBs, the countries suggest the following actions.

Action 7.1: (Ongoing) The countries will exchange information about manufacturing processes that cause incidental generation of PCBs and about alternative technologies and processes that reduce or avoid such generation.

Action 7.2: (Ongoing) The countries will regulate manufacturing processes that cause the incidental generation of PCBs to ensure that these processes operate in an environmentally sound manner.

#### **III.7.2 Manage the Remediation of PCBs in the Environment**

The PCB Task Force recognizes that each country has already developed environmental remediation programs that address PCB contamination and more general toxic/hazardous chemical contamination. In keeping with its emphasis on the sound management of chemicals, the RAP defers to those existing domestic regulatory programs to address PCB remediation activities in each of the countries. Those programs are encouraged to proceed with their efforts to remediate PCB contamination that presents a risk to human health and/or the environment.

Action 7.3: (Ongoing) The countries will ensure, through regulatory programs for remediation and requirements governing PCB waste treatment/disposal, that PCB remediation wastes are managed in an environmentally sound manner to prevent further release and pollution.

#### **III.7.3 Other Strategies**

As one element of the ongoing implementation of the RAP, the Task Force will monitor these strategies and consider whether they have been developed and implemented appropriately and whether future developments call for additional strategies of implementation.

## **IV. INFRASTRUCTURE FOR IMPLEMENTING THE ACTION PLAN**

To oversee implementation of the RAP, the countries will coordinate with the CEC and report regularly through it on their progress. Such coordination will ensure that all steps necessary to achieve the goals and support the principles of the RAP are taken to ensure its successful implementation. The countries will establish such mechanisms as are needed to provide for ongoing monitoring of regional PCB management. Such mechanisms will provide for:

- transfer of technology on PCB uses, treatment, and disposal;



- cooperation and information exchange on each country's regulatory regime, activities in managing PCBs, and enforcement;
- periodic assessment of implementation of the RAP and its underlying goals, principles, and strategies; and
- participation and review by interested members of the public and the environmental industry.

As specific implementation mechanisms, the following activities already have been agreed upon:

- peer review of the Scoping Paper [completed];
- a workshop in June 1996 in Mexico City to provide for transfer of technology on basic elements of PCB regulation [completed];
- a meeting in June 1996 of the PCB Task Force to advance work on the draft RAP (and to discuss in more detail PCB use/sale/distribution management strategies) [completed];
- an exchange of information on PCBs in use and in the environment in each country, in late June 1996 [completed] and annually thereafter;
- consultative review of the draft RAP [completed];
- Stakeholders Workshop in autumn 1996, coordinated by the Sound Management of Chemicals Working Group [completed];
- a workshop in 1997 to discuss the regulation and phase-out of PCB uses;
- a workshop in 1997 to consider a Code of Practice for management of PCB waste;
- regular exchange of PCB-related environmental monitoring information collected under other regulatory programs of the three countries; and
- a tentative schedule of activities for the Regional Action Plan for PCB Management (see below).

## V. CONCLUSION

The three countries are committed to the environmentally sound management of chemicals of concern throughout North America. The development of this RAP has been characterized by highly constructive discussion of the strategies and goals necessary for effective management of PCBs in North America. The spirit of cooperation and free exchange of information that has fostered the development of the RAP will help to ensure its successful implementation for years to come. Nevertheless, the countries are mindful of the need to maintain constant vigilance to protect the public health and ecological systems in the region from exposure to PCBs and other chemicals of concern, and are committed to regular re-evaluation and updating of the Plan as necessary to address new developments. The Action Plan establishes a solid framework for this continuing effort.

### **Tentative Schedule for Completion of Regional Action Plan on PCB Management**

**(1996 and Following)**

#### **TASK DATE**

- Deadline for receipt of peer review comments on the Scoping Document and Discussion Paper June 7 [extended to 14]
- Workshop for information exchange and three-day Task Force Meeting in Mexico City June 11-14
- Exchange of information characterizing PCB problem in each country June 12-14

- Draft Regional Action Plan available for consultative review August 14
- Consultative review comments due on the Draft Action Plan September 18
- Stakeholders' Meeting October 29
- Final Action Plan completed and submitted to Environment Ministers December 12

**RAP Implementation Mechanisms Determined:**

- Workshop on the Regulation and Phase-Out of PCB Uses 1997
- Workshop on Development of Code of Practice for Managing PCB Storage, Treatment, and Disposal Facilities 1997
- 1996 information baseline for RAP established End 1998
- Annual information exchange per baseline 1999 and thereafter

**APPENDIX A: OVERVIEW OF PCB MANAGEMENT IN NORTH AMERICA**

The CEC commissioned studies on PCB management in Canada, Mexico, and the US. This section summarizes and briefly updates information contained in these reports.

**Applicable International Agreements**

Several multilateral and bilateral agreements address transboundary shipments of hazardous waste including PCBs. These agreements establish a framework for domestic regulation of transboundary shipments of hazardous waste and other waste, which recognizes the right of a country to ban the export or import of hazardous waste and other waste and allows the transboundary movements of such waste subject to conditions including prior notification and acceptance of the shipment by the country of import. The regulatory frameworks currently in place also recognize the sovereign right of a country to ban or deny the import or export of any waste shipment. Therefore, the status of domestic rules in Canada, the United States and Mexico on import and export of PCBs is crucial to any policy purporting to allow or encourage transboundary shipment of PCBs for disposal.

The primary international agreement on transboundary hazardous waste and other waste movements is the 1989 Basel Convention. This agreement provides, *inter alia*, that each party shall reduce the generation of hazardous and other waste, that adequate disposal facilities should be made available within the country where hazardous and other waste is produced to the extent possible and that hazardous and other waste management should be done so as to prevent pollution. Under Article 4.5 of the Convention, hazardous and other waste shipments between member and non-member countries are prohibited unless a separate bilateral or regional agreement under Article 11.2 between a member and non-member country, compatible with environmentally sound management, authorizes such shipments. Although Canada and Mexico are parties to the Basel Convention and the United States is not, the United States has signed separate bilateral agreements with Canada and Mexico which cover hazardous waste movements between each of these countries.

Both of these agreements require prior notification and consent of the importing state for any shipment of hazardous waste. The Agreement Between the Government of Canada and the Government of the United States of America Concerning the Transboundary Movement of Hazardous Waste, of 28 October 1986 provides for a 30-day prior notice. However, the absence of a response from the regulatory authorities of the importing country within the 30-day delay is considered as tacit consent. The 1987 Annex III to the United States-Mexico Agreement provides for a mandatory prior notice to the country of import which shall respond within 45 days. This Agreement does not provide for tacit consent if no response is provided in the 45-day time period.

In September 1995, the Third Conference of Parties to the Basel Convention adopted an amendment banning the export of hazardous waste and other waste from Annex VII countries to non-Annex VII countries. However, this ban would not apply to PCB shipments between the United States, Canada and Mexico, since all are Annex VII countries.

Although NAFTA is designed to promote free trade between the three countries, it also recognizes that the Basel Convention, the 1986 Agreement between Canada and the United States and the 1983 La Paz Agreement between the United States and Mexico take precedence over NAFTA in case of any inconsistency between NAFTA and the trade provisions of these environmental agreements, subject to a specified proviso. In fact, the Canada-US hazardous waste agreement recognizes that transboundary movements of hazardous waste can provide opportunities for a generator to benefit from using the nearest appropriate disposal facility. Canada and Mexico are still bound by the general obligations of Basel, which continue to apply.

Existing rules of conventional international law thus allow for the establishment of a "regulated" trade market for the disposal of PCBs in North America. Requirements limiting free trade of hazardous waste are the procedural rules of prior notification and consent, bilateral agreements, domestic laws and obligations under the Basel Convention. The right to ban has led to the emergence of domestic policy and law banning or restricting the import of PCBs in, and export of PCBs from, the United States. If the NAFTA parties agree to "open borders" for PCB disposal, they will have to replace these discretionary bans or restrictions, allowed by the above-mentioned international instruments, by PCB management, handling, shipping and disposal standards enacted by the responsible regulatory agencies. Each country could then issue a consent to the import of PCBs for disposal purposes inasmuch as each shipment complies with these standards.

### **United States**

The US has devised a complex regulatory structure for control and disposal of PCBs. PCB use is regulated at the federal level, with states retaining some responsibility for emergency response and monitoring. The federal Toxic Substances Control Act (TSCA) has a separate section devoted exclusively to PCBs, and PCB rules comprise more than seventy pages of the Code of Federal Regulations. Under this regulatory regime, PCBs are banned from manufacture, import, export, and use except under limited circumstances. The EPA has determined that no unreasonable risk exists for any of the remaining allowed uses of PCBs, and certain types of equipment with PCBs have been phased out.

PCBs are regulated under a three-part concentration-based hierarchy. PCBs at concentrations less than 50 parts per million (ppm) are largely unregulated. Equipment containing material with PCB concentrations from 50-499 ppm is subject to some regulatory requirements, and material with PCB concentrations of 500 ppm or more is subject to the most stringent regulations: these include limited disposal options, and storage, labeling, location, and recordkeeping requirements. Regulations dictate the types of disposal allowed for liquid PCBs and for equipment contaminated by PCBs. Facility permits for commercial storers indicate the maximum available capacity for storing PCBs; approvals for treatment/disposal facilities specify the PCB concentrations appropriate to different treatment/disposal methods. In the event of a PCB spill, site-specific requirements apply depending on the type and location of the spill.

EPA has begun to modify its PCB rules to help increase the pace of PCB removal and destruction or disposal in the US. Rules proposed in December 1994 would make major changes in disposal options available and the items that fall under regulatory control. The public comment period for these proposed rules closed in May 1995, and the public hearing, required for any rulemaking, was held in June of that year. EPA is issuing the final rules in two separate sections. The section dealing with PCB import (discussed below) was issued in March 1996. Final rule-making (including disposal and export provisions) was scheduled for late 1996.

What amount of PCBs remains? Of the 634,900 metric tonnes (700,000 US tons or 1.4 billion pounds) of pure PCBs produced by Monsanto, the US used about 566,875 metric tonnes (625,000 US tons) in dielectric fluid for electrical equipment and for other uses. In 1976, EPA estimated that 226,750 metric tonnes (250,000 US tons) had already entered the environment and that 340,125 metric tonnes (375,000 US tons) remained in electrical equipment. By 1988, EPA estimated, 127,890 metric tonnes (141,000 US tons) of pure PCBs still remained in use. In addition, EPA estimates that 26 million cubic meters (34 million cubic yards) of soils are contaminated with PCBs.

EPA has not conducted a comprehensive PCB inventory since the 1980s, and only began tracking disposal data in 1990. EPA currently does not plan to conduct another inventory. It is therefore difficult to accurately assess amounts of pure PCBs or equipment with PCBs remaining in 1996. Since EPA began tracking PCB disposal, approximately 2.585 million metric tonnes (2.85 million US tons) of PCB wastes have been disposed at TSCA permitted facilities. At the end of 1993, 25,850 metric tonnes (28,500 US tons) of PCB waste were in storage awaiting disposal. PCB concentration data are not reported, so all disposal data reflect the total weight of the contaminated material, not the quantity of pure PCBs.

What options exist for treatment and disposal? A considerable variety of PCB disposal options exists in the US. As of 1995, four fixed commercial incinerators and four private incinerators were permitted to handle PCBs. An additional commercial incinerator (in the state of Utah) was scheduled to undergo test burns. Other disposal options include a mobile incinerator as well as seven chemical waste landfills. Decontaminating and recycling/equipment repair services also are available. Five companies are permitted for mobile or fixed chemical dechlorination of low level contaminated items; four facilities are permitted for physical separation; three facilities are permitted for transformer decommissioning; and three facilities are permitted for fluorescent light ballast recycling.

Pricing information on several US companies was obtained in 1995 on the proviso that the company names not be identified, due to the competitive nature of the industry. These costs were then compared to prices from the Canadian facility in Alberta. Of the three US firms that supplied pricing data, one had considerably higher prices than the Canadian facility, one had considerably lower prices, and one had slightly lower prices. No transportation costs were included in this comparison.

The actual volumes of PCBs and quantities of PCB-contaminated items disposed of on an annual basis have been increasing each year; however, the amount of PCBs existing is finite, thus the annual volume of PCB disposal cannot continue to increase indefinitely. In late 1995, virtually all US treatment/disposal facilities were operating below their permitted capacities. In some cases, particularly for incinerators that are permitted to handle RCRA hazardous waste as well as PCBs, the capacity available for PCBs was being allocated to other hazardous wastes if sufficient PCBs were not available.

Is PCB import/export allowed? EPA originally allowed the import and export of PCBs for disposal in its "Open Border Policy" in 1979. This policy expired in 1980 in order to encourage other countries to develop their own PCB disposal capacity. Until March 1996, imports and exports of PCBs in concentrations greater than 50 ppm were banned but EPA could grant regulatory exemptions. To obtain an exemption, a petitioner had to prove that no unreasonable risk would result and that no alternatives to the proposed activity were available. EPA last granted regulatory exemptions by rule in April 1994.

EPA's March 1996 PCB import rule no longer requires a regulatory exemption or case-by-case approval by EPA for imports of PCBs in concentrations greater than 50 ppm if certain conditions are met. (This is consistent with US hazardous waste import rules covering other types of wastes.) Under the new rules, imports for disposal must be deemed to present insignificant risks, be in the interest of the United States because of lessened risk from the presence of PCBs in the world environment; and accrue an economic benefit from increased waste imports to US treatment/disposal facilities.

Importers must provide notice to EPA at least 45 days before the first import enters the US, including descriptions of the wastes, entry point, and destinations of the imports. Imported PCB waste generally must be stored and disposed of in an approved commercial facility and must be handled in accordance with all rules applicable to domestic wastes (including a one-year deadline for disposal). Storage and treatment/disposal facilities must certify that they will accept the wastes and will not use more than 70% of their capacity at any one time for imported PCB wastes. EPA may refuse entry of shipments where the notice is deficient, where there is a shortage of storage capacity, or where international obligations are not met. EPA may also bring an enforcement action against violators when a shipment has already entered the US. In addition, special, less restrictive provisions apply to imports of analytical samples and imports for the purpose of treatability studies.

EPA's new import rules are being challenged legally by parties who question the statutory basis for the new rules. Depending on the relief requested by these parties and the response of the court hearing the challenge, implementation of the new rules could be delayed for some time.

In late 1995, prior to promulgation of its new import rules, EPA had agreed to exercise enforcement discretion so that, in effect, an importer could legally bring in PCBs for disposal from Canada, as long as certain terms and conditions were met. On 19 January 1996, eleven additional companies also received enforcement discretion commitments from EPA for imports from Canada. EPA has used the same enforcement discretion approach, in effect, to allow transit shipments from PCB wastes from Alaska through Canada and back into the US. No requests to import PCBs for disposal from any other country besides Canada were granted, although requests from Mexico were pending when the new rules were issued. EPA based its case-by-case import decisions on several factors, including a no "unreasonable risk of injury" determination, and consistency with the proposed EPA rules on importing PCBs for disposal. The EPA decisions were issued in the form of letters to importers. Each letter sets forth conditions which, if met, would cause EPA to decline to enforce its current regulatory ban on imports. Because letters were issued only to petitioners wishing to import from Canada, which has banned exports (in an interim order from 20 November 1995), no transboundary shipment of PCBs for disposal in the US has occurred recently.

Final rules that amend the current regulations regarding PCB waste disposal and the export of PCB waste from the US are expected in 1997. Until then, exports (including exports that would transit through another country for disposal in the US) are prohibited under the US regulatory regime.

## **Canada**

In Canada, PCBs are regulated under a series of regulations promulgated under the Canadian Environmental Protection Act (CEPA). The Chlorobiphenyl Regulations, first issued in 1977, are similar to the United States' PCB rules promulgated under TSCA. The Chlorobiphenyl Regulations set a regulatory concentration limit of 50 ppm, prohibit the manufacture, sale and import of PCBs for any use (except importation of PCBs for destruction), restrict the allowable use of PCBs in products, and specify the concentration and amount of PCBs that can be released legally to the environment. PCBs are also regulated under CEPA's Export and Import of Hazardous Waste Regulations, PCB Storage Regulations, and PCB Waste Export Regulations.

Federal regulations impose storage requirements for PCBs, and apply to all PCB owners. Regulations for the storage of PCB wastes have been in place since 1988. They require all owners of PCB wastes having quantities greater than 100 litres (26.42 gallons) of liquid, or 100 kg (220.46 pounds) of solid (PCB concentration greater than 50 ppm), or in an amount less than the above but containing 1 kg (2.2046 pounds) or more of PCBs, to store them according to specified criteria. Many provinces also have specific storage regulations for PCBs.

The Transportation of Dangerous Goods Act places requirements on PCB transportation, including packaging specifications, manifesting, and training and safety, but some provinces have additional regulatory requirements for transporting PCBs. PCB waste management and destruction facilities are provincially permitted.

Canada has few commercial storage facilities, due in part to a reluctance to approve them and public opposition to consolidated sites. Very little consolidation has been allowed for PCBs taken out of service. As a result, PCB wastes are now stored on the sites of over 3,000 generating and producing facilities around the country. The regulations do not set limits on the amount of time such material can remain in storage.

What amount of PCBs remains? Canada conducts an annual national PCB inventory. At the end of 1993, Environment Canada's nationwide PCB inventory included approximately 45,696 metric tonnes (50,000 US tons or 100 million pounds) of PCBs and PCB material in-use (excluding fluorescent lamps), and 127,027 metric tonnes (140,050 US tons or 280 million pounds) of PCBs, PCB material, and contaminated soil in storage. There is, presumably, a large but relatively unknown quantity of fluorescent lamp ballasts in use, which is not included in the national inventory.

What options exist for treatment and disposal? Until recently, there have been limited, readily accessible PCB destruction or treatment options available throughout Canada. Several attempts at siting PCB disposal facilities have failed as a result of strong public opposition. There are three sites in Quebec in which PCB-contaminated soil can be landfilled, provided the soil is not classified under provincial regulation as a hazardous waste. (The soil is considered a hazardous waste if waste PCBs leaked or spilled onto it.) Two mobile incineration projects have been completed, and a third, scheduled for three sites in Quebec, is soon to be implemented. Options for the treatment of PCB-contaminated mineral oil (for re-use) have been available and widely used in Canada, primarily through mobile dechlorination units operated by PCB service companies. Mobile decontamination services for high concentration

PCB equipment have also been available, but have not been popular, partly due to the prior lack of readily available incineration facilities for the destruction of the askarel liquids.

A commercial incinerator in Alberta, with a capacity of approximately 50,000 metric tonnes (55,000 US tons) per year, is the only fixed PCB incinerator in Canada. At the time of construction, Canada had limited options to dispose of PCBs, partly due to the US import ban. Until January 1995, the incinerator was allowed by the Alberta government to accept PCBs only from within Alberta. However, the policy changed in February 1995, and the facility is now able to accept PCB (and other) waste from throughout Canada. The facility currently operates below capacity for both PCBs and hazardous waste.

Is PCB import/export allowed? In July 1990, PCB Waste Export Regulations under CEPA were introduced that prohibit export of PCB wastes to any country, except the US with EPA's consent. An Interim Order under CEPA banning the export of Canadian PCBs to the United States was put in place 20 November 1995, following a US policy decision regarding imports of PCB wastes. The Interim Order provided time to review the final US import rule, published 18 March 1996, and to ensure that Canadian PCB wastes would be managed in an environmentally sound manner. Canada has international obligations under the Basel Convention on the control of the Transboundary Movement of Hazardous Wastes and Their Disposal to ensure that any hazardous waste exported are handled and disposed of in an environmentally sound manner.

Canada pre-published in the Canada Gazette, Part One, on 5 October 1996, regulations that would allow exportation of PCB wastes to the United States for permissible treatment and disposal. These PCB Waste Export (PCBWE) Regulations underwent a 60-day period after pre-publication for public review and comment. Following this 60-day period, the comments were to be reviewed and the final regulations published in the Canada Gazette, Part Two. This publication was expected in February 1997, at which time the regulations would be put in force and the border re-opened to PCB wastes exports.

Prohibition on export of PCB wastes to all countries except the US will continue to be in effect.

With respect to import, the federal Chlorobiphenyl Regulations allow import for destruction only. However, under provincial law, the Alberta border is closed to importation of PCBs from outside Canada.

## **Mexico**

Mexico has used smaller quantities of PCBs than Canada and the US and has not yet established a specific regulatory structure to control PCB handling, management, and disposal apart from general hazardous waste management rules, although INE began work on separate PCB regulations in 1996. In Mexico, PCBs are regulated under the Hazardous Wastes Regulation of the General Law of Ecological Equilibrium and Environmental Protection. PCBs are considered a hazardous waste under Mexican Law, and therefore all obligations of hazardous waste generators apply to PCBs.

PCB handling and disposal is regulated by special Technical Ecological norms; disposal is regulated by Articles 38 and 39 of the General Law of Ecological Equilibrium and Protection of the Environment on Hazardous Waste. Any entity that has PCBs and will eventually have to dispose of them must submit a report (manifest) to INE. By mid-1995, most industries had not submitted the manifest; however, INE has been working with the companies to obtain the manifests and ensure their accuracy. Transformer repairs do require authorization for PCB management. Labeling is controlled according to official Mexico norms, international labeling norms, and the General Law of Ecological Equilibrium and Protection of the Environment. Limited information is available regarding whether PCBs are being stored appropriately and in controlled ways.

What amount of PCBs remains? INE is in the process of conducting a National Inventory of PCBs in Mexico but to date has only partial data on PCB levels in some public and private sector entities. As this inventory is yet to be completed, there is some uncertainty regarding the overall level of PCBs in Mexico. According to one official report from INE, Mexico has 7,980 metric tonnes (8,800 US tons) of liquid PCBs stored and in transformers, but there currently is no information available on the amount of PCB contaminated material. The Federal Electricity Commission (CFE) has approximately 2,040 metric tonnes (2,250 US tons) of PCBs in electrical equipment; Luz y Fuerza del Centro, 2,722 metric tonnes (3,002 US tons); PEMEX, 642 metric tonnes (708 US tons); and Metro, 198 metric tonnes (218 US tons) in use across the country.

What options exist for treatment and disposal? Mexico has several options for the treatment of PCBs. On 5 June 1996, the joint venture of Cintec Environnement Inc. and Grupo Perfotec S.A. de C.V. received authorization from INE to operate their mobile autoclave for the decontamination of transformer and capacitor equipment that has been in contact with high concentration PCBs (30 tonnes per day maximum). The unit utilizes a solvent decontamination process, which recycles the solvent for reuse within the system. Previously, one incinerator was constructed but not authorized to operate. Mexico also has authorized two companies for the mobile unit treatment of oil contaminated with PCBs at low concentrations. Several other companies have shown interest in introducing mobile incineration units during 1996. In early March 1996, INE authorized one company (RIMSA) to dispose of drained transformers with PCB concentrations under 500 ppm in a landfill.

There is some uncertainty regarding both the amount of PCBs currently stored and the amount and method of PCBs disposed. The CFE, for example, has many PCB storage centers, and all local utilities and substations store dielectric oils, which may contain PCBs. There is no commercial PCB storage facility in Mexico.

Is PCB import/export allowed? Imports of PCBs to Mexico are prohibited by Article 142 of the General Law of Ecological Equilibrium and Environmental Protection; however, PCBs may be exported for disposal, as six companies are authorized to do so. As of 31 March 1996, INE had granted permits for the exportation of 1,528 metric tonnes (1,605 US tons) of PCBs. Of this amount, 1,350 metric tonnes (1,489 US tons) was exported to Finland and 178 metric tonnes (196 US tons) to England for incineration. The President of INE has requested that US EPA consider allowing PCB imports from Mexico for incineration in the US in the belief that the relatively small volumes of PCBs in Mexico do not justify the investment in additional treatment/disposal capacity, particularly in light of the capacity available regionally. The national Environmental Program 1995-2000 includes provisions to develop Integral Centers for Management and Benefit for Industrial Wastes (CIMARIs), which would provide recycling, treatment, incineration, and chemical landfill services for PCB wastes. As these facilities have not yet been developed, however, Mexico believes that export for sound management remains a necessary option, and that the option to export to the US, rather than the current practice of exporting PCB wastes to Europe, would support the OECD "proximity principle," would be less costly than European shipment and management, and would help to speed the environmentally safe destruction of PCBs. At least one petition to import PCBs to the US from Mexico for disposal was filed with EPA prior to the promulgation of the new US PCB import regulations.

**Table A: Requirements for PCB Use \***

{PRIVATE}Type of Use	Canada	United States
Dispersive Use	Prohibited. Application of waste oil to roadways prohibited if PCB concentration >5 ppm.	Prohibited except for specified product exemptions. Application of waste oil to roadways prohibited if PCB concentration >2 ppm.
Non-Dispersive Use	Prohibited, except capacitors and transformers that existed before 1980; and some heat, vapor diffusion, and hydraulic equipment that existed before 1977.	Prohibit all uses of PCBs > 50 ppm, except transformers, capacitors, and most other electrical equipment, and certain other miscellaneous uses.
Use in Sensitive Sites	Prohibited in electromagnets used in food/feed processing plants. Prohibitions in schools, hospitals, senior citizen care homes, potable water treatment plants and food and feed processing sites are being considered in proposed amendments to regulations.	Prohibited in food/feed processing plants. PCB transformers prohibited in commercial buildings (with certain exemptions). Large capacitors prohibited except in enclosed locations.
Reclassification	No regulations. Protocol and standards established for the self-reclassification of transformers.	Regulations permit reclassification of transformers and certain other types of electronic equipment.
Repair and Reuse	Prohibited except for the return of PCBs to electromagnets, capacitors, and transformers. PCB equipment with PCB concentrations > 50 ppm may not be imported for service.	Transformers with PCB concentrations > 500 ppm may be serviced unless core and coil are removed, in which case the transformers must be disposed of. Transformers > 500 ppm may be serviced. Sale and use of PCBs for servicing electric equipment restricted.
Timetables for Use Phase Out	No timetables currently, but some are being considered in proposed amendments to regulations.	Deadlines for sensitive site uses have expired.

Labeling	Voluntary labeling - Environment Canada provides serialized labels that PCB handlers are encouraged to use; good success, most PCB equipment and waste labeled.	Labeling required for transformers with PCBs > 500 ppm, high voltage capacitors, PCB storage units, and all PCB waste > 50 ppm.
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\* Mexico does not currently have requirements governing the use of PCB equipment.

**Table B: Requirements for PCB Information**

{PRIVATE}Category	Mexico	Canada	United States
<b>Information about PCB use</b>	Initial Report being gathered, to be updated regularly in the future. Distinguishes liquids vs. equipment. Captures total quantity of material, not concentration.	Annual Inventory, reported by all parties in possession of > 1kg of high concentration PCB material.	1998 estimate, with extrapolations based on annual disposal date (since 1990).
<b>Information about PCB Storage</b>	Initial Report being gathered, to be updated regularly in the future. Distinguishes liquids vs. equipment. Captures total quantity of material, not concentration.	Annual inventory with updates within certain timeframe of receipt into storage or shipment out of storage.	Annual, by commercial storers transferring waste to disposal: quantity received and shipped, quantity remaining; specified by liquids, bulk wastes, transformers > 500 ppm, and large capacitors.
<b>Information about PCB Shipments</b>	Report of shipments received.	Provinces received manifests for domestic shipments; Environment Canada receives a summary. Environment Canada would receive manifest for transboundary (international) shipments once the border is opened.	Shipment manifests maintained on-site (at commercial storage facilities, treatment/disposal facilities, and generator site) unless state requires submittal. (international) shipments once the border is opened.
<b>Information about PCB Treatment Disposal</b>	Monthly report submitted by treatment/disposal facility.	Commercial treatment/ disposal facility submits reports to provincial authorities as requested.	Annual report of quantity, by waste type, received for specific management method. Reported by all disposal and commercial storage facilities.
<b>Information about PCB Treatment Disposal Facilities</b>	Location, management methods, capacity, proposed construction. Will try to obtain information about types and concentrations of wastes [to be] managed.	Location, management methods, capacity, types and concentrations of wastes permitted to be managed as part of provincial regulations.	Location, management methods, types and concentrations of wastes permitted to be managed. Approximate capacity estimates.
<b>Information about Environmental Contamination</b>	Some information available.	Some information available.	Some information available.

**Table C: Requirements for PCB Storage**

{PRIVATE}Category	Mexico	Canada	United States
<b>Regulations</b>	Yes, according to official regulations (LGEEPA).	Since 1992 (interim Order 1988) for all sites (government and private).	Since 1978 (revised 1989 for commercial storers) for all sites.



<b>Site Access</b>	Controlled.	Controlled.	Controlled.
<b>Storage Requirements</b>	Yes, according to official regulations (LGEEPA).	Site criteria, container type requirements.	Building/site criteria, container type requirements.
<b>Inspections/Monitoring</b>	Yes, by PROFEPA.	Maintenance and monthly self-inspections.	Monthly self-inspections.
<b>Labeling</b>	No.	Yes.	Yes.
<b>Recordkeeping</b>	Yes, according to official regulations (LGEEPA).	Yes.	Yes.
<b>Reporting</b>	Yes, according to official regulations (LGEEPA).	Yes.	Yes for disposers and commercial storers. No for generators.
<b>Other</b>	No.	Fire protection and emergency procedures.	Financial assurance for closure of commercial stores/disposers.

**Table D: Requirements for PCB Treatment/Disposal**

{PRIVATE}Category	Mexico	Canada	United States
<b>Fixed Management</b>	Specific requirements developed for incineration. Others under development in 1996.	Federal/Provincial (CCME) Guideline for the Management of Wastes Containing PCBs (Sept. 1989) establishes requirements for decommissioning and decontamination; storage; labeling and recordkeeping; transport; disposal; and emergency preparedness/ response.	TSCA sets federal requirements. States may make disposal requirements more restrictive, but TSCA preempts states in all other areas.
<b>Mobile Management</b>	Mobile treatment regulations and trial burn test requirements.	Federal Mobile PCB Treatment and Destruction Regulations: standards, design and performance, test methods, testing. Also, CCME Guideline for Mobile PCB Treatment Systems (March 1990) and CCME Guideline for Mobile PCB Destruction Systems (March 1990).	TSCA sets federal requirements; must meet incineration standard.
<b>Decontamination</b>	Standards and protocols	CCME PCB Transformer Decontamination Standards and Protocols (CCME 1995): decontamination criteria, recommended standards and protocol, decontamination technologies.	TSCA sets federal requirements.
<b>Emissions</b>	Specific standards for air emissions.	Specific standards for chemical treatment and thermal destruction under CCME guidelines. Provincial regulation also contains emissions standards.	Specific standards for chemical treatment and thermal destruction.
<b>Siting</b>	Official regulations.	Criteria established and approved by Provincial authority.	TSCA sets federal requirements.
<b>Monitoring Reporting</b>	Reporting	Provincial regulations and permits for monitoring, inspections, and reporting.	TSCA sets federal requirements.
<b>Technology/Facility Approvals</b>	INE does not approve technologies, only facilities according to official regulations.	Provinces approve technology/ facilities for treatment/ destruction of waste stored in that province. Federal government authorizes for destruction of PCB wastes on federal lands or under federal contracts.	EPA Regional Offices approve, except for new technologies and mobile treatments, which are approved by EPA HQ.