

**STRATEGIC IMPLEMENTATION FRAMEWORK
FOR INTERNATIONAL COMMITMENTS ON
HAZARDOUS AIR POLLUTANTS (HAPs)**

2004 UPDATE

Prepared for:

The Canadian Council of Ministers of the Environment

By:

HAPs Task Group of the National Air Issues Coordinating Committee

MARCH 2004

EXECUTIVE SUMMARY	1
1. INTRODUCTION	6
1.1 PURPOSE OF THE STRATEGIC IMPLEMENTATION FRAMEWORK - 2004 UPDATE	6
1.2 CANADA'S ROLE IN INTERNATIONAL HAPs ACTIVITIES	6
1.3 OVERVIEW OF INTERNATIONAL AGREEMENTS ON HAPs	7
1.3.1 THE STOCKHOLM CONVENTION ON POPS	7
1.3.2 THE UNECE PROTOCOLS ON POPS AND HEAVY METALS	7
1.4 THE IMPORTANCE OF LONG-RANGE TRANSBOUNDARY AIR POLLUTION FOR CANADA	8
2. IMPLEMENTATION APPROACH	10
2.1 DEFINITION AND SCOPE OF HAZARDOUS AIR POLLUTANTS	10
2.1.1 HAZARDOUS AIR POLLUTANTS	10
2.1.2 PERSISTENT ORGANIC POLLUTANTS	10
2.1.3 HEAVY METALS	10
2.1.4 STATUS OF SUBSTANCES COVERED BY INTERNATIONAL AGREEMENTS IN CANADA	10
2.2 GENERAL APPROACH	11
2.3 ELEMENTS OF HAPs MANAGEMENT IN CANADA	12
2.3.1 ORGANIZATION OF THIS DOCUMENT	12
2.3.2 SCIENTIFIC INVESTIGATION AND PROBLEM ASSESSMENT	12
2.3.3 MANAGEMENT INSTRUMENTS	14
2.3.4 COORDINATION AND PARTNERSHIPS	16
3. IMPLEMENTING THE REQUIREMENTS OF THE STOCKHOLM CONVENTION ON POPS	18
3.1 IMPLEMENTING THE MAIN OBLIGATIONS OF THE STOCKHOLM CONVENTION ON POPS	21
3.1.1 ELIMINATION OF PRODUCTION AND USE	21
3.1.2 RESTRICTION OF PRODUCTION AND USE	23
3.1.3 ELIMINATION OF IMPORT	24
3.1.4 ELIMINATION OF EXPORT	24
3.1.5 ASSESSMENT OF NEW PESTICIDES AND INDUSTRIAL CHEMICALS	25
3.1.6 ASSESSMENT OF EXISTING PESTICIDES AND INDUSTRIAL CHEMICALS	26
3.1.7 SPECIFIC EXEMPTIONS FOR PRODUCTION AND USE	27
3.1.8 REDUCTION OF UNINTENTIONAL PRODUCTION OF BY-PRODUCT EMISSIONS	27
3.1.9 MANAGING STOCKPILES AND WASTES - OVERVIEW	36
3.2 OTHER OBLIGATIONS OF THE STOCKHOLM CONVENTION ON POPS	42
3.2.1 IMPLEMENTATION PLANS	42
3.2.2 INFORMATION EXCHANGE	43

3.2.3	PUBLIC INFORMATION, AWARENESS AND EDUCATION	43
3.2.4	RESEARCH, DEVELOPMENT AND MONITORING	44
3.2.5	TECHNICAL ASSISTANCE	45
3.2.6	FINANCIAL RESOURCES AND MECHANISMS	46
3.2.7	REPORTING	46
3.3	KEY OBLIGATIONS ON THE CONFERENCE OF PARTIES	47
3.3.1	ADDITION OF FUTURE CHEMICALS TO THE CONVENTION	47
3.3.2	EFFECTIVENESS EVALUATION	47
4.	IMPLEMENTING THE MAIN REQUIREMENTS OF THE UNECE POPS PROTOCOL	49
4.1	OVERVIEW	49
4.2	THE BASIC OBLIGATIONS	53
4.2.1	ELIMINATION OF PRODUCTION AND USE OF 12 SUBSTANCES	54
4.2.2	RESTRICTION OF USE OF 3 POPS	54
4.2.3	REASSESSMENT OF EXEMPTED USES OF FOUR POPS	57
4.2.4	CONTROL OF ATMOSPHERIC EMISSIONS FOR FOUR POPS	58
4.2.5	WASTE MANAGEMENT	63
4.2.6	EMISSION INVENTORIES	63
5.	IMPLEMENTING THE MAIN REQUIREMENTS OF THE UNECE HEAVY METALS PROTOCOL	65
5.1	OVERVIEW	65
5.2	THE BASIC OBLIGATIONS	66
5.2.1	NATIONAL EMISSIONS REDUCTIONS	67
5.2.2	EMISSION CONTROL MEASURES	67
5.2.3	PRODUCT CONTROL MEASURES	69
5.2.4	PRODUCT MANAGEMENT MEASURES	69
5.2.5	EMISSION INVENTORIES	70
6.	OTHER OBLIGATIONS OF THE UNECE POPS AND HEAVY METAL PROTOCOLS	71
6.1	EXCHANGE OF INFORMATION AND TECHNOLOGY	71
6.2	PUBLIC AWARENESS	71
6.3	STRATEGIES, POLICIES, PROGRAMS, AND MEASURES	72
6.4	RESEARCH, DEVELOPMENT AND MONITORING	73
6.5	REPORTING	74
6.6	AMENDMENTS	75
APPENDIX A	SUMMARY OF JOINT FEDERAL / PROVINCIAL / TERRITORIAL INSTRUMENTS FOR MANAGING HAZARDOUS AIR POLLUTANTS	77
1.1	THE COMPREHENSIVE AIR QUALITY MANAGEMENT FRAMEWORK FOR CANADA	77
1.2	THE CANADA-WIDE ACCORD ON ENVIRONMENTAL HARMONIZATION	77

1.3	THE CANADA-WIDE ENVIRONMENTAL STANDARDS SUB-AGREEMENT	77
1.3.1	CANADA-WIDE STANDARDS FOR DIOXINS AND FURANS	78
1.3.2	CANADA-WIDE STANDARDS FOR MERCURY	79
1.3.3	CANADA-WIDE STANDARDS FOR PARTICULATE MATTER AND OZONE	80
1.4	THE CCME POLICY FOR THE MANAGEMENT OF TOXIC SUBSTANCES	80
1.5	THE NATIONAL COMMITMENT TO POLLUTION PREVENTION	81
1.6	ENVIRONMENTALLY SOUND WASTE MANAGEMENT	81
1.7	FEDERAL / PROVINCIAL AGREEMENTS	81
1.8	GUIDELINES AND CODES OF PRACTICE	82
1.9	NATIONAL AIR POLLUTION SURVEILLANCE NETWORK	83
1.10	THE ECOLOGICAL MONITORING AND ASSESSMENT NETWORK	83
 APPENDIX B SUMMARY OF FEDERAL INSTRUMENTS FOR MANAGING HAZARDOUS AIR POLLUTANTS		 84
2.1	LEGISLATION	84
2.1.1	THE CANADIAN ENVIRONMENTAL PROTECTION ACT, 1999	84
2.1.2	THE PEST CONTROL PRODUCTS ACT	88
2.2	POLICIES AND PROGRAMS	89
2.2.1	THE FEDERAL TOXIC SUBSTANCES MANAGEMENT POLICY	89
2.2.2	ASSESSMENTS OF PRIORITY SUBSTANCES	90
2.2.3	CATEGORIZATION AND SCREENING OF THE DOMESTIC SUBSTANCES LIST	91
2.2.4	THE FEDERAL POLLUTION PREVENTION STRATEGY AND POLLUTION PREVENTION (P2) PLANS	91
2.2.5	CHLORINATED SUBSTANCES ACTION PLAN	92
2.2.6	ACCELERATED REDUCTION/ELIMINATION OF TOXICS	92
2.2.7	THE NATIONAL POLLUTANT RELEASE INVENTORY	93
2.2.8	THE RESIDUAL DISCHARGE INFORMATION SYSTEM	93
2.2.9	STATE OF THE ENVIRONMENT REPORTING	93
2.2.10	THE NORTHERN CONTAMINANTS PROGRAM	94
2.2.11	TOXIC SUBSTANCES RESEARCH INITIATIVE	94
2.2.12	METALS IN THE ENVIRONMENT RESEARCH NETWORK	95
2.2.13	COLLABORATIVE MERCURY RESEARCH NETWORK	95
2.2.14	THE FEDERAL MINERALS AND METALS POLICY	95
2.3	FEDERAL GUIDELINES	95
 APPENDIX C SUMMARY OF PROVINCIAL AND TERRITORIAL INSTRUMENTS AND ACTIONS FOR MANAGING HAZARDOUS AIR POLLUTANTS		 97
3.1	OVERVIEW OF PROVINCIAL AND TERRITORIAL INSTRUMENTS	97
3.1.1	BRITISH COLUMBIA	100
3.1.2	YUKON	100
3.1.3	ALBERTA	101
3.1.4	NORTHWEST TERRITORIES	102
3.1.5	SASKATCHEWAN	102

**STRATEGIC IMPLEMENTATION FRAMEWORK FOR INTERNATIONAL COMMITMENTS
ON HAZARDOUS AIR POLLUTANTS (HAPs): 2004 UPDATE**

3.1.6	MANITOBA	103
3.1.7	ONTARIO	103
3.1.8	QUEBEC	104
3.1.9	NEW BRUNSWICK	104
3.1.10	NOVA SCOTIA	105
3.1.11	NEWFOUNDLAND AND LABRADOR	105
3.1.12	PRINCE EDWARD ISLAND	105
3.1.13	NUNAVUT	106
3.2	PROVINCIAL AND TERRITORIAL ACTIONS	106
3.2.1	PCBS (POPS PROTOCOL/STOCKHOLM)	106
3.2.2	DIOXINS AND FURANS AND HCB (POPS PROTOCOL/ STOCKHOLM)	110
3.2.3	POLYCYCLIC AROMATIC HYDROCARBONS (PAHS) (POPS PROTOCOL)	116
3.2.4	MERCURY, CADMIUM AND LEAD (HM PROTOCOL)	120
3.2.5	WASTES	125
3.2.6	PRODUCT CONTROL (HM PROTOCOL)	128
3.2.7	PRODUCT MANAGEMENT (HM PROTOCOL)	130
3.2.8	CONTAMINATED SITES (POPS PROTOCOL, STOCKHOLM)	133
3.2.9	PUBLIC INFORMATION, EDUCATION AND AWARENESS (POPS PROTOCOL / STOCKHOLM CONVENTION)	137
3.2.10	RESEARCH, DEVELOPMENT AND MONITORING (POPS AND HM PROTOCOLS AND THE STOCKHOLM CONVENTION)	140
3.2.11	OTHER OBLIGATIONS (POPS AND HM PROTOCOLS, STOCKHOLM CONVENTION)	143
APPENDIX D SUMMARY OF INTERNATIONAL AND REGIONAL INSTRUMENTS AND ACTIONS FOR MANAGING HAZARDOUS AIR POLLUTANTS		146
4.1	INTERNATIONAL AGREEMENTS	146
4.2	ARCTIC COUNCIL - ARCTIC MONITORING AND ASSESSMENT PROGRAM (AMAP) / ACTION PLAN TO ELIMINATE POLLUTION FROM THE ARCTIC (ACAP)	146
4.3	THE NORTH AMERICAN AGREEMENT ON ENVIRONMENTAL COOPERATION / COMMISSION ON ENVIRONMENTAL COOPERATION	147
4.4	THE GREAT LAKES BASIN	148
4.4.1	THE GREAT LAKES WATER QUALITY AGREEMENT	148
4.4.2	CANADA-ONTARIO AGREEMENT RESPECTING THE GREAT LAKES BASIN ECOSYSTEM	148
4.4.3	THE GREAT LAKES BINATIONAL TOXICS STRATEGY	148
4.4.4	THE INTEGRATED ATMOSPHERIC DEPOSITION NETWORK	149
4.4.5	SAINT-LAURENT VISION 2000	149
4.5	NORTHERN RIVER BASINS STUDY / NORTHERN RIVERS ECOSYSTEM INITIATIVE / NORTHERN ECOSYSTEM INITIATIVE	150
4.6	THE GEORGIA BASIN ECOSYSTEM INITIATIVE	150

4.7	THE NEW ENGLAND GOVERNORS AND EASTERN CANADIAN PREMIERS MERCURY ACTION PLAN	151
4.8	THE MERCURY DEPOSITION NETWORK	151
4.9	RELATED INTERNATIONAL AGREEMENTS	151
4.9.1	BASEL CONVENTION ON THE CONTROL OF TRANSBOUNDARY MOVEMENTS OF HAZARDOUS WASTES AND THEIR DISPOSAL	151
4.9.2	ROTTERDAM CONVENTION ON PRIOR INFORMED CONSENT	152
4.9.3	CANADA'S NATIONAL PROGRAMME OF ACTION FOR THE PROTECTION OF THE MARINE ENVIRONMENT FROM LAND-BASED ACTIVITIES	152
APPENDIX E	EXPORT/IMPORT CONTROLS UNDER THE EXPORT AND IMPORT OF HAZARDOUS WASTES REGULATIONS FOR THE TWELVE POPS UNDER THE STOCKHOLM CONVENTION	153

EXECUTIVE SUMMARY

The Strategic Implementation Framework describes how Canada intends to implement international agreements on hazardous air pollutants (HAPs). The original Framework of June 1999 focused on the implementation of the Persistent Organic Pollutants (POPs) and Heavy Metals Protocols under the United Nations Economic Commission for Europe's Convention on Long-range Transboundary Air Pollution, both of which have been ratified by Canada in 1998. In 2003 the Framework is being updated to include implementation of the global Stockholm Convention on Persistent Organic Pollutants under the United Nations Environment Program (UNEP). The Framework will also be relevant to any future international agreements on HAPs.

The first underlying principle on the management of HAPs is that the approach use existing legislation, regulations, standards, policies, programs and other related initiatives. The management of HAPs is not a 'stand-alone' policy or program, but rather an integrated approach that draws on existing measures to provide a comprehensive framework for implementation. The second underlying principle is that the federal, provincial and territorial governments share jurisdictional responsibility for management, and work in partnership to achieve results. The third principle is that the federal, provincial and territorial governments consult with interested parties, including Aboriginal organizations, environmental and health non-governmental organizations (NGOs) and the private sector, on all aspects of HAPs management.

1. Scientific Investigation and Problem Assessment

A number of federal, provincial and territorial initiatives contribute to the scientific understanding of, and the knowledge base on HAPs. Key among these initiatives are Canada's regional and ecosystem studies such as the Northern Contaminants Program, the international Arctic Monitoring and Assessment Program, and research efforts under the Georgia Basin Ecosystem Initiative, the Great Lakes Water Quality Agreement and the Saint-Laurent Vision 2000. Other relevant ecosystem monitoring studies include the Ecological Monitoring and Assessment Network and the Mercury Deposition Network. The Toxic Substances Research Initiative also enhances the knowledge base on HAPs.

Several other scientific programs involve the collection of information or the estimation of source emissions of HAPs, including the National Pollutant Release Inventory (NPRI), the Accelerated Reduction/Elimination of Toxics (ARET) and its successor program ARET II, and Environment Canada's Residual Discharge Information System (RDIS). Data from these programs will contribute to Canada's knowledge base on HAPs emissions.

In addition, substances that are released to the environment can be subject to environmental and human health impact assessments under the *Canadian Environmental Protection Act* and the *Pest Control Products Act*.¹ As such all HAPs that are currently in or that could likely be targeted by the Protocols and the Convention can be covered by assessment activities under these Acts. All of these programs will contribute to the scientific investigation and problem assessment aspects of the Framework.

2. Management Instruments

¹ Note that since the original 1999 Framework, CEPA legislation has been updated under the *Canadian Environmental Protection Act, 1999* (CEPA 1999) and a revised *Pest Control Products Act* is currently under consideration by Parliament.

Several management instruments deal with the control of toxic substances, including the HAPs identified in the UNECE POPs and Heavy Metals Protocols and the Stockholm Convention on POPs. These instruments include policies, action plans and programs, regulations and voluntary measures.

Given the transboundary nature of the problem, solutions are sought through international cooperation, often in the form of legally-binding commitments by states. Canada will continue to promote international action to address the long-range transport of HAPs.

Policies and programs that address toxic substances domestically include the CWS process, the CCME Policy for the Management of Toxic Substances, and the federal Toxic Substance Management Policy. Under the CWS process, standards have been developed for mercury, dioxins, furans, and particulate matter. These standards are expected to be incorporated into federal, provincial and territorial legislative, regulatory, and management controls, which will allow Canada to meet some of the Obligations of the Protocols and the Convention.

The Toxic Substances Management Policy (TSMP), adopted in June 1995, provides for the preventive, precautionary management of toxic substances to ensure the protection of human health and the environment. It guides federal actions domestically and serves as the centerpiece for the Canadian position in international negotiations on managing toxic substances. The policy recognizes the particular problems associated with toxic substances that are in the environment as a result of human activity, that persist in the environment, and that accumulate in organisms. These 'Track 1' substances are targeted for virtual elimination from the environment.

Other programs with similar objectives include the Arctic Environmental Protection Strategy, the Great Lakes Water Quality Agreement, the Great Lakes Binational Toxics Strategy, Saint-Laurent Vision 2000 and the North American Regional Action Plans for PCBs, DDT, chlordane, dioxins, furans, hexachlorobenzene, mercury, and more recently for lead and lindane. These programs all have goals to reduce or virtually eliminate particular pollutants. These are used as management instruments for HAPs in specific regions of the country.

A strong regulatory instrument for managing HAPs is the *Canadian Environmental Protection Act, 1999*. Specific provisions of the Act provide a statutory process for identifying and managing toxic substances. Substances new to Canada are assessed before they are introduced into Canadian commerce. For substances already in use in Canada, the "Priority Substance List" identifies substances to be assessed on a priority basis to determine whether they are toxic under CEPA 1999. When a substance is found to be toxic under CEPA 1999, appropriate pollution prevention or control measures are initiated to address the relevant sources. The objectives of these measures must be consistent with the federal Toxic Substances Management Policy.

The *Pest Control Products Act* (PCPA) and regulations are intended to protect people and the environment from risks posed by pesticides. Any pesticide imported into, sold or used in Canada must first be registered under the PCPA which is administered by the Pest Management Regulatory Agency (PMRA). A pesticide cannot be registered under the PCPA unless the PMRA determines that any associated risks to people and the environment are acceptable. The product must also serve a useful purpose. Aspects of the pesticide including uses, downstream effects and disposal may be taken into account during the pre-market assessment. Registered products may be used only for the specific purposes listed on the

approved product label. Failure to follow the directions on a pesticide label is an offense under the PCPA. In December, 2002, the new PCPA received Royal Assent and is expected to come into force some time in 2004 pending the development of supporting regulations.

All provinces and territories have legislation that applies, or could apply, to HAPs management. Most require the owners/operators of stationary point sources to obtain operating permits or approvals, which may specify technological requirements, operating requirements or emission limits for HAPs, when appropriate. This 2004 Update provides additional information on provincial / territorial actions which support implementation of Canada's obligations under the UNECE POPs and Heavy Metals Protocols and the Stockholm Convention on POPs.

Voluntary programs such as ARET, which operated during the 1990s and early 2000s, have also proven to be effective management instruments, and have contributed to the reduction of HAPs emissions from stationary point sources.

Collectively, the existing federal, provincial and territorial management instruments provide a comprehensive framework for implementing Canada's current and anticipated international commitments on HAPs.

3. Coordination and Partnerships

Implementing the UNECE POPs and Heavy Metals Protocols and the UNEP Stockholm Convention requires coordination and collaboration among various levels of government, as well as the establishment of partnerships with the public and private sector. The Canada-Wide Accord on Environmental Harmonization provides the basis for a productive federal/provincial/territorial working partnership. The CCME Comprehensive Air Quality Management Framework, the National Air Issues Coordinating Committee, the CCME Policy for the Management of Toxic Substances, the current CEPA National Advisory Committee (formerly the CEPA Federal/Provincial Advisory Committee) all provide important mechanisms for inter-governmental coordination on the management of HAPs.

As well, the growing emphasis on partnerships on environmental management amongst governments, Aboriginal organizations, environmental and health NGOs and the private sector will strengthen the management of HAPs in Canada.

International Obligations

The Main Requirements of the Stockholm Convention on POPs

Mindful of the precautionary approach,² the objective of the Stockholm Convention on POPs is to protect human health and the environment from POPs. The Convention sets the following targets:

- Eliminate the production and use of nine substances: aldrin, chlordane, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex, PCBs and toxaphene;
- Restrict the production and use of DDT;
- Eliminate import and export of all ten intentionally produced substances (those listed above) unless for environmentally sound disposal;

² As set forth in Principle 15 of the Rio Declaration on Environmental Development

- Regulate substances having the characteristics of POPs with the aim of preventing their production and use;
- Aim to continually reduce anthropogenic by-product emissions of dioxins, furans, HCB and PCBs, with the goal of their continuing minimization and, where feasible, ultimate elimination; and
- Manage and dispose of POPs wastes in an environmentally sound manner.

Other Requirements of the Stockholm Convention on POPs

The Stockholm Convention contains a number of additional provisions regarding:

- Development of a National Implementation Plan;
- A process for future addition of POPs to the Convention;
- Facilitation of information exchange between Parties, as well as public awareness, education and training activities;
- Encouragement of appropriate research, development, monitoring;
- Provision of new and additional financial resources, and technical capacity building assistance to developing countries and countries with economies in transition; and
- Reporting periodically on implementation measures; and evaluation of the effectiveness of this Convention through global monitoring activities.

The Main Requirements of the UNECE POPs Protocol

The objective of the UNECE POPs Protocol is to control, reduce or eliminate discharges, emissions and losses of POPs. The Protocol sets the following targets:³

- Eliminate the production and use of ten POPs (aldrin, chlordane, chlordecone, dieldrin, endrin, hexabromobiphenyl, heptachlor, hexachlorobenzene, mirex and toxaphene);
- Eliminate the production of PCBs and any new use after entry into force of the Protocol;
- Restrict the use of three POPs (hexachlorocyclohexane, PCBs and DDT);
- Control atmospheric emissions of four POPs (polycyclic aromatic hydrocarbons (PAHs), dioxins, furans and hexachlorobenzene) from designated industrial sectors;
- Commit to environmentally sound destruction and disposal of substances subject to elimination; and
- Develop and maintain emission inventories for substances subject to emission controls (PAHs, dioxins, furans and hexachlorobenzene) and provide information on the measures taken to implement the Protocol.

³ Some POPs are subject to several controls.

The Main Requirements of the UNECE Heavy Metals Protocol

The objective of the Heavy Metals Protocol is to control anthropogenic emissions of heavy metals that are subject to long-range transboundary atmospheric transport, and that are likely to have significant adverse effects on human health or the environment. The Protocol targets three heavy metals: cadmium, lead and mercury. The main requirements are to:

- Reduce total annual atmospheric emissions of heavy metals, particularly from major stationary sources;
- Reduce heavy metal content in specified products; and
- Develop and maintain emission inventories for the specified heavy metals.

Other Requirements Common to Both Protocols and Convention

The POPs and Heavy Metals Protocols and the Stockholm Convention contain mechanisms for amending (including adding substances) the agreements and provisions to foster research, monitoring, information exchange, capacity building and periodic reporting of emissions and measures taken to implement the instruments.

Countries are free to adopt more stringent requirements to meet their domestic needs than those mandated by these international agreements. As a result, reduction goals stipulated in the Protocols will not undermine any more restrictive domestic policies or standards.

1. INTRODUCTION

1.1 PURPOSE OF THE STRATEGIC IMPLEMENTATION FRAMEWORK - 2004 UPDATE

The purpose of the 2004 Update of the Strategic Implementation Framework for International Commitments on Hazardous Air Pollutants (the Framework) is to describe how Canada intends to implement its obligations under three multi-lateral international agreements on hazardous air pollutants (HAPs): i) the Stockholm Convention on POPs; and ii) the Persistent Organic Pollutants (POPs) and iii) Heavy Metals Protocols under the United Nations Economic Commission for Europe (UNECE).

The Framework outlines the ways in which existing federal, provincial and territorial government policies and programs on air quality, toxic chemicals and pesticides meet Canada's international and multilateral commitments on HAPs. Implementing the Framework is intended to minimize overlap and duplication among the federal, provincial and territorial government programs for managing HAPs. The Framework is also designed to describe a comprehensive, nation-wide capability to address international commitments.

The original Framework was prepared by the National Air Issues Coordinating Committee (NAICC) and reviewed by Canadian Council of Environmental Ministers (CCME) Ministers in June 1999. While it focused on the implementation of the UNECE POPs and Heavy Metals Protocols, it was also designed to be applicable to other international agreements on HAPs that would be developed in the future.

The 2004 Update of the Framework:

- demonstrates how Canada intends to implement the requirements of the **Stockholm Convention on POPs**;⁴
- provides additional information on provincial / territorial actions on POPs and Heavy Metals;
- **updates** information on implementing the **UNECE POPs and HM** Protocols.

1.2 CANADA'S ROLE IN INTERNATIONAL HAPs ACTIVITIES

Canada plays an active and leading role in international HAPs activities at the global level. Highlights of that role include:

- In May 2001, Canada was the first country to both sign and ratify the global Stockholm Convention on POPs; the Convention will enter into force on May 17, 2004;
- In December 1998, Canada was the first country to ratify the UNECE POPs and Heavy Metals Protocols. The POPs Protocol entered into force on October 23, 2003 and the Heavy Metals Protocol on December 29, 2003;
- In June 2000, Canada was the first country to develop a National Programme of Action (NPA) for the Protection of the Marine Environment from Land-based Activities, which includes actions on POPs and Heavy Metals. The NPA is based on the Global Programme of Action, a non-legally binding instrument signed by Canada and 108 other nations in 1995; and

⁴ The Stockholm Convention was concluded in December 2000 after the original 1999 Framework was completed.

- In February 2003 the UNEP Governing Council accepted the Global Mercury Assessment (GMA) report and concluded that further international action to reduce the risks of mercury and its compounds is warranted. Canada actively participated on the working group conducting the assessment and continues to be engaged in the UNEP Global Mercury Programme.

Canada is also active in HAPs activities at the continental and bilateral level, including participation in:

- The Sound Management of Chemicals North American Regional Action Plans (NARAPs), pursuant to the North American Commission for Environmental Cooperation;
- The Canada-U.S. Great Lakes Binational Toxics Strategy (GLBNTS), pursuant to the Great Lakes Water Quality Agreement;
- The New England Governors and the Eastern Canadian Premiers Mercury Action Plan.

1.3 OVERVIEW OF INTERNATIONAL AGREEMENTS ON HAPs

1.3.1 THE STOCKHOLM CONVENTION ON POPS

In March 1995, the UNEP Governing Council (GC) adopted Decision 18/32 inviting the Inter-Organization Programme on the Sound Management of Chemicals (IOMC), the Intergovernmental Forum on Chemical Safety (IFCS) and the International Programme on Chemical Safety (IPCS) to initiate an assessment process of an initial list of 12 substances.

In June 1996, a meeting of experts was convened in Manila, the Philippines, and concluded that sufficient information existed to demonstrate the need for international action to minimize the risks from the 12 POPs, including a global legally binding instrument.

In February 1997, the UNEP GC adopted Decision 19/13C, requesting that UNEP, together with relevant international organizations, prepare for and convene an intergovernmental negotiating committee (INC) with a mandate to develop, by the end of 2000, an international, legally binding instrument for implementing international action, beginning with the 12 specified POPs.

The first session of the Intergovernmental Negotiating Committee (INC-1) was held from June 29 – July 3, 1998, in Montreal. Dr. John Buccini of Environment Canada was selected as Chair. The text of the agreement was completed at the fifth negotiating session in 2000 in Johannesburg, South Africa. The Stockholm Convention on POPs was adopted at a Diplomatic Conference in Stockholm, Sweden on May 23, 2001. In order for the Convention to come into force, ratification by 50 countries was required. On February 17, 2004, the 50 ratifications were in place, and the Convention will come into force on May 17, 2004. The status of ratifications can be found on the Stockholm Convention web site.⁵

1.3.2 THE UNECE PROTOCOLS ON POPS AND HEAVY METALS

The United Nations Economic Commission for Europe (UNECE) region includes 55 countries in Europe, Russia and former members of the Soviet Union (sometimes referred to as countries with economies in transition), as well as Canada and the United States.

⁵ www.pops.int/documents/signature/signstatus.htm

The UNECE Convention on Long-Range Transboundary Air Pollution (LRTAP) is an overarching international agreement on the management of transboundary air pollution. It includes general management principles and establishes a process for negotiating more specific Protocols and Agreements.

In November 1995, the Executive Body to the Convention instructed the Working Group on Strategies to begin negotiations on two additional Protocols, POPs and heavy metals. By February 1998, negotiations on the proposed texts had been completed. Both Protocols were open for signature at the 4th Pan European Meeting of Environment Ministers in Denmark in June 1998. Canada actively participated in the development of both Protocols, signed them in June 1998, and in December 1998, became the first country to ratify them. Both Protocols entered into force in late 2003. The status of ratifications of the Protocols is shown at their respective websites.⁶

1.4 THE IMPORTANCE OF LONG-RANGE TRANSBOUNDARY AIR POLLUTION FOR CANADA

In recent years, there has been growing national and international concern about the health and environmental risks posed by some POPs and heavy metals. Scientific studies have shown that some POPs and heavy metals can be transported long distances in the atmosphere and deposited in the oceans and freshwater bodies.

Many POPs tend to concentrate in colder regions such as Canada's north. Concentrations of a number of POPs in fish and wildlife, the traditional food of many Aboriginal people in northern Canada, are sufficiently high that, as a result of the consumption of these foods, their levels of exposure exceed 'tolerable daily intake' levels established by Health Canada. POPs levels in Canadian Inuit populations are among the highest observed in the world. At least 50% of Inuit women have blood levels of PCB that exceed the concentration which Health Canada identifies as a 'level of concern'.

Concentrations of certain POPs in biota are even higher in the Great Lakes and St. Lawrence basins than in northern Canada. However, contaminant concentrations in residents of these regions are less than those observed in the north, as fish and wildlife species from these systems are not significant food sources. Nevertheless, there is a long-term concern in all regions of Canada because of the propensity for some POPs to accumulate over a lifetime and to be passed on from one generation to the next.

In addition to accumulating in Canada's North and the Great Lakes basin, Canadian researchers have discovered that POPs tend to concentrate in other colder climates - alpine regions with high snowfalls such as Canada's Rocky Mountains. These same researchers found that the Bow Lake in Banff National Park, which receives about three-quarters of its water through glacial melt, receives between 50 and 97 per cent of the contaminant concentration in these melt waters. As in other ecosystems, POPs carried in the glacial water feeding rivers and lakes will become available in the food chain.

POPs of concern in Canada come largely from foreign sources through long-range air transport, most notably from the U.S., Mexico and Central America, Eastern Europe and Western Russia, and Southeast Asia. It is therefore in Canada's interest to secure international

⁶ POPs Protocol ratification checklist: www.unece.org/env/lrtap/status/98pop_st.htm
HM Protocol ratification checklist: www.unece.org/env/lrtap/status/98hm_st.htm

agreements that restrict or eliminate the use of POPs that can be introduced into Canada in this way.

Heavy metals, notably mercury, are also of concern in Canada. Transboundary atmospheric transport of mercury into Canada is an important issue, especially in eastern provinces and in the north. Several provinces and territories have issued fish consumption advisories because of high mercury levels. Concentrations of mercury in loons from Kejimikujik Park in Nova Scotia are the highest ever recorded in North America, and exceed levels suspected of reducing reproductive success. Local sources alone cannot account for the increasing deposition rates of mercury.

In order to ensure the continued protection of Canadians and their environment, Canada must be an active participant in international agreements on POPs and heavy metals.

2. IMPLEMENTATION APPROACH

2.1 DEFINITION AND SCOPE OF HAZARDOUS AIR POLLUTANTS

2.1.1 HAZARDOUS AIR POLLUTANTS

In 1993, the Organization for Economic Cooperation and Development broadly defined “hazardous air pollutants” as: “gaseous, aerosol or particulate contaminants present in ambient air in trace amounts, with characteristics (e.g., toxicity, persistence) that make them a hazard to human health or animal life”. In this Strategic Implementation Framework, the term “hazardous air pollutant” (HAPs) refers to persistent organic pollutants and heavy metals which can travel through the air. HAPs can generally be categorized according to their use or nature:

- Pesticides (e.g., DDT and toxaphene);
- Industrial chemicals (e.g., PCBs);
- By-products and contaminants (e.g., dioxins/furans, PAHs and hexachlorobenzene); and
- Heavy metals (e.g., cadmium, lead and mercury) released to the environment from anthropogenic activities.

2.1.2 PERSISTENT ORGANIC POLLUTANTS

The Preamble to the Stockholm Convention on POPs states that persistent organic pollutants are substances that possess toxic properties, resist degradation, bioaccumulate and are transported, through air, water and by migratory species across international boundaries and are deposited far from their place of release, where they accumulate in terrestrial and aquatic ecosystems. The UNECE POPs Protocol adds that POPs are likely to cause significant adverse human health or environmental effects near to and distant from their sources.

2.1.3 HEAVY METALS

The UNECE Heavy Metals Protocol defines "heavy metals" as stable metals / metalloids with a density greater than 4.5 g/cm³ and their compounds. The Protocol aims to control anthropogenic emissions of heavy metals which are subject to long-range transboundary atmospheric transport and likely to have significant adverse effects on human health or the environment.

2.1.4 STATUS OF SUBSTANCES COVERED BY INTERNATIONAL AGREEMENTS IN CANADA

The Stockholm Convention on POPs currently includes 12 POPs; the UNECE POPs Protocol includes 16 POPs; and the UNECE Heavy Metals Protocol includes 3 metals. The substances covered under these three international agreements, and their status in Canada, are indicated in Table 1 below.

**STRATEGIC IMPLEMENTATION FRAMEWORK FOR INTERNATIONAL COMMITMENTS
ON HAZARDOUS AIR POLLUTANTS (HAPs): 2004 UPDATE**

Table 1: POPs and heavy metals covered under international hemispheric and global agreements and their status in Canada

Category	Substance	UN ECE Protocols	Stockholm Convention	Status in Canada
<i>Pesticides</i>	<i>Chlordane</i>	X	X	<i>Discontinued, 1995</i>
	<i>DDT (+DDD+DDE)</i>	X	X	<i>Discontinued, 1985</i>
	<i>Aldrin</i>	X	X	<i>Discontinued, 1990</i>
	<i>Dieldrin</i>	X	X	<i>Discontinued, 1990</i>
	<i>Endrin</i>	X	X	<i>Discontinued, 1990</i>
	<i>Heptachlor</i>	X	X	<i>Discontinued, 1985</i>
	<i>Hexachlorobenzene</i>	X	X	<i>Discontinued as a pesticide, 1976</i>
	<i>Mirex</i>	X	X	<i>Never registered as a pesticide</i>
	<i>Toxaphene</i>	X	X	<i>Discontinued, 1982</i>
	<i>Chlordecone</i>	X		<i>Discontinued, 1995</i>
	<i>Lindane</i>	X		<i>All uses to end by Dec. 31, 2004 (except as public health and veterinary topical insecticide)</i>
<i>Industrial Chemicals</i>	<i>PCBs</i>	X	X	<i>CEPA Toxic, CEPA Regulations, TSMP Track 1</i>
	<i>Hexabromobiphenyl</i>	X		<i>CEPA Toxic, CEPA Regulations</i>
<i>By-Product Emissions</i>	<i>PCDDs (Dioxins)</i>	X	X	<i>CEPA Toxic, CEPA Regulations, TSMP Track 1, CWS</i>
	<i>PCDFs (Furans)</i>	X	X	<i>CEPA Toxic, CEPA Regulations, TSMP Track 1, CWS</i>
	<i>Hexachlorobenzene</i>	X	X	<i>CEPA Toxic, CEPA Regulations, TSMP Track 1</i>
	<i>PAHs</i>	X		<i>CEPA Toxic</i>
	<i>PCBs</i>		X	<i>CEPA Toxic, CEPA Regulations, TSMP Track 1, CWS</i>
<i>Heavy Metals</i>	<i>Mercury</i>	X		<i>CEPA Toxic, CWS</i>
	<i>Lead</i>	X		<i>CEPA Toxic</i>
	<i>Cadmium</i>	X		<i>CEPA Toxic</i>

2.2 GENERAL APPROACH

In Canada, the management of HAPs is based on three underlying principles:

- A 'cross-cutting' approach: Currently, legislative, regulatory and policy instruments are used to manage air quality, toxic chemicals and pesticides. This approach recognizes that HAPs are not managed through a stand-alone policy or program, but through an integration of

existing initiatives. Taken together, these initiatives provide a comprehensive framework for the implementation of international commitments.

- **Shared jurisdictional responsibility:** In Canada, the federal, provincial and territorial governments share jurisdictional responsibility for the management of toxic substances and air quality. The different levels of government work in partnership to ensure that such management is comprehensive and effective. The Framework will continue to ensure that HAPs are effectively managed domestically, and Canada will continue to work with other countries to strengthen HAPs management internationally.
- **Consultation:** The federal, provincial and territorial governments are committed to consulting with all interested parties, including Aboriginal organizations, environmental and health non-governmental organizations (NGOs) and the private sector on specific issues of domestic interest. Consultations are also initiated when negotiating international agreements, including those on HAPs, in order to allow interested parties to input to the development of Canada's position. Consultation processes are an essential component of the legislation, regulations, standards, policies, programs and initiatives that comprise this Framework.

2.3 ELEMENTS OF HAPs MANAGEMENT IN CANADA

Three elements form the basis for the Strategic Implementation Framework for International Commitments on HAPs:

- Scientific investigation and problem assessment;
- Management instruments, and
- Coordination and partnerships.

2.3.1 ORGANIZATION OF THIS DOCUMENT

The remainder of Section 2 describes how scientific investigation and program assessment, management instruments and coordination and partnership are manifested in current and planned federal, provincial and territorial instruments.

Sections 3, 4, 5 and 6 outline how these elements contribute to implementing Canada's obligations under the UNEP Stockholm Convention on POPs, the UNECE POPs Protocol and the UNECE HM Protocol. Specific instruments and initiatives are described in more detail in Appendices A, B, C and D.

2.3.2 SCIENTIFIC INVESTIGATION AND PROBLEM ASSESSMENT

In Canada, scientific investigation and problem assessment centers around regional and ecosystem studies, point source monitoring and estimates of emissions and substance assessments.

Regional and ecosystem studies

Regional and ecosystem studies are used to assess the environmental behavior, movement, fate and persistence of HAPs, including levels and effects of particular substances in specified regions and ecosystems. Studies of this type also provide information on human exposures to HAPs, levels of HAPs in human tissues, and their effects in human populations and critical sub-populations. Regional and ecosystem studies are also important in identifying new and emerging HAPs issues.

Significant studies underway in Canada include the federal government's major research programs in the North and the Great Lakes Basin. In the North, the Northern Contaminants Program and the Arctic Monitoring and Assessment Program have provided considerable information on the transboundary movement of HAPs, the levels of HAPs in wildlife and Aboriginal peoples, and the risks to human health. The unambiguous and conclusive nature of this information provided a major impetus for Canada's leadership role in the development of the POPs and Heavy Metals Protocols, and the Stockholm Convention on POPs.

Similarly, in the Great Lakes Basin, long-term research under the Great Lakes Water Quality Agreement has produced a large body of scientific evidence on the environmental and potential human health effects of toxic substances. This has resulted in policies and programs such as the Canada-US Great Lakes Binational Toxics Strategy, whose goal is the virtual elimination of persistent, bioaccumulative, toxic substances in the Great Lakes Basin. The Integrated Atmospheric Deposition Network also facilitates a better understanding of HAPs loadings to the Great Lakes Basin.

Additional studies on HAPs include research in regional ecosystem initiatives, such as the Saint-Laurent Action Plan Vision 2000; Great Lakes 2000; Northern Rivers Basins Study / Northern Rivers Ecosystem Initiative / Northern Ecosystem Initiative; Fraser River Action Plan / Georgia Basin Ecosystem Initiative; and the Ecological Monitoring and Assessment Network. All these initiatives demonstrate that ecosystem science can act as a key influence in policy development.

Studies conducted as part of the Toxic Substances Research Initiative greatly enhanced the knowledge base on HAPs, especially in terms of exposures, sources and effects on human and ecosystem health. Launched in 1998, the Toxic Substances Research Initiative (TSRI) was a \$40 million program managed by Health Canada and Environment Canada. The four year programme sunset as of March 31, 2002 and research sponsored by the programme has been completed.

Point source monitoring and estimates of emissions

Monitoring and emission estimates are used to identify and characterize the sources and types of HAPs and the nature and locations of sources. They can also assist in developing emissions inventories, and can be used to verify the implementation and effectiveness of control actions.

The joint federal, provincial, territorial National Air Pollution Surveillance Network (NAPs) includes ambient air monitoring for PAH, dioxins and Furans and heavy metals such as lead and mercury.

The federal government's principal methods of collecting, estimating and synthesizing information on emissions of HAPs are the National Pollutant Release Inventory and the Residual Discharge Information System. These programs are critical for tracking the effectiveness of management controls. As well, during the 1990s and early 2000s, the Accelerated Reduction/Elimination of Toxics (ARET) Program tracked reductions in the emissions of some HAPs through voluntary reporting.

Industries are also generating an increasing amount of emission data. Some provinces now include requirements for monitoring and reporting emissions in operating permits and approvals for stationary point sources of atmospheric pollutants.

Substance assessments

Assessment information on individual HAPs is essential for the design of effective management instruments. Substance assessments can be used in a risk assessment process to integrate and synthesize information on individual HAPs. These studies include data on use, environmental levels, human and environmental exposures, and toxicological and epidemiological evidence of effects.

Substance assessment studies on many HAPs have been conducted under CEPA and the federal Toxic Substances Management Policy. Assessments on aldrin, chlordane, DDT, dieldrin, dioxins, furans, hexachlorobenzene, endrin, mirex, PAHs, PCBs, toxaphene, heptachlor, mercury, lead and cadmium are already complete.

As well, substances that are not yet in Canadian commerce are assessed either through the toxics provisions of the *Canadian Environmental Protection Act, 1999* (CEPA 1999) (for commercial chemicals), or through the *Pest Control Products Act* (PCPA) (for pesticides).

As a result of these and other initiatives, Canada plays a prominent role in the scientific research on HAPs, including the identification of new and emerging issues.

2.3.3 MANAGEMENT INSTRUMENTS

In Canada, there is a suite of management tools available as options for managing substances:

- Joint federal/provincial/territorial initiatives — national policies, Canada-wide Standards, guidelines, codes of practice
- Federal Instruments
 - *Canadian Environmental Protection Act, 1999* — regulations, pollution prevention plans, environmental emergency plans, virtual elimination plans, administrative agreements, guidelines, codes of practice
 - *Pest Control Products Act*
- Provincial/territorial instruments — regulations, permits, approvals, or other processes

Effective management instruments are central to this Strategic Implementation Framework. They include legislation, regulations, standards, policies, programs and initiatives to:

- Limit or eliminate the production or use of HAPs, including product control and management measures;
- Manage emissions of HAPs from stationary and mobile sources, including new and existing sources, and
- Ensure environmentally sound waste management of HAPs and of products containing HAPs.

Foreign Policy and Programs

Given the transboundary nature of the problem of hazardous air pollutants, solutions must be sought through international cooperation, often in the form of legally binding commitments by national governments.

Consistent with Canada's foreign policy objectives of promoting and defending Canadian interests and working towards a more peaceful, prosperous and environmentally sound world, Canada has played an important role in international action to address hazardous air pollutants. These activities include work under:

- the Stockholm Convention on POPs;
- the UN Economic Commission for Europe Protocols on POPs and Heavy Metals;

- the North American Agreement on Environmental Cooperation;
- the Arctic Council;
- the Rotterdam Convention on the Prior Informed Consent;
- the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes;
- the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities; and
- the UNEP Global Mercury Assessment.

Domestic Policy and Programs

A number of instruments provide direction on measures needed to address the HAPs issue within Canada. These include the Canada-Wide Standards process, the CCME Policy for the Management of Toxic Substances, the federal Toxic Substances Management Policy and various provincial and territorial programs. Under the Canada-Wide Standards process, standards have been developed for mercury, dioxins, furans, hexachlorobenzene and particulates.

The federal Toxic Substances Management Policy was published in June 1995. The policy provides for a preventive and precautionary approach to the management of toxic substances to ensure the protection of human health and the environment. It guides federal actions domestically and serves as the centerpiece for the Canadian position in international negotiations on managing toxic substances. The policy recognizes the particular problems associated with toxic substances that are in the environment as a result of human activity, that persist in the environment, and that accumulate in organisms. The policy stipulates that these 'Track 1' substances must be managed to achieve their virtual elimination from the environment.

Many other regional and ecosystem initiatives aim at reducing or virtually eliminating contaminants. These initiatives include the Arctic Environmental Protection Strategy, the Great Lakes Water Quality Agreement, the Great Lakes Binational Toxics Strategy, Saint-Laurent Vision 2000; the Northern Ecosystems Initiative; and the Georgia Basin Ecosystem Initiative.

Restriction or elimination of the production or use of HAPs

A variety of management instruments can be used to limit or eliminate the production or use of HAPs. Under the federal Toxic Substances Management Policy, many of the substances targeted for action under the Stockholm Convention and UNECE POPs Protocol have already been scheduled for virtual elimination.

CEPA 1999 is used to establish regulations to prohibit the production, importation, sale and use of several POPs. Under CEPA 1999, virtual elimination is the required management objective for persistent, bioaccumulative, anthropogenic toxic substances, including any HAPs which meet these criteria.

The Pest Management Regulatory Agency regulates pesticides under the *Pest Control Products Act*. Many of the HAPs targeted for elimination under the POPs Protocol are pesticides which are not registered for use as pesticides in Canada. Contaminants that occur in pest control products are also regulated by the PMRA under the PCPA. The PMRA has released a Regulatory Directive (Dir99-03) outlining its strategy for the implementation of the TSMP under the PCPA. POPs that occur as contaminants in the pest control products registered in Canada are regulated in accordance with this strategy.

Management of emissions of HAPs from stationary and mobile sources

Most provinces and territories have legislation regarding air quality and toxic substances, which requires operating permits or approvals for stationary point sources. These permits or approvals impose technological requirements or limits on air and water emissions of HAPs, when appropriate. The requirements are often based on relevant Guidelines and Codes of Practice.

Under CEPA 1999, appropriate management options for specific toxic substances have been, or are being, developed. CEPA regulations have been developed to control emissions of some HAPs now targeted for action under the Stockholm Convention and UNECE Protocols. These *Regulations* are outlined in [Appendix B](#).

Environmentally sound waste management of HAPs

Most provinces and territories have established programs to control or restrict the storage, use and disposal of toxic substances such as PCBs. As well, there are federal regulations under CEPA 1999 for the storage, mobile treatment, destruction and transboundary movement of PCBs, and CCME guidelines for waste management, treatment and destruction of PCBs.

Collectively, these management instruments provide a comprehensive framework for implementing Canada's commitments with respect to the Stockholm Convention on POPs and the UNECE POPs and Heavy Metals Protocols.

2.3.4 COORDINATION AND PARTNERSHIPS

Coordination and partnerships are essential to ensure that HAPs management and the implementation of international commitments are conducted in a comprehensive and cost effective manner. Such collaboration is also necessary to prevent duplication and overlap among the federal, provincial and territorial levels of government. Coordination and partnerships include:

Coordination and collaboration among federal, provincial and territorial Agencies

In the last few years, the respective roles and responsibilities of the federal, provincial and territorial levels of government for environmental management have been clarified by the CCME through initiatives such as the Canada-wide Accord on Environmental Harmonization and the Canada-Wide Standards process. These have provided clear direction for coordination of activities on HAPs management.

Other mechanisms for ensuring federal, provincial and territorial coordination and collaboration include the CCME Policy for the Management of Toxic Substances, the Comprehensive Air Quality Management Framework for Canada, the National Air Issues Coordinating Committee and the HAPs Task Group. In addition, federal/provincial/territorial committees under CEPA 1999 are important, such as the National Advisory Committee.

Interdepartmental coordination

At the federal level, Environment Canada and Health Canada are jointly responsible for implementing CEPA 1999, including the assessment and management of toxic chemicals. An interdepartmental working group meets regularly to discuss the Canadian position for international negotiations. At the provincial and territorial level, there are various formal and informal mechanisms to facilitate similar interdepartmental coordination.

Working with municipal and regional governments

Provincial and territorial governments work closely with municipal and regional governments on HAPs management. Two provinces, Quebec and British Columbia, have delegated responsibility to two municipalities (Montreal and Vancouver, respectively) for air quality management within their boundaries.

Working with Aboriginal organizations and environmental groups

The federal government will continue to work on HAPs management with Aboriginal organizations particularly with those in the North most affected by HAPs contaminants, and with environmental non-governmental organizations.

Partnerships with the private sector

There has been a growing emphasis on partnerships on environmental management between government and the private sector. Several public/private initiatives facilitate the management of HAPs and there are a growing number of formal agreements between industry and federal/provincial government agencies.

3. IMPLEMENTING THE REQUIREMENTS OF THE STOCKHOLM CONVENTION ON POPs

The objective of the Stockholm Convention on POPs, as stated in Article 1, is: “Mindful of the precautionary approach as set forth in Principle 15 of the Rio Declaration on Environment and Development, the objective of this Convention is to protect human health and the environment from persistent organic pollutants”.

The key obligations of the Stockholm Convention can be separated into main obligations and other obligations. The main obligations are the most important commitments under the Convention, as they detail the actions to be taken by Parties to control an initial list of twelve POPs.⁷ The specific types of action required are:

- Article 3 - Elimination of Production and Use
- Article 3 - Restriction of Production and Use
- Article 3 - Elimination of Import
- Article 3 - Elimination of Export
- Article 3 - Assessment of New Pesticides and Industrial Chemicals
- Article 3 - Assessment of Existing Pesticides and Industrial Chemicals
- Article 5 - Reduction of Unintentional Production of By-Product Emissions
- Article 6 - Management of Stockpiles and Wastes

The Convention's other obligations⁸ are contained in:

- Article 7 - Implementation Plans;
- Article 8 - Addition of Future Chemicals to the Convention;
- Article 9 - Information Exchange;
- Article 10 - Public Information, Awareness and Education;
- Article 11 - Research, Development and Monitoring;
- Article 12 - Technical Assistance;
- Article 13 & 14 - Financial Resources and Mechanisms;
- Article 15 - Reporting;
- Article 16 - Effectiveness Evaluation.

Table 2 summarizes how Canada will implement the key obligations of the Stockholm Convention.

⁷ The initial set of POPs include aldrin; chlordane; DDT, dieldrin; dioxins and furans; endrin; heptachlor; hexachlorobenzene (HCB); mirex; PCBs; and toxaphene.

⁸ Articles 8 and 16 are obligations on the Conference of the Parties and not on individual countries such as Canada.

**STRATEGIC IMPLEMENTATION FRAMEWORK FOR INTERNATIONAL COMMITMENTS
ON HAZARDOUS AIR POLLUTANTS (HAPs): 2004 UPDATE**

Table 2: Overview of Canada's Implementation of the Stockholm Convention on POPs

Obligation (Article in Convention)	POPs	Implementation
Elimination of Production and Use of 9 substances (Article 3 Paragraph 1(a)(i) and Annex A)	Aldrin, chlordane, dieldrin, endrin, heptachlor, hexachlorobenzene (HCB), mirex, toxaphene and PCBs	- Pesticides: PCPA (Not registered for use in Canada) - Mirex, hexachloro-benzene and PCB: CEPA 1999 regulations
Restriction of Use of 1 Substances (Article 3 Paragraph 1(b) and Annex B)	DDT (limited to uses for public health protection, production of dicofol, and as an intermediate)	- PCPA (no registered use in Canada); - CEPA 1999 (for non-pesticidal purposes)
Elimination of Import (Article 3 Paragraph 1(a)(i) and Paragraph 2)	Aldrin, chlordane, dieldrin, DDT, endrin, heptachlor, hexachlorobenzene (HCB), mirex, toxaphene and PCBs	- PCPA (pesticides); - CEPA 1999 (industrial chemicals)
Elimination of Export (Article 3 Paragraph 1(a)(ii) and Paragraph 2)	Aldrin, chlordane, dieldrin, DDT, endrin, heptachlor, hexachlorobenzene (HCB), mirex, toxaphene and PCBs	- CEPA 1999
Assessment of New Pesticides and Industrial Chemicals (Article 3 Paragraph 3)	"New" chemicals with POPs characteristics	- TSMP criteria for Track 1 substances - CEPA 1999 substance assessments - PCPA substance assessments
Assessment of Existing Pesticides and Industrial Chemicals (Article 3 Paragraph 4)	"In-use" chemicals with POPs characteristics	- TSMP criteria for Track 1 substances - CEPA 1999 substance assessments - PCPA substance assessments
Reduction of Unintentional Production of By-Product Emissions (Article 5)	Dioxins, furans, HCB and PCBs	- CCME Canada-wide Standards for dioxins and furans; - CCME guidelines; - Strategic Options Processes - CEPA 1999 - Provincial and territorial regulations and approval and licensing processes
Managing Stockpiles and Wastes (Article 6)	All targeted POPs	- BASEL Convention - Provincial, territorial and municipal facilities and programs for wastes, and for contaminated sites - CEPA 1999 regulations for PCBs and transboundary movement of hazardous wastes - PCPA for pesticides

**STRATEGIC IMPLEMENTATION FRAMEWORK FOR INTERNATIONAL COMMITMENTS
ON HAZARDOUS AIR POLLUTANTS (HAPs): 2004 UPDATE**

Implementation Plans (Article 7)	All targeted POPs	- Implementation of Canadian HAPs initiatives, in consultation with stakeholders
Information Exchange (Article 9)	All targeted POPs	- federal and provincial, academic and private sector programs and web sites - CEPA 1999 Registry - PMRA web site
Public Information, Awareness and Education (Article 10)	All targeted POPs	CEPA 1999 Registry PMRA web site NPRI - federal and provincial, academic and private sector programs and web sites - the Canadian Pollution Prevention Clearinghouse
Research, Development and Monitoring (Article 11)	All targeted POPs	- Northern Contaminants Program and AMAP - Integrated Atmospheric Deposition Network and EMAN - federal, provincial and territorial monitoring
Technical Assistance (Article 12)	All targeted POPs	- Canada POPs Fund at the World Bank - Federal international development assistance programs
Financial Resources and Mechanisms (Article 13)	All targeted POPs	- Canada's financial contribution to the Global Environmental Facility
Reporting (Article 15)	All targeted POPs	Reports will be prepared from data collected under: - NPRI, RDIS - Emissions monitoring by government agencies and industry - Proposed database on sales of pesticides (PMRA) - PCB National inventory
Addition of Future Chemicals to the Convention (Article 8)	Candidate POPs chemicals	- Canada will actively participate
Effectiveness Evaluation (Article 16)	All targeted POPs	- Canada will provide monitoring information

3.1 IMPLEMENTING THE MAIN OBLIGATIONS OF THE STOCKHOLM CONVENTION ON POPs

3.1.1 ELIMINATION OF PRODUCTION AND USE

Article 3 para. 1(a)(i) and Annex A

The Obligation

Parties shall prohibit and/or take legal and administrative measures necessary to eliminate production and use of Annex A chemicals (aldrin, chlordane, dieldrin, endrin, heptachlor, hexachlorobenzene (HCB), mirex, toxaphene and PCBs).

Rationale for the Obligation

These substances, which have been intentionally produced, have been targeted under the Stockholm Convention because they are persistent, bioaccumulative and toxic, and have the potential for transboundary transport. They were chosen by the UNEP Governing Council (Decision 18/32 of May 25, 1995) from an initial short-list of POPs being considered for the UNECE POPs Protocol.

Implementation in Canada

Canada already complies with this Obligation to eliminate the production and use of the specified substances. They are not produced in Canada.

Production and Use of POPs Pesticides

There are eight pesticides identified for elimination of production and use: aldrin; chlordane; dieldrin; endrin; heptachlor; HCB (also used as an industrial chemical); mirex (also used as an industrial chemical) and toxaphene.

These eight pesticides have been targeted for management as Track 1 substances under the federal Toxic Substances Management Policy, with the objective of virtual elimination.

Under the *Pest Control Products Act*, there are no registered uses for these eight pesticides. Unless registered, a pesticide may not be imported, sold or used in Canada.

The new PCPA (anticipated to come into force in 2004) will prohibit the manufacture of unregistered pesticides and thereby provide the authority to eliminate, prevent or restrict the production of pesticides as required by the Convention. Since none of the POPs pesticides is registered in Canada, their sale or use is a violation of the current PCPA, and there are mechanisms under CEPA 1999 (see Section 3.1.4 on elimination of exports) which would exclude their export for commercial purposes. Therefore, there is no practical or commercial reason to manufacture these substances in Canada. Nevertheless, should the need arise to address manufacture of these substances pending enactment of new legislation, appropriate regulations would be developed under the current PCPA.

Pesticides that are not legally registered in Canada are refused entry and returned to the exporter. The Importation for Manufacturing and Export Programme for Pest Control Products does not allow for the importation of the eight listed pesticides for the purposes of reformulation and subsequent export. In addition, exports of the eight listed pesticides would be subject to notification according to the *Canadian Environmental Protection Act, 1999*. No such notifications have been received.

Import and/or manufacture of these substances for non-pesticidal purposes would require notification under *the New Substances Notification Regulations* of the *Canadian Environmental Protection Act, 1999*. These POPs would be identified during the assessment process, and their manufacture can be prohibited, consistent with the management objectives of the TSMP and in compliance with Canada's obligations under the Stockholm Convention.

Production and Use of POPs Chemicals

The industrial chemicals identified for elimination of production and use are: mirex, hexachlorobenzene, and PCBs. These substances are identified for management as Track 1 substances under the TSMP, targeted for virtual elimination.

Under CEPA 1999 regulations, the manufacture and use of the industrial chemicals mirex and hexachlorobenzene are prohibited in Canada.

These measures fulfill the obligation for Canada to take legal and administrative measures necessary to eliminate the production or use of these eight substances listed in Annex A (aldrin; chlordane; dieldrin; endrin; heptachlor; HCB; mirex; and toxaphene).

Production and Use of PCBs

The remaining class of POPs identified in Annex A is PCBs. The Convention sets out a specific regime for PCBs, which is applicable to all Parties. This regime is flexible enough to accommodate Canada's domestic regulatory frameworks for PCBs.

The Convention exempts all articles in use, while requiring the following commitments on PCB management:

- make "determined efforts" to eliminate the use of PCBs in equipment by 2025;
- promote measures to reduce exposure and risk to control the use of PCBs;
- ensure that equipment containing PCBs shall not be exported or imported except for environmentally sound management;
- except for maintenance and servicing, not allow PCB recovery for the purpose of reuse in other equipment;
- make determined efforts to lead to environmentally sound waste management of liquids containing PCBs no later than 2028;
- endeavor to identify other articles containing PCBs and manage them accordingly;
- provide a report every five years to the Conference of Parties on progress in eliminating PCBs. These reports will be used to review progress in eliminating PCBs.

The language of the PCB exemption was crafted to allow some flexibility and discretion to Parties. In particular:

- the obligation for eliminating uses by 2025 is based on a "determined efforts" requirement rather than a stricter obligation;
- the requirements are compatible with the sound environmental management programs in Canada and most other OECD countries;
- Parties are not required to demonstrate 100% elimination or destruction/ disposal of PCBs. Rather, they are required to take steps designed to meet this goal.

The federal TSMP and the CCME PMTS provide a framework for the virtual elimination of PCB releases to the environment. The manufacture, import and sale of PCBs have been prohibited in Canada since 1977 and through CEPA regulations that came into effect in 1991. Federal

regulations under CEPA 1999 on PCB waste storage and destruction and waste import and export are consistent with the provisions of both the Stockholm Convention and the UNECE POPs Protocol.

At the national level, there are CCME Guidelines for the management of waste containing PCBs (1989), for mobile PCB destruction systems (1990), for mobile PCB treatment systems (1990), for PCB transformer decontamination (1995), and for the land-filling of Hazardous Wastes (1991), which apply to PCBs and provide standards and codes of practices.

In summary, there are numerous federal regulatory measures which help satisfy Canada's obligations on PCBs. The national CCME guidelines and provincial requirements also apply to PCBs. The provinces and territories also manage hazardous wastes, including waste containing PCBs, as outlined in Section 3.1.9 on managing stockpiles and wastes. Additional information on specific provincial actions on PCBs is found in Appendix C.

These measures fulfill Canada's obligations with respect to the production and use of PCBs.

3.1.2 RESTRICTION OF PRODUCTION AND USE

Article 3 para. 1(b) and Annex B

The Obligation

Parties shall restrict production and use of Annex B chemicals (DDT).

Rationale for the Obligation

DDT is the only substance identified in the Convention for restricted production and use. Production and use is allowed for disease vector control, as an intermediate in the production of dicofol and as an intermediate.

The use restrictions for DDT recognize the value of DDT for public health protection (e.g., vector control to prevent malaria and encephalitis) and it is therefore allowed in certain applications. The use of DDT for public health protection is endorsed by the World Health Organization, and the Protocol's requirements for DDT are consistent with the recommendations of that organization.

Implementation in Canada

In Canada, DDT has been identified for management as a Track 1 substance under the TSMP, and is targeted for virtual elimination.

DDT was first registered in 1946 and used in Canada to control insect pests in crops as well as in domestic and industrial applications. DDT was never manufactured in Canada. In response to environmental and safety concerns, most uses of DDT were phased out by the mid-1970s. Registration of all remaining uses of DDT was discontinued in 1985 with the understanding that existing stocks would be sold, used or disposed of by December 31, 1990. After that date, any sale or use of DDT in Canada represented a violation of the *Pest Control Products Act*.

Pesticides that are not legally registered in Canada are refused entry and returned to the exporter. The Importation for Manufacturing and Export Programme for Pest Control Products does not allow for the importation of DDT for the purposes of reformulation and subsequent

exportation. In addition, exports of DDT would be subject to notification according to the *Canadian Environmental Protection Act, 1999*, and no such notifications have been received.

DDT is listed on the Domestic Substances List (DSL), the Canadian inventory of existing industrial chemicals. While there are no known industrial uses in Canada, in theory it could be imported for non-pesticidal purposes or manufactured in Canada. Consequently, in 2003-2004, DDT was proposed for addition to the *Total, Partial or Conditional Prohibition of Certain Toxic Substances Regulations*, to prohibit the import of DDT for purposes other than those covered by the PCPA.

These measures fulfill Canada's obligations with respect to the restriction of production and use of DDT.

3.1.3 ELIMINATION OF IMPORT

Article 3 para. 1(a)(i) and 3 para. 2

The Obligation

Parties shall ensure that chemicals listed in Annex A or Annex B are imported only for the purpose of environmentally sound disposal or for a use permitted for the Party under either Annex.

Implementation in Canada

All ten substances⁹ designated for elimination or restriction of production and use are subject to elimination of import unless for environmentally sound disposal or for a permitted use or purpose.

Unless registered under the PCPA, no pesticide may be imported into Canada. None of the pesticides listed in Annex A or Annex B are registered under the PCPA.

Under CEPA 1999 regulations, import of the industrial chemicals HCB, mirex and of PCBs is prohibited. The import of DDT as an industrial chemical was proposed for import prohibition in 2003/04, under CEPA 1999 regulations. The import of waste containing PCBs is controlled under CEPA 1999 regulations.

These measures fulfill Canada's obligations with respect to the elimination of import of POPs.

3.1.4 ELIMINATION OF EXPORT

Article 3 para. 1(a)(ii) and 3 para. 2

The Obligation

Parties shall ensure that chemicals listed in Annex A or Annex B are exported only for the purpose of environmentally sound disposal, to a Party that has a permitted use of the chemical under either of the Annexes or to a non-Party that certifies that it is committed to comply with certain provisions of the Stockholm Convention.

⁹ Aldrin, Chlordane, Dieldrin, DDT, Endrin, Heptachlor, HCB, Mirex, Toxaphene, PCBs.

Implementation in Canada

Canada does not allow the manufacture, import or use of any of the ten substances listed in the previous section (the exception is PCBs in articles in use). As indicated in the section on Canada's obligations with respect to identifying and managing stockpiles, with the exception of PCBs, there are no stockpiles existing from pre-prohibition periods that could constitute stocks for export. Consequently, there is no practical way that export of these substances from Canada could occur.

In the case of PCBs, federal regulatory amendments are proposed under CEPA 1999 prohibiting the export of PCBs. Federal regulations under CEPA 1999 prohibit the export of PCB wastes except for disposal other than landfilling in USA.

While there is no practical way that export of these substances from Canada can occur, all of the ten substances are subject to the Export of Substances provisions of CEPA 1999. This gives the Minister of Environment prior notice of any proposed export, and provides the authority to impose conditions on their export.

In light of the above, mechanisms under CEPA 1999 ensure that Canada will meet its export control obligations when the Convention enters into force.

3.1.5 ASSESSMENT OF NEW PESTICIDES AND INDUSTRIAL CHEMICALS

Article 3 para. 3

The Obligation

Parties with existing regulatory and assessment schemes for new pesticides or industrial chemicals shall take measures to regulate with the aim of preventing the production and use of new pesticides and industrial chemicals exhibiting the characteristics of POPs and take the criteria for identification of POPs into consideration in such schemes.

Implementation in Canada

Canada has such existing regulatory and assessment schemes for new pesticides and industrial chemicals, and must comply with these provisions.

All "new" pesticides (i.e., not currently registered) are subject to assessment under the PCPA and cannot be used until assessments are complete and substances registered. The registration may identify acceptable uses, and therefore prohibit all other uses, or determine that no uses are acceptable. This process satisfies the requirement "to regulate".

Under CEPA 1999's *New Substances Notification Regulations (NSNR)*, all "new" industrial chemicals must undergo an assessment to determine if they are "toxic" to the environment or human health. Industrial substances that are not on the Domestic Substances List are considered to be new to Canada. These cannot be manufactured or imported until: the Minister of Environment has been notified prior to manufacturing or importation of the substance; relevant assessment information to determine toxicity to the environment and human health has been provided; and the assessment period has expired.

CEPA 1999 requirements apply to all new substances unless other applicable Acts contain the same requirements for notice and assessment, meaning that CEPA 1999 sets the standard and acts as a safety net for new substances that are not covered under other Acts of Parliament.

Following the *NSNR* assessment, a substance may be subject to any condition the Minister of Environment may specify, satisfying the requirement “to regulate”. Any substance with the POPs characteristics described in the Convention would at a minimum be subject to a condition, i.e. satisfying the requirement “to regulate”.

The federal TSMP establishes criteria (very similar to the POPs criteria under the Convention) to identify Track 1 substances targeted for virtual elimination. Both CEPA 1999 and the PCPA apply these criteria in their assessment schemes as key criteria for identifying substances for which manufacture and/or use are not acceptable in Canada.

As described above, all new pesticides and industrial chemicals with POPs characteristics will be regulated with the “aim” of preventing production and use.

These measures fulfill Canada’s obligations with respect to the assessment of new pesticides and industrial chemicals.

3.1.6 ASSESSMENT OF EXISTING PESTICIDES AND INDUSTRIAL CHEMICALS

Article 3 para. 4

The Obligation

The Convention requires countries to take measures under existing regulatory and assessment schemes to conduct assessments of in-use substances, considering, where appropriate, the screening criteria for candidates for addition to Convention (Annex D).

Implementation in Canada

Canada complies with this obligation under CEPA 1999 which establishes processes for the evaluation of existing substances. The existing PCPA allows for re-evaluation of existing pesticides. The new PCPA will build on this regime to ensure periodic re-evaluation of existing pesticides.

CEPA 1999 provides specific processes for identifying, categorizing, screening, and assessing toxic substances, as well as reviewing decisions of other jurisdictions.

The Domestic Substances List (DSL) is an inventory of approximately 23,000 substances manufactured in, imported into, or used in Canada on a commercial scale. By 2006, Environment Canada and Health Canada are required to categorize all substances listed on the DSL with respect to their persistence, bioaccumulation and inherent toxicity. Substances that meet these criteria will subsequently be subject to screening level assessments, using criteria established in CEPA 1999 *Persistence and Bioaccumulation Regulations*.

The Priority Substances List (PSL) was initiated under CEPA 1988. Under CEPA 1999, the Ministers must establish and amend the PSL from time to time to allow for additions to the list as a result of nominations from the public, screening-level risk assessments of substances on the DSL, reviews of decisions by other jurisdictions, or consultations with provinces / territories.

The TSMP is an overarching policy directive for all assessment schemes of existing substances. The Track 1 criteria of the TSMP are either identical or very similar to the POPs criteria of the Convention, and meet the “taking into consideration” requirement.

In light of the above, all existing pesticides and industrial chemicals undergoing an assessment are assessed against criteria in the TSMP, thereby meeting the obligation to take into consideration the criteria in the Convention which establish the characteristics of POPs.

Canada's obligations under the Stockholm Convention are fulfilled by assessments under CEPA 1999 and the PCPA.

3.1.7 SPECIFIC EXEMPTIONS FOR PRODUCTION AND USE

Article 4 and Annexes A and B

The Obligation

The Convention requires countries to register specific exemptions to Annex A or Annex B if needed upon becoming a Party and, if an extension to such a registration is to be requested, provide a suitable justification report for the extension.

Rationale for the Obligation

A Register of Specific Exemptions is established for identifying Parties that have a specific exemption for production or use. (For PCBs, a specific exemption for articles in use applies to all Parties, hence it does not need to be added to the Register.)

Implementation in Canada

Canada will not produce or use any of the substances that require a listing in the Register, and therefore will not request that any exemptions be added to the Register. Therefore, Canada is in compliance with this obligation.

3.1.8 REDUCTION OF UNINTENTIONAL PRODUCTION OF BY-PRODUCT EMISSIONS

Article 5

The Obligation

Parties are required, at a minimum, to take the following five measures to reduce total releases of by-product emissions of Annex C chemicals (dioxins, furans, HCB, PCB) from anthropogenic sources "with the goal of their continuing minimization and, where feasible, ultimate elimination":¹⁰

- Develop and implement an action plan;
- Promote measures to achieve real release reductions or source elimination;
- Promote the development and, where it deems appropriate, require the use of substitute or modified materials, products and processes;
- Promote, and in accordance with implementation schedule of the above-mentioned action plan, require Best Available Techniques (BAT) for new sources of emissions within specified source categories; and
- Promote BAT and Best Environmental Practices (BEP) for new and existing sources of emissions within specified source categories.

¹⁰ The Report of the fifth and final Intergovernmental Negotiating Committee (INC-5) session conveys the Committee's understanding that the term "feasible" includes both technical and economic considerations.

Rationale for this Obligation

Four unintentionally produced chemicals are identified in the Convention for reduction of emissions from anthropogenic sources: dioxins, furans, HCB and PCBs. These POPs are unintended and unwanted by-products formed and released as a result of incomplete thermal combustion processes or chemical reactions involving organic substances and chlorine.

Implementation in Canada

Dioxins, furans, HCB, and PCBs are all targeted for management as Track 1 substances, and therefore subject to virtual elimination under the TSMP. As part of implementing the TSMP, the federal government engages stakeholders in order to propose and implement domestic and international actions to protect the health of Canadians and the environment. The CCME Policy for the Management of Toxic Substances (PMTS) reaffirms the federal, provincial and territorial approach to the management of toxic substances, and outlines a national approach to dealing with these Track 1 substances.

The presence of dioxins and furans in the Canadian environment can be attributed to three principal sources: source (point, area, mobile) discharges to water, air and soil, contamination from *in situ* dioxins and furans, and loadings from long-range transboundary air pollution.

Dioxin and furan contamination found in soil, water, sediments, and tissues (*in situ* contamination) is the subject of national guidelines for dioxins and furans. These guidelines outline ambient or alert levels that may be used by jurisdictions as benchmarks for the management and monitoring of dioxins and furans already present in the environment.

Point source discharges to water from the pulp and paper sector have been the target of aggressive federal and provincial regulation, as well as industry innovation and change. Discharges of dioxins and furans to the aquatic environment from this sector reached non-measurable levels in 1995.

Canada's approach focuses on actions to control dioxin and furan releases. Since the same combustion processes and chemical reactions give rise to by-products of all four chemicals, these measures will result in commensurate reductions of HCB and PCB emissions.

HCB is no longer in commerce in Canada. The principle sources of HCB are from the application of HCB-contaminated chlorinated pesticides and the incineration of wastes. HCB can also be released from the volatilization/leaching from in-service utility poles (treated wood), and from other minor sources, such as cement kilns, chemical production, the use of ferric/ferrous chloride and some chlorinated solvents.

Develop and Implement an Action Plan for Unintentionally Produced Chemicals

The required action plan must identify, characterize and address the release of the four unintentionally produced chemicals. The action plan:

- must be developed within two years of the date of entry into force for Canada (the date of entry into force for Canada is May 17, 2004);
- must include:
 - an evaluation of current and projected releases including source inventories and release estimates
 - an evaluation of laws and policies regarding management of releases;
 - an implementation strategy and schedule; and

- an ongoing 5-year review of the success of the strategy;
- should take into consideration the specific emission source categories identified in the Convention.

Canada is well positioned to develop such an action plan. In January 1999, Environment Canada and a Federal-Provincial Task Group published a national Dioxins, Furans and Hexachlorobenzene Inventory of Releases. The inventory will be updated as new information becomes available (the first update was through a Release Inventory Report in February 2001). The major sources for release of dioxins, furans and HCB in Canada are municipal incinerators, residential wood stoves, sintering plants, steel plants and salt-laden wood combustion. The inventory indicates that between 1990 and 1997, there was an 18% reduction in atmospheric releases.

In addition, dioxins, furans, and HCB have been added to the National Pollutant Release Inventory since the year 2000. All facilities carrying out tests/analysis for dioxins and furans under NPRI are encouraged to analyze / report on HCB and co-planar PCBs. Based on the 1999 national inventory, the CCME initiated the Canada-wide Standards (CWS) for Dioxins and Furans, a national action plan to identify priority sectors for prevention and/or reduction measures for dioxins and furans, consistent with the objective of virtual elimination. To ensure continuing reduction in emissions, standards for dioxins and furans emitted from identified priority source sectors have been developed under the Canada-wide Standards (CWS) process, including incinerators, coastal pulp and paper boilers, iron sintering plants, steel manufacturing electric arc furnaces and conical waste combustors. The CWS for Dioxins and Furans provides for development and implementation of a reduction strategy consistent with the Convention's action plan, such as implementation schedules, regular progress reporting, review of regulatory instruments, and evaluation of CWS emission limit values over time.

The CCME Dioxins and Furans CWS Development Committee prepared a Status of Activities Related to Dioxins and Furans Canada-wide Standards in February 2003.¹¹ The report provides information on the status of the five Canada-wide Standards developed to-date, which account for 65% of national releases to the atmosphere. There are 18 remaining sectors identified as potential sources of dioxins and furan releases to the atmosphere, and 5 sectors to soil.

Other Canadian initiatives which have been or are being used to reduce by-product emissions of dioxins, furans, HCB and PCBs include:

1. Provincial / territorial regulations and facility specific approvals (such as operating licenses or permits) to control emissions of dioxins, furans and HCB (for information on provincial initiatives see Appendix C);
2. The Strategic Options Processes (SOPs) under CEPA developed management options for substances declared CEPA-toxic. Relevant to the four unintentionally produced substances covered by the Stockholm Convention, there were SOPs for the wood preservation, base metal smelting and steel manufacturing sectors, as well as for HCB as a substance;
3. National CCME guidelines and codes of practice for specific sectors, which address dioxins and furans as well as other substances;

¹¹ The Status of Activities Related to Dioxins and Furnas Canada-wide Standards in February 2003 is available at: www.ccme.ca/assets/pdf/d_f_sector_status_rpt_e.pdf.

4. National guidelines for dioxin and furan contamination in soil, water, sediments, and tissues which may be used by jurisdictions to manage and monitor dioxins and furans already present in the environment;
5. Regional action plans developed with the US and Mexico for PCBs, dioxins, furans, and HCB under the Sound Management of Chemicals initiative of the North American Agreement on Environmental Cooperation; and
6. Activities under the Canada-U.S. Great Lakes Binational Toxics Strategy and the Canada-Ontario Agreement on the Great Lakes.

A 2000 progress report on Canada's Chlorinated Substances Action Plan provided a summary of initiatives from the 1990s that identified and focused action on priority emission sources of dioxins, furans, HCB, PCBs and other organochlorines.

Promote Measures to Achieve Real Release Reductions or Source Elimination

Each Party to the Stockholm Convention must promote the use of available, feasible and practical measures to expeditiously achieve real and meaningful reductions in emission releases or source elimination for unintentionally produced chemicals.

Pollution prevention (P2) is a cornerstone of federal and national policies and legislation addressing POPs. Pollution prevention promotes continuous improvement through the use of processes, practices, materials, products or energy that avoid or minimize the creation of pollutants and wastes, at the source.

Under CEPA 1999, priority is to be given to pollution prevention actions in developing proposed regulations, instruments or control actions for substances listed in Schedule 1 of CEPA 1999 (which include dioxins, furans, HCB and PCBs). These substances were also identified as Track 1 substances under the TSMP and have a management objective of virtual elimination.

The federal government has adopted a Pollution Prevention Strategy for Action. This strategy promotes pollution prevention through a variety of measures, which include:

- reviewing legislation, regulations and policy;
- developing practical tools, such as guidelines and codes of practice;
- educating the public and training relevant groups in the technical aspects of pollution prevention;
- promoting research, development and demonstration initiatives;
- adoption of sustainable production in industrial and manufacturing processes; and
- providing information that illustrates how pollution prevention fits into daily activities.

The Canadian Pollution Prevention Information Clearinghouse, one of the components of the federal strategy, provides public information on pollution prevention through Environment Canada's Green Lane web site. The clearinghouse provides "how-to" information for individuals, communities, and the public and private sectors, and highlights pollution prevention success stories.

The CCME also has a pollution prevention strategy that includes a Pollution Prevention Awards and Recognition Program. This program recognizes companies and organizations showing leadership in pollution prevention.

Canada-wide Standards for Dioxins and Furans promote measures to achieve real and meaningful reductions in emission releases, as pollution prevention was encouraged in the

development of CWSs as the preferred method for avoiding the creation of by-products or reducing releases to the environment.

In addition to pollution prevention, Canada promotes pollution abatement technologies to reduce emission releases. For example, Environment Canada supports a wide range of environmental technology advancement activities that reduce risks from toxic substances. Promotion measures aimed at the public and private sectors include: public information and awareness, technology demonstration, and technology transfer for developing and using appropriate solutions.

Canada also has non-regulatory initiatives which promote reduction of emission releases. For example, during the 1990s the Accelerated Reduction/Elimination of Toxics (ARET) Program targeted the reduction or elimination of releases of 117 toxic substances, including dioxins, furans, HCB and PCBs.

Promote the Development and, where Appropriate, Require the Use of Substitute or Modified Materials, Products and Processes

Each Party must promote and, “where it deems appropriate”, require using substitute or modified materials, products and processes to prevent the formation and release of unintentional POPs by-products, taking into consideration the general guidance on prevention and release reduction measures in Annex C and guidelines to be adopted by the Conference of Parties.

Canada can, and does, promote the use of substitute or modified materials, products and processes as part of an overall suite of pollution prevention initiatives. Canada can make this a requirement in areas where it deems appropriate. Canada is prepared to pursue such a course, using a pragmatic approach where domestic policies and specific cases warrant.

Promote, and in Accordance with Implementation Schedule of its Action Plan, Require Best Available Techniques (BAT) for New Sources of Emissions within Party Specific Priority Sectors

Canada must promote, and in accordance with implementation schedule of its action plan, require Best Available Techniques (BAT) for new sources of emissions within specific source categories identified by Canada in its action plan (with a particular focus on those categories listed in Part II of Annex C of the Convention - see Table 3 below). The Convention allows for phasing in of this requirement, providing Canada with the ability to implement BAT up to the year 2008 (four years after entry into force of the Convention for Canada). New sources of emissions are defined as those sources where construction or substantial modification has started at least one year after date of entry into force for Canada. Therefore this obligation would only apply to new sources in these categories coming on-line in 2005 and beyond.

Canada supports the Convention’s definitions of “best available techniques”, which is identical to the definition used in the UNECE POPs Protocol (which Canada ratified in 1998). The definition allows suitable flexibility to apply BAT. The Convention:

- does not prescribe or impose a BAT but provides general guidance. Canada is allowed a certain amount of discretion to determine “best” and “available” within its jurisdiction and for a particular situation; and
- allows consideration of economic costs and advantages, an approach that is consistent with the TSMP.

The Convention allows a Party to use release limit values or performance standards to comply with its requirements for BAT. In Canada, the CWS for Dioxins and Furans include emission targets or actions which will significantly move toward achievement of virtual elimination of releases. The development of CWS for Dioxins and Furans have helped to identify best available techniques for new sources in priority sectors, and BAT for new sources is already a requirement for some emission reduction initiatives. For example, the CWS for Dioxins and Furans - Waste Incineration requires new or expanding facilities to achieve the Standard by applying best available pollution prevention and control techniques, setting a numerical emission limit value for releases from each facility. Therefore, the establishment of a CWS for specific source sectors will satisfy the requirement for BAT for new sources in that sector.

A draft national policy, currently under development for federal / provincial / territorial discussion, is considering requirements for new installations in sectors not covered by an emission limit value or performance standard. This draft national policy may also include BAT requirements for new sources.

For the most part, construction of any “new” sources in the specific source categories in Table 3 would represent significant and infrequent undertakings. Canada will implement this obligation through existing provincial and territorial assessment, licensing and permitting processes. All new facilities that are approved and licensed in Canada will be expected to use BAT for emission controls, with individual jurisdictions determining the appropriate BAT for particular facilities.

Any additional categories identified by Canada in its action plan would be based on domestic policy decisions to pursue such actions in Canada. The February 2003 CCME Status of Activities Related to Dioxins and Furans CWS report¹² makes recommendations for sector-specific actions. Through the joint federal, provincial, territorial CWS for Dioxins and Furans process, and the national strategic options processes, Canada has already self-identified key source categories for controlling by-product emissions and is developing action plans to deal with priority sectors. These Canadian initiatives cover, or are considering, the specific source categories identified in the Convention, as illustrated below in Table 3 and in the following section.

¹² www.ccme.ca/assets/pdf/d_f_sector_status_rpt_e.pdf

Table 3: Source Categories for Initial Focus for Promoting / Requiring BAT Under the Convention

Convention Source Categories	Control Actions in Canada	Status of BAT
a) Waste incinerators, including co-incinerators of municipal, hazardous or medical waste or of sewage sludge	<ul style="list-style-type: none"> • CCME guidelines on Waste Incineration, PCB Destruction (Incineration), and Biomedical Waste Guidelines • CWS for dioxins and furans for waste incineration (municipal solid waste, hazardous waste, sewage sludge and bio-medical waste) • CWS for dioxins and furans for conical municipal waste combustion in Newfoundland and Labrador 	<ul style="list-style-type: none"> • Emission Limit Values established for new & existing sources • Pollution Prevention Strategy being developed for waste incinerators • Jurisdictions developed implementation plans to meet CWS and many are implementing the plans. Plan implementation on federal land is delayed, further consultation is required as part of the regulatory development process.
b) Cement kilns firing hazardous waste	<ul style="list-style-type: none"> • CCME Guidelines for the use of Hazardous and Non-Hazardous Wastes as Supplementary Fuels in Cement Kilns (1996) • Environment Canada considering development of comprehensive Environmental Code of Practice for Cement Manufacturing facilities 	<ul style="list-style-type: none"> • Emission Limit Values established for new and existing sources. These limits may be updated to reflect ongoing assessment of BAT. • Proposed Environment Canada Code would include Emission Limit Values and operating practices.
c) Production of pulp using elemental chlorine or chemicals generating elemental chlorine for bleaching	<ul style="list-style-type: none"> • Federal and provincial pulp and paper regulations addressing mills using chlorine bleaching processes. • All pulp and paper mills are meeting the regulations 	<ul style="list-style-type: none"> • Emission Limit Values set which prohibit measurable concentrations of dioxin and furan in effluent.

**STRATEGIC IMPLEMENTATION FRAMEWORK FOR INTERNATIONAL COMMITMENTS
ON HAZARDOUS AIR POLLUTANTS (HAPs): 2004 UPDATE**

<p>d) The following thermal processes in the metallurgical industries:</p> <ul style="list-style-type: none"> • Secondary copper production • Secondary zinc production 	<ul style="list-style-type: none"> • PSL2 assessment designated PM emissions from the copper and zinc smelters and refineries as CEPA toxic which will cover all primary and secondary facilities in this sector. • PSL2 smelter releases assessment of toxicity is based on releases from 6 identified copper smelters, 4 copper refineries and 4 zinc plants. This grouping constitutes the working definition of primary and secondary sectors for this CEPA-toxic substance. • The SOP for base metals sectors included a few primary facilities which process secondary copper materials. However, the secondary sector likely extends beyond those few facilities. 	<ul style="list-style-type: none"> • Note - there is limited information available on dioxin/furan emissions from this sector. BAT for controlling PM emissions from the zinc and copper production sector will be established under CEPA. Co-benefits for dioxins/furans are expected.
<p>Sinter plants in the iron and steel industry</p>	<ul style="list-style-type: none"> • SOP for steel manufacturing addressed iron sintering emissions • CWS for dioxins and furans from iron sintering plants endorsed in March 2003. 	<ul style="list-style-type: none"> • CWS developed phased-in emission limits for dioxins and furans from new and existing plants, based on review of BAT, required development of a P2 Strategy • CWS includes schedule and targets for new and existing plants, based on review of BAT.
<p>Secondary aluminum production</p>	<ul style="list-style-type: none"> • Require estimation of dioxin / furan emissions from this sector • Currently not a high priority source for reduction 	<ul style="list-style-type: none"> • Note - there is very little information available on sector emissions and significance. BAT for this sector is not established.

Promote BAT and Best Environmental Practices (BEP) for New and Existing Sources of Emissions in Specified Source Sectors

Canada must promote, in accordance with its action plan, the use of BAT and BEP for existing sources of emissions in the specified source sectors for initial focus (identified in Table 3), and for new and existing sources in other specified source categories (see Table 4).

BEP is defined as the application of the most appropriate combination of environmental control measures and strategies. BEP is included in the Convention to acknowledge and reference other environmental approaches in addition to BAT. The definition of BEP is broad and allows countries flexibility and jurisdictional discretion in its determination.

General guidance is provided in the Convention on preventing or reducing releases of unintentional by-products through the use of BAT. Similar guidance on BEP is being developed for consideration by the Conference of Parties. Canada participates in an expert group on BAT/BEP established at the sixth meeting of the Stockholm Convention Intergovernmental Negotiation Committee (INC-6) in June 2002. The first meeting of the expert group was held in

**STRATEGIC IMPLEMENTATION FRAMEWORK FOR INTERNATIONAL COMMITMENTS
ON HAZARDOUS AIR POLLUTANTS (HAPs): 2004 UPDATE**

Raleigh, NC in March 2003 and a subsequent meeting was held in December 2003 in Chile. Canada will continue to actively participate in this process.

Pollution prevention and best available control technologies are considered and promoted in joint federal, provincial and territorial decision-making processes such as CWSs and CCME guidelines, to control dioxin and furan releases from new and existing sources from priority source sectors. The CWS and SOP initiatives were developed through a multi-stakeholder process, and recommendations on BAT and BEP for some sectors are publicly available through the CCME web site.

Pollution prevention is highlighted under CEPA 1999. Consistent with this emphasis, a Pollution Prevention Planning Handbook is available to Canadians on preparing a pollution prevention plan for a Track 1 substance (such as dioxins, furans, HCB and PCBs). Factors to consider in this planning process include currently available technologies or pollution prevention practices, and there is generic advice on “best practices”.

Canada is already taking action on identified priority source sectors of dioxins and furans in specified source categories (listed in Table 4 below), as required under the Convention. As part of Canada’s move towards virtual elimination of these substances, BAT and BEP will be promoted for new and existing sources as part of sectoral reduction strategies and actions.

Table 4: Source Categories Requiring Promotion of BAT and BEP Under the Convention

Convention Source Categories	Control Actions in Canada
a) Open burning of waste, including burning of landfill sites	<ul style="list-style-type: none"> • The Canada-US Great Lakes Binational Toxic Strategy is implementing a strategy to reduce household garbage burning (e.g., in barrels, pits, woodstoves, outdoor boilers) and studying landfill fires. • The CWS for dioxins and furans is supporting activities in the strategy and is considering implementing it at a national level. Currently, BEP for open burning includes public education programs promoting behavioural change. There is no BAT available for burning small quantities of household waste.
b) Thermal processes in the metallurgical industry not mentioned in Part II	<ul style="list-style-type: none"> • Study of dioxin / furan emissions from lead & magnesium production • CWS for dioxins and furans developed for steel manufacturing electric arc furnaces: includes phased-in emission limits for new and existing facilities (based on review of BAT) and development of P2 Strategy • SOP for base metals smelters, worked with industry to characterize primary sector’s dioxins and furans emissions.
c) Residential combustion sources	<ul style="list-style-type: none"> • CWS for particulate matter to be developed for residential wood combustion, co-benefits with dioxins and furans • Public education on clean burning and promoting change-outs to advanced technology stoves in some regions.
d) Fossil fuel-fired utility and industrial boilers	<ul style="list-style-type: none"> • Dioxins and furans may be reduced as a co-benefit of taking action to reduce PM and ozone.

**STRATEGIC IMPLEMENTATION FRAMEWORK FOR INTERNATIONAL COMMITMENTS
ON HAZARDOUS AIR POLLUTANTS (HAPs): 2004 UPDATE**

e) Firing installations for wood and other biomass fuels	<ul style="list-style-type: none"> • CWS for dioxins and furans – Burning of salt laden wood in coastal BC pulp and paper boilers. • Some provinces have plans to phase out beehive burners used to burn clean wood waste.
f) Specific chemical production processes releasing unintentionally formed persistent organic pollutants, especially production of chlorophenols and chloranil	<ul style="list-style-type: none"> • CEPA 1999 notice on chloranil published in Part 1 of the <i>Canada Gazette</i>
g) Crematoria	<ul style="list-style-type: none"> • CWS for dioxins and furans reviewing emissions from crematoria • Subject to provincial / territorial guidelines or other requirements
h) Motor vehicles, particularly those burning leaded gasoline	<ul style="list-style-type: none"> • Leaded fuel is not used in Canada (except for use in racing vehicles and in certain aviation fuels - proposed amendment to <i>Gasoline Regulations</i> will extend this exemption to January 1, 2008)
i) Destruction of animal carcasses	<ul style="list-style-type: none"> • Subject to provincial / territorial guidelines or requirements in a permit/order
j) Textile and leather dyeing (with chloranil) and finishing (with alkaline extraction)	<ul style="list-style-type: none"> • MOUs signed with 10 importers of chloranil and chloranil-based dyes and pigments
k) Shredder plants for the treatment of end of life vehicles	<ul style="list-style-type: none"> • Under consideration for CEPA PCB regulations
l) Smouldering of copper cables	<ul style="list-style-type: none"> • No actions ongoing or planned for this sector.
m) Waste oil refineries	<ul style="list-style-type: none"> • Under consideration as national inventory item

Notes to Tables 4 and 5:

Emission limits for dioxins / furans based on BAT are developed for electric arc furnaces from the steel sector and coastal pulp and paper mill boilers.

Sources (g) to (m) in Table 4 are currently not on the national dioxins / furans release inventory as they are not industrial facilities and are not necessarily required to report to the NPRI. Canada is currently gathering emission information for these sectors.

Other sources of air releases of dioxins and furans being studied by Canada are beehive burners in the western forest industry, agricultural/residential fuel combustion, electric power generation, foundries, and petroleum refineries. Canada is also addressing sources that can release dioxins and furans and HCB to other media, e.g., biosolids from sewage sludge, pentachlorophenol treated wood, pesticides use.

3.1.9 MANAGING STOCKPILES AND WASTES - OVERVIEW

Article 6.1

The Obligation

With the goal of managing stockpiles and wastes in a manner protective of human health and the environment, this obligation includes the following:

- developing appropriate strategies for identifying, and then identifying to the extent practicable:
 - stockpiles consisting of or containing intentionally produced POPs;
 - products, articles in use, and wastes consisting of, or containing or contaminated with any of the 12 POPs;
- managing stockpiles in a safe, efficient and environmentally sound manner;

- applying environmentally sound handling, collection, transport, storage and disposal measures to wastes and articles and products upon becoming waste; and
- developing appropriate strategies for identifying sites contaminated by POPs, and remediation (if undertaken) in an environmentally sound manner.

3.1.9.1 IDENTIFYING AND MANAGING STOCKPILES

Article 6.1 a) i, b) and c)

The Obligation

Each Party is required to develop “appropriate” strategies for identifying stockpiles of intentionally produced POPs substances. Each Party is to then use these strategies to identify “to the extent practicable” stockpiles, and to manage stockpiles “as appropriate, in a safe, efficient and environmentally sound manner”. Stockpiles of chemicals subject to elimination or restriction that are no longer allowed to be used are deemed to be wastes.

Implementation in Canada

The wording of this obligation is such that there is considerable flexibility for Canada to develop appropriate strategies to identify and manage stockpiles. Furthermore, the INC-5 Report acknowledges that countries may still have small quantities of POPs remaining with end-users, for example in “the farmer’s barn”, after eliminating their production and use, banning their sale, or withdrawing their registration. While Parties are encouraged to promote programs aimed at collecting these small quantities, this is not an obligatory requirement.

Canada has taken steps that meet the requirement to develop appropriate strategies to identify stockpiles, and then identify and manage any stockpiles in an appropriate manner. These steps are outlined below for: (i) PCBs; and (ii) other intentionally produced POPs substances (pesticides).

PCBs

PCBs were never manufactured in Canada, but they were imported for use and have been used in a wide range of products. The use of PCBs has been prohibited for many years under the federal *Chlorobiphenyls Regulations*, except, namely, for specified existing electrical equipment. Federal and provincial strategies and initiatives to deal with PCB stockpiles and wastes began in the late 1970s, with federal regulations and a CCME Action Plan to phase out PCBs from service and to develop national codes for storage, handling and destruction of PCBs.

Provinces ensure the proper collection, storage and disposal of PCB wastes through regulations. For example, in Manitoba, out-of-service equipment (such as electrical transformers and capacitors) and solid PCB contaminated materials are collected and stored under the province’s *PCB Storage Site Regulations*. Provincial governments issue approval licences for PCB storage sites and conduct regular inspections to ensure that material is secure and not entering the environment. The owner or producer of the PCBs, or PCB contaminated material, is responsible for their proper storage or disposal.

In December 2001, Ontario began consultations on a draft regulation for the phase-out of PCB waste in storage. The draft regulation proposes to eliminate these wastes over a three-year time frame. As part of the phase-out schedule, all PCBs currently stored at sensitive sites such as schools and hospitals will be eliminated within one year of the regulation coming into force.

Additional information on specific provincial actions on PCBs is found in Appendix C.

The CCME has published annual National Inventories of PCBs in Use and PCB Wastes in Storage in Canada¹³ since 1989. This joint federal/provincial/territorial inventory identifies and classifies (e.g., by high or low concentration levels) amounts of PCBs in-use in electrical equipment, in storage, and destroyed. PCB owners are required by federal and provincial regulations to supply information on PCB wastes in storage, and will be required to report on the amounts of PCBs in-use in electrical equipment (supplemented by compliance inspections under the *Chlorobiphenyls Regulations*). Information on amounts of PCBs destroyed is supplied by operators of commercial PCB treatment and destruction systems.

The 2002 Annual Report of the National Inventories of PCBs in Use and PCB Wastes in Storage in Canada indicates that nationally, between 1992 and 2002, PCB items in use declined by one-third to 9,647 tonnes; PCBs stored in waste declined by 30 percent to 99,190 tonnes; and the number of PCT waste storage sites declined by 40 percent to 1,861 sites. The national declines started in earnest in 1995, when the Swan Hills Waste Treatment Centre in Alberta. Some provinces use this facility to dispose of PCB wastes, as it is the only stationary PCB disposal facility currently operating in Canada.

Pesticides

None of the nine POPs pesticides was ever manufactured in Canada, and their use has been discontinued for many years. Any stocks which existed at the time that registration was withdrawn were to be sold, used or disposed of (between 1981 and 1995, depending on the chemical), after which their sale or use became a violation of the PCPA. Therefore, there is no commercial reason to maintain stockpiles. Post-registration monitoring and compliance programs have been established to ensure compliance with federal and provincial legislation.

Any stockpiles of POPs would be considered hazardous waste in Canada. Through the CCME Hazardous Wastes Task Group, federal, provincial and territorial governments are currently working to develop environmentally sound management criteria for hazardous wastes.

Although, as noted above, there is no required obligation, federal, provincial and territorial hazardous waste programs address the small quantities of retired material in the possession of consumers, and have collected and safely disposed of pesticide products which are no longer registered. Information from these programs has not identified substantive quantities of banned POPs that would be considered stockpiles, nor are any such stockpiles expected to exist.

Since the mid-1980s, programs have been set up at the provincial and municipal level across Canada to collect hazardous wastes. These programs generally include pesticides that are no longer used, have been discontinued, or were banned. Hazardous waste management facilities handle the products in accordance with federal and provincial guidelines.

In most provinces, rural and urban collection programs have been established at different times specifically to collect pesticides that were no longer being used.¹⁴ Examples include:

- The Ontario Ministry of Agriculture and Food and Rural Affairs conducted the Ontario Waste Agricultural Pesticide Collection Programme in 1991-92. This program was widely publicized

¹³ Annual National Inventories of PCBs in Use and PCB Wastes in Storage in Canada available at Environment Canada's Polychlorinated Biphenyls (PCB) Website: www.ec.gc.ca/wmd-dgd/default.asp?lang=En&n=FDC36D83-1

¹⁴ Additional information on this program is available at www.croplife.ca/english/aboutcpi/aboutcpi.html.

and, using DDT and chlordane as examples, collected approximately 1,180 kilograms of DDT and 293 kilograms of chlordane. A subsequent pilot project, the Pesticide Disposal Pilot Project to dispose of waste registered and unregistered pesticide products, was initiated in August 1995. As of August 1996 neither DDT nor chlordane has been brought forward for disposal. Limited quantities (e.g., 300 grams of DDT, 2 kilograms of chlordane) have been reported in municipal collections of Household Hazardous Waste Collection programs, though information on specific chemicals is not available from all sites;

- The Alberta Operation Clean Farm program in Central Alberta collected almost 90 tonnes of old, obsolete or unwanted pesticides collected from farmsteads across the region in 2003;
- Manitoba has conducted programs since the 1970's to collect and appropriately manage restricted pesticides such as DDT, and runs a Household Hazardous Waste program that collects and manages Household Wastes, including pesticides.
- In 2002, the Newfoundland and Labrador Obsolete Pesticide Collection Program collected, for proper disposal, 1800 kg of pesticides, including chlordane, DDT and mercury-based fungicides.

The gradual restriction of the range of permitted uses of DDT was facilitated by the availability of effective alternatives. The phased reduction was also important in that it helped to avoid the creation of a large-scale disposal problem.

Provincial legislation provides additional regulatory powers to control the transportation, storage, disposal and use of pest control products, taking into account regional conditions and concerns. Municipalities may also control aspects of pesticide use and disposal. Some of the earliest pesticide collection programs at the municipal-level were set up in the 1960s and 1970s to collect and dispose of DDT. These programs were developed to manage unused stocks of certain formulations of DDT, resulting from the regulatory decisions to limit the permitted uses.

In summary, Canada has a thorough understanding of the status of stockpiles of PCBs and POPs pesticides, an appropriate strategy for identifying stockpiles, and in-place systems for handling and disposing of them as hazardous wastes.

3.1.9.2 DEVELOP APPROPRIATE STRATEGIES TO IDENTIFY PRODUCTS AND ARTICLES IN USE AND WASTES

Article 6.1(a)(ii)

The Obligation

Each Party is required to develop "appropriate strategies" to identify products and articles in use and wastes containing or contaminated with any of the 12 substances under the Convention.

Implementation in Canada

Canada has taken steps that meet the requirement to develop appropriate strategies to identify products and articles in use and wastes containing or contaminated with any of the 12 substances. Much of the rationale for Canada's strategy on stockpiles (in the preceding section) is relevant to products, articles in use and contaminated wastes:

- PCBs in-use and PCB contaminated material are identified in a national annual inventory and regulated throughout their life cycle to environmentally sound disposal;
- POPs pesticides have never been produced in Canada, their use has been discontinued for many years, no substantive product stocks are currently identified, and any such products or articles containing POPs would be treated as hazardous waste;

- the INC-5 Report acknowledges that small quantities of POPs products and POPs in articles in use may remain with end-users, and there is no obligation to collect these small amounts;
- unintentional trace contaminants of the ten intentionally produced substances in existing products and articles (i.e., as of the date of entry into force of the Convention) are exempted; and
- the federal government regulates the content of contaminants (such as dioxins) in pesticides in Canada. Monitoring programs indicate that the dioxin content in currently registered pest control products is very low. The Pest Management Regulatory Agency is conducting further reviews to identify pesticides which may be contaminated with unwanted POPs by-products, to quantify the contaminant levels.

Once the new PCPA has received Royal Assent, the Pest Management Regulatory Agency will develop a database on pesticide sales in Canada.

Canada has an appropriate strategy to identify products and articles in use and wastes containing or contaminated with any of the twelve substances through the use of in-place hazardous waste management schemes.

3.1.9.3 HANDLE AND DISPOSE OF WASTES IN AN ENVIRONMENTALLY SOUND MANNER

Article 6.1(d) i, ii, iii

The Obligation

Each Party is required to “take appropriate measures” so that wastes containing POPs wastes are:

- handled, collected, transported and stored in an environmentally sound manner;
- disposed of in such a way that “the POP content is either destroyed, or irreversibly transformed so that they do not exhibit the characteristics of POPs or otherwise disposed of in an environmentally sound manner when destruction or irreversible transformation does not represent the environmentally preferred option or the POP content is low, taking into account international rules, standards and guidelines”, as well as “relevant global and regional regimes governing the management of hazardous wastes”;
- not permitted to lead to recovery, recycling, reclamation, direct reuse or alternative uses of POPs; and
- not be transported across international boundaries without taking into account international rules, standards and guidelines.

Implementation in Canada

Canada is an active participant in international efforts to develop environmentally sound management criteria for hazardous wastes. At the national level, the federal government is working on domestic environmentally sound management criteria with the provinces and territories through the CCME Hazardous Wastes Task Group. This will enable Canada to comply with the requirement to take appropriate measures so that wastes are handled, collected, transported, stored and disposed of in an environmentally sound manner. The federal, provincial and territorial governments and industry have cooperated to develop a broad definition of hazardous wastes and to assess the detrimental effects of these wastes on public health and the environment.

Management of hazardous waste facilities in Canada is primarily a provincial responsibility. Provinces regulate the management and control of treatment facilities and landfill sites, and authorize entry of imported hazardous wastes into their jurisdiction. Most provinces and territories have established programs to control or restrict the storage, use and disposal of hazardous substances in an environmentally sound manner. The provinces also grant authorizations (i.e., permits, licenses, and certificates) for most carriers that transport hazardous wastes. Additional information on specific provincial actions on management of hazardous waste facilities is found in Appendix C.

The federal government assists in developing the national hazardous waste management system and establishing national objectives and standards. The federal government has the primary responsibility for establishing transportation safety requirements of shipments under the *Transportation of Dangerous Goods Regulations*; and controlling transboundary movements of hazardous wastes for environmentally sound disposal or recycling/recovery operations under the *Export and Import of Hazardous Waste Regulations* of CEPA 1999.

PCBs are the primary POP of concern for hazardous waste management in Canada. There are federal, provincial and territorial regulations and CCME guidelines specifically to address the proper handling, storage and treatment and disposal of PCB wastes in an environmentally sound manner. Canada also cooperates with the U.S. and Mexico under the Commission for Economic Cooperation (CEC) North American Regional Action Plan (NARAP) for the Management of PCBs, which is consistent with international and domestic obligations for sound environmental management of PCB wastes.

3.1.9.4 TRANSBOUNDARY MOVEMENT OF STOCKPILES AND WASTES

Article 6.1(d) iv

The Obligation

Each Party is required to “take appropriate measures” so that wastes containing POPs are not be transported across international boundaries without taking into account international rules, standards and guidelines.

Implementation in Canada

Canada’s domestic regulations regarding import and export of hazardous wastes are instrumental in meeting its obligations under a number of international agreements, for example the United Nations Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989 (ratified by Canada in 1992); the Organization for Economic Co-operation and Development (OECD) Decision of Council on the Control of Transboundary Movements of Wastes Destined for Recovery Operations, C(2001)107, June 2001; and the Canada-U.S.A. Agreement on the Transboundary Movement of Hazardous Wastes, 1986 (as amended in 1992). The Stockholm Convention establishes a waste regime that is consistent with the Basel Convention. Canada complies with its international obligations under the Basel Convention to ensure that any hazardous wastes imported and exported are handled and disposed of in an environmentally sound manner.

The Conference of Parties of the Stockholm Convention is required to co-operate closely with the appropriate bodies of the Basel Convention in developing criteria and strategies to address POPs wastes. Canada is actively participating in this process. In particular, Canada is leading an update to the Basel Convention Technical Guidelines on PCBs, polychlorinated terphenyls (PCTs) and polybrominated biphenyls (PBBs) (which include recognition of the Stockholm

waste provisions) and the development of the UNEP Framework technical guidelines on POPs as wastes. The disposal practices that will be recommended in the UNEP Framework technical guidelines on POPs and the Basel Technical Guidelines on PCBs will be promoted in Canada.

Hazardous wastes are controlled and tracked in Canada and POPs-containing wastes are controlled when they exhibit a hazard characteristic. Specific identification labels are required under Canadian regulations to track waste shipments containing PCB, HCB and dioxin and furan. Other POPs are more generally identified and controlled as (organic and chlorinated) hazardous waste. Proposed revisions to the *Export and Import of Hazardous Waste Regulations* will require that the exporter or importer of hazardous wastes notify whether the wastes to be exported or importer contains POPs including the quantity and concentration of POPs.

3.1.9.5 DEVELOP STRATEGIES TO IDENTIFY AND REMEDIATE CONTAMINATED SITES

Article 6.1(e)

The Obligation

Parties must endeavor to “develop appropriate strategies” for identifying sites contaminated by POPs covered under the Convention, with any remediation of these sites undertaken to be performed in an environmentally sound manner.

Implementation in Canada

The CCME has published a comprehensive Guidance Document on the Management of Contaminated Sites in Canada. The Guidance Document sets out a strategy for contaminated site management, including contaminated site identification and assessment, and development and implementation of remediation action.

Regulation and management of contaminated sites is primarily a provincial responsibility. Additional information on specific provincial actions is found in Appendix C.

3.2 OTHER OBLIGATIONS OF THE STOCKHOLM CONVENTION ON POPs

3.2.1 IMPLEMENTATION PLANS

Article 7

The Obligation

Each Party is required to develop and endeavor to implement a plan for the implementation of its obligations. The plan is to be completed by May 17, 2006 (two years after the coming into force of the Convention) and reviewed and updated in a manner to be determined by a future decision of the Parties. The plan is to be developed in consultation with national stakeholders, and should be integrated into national sustainable development strategies, where appropriate.

Implementation in Canada

Canada's implementation plan will be developed based on the in-place federal, provincial and territorial program, policy and regulation initiatives described in this document which, in total, provide for delivery on Convention obligations. During the winter of 2004, the federal government held three consultation meetings in Edmonton, Alberta, the National Capital

Region and Dartmouth, Nova Scotia, soliciting the advice of stakeholders on the drafting of the national implementation plan. A draft plan will be made available to stakeholders for further comment and consultation before it is delivered to the Conference of the Parties.

3.2.2 INFORMATION EXCHANGE

Article 9.1, 9.3, 9.5

The Obligation

Each Party is required to facilitate or undertake the exchange of information on reducing or eliminating the production, use and release of POPs; and on alternatives to POPs.

The Convention allows countries to exercise their domestic requirements for treatment of confidential information in achieving this obligation, except for information on health and safety of humans and the environment which will not be regarded as confidential.

Each Party is required to designate a national focal point for exchange of information on POPs.

Implementation in Canada

Canada has programs and initiatives in place that address the exchange of information between governments, and can readily comply with this obligation through continuation of existing strategies. Canada provides information and supports demonstration projects which illustrate practical methods to control POPs (such as pollution abatement technologies) and to find alternatives to their use (such as integrated pest management). These programs are sponsored and delivered by Canadian government agencies, often in partnership with the Canada's academic and private sectors. Canada also provides information and services on the Internet, such as Environment Canada's Green Lane¹⁵ and other government data bases, which are available to other governments and to the public.

The Transboundary Air Issues Branch of Environment Canada has served as Canada's focal point agency for information exchanged during the interim period of Stockholm Convention and will continue to do so when the Convention comes into force for Canada; the UNEP Secretariat for the Convention has been informed of this role.

3.2.3 PUBLIC INFORMATION, AWARENESS AND EDUCATION

Article 10

The Obligation

Each Party is required, "within its capabilities", to promote and facilitate public awareness, education and training activities, and to ensure public access to updated information. Each Party is to give "sympathetic consideration" to developing mechanisms for the collection and dissemination of quantitative information on annual releases and disposal of POPs.

Implementation in Canada

Canada makes health and environmental information on POPs available to the public, and has existing labeling and consumer awareness measures. There is a wide range of information provided, from scientific journal articles and workshop proceedings to the transparent

¹⁵ www.ec.gc.ca

processes of substance assessments for regulatory processes under CEPA 1999. Public information on POPs is available through a variety of sources, including federal, provincial and territorial Internet sites. As the federal government moves forward with its government-on-line initiative, this will likely facilitate the availability of even broader amounts of public information in the future.

The CEPA 1999 Environmental Registry was launched with the proclamation of CEPA 1999 on March 31, 2000. It is a key instrument in meeting the commitment to public participation by providing comprehensive access to information related to the administration of the Act. It also provides an opportunity for the Canadian public to understand how the federal government administers CEPA 1999 by facilitating access, directly and through search capabilities, to public documents.

The new PCPA (expected to come into force in 2004) will facilitate the provision of information, including confidential information, about pest control products to the public.

Regarding the collection and dissemination of quantitative information on annual releases and disposal of POPs, Canada will provide this information through existing mechanisms. The National Pollutant Release Inventory includes facility reporting of dioxin, furan and HCB releases. The National Inventory of PCBs in Use and PCB Wastes in Storage in Canada provide annual inventory information on PCBs including disposal. PCB release information will be added to the PCB national inventory (anticipated in 2004). These measures go well beyond the Convention's requirement to "give sympathetic consideration".

There are many provincial programs to inform and educate the public on issues such as pesticide use and safety, waste management, and air quality monitoring and reporting. Additional information on specific provincial actions is found in Appendix C.

3.2.4 RESEARCH, DEVELOPMENT AND MONITORING

Article 11

The Obligation

Parties are required, at the national and international levels, to encourage and/or undertake appropriate research, development, monitoring and cooperation pertaining to POPs, to their alternatives, and to candidate POPs. Parties are also required, within their capabilities, to support international research programmes and to strengthen research capabilities in developing countries and countries with economies in transition.

Implementation in Canada

The monitoring of all media (air, water and soil), wildlife and humans must continue in order to further our knowledge of the environmental behavior of HAPs, of their effects on ecosystems and of human exposure and to enable the determination of trends. Comprehensive emission inventories will be needed to report on Canada's commitments. The identification and characterization of new and emerging HAPs issues will also require strong scientific support.

Canada will implement this requirement through existing programs and initiatives on research, development and monitoring, contingent on federal decisions for periodic refunding. These programs include, but are not limited to: the Northern Contaminants Program and research and monitoring programs in the Great Lakes Basin.

The provinces undertake air and water monitoring and research on POPs and heavy metals. Additional information on specific provincial actions is found in Appendix C.

POPs and heavy metals are monitored across Canada's regions and in many environments. For example, in British Columbia and the Yukon, POPs and heavy metal monitoring and studies continue to be undertaken in all media (air, water, sediments, soils) and in many representative animal species (e.g. invertebrates, trout, salmon, frogs, birds). Measurements are recorded at federal/provincial water quality network stations, at the Rieffel Island atmospheric mercury monitoring station, and under regional ecosystem initiatives (e.g. Fraser River Action Plan, Georgia Basin Ecosystem Initiative (GBEI), and the coming Georgia Basin Action Plan). For the Coastal Mountains, a GBEI project on POPs in fish from high altitude lakes has established a baseline of contaminant levels, which could be used to track progress in the control of global emissions of POPs. The consequences of these accumulations in fish were evaluated under a TSRI project linking osprey health to local contaminant burdens in fish in nearby lakes.

Several federal departments support the planning and conduct of research and development on toxic chemicals and pesticides and their health and environmental impacts, including Environment Canada, Health Canada and the Pest Management Regulatory Agency, Indian and Northern Affairs Canada, Natural Resources Canada, Fisheries and Oceans, and Agriculture and Agri-Food Canada.

Canada will assist developing countries and countries with economies in transition build their research and monitoring capacities through the Canada POPs Fund (described briefly in the next section) and other initiatives such as the Canada-Russia Agreement on Science and Technology.

3.2.5 TECHNICAL ASSISTANCE

Article 12.2, 12.3 and 12.4

The Obligation

The Parties are required to cooperate to provide "timely and appropriate" technical capacity building assistance to developing countries and countries with economies in transition, to help their implementation of the Convention's obligations. Parties are required to make arrangements for the purpose of technical assistance and transfer of technology, with further guidance to be provided by the Conference of Parties.

Implementation in Canada

Canada has established the 5-year \$20 million (Cdn) Canada POPs Fund, administered by the World Bank, to assist developing countries and countries with economies in transition to build their capacities to deal with POPs and to implement their obligations under the Convention. The Fund is available for a variety of projects, tailored to the needs of specific countries, such as: developing POPs inventories; establishing the regulatory mechanisms and building the institutional framework needed to control POPs releases; and finding alternative chemicals or strategies to the use of POPs.

Canada provides technical assistance to developing countries and countries with economies in transition, for capacity building in the fields of chemical management and alternatives to POPs use, such as integrated pest management. For example, the Canadian International Development Agency (CIDA) and the International Development Research Centre support

sustainable environmental development programs in many countries. CIDA administers the Canadian Consultant Trust Fund and Industry Canada administers Technology Partnerships Canada. Natural Resources Canada has a technology transfer program for the sustainable development of natural resources in South America.

3.2.6 FINANCIAL RESOURCES AND MECHANISMS

Article 13.1 and 13.2

The Obligations

Each Party is to provide, within its capabilities, financial support and incentives for national activities intended to achieve the objective of the Convention.

Developed country Parties are to provide financial support to developing country Parties and Parties with economies in transition to meet the agreed full incremental costs associated with meeting their obligations under the Convention. Implementing this obligation will take into account the need for adequacy, predictability, timely flow of funds and the importance of burden sharing among the contributing Parties.

Implementation in Canada

As a developed country, Canada is required to provide new and additional financial resources to help developing countries and countries with economies in transition to fulfill their obligations under the POPs Convention.

The Global Environment Facility will operate as the primary financial mechanism for the Convention, on an interim basis, from the date of entry into force until at least the first meeting of the Conference of Parties. In taking on its role as primary financial mechanism, the GEF has developed a new operational program specific to POPs. The GEF has indicated that new and additional resources from donor countries will be required in order to adequately support the implementation of the POPs Convention.

Canada will comply with this obligation through its financial contribution to GEF. Given demands on GEF's resources for a new operational program on POPs, as well as for other global environmental problems, Canada's contribution to the GEF has increased for the third Replenishment period (2002 to 2006).

3.2.7 REPORTING

Article 15

The Obligation

Each Party is required to report periodically on the measures it has taken to implement the provisions of the Convention and on the effectiveness of such measures in meeting the objectives of the Convention. The reporting period and format will be decided by the Conference of Parties at its first meeting. Each Party is required to provide statistical data on its total quantities of production, import and export of each of the intentionally produced chemicals and, to the extent practicable, a list of the States from which it has imported, and / or to which it has exported, each substance, as well as to report on various other items in the Convention.

Implementation in Canada

Canada has several in-place programs and initiatives to meet the requirements for reporting, including:

- the National Pollutant Release Inventory;
- the National Inventory of Releases of Dioxins and Furans and HCB;
- the Residual Discharge Information System;
- the PCB National Inventory
- the proposed database on pesticide sales in Canada, being developed by the Pest Management Regulatory Agency;
- the Canada-U.S. Great Lakes Binational Toxics Strategy;
- the North American Regional Action Plan for dioxins/.furans/HCB; and
- emissions monitoring by federal, provincial and territorial government agencies and industries.

3.3 KEY OBLIGATIONS¹⁶ ON THE CONFERENCE OF PARTIES

3.3.1 ADDITION OF FUTURE CHEMICALS TO THE CONVENTION

Article 8 and Annexes D, E, F

The Obligation

The Convention provides a process for future addition of POPs. At its discretion, any Party may nominate a substance for consideration by the Conference of Parties which then decides on inclusion and the nature of associated control measures. Once nominated, a substance will be subject to consideration by a POPs Review Committee, as set out in the Convention.

Implementation in Canada

Canada will actively participate in discussions and negotiations concerning addition of future chemicals to the Convention. Information from currently in-place domestic scientific, monitoring, assessment and domestic control programs will be the basis of any nominations by Canada for addition to the Convention. In a similar manner, Canada's participation in responding to substance proposals by other Parties will be based on domestic information, assessments and measures pertinent to such chemicals.

Canada is prepared to generate nominations as appropriate, and participate in decisions about additions of new chemicals to the Convention.

3.3.2 EFFECTIVENESS EVALUATION

Article 16

The Obligation

The effectiveness of the Stockholm Convention will be evaluated beginning four years after entry into force, and periodically thereafter at intervals determined by the Conference of Parties. Monitoring procedures will be established at the first meeting of the Conference of Parties, and should be implemented on a regional basis, using existing monitoring programmes as much as possible.

¹⁶ These are not "obligations" which Canada as a Party must meet, rather they are the responsibility of the Conference of Parties to the Convention. However, they are very important elements of the Stockholm Convention, Canada played a leading role in advocating and/or developing them and Canada has an important stake in their effective implementation.

Implementation in Canada

To form the basis for effectiveness evaluation of the Convention, a UNEP Global Network for the Monitoring of Chemicals in the Environment has been established. The goal is to provide comparable monitoring data through harmonized methodologies on the presence of POPs as well as their regional and global environmental transport. It will focus on the initial twelve POPs and be designed to accommodate other substances that in the future might be included in the Stockholm Convention.

Canada promoted the inclusion of global monitoring for effectiveness evaluation during the negotiations of the Stockholm Convention. Canadian officials actively participated in the genesis of this initiative and are assisting in the development of the Global Network for the Monitoring of Chemicals in the Environment. Canada will be expected to provide information on POPs as part of a regional evaluation. Canada will be able to provide the information from existing monitoring programs.

4. IMPLEMENTING THE MAIN REQUIREMENTS OF THE UNECE POPs PROTOCOL

4.1 OVERVIEW

The overall objective of the POPs Protocol is “to control, reduce or eliminate discharges, emissions and losses of persistent organic pollutants” (Article 2).

The Protocol's Obligations are contained in seven key Articles:

- Article 3: Basic Obligations;
- Article 5: Exchange of Information and Technology;
- Article 6: Public Awareness;
- Article 7: Strategies, Policies, Programs, Measures and Information;
- Article 8: Research, Development and Monitoring;
- Article 9: Reporting, and
- Article 14: Amendments.

Table 5 below summarizes the ways in which Canada will implement the Obligations of the POPs Protocol.

Table 5: Overview of Canada's Implementation of the UNECE POPs Protocol

Obligation (Article in Protocol)	POPs	Implementation
Elimination of Production and Use of 12 substances (Article 3 Paragraph 1(a) and Annex I) ¹⁷	Aldrin, chlordane, chlordecone, dieldrin, DDT, endrin, heptachlor, hexabromobiphenyl, hexachlorobenzene, mirex, PCBs and toxaphene	<ul style="list-style-type: none"> - Pesticides: PCPA (Not registered for use in Canada) - Hexabromobiphenyl, mirex, hexachloro-benzene and PCB: CEPA regulations
Restriction of Use of 3 substances (Article 3 Paragraph 1(c) and Annex II) ¹⁸	<p>PCBs (quantities in use as of the date of entry into force of Protocol)</p> <p>DDT (limited to uses for public health protection and as a chemical intermediate for dicofol)</p> <p>HCH -mixed isomers (limited to use as intermediate in chemical manufacturing)</p> <p>HCH - lindane (limited to specific uses listed in Protocol)</p>	<ul style="list-style-type: none"> - PCBs: CEPA regulations to be amended -DDT: PCPA (no registered use in Canada) - HCH (mixed isomers): PCPA (No registered use in Canada) - HCH (lindane) : PCPA
Requirement for Reassessment of 4 substances (Annex II) ¹⁹	Polychlorinated terphenyls, and Ugilec, DDT, lindane and heptachlor	<ul style="list-style-type: none"> - Polychlorinated terphenyls, Ugilec, DDT and heptachlor: Not applicable (no use in Canada) - Lindane : to be reassessed under PCPA

¹⁷ See section 4.2.1 for detailed requirements for the elimination of production and use.

¹⁸ See section 4.2.2 for detailed use restrictions.

¹⁹ See section 4.2.3 for detailed requirements for reassessments.

**STRATEGIC IMPLEMENTATION FRAMEWORK FOR INTERNATIONAL COMMITMENTS
ON HAZARDOUS AIR POLLUTANTS (HAPs): 2004 UPDATE**

Obligation (Article in Protocol)	POPs	Implementation
<p>Emissions reductions for 4 substances</p> <p>a) general reduction of national emissions (from 1990 levels) (Article 3 Paragraph 5 (a) and Annex III)²⁰</p> <p>b) BAT, ELV or equivalent for new stationary sources (Article 3 Paragraph 5 (b)(I) and (ii) and Annexes IV, V and VI)²¹</p>	<p>Dioxins, furans, hexachlorobenzene and Polycyclic aromatic hydrocarbons (PAHs)</p>	<p>a) - dioxins, furans and hexachlorobenzene : CWS to be developed for major sources of dioxins and furans HCB emissions will be reduced at the same time.</p> <p>- PAHs : SOPs or other control initiatives under CEPA for major sources</p> <p>(emissions have already substantially decreased since 1990)</p> <p>b) - Provincial and territorial approval and licensing processes</p>
<p>c) BAT or equivalent for existing stationary sources (Article 3 Paragraph 5(b)(iii) and (iv) and Annexes IV, V and VI)²²</p> <p>d) Emissions reductions from Mobile Sources (Article 3 Paragraph 5(b)(v), Annex VII)²³</p>	<p>Dioxins, furans, hexachlorobenzene and Polycyclic aromatic hydrocarbons (PAHs)</p>	<p>c) - Provincial and territorial processes to renew approvals and licenses</p> <p>d) North American fuel and engine emission controls</p>
<p>Environmentally sound management of waste (Article 3 Paragraphs 1(b) and 3 and Annexes I,II, and III:)²⁴</p>	<p>All targeted POPs</p>	<p>- BASEL Convention</p> <p>- Provincial, territorial and municipal programs.</p> <p>- CEPA regulations for PCBs</p>

²⁰ See section 4.2.4.1 for detailed requirements on the reduction of national emissions.

²¹ See section 4.2.4.2 for detailed requirements for the reduction of emissions from new stationary sources.

²² See section 4.2.4.3 for detailed requirements for the reduction of emissions from existing stationary sources.

²³ See section 4.2.4.4 for detailed requirements for the reduction of emissions from mobile sources.

²⁴ See section 4.2.5 for detailed waste management requirements.

**STRATEGIC IMPLEMENTATION FRAMEWORK FOR INTERNATIONAL COMMITMENTS
ON HAZARDOUS AIR POLLUTANTS (HAPs): 2004 UPDATE**

Obligation (Article in Protocol)	POPs	Implementation
Emission Inventory Development (Article 3, Paragraph 8) ²⁵	Dioxins, furans, hexachlorobenzene and PAHs HCH	- NPRI, RDIS and ARET - Proposed database on sales of pesticides (PMRA)
Exchange of Information and Technology(Article 5) ²⁶	All targeted POPs	- Canadian Consultant Trust Fund - Technology Partnership Canada
Promotion of Public Awareness (Article 6) ²⁷	All targeted POPs	- labeling requirements for pesticides and other programs - published assessment reports - reports on ecosystem and regional studies - the Canadian Pollution Prevention Clearinghouse
Development of Strategies, Programs, Measures and Information to implement Protocol Obligations (Article 7:) ²⁸	All targeted POPs	- the TSMP and the CCME Policy for the Management of Toxic Substances - the CWS process - regional and ecosystem strategies - federal, provincial and territorial legislation and regulations

²⁵ See section 4.2.6 for details on emission inventory development

²⁶ See section 6.1 for detailed requirements on the exchange of information.

²⁷ See section 6.2 for detailed requirements on public awareness.

²⁸ See section 6.3 for detailed requirements on strategies, policies, programs, measures and information.

**STRATEGIC IMPLEMENTATION FRAMEWORK FOR INTERNATIONAL COMMITMENTS
ON HAZARDOUS AIR POLLUTANTS (HAPs): 2004 UPDATE**

Obligation (Article in Protocol)	POPs	Implementation
Encouragement of Research, Development and Monitoring (Article 8) ²⁹	All targeted POPs	- Northern Contaminants Program and AMAP - Integrated Atmospheric Deposition Network and EMAN - federal, provincial and territorial monitoring
Reporting (Article 9) ³⁰	All targeted POPs	Reports will be prepared from data collected under : - NPRI, RDIS and ARET - Emissions monitoring by government agencies and industry - Proposed database on sales of pesticides (PMRA)
Amendments, addition of substances to the Protocol (Article 14) ³¹	All targeted POPs	- Canada will actively participate

4.2 THE BASIC OBLIGATIONS

Article 3 and Annexes I to VIII of the Protocol contain the most important Obligations. Six types of control actions are specified:

1. Eliminate production or use of 12 POPs;
2. Restrict the use of 3 POPs;
3. Re-assess exempted uses of 4 POPs;
4. Control atmospheric emissions of 4 POPs from designated industrial sectors;
5. Commit to environmentally sound destruction and disposal of substances subject to elimination, and
6. Report emissions of substances subject to atmospheric emission controls and available information on production and sale of substances scheduled for elimination.

These Obligations come into force 90 days after 16 countries have ratified the Protocol, which is expected to occur in 2000.

²⁹ See section 6.4 for detailed requirements on research, development and monitoring

³⁰ See section 6.5 for detailed reporting requirements.

³¹ See section 6.6 for detailed requirements for amendments.

4.2.1 ELIMINATION OF PRODUCTION AND USE OF 12 SUBSTANCES

Article 3 Paragraph 1(a) and Annex

The Obligation

Parties are required to:

- Eliminate the production and use of the following POPs, with no exemptions: aldrin, chlordane, chlordecone, dieldrin, endrin, hexabromobiphenyl, mirex and toxaphene;
- Eliminate the production and use of heptachlor, with a minor exception for use on fire ants;
- Eliminate the production and use of hexachlorobenzene, except for countries with economies in transition which can identify exemptions at the time of ratification;
- Eliminate the production of DDT when Parties to the Protocol conclude that suitable alternatives are available to protect public health against diseases such as malaria. Meanwhile Parties, in consultation with the WHO, the FAO and UNEP, are required to review and promote safer and economically viable alternatives to DDT, and
- Eliminate the production and new uses of PCBs. Countries with economies in transition can have until 2005 to comply with this Obligation.

Rationale for the Obligation

These substances have been targeted under the POPs Protocol because they are persistent, bioaccumulative and toxic, and have the potential for transboundary transport. Certain uses were allowed to continue for a period of time because these uses have no suitable alternatives and are critical to society. Some others uses were allowed to continue for socio-economic reasons.

Implementation in Canada

Canada already complies with this Obligation to eliminate the production and use of the specified substances:

- Under the *Pest Control Products Act* there are no registered uses of aldrin, chlordane, chlordecone, DDT, dieldrin, endrin, hexachlorobenzene, mirex and toxaphene;
- The manufacture and use of mirex and brominated biphenyls, including hexabromobiphenyl, is prohibited under CEPA regulations. The manufacture and use of hexachlorobenzene (for non-pesticidal use) will be prohibited under a CEPA regulation in Spring 2003;
- The manufacture and new use of PCBs are prohibited in Canada under CEPA regulations.

4.2.2 RESTRICTION OF USE OF 3 POPS

Article 3 Paragraph 1(c) and Annex II

The Obligation

Parties are required to impose use restrictions on three POPs: PCBs, DDT and hexachlorocyclohexane.

PCBs:³² For PCBs in use prior to the Protocol coming into force, the Parties are required to make determined efforts to:

- Eliminate the use of identifiable PCBs in equipment (i.e. transformers, capacitors or other receptacles containing PCBs in volumes greater than 5 dm³ and having a concentration of 0.05% PCBs or greater), as soon as possible, but no later than 31 December 2010, or 31 December 2015 for countries with economies in transition;
- Destroy or decontaminate in an environmentally sound manner all liquid PCBs referred to in subparagraph (a), and other liquid PCBs not in equipment but containing more than 0.005% PCBs, as soon as possible, but no later than 31 December 2015, or 31 December 2020 for countries with economies in transition; and
- Decontaminate or dispose of equipment referred to in subparagraph (a) in an environmentally sound manner.

DDT: DDT can be used for public health protection as a component of an integrated pest management strategy, but only to the extent necessary and consistent with the Obligation on the elimination of production. DDT can also be used as an intermediate to produce Dicofol, but this use is to be reassessed two years after the Protocol comes into force.

Hexachlorocyclohexane (HCH): Technical HCH (i.e. mixed isomer HCH) is restricted to use as an intermediate in chemical manufacturing. Gamma-HCH (i.e., lindane) is restricted to the following uses:

- as a seed treatment;
- for direct applications to soil, followed by incorporation into the topsoil layer;
- for professional remediation
- for industrial treatment of lumber, timber and logs;
- as a public health and veterinary topical insecticide;
- for non-aerial application to tree seedlings,
- for small-scale lawn use,
- for indoor and outdoor use on nursery stock and ornamentals, and
- for indoor industrial and residential applications.

These uses must be reassessed no later than two years after the Protocol comes into force.

Rationale for the Obligation

PCBs: The Obligation is based on the following considerations:

- Countries with economies in transition need a longer time frame to work towards eliminating the use of PCBs, as well as to decontaminate and destroy liquid PCBs;
- PCBs must be managed in an economically and technically feasible manner;

Specific dates have been established for eliminating the use of PCBs in equipment and for destroying or decontaminating PCB fluids, but Parties are not required to demonstrate 100% elimination or destruction/disposal. They must, however, make “determined efforts” to meet these goals.

³² See also section 3.2.3 regarding the requirement to reassess the production and use of polychlorinated terphenyls and Ugilec.

Protocol requirements must be compatible with current PCB management programs in Canada and the US.

DDT: The use restrictions for DDT recognize the value of DDT for public health protection (e.g., vector control to prevent malaria and encephalitis), and it is therefore allowed in certain applications. The use of DDT for public health protection is endorsed by the World Health Organization, and the Protocol's requirements for DDT are consistent with the recommendations of that organization.

Hexachlorocyclohexane (HCH): The production and use of HCH mixed isomer pesticide formulations are to be eliminated. HCH mixed isomers are only allowed to be used as intermediates in the manufacture of other chemicals. The Protocol allows restricted use of lindane, a particular HCH isomer, because alternatives for some applications are not available.

Implementation in Canada

PCBs: Current federal, provincial and territorial programs to eliminate PCB-containing equipment and to destroy, decontaminate and dispose of PCBs address Canada's Obligation under the Protocol. These include:

The federal TSMP and CCME PMTS, which provide a framework for the virtual elimination of PCB releases to the environment.

Federal regulatory amendments proposed under CEPA 1999 with time deadlines on uses, waste storage and destruction consistent with the provisions of the Stockholm Convention and the UNECE POPs Protocol. Federal regulatory amendments are also proposed under CEPA 1999 to address use registration and waste transportation.

CCME Guidelines for the management of waste containing PCBs (1989), for mobile PCB destruction systems (1990), for mobile PCB treatment systems (1990), for PCB transformer decontamination (1995), for the land filling of Hazardous Wastes (1991) apply to PCBs and provide standards and codes of practices.

Federal regulations under CEPA 1999 which:

- prohibit the import of PCBs and controls the importation of PCB wastes; and
- prohibit the export of PCB wastes except for disposal other than land filling in USA.

Federal regulatory amendments proposed under CEPA 1999 prohibiting the export of PCBs.

DDT: Canada currently complies with the Obligation because DDT is not registered for use under the *Pest Control Products Act*, and Canada does not manufacture Dicolol.

Hexachlorocyclohexane: Canada meets the Obligation because there are no permitted uses of technical HCH (mixture of isomers) as a pesticide under the *Pest Control Products Act*, and the registered uses of lindane are consistent with those permitted in the Protocol. Canada completed a special review of lindane in late 2001. This led to the decision to phase out the remaining uses of lindane. All of the registrations were voluntarily discontinued or suspended and all use of lindane products will end by December 31, 2004.

4.2.3 REASSESSMENT OF EXEMPTED USES OF FOUR POPs

Annex II

The Obligation

In addition to elimination and use restrictions, Annex II also contains requirements for the Parties to reassess:

- the production and use of polychlorinated terphenyls and Ugilec (by 2004);
- the use of DDT as a chemical intermediate to produce Dicofol;
- all restricted uses of lindane, and
- the use of heptachlor for the control of fire ants.

Rationale for the Obligation

The reassessments will provide an opportunity for the Parties to review new information on these substances and to consider whether further management actions are appropriate. The reassessments recognize the need to develop cost-effective alternatives.

In 2000 the UNECE established a scientific ad hoc expert group on POPs, which developed a work plan to review relevant information on POPs subject to re-assessment under the Protocol or which might be considered for future addition to the Protocol. In 2002 the ad hoc expert group prepared a compendium of available information, with an expert judgment, for the consideration of senior UNECE bodies on each of the following substances: DDT, DDT in dicofol, heptachlor, lindane, polychlorinated terphenyls (PCTs) and ugilec.

The mandate of the ad hoc expert group on POPs was terminated with the entry into force of the UNECE POPs Protocol in October 2003. A Task Force on POPs has been established to undertake the technical aspects of substance re-assessment under the Protocol and technical review of substances which may be considered for future addition to the Protocol.

Implementation in Canada

Canada is actively participating in the UNECE process to reassess substances under the POPs Protocol. The UNECE ad hoc Expert Group on POPs was chaired by a Canadian, and a Canadian expert prepared the scientific dossier on PCTs, and Canada forwarded relevant Canadian information to the experts preparing other substance dossiers. Canada will continue to participate in subsequent work in the reassessment process through the Task Force on POPs.

Activities planned or already underway will allow Canada to meet its obligations under the Protocol. Because the use of polychlorinated terphenyls, DDT and heptachlor is not permitted in Canada, the reassessment of these chemicals will not require any new control initiatives in Canada. Ugilec, a dielectric fluid, is not believed to have been manufactured or used in Canada, but this will be confirmed through further surveys.

Since the Protocol was completed in 1998, The Pest Management Regulatory Agency has already announced that the registered uses of lindane will be reassessed. Canada has completed a special review of lindane in late 2001 which led to the decision to phase out the remaining uses of lindane. All of the registrations were voluntarily discontinued or suspended and all use of lindane products will end by December 31, 2004 (with the exception of use as a public health and veterinary topical insecticide).

4.2.4 CONTROL OF ATMOSPHERIC EMISSIONS FOR FOUR POPS

Dioxins, furans, hexachlorobenzene and polycyclic aromatic hydrocarbons (PAHs) are targeted for emission limitations (dioxins, furans and hexachlorobenzene are assumed to have common sources).

There are four key elements in the Obligation to limit emissions:

1. General reduction of national emissions;
2. Reduction of emissions from new stationary sources;
3. Reduction of emissions from existing stationary sources, and
4. Reduction of emissions from mobile sources.

4.2.4.1 GENERAL REDUCTION OF NATIONAL EMISSIONS

Article 3 Paragraph 4(a) and Annex III

The Obligation

Parties are required to reduce their national emissions of dioxins, furans, hexachlorobenzene and PAHs from levels of emissions in a reference or base year. The base year is 1990, or an alternative year between 1985 and 1995, to be specified upon ratification. The level of reductions is not specified in the Protocol.

Rationale for the Obligation

This Obligation is to ensure a downward trend in emissions from those of a base year, with most countries specifying 1990 as the base year.

Implementation in Canada

This requirement has essentially already been met in Canada. Canada can demonstrate substantial reductions from the 1990 emissions levels of these POPs for the major source sectors.

Dioxins/furans and Hexachlorobenzene: As outlined in Section 3.1.9, In January 1999, Environment Canada and a Federal-Provincial Task Group published an inventory of sources of releases of dioxins, furans and hexachlorobenzene in Canada. The major sources are municipal incinerators, residential wood stoves, sintering plants, steel plants and salt-laden wood combustion. The inventory indicates that between 1990 and 1997, there was an 18% reduction in atmospheric releases. An additional 25% reduction is projected for 1999, as a result of announced upgrades or closures of industrial facilities. This represents a total reduction of 43% compared to the 1990 base year.

To ensure continuing reduction in emissions, standards for dioxins and furans emitted from the main source sectors will be developed under the CWS process. Reductions in hexachlorobenzene are expected to parallel reductions in dioxin and furan emissions. In addition, CCME will be developing an action plan for dioxins and furans consistent with the federal Toxic Substances Management Program's goal of virtual elimination.

New sources coming on stream as a consequence of increased economic activity in Canada are not expected to affect the downward trend, since standards for new sources will be applied.

PAHs: Approximately 60% of total national anthropogenic emissions of PAHs in 1990 resulted from aluminum production and residential wood combustion. Because of technological

improvements, the aluminum industry has reduced its PAH emissions by approximately 50 % since 1990. As well, Alcan plans to construct a 'state of the art' facility by 2002 in Quebec, to replace one of the Söderberg facilities. This will result in additional PAH emission reductions. Involvement of the Quebec government is the key to further reduction since 10 out of 11 aluminum smelters in Canada are located in this province. Quebec is currently involved in the modification of their *Air Quality Regulation* and in discussing a time frame for decommissioning of other Söderberg facilities with aluminum producers. The Quebec government's amendments to the *Air Quality Regulation* will require the other Alcan vertical stud Söderberg plants (Jonquière, Shawinigan and Beauharnois) to modernize by 2015, as will the Alcoa plant in Baie Comeau, which uses vertical stud Söderberg smelters. Alcoa expects to complete its modernization by the deadline.

Integrated steel mills have reduced emissions of PAHs from their coke making operations by 74% in 2002 relative to the 1993 baseline, as a result of limits specified in the CEPA Environmental Code of Practice for Integrated Steel Mills, and associated steel sector environmental best practices program.

The two keys to reducing emissions from residential wood combustion are to increase the utilization rate of cleaner-burning technology and to improve wood burning practices by the users. As PAHs are part of particulates and VOCs being emitted from these sources, measures to reduce particulate and VOC emissions under the Phase III federal smog plan will also result in PAH emission reductions. There are further explanations of the measures being considered in the following two sections on new and existing sources emission control requirements. Reductions in the emissions of PAHs from wood stoves are expected as older units are replaced by new, more efficient stoves and as Canadians become aware of the better wood burning practices.

4.2.4.2 REDUCTION OF EMISSIONS FROM NEW STATIONARY SOURCES

Article 3 Paragraph 4(b) (i) and (ii) and Annexes IV, V and VI

The Obligation

Best Available Techniques (BAT) must be applied to all new major stationary sources in major sectors (except for incinerators) within two years after the Protocol comes into force. The major sectors include:

- for dioxins, furans and hexachlorobenzene: Waste incineration, thermal metallurgic processes, combustion plants producing energy, residential combustion units, and specific chemical production processes, and
- for PAHs: Domestic wood and coal heating, open fires (such as refuse burning), coke and anode production, aluminum production (via the Söderberg process), and wood preservation installations.

A different approach involving allowable emission values has been adopted for incinerators. Incinerator types and Emission Limit Values (ELVs) for combined dioxin and furan emissions are noted in Table 6 below.

Table 6: ELVs for incinerator types

Incinerator Type	Limit Values
Municipal Solid Waste (burning more than 3 tonnes/hour)	0.1 ng TEQ/m ³ *
Medical Solid Waste (burning more than 1 tonne/hour)	0.5 ng TEQ/m ³
Hazardous Waste (burning more than 1 tonne/hour)	0.2 ng TEQ/m ³

* Toxic Equivalents/Cubic Meter

Rationale for the Obligation

New stationary sources are defined as those coming on line two years after the date that the POPs Protocol comes into effect. Since this is likely to occur in 2000, new stationary sources would be those for which construction or substantial modification begins after 2002.

Although particular control techniques are described in Annex V of the Protocol, Parties are not obligated to use them, but they must consider this information in selecting specific control strategies. Parties may use newer or alternative technologies that may be equal to or better than the procedures described in the Annex.

With respect to incinerators, Parties are not required to apply the ELVs. However, the alternative strategies utilized must yield substantially equivalent results. This provides for some flexibility in achieving emission reductions.

Implementation in Canada

Canada will implement this Obligation primarily through existing approval and licensing processes for new stationary sources. The provinces and territories are generally responsible for the approval and licensing of new stationary sources, and all have established processes to address new major facilities being constructed within their jurisdiction. The CWS and CEPA SOPs will help to identify BAT and ELVs for new stationary sources.

In March 2001, Canada published an Environmental Code of Practice for Integrated Steel Mills, which includes PAH emission targets and schedules for coke making operations at steel mills. The emission standards are based on best available techniques and environmental practices associated with traditional by-product recovery coke-making.

Under existing approval and licensing processes, all new incinerators in Canada are expected to have best available controls. Canadian and U.S. data indicate that controls on incinerators with BAT can achieve better than 0.1 ng TEQ/m³, even though the emission standard is set at 0.5 ng TEQ/m³. Therefore, the proposed ELVs are attainable by new facilities, and CWS initiatives will probably reflect these capabilities. The standard being proposed in the Quebec government's amendments to the *Air Quality Regulation* is 0.08 ng/m³ for dioxins and furans. It will be applicable to all types of incinerators. Most if not all medical waste incinerators in Canada do not exceed the 1 tonne/hour de minimus capacity, and therefore the ELVs do not apply.

With respect to PAHs emitted during domestic wood combustion, most of the wood stoves currently sold on the Canadian market meet the US Environmental Protection Agency (EPA)

1988 emission guidelines, because the Canadian wood stove manufacturing companies must meet these standards to export to the US. They therefore generally manufacture the same wood stoves for the both countries. The Canadian Standards Association (CSA) has set some wood stove emission standards. Several actions will be considered under the Phase III federal smog plan, in cooperation with provinces, municipalities and stakeholders including the support of programs to replace old stoves and the development of further CSA standards for fireplaces and solid-fuel-burning central systems.

An Environmental Code of Practice for Primary Aluminum Smelters will be developed under CEPA and will include PAH emission limits.

4.2.4.3 REDUCTION OF EMISSIONS FROM EXISTING STATIONARY SOURCES

Article 3 Paragraph 4 (b) (iii) and (iv) and Annexes IV, V and VI

The Obligation

The requirements for existing stationary sources are the same as those for new sources, (sec. 4.2.4.2) with three important caveats:

- An exception is allowed if applying BAT/ELVs is not technically or economically feasible;
- The Obligation takes effect eight years after the Protocol comes into force (i.e. approximately 2008), and
- Alternative strategies to BAT (e.g. percentage reductions) can be employed, if they result in equivalent reductions.

Rationale for the Obligation

Parties felt that greater flexibility was needed when dealing with existing facilities.

Implementation in Canada

Canada will implement the requirements for existing stationary sources mainly through provincial and territorial processes for the periodic renewal of approvals and licenses for existing facilities. Best available technologies and practices will be identified through a series of initiatives:

For dioxins, furans and hexachlorobenzene:

Canada-Wide Standards on dioxins and furans are developed for waste incineration (municipal, medical, hazardous, sewage sludge), iron sintering plants, steel manufacturing electric arc furnaces, conical waste combustors and salt-laden wood combustion and conical waste combustors. Under CEPA 1999, Strategic Options Reports (SORs) identified the need to characterize emissions, and identify reduction opportunities for dioxins and furans emitted from thermal metallurgical processes. A reduction in dioxins and furans emissions will likely lead to reductions in hexachlorobenzene emissions.

For PAHs:

CEPA Strategic Option Reports addressed the steel manufacturing sector and wood preservation installations. The SORs put forward recommendations on the management of PAH emissions from these sources. The SOR for steel manufacturing included release targets and schedules for achievement by existing facilities.

PAH emissions from existing aluminum plants are also an issue. All but one of the aluminum plants in Canada operates in Quebec. Quebec is currently involved in the modification of their *Air Quality Regulation* and in discussing a time frame for decommissioning of Söderberg

facilities with aluminum producers. An Environmental Code of Practice is being developed for primary aluminum smelters under CEPA and will include PAH emission limits.

Several actions are being in cooperation with provinces, municipalities and stakeholders, in order to reduce emissions from wood burning devices already in use:

- Assemble information on emission factors, inventories and pilot programs such as the Great Eastern Ontario Wood Stove Change-out.
- Develop options for programs to reduce emissions from the sector, including regulation.
- Develop model municipal by-laws for fireplace and wood stove use.
- Develop a public education campaign.

4.2.4.4 REDUCTION OF EMISSIONS FROM MOBILE SOURCES

Article 3 Paragraph 4 (b)(v) and Annex VII

The Obligation

This Obligation requires the Parties to apply effective measures to control emissions from mobile sources, taking into consideration the information in Annex VII of the Protocol. Annex VII contains information on achievable emission levels for new vehicles, fuel parameters, measures for restricting halogenated scavengers and additives in fuels and lubricants, and control measures for emissions of POPs from mobile sources.

Rationale for the Obligation

This Obligation is intended to result in measures to reduce emissions of POPs from mobile sources, including emissions from on-road and off-road vehicles. It is expected that appropriate fuel specifications and tighter exhaust emission standards will result in lower POPs emissions.

Implementation in Canada

A Memorandum of Understanding between Environment Canada, the Canadian Motor Vehicle Manufacturers' Association, the Association of International Automobile Manufacturers of Canada and the member companies of these Associations was signed in June 2001 which formalized the industry's commitment to market the same low emission vehicles in Canada as in the United States for the 2001 to 2003 model years.

On January 1, 2003 the *On-Road Vehicle and Engine Emission Regulations* were finalized and published in the *Canada Gazette*, Part II. These regulations will phase-in more stringent emission standards for on-road vehicles and engines under CEPA 1999 beginning with the 2004 model year. The proposed *Regulations* apply to light-duty vehicles (i.e. passenger cars), light-duty trucks (i.e. minivans, pick-up trucks, and sport utility vehicles), heavy-duty vehicles (i.e. trucks, buses) and heavy-duty engines, and motorcycles.

The Sulphur in Gasoline Regulations, which limit the amount of sulphur in gasoline, were passed on June 23, 1999. Starting in 2005, low-sulphur gasoline, that is, gasoline with an average sulphur level of less than 30 parts per million (ppm), will be required throughout Canada. As an interim step, gasoline with an average sulphur level of not more than 150 ppm will be required starting in July 2002.

The Sulphur in Diesel Fuel Regulations were published in the *Canada Gazette*, Part II on July 31, 2002. The regulations limit the level of sulphur in diesel fuel used in on-road vehicles to a maximum of 15 mg/kg (or 15 parts per million) to come into effect on June 1, 2006 for producers and importers and on September 1, 2006 for sellers. In the Arctic regions, the limit

on sales would come into effect a year later, on September 1, 2007, to allow for slower turnover of diesel supplies and to reflect logistical difficulties in the far north.

4.2.5 WASTE MANAGEMENT

Article 3 Paragraphs 1(b) and 3 and Annexes I, II and III

The Obligation

Parties must ensure that POPs are destroyed or disposed of in an environmentally sound manner. The four basic elements of the Obligation are:

- To ensure that the eight POPs targeted for elimination are destroyed or disposed of in an environmentally sound manner;
- To take appropriate measures to ensure that articles containing POPs are identified and destroyed or disposed of in an environmentally sound manner when they become wastes;
- To endeavor to ensure that these substances are disposed of domestically, and
- To ensure that any transboundary movement of these substances is carried out in an environmentally sound manner.

Rationale for the Obligation

This Obligation is intended to address stockpiles of wastes and newly generated wastes. In particular, many UNECE countries are concerned that there may be large stockpiles of unused pesticides in the former Soviet Union.

The Obligation is consistent with the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes, which provides the international framework for hazardous waste management. It also recognizes that not all UNECE countries are Parties to the Basel Convention.

Implementation in Canada

Canada is a Party to the Basel Convention, which will ensure compliance with the Protocol requirements for the transboundary movement of POPs wastes. With the exception of PCBs, there are no stockpiles of the targeted substances in Canada. PCB disposal is subject to various federal and provincial requirements. Furthermore, most provinces and territories and many large municipalities have programs to address industrial, commercial and domestic hazardous wastes, including POPs in products. Further details of Canada's implementation of hazardous wastes containing POPs are found in Section 3.1.9 of this document.

4.2.6 EMISSION INVENTORIES

Article 3 Paragraph 8

The Obligation

Parties are required to develop and maintain emission inventories for dioxins, furans, hexachlorobenzene and PAHs. They must also collect available information relating to the production and sales of substances listed in Annex I and II.

Rationale for the Obligation

This Obligation ensures that the Parties will demonstrate that they are meeting the requirements of the Protocol and that the Protocol is effective.

Implementation in Canada

Several programs and initiatives already underway in Canada provide information on POPs emissions. These include:

- The National Pollutant Release Inventory (NPRI)
- The National Inventory for Releases of Dioxins and Furans (PCDD/PCDF)
- The Residual Discharge Information System (RDIS)
- Emissions monitoring by federal, provincial and territorial government agencies and industries;
- The Canada-U.S. Great Lakes Binational Toxics Strategy; and
- The North American Regional Action Plan for dioxins/furans/HCB.

PCB release information will be available in the PCB National Inventory, when regulatory amendments will be in place (anticipated in 2004).

The Pest Management Regulatory Agency will develop a database on pesticide sales in Canada. Of all the substances listed in Annexes I and II, only lindane (hexachlorocyclohexane) is still sold in Canada. However, use of all lindane pesticide products will end by December 31, 2004.

5. IMPLEMENTING THE MAIN REQUIREMENTS OF THE UNECE HEAVY METALS PROTOCOL

5.1 OVERVIEW

The objective of the Heavy Metals Protocol is: “to control emissions of heavy metals caused by anthropogenic activities, that are subject to long-range transboundary atmospheric transport and that are likely to have significant adverse effects on human health or the environment” (Article 2).

The Protocol’s requirements apply to heavy metals listed in Annex I of the Protocol: cadmium, lead and mercury. Its Obligations are contained in six key Articles supported by appropriate annexes:

- Article 3: Basic Obligations;
- Article 4: Exchange of Information and Technology;
- Article 5: Strategies, Policies, Programs and Measures;
- Article 6: Research, Development and Monitoring;
- Article 7: Reporting, and
- Article 13: Amendments.

Table 7 below summarizes how Canada will implement the Obligations of the Heavy Metals Protocol.

Table 7: Overview of Canada’s Implementation of the UNECE Heavy Metals Protocol

Obligation Article in the Protocol	Implementation
Continued National annual Emissions Reductions Article 3 Paragraphs 1 and 6 and Annex I ³³	<ul style="list-style-type: none"> - CEPA <i>Regulations</i> - CWS for mercury - CEPA SOP for power generation, base metals smelting and steel production - ARET - provincial and territorial initiatives (Canada has already achieved significant emission reductions)
Emission Control Measures Article 3 Paragraphs 2(a)(b)(c)(d) and 7 and Annexes III, IV and V) ³⁴ 1) BAT for major new stationary sources (Paragraph 2a) 2) 50 % reduction from a base year (1990), 8 years after entry into force of the Protocol	1) Provincial and territorial approvals and licensing processes 2) Past and current initiatives will allow Canada to demonstrate at least a 50% reduction in national emissions of the three heavy metals.

³³ See section 4.2.1 for detailed requirements on emission limitations.

³⁴ See section 4.2.2 for detailed emission control measures.

**STRATEGIC IMPLEMENTATION FRAMEWORK FOR INTERNATIONAL COMMITMENTS
ON HAZARDOUS AIR POLLUTANTS (HAPs): 2004 UPDATE**

Obligation (Article in the Protocol)	Implementation
Product Control Measures Article 3 Paragraph 3 and Annex VI) ³⁵	- Lead in <i>Gasoline Regulations</i> under CEPA - Voluntary initiatives for mercury alkaline batteries
Product Management Measures Article 3 Paragraph 4 and Annex VII) ³⁶	- Measures to control mercury-containing products (fluorescent lamps, dental amalgam waste, clinical thermometers and auto switches) - Voluntary programs - Outreach programs
Emission Inventories Article 3 Paragraph 5 and Annex I) ³⁷	- NPRI, RDIS and ARET - Emissions monitoring by federal, provincial and territorial agencies and industry
Obligation Article in the Protocol)	Implementation
Exchange of Information and Technology Article 4) ³⁸	- Canadian Consultant Trust Fund - Technology Partnership Canada - Canadian Environmental Technology Advancement Centres - Sustainable Development Technology Canada - Canadian Technology Network
Strategies, Policies, Programs and Measures Article 5) ³⁹	- Federal TSMP and the CCME Policy for the Management of Toxic Substances - CWS process (mercury) - Regional and ecosystem strategies, e.g., the NARAPs
Reporting Article 7) ⁴⁰	- NPRI, RDIS and ARET - Emissions monitoring by federal, provincial and territorial agencies and industry
Amendments Article 13) ⁴¹	- Canada will actively participate in discussions and review of amendments proposed under Article 13.

5.2 THE BASIC OBLIGATIONS

Article 3 and Annexes I-VII contain the Protocol's basic and most important Obligations. Five types of actions are specified:

³⁵ See section 4.2.3 for detailed product control measures.

³⁶ See section 4.2.4 for detailed product management measures.

³⁷ See section 4.2.5 for detailed requirements for emission inventories.

³⁸ See section 5 for detailed requirements for the exchange of information and technology.

³⁹ See section 5 for detailed requirements for strategies, policies, programs and measures.

⁴⁰ See section 5 for detailed requirements for reporting.

⁴¹ See section 5 for detailed requirements for amendments.

1. Continued national annual atmospheric emissions reductions;
2. Emission control measures (BAT);
3. Product control measures;
4. Product management measures, and
5. Emission inventories.

5.2.1 NATIONAL EMISSIONS REDUCTIONS

Article 3 Paragraphs 1 and 6 and Annex I

The Obligation

Parties must reduce their total annual emissions into the atmosphere from the level of the emission in the reference year (1990 or an alternate year from 1985 to 1995 inclusive) of Annex I metals (cadmium, lead and mercury), based on a declared inventory of emissions for a specified year between 1985 and 1995. A Party is exempt from this requirement if it has applied the requirements for emission control measures and product control measures and still cannot further reduce its total annual emissions of a heavy metal.

Rationale for the Obligation

This Obligation is to ensure a continued downward trend in emissions from those of a base year. Reduction levels are not specified in the Article 3 of the Protocol.

Implementation in Canada

Essentially, this Obligation has already been implemented in Canada. Using 1990 as the base year, information from ARET, RDIS and NPRI demonstrates that we will meet the there has been a 50% reduction in emissions from the stationary source categories identified in the Protocol. Ongoing initiatives to further reduce emissions include the Canada Wide Standard for mercury, actions taken as a result of the CEPA Strategic Options Reports for the power generation, primary base metals smelting and steel production sectors and initiatives under the Commission for Environmental Co-operation's North American Regional Action Plan for mercury or the Great Lakes Binational Toxics Strategy.

5.2.2 EMISSION CONTROL MEASURES

Article 3 Paragraphs 2 (a) (b) (c) (d) and 7 and Annexes III, IV and V

The Obligation

Parties are required to:

- Apply Best Available Techniques (BAT) to all new stationary sources for major stationary source categories listed in Annex II, taking into account the information on BAT in Annex III of the Protocol (2a);
- Apply the Emission Limit Values (ELVs) in Annex V to new stationary sources in a major stationary source category, or an alternative strategy that achieves equivalent overall emission reductions; (2b)
- Apply BAT to all existing stationary sources in major stationary source categories, taking into account the information in Annex III or an alternative strategy that achieves equivalent overall emission levels (2c); and
- Apply the ELVs in Annex V to existing stationary sources in a major stationary source category, or an alternative strategy that achieves equivalent overall emission reductions (2d).

The major stationary source categories include:

- Combustion installations;
- Metal ore, concentrate roasting or sintering facilities, installations producing pig iron or steel;
- Ferrous metal foundries;
- Facilities producing copper, lead and zinc from ore;
- Copper, lead and zinc smelting installations;
- Installations producing cement clinker in rotary kilns;
- Facilities manufacturing glass using lead;
- Chlor-alkali production facilities, and
- Hazardous, medical or municipal waste incinerators.

All Parties must apply BAT to new stationary sources. Parties are required to apply BAT or ELVs two years after the Protocol comes into force. For existing sources, Parties are required to apply BAT or ELVs, or an equivalent reduction strategy, eight years after the Protocol comes into force. Parties are permitted to extend the eight year period for specific existing sources in accordance with the amortization period provided for by national legislation.

An alternative to the Obligations to apply BAT to existing stationary sources and ELVs to new and existing stationary sources (i.e., Article 3, paragraphs 2b,c and d) is provided. If the land area of a country is greater than 6,000,000 km², (only the U.S., Canada and the Russian Federation qualify), the Party can opt to demonstrate 50% reductions with respect to each of the heavy metals within eight years of the Protocol coming into force Article 3, paragraph 7). Canada chose this option when it ratified the Protocol.

Rationale for the Obligation

The purpose of this Obligation is to ensure that BAT and ELVs are applied to major stationary sources that emit cadmium, lead and mercury. Alternatively, other emission reduction strategies that achieve equivalent overall emission levels may be used. This will provide Parties with greater flexibility, especially in dealing with existing facilities.

The alternative for large countries to demonstrate a national 50% reduction in heavy metal emissions was included because, in large countries, there is no known method for accurately determining receptors of the emissions from specified sources.

Implementation in Canada

Best Available Techniques for New Sources: Canada will implement the requirement to apply BAT to new stationary sources through existing approval and licensing processes for new facilities. Approval and licensing are primarily the responsibilities of provinces and territories, all of which have established processes requiring the licensing of major source facilities. These approvals or licenses require new facilities to have best available emission controls or techniques. Under the CWS for mercury for incinerators and smelters, emission limits have been set for new smelters and new incinerators that can be achieved either through pollution prevention or BAT. The CWS will not specify which BAT to use.. CCME and CEPA codes and guidelines, and the CWS and CEPA SOP processes, assist in the identification of BAT and associated emission limits for the different source categories.

Emission Controls for Existing Sources: To meet this Obligation, Canada has opted to demonstrate a 50% reduction in emissions of each of the heavy metals because this approach is more relevant to the Canadian situation. Canada may set point source standards to address domestic concerns about emissions of heavy metals.

Information from ARET, RDIS and NPRI demonstrates that Canada has achieved a 50% reduction in emissions from the stationary source categories identified in the Protocol for the primary heavy metals sector, using 1990 as the base year. The Obligation relating to existing sources has therefore already been met. To reduce mercury emissions even further and to go beyond the requirements of the Protocol, Canada has established Canada-wide Standards for mercury emissions from incinerators and smelters, and is currently developing a Canada-wide Standard for mercury emissions from coal-fired power plants.

5.2.3 PRODUCT CONTROL MEASURES

Article 3 Paragraph 3 and Annex VI

The Obligation

Each Party is required to apply product control measures according to Annex VI. At present, these measures apply to lead in gasoline (timeframe within six months of the Protocols entry into force) and mercury in alkaline manganese batteries (timescale within five years of the Protocols entry into force).

Rationale for the Obligation

Control measures are important to reduce releases during the life cycle associated with products that contain the targeted heavy metals. Annex VI contains appropriate control measures that provide sufficient flexibility to accommodate the variety of needs and circumstances within the UNECE. This obligation enhances the capacity of countries with economies in transition to adopt controls already in place in Canada.

Implementation in Canada

Canada already has the following measures in place that meet these requirements:

- the import and manufacture of leaded gasoline is prohibited under *the Lead in Gasoline Regulations* under CEPA, and
- current Canadian voluntary initiatives for batteries exceed the Protocol requirements. These voluntary initiatives are equivalent to regulatory controls in the US, which essentially ban added mercury in alkaline batteries.

5.2.4 PRODUCT MANAGEMENT MEASURES

Article 3 Paragraph 4 and Annex VII

The Obligation

Parties are to consider applying additional product management measures for specified types of products containing mercury, taking into account the information in Annex VII of the Protocol. The types of products include electrical components, thermometers, barometers, fluorescent lamps, dental amalgams, pesticides, paint and batteries.

Rationale for the Obligation

Although not mandatory, these additional measures can help to reduce releases and risks to human health and the environment associated with mercury-containing products. This obligation may be a first step for inclusion of more products in Annex VI.

Implementation in Canada

Canada will comply by considering further relevant measures to manage mercury-containing products. Canada already has measures in place to control some of these products such as the CWS for Mercury-containing Lamps and the CWS for Dental Amalgam Waste. The Environmental Choice program has established standards for certain products. Some provinces have initiated management projects in hospitals and dental clinics. The New England Governors / Eastern Canadian Premiers Mercury Action Plan propose many measures including outreach programs.

5.2.5 EMISSION INVENTORIES

Article 3 Paragraph 5

The Obligation

Parties are required to develop and maintain emission inventories for cadmium, lead and mercury and to provide this information for verification to UNECE.

Rationale for the Obligation

This Obligation ensures that the Parties will demonstrate that they are meeting the other requirements of the Protocol and that the Protocol is effective and is progressing towards meeting its objectives.

Implementation in Canada

Several programs and initiatives already underway in Canada provide information on heavy metal emissions. These include:

- The National Pollutant Release Inventory;
- The Residual Discharge Information System;
- ARET (1995-2000);
- Emissions monitoring by federal, provincial and territorial government agencies and industries;
- The Canada-U.S. Great Lakes Binational Toxics Strategy; and
- The North American Regional Action Plan for mercury;
- The Regional Action Plan for Mercury under the Conference of New England Governors and Eastern Premiers.
- For example, Quebec is preparing an updated exhaustive inventory of mercury emissions in the province. Inventories of cadmium and lead are at the planning stage.

6. OTHER OBLIGATIONS OF THE UNECE POPs AND HEAVY METAL PROTOCOLS

The following Obligations appear in both the POPs and Heavy Metals Protocols.

6.1 EXCHANGE OF INFORMATION AND TECHNOLOGY

Article 5 of the POPs Protocol, Article 4 of the Heavy Metals Protocol

The Obligation

Parties must, consistent with their laws, regulations and practices, facilitate the exchange of information and technology designed to prevent or reduce emissions and to develop cost-effective alternatives.

These Articles also provide examples of activities to promote the exchange of information and technology. These include cooperation between the public and private sectors on technology, engineering, equipment and finance; the exchange and access to information on alternatives; maintenance of lists of people working on similar activities internationally, and the exchange of information on other international activities.

Rationale for the Obligation

This requirement is intended to encourage the Parties to exchange information with each other. This is especially important for countries with economies in transition, which need better access to information and technology to manage POPs and heavy metals, and to develop cost-effective alternatives.

Implementation in Canada

Canada already has several programs and initiatives that address the exchange of information and technology. These include the Canadian Consultant Trust Fund, administered by Environment Canada's Environmental Technology Advancement Directorate, and the Technology Partnerships Canada, administered by Industry Canada. The new PCPA (expected to come into force in 2004) will facilitate the provision of information, including confidential business information, about pest control products to foreign governments and international organizations. The Canada POPs Fund also funds the organization of workshops to sensitize governments in countries with economies in transition about POPs.

6.2 PUBLIC AWARENESS

Article 6 of the POPs Protocol

The Obligation

Parties must, consistent with their laws, regulations and practices, promote the provision of information on POPs to the public. This may include information on risks and hazards (e.g., labels); information on risk reduction; information to encourage reduced use or elimination, and information on alternatives.

Rationale for the Obligation

It is important for people to be informed about the risks associated with POPs, the ways in which these risks can be reduced and available alternatives. This Obligation is intended to result in programs to increase public awareness of POPs and to allow people to make informed decisions about using them.

Implementation in Canada

The new PCPA (expected to come into force in 2004) requires the Minister of Health to "encourage public awareness in relation to pest control products by informing the public, facilitating public access to relevant information, and public participation in the decision-making process".

Canada will implement this requirement through existing programs that support public awareness, including:

- the labeling requirements for pesticide products and the Pest Management Regulatory Agency's policies, programs and projects on Sustainable Pest Management;
- published reports on the assessment of POPs on the Priority Substances List under CEPA;
- reports and other forms of public information on ecosystem and regional studies, including reports on toxic chemicals in the Great Lakes basin and the north, and
- the Canadian Pollution Prevention Information Clearinghouse.

6.3 STRATEGIES, POLICIES, PROGRAMS, AND MEASURES

Article 7 of the POPs Protocol, Article 5 of the Heavy Metal Protocol

The Obligation

Parties must establish (POPs) or develop (heavy metals) strategies, policies and programs to implement the Protocols within six months (POPs) or without undue delay (heavy metals) after they enter into force.

POPs: Parties must also encourage the use of environmentally sound management techniques and other types of management instruments, such as voluntary measures and economic instruments. They must also consider adopting additional policies, such as non-regulatory approaches. As well, Parties must make determined efforts to reduce the levels of the targeted POPs when they are contaminants in other substances. In addition, they are to consider the criteria that will be used to assess whether new POPs should be added to the Protocol.

Heavy Metals: Parties are encouraged to foster the efficient use of resources and raw materials, and to encourage the development and use of less polluting energy generation and transportation sources. They are also encouraged to take measures to phase out processes that emit heavy metals, and to develop cleaner production processes.

Parties may take more stringent measures than those required by the Protocol.

Rationale for the Obligation

The first part of this requirement is intended to ensure that the Parties develop management instruments to implement the Protocol's requirements within a reasonable period of time after the Protocol comes into force.

The second part is intended to encourage Parties to adopt a broad range of approaches to manage POPs and heavy metals, including voluntary measures, non-regulatory initiatives and economic instruments. It also requires the Parties to try to reduce the levels of POPs when they are contaminants in other substances or products.

The third part emphasizes the fact that Parties can impose additional, more stringent requirements on HAPs within their own countries.

Implementation in Canada

Canada will implement this requirement through existing strategies, policies, programs and measures addressing POPs and Heavy Metals. These include:

- the federal Toxic Substances Management Policy and the Canadian Council of Ministers of the Environment Policy for the Management of Toxic Substances;
- the Canada-Wide Standards process under the Canada-Wide Accord on Environmental Harmonization, which establishes a common vision, objectives and principles to inform the partnership of environmental management between the federal and provincial/territorial governments;
- federal legislation and regulations such as the *Canadian Environmental Protection Act*, the *Fisheries Act* and associated regulations which govern toxics released to air, water and soil;
- provincial/territorial legislation and regulations which regulate the release of toxics to air, water and soil in their jurisdictions;
- regional and ecosystem strategies, including the Northern Contaminants Programme; the North American Regional Action Plans; the Great Lakes Water Quality Agreement and the Great Lakes Binational Toxics Strategy; the Canada-Ontario Agreement; the Georgia Basin Ecosystem Initiative and St-Laurent Vision 2000 and the New England Governors / Eastern Canadian Premiers Mercury Action Plan.
- evaluation of new and existing substances under CEPA, and
- evaluation of new and existing active ingredients and pest control products under the PCPA.

6.4 RESEARCH, DEVELOPMENT AND MONITORING

Article 8 of the POPs Protocol, Article 6 of the Heavy Metals Protocol

The Obligation

Parties must encourage research, development, monitoring and cooperation on a variety of matters. These include emissions, transport, deposition levels and levels in the environment; pollutant pathways and ecosystem inventories; relevant effects on human health and the environment; best available techniques and practices; methods for considering economic and social factors in the evaluation of alternatives; an effects-based approach; methods for estimating national emissions (not for heavy metals), and levels of POPs and heavy metals that are contained as contaminants in products. Also for heavy metals: collection, recycling and disposal of products containing listed heavy metals; alternatives to the use of heavy metals in listed products.

Rationale for the Obligation

Research, development and monitoring will generate information and knowledge, which are essential for designing effective management instruments, monitoring the effectiveness of control strategies, and identifying emerging issues.

Implementation in Canada

Canada will implement this requirement through existing programs and initiatives on research, development and monitoring, including:

- the Northern Contaminants Program and the Arctic Monitoring and Assessment Program;
- the Integrated Atmospheric Deposition Network and other monitoring in the Great Lakes basin;
- the Ecological Monitoring and Assessment Network;
- federal, provincial and territorial monitoring programs and initiatives;
- domestic and international work on environmentally sound management criteria.; and
- Canadian Wildlife Service monitoring programs.

6.5 REPORTING

Article 9 of the POPs Protocol, Article 7 of the Heavy Metals Protocol

The Obligation

Parties are required to report periodically to the Executive Body on measures that they have taken to implement the Protocols. The frequency of reporting and the format and contents of reports are to be determined by the Executive Body. Parties are also required to report the levels of emissions of PAHs, dioxins, furans, hexachlorobenzene, cadmium, lead and mercury and production and sales figures for substances listed in annexes I and II of the POPs Protocol.

Rationale for the Obligation

Reporting is necessary so that the Parties can demonstrate that they are meeting the Obligations and that the Protocol is achieving its objectives. In addition, reporting ensures that the UNECE receives information on the long-range transport and deposition of POPs and heavy metals.

Implementation in Canada

Several programs and initiatives will facilitate compliance with these requirements:

- the National Pollutant Release Inventory;
- the National Inventory for Releases of Dioxins and Furans (PCDD/PCDF);
- the Residual Discharge Information System;
- emissions monitoring by federal, provincial and territorial government agencies and industries, and
- the proposed database on pesticide sales in Canada, being developed by the Pest Management Regulatory Agency;
- the Canada-U.S. Great Lakes Binational Toxics Strategy; and
- the North American Regional Action Plans.

6.6 AMENDMENTS

Article 1 of the POPs Protocol and Article 13 of the Heavy Metals Protocols

The Obligation

Any Party may propose amendments to the Protocol. For proposals to add POPs to the Protocol or to amend the Annexes that contain the detailed requirements for the listed POPs, the proponent must provide the Executive Body with the information specified in Executive Body decision 1998/2. For heavy metals, the proponent may propose amendments to Annexes I, II, IV, V or VI. For proposed amendments to Annex I, V or VII, the proponent must provide the Executive Body with the information specified in Executive Body decision 1998/1.

These decisions describe the information required and the procedure for amending the stated annexes to the Protocols. For adding a substance, information is required on the potential for long-range atmospheric transport, toxicity, and bioaccumulation, as well as on production, uses, emissions and measured environmental levels. Information must also be provided on socio-economic factors related to alternatives and/or techniques for reducing emissions.

Decisions to amend the Protocol will be made by consensus of the Parties meeting within the Executive Body.

Rationale for the Obligation

This Obligation allows consideration for new POPs and heavy metals to be added, or in the case of heavy metals for amendments to other of the Protocol's annexes. The information described in the decision of the Executive Body is essential to determine whether or not a proposed amendment should be adopted by Parties to the Protocol and in the case of proposals to add new substance, the most appropriate management requirements for that substance.

In 2000 the UNECE established a scientific ad hoc expert group on POPs, which developed a work plan which included assisting Parties to the Protocol by preparing preliminary risk profiles and preliminary summary reports on specific substances which might be considered for future addition to the Protocol.

In 2002 and 2003 the UNECE ad hoc expert group on POPs prepared a compendium of available information on a number of substances: hexachlorobutadiene; pentabromodiphenyl ether (PeBDE); pentachlorobenzene; polychlorinated naphthalenes; dicofol; short-chain chlorinated paraffins; endosulfan and pentachlorophenol.

In March 2003 the first meeting of a UNECE expert group on Heavy Metals was held. This expert group will collect and review scientific and technical information in preparation for a later review of the Protocol. Proposed workplan activities include: collecting available information on the effects of heavy metal pollution; reviewing information on abatement options and their costs; and reviewing information on heavy metals not yet included in the Protocol. The group's workplan will be available in early 2004..

Implementation in Canada

Canada is actively participating in the UNECE ad hoc expert group on POPs process to assist Parties by conducting preliminary work on substances which might be considered for future addition to the Protocol. The Expert Group is chaired by a Canadian, a Canadian expert prepared the scientific dossier on short-chained chlorinated substances, and Canada

**STRATEGIC IMPLEMENTATION FRAMEWORK FOR INTERNATIONAL COMMITMENTS
ON HAZARDOUS AIR POLLUTANTS (HAPs): 2004 UPDATE**

forwarded relevant Canadian information to the experts preparing other substance dossiers. Canada will continue to participate in subsequent work in the process to consider candidate substances discussions and anticipated negotiations concerning amendments to the Protocols. Canada is also actively participating in the more recently established UNECE expert group on heavy metals.

Canada will actively participate and follow from early stages discussions and negotiations concerning amendments to the Protocols, and will make any relevant information in its possession available to the UNECE and the Parties. Canada supports the concept that sound science must be the basis of decision-making when considering the addition of new substances.

APPENDIX A SUMMARY OF JOINT FEDERAL / PROVINCIAL / TERRITORIAL INSTRUMENTS FOR MANAGING HAZARDOUS AIR POLLUTANTS

1.1 The Comprehensive Air Quality Management Framework for Canada

The purpose of the Comprehensive Air Quality Management Framework for Canada is to establish a cooperative framework and mechanism for the coordination of actions by the governments of Canada on air quality issues of regional, national and international scope, especially those with transboundary or global effects, and for the establishment of related goals and objectives. It was signed by the Canadian Council of Ministers of the Environment (CME) and the Council of Energy Ministers in 1993.

The federal/provincial/territorial coordination mechanism established under the Framework is the National Air Issues Coordinating Committee (NAICC). There are several task groups under NAICC, including the HAPs Task Group. The Consultation Groups on POPs and Heavy Metals, established under the HAPs Task Group, have been the federal/provincial/territorial mechanisms for multistakeholder consultations on POPs and heavy metals.

1.2 The Canada-Wide Accord on Environmental Harmonization

The Canada-Wide Accord on Environmental Harmonization, which came into effect in January 1998, establishes a common vision, objectives and principles to inform the partnership in environmental management between the federal, provincial and territorial governments, and the development and implementation of associated Sub-Agreements. The Accord will help to ensure that the management of HAPs is coordinated on a national basis.⁴²

1.3 The Canada-Wide Environmental Standards Sub-Agreement

Canada-wide Standards (CWSs) are national standards developed under the Canadian Council of Ministers of the Environment (CCME) Canada-wide Environmental Standards Sub-Agreement, which operates under the broader CCME Canada-wide Accord on Environmental Harmonization. Canada-wide Standards address key environmental protection and health risk issues that require concerted action across Canada.

The focus of the Canada-wide Environmental Standards Sub-Agreement is on standards that recommend levels or concentrations of substances in the surrounding environment. The levels or concentrations contained in the standards are generally those that provide protection for the environment and human health and are technologically and economically achievable. Generally, each standard includes a target, a time frame for achieving the target, a list of governments' initial actions towards achieving the standard, and a protocol for reporting to the public on progress achieved.

The standards are developed jointly by all jurisdictions that signed onto the Harmonization Accord with the coordination of the CCME. Joint initial actions along with implementation plans are then developed by each jurisdiction, including federal and provincial / territorial governments, to meet the Canada-wide standards for the substance.

The development of Canada-wide Standards for dioxins/furans, mercury and particulate matter will contribute to Canada's ability to meet international obligations on HAPs.

⁴² Although the Province of Quebec has not signed the Accord, its operations are consistent with those of other provinces.

1.3.1 CANADA-WIDE STANDARDS FOR DIOXINS AND FURANS

The Canada-wide Standards process has focused on anthropogenic sources that are releasing dioxins and furans to the atmosphere. In recognition of the ultimate goal of virtual elimination, pollution prevention is being encouraged as the preferred method for avoiding the creation of dioxins or reducing releases to the environment.

Inventories of Releases of Dioxins, Furans and HCB: In January 1999, the Federal/Provincial Task Force on Dioxins and Furans released the first *Dioxins and Furans and Hexachlorobenzene Inventory of Releases*, followed by a revised Update published by Environment Canada in February 2001. The latest Update documented the current understanding of anthropogenic sources in Canada releasing dioxins and furans. The *Inventory of Releases* and the Updates list emissions from over 20 sectors by province and territory, and provides national summaries for each sector.

The information in the dioxins and furans inventory will be refined and updated on a regular basis through a variety of sources including the National Pollutants Release Inventory as a means of tracking progress and as a means of identifying any future sources of releases that must be addressed. A review with recommendations of release sources of dioxins and furans in Canada is found in the Status of Activities Related to Dioxins and Furans Canada-wide Standards - February 2003.⁴³

Canada-wide Standards have been developed for five priority sectors, varying from regional to national in scope, accounting for about 65% of national releases to the atmosphere:⁴⁴

Waste Incineration: The CWS, signed in June 2001, sets out targets and timelines for four types of incineration: municipal solid waste, medical waste, hazardous waste and sewage sludge. Many jurisdictions have combined their incineration implementation plans for dioxins and furans with those for mercury. For Dioxins & Furans CWSs, jurisdictions with existing facilities that do not meet the CWS have prepared implementation plans. Those that do not have existing facilities will apply the standard for new facilities in conjunction with their permitting processes if proposals are received in the future. Those jurisdictions in which all facilities meet or surpass the standard will work to ensure that facilities remain in compliance.

Coastal Pulp and Paper Boilers that Burn Salt Laden Wood: CCME Ministers endorsed the Dioxins & Furans CWS for Coastal Pulp & Paper Boilers Burning Salt Laden Wood in May 2001. British Columbia has the vast majority of existing coastal pulp and paper boilers that burn salt-laden wood. New Brunswick has one facility to which the CWS applies. Other jurisdictions will apply the standard for new facilities in conjunction with their permitting processes if proposals are received in the future.

Iron Sintering Plants: Unique to Ontario, where there is only one remaining iron sintering plant in Canada. Endorsed by CCME in March 2003, this Standard sets out limits for dioxins and furans as well as expected emission levels for particulate matter which should be achieved when control technology designed to meet the dioxin and furan limits is employed. Particulate

⁴³ www.ccme.ca/assets/pdf/d_f_sector_status_rpt_e.pdf.

⁴⁴ Detailed information on the CWS for Dioxins and Furans is available at: www.ccme.ca/initiatives/standards.html?category_id=50#23.

matter emission levels are addressed because there is believed to be a very close association of emissions of particulate matter and dioxins and furans.

Electric Arc Furnaces in Steel Manufacturing: Electric arc furnace (EAF) steel manufacturing is an important recycling activity which contributes to the recovery of steel resources and waste minimization. However, the nature of the process also results in the formation of dioxins and furans. The CWS was endorsed by CCME in March 2003. Numerical limits, with timelines for implementation, are presented in this CWS. This will allow a standard to be established for the interim period prior to a planned review of the standard in 2003. This review, which is to be complete by December 31, 2003, will incorporate advancements in scientific, technical and economic information and analysis. The requirement to develop a Pollution Prevention Strategy for the EAF steel sector is included and this considers the management of other pollutants. A process to review the standard is also included.

Conical municipal waste combustion: Unique to Newfoundland and Labrador, the burning of municipal waste in conical waste combustors results in 27 percent of the national total of dioxins and furans emissions to the atmosphere documented in the 2001 inventory of releases. This standard proposes to phase out the operation of the 41 conical waste combustors (as of June 2003) in Newfoundland and Labrador, and prevent the operation of new conical waste combustors anywhere in Canada.

A Canada-wide Standard for dioxins/furans will not be developed for residential wood combustion since a recent Canadian study showed that the dioxin/furan contribution from this sector is lower than originally estimated. However, this sector is being addressed under the Canada-wide Standard process for PM/Ozone. Other sectors that are potentially a significant source of dioxin/furan release, such as open burning, are being reviewed by the CCME.

Wherever possible, work on the Canada-wide Standards for dioxins and furans have been coordinated with other ongoing processes (e.g. Mercury Canada-wide Standards and the Strategic Options Process). A multi-pollutant approach will be carried forward to the remaining sectors while ensuring that dioxins and furans issues are addressed and that the ultimate goal of virtual elimination is kept clearly in mind (e.g., Canada-wide Standard for PM and Ozone).

1.3.2 CANADA-WIDE STANDARDS FOR MERCURY

The CCME has undertaken a number of Canada Wide Standards (CWS) to reduce anthropogenic emissions of mercury. Each government may choose the most appropriate measures to implement the standards within their jurisdiction. Summaries of these standards for mercury are found below:

Base metal smelting: Environmental source performance guidelines have been established for base metal smelters. For existing facilities, the guideline is 2 g mercury/tonne of finished metal, while for new and expanded facilities, the performance guideline is 0.2 g mercury/tonne of finished zinc, nickel and lead, and 1 g mercury/tonne of finished copper.

Waste Incineration: Emission limits have been established for incinerators. They are expressed as a concentration of mercury in the exhaust gas exiting the facility. Each government may choose the most appropriate measures to implement the standard within their jurisdiction.

Mercury-Containing Lamps: The Canada-wide Standard for mercury-Containing Lamps takes a pollution prevention approach by reducing the mercury content of lamps sold in Canada. The

CWS is a 70% reduction by 2005 from a 1990 baseline, and an 80% reduction by 2010 in the average content of mercury in all mercury-containing lamps sold in Canada.

Dental Amalgam Waste: The Canada-wide Standard for Mercury for Dental Amalgam Waste is the application of "best management practices" to achieve a 95% national reduction in mercury releases from dental amalgam waste discharges to the environment, by 2005, from a base year of 2000.

Electric Power Generation: In June 2003, CCME announced their commitment to develop a CWS for this sector by 2005 for implementation by 2010, to explore the national capture of mercury from coal burned in the range of 60-90%, and to align with US standards for mercury.

1.3.3 CANADA-WIDE STANDARDS FOR PARTICULATE MATTER AND OZONE

In June 2000, the Canada-wide Standards for Particulate Matter (PM) and Ozone were signed. These standards commit government to significantly reduce PM and ground-level ozone by 2010.

When adopting the Canada-wide Standards, Ministers also agreed to a set of Joint Initial Actions to be completed by 2005, which include the cooperative development of multi-pollutant emission reduction approaches by the federal government, provinces and territories to reduce emissions from key industrial sectors.

The main vehicle for implementation of the CWS for PM and Ozone will be jurisdictional implementation plans. As an input to the jurisdictional implementation plans, Multi-pollutant Emission Reduction Analysis Foundation (MERAF) reports have been completed for seven sectors, including iron and steel, base metals smelting, pulp and paper, lumber and allied wood products, concrete batch mix and asphalt mix plants. These reports inventory the emissions, describe the control technologies and management practices available to reduce emissions and evaluate potential emission reductions that could be derived from application of available techniques. Some of the actions that are taken to reduce emissions of PM and Ozone will also affect emissions of other pollutants, and may provide co-benefits for reductions of dioxins and furans and mercury.

1.4 The CCME Policy for the Management of Toxic Substances

In January 1998, Ministers endorsed the CCME Policy for the Management of Toxic Substances, which was developed by the CCME's Ad Hoc Toxics Group. The Policy sets out a comprehensive, integrated, cooperative and concerted approach for the management of toxic substances.

The CCME Ad Hoc Toxics Group is inventorying current activities related to toxic substances management. The objective is to identify gaps for the purpose of recommending areas for further action.

1.5 The National Commitment to Pollution Prevention

The National Commitment to Pollution Prevention (1993)⁴⁵ commits the member governments of the CCME to:

- Show leadership by encouraging pollution prevention;
- Set an example through good stewardship;
- Establish partnerships to enhance the capacity to achieve pollution prevention;
- Provide information to citizens, so that they can make informed decisions;
- Re-orient research, science and technology towards pollution prevention; and
- Incorporate pollution prevention principles into legislation and regulations, where feasible.

The National Commitment to Pollution Prevention means that federal, provincial and territorial management approaches for HAPs should be based on pollution prevention, whenever possible.

In May 1996 the CCME established a five-year Pollution Prevention Awards program. This program recognizes organizations that have shown leadership and innovation in pollution prevention - the use of processes, practices, materials, products, or energy that avoid or minimize the creation of pollutants and waste at the source.

1.6 Environmentally Sound Waste Management

In July 2000, the Minister of the Environment called on provinces and territories to help strengthen the standards for all facilities that accept hazardous waste. Since then, actions were taken at the provincial level including the implementation in Ontario of more stringent hazardous waste regulations and in Quebec of contaminated soil regulations. In addition, work is taking place under the CCME to revise and update the CCME National Guidelines for the Land filling of Hazardous Wastes

At the federal level, proposed revisions to the *Export and Import of Hazardous Wastes Regulations* will include criteria that the Minister will take into account, prior to issuing an export, import and transit permit for hazardous waste and hazardous recyclable material. These criteria will be used to form an opinion as to whether the hazardous waste or hazardous recyclable material will be managed in a manner that will protect the environment and human health. The Minister could refuse to issue a permit if he is of the opinion that the waste or recyclable material will not be managed in a manner that will protect the environment and human health. These proposed Environmentally Sound Management criteria are based on work being done at the OECD level.

1.7 Federal / Provincial Agreements

The federal and provincial governments can enter into agreements on environmental instruments under CEPA 1999.

The Canada-Saskatchewan Administrative Agreement (in force since September 15, 1994) is a working arrangement (covering inspections, enforcement, monitoring, reporting, etc.) between the federal and provincial government which streamlines efforts in administering a number of

⁴⁵ www.ccme.ca/initiatives/pollution.html?category_id=23

CEPA 1999 regulations, including those regarding pulp and paper mills, chlorobiphenyls and PCBs.

Since 1994, Administrative Agreements have been in place between the province of Quebec and the Canadian government concerning the pulp and paper sector.

Since 1994, the province of Alberta has had an Equivalency Agreement with the federal government to eliminate duplication of legislative requirements. The regulated facilities (four kraft mills, one vinyl chloride plant, and one polyvinyl chloride plant) continue to remain in compliance with their provincial operating licences for dioxin, furan, and vinyl chloride emissions.

1.8 Guidelines and Codes of Practice

Environment Canada and CCME guidelines are widely used across federal, provincial, and territorial governments and in over 45 countries to assess the status and trends of environmental contamination in water bodies and for managing toxic substance risks in the environment.

Four new guidelines for water, sediment, and tissue have been recently finalized, and 11 other guidelines are under development. These included published guidelines on dioxins and furans for sediment quality and for tissue quality.

The CCME and Environment Canada have developed many guidelines and codes of practice that focus on HAPs targeted for action under the Stockholm Convention and UNECE POPs and HM Protocols, including:

- Environment Canada's National Emission Guidelines for the Wood Pulping Industry - New Stationary Sources (1979);
- CCME Guidelines for the Management of Wastes Containing PCBs (1989);
- CCME Guidelines for Mobile PCB Destruction Systems (1990);
- CCME Guidelines for Mobile PCB Treatment Systems (1990);
- CCME National Guidelines for the Land filling of Hazardous Wastes (1991);
- CCME National Emission Guidelines for Stationary Combustion Turbines (1992);
- CCME National Guidelines for Hazardous Waste Incineration Facilities, Design and Operating Criteria, Volumes 1 and 2 (1992);
- CCME National Guidelines for the Use of Hazardous and Non-hazardous Wastes as Supplementary Fuels in Cement Kilns (1996); and
- Wood Preservation Facilities: Recommendations for the Design and Operation of Wood Preservation Facilities (March 1999).
- National Guidelines for Hazardous Waste Incineration Facilities: Design and Operating Criteria

1.9 National Air Pollution Surveillance Network

The National Air Pollution Surveillance Network (NAPs)⁴⁶, established in 1969, is the primary air monitoring network in Canada. This joint federal, provincial, territorial, and municipal network manages 252 monitoring stations in 153 municipalities across Canada.

Since 1988, the Centre has been developing and applying improved techniques for measuring potentially toxic air contaminants. POPs monitoring under NAPs includes the PAH and Dioxins/Furans Monitoring Program. In co-operation with provincial environmental agencies, Environment Canada's Environmental Technology Centre operates a PAH and dioxin / furan measurement program that has collected data from over 35 rural and urban sites across Canada. Dioxins and furans in ambient air are being measured at 15 sites across Canada. Dioxin and furan data are being shared with researchers in the U.S. to determine how much various industrial sectors contribute to ambient levels. Sample filters are also analysed for 50 elements including toxic metals such as lead, mercury, zinc and arsenic.

1.10 The Ecological Monitoring and Assessment Network

The Ecological Monitoring and Assessment Network (EMAN)⁴⁷ is a national network of ecological monitoring and research sites characterized by long-term, multi-disciplinary studies. Its operating goal is to promote coordinated monitoring and research activities within a network of specific sites across Canada which attempt to address federal, provincial, regional and local environmental needs. The network promotes the standardization of monitoring protocols, the use of environmental indicators and the production of issue and area-based assessments.

⁴⁶ www.etc-cte.ec.gc.ca/NAPS/index.html

⁴⁷ www.eman-rese.ca/eman/

APPENDIX B SUMMARY OF FEDERAL INSTRUMENTS FOR MANAGING HAZARDOUS AIR POLLUTANTS

2.1 Legislation

2.1.1 THE CANADIAN ENVIRONMENTAL PROTECTION ACT, 1999

The *Canadian Environmental Protection Act, 1999* (CEPA 1999)⁴⁸ includes major revisions to the original CEPA that was promulgated in 1988. The goal of the renewed *Canadian Environmental Protection Act* (CEPA) is to contribute to sustainable development through pollution prevention and to protect the environment, human life and health from the risks associated with toxic substances. CEPA also recognizes the contribution of pollution prevention and the management and control of toxic substances and hazardous waste to reducing threats to Canada's ecosystems and biological diversity. It acknowledges for the first time the need for the virtual elimination of substances that are toxic under the Act, persistent, bioaccumulative and primarily the result of human activity. Health Canada works in partnership with Environment Canada to assess potentially toxic substances and to develop regulations to control toxic substances.

CEPA 1999 Regulations

Prohibition of Certain Toxic Substances Regulations and Prohibition of Certain Toxic Substances Regulations

The *Regulations* prohibit the manufacture, use, processing, sale, offering for sale and importation of certain toxic substances that appear on Schedule I of CEPA 1999 except for use for scientific research purposes and for use as a laboratory analytical standard.

The *Prohibition of Certain Toxic Substances Regulations, 2003* replaced the *Prohibition of Certain Toxic Substances Regulations* made by Order in Council on April 30, 1996 under CEPA 1988. The *Regulations* feature a schedule listing toxic substances subjected to prohibition for manufacture, use, process, sale, and offer for sale or import. The revisions to the 1995 regulations added two new substances: benzidine and its salt (benzidine dihydrochloride), and hexachlorobenzene and include conditions specific to hexachlorobenzene.

Persistence and Bioaccumulation Regulations

The *Persistence and Bioaccumulation Regulations* set the criteria used to determine if a substance is persistent or bioaccumulative under certain sections of the *Canadian Environmental Protection Act, 1999*. These criteria are those in the Toxic Substances Management Policy adopted, in 1995, by the Federal Government.

Export Control List Notification Regulations

The *Regulations* require exporters to provide notice to the Minister of Environment, of the proposed exports of substances on the Export Control List, Schedule 3 of the *Canadian Environmental Protection Act, 1999* and to submit annual reports.

⁴⁸ www.ec.gc.ca/CEPARRegistry/the_act/

Export of Substances under the Rotterdam Convention Regulations

The regulations permit Canada to implement the Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade. The main purpose of the regulations (final version was published in August 2002) is to ensure that chemicals and pesticides subject to the PIC procedure are not exported to parties to the Convention, unless the importing Party has provided its "prior informed consent" to the shipment. Canada has also undertaken measures to ensure that Canadian exporters respect any conditions imposed on the importation of these substances.

Chlorobiphenyls Regulations

The *Regulations* prohibit the manufacturing, the use, except for specified electrical equipment containing PCBs already in Canada when the ban was put in place, the sale, the offer for sale and the import of PCBs. The *Regulations* limit the concentrations of PCBs in manufactured products and the quantities that may be released in the environment to 50 parts per million by weight of PCBs except for road oiling purposes, where the limit is five parts per million. The *Regulations* also set a one gram per day limit on the amount of PCBs that may be released into the environment in the course of the operation, the maintenance, the storage, the transportation and the management of the specified PCB equipment.

Amendments are proposed to the *Chlorobiphenyls Regulations* to require PCB use registration and set deadlines on the use of PCB in equipment.

Federal Mobile PCB Treatment and Destruction Regulations

The *Regulations* apply to mobile systems for the treatment and destruction of PCBs that are operated on federal lands or operated by or under contract with federal institutions. They require Ministerial authorisation, specify release limits on PCBs, dioxins and furans, particulate matters and hydrogen chloride, operating standards, and emission testing methods.

Amendments are proposed to these regulations to update the release limits to reflect technology improvement and meet the CWS on dioxins and furans. Stakeholder consultations were held in 2000 and 2003.

PCB Waste Export Regulations

The *PCB Waste Export Regulations*, were published in *Canada Gazette* Part II on February 7, 1997. The *Regulations* apply to PCB liquids, PCB solids, PCB mixtures, PCB equipment, PCB-contaminated solid or electrical equipment, and packaging that held any of these materials. PCB liquids, solids and mixtures will be controlled down to a concentration of 50 parts per million. The *Regulations* establish strict controls on the export of PCB waste, that are an enhancement of similar controls already in place for hazardous waste under the *Export and Import of Hazardous Wastes Regulations*. Export is only allowed for thermal or chemical destruction at authorized and environmentally sound U.S. facilities. Export for land filling and for purposes other than those listed in the *Regulations* is not allowed. Exports of PCB wastes to countries other than the United States continue to be prohibited.

The key elements of the *Regulations* are: prior notification for proposed exports; consent from U.S. authorities (written or 45-day tacit consent); exports only to facilities authorized to thermally or chemically destroy PCB wastes; transport by authorized carriers; contracts

between Canadian exporters and U.S. importers; liability insurance of \$5 million in case of release of PCB wastes into the environment during export; tracking of shipments via waste manifests and certification of disposal; and making alternative arrangement where the PCB waste cannot be received or disposed of as intended.

Amendments to the *PCB Waste Export Regulations* are proposed to include in one set of regulations, import and export controls for PCB wastes. Stakeholder consultations were held in 2001.

Storage of PCB Material Regulations

The *Regulations* concern the storage of materials, wastes or equipment containing more than fifty parts per million of chlorobiphenyls (PCBs). The *Regulations* include provisions for secure access, maintenance and storage practices, fire protection, emergency planning, labeling, record maintenance and reporting waste inventories. Amendments to these regulations are proposed to set time deadlines on storage before destruction. Stakeholder consultations were held in 2000 and 2003.

Export and Import of Hazardous Wastes Regulations

The *Export and Import of Hazardous Wastes Regulations*, made pursuant to the *Canadian Environmental Protection Act, 1988*, have been in force since November 1992. The main goal of the *Regulations* is to implement a control system for transboundary movements of hazardous waste and hazardous recyclable materials. The *Regulations* include requirements for: prior notification and consent of the importing and transit jurisdictions; the existence of contracts between importers and exporters; insurance for Canadian importers and exporters and their carriers; and tracking of the movement from its point of origin to its final destination through the use of manifests and certificates of recycling/disposal. The *Regulations* allowed Canada to implement its international obligations under the Basel Convention, 1992 OECD Council Decision C(92)39 on wastes destined for recovery operations, and the 1986 Canada-U.S.A. Agreement on the Transboundary Movement of Waste.

Proposed revisions to the *Export and Import of Hazardous Wastes Regulations* will harmonize definitions and controls with recent domestic and international changes as well as improve regulatory efficiency.

Appendix E outlines the export/import controls under the *Export and Import of Hazardous Wastes Regulations* for the twelve POPs under the Stockholm Convention.

Interprovincial Movement of Hazardous Waste Regulations

The goal of the *Interprovincial Movement of Hazardous Waste Regulations* is to ensure that the current manifest tracking and classification requirements for the interprovincial movements of hazardous wastes are maintained.

Under section 191 of the *Canadian Environmental Protection Act, 1999* (CEPA 1999), the Governor in Council has the authority to make regulations respecting conditions governing the movement within Canada of hazardous wastes and hazardous recyclable materials. The regulations are required as a consequence of the new *Transportation of Dangerous Goods Regulations* (TDG regulations), made pursuant to the *Transportation of Dangerous Goods Act, 1992*. These new *TDG Regulations* came into force on August 15, 2002.

Preliminary consultations were held across Canada between 2000 and 2003 on new regulations governing the interprovincial/territorial movement of hazardous wastes and hazardous recyclable materials. These regulations will ensure that wastes are transported to and received only at authorized facilities for final disposal and recycling operations. It is anticipated that proposed regulations will be published in fall 2004.

Pulp and Paper Mill Defoamer and Wood Chip Regulations

The purpose of the regulations is to prevent the formation of dioxins and furans and the limit the discharge of these substances from pulp and paper mills using a chlorine bleaching process. The defoamers used by pulp and paper mills are limited to a maximum concentration of ten parts per billion of dioxins and forty parts per billion furans. In addition, the *Regulations* stipulate that "no person shall import, offer for sale, sell for use or use in a mill in Canada, wood chips that have been made from wood that has been treated with polychlorinated phenols".

Pulp and Paper Mill Effluent Chlorinated Dioxins and Furans Regulations

The *Regulations* are designed to protect the environment and humans from dioxin and furan releases. The *Regulations* prohibit the releases of dioxins and furans in pulp and paper mill effluents as of July 1, 1992. In the case of many of the existing mills, significant modifications to the bleaching processes were necessary to avoid dioxin and furan formation. All pulp and paper mills are meeting the regulations

Contaminated Fuel Regulations

The *Regulations* prohibit the import and export of contaminated fuel except for the purpose of destruction, disposal and recycling in accordance with applicable federal or provincial law. Potential contaminants in fuel include chlorinated hydrocarbons, including PCBs; heavy metals, including lead, chromium, cadmium, nickel, vanadium, and zinc; sulphur and phosphate.

Gasoline Regulations

The *Regulations* limit the concentration of lead in gasoline that is produced, imported, sold or offered for sale in Canada and limit the concentration of phosphorus in unleaded gasoline. Gasoline for use in aircraft is exempt from the *Regulations* and, until January 1, 2008, leaded gasoline for use in racing competition vehicles is not subject to the lead concentration restrictions imposed by the *Regulations*. In total, the exemptions represent less than 0.1% of gasoline use in Canada.

New Substances Notification Regulations

The *Regulations* concern the notification and assessment of substances new to Canada. They are intended to ensure that no new substance is introduced into the Canadian marketplace before an assessment is made of whether or not it is "toxic" to human health or to the environment, within the meaning of the Act. Conditions may be imposed on a substance when the assessment demonstrates that it is suspected of being "toxic" or capable of becoming "toxic".

All substances, including those with the characteristics of POPs that are not on Canada's list of in-use substances (Domestic Substances List) are deemed to be new to Canada and their

introduction requires notification and assessment under the *New Substances Notification Regulations* of CEPA.

The *New Substances Notification Regulations* are undergoing significant amendment, and the amended version will be made available in 2004/2005.

Chlor-Alkali Mercury Release Regulations

The *Chlor-Alkali Mercury Release Regulations* under CEPA (1999) limit the release of mercury into ambient air from mercury cell chlor-alkali plants. The *Regulations* also include provisions with respect to reporting releases, malfunctions and breakdowns.

Secondary Lead Smelter Release Regulations

These *Regulations* limit the concentration of particulate matter containing lead emitted into ambient air.

Migratory Bird Regulations

These *Regulations* under the *Migratory Birds Convention Act* ban the use of lead shot for hunting of most migratory game birds in wetland areas.

2.1.2 THE PEST CONTROL PRODUCTS ACT

The *Pest Control Products Act* (PCPA) is the primary federal legislation for the regulation of pesticides in Canada and is intended to protect people and the environment from risks posed by pesticides. Pesticides include insecticides, herbicides, fungicides, etc. that are used in agriculture, forestry, industry, public health and domestic settings. Any pesticide imported into, sold or used in Canada must first be registered under the PCPA. The PCPA is administered by the Pest Management Regulatory Agency (PMRA) of Health Canada.

A pesticide cannot be registered under the PCPA unless the PMRA determines that any associated risks to people and the environment are acceptable. The product must also serve a useful purpose. Any aspect of the pesticide, including all uses, downstream effects and disposal, may be taken into account during the pre-market assessment. The onus rests with the applicant to conduct extensive tests to demonstrate that the risks and value of the product are acceptable.

Registered products may be used only for the specific purposes listed on the approved product label. Failure to follow the directions on the pesticide label is an offence under the PCPA, which is enforced by the PMRA.

At the provincial/territorial level, pest management and pesticide regulation are typically within the mandate of agriculture and/or environment departments. Provincial and territorial legislation, which focuses on the sale and application of products registered under the federal PCPA, may add to federal restrictions but may not relax them. For example, provinces and territories may require permits to be obtained before pesticides are sprayed via the air, establish specific buffer zones around sensitive areas, and impose posting requirements to identify areas of pesticide application. Federal and provincial/territorial regulators collaborate in various ways, including ensuring compliance with their respective pesticide legislation.

The New Pest Control Products Act

In December 2002, the new PCPA received Royal Assent and is expected to come into force some time in 2004 pending the development of supporting regulations. This new PCPA replaces the existing PCPA, which was passed in 1969. The new PCPA includes several provisions which put into legislation the current practices of the PMRA which are linked to Canada's commitment to the Stockholm Convention. These include:

- The need for Canada to fulfill its international obligations in relation to pest management is acknowledged
- Applicable policies of the Government of Canada that are consistent with the objectives of the new PCPA must be duly reflected in the decisions regarding the regulation of pesticides (e.g., TSMP)
- Contaminants are included in the definition of pest control products, which are therefore considered in the assessment of pest control products
- The minimization of risks associated with the use of pesticides is required
- The pre-market assessment of pesticides required by the new PCPA is inherently precautionary. In addition, the precautionary approach is included in the new PCPA as it applies to pesticides already registered, and is consistent with the definitions in the 1992 Rio Declaration and the 1999 *Canadian Environmental Protection Act*
- Applicants and registrants are obliged to report any new information regarding adverse effects of the product
- With regard to the re-evaluation or special review of registered pesticides, the new PCPA requires, as a minimum, that re-evaluation of pesticides be initiated within a year after 15 years had elapsed since the most recent approval requires that a special review would have to be initiated if a member country of the Organization for Economic Cooperation and Development (OECD) has prohibited all uses of an active ingredient for health or environmental reasons, or if information provided by another federal or provincial / territorial department, or through the reporting of adverse effects, reveals that risks or value may be unacceptable
- Allows any person to make a request for a special review by the Minister
- Registrants are required to disclose information on the sales of their registered pest control products as a means to estimate pesticide use
- Export of pesticides is subject to the *Export Control Regulations* of CEPA 1999
- Provisions for post-registration controls include increased powers of inspection and higher maximum penalties, up to \$1 million for the most serious offences

2.2 Policies and Programs

2.2.1 THE FEDERAL TOXIC SUBSTANCES MANAGEMENT POLICY

The federal Toxic Substances Management Policy (TSMP)⁴⁹ puts forward a preventative and precautionary approach to deal with substances that enter the environment and could harm the environment or human health. The policy provides decision makers with direction and sets out a science-based management framework to ensure that federal programs are consistent with its objectives. It also serves to support the federal government's position on the management of toxic substances in discussions with the provinces and territories and negotiations with the global community.

⁴⁹ www.ec.gc.ca/toxics/TSMP/en/execsum.cfm

The key management objectives of the Federal Toxic Substances Management Policy (TSMP) are:

- the virtual elimination from the environment of toxic substances that result predominantly from human activity and that are persistent and bioaccumulative (Track 1 substances); and
- the management of other toxic substances and substances of concern, throughout their entire life cycles, to prevent or minimize their release into the environment (Track 2 substances).

A substance is considered 'toxic' under the Policy if, after a scientific assessment or decisions taken under federal programs, it either conforms or is equivalent to the definition of a "toxic substance" in s. 11 of CEPA 1999. The Policy contains criteria to assist in determining whether a substance is persistent, bioaccumulative and predominantly anthropogenic. If all the criteria (i.e., persistence, bioaccumulation and predominantly anthropogenic) are met, the substance is classified as a Track 1 substance and the virtual elimination objective applies. If only some of the criteria are met, the substance is classified as a Track 2 substance and the life cycle management objective applies. Elements and naturally occurring inorganic substances are not candidates for virtual elimination from the environment, however, a natural substance that is used or released as a result of human activity may be targeted for reduction to naturally occurring levels under Track 2.

Many of the HAPs targeted for action under the Stockholm Convention and POPs Protocol have been designated as Track 1 substances under the TSMP and scheduled for virtual elimination, including aldrin, dieldrin, chlordane, DDT, endrin, heptachlor, hexachlorobenzene, mirex, dioxins and furans, PCBs and toxaphene.

Environment Canada, Agriculture and Agri-Food Canada and the Pest Management Regulatory Agency, have prepared TSMP Implementation Plans which outline how they will implement the requirement for the virtual elimination of Track 1 substances.

2.2.2 ASSESSMENTS OF PRIORITY SUBSTANCES

CEPA 1999 requires the Ministers of the Environment and of Health to establish a Priority Substances List (PSL) that identifies substances to be assessed on a priority basis to determine whether they pose a significant risk to the health of Canadians or to the environment. Assessments of substances placed on the PSL are the shared responsibility of Environment Canada and Health Canada. Substances to be assessed were identified primarily through the work of multi-stakeholder Expert Advisory Panels. The first Priority Substances List was published in the *Canada Gazette* in February 1989 and contained 44 substances. Assessments of these substances were completed by February 1994, and are documented in the *Canada Gazette* and in individual assessment reports. In December 1995, 25 other substances were added to the PSL for assessment, and these are currently being assessed.

The assessment and management of priority substances under CEPA 1999 occurs in two distinct phases. Scientists must first determine whether a substance is "toxic" as defined under Section 64 of CEPA. Under CEPA 1999, a substance is defined as "toxic" if it enters or may enter the environment in amounts or under conditions that may pose a risk to human health, the environment, or to the environment that supports human life. Thus, "toxic" in the context of CEPA 1999 is a function of both the inherent properties of a substance and of the amounts, concentrations, or nature of entry of the substance in the Canadian environment. For substances determined to be "toxic", management options are identified and implemented, in consultation with stakeholders, to reduce or eliminate the risks the substances pose to human health or the environment. There are three substances under the Stockholm Convention which

have been assessed as toxic under CEPA PSL: dioxins, furans and HCB. In addition, the following metals have been assessed as toxic under CEPA PSL: inorganic cadmium compounds, releases from primary and secondary copper smelters and refineries, releases from primary and secondary zinc smelters and refineries, inorganic arsenic compounds and hexavalent chromium.

2.2.3 CATEGORIZATION AND SCREENING OF THE DOMESTIC SUBSTANCES LIST

Environment Canada initiated the implementation of some of the new initiatives under CEPA 99. One of these initiatives involves the identification of persistent, bioaccumulative and inherently toxic substances on the Inventory of Existing Substances. CEPA requires the Minister of the Environment and the Minister of Health to "categorize" and then "screen" substances listed on the Domestic Substances List (DSL) to determine whether they pose a risk to the health of Canadians or the environment. The DSL includes substances that were, between January 1, 1984, and December 31, 1986, in Canadian commerce, used for manufacturing purposes, or manufactured in or imported into Canada in a quantity of 100 kg or more in any calendar year.

The List has been amended from time to time and currently contains approximately 23,000 substances. Since most of the substances on the DSL have not undergone any environmental or human health assessment, CEPA provides for the systematic assessment of substances on the DSL that are to be carried out in two phases. The initial phase, the categorization of substances on the DSL, requires the Ministers of Environment and Health to identify substances that are: 1) persistent or bioaccumulative, and inherently toxic to human beings or to non-human organisms, and 2) identify substances that may present, to individuals in Canada, the greatest potential for exposure.

When a substance is identified as meeting the criteria for categorization, it then moves to the second phase, the screening level risk assessment. A screening level risk assessment results in one of the following outcomes:

- no further action is taken at this time, if the screening level risk assessment indicates that the substance does not pose a risk to the environment or human health;
- the substance is added to the CEPA Priority Substances List in order to assess more comprehensively the possible risks associated with the release of the substance, if the substance is not already on the Priority Substances List (see Section 1A); or
- it is recommended that the substance be added to the List of Toxic Substances in Schedule 1 of CEPA, if the screening level risk assessment indicates concerns, whether these are associated or not with the persistence or bioaccumulation properties of the substance; substances on Schedule 1 can be considered for regulatory or other controls.

2.2.4 THE FEDERAL POLLUTION PREVENTION STRATEGY AND POLLUTION PREVENTION (P2) PLANS

The Federal Pollution Prevention Strategy defines pollution prevention as: "The use of processes, practices, materials, products or energy that avoid or minimize the creation of pollutants and waste, and reduce overall risk to human health or the environment".

The federal Pollution Prevention Strategy means that federal management approaches for HAPs should be based on pollution prevention, whenever possible.

CEPA 1999 gives the Minister of the Environment the authority to require the preparation and implementation of pollution prevention plans (P2 plans) for CEPA 1999 toxic substances (substances that have been added to Schedule 1 of CEPA 1999).

The Canadian Pollution Prevention Information Clearinghouse⁵⁰, authorized under CEPA 1999 section 63, is a comprehensive Internet tool that links Canadians with the information they need to practice or support pollution prevention. The clearinghouse provides access to a variety of pollution prevention documents, such as technical reports, guides, regulations, training materials, and success stories. The website has been enhanced to reflect the growing interest in pollution prevention, with new sections on CEPA 1999, funding, and planning. It now includes over 1200 pollution prevention references classified under 40 different industrial sectors.

2.2.5 CHLORINATED SUBSTANCES ACTION PLAN

The Chlorinated Substances Action Plan (CSAP)⁵¹ is part of an overall federal strategy to protect human health and the environment from the effects of toxic substances. This science-based action plan includes both regulatory and non-regulatory measures targeting chlorinated substances of concern. It is an important component of Canada's domestic and international efforts to address those substances that threaten our health and the environment.

The CSAP approach is based on the scientific community's conclusion that current evidence does not support a complete ban on all uses and releases of chlorine and chlorinated substances. However, there is scientific evidence that the use or release of certain toxic chlorinated substances should be virtually eliminated or significantly reduced.

2.2.6 ACCELERATED REDUCTION/ELIMINATION OF TOXICS

The Accelerated Reduction and Elimination of Toxics (ARET)⁵² program was Canada's first major voluntary effort to secure a safe and healthy environment while contributing to a prosperous economy. ARET sought, through voluntary actions, the virtual elimination of 30 persistent, bioaccumulative and toxic (PBT) substances, as well as significant reductions in emissions of another 87 toxic substances. Participants from eight major industrial sectors and government used the ARET program to prioritize emission reductions and determine appropriate reduction and elimination methods.

The ARET Program ran from 1995 to 2000, with the goals of achieving a 90-per-cent reduction of PBT substance emissions and a 50-per-cent emission reduction of 85 toxic substances by the year 2000, measured against declared base-year levels.

The final report of the ARET program will be available in 2004. It will demonstrate that releases of all ARET substances in 2000 were 27,800 t lower than in base year levels; PBT substances were reduced by 61%, while all others were reduced by 72%. In all, 318 separate facilities representing 171 corporations participated in the Program.

ARET participants reported some impressive reductions for the HAPs listed on ARET. From base year levels participants succeeded in reducing releases by: 99.6% for 2,3,7,8-tetrachlorodibenzo-p-dioxin, 99.5% for 2,3,7,8 tetrachlorodibenzofuran, 100% for Hexachlorobenzene, 84% for PCBs, 76% for cadmium, 74% for lead and 89% for mercury.

⁵⁰ www.ec.gc.ca/cppic/en/index.cfm

⁵¹ www.ec.gc.ca/nopp/docs/rpt/csap/en/index.cfm

⁵² www.ec.gc.ca/nopp/aret/en/index.cfm

2.2.7 THE NATIONAL POLLUTANT RELEASE INVENTORY

The National Pollutant Release Inventory (NPRI)⁵³ was established under CEPA. The NPRI is the only legislated, nationwide, publicly accessible inventory of its type in Canada. It provides Canadians with information on pollutants being released to the environment from facilities located in their communities. It tracks on-site releases of pollutants to air, water, and land; off-site transfers in waste; and off-site transfers for recovery, reuse, recycling, and energy recovery. The data collected are used in conducting research, formulating environmental objectives and codes of practice, issuing guidelines, or reporting on the state of the environment.

Under the NPRI anyone in Canada who owns or operates a facility with ten or more full-time employees and which manufactures, processes or otherwise uses any of the NPRI-listed pollutants in concentrations equal to, or greater than 1% and in quantities equal to or greater than 10 tonnes must file a report with Environment Canada and identify any releases or transfers in wastes of those substances to air, water or land. The number of industrial facilities reporting pollutant emissions is expected to rise from 2190 in 1999 to more than 7000 by 2005.

The NPRI tracks releases of about 176 substances. In the 2000 reporting year, four POPs substances were added to the NPRI: dioxins, furans, HCB and PAHs. Mercury releases to air, water and soil from Canadian industry and transportation sectors are also reported through the NPRI. Beginning in the 2000 reporting year, the threshold for reporting mercury is 5 kg of mercury manufactured, processed or otherwise used. Beginning in the 2002 reporting year, the reporting thresholds were reduced for cadmium and its compounds from 10 tonnes to 5 kg as well as for lead and its compounds and tetraethyl lead from 10 tonnes to 50 kg.

2.2.8 THE RESIDUAL DISCHARGE INFORMATION SYSTEM

The Residual Discharge Information System is a database system maintained by Environment Canada to compile national emission inventories for criteria air pollutants and selected heavy metals and POPs. The information is compiled in cooperation with the provincial ministries of the environment and energy through the National Emissions Inventory and Projection Task Group (NEIPTG).

The system is designed to store information from all major Canadian emission sources, of man-made and natural origin. When source data on specific pollutants is not available, emission discharge factors are used to estimate the emissions. These factors indicate the rate at which a contaminant is released into the environment as the result of a given activity. Using this data, the system can summarize yearly emissions by plant, by province or nation wide.

2.2.9 STATE OF THE ENVIRONMENT REPORTING

Periodic state of the environment reporting is done as part of the 'Vision for Federal State of Environment (SOE) Reporting in Canada' under the five natural resource departments. Environment Canada contributes reports as well as coordination and support for this work. Indicators, reports, data, and tools are housed or referenced through the State of Canada's Environment Infobase.⁵⁴

⁵³ www.ec.gc.ca/pdb/npri/npri_home_e.cfm

⁵⁴ www.ec.gc.ca/soer-ree/English/Indicator_series/default.cfm#pic

The two main purposes of state of the environment (SOE) reporting are to report to Canadians on the condition of their environment and to foster the use of science in policy- and decision-making.

State of the environment reports and environmental indicator reports are published periodically by various government agencies. Some focus directly on HAPs and other toxic contaminants, whereas others are broader in scope (e.g., covering a broad range of environmental issues) but may have sections addressing the issue of HAPs.

2.2.10 THE NORTHERN CONTAMINANTS PROGRAM

In 1991, the Northern Contaminants Program (NCP)⁵⁵ was established as part of Canada's new Arctic Environmental Strategy. The Program is assessing the risk to northern ecosystems and human health from contaminants, including many HAPs that are subject to long-range transport. Its key objective is to reduce and wherever possible, eliminate contaminants in traditionally harvested (country) foods while providing information that assists informed decision making by individuals and communities in their food use.

The development of the strategic research plan and priorities for the NCP was based on an ecosystem approach, focusing on three main categories: sources, pathways and fate; ecosystem uptake and effects; and human health. Other priority work areas include communications, education and community-based strategies; and initiatives to promote international action on transboundary HAPs.

In 1997, the NCP published the Canadian Arctic Contaminants Assessment Report (CACAR) which provides an evaluation of the current state of contamination in the Canadian Arctic environment, including the status and trends of contaminant levels and a comparison to other areas of the world. In 2003, a second CACAR Report⁵⁶ was published, focusing on the work carried out since 1997 during Phase II of the NCP. The Reports show that POPs and heavy metals have been detected throughout Arctic ecosystems at unexpectedly high levels and that these contaminants originate from transboundary sources. Many of these pollutants bioaccumulate and reach high concentration in animals at the top of the food chain. Northern residents, especially Aboriginal peoples, are susceptible to the potential adverse effects of contaminants, due to a dietary dependence on Arctic fish and wildlife.

The NCP has led Canada to produce world-class science on the past and current sources of metals and POPs, and in predicting their movement through the atmosphere. The results of NCP studies have provided the basis for policy decisions and action in Canada and on the international stage. Canadian northern Aboriginal organizations have played a key role over the years, especially at the international level.

2.2.11 TOXIC SUBSTANCES RESEARCH INITIATIVE

Launched in 1998, the Toxic Substances Research Initiative (TSRI) was a \$40 million program managed by Health Canada and Environment Canada. The four year programme sunset as of March 31, 2002 and research sponsored by the programme has been completed. The Initiative reinforced the federal government's commitment to enhance the health and environment of Canadians, through funding a variety of research projects on toxic substances.

⁵⁵ www.ainc-inac.gc.ca/ncp/index_e.html

⁵⁶ www.ainc-inac.gc.ca/ncp/pub/higsum_e.html

The research funded by the TSRI helped to protect the health and environment of Canadians by gathering an improved knowledge of toxic substances, and their adverse effects. TSRI enhanced existing research partnerships and fostered the development of new collaborations between non-government and federal government researchers, by focusing on emerging issues not adequately addressed by existing research.

2.2.12 METALS IN THE ENVIRONMENT RESEARCH NETWORK

The Metals in the Environment Research Network (MITE-RN)⁵⁷ is jointly funded by the National Sciences and Engineering Research Council of Canada (NSERC), the minerals industry and an electrical power generator. MITE-RN is supporting research focusing on the relative contributions of natural and anthropogenic sources of mercury to the environment, mercury records in Arctic biological archives, and the processes affecting metal distributions in sediment cores and the validity of chemical data as historical records at sites remote from anthropogenic sources.

2.2.13. COLLABORATIVE MERCURY RESEARCH NETWORK

The Collaborative Mercury Research Network (COMERN) aims to provide an integrated research effort that will improve our general understanding of how mercury is transmitted and accumulates in our ecosystem. Studies have revealed a rise in mercury levels in a number of freshwater fish species. The network will attempt to assess the causes of this contamination and its possible health consequences. This work is funded by the Natural Sciences and Engineering Research Council of Canada (NSERC).

2.2.14 THE FEDERAL MINERALS AND METALS POLICY

The Federal Minerals and Metals Policy⁵⁸ provides guidance for federal decisions on minerals and metals in the context of sustainable development, including support for the safe use of minerals and metals, domestically and internationally, consistent with the TSMP.

Under the Policy, there is a Memorandum of Understanding among Environment Canada, Natural Resources Canada, Agriculture and Agri-Food Canada, Health Canada, and the Department of Fisheries and Oceans (“Science and Technology for Sustainable Development in the Natural Resource Sectors”) which provides a forum for interdepartmental consultations on the heavy metals in the environment.

2.3 Federal Guidelines

CEPA 1999 provides for the preparation of guidelines and codes of practice in relation to a wide range of issues, such as indicating government policy direction for certain provisions of CEPA 1999 or providing industries and regulators clear direction on how to reduce emissions, effluents, and wastes.

Non-regulatory tools such as guidelines, codes of practices and objectives provide a scientific basis for the development of environmental quality/human health objectives and for performance measures for Strategic Options and risk management initiatives. Guidelines can be developed to set a numerical concentration for toxic substances in water, agricultural water, soil, sediment, and human and animal tissue. Objectives can be set for desirable levels of environmental quality. Similarly, codes of practice can be developed, providing systematic

⁵⁷ www.mite-rn.org/

⁵⁸ www.nrcan.gc.ca/mms/policy/policy_e.htm

collections of principles or rules describing accepted (desirable) professional or operating practice.

Codes of practice include:

- Environmental Code of Practice for Non-Integrated Steel Mills - dioxins and furans;
- Environmental Code of Practice for Integrated Steel Mills - dioxins and furans; and
- Provisional Code of Practice for Post-use Treated Wood.

Fourteen "Issue Tables" were established under the Strategic Options Process. Issue Tables were multi-stakeholder consultative groups chaired by Environment Canada and made up of representatives from government (federal and provincial), industry and non-government organizations. Each issue table developed recommendations on the most feasible way to address the problems associated with specific toxic substances.

The Strategic Options Process resulted in the development of management options for a number of HAPs:

- Codes of Practice to control dioxins and furan releases in the integrated steel and non-integrated steel sectors;
- CWS process for dioxins/ furans for a number of sectors
- Wood preservation sector for dioxins and furans, hexachlorobenzene (HCB) addition of HCB to CEPA 1999 *Prohibition of Certain Toxic Substances Regulations*.

APPENDIX C SUMMARY OF PROVINCIAL AND TERRITORIAL INSTRUMENTS AND ACTIONS FOR MANAGING HAZARDOUS AIR POLLUTANTS

3.1 Overview of Provincial and Territorial Instruments

All provinces and territories have legislation and regulations to manage air quality, toxic substances and pesticides (see Table 8 below). Most provinces and territories have an Environmental Protection Act, or the equivalent, with regulations that establish permitting or approvals systems for stationary point sources that discharge pollutants to the atmosphere. Most provinces and territories also have a Pesticides Act or regulations that establish a system for managing pesticide use. Two provinces have a Clean Air Act.

**STRATEGIC IMPLEMENTATION FRAMEWORK FOR INTERNATIONAL COMMITMENTS
ON HAZARDOUS AIR POLLUTANTS (HAPs): 2004 UPDATE**

Table 8: Summary of Provincial and Territorial Legislation and Regulations on HAPs

PROVINCE/ TERRITORY	LEGISLATION/REGULATIONS
British Columbia	<ul style="list-style-type: none"> • <i>BC Waste Management Act</i> • <i>Special Waste Regulation</i> • Various other regulations • <i>Pesticide Control Act</i>
Yukon	<ul style="list-style-type: none"> • <i>Environment Act (1991)</i> • <i>Pesticides Regulations</i> • <i>Air Emissions Regulation</i>
Alberta	<ul style="list-style-type: none"> • <i>Environmental Protection and Enhancement Act</i> • <i>Approvals and Registrations Regulation</i> • <i>Activities Designation Regulation</i> • <i>Substance Release Regulation</i> • <i>Release Reporting Regulation</i> • <i>Pesticide (Ministerial) Regulation</i> • <i>Pesticide Sales, Handling, Use and Application Regulation</i>
NWT	<ul style="list-style-type: none"> • <i>NWT Environmental Protection Act</i> • <i>Pesticide Act</i>
Saskatchewan	<ul style="list-style-type: none"> • <i>The Environmental Management and Protection Act (2002)</i> • <i>Clean Air Act</i> • <i>Clean Air Act Regulations</i> • <i>The Environmental Assessment Act</i>
Manitoba	<ul style="list-style-type: none"> • <i>Environment Act and Regulations</i> • <i>Incinerators Regulation</i> • <i>Peat Smoke Control Regulation</i> • <i>Pesticides Regulation</i> • <i>Pesticides and Fertilizers Control Act and its associated regulations</i>
Ontario	<ul style="list-style-type: none"> • <i>Environmental Protection Act</i> • <i>Pesticides Act and Regulations</i> • <i>Regulation 346 General Air Pollution</i> • <i>Regulation 337 Ambient Air Quality Criteria</i> • <i>Various other regulations</i>
Québec	<ul style="list-style-type: none"> • <i>Environmental Quality Act</i> • <i>Quality of the Atmosphere Regulations</i> • <i>Pesticides Act and associated regulations</i> • <i>Regulation respecting permits and certificates for the sale and use of pesticides</i> • <i>Regulation respecting hazardous materials</i> • <i>Regulation respecting solid waste</i> • <i>Industrial Waste Reduction Program (certificates for existing plants)</i>

**STRATEGIC IMPLEMENTATION FRAMEWORK FOR INTERNATIONAL COMMITMENTS
ON HAZARDOUS AIR POLLUTANTS (HAPs): 2004 UPDATE**

PROVINCE/ TERRITORY	LEGISLATION/REGULATIONS
New Brunswick	<ul style="list-style-type: none"> • <i>Clean Air Act</i> • <i>Pesticides Control Act</i> • <i>Air Quality Regulations</i> • <i>Pesticides Regulations</i>
Nova Scotia	<ul style="list-style-type: none"> • <i>Environment Act</i> • <i>Activities Designation Regulation</i> • <i>Air Quality Regulations</i> • <i>PCB Management Regulations</i> • <i>Pesticides Regulations</i> • <i>Dangerous Goods Management Regulations</i> • <i>Emergency Spill Regulations</i>
Newfoundland and Labrador	<ul style="list-style-type: none"> • <i>Environmental Protection Act</i> • <i>Air Pollution Control Regulations</i> • <i>Pesticide Control Regulations</i> • <i>Storage of PCB Wastes Regulations</i> • <i>Waste Management Regulations</i> • <i>Environmental Assessment Regulations</i>
Prince Edward Island	<ul style="list-style-type: none"> • <i>Environment Act</i> • <i>Air Quality Regulation</i> • <i>Pesticide Control Act</i>
Nunavut	<ul style="list-style-type: none"> • <i>Nunavut Environmental Protection Act</i> • <i>Pesticide Act</i>

In nearly all provinces and territories, legislation or regulations require the owners/operators of industrial facilities to obtain operating permits or approvals which can contain emission limits or requirements for any atmospheric pollutant, including HAPs. Some provinces, such as Manitoba, list the types of facilities required to have permits or approvals, while others, such as Saskatchewan, impose a general requirement and then list the types of industries excluded from it.

Two basic approaches are used to establish the limits and requirements in permits or approvals - dispersion modeling to estimate levels of pollutants emitted by the facility in the environment and technological and/or process requirements. Most provinces use a combination of these approaches. In most cases, permits or approvals are issued for a set length of time and must then be renewed. For new facilities, most provinces and territories now require 'best available control technology'.

Provincial and territorial permits and approvals contain limits and requirements for HAPs when appropriate. Limits and requirements for HAPs are common in permits and approvals for industries that release HAPs, such as smelters, chemical and petroleum facilities and wood products facilities. In addition, limits and requirements for particulates, which are often included in permits and approvals, will contribute to HAPs management because many HAPs are contained in particulate matter.

Two provinces, Quebec and BC, have delegated responsibility to municipalities (the City of Montreal and the Greater Vancouver Regional District, respectively) for air quality management within their boundaries.

As the provinces and territories have major jurisdictional responsibilities for the management of stationary point sources of atmospheric pollutants, they have a major stake in HAPs management and in contributing to Canada's implementation of the obligations under the Stockholm Convention on POPs and the UNECE POPs and Heavy Metals Protocols.

3.1.1 *British Columbia*

The *Waste Management Act* prohibits the disposal of pollution causing waste, except as permitted and it contains a broad definition of an "air contaminant". The Pollution Control Objectives, developed in the 1970s, provide guidance on emission limits for permit requirements. They also list the types of facilities required to obtain a permit, including the types of facilities likely to emit HAPs, and ambient air quality guidelines/criteria. The Waste Discharge Criteria are more recent and are also used to establish permit requirements. They contain the normal minimum requirements for new sources, existing sources undergoing modifications and existing sources (phase in) and are based on 'best available control technology'. Permit requirements may be more stringent than the Pollution Control Objectives and the Waste Discharge Criteria if an environmental assessment determines that more stringent standards are necessary to protect human health and/or the environment, and when necessary to reflect an international or interjurisdictional agreement.

The *Special Waste Regulation* contains emission limits for several types of wastes, including some containing HAPs. There is also a *Biomedical Waste Regulation*. Other relevant regulations include the *Open Burning Smoke Control Regulation*, and the *Wood Stove Emissions Regulation*.

There is a provincial Clean Air Strategy whose major focus is clean vehicles and fuels.

Pesticides are regulated by *the Pesticide Control Act*.

3.1.2 *Yukon*

The Environment Act contains a general prohibition on the release of contaminants to the environment, except as permitted by the Act or its regulations. There are provisions allowing environmental protection officers to order the owners/operators of facilities to conduct risk assessments of hazardous substances and to implement measures necessary to prevent spills. *The Environment Act* also contains provisions related to pesticides and the *Pesticide Regulations* under the Act outline the requirements for pesticide applicator certificates, use permits, service permits and vendor permits.

Air Emissions Regulations, passed in 1998, set opacity limits for air pollution sources and also lists activities that require permits. This includes the types of facilities likely to emit HAPs. Permits set emission standards for selected air pollutants and require notification for significant modifications. *Special Waste Regulations*, passed in 1995, require permits for burning of waste oil where the fuels must meet minimum standards for contaminants such as metals, PCBs and dioxins.

3.1.3 Alberta

The *Alberta Environmental Protection and Enhancement Act* states that approvals are required for activities designated under the Act or its regulations. The Act also contains a general prohibition against releases of contaminants into the environment in amounts greater than permitted or in amounts that could result in significant adverse impacts. Details and requirements for the approvals process are contained in the following *Regulations*:

- *The Approvals and Registrations Regulation* (2000 amended 2002);
- *The Activities Designation Regulation* (1996 amended 2000);
- *The Substance Release Regulation* (1993 amended 1999);
- *Pesticide (Ministerial) Regulation* (1997 amended 2000);
- *Pesticide Sales, Handling, Use and Application Regulation* (1997); and
- *The Release Reporting Regulation* (1993 amended 1996).

The Approvals and Registrations Regulation identifies the information required in an application for an approval and the process for obtaining one which includes public notification and comment. The approval contains operational restrictions, pollution control measures, emission limits, monitoring and reporting requirements and addresses air emissions, wastewater discharges, sanitary wastewater treatment, groundwater, solid and hazardous wastes, soil and reclamation or decommissioning matters. *The Activities Designation Regulation* specifies the types of activities required to obtain an approval. Where a project includes different types of activities, one approval may be issued that covers all of the activities included in the project.

The *Substance Release Regulation* covers various types of substance releases into air, including visible emissions (opacity) from stationary activities; particulate emissions from a wide variety of industrial and combustion activities; particulate emissions from secondary lead smelters; and vinyl chloride releases. Some activities require registration with the Department of Environmental Protection and are governed by Codes of Practice. These activities include foundries, asphalt paving plants, concrete producing plants, compressor and pumping stations and sweet gas processing plants. The *Release Reporting Regulation* sets out the minimum reportable information for release of substances not regulated under other legislation.

The Pesticide (Ministerial) Regulation provides for the classification of pesticides, the certification of applicators and approvals for vendors and businesses offering pesticide application services. The *Pesticide Sales, Handling, Use and Application Regulation* regulates the sale, handling, storage and disposal of various classes of pesticides.

The Clean Air Strategic Alliance (CASA), a multi-stakeholder organization with representation from industrial, municipal, commercial, government and public interest sectors, is responsible for strategic air quality planning, organizing, and coordinating resources, and evaluation of results in Alberta through a collaborative, consensus decision making process. The management of air toxics was addressed in 1998 and the recommendations incorporated into Alberta Environment's overall air quality management system. Implementation of CASA recommendations is generally the responsibility of the appropriate regulatory agencies.

CASA recommendations on a framework for managing solution gas flaring were successful in achieving a 50 per cent reduction of solution gas from a 1996 baseline by the end of 2001, well beyond the agreed upon target of 25 per cent. A new CASA Flaring/Venting Project Team was established in late 2000 to look into further emission reduction opportunities from flaring and venting practices in the province. Activities such as well test flaring, gas plant flaring and gas

venting were included. New flare performance requirements for all flares, including compliance deadlines, were established and new targets of reduction in total volumes flared in Alberta were set.

The present air quality management system in Alberta has evolved over time and uses the environmental assessment process, ambient objectives, source emission standards, plume dispersion modeling, ambient air and source monitoring, environmental reporting, emission inventories, and research as the management tools. When implemented through approvals, inspections/abatement, and enforcement, the goal that clean air in Alberta remains clean can be achieved.

Alberta has established Ambient Air Quality Guidelines for common air pollutants, including sulfur dioxide, nitrogen dioxide, total particulate matter, hydrogen sulfide, carbon monoxide and ozone, as well as twenty-five air toxic substances. New ambient air quality guidelines are under development for a variety of hazardous air pollutants including heavy metals and volatile organic compounds.

A renewed Memorandum of Understanding (MOU) was signed with the Canadian Chemicals Producers' Association (CCPA) in 2002. Other parties to the memorandum included Environment Canada, Industry Canada and Health Canada for the Government Canada and the government of Ontario. Parties are committed to continuous improvement on the management of toxic substances and reduction of emissions of toxic substances.

Alberta has adopted the Canadian Council of Ministers of the Environment (CCME) Canada Wide Standards for Mercury, as well as for Dioxins and Furans. Implementation plans are in place for: dioxins and furans emissions from waste incineration; mercury containing lamps, mercury emissions from existing waste incineration facilities, mercury emissions from new waste incineration facilities, and mercury emissions from new base metal smelters.

3.1.4 Northwest Territories

The jurisdictional authority for controlling point source emissions of atmospheric pollutants in the Northwest Territories is shared between the federal and territorial governments. Environment Canada has authority under the *Canadian Environmental Protection Act, 1999* to regulate international air pollution and sources from federal activities and on federal lands. The *Northwest Territories' Environmental Protection Act* provides authority to make regulations to control the discharge of contaminants into the environment, including the air. There is also a *Pesticide Act* which requires commercial applicators to be registered.

3.1.5 Saskatchewan

Saskatchewan has *The Environmental Management and Protection Act, 2002* which requires a permit to be obtained to operate a facility. Air, Land and Water are protected from pollution.

Saskatchewan has a *Clean Air Act (1989)* which requires the owners/operators of industrial facilities, incinerators and fuel burning equipment that emit air contaminants to obtain a permit. The Act lists the types of facilities that are excluded from this requirement. The *Clean Air Act Regulations* outline the information that must be submitted in a permit application. The *Regulations* require that facilities must not emit air contaminants at concentrations greater than specified in the permit or at concentrations that would result in the exceedance of the ambient air quality standards when a permit is not required or when a maximum concentration has not

bee specified in the permit. There are ambient air quality standards for suspended particulates and other 'conventional' air pollutants such as sulfur dioxide and carbon monoxide.

In 1995, the multistakeholder Saskatchewan Air Quality Task Force reported to the Ministers of Energy and Mines, and Environment and Resource Management on the major outdoor air issues in Saskatchewan and what should be done to address them. The Ministers are currently finalizing a Clean Air Strategy which responds to the Task Force and outlines Saskatchewan's approach to air quality issues. The draft Strategy includes many HAPs.

There are guidelines for the application of pesticides and herbicides for agricultural uses.

Saskatchewan has The *Environmental Assessment Act* which requires an Environmental Impact Assessment be done on any new development in the province.

3.1.6 Manitoba

In Manitoba, the licensing process for facilities is closely linked to the environmental assessment process. The types of developments required to conduct an environmental assessment and obtain a license are specified in the *Classes of Development Regulation*. A license is issued, or refused, after an environmental assessment has been completed. Licenses may contain limits on atmospheric emissions. Limits, where included in the license, may be based on several factors including estimated releases, air dispersion modeling, ambient air quality guidelines, national emissions guidelines and other factors as appropriate. Manitoba currently has 19 ambient air quality guidelines.

Other relevant *Regulations* include the *Burning of Crop Residue and Non-Crop Herbage Regulation* and the *Incinerators Regulation*. The *Burning of Crop Residue and Non-crop Herbage Regulation* limits the time of year and time of day when farmers can burn stubble. The *Incinerators Regulation* requires the owners/operators of incinerators to register their facility with the provincial government.

The *Pesticides Regulation* under the *Manitoba Environment Act* requires government agencies that apply pesticides, such as municipalities, to obtain a permit. The *Manitoba Agriculture Pesticide and Fertilizers Control Act* requires the licensing of commercial applicators.

3.1.7 Ontario

Key Ontario environmental legislation related to hazardous air pollutants and their environmental fate includes the *Environmental Protection Act*, *Ontario Water Resources Act*, *Pesticides Act*, the *Environmental Assessment Act* and the *Brownsfield Statute Law Amendment Act*.

The *Environmental Protection Act* contains a general prohibition against the discharge of contaminants into the environment, except in accordance with a Certificate of Approval. The Act also contains a list of exceptions to this requirement.

Regulation 346 - General Air Pollution and Regulation 337 - Ambient Air Quality Criteria regulate most stationary sources of air pollutants. *Regulation 346* contains requirements for the control of air contaminants at the 'point of impingement', opacity limits and performance requirements for incinerators. It also establishes an air pollution index and contains dispersion

models. There are 78 substances listed, including many HAPs. *Regulation 337* contains ambient air quality criteria for 23 substances. There are several other relevant regulations.

Emission limits and requirements are usually included in Certificates of Approval, issued under *Regulation 346*. They are based on the 'point of impingement' standards, dispersion modeling, the ambient air quality criteria in *Regulation 337* and 'approvals screening levels'. 'Approvals screening levels' have been developed for approximately 400 contaminants and they are based on requirements in other jurisdictions and scientific and technological considerations.

There is also a *Pesticides Act and Regulations* that requires pesticides sold in Ontario to be classified. The *Regulations* govern the sale, use, disposal, display, storage and transportation of pesticides. Licenses and permits are required for sale and commercial uses.

3.1.8 Quebec

The *Quebec Environmental Quality Act* prohibits the discharge of contaminants in quantities more than those regulated or in amounts likely to affect human health or the environment. It also requires the owners/operators of facilities and people who conduct activities that are likely to result in releases to obtain a certificate of authorization.

The *Regulation Respecting the Quality of the Atmosphere* contains sets of general and specific emission standards that apply to most industrial activities, including metal refineries and secondary lead smelters. It also sets out ambient air standards for 'conventional' air pollutants, including lead.

Specific emission limits are incorporated in certificates of authorization. They are based on 'best available technology' for new facilities and 'best available control technology' for modifications of existing facilities. Residual emissions are assessed using dispersion modeling and ambient air quality criteria. Quebec has developed an informal list of ambient air criteria from other governmental organizations including the World Health Organization Regional Office for Europe, the U.S. Environmental Protection Agency, the American Conference of Governmental Industrial Hygienists and Ontario's Ministry of the Environment. The list of ambient air quality criteria covers close to 120 substances; this includes most HAPs, except for pesticides. By decree, these criteria are standards for the Industrial Waste Reduction Program and the *Regulation Respecting the Quality of the Atmosphere*.

Quebec is reducing dioxin and furan releases from primary magnesium smelters. The plants use the best available control technology available at the moment and have put in place an excellent monitoring program. Quebec is undertaking research and development to find alternative processes. One of the plants is closing in March 2003 because of poor market conditions.

The *Pesticides Act* establishes a process for commercial pesticide users to obtain certificates and permits.

3.1.9 New Brunswick

The *Clean Air Act* provides the legislative authority for the management of atmospheric pollutants in New Brunswick. The Act provides the Minister with authority to establish 'air resource management areas' where there are multiple sources of air pollutants requiring

management. The New Brunswick Department of the Environment has recently set up several multistakeholder committees in different regions to examine 'air resource management areas'. The Act also provides authority for the Minister to enter into inter-governmental agreements requires the owners/operators of facilities that emit air pollutants to obtain an approval, contains the power to administer fines and penalties and require the restoration of land, premises or personal property damaged by air pollution.

Under the Act, the *Air Quality Regulations* contain requirements for the approvals process. Requirements for self-monitoring and reporting are important components of the approvals.

Pesticides are regulated under the *Pesticide Regulations* of the *Clean Environment Act*.

3.1.10 Nova Scotia

A 1992 Ministerial Task Force report on air quality management in the Province recommended three principal goals:

- to work to attain desirable levels of ambient air quality throughout Nova Scotia;
- to minimize the release of toxic chemicals to the atmosphere; and
- to reduce emissions of air contaminants that has impacts of global or regional significance.

The *Nova Scotia Environment Act* contains a framework for promoting and achieving these goals.

There are several relevant regulations. The *Activities Designation Regulation* specifies which activities are required to obtain an approval. The *Air Quality Regulations* contain ambient air quality criteria and approvals are identified as the principal mechanism for applying and enforcing the criteria. The *Pesticide Regulations* require commercial applicators to obtain certificates of qualification and establish an approvals process for commercial pesticide applications. Other *Regulations* include the *PCB Management Regulation*.

3.1.11 Newfoundland and Labrador

In Newfoundland and Labrador the *Environmental Protection Act* provides the overall authority for pollution control. The *Air Pollution Control Regulations* are based on ambient air quality criteria and 'point of impingement' calculations with dispersion models. There are also regulations relating to the storage of PCB wastes under the *Environmental Protection Act*.

Pesticides are regulated under the *Pesticides Control Act* and its *Regulations*. These instruments contain requirements for permits and licenses for commercial uses, applicators and vendors.

3.1.12 Prince Edward Island

Prince Edward Island's *Environmental Protection Act* prohibits the discharge of contaminants into the environment, except as permitted by the regulations. The *Air Quality Regulation* under the Act requires the owners/operators of certain types of facilities that emit atmospheric pollutants to obtain a permit. Permit requirements take account of 'best available control technology'.

The *Pesticide Control Act* establishes a system for licensing pesticide applicators and vendors.

3.1.13 Nunavut

Nunavut has an *Environmental Protection Act* and a *Pesticide Act*. The *Environmental Protection Act* provides the Government of Nunavut with the authority to make regulations to control the discharge of contaminants into the environment, including air. The *Pesticide Act* requires the registration of commercial applicators. In Nunavut, however, jurisdictional authority for controlling point source emissions of atmospheric pollutants is shared between the federal and territorial governments. Environment Canada regulates international air pollution, and sources from federal activities on federally owned land under the *Canadian Environmental Protection Act, 1999*.

3.2 Provincial and Territorial Actions

This section provides information on specific provincial and territorial legislation, programs, policies and actions related to meeting the obligations of the Stockholm Convention on POPs and the UNECE Protocols on POPs and Heavy Metals. Examples of projects and best practices are also included where they are appropriate.

Information on each jurisdiction was provided by respective provincial / territorial representatives through a survey questionnaire conducted in early 2004. It is important to note that provincial and territorial initiatives work in conjunction with federal regulations and policies and national initiatives (identified in other Appendices A, B and D).

3.2.1 PCBs (POPs Protocol/Stockholm)

BRITISH COLUMBIA

Within BC, the three major issues regarding PCBs are: 1) contaminated sites; 2) transformers; and 3) storage and disposal of contaminated materials.

The Protocol for the management of PCB contaminated sites is found in the *Special Waste Regulation* and the *Contaminated Site Regulation*. Throughout these regulations, a quality assurance/quality control program is used which includes appropriate analysis of duplicate samples to ensure proper disposal methods and sound environmental procedures depending on concentrations of PCBs.

There are no regulations governing the removal of PCB transformers currently in use although, once the equipment is removed from service, it is dealt with under the Protocol for the Management of PCB Transformers to be disposed of and not reused. The storage and disposal requirements for PCBs are also found in the Special Waste Regulation⁵⁹ and are considered a Best Environmental Practice.

⁵⁹ <http://wlapwww.gov.bc.ca/epd/epdpa/sw/pfmoppcsw.html>

ALBERTA

Alberta Environment (AENV) regulates the proper storage and disposal of hazardous PCB wastes through the *Environmental Protection and Enhancement Act*, *Waste Control Regulation*, and facility specific approvals (licenses). AENV does not regulate products containing PCBs or the elimination of the use of PCBs, as this is currently a federal responsibility. PCB waste is classified as hazardous waste if it exceeds 50 milligrams per kilogram.

PCB wastes in Alberta are destroyed at the Swan Hills Treatment Centre in a rotary kiln that has a destruction removal efficiency of 99.9999% at temperatures up to 1300°C. Hazardous PCB waste cannot be land filled in Alberta. Waste with less than 50 milligrams per kilogram PCB is not classified as hazardous and can be disposed in municipal landfills.

SASKATCHEWAN

The PCB Waste Storage regulations, 1989 regulate the storage of PCB wastes at a concentration greater than 5 mg/L. High risk PCB materials, such as liquid residues, are still in use in a very small number of facilities. PCBs contained in auto shredder residue are a current issue in the province.

Occupational Health and Safety Regulations, 1996: Sections 306, 311 and Table 20 List of Designated Substances includes PCBs and sets out the requirements of employers to protect employees from exposure to PCBs.

- Saskatchewan's Occupational Health and Safety Division (OHSD) enforces the requirement (S 306) for engineering controls to prevent release of PCBs (as a designated substance) into workplaces and to take other measures (including personal protective equipment) to prevent "significant" risk to workers (judged on a case by case basis);
- OHSD advised on best practices for identifying and handling light ballasts containing PCBs and continue to distribute a bulletin on PCBs and light ballasts;⁶⁰
- For some processes OHSD requires and reviews written procedures for handling, for example, burnt transformers and the clean-up of areas where PCB spilled or accumulated; OHSD enforces the implementation of written procedures; and
- OHSD provides risk assessments when workers have been exposed to PCBs.

MANITOBA

Manitoba Hydro is the main source of PCBs in Manitoba. Other industrial operations may have PCB equipment remaining in service, but no specific information is available. PCB contamination has also been found in auto shredder residue.

The *Manitoba PCB Storage Site Regulation (MR474/88)* has similar reporting and storage requirements as the federal *PCB Storage Regulation*. Manitoba Conservation works with Environment Canada to ensure compliance with the *PCB Storage Regulation* and is currently considering repealing this regulation to reduce overlap.

Manitoba Hydro has been removing PCB and PCB contaminated equipment from its electrical system since the late 1980's. Manitoba Hydro operates a licensed sodium process that treats PCB contaminated transformer oil. PCB contaminated equipment is addressed through routine

⁶⁰ Available at www.labour.gov.sk.ca

maintenance. Out-of-service capacitors and solid PCB contaminated materials are collected and stored pursuant to *Manitoba Regulation 474/88* and the federal *PCB Storage Regulation*. These materials are sent to Alberta for final disposal at the Swan Hill Treatment Centre. Manitoba Hydro has indicated it no longer has any large PCB transformers in its system.

ONTARIO

In December 2001, a draft regulation was posted on the Ontario Environmental Bill of Rights (EBR) Registry⁶¹ consulting on the phase-out of PCB waste in storage. The elimination of these wastes over a three-year time frame set out in the draft regulation will also promote opportunities for Ontario's environmental industries to respond to the demand for PCB destruction technologies.

At the time of the posting of the draft regulation there were approximately 99,000 tonnes of PCB wastes in storage at 1,000 sites throughout Ontario. Some 7,000 tonnes were considered high-level (greater than 10,000 parts per million), and 92,000 tonnes were considered low-level (less than 10,000 parts per million). Until recently, there were few options available for destroying PCBs. More options now exist within and outside of Ontario, making the elimination of this waste possible.

- In September, 2003 Hydro One, Stelpipe, Slater Steel, and Enersource Hydro (Mississauga) were awarded the first four Canadian award plaques under Environment Canada's Recognition Program for their excellent accomplishments in phasing out PCBs through voluntary efforts at their facilities.

A timetable in the draft regulation will provide destruction dates for:

- PCBs currently in storage in sensitive sites;
- PCBs currently stored at all other sites; and,
- PCBs coming out of service and into storage.
- As part of the phase-out schedule, the ministry will require that all PCBs currently stored at sensitive sites such as schools and hospitals will be eliminated within one year of the regulation coming into force.

QUEBEC

Regulation currently being revised: specification of the efficacy of the destruction and removal upon incineration of hazardous materials (= or > 99.9999%) for materials that contain more than 0.15% by weight of halogenated compounds or more than 50 mg/kg of PCBs in the material.

NEW BRUNSWICK

The storage of PCB waste has been designated as a source that is a danger of pollution requiring an Approval under the *Water Quality Regulation-Clean Environment Act*. Each individual PCB storage site is issued an Approval to operate. All sites are inspected on a yearly basis.

When Alberta opened the doors to allow importation of out-of-province PCB waste for destruction at the Swan Hills Treatment Centre, the Department wrote all of the PCB waste

⁶¹ www.ene.gov.on.ca/envision/env_reg/ebr/english/ebr_info/introduction.htm

owners encouraging them to take advantage of the opportunity to dispose of their waste permanently.

The PCB Storage Standards requires that operators of storage site submit a detailed operating plan when they plan to remove waste from storage. The movement of PCBs between the storage site and the transport unit presents the highest degree of risk of accidental release. The plan review usually includes a site visit. The practice of requiring detailed preplanning taking such things into consideration as the position of the truck, the distance between the truck and the storage site, the presence of sumps or sensitive receptors, the presence of overhead impediments (i.e. electric power lines, infrastructure, etc.), the type and location of emergency spill containment equipment when PCBs are actually being handled have ensured a safe environment with very limited potential for PCB releases due to improper handling. Many PCB service companies also submit plans when taking PCB equipment out of service as they see the advantage of detailed planning.

The inventory of PCB waste in storage has been reduced by well over 95% over the last ten years. All major users of electricity (except for one industrial operation) have voluntarily removed high level PCB equipment from service. In many instances, the decision to remove PCB equipment from service was prompted as a necessary precaution to avoid the potential complications associated with the clean-up following a PCB fire which can often lead to months of shut-down time. PCB owners were also anxious to take advantage of the fact that PCB waste could be sent for destruction as there had been a period of time when this was not possible in this province.

NOVA SCOTIA

- Nova Scotia regulates the handling and storage of PCBs through its *PCB Management Regulations*. The province has banned PCBs from landfills which reduces the opportunity for long term releases of PCBs. Approvals for PCB destruction stipulate the use of national guidelines, which include BAT.
- Nova Scotia has issued Standards for Decontamination of Impermeable Surfaces Contaminated with PCBs.

PRINCE EDWARD ISLAND

The storage and disposal of PCB-containing waste is regulated in PEI under the *Environmental Protection Act*, as well as federally under CEPA 1999. Storage facilities (and there are very few) are licensed and inspected by Environment Canada under the *Storage of PCB Material Regulations*. Shipments from the province are permitted and documented by the PEI Department of Environment and Energy. The province does not regulate PCB-containing products or their phase-out, as this is done federally.

Material containing greater than 50 ppm PCBs is considered hazardous waste and cannot be land filled in PEI. At less than 50 ppm, the material can be sent to the province's one municipal land fill that is lined and implements leachate testing.

PEI, with Environment Canada, regulates the storage and disposal of hazardous PCB wastes. They are sent to the Swan Hills Treatment Centre in Alberta.

NEWFOUNDLAND AND LABRADOR

Newfoundland and Labrador Department of Environment (NLDOE):

- maintains *Storage of PCB Waste Regulations* under the *Environmental Protection Act*;
- manages transport of hazardous waste, including PCBs, in the Province for export to licensed treatment/destruction/disposal facilities;
- maintains records of shipments of PCBs;
- promotes removal of in-service PCB equipment; and
- manages contaminated sites to identify PCBs. Within the last decade the number of PCB contaminated sites under provincial jurisdiction has been reduced from 56 to 8.

The Province conducts annual inspection of PCB storage sites and areas with ongoing promotion to cleanup/export PCB containing equipment or contaminated material.

There are no PCB treatment / destruction facilities in the province. Any such facilities would require licensing from the NLDOE.

3.2.2 DIOXINS AND FURANS AND HCB (POPS PROTOCOL/STOCKHOLM)

BRITISH COLUMBIA

The Canada Wide Standards (CWS) for the reduction of Dioxins and Furans (D&F) covers all industrial and non-industrial sector sources of D&F emissions in BC. Most of BC's efforts to reduce D&F emissions fall under the mandate of the D&F CWS. Sources of particular importance in BC are 1) Coastal pulp and paper mills (i.e. burning of salt laden hogged fuel) 2) Solid waste incineration within the Greater Vancouver Regional District (GVRD) and 3) open burning and residential wood combustion.

A process towards the development of a BC strategy to reduce the formation of dioxins and furans by the coastal pulp and paper industry was launched in 2001. The province engaged representatives from relevant stakeholder groups to help develop this strategy. Research collaboration between facility operators is being undertaken to better understand how dioxins and furans are formed and how best to eliminate or reduce them from stack emissions and the pulp & paper process.

All boilers covered under the CWS for pulp and paper boilers burning salt-laden wood must be tested annually for dioxins and furans. The Ministry of Water Land and Air Protection has facilitated this testing for coastal pulp mills with the cooperation of operators, and has established the testing, reporting, procedures and methods required to meet the obligation of the standard.

The Greater Vancouver Regional District (GVRD) operates one solid waste incinerator in the Lower Mainland. Historically, emissions of D&F from this incinerator have been well below the D&F CWS for solid waste incinerators of 80pg I-TEQ/m³. Monitoring is completed to ensure compliance.

The *Open Burning Smoke Control Regulation* prohibits the burning of toxin-producing materials such as plastics, creosote treated wood, tires and paints for the purpose of land-clearing, forestry slash burning and wildlife and domestic range enhancement. The *Solid Fuel Burning*

Domestic Appliance Regulation sets standards for newly purchased woodstoves. The province also supports and encourages the creation of municipal and district bylaws around residential woodstove emissions and backyard burning such as a bylaw in the city of Kelowna being put forward to outlaw the burning of wood with a moisture content of greater than 20%. Burning of salt laden wood for residential heating has not been addressed.

ALBERTA

Alberta Environment (AENV) regulates the emissions of D&F and HCB through the *Environmental Protection and Enhancement Act* and facility specific approvals (licenses).

Facilities are required to use the best available demonstrated control technology to control emissions of D&F and HCB. These requirements are reflected through conditions included into the facility approval.

SASKATCHEWAN

There are two major sources for the formation and release of HCB: waste incineration and HCB contaminated chlorinated pesticides. Waste incineration activities are closely tied to the dioxin and furan Canada Wide Standards (CWS) work and as a result no other action is anticipated outside of the options proposed by that group. The release of HCB through contaminated chlorinated pesticides will continue until the manufacturing processes are changed. Saskatchewan will continue to monitor the situation and suggest alternatives to the chlorinated pesticides as they become available.

Waste Incineration

Reduction in releases:

Since all operational waste incinerators in Saskatchewan included under the CWS are operated as components of waste management of hospital operations and all are of relatively small loading of less than 26 tonnes per year, operating permit conditions will provide for choice of pollution control upgrading and stack testing or "determined efforts" including diversion planning and waste audits. This will lead to a reduction in releases.

Promoting the use of alternative processes:

It is anticipated that the initial stages of permit implementation will be to encourage voluntary actions through diversion planning and subsequent waste auditing which could be considered an alternative process as well as leading to a reduction in releases.

Requiring Best Available Technology (BAT) for new emission sources:

Saskatchewan's overall approach to management of emissions from new waste incineration facilities will be to incorporate the Canada Wide Standard (CWS) into the conditions of permits to operate issued pursuant to Saskatchewan's *Clean Air Act* and *Clean Air Regulations*. If the construction of a new waste incineration facility is such that it would be considered to be a "development", during the project development and assessment stage, management of dioxin and furan emissions will be introduced through the processes associated with The *Environmental Assessment Act*. These provisions will apply for municipal waste incineration, medical waste incineration, hazardous waste incineration and sewage sludge incineration as defined within the CWS. This process would allow for the introduction of BAT if required by the government or stakeholders.

Promoting BAT and Best Environmental Practices (BEP) for existing emission sources: Saskatchewan's overall approach to management of dioxin and furan emissions from existing waste incineration facilities will be to incorporate the CWS into the conditions of permits to operate issued pursuant to Saskatchewan's *Clean Air Act* and *Clean Air Regulations*. This process allows these facilities to install pollution control devices to meet the CWS, however, the installation of pollution controls are expensive and not as effective as waste diversion. Therefore, rather than promoting BAT and BEP for pollution controls, facilities are expected to have waste diversion plans whereby materials which cause dioxins and furans are eliminated from the waste stream.

Electric Arc Furnace Sector (EAF)

Reduction in releases:

Pollution prevention is being encouraged as the preferred method for avoiding the creation of dioxins and furans thereby reducing the releases to the environment at EAFs. The application of the CWS for this sector will lead to process changes and pollution prevention measures to adhere to the CWS.

Promoting the use of alternative processes:

Saskatchewan's overall approach to management of emissions from new or modified EAF facilities will be to incorporate the CWS into the conditions of permits to operate issued pursuant to Saskatchewan's *Clean Air Act* and *Clean Air Regulations*. As part of the CWS, it will be expected that the pollution prevention strategy will be considered for any new or existing plants whereby, industry is expected to adopt the most economically effective pollution prevention processes for reducing emissions.

Requiring BAT for new emission sources:

If the construction of a new or modified facility is such that it would be considered to be a "development," during the project development and assessment stage, management of dioxin and furan emissions will be introduced in accordance with The *Environmental Assessment Act*. This process would allow for the introduction of BAT if required by the government or stakeholders.

Promoting BAT and BEP for existing emission sources:

The existing EAF facility has a permit to operate, which will specify annual exhaust testing to demonstrate compliance and adherence to the numerical targets of the CWS for existing furnaces. As well, a component of the CWS includes a pollution prevention strategy. This strategy is a tool for industry and regulators to ensure that the most effective economically feasible measures are used for pollution prevention.

Forest Fires

Every year in Saskatchewan about 700 fires burn approximately 490,000 hectares. These fires occur in two separate zones which roughly divide the province's 35 million hectares of forest area into northern and southern zones. In the south, where most of the communities are located, Saskatchewan works to minimize the occurrence of large fires. Over 96 - 98% of fires which occur in the southern part of Sask. are held to less than 100 hectares. In the north, with few communities and little commercial timber, a number of fires are allowed to burn naturally as the ecosystem is fire dependant for renewal.

Through its work at fire prevention through raising awareness and education, early detection and rapid initial attack, Saskatchewan minimizes, as best it can, the emissions that come from these fires. Presently all Canadian forest fire agencies are working together at a plan to renew Canada's forest fire program by reinvesting in the way it is managed and resourced.

Other Potential Sources

The Saskatchewan Crematoria Council in consultation with Saskatchewan Environment is developing best management practices (BMP) for environmental issues relating to human crematoria. The BMPs are intended to replace permits under the CAA; A policy and permitting procedure for The Destruction of Animal Carcasses is in progress;

MANITOBA

Manitoba Conservation has participated in the development of Canada-wide Standards (CWS) for dioxins and furans and will be implementing the CWS for those sources of significance in Manitoba, namely incineration and steel electric arc furnaces.

ONTARIO

Incineration

- O. Reg 323/02 required all existing hospital incinerators to close by December 6, 2003.
- The MOE also released tougher operating standards in the form of two guidelines that biomedical waste treatment facilities will be required to meet. These new guidelines, which incorporate the new Canada-Wide Standards, cover operating standards for new incinerators and other non-incineration technologies.
- If a hospital, other health care facility or a waste management company wishes to install new state-of-the-art incinerators or other non-incineration technologies to treat biomedical waste, they will be required to meet the tough standards outlined in the guidelines.
 - *Guideline A-1 - Combustion Air Pollution Control and Monitoring Requirements for Biomedical Waste Incineration in Ontario* provides new state-of-the-art operating criteria and emission limits to control new biomedical waste incinerators.
 - *Non-Incineration Technologies for Treatment of Biomedical Waste (Protocols for Microbiological Testing)* sets out detailed protocols for the microbiological testing of non-incineration treatment technologies
- Hospital incinerators were the largest emission source of dioxins in Ontario, accounting for about one-eighth of national emissions and one-quarter of provincial emissions.
- Hamilton's Solid Waste Recovery Unit (SWARU) incinerator was closed in December 2002 – eliminating one of Ontario's most significant sources of dioxins/furans.
- The Canada-wide Standard (CWS) for dioxins/furans has been implemented ahead of schedule for some incinerators and will be implemented as others are newly commissioned in Ontario (e.g. KMS Peel, Clean Harbors, Medical Waste Management Inc., Material Resource Recovery Inc. and Ontario Power Generation - Bruce Nuclear site).
- Ontario's implementation of the Canada-wide Standard for dioxin/furan emissions from sewage sludge, municipal solid waste, hazardous waste and biomedical waste incinerators has involved initiatives from several branches of the Ministry. Waste Management Policy Branch created O. Reg. 323/02 to close all existing hospital incinerators to close by December 6, 2003. The MOE is working co-operatively with industry (e.g. Clean Harbors installed BAT to reduce dioxins/furans) to incorporate CWS limits into Certificates of Approval ahead of schedule achieving reductions early.

Electric Arc Furnaces

Ontario is monitoring stack testing results from steel-making electric arc furnaces that are subject to a dioxins/furan CWS and the results indicate that the facilities will meet the 2005 and 2010 limits ahead of schedule.

Iron Sintering

Ontario has the only iron sintering plant still operating in Canada and the 2002, 2005 and 2010 CWS limit for dioxins/furan has been added to their Certificate of Approval.

QUEBEC

The regulation is currently being revised so that it harmonizes with pan-Canadian standards, i.e., maximum dioxin and furan emissions of 0.08 ng/m³R for incineration of hazardous materials. According to our information, one municipal incinerator meets the Canada-wide Standard and a second one does not, while we have no information on the third municipal residual waste incinerator. For both municipal sludge incinerators, mercury emissions are higher than 0.08 ng/m³R.

Description of a "best practice" for management of dioxins and furans and D&F and HCB: Treatment of municipal incinerator emissions by limestone and activated carbon injection followed by dust extraction using a filter baghouse is, in our opinion, the best technology available (BTA)(3 cases in Québec).

NEW BRUNSWICK

Waste incineration in New Brunswick is limited to the incineration of medical waste in two existing medical waste incinerators, which combined handle all the Province's medical waste. The larger of the two incinerators processes approximately 850 tonnes of medical waste per year and is equipped with emission control equipment that includes an afterburner, a wet scrubber, a fabric filter baghouse and activated carbon injection (for dioxin and furan control). The smaller of the two incinerators processes approximately 80 tonnes of medical waste per year and is equipped with emission control equipment that includes an afterburner and a wet scrubber.

New Brunswick is committed to meet the Canada-wide Standard (CWS) for Dioxins and Furans. Implementation will be achieved by incorporating the CWS requirements into the conditions of the Approvals to Operate issued pursuant to the *Air Quality Regulation – Clean Air Act*, in order to meet the emission standard of 80 pg I-TEQ/m³ by 2006. New incineration facilities in New Brunswick would be required to install BAT for controlling emissions of dioxins and furans, as required by the CWS.

Burning of municipal solid waste is not permitted at landfills in New Brunswick. As well, burning of domestic waste by private citizens (in burn barrels) is minimal in the Province as there is curbside garbage collection for virtually all (99%) of New Brunswick residents, including those in rural areas. There is no incentive for residents to burn their garbage as they have already paid for the collection service through their taxes.

A new facility for the high temperature thermal treatment of petroleum hydrocarbon and PAH impacted soil is currently under construction in New Brunswick. As part of the emission control system, the facility is required to install dioxin and furan control equipment including an

afterburner chamber, a rapid gas quench chamber and activated carbon injection combined with a fabric filter baghouse.

New Brunswick committed to the implementation of the CCME Guideline for the Management of Biomedical Waste in Canada. This resulted in the closure of inadequate biomedical waste incinerators in the early 1990s, which were replaced with incinerators meeting the CCME Guideline. Through meeting with various health regions and hospital workers associations, information was given on the proper segregation of biomedical waste resulting in a significant decrease in volumes of waste that were unnecessarily being incinerated. Although the costs for environmentally sound management of biomedical waste did go up significantly, the educational efforts in the area of waste identification helped offset some of the costs because of waste reduction. Hospitals were also asked to limit where possible the use of chlorinated plastics to further reduce the potential for dioxin creation during incineration.

NOVA SCOTIA

Nova Scotia has signed the CWS for Dioxins and Furans for each of the five sectors covered by the Standard. Any new facilities (within these sectors) established in the province would require Approvals, which would include the requirement for the proponents to meet the CWS.

All small biomedical incinerators and all conical waste combustors have been closed in the province. The open burning of solid waste in Nova Scotia has been banned.

Nova Scotia has issued Standards for Decontamination of Impermeable Surfaces Contaminated with Dioxins/ Furans.

PRINCE EDWARD ISLAND

In PEI, there is no heavy industry, so the primary sources of dioxins and furans (D/F) are incinerators. One is a municipal energy from waste plant and the others are small, infrequently used biomedical waste incinerators. The PEI Department of Environment and Energy regulates the release of D/F emissions from these sources under the *Air Quality Regulations* of the *Environmental Protection Act*, using facility specific approvals.

Permitted facilities are required to control D/F emissions to a level and on a schedule specified in the Canada-wide Standards for Dioxins and Furans (Incineration). It is expected that applied "best practice" will also control HCB.

NEWFOUNDLAND AND LABRADOR

Newfoundland and Labrador was the first province to sign the Canada-wide Standard (CWS) for Conical Waste Combustion (Dioxins and Furans). The CWS will result in the phase-out of conical waste combustors by 2008. Currently Newfoundland and Labrador has approximately 42 conical waste combustors and these contribute to 25% of the national dioxin and furan emissions to the atmosphere. Newfoundland and Labrador's DOE has developed a comprehensive Waste Management Strategy with a goal of 50% waste diversion from 1992 levels by 2010. Current plans are to eliminate all open burning at landfill/disposal sites by 2005.

Proposed amendments to the *Air Pollution Control Regulations* will:

- make it illegal to burn residential waste in burn-barrels or fireplaces

- require all new woodstoves to be US Environmental Protection Agency or Canada Standards Association Approved.
- require the incineration sector to meet stack concentrations for D&F as set out in the CWS.

Newfoundland and Labrador has signed the CWS for Municipal Incineration which will require BAT and stack emission limits/testing for new emission sources.

NORTHWEST TERRITORIES

Implementation of CWS for Dioxins and Furans – biomedical waste incineration;
Introduction of new Guidelines for community landfills which prohibit burning of material other than clean wood or paper.

Examples of use of BAT / BEP:

Required Best Available Control Technology on new biomedical waste incinerator in Inuvik;
Study conducted by health community on options for disposal of biomedical waste;
Ticket issued to Village of Ft Simpson for open burning at community landfill.

3.2.3 *POLYCYCLIC AROMATIC HYDROCARBONS (PAHS) (POPS PROTOCOL)*

BRITISH COLUMBIA

Although there is aluminium production in BC, it is primary production and uses the Halls process as opposed to the Söderberg process. Anode production is regulated by permit. Creosote is not used as a wood preservative in BC.

There are several provincial actions related to the improvement of PAH emissions:

- The “Burn it Smart” Program is a travelling road show designed to educate the public on proper woodstove techniques through workshops and presentations.
- The Woodstove Exchange Program encourages the use of lower emitting EPA approved woodstoves with informational workshops and offered rebates to replace uncertified stoves with new USAEPA certified ones.
- Model bylaws for backyard burning provides local governments a template from which to build bylaws to control the periods during which backyard burning is conducted and the types of materials burned.
- The *Wood Residue Burner Incinerator Regulation* sets dates for the phase-out of beehive and silo burners in populated areas of the province.

ALBERTA

Alberta Environment (AENV) regulates the emissions of PAH through the *Environmental Protection and Enhancement Act* and facility specific approvals (licenses). Alberta Environment requires industrial project proponents to assess environmental and health impacts of PAH emitted from their projects in environmental impact assessment or approval application. If significant emissions of PAH are produced from the proposed project, emission limits and monitoring (both emission and ambient) requirements will be imposed as conditions in the operation approval.

In 1998 the Clean Air Strategic Alliance’s Flaring and Venting Project Team put forward recommendations to Alberta Energy and Utilities Board and Alberta Environment for

implementation. The recommendations are the result of an extensive consensus-based process with representatives of environmental and health organizations, governments, and industry. Solution gas flaring reduction targets are 40 - 50% in volumes flared by the end of 2003 and 60 - 70% reductions in volumes flared by the end of 2006 or 2007. PAH is one of the contaminants in the solution gas emission.

SASKATCHEWAN

- Fact sheets for wood/coal burning and treated wood disposal are being developed;
- In the province there are approximately 12 hospitals with small incinerators for biomedical waste. The two commercial operations in the province use hydroclave and microwave technology. The province has also developed the Saskatchewan Biomedical Waste Management Guidelines in 1998 to deal with the issue of biomedical waste.
- Waste diversion programs have been implemented. Saskatchewan's regional waste management program has reduced the number of landfills by over 80. Saskatchewan has increased Landfill burning enforcement;
- *Occupational Health and Safety Regulations, 1996*: Sections 306, 311 and Table 20 List of Designated Substances includes PAH; and
- Occupational Health and Safety Division (OHSD) enforces the requirement (S 306) to require engineering controls to prevent release of PAHs (as a designated substance) into workplaces and take other measures (including personal protective equipment) to prevent "significant" risk to workers (judged on a case by case basis).

MANITOBA

Open burning of municipal solid waste at landfills is prohibited under Manitoba's Waste Disposal Grounds Regulation (MR 150/91). As well, Manitoba Conservation is participating in the national process to manage emissions from residential wood combustion.

Many of the sources listed in the UNECE POPs Protocol (e.g., coke and anode production, aluminum production, wood preservation installations) are not present in Manitoba; however, Manitoba Conservation would address any new sources of PAHs on a case-by-case basis as part of its *Environment Act* licensing process. This process provides an opportunity to apply BAT to new sources.

ONTARIO

- Effluent monitoring and limits were set by regulation for nine industrial sectors under the Municipal Information Systems Association (MISA) program with the goal of virtual elimination of persistent toxics from all discharges
- Regulation 347 provides the process and structure under which waste is classified as either hazardous or non-hazardous. Open fires are prohibited unless burning clean wood or brush.
- Burning of any kind is not permitted at new landfill sites unless specifically allowed in the Certificate of Approval. The C-7 Guidelines provides a set of operational requirements to burn clean wood or brush at landfill sites.

QUEBEC

- Québec regulations prohibit open air burning except in remote (northern) areas.
- Regulations are currently being revised to reduce emissions from aluminum smelters and, in the medium term, to stop production of aluminum at old plants starting in 2015. However, Alcan has decided to advance the closing of certain Söderberg potrooms, announcing they will be shut down before 2015. In recent years, however, it has developed a pitch that emits less HAP.
- Requirement that emissions from wood preserving facilities be treated.

Description of a "best practice" for HAP management:

- Use of EPA-certified stoves.
- Production of prebaked anodes with treatment of emissions by coke injection and filter baghouses for the fabrication of anode paste is a "best technology available (BTA)."
- The use of "prebaked anode" rather than Söderberg potrooms to produce aluminum is a best practice.
- Thermal treatment by regenerative oxidation of emissions for wood preserving facilities is a best practice.

NEW BRUNSWICK

Provincial actions related to PAHs have focused on domestic wood heating and open fires. Although the work described below is designed primarily to reduce PM emissions, the methods promoted here are also effective in reducing PAHs.

Domestic wood heating:

The Department of Environment and Local Government has organized and/or participated in several education initiatives to promote good wood burning techniques. Departmental staff also participates in home shows and other such public events, where they discuss the importance of minimizing emissions from wood combustion, and discuss the issue on a one-on-one basis with citizens who approach us for advice.

On a broader scale, the Department of the Environment and Local Government is actively participating in two committees formed to address specific Joint Initial Actions, under the Canada Wide Standard for PM and Ozone (re: residential wood combustion). These actions include the development of a national regulation controlling the sale of wood burning appliances in Canada to ensure that they meet specified environmental limits, and the pursuit of a national education campaign on wood burning issues.

Open Burning⁶² (such as refuse burning):

Burning of garbage, plastics, and other non-wood products is prohibited in NB. The burning of brush and other wood materials is permitted, but the Department encourages citizens to choose this method of disposal only as a last resort. For most small-scale burning, a permit is not required, provided that the work is conducted in accordance with guidelines. These guidelines are designed to promote a hot fire, with little smoke. In cases where the guideline

⁶² New Brunswick's Policy on Open Burning is available at www.gnb.ca/0009/0355/0011/0001-e.pdf

cannot be followed, a proponent can apply for a burning permit from the Department. These situations are evaluated on a case-by-case basis.

It is expected that the amount of refuse burning is much lower in New Brunswick than in many other provinces across the country. Curbside garbage pickup is available in all areas of the province, with the exception of Grand Manan Island (population ~2600). The fee for this service is included in the property tax rate. Since this service is automatically paid for, residents have no incentive to burn domestic garbage in rural areas.

The Department's efforts to reduce PM emissions from residential wood combustion and open burning are also leading to a reduction in PAHs from these sources. Techniques have focused on public education and co-operation with other jurisdictions. A number of "best management practices" are recommend to the public to promote hot, clean-burning fires, including the use of seasoned wood, the purchase of a CSA or EPA certified appliance, and the prohibition of burning plastics, garbage, and other such materials.

NOVA SCOTIA

The open burning of solid waste in Nova Scotia has been banned under the *Solid Waste Resource Management Regulations*. The federal and provincial governments are partnering with industry to provide public education regarding proper operation of residential wood stoves as well as provide old appliance replacement with US EPA rated wood stoves program.

PRINCE EDWARD ISLAND

There is no coal burning, coke and anode production, aluminum production or wood preservation in PEI. Open refuse burning is not permitted.

PAHs, along with many other parameters, are tested annually at the energy from waste plant.

A recent educational program seeks to promote residential wood burning efficiency improvements/emissions reductions by proper wood preparation, storage and use, and through the purchase of EPA certified stoves and furnaces.

NEWFOUNDLAND AND LABRADOR

Proposed amendments to the *Air Pollution Control Regulations* will require all new woodstoves to be USEPA or CSA Approved and will make it illegal to burn residential waste in burn-barrels or fireplaces. Elimination of all open burning at landfill/disposal sites will be in place by 2005.

Newfoundland and Labrador has only one wood preservation facility which currently operates under a Certificate of Approval. New owners of the facility have indicated that they are planning on making improvements.

NORTHWEST TERRITORIES

Introduction of new Guidelines for community landfills which prohibit burning of material other than clean wood or paper.

3.2.4 MERCURY, CADMIUM AND LEAD (HM PROTOCOL)

BRITISH COLUMBIA

Through the Consumer and Industrial Product Stewardship Program, the Lead Battery Recycling program is able, with incentives, to collect almost all of the batteries generated in the province for further recycling.

A significant source of lead in the province is the Trail Teck Cominco Smelter and Refinery plant. At this location there are several monitoring stations, emission stack tests, public education forums and continuous checks of lead blood levels in children. BAT is applied for every new upgrade at the Cominco plant and there have been significant improvements in lead emissions over the last 10 years.

ALBERTA

Alberta Environment (AENV) regulates the emission of mercury, cadmium and lead through the *Environmental Protection and Enhancement Act* and facility specific approvals (licenses). Alberta Environment requires industrial project proponents to assess environmental and health impacts of these metals emitted from their projects in environmental impact assessment or approval application. If significant emissions of these metal are produced from the proposed project, emission limits and monitoring (both emission and ambient) requirements are imposed as conditions in the operation approval. Facilities are required to use the best available demonstrated control technology to control emissions of contaminants. These requirements are reflected through conditions included into the facility approval.

In December 2003, the Clean Air Strategic Alliance's Electrical Power Project Team put forward an air emissions management framework for the Alberta electricity sector to Alberta Environment for implementation. The framework is the result of an extensive two-year consensus-based process with representatives of environmental and health organizations, senior provincial and federal officials, municipal leaders, industry leaders and local community groups. More than 350 Albertans added their input at 11 public meetings held across the province. Annual reduction of 400 kilograms (50 per cent by the end of 2009) of mercury based on current emissions levels should be achieved under the framework. Coal-fired power plants account for about 80 per cent of mercury emissions in the province. Under the framework, industry is required to set continuous improvement goals at five-year intervals through regular review and updating of technology performance standards.

SASKATCHEWAN

Saskatchewan's overall approach to management of mercury emissions from existing waste incineration facilities will be to incorporate the CWS into the conditions of permits to operate issued pursuant to Saskatchewan's *Clean Air Act* and *Clean Air Regulations*. Since all operational waste incinerators in Saskatchewan are operated as components of waste management of hospital operations, and all are of relatively small capacity of less than 120 tonnes per year, permit conditions will provide for choice of pollution control upgrading and stack testing or "determined efforts" including mercury diversion planning and waste audits. It is anticipated that all facilities will choose to complete mercury diversion planning and the waste audits option in which mercury will be diverted from the waste stream and reduce total annual emissions.

If the construction of a new waste incineration facility is such that it would be considered to be a “development”, during the project development and assessment stage, management of mercury emissions will be introduced through the processes associated with The *Environmental Assessment Act*. These provisions will apply for municipal waste incineration, medical waste incineration, hazardous waste incineration and sewage sludge incineration as defined within the CWS. This process would allow for the introduction of BAT if required by the government or stakeholders.

Saskatchewan and SaskPower participate in the CCME’s Canadian Uniform Data Collection Program (UDCP) for Mercury from Coal-fired Electric Power Generation. This monitoring and reporting will estimate the emissions from this sector in Saskatchewan. The data is collected by SaskPower and submitted to Saskatchewan Environment and is compiled nationally through CCME.

Saskatchewan plans to develop a program to manage electronic-waste.

Saskatchewan proposes to implement an industry driven program to collect certain mercury containing wastes.

Occupational Health and Safety Regulations, 1996: Sections 306, 311 and Table 20 List of Designated Substances includes Pb, Cd, Hg. Occupational Health and Safety Division (OHSD) enforces the requirement (S 306) to require engineering controls to prevent release of these metals (as a designated substance) into workplaces and take other measures (including personal protective equipment) to prevent “significant” risk to workers (judged on a case by case basis).

All 3 metals have Saskatchewan Contamination limits. There are requirements to keep worker exposure to the metals below their respective contamination limits (8 hour and 15 min averaged air concentrations), and where reasonably practicable keep air concentrations below the Concentration Limit in areas where workers are usually present. Exposure includes:

- Mercury: dental amalgams, sphygmomanometers, ash, electrical switches, thermometers, electrodes and labs;
- Cadmium: paints, slag, ash, welding fume (painted surfaces), electroplating, NiCd batteries, possibly brazing filler;
- Lead: broken batteries, babbitt manufacturing, foundries, welding fumes (painted surfaces), lead in solder for radiator repair, electrical circuit boards, shielding, ash slag, paint, sweeping compounds, bullet casings, pottery pigments, stained glass;
- OHSD Best Practices (workplace): Lead in Radiator Repair shops and Mercury and Dental Workers;

Two contaminated sites were remediated with extensive lead contamination. Inland Steel and NWR Salvage.

Other sources of significance will be salvage operations that have processed batteries, and copper wire burn sites which also generate lead.

MANITOBA

Manitoba Conservation has participated in the development of Canada-wide Standards (CWS) for mercury and will be implementing the CWS for those sources of significance in Manitoba, namely base metal smelters.

Many of the sources listed (e.g., cement kilns, secondary copper or zinc production, etc.) are not present in Manitoba; however, Manitoba Conservation would address any new sources of mercury, cadmium and lead on a case-by-case basis as part of its *Environment Act* licensing process. This process provides an opportunity to apply BAT to new sources.

Manitoba Conservation will continue to cooperate with Environment Canada in the development of emission inventories for heavy metals, through participation on the Emissions and Projections Working Group of the National Air Issues Coordinating Committee (NAICC-A).

Since 1988, the base metal smelter in Flin Flon Manitoba has reduced its mercury, cadmium and lead emissions by 93%, 60%, and 57%, respectively. This was accomplished by replacing its zinc roasters for processing ore with a zinc pressure leaching system in 1993. More recently, control of spill gases from the copper smelter has been gained through improved collection of the gases released during roasting of the copper ores. Over the same time period of 1988 to 2002, the base metal smelter in Thompson has reduced its lead emissions by 40%. Emissions of mercury and cadmium at this smelter have not been significant.

ONTARIO

- O. Reg 323/02 required all existing hospital incinerators to close by December 6, 2003.
- Hamilton's Solid Waste Recovery Unit (SWARU) incinerator was closed in December 2002.
- The Canada-wide Standard (CWS) for mercury has been implemented ahead of schedule for some incinerators and will be implemented as others are newly commissioned in Ontario (e.g. KMS Peel, Clean Harbors, Medical Waste Management Inc., Material Resource Recovery Inc. and OPG - Bruce Nuclear site).
- O. Reg 196/03 required all members of the Royal College of Dental Surgeons of Ontario (RCDSO) that own or control a dental office in Ontario that produces waste amalgam to install an amalgam separator that meets or exceeds the ISO standard by November 15, 2003.
- Ontario is part of a dental working group (which includes among others, Environment Canada and the Royal College of Dental Surgeons of Ontario) that is producing a Best Management Practices Guide for the dental community, and the group has already created and distributed flowcharts for the proper disposal of dental wastes including mercury.
- O. Reg 396/01 requires Lakeview generating station to cease burning coal by April 30, 2005.
- Ontario has funded the Switch Out program administered by the Clean Air Foundation for the past three years. This program has collected more than 20,000 mercury-containing switches from end of life vehicles in Ontario.
- Ontario works co-operatively with Environment Canada on updating the mercury inventory on a regular basis.
- Ontario is co-chair of the Canadian Council of Ministers of the Environment Mercury Development Committee that is currently developing a Canada-wide Standard to reduce mercury emissions from coal-fired power plants.

QUEBEC

Regulations governing air emissions are currently being revised to integrate and harmonize them with pan-Canadian standards.

Québec is currently developing its "Québec Mercury Action Plan." This plan is based on the province's commitments under the regional action plan of the Conference of New England

Governors and Eastern Canadian Premiers (CNEG/ECP). Once approved, one of the main priorities of this action plan will be to reduce mercury emissions from specific sources (municipal and other incinerators, industrial and diffuse sources, crematoriums, etc.).

Description of a "best practice" in the management of mercury, cadmium and lead:

- The Québec Ministry of the Environment is conducting a series of inspections of all disassemblers/recyclers in its territory over a 4-year period. Each company will be visited twice and will receive information about the reclamation of mercury products in vehicles along with a guide to the recovery, storage and recycling of such parts. This program will greatly reduce the amount of mercury released into the atmosphere during the recycling of steel from cars. The program has been operating since 2003.

NEW BRUNSWICK

Mercury

Significant reductions (60%) in mercury emissions from the coal-fired electric power generation (EPG) sector have been achieved since 1990 in New Brunswick. Most of these reductions have been achieved through fuel switching, with limited reductions coming from the installation of wet flue gas desulphurization technology, which not only removes sulphur dioxide but also captures some mercury contained in the gas stream. Further mercury reductions will be achieved prior to 2010 with the discontinued use of indigenous New Brunswick coal (relatively high in mercury at 0.5 ppm) as a fuel source. This will result in 90% reduction in mercury emissions from the coal-fired EPG sector when compared to a base year of 1990.

New Brunswick's chlor-alkali facility has reduced mercury emissions by approximately 30% since 1990 through continuous improvements to their process and operating procedures of the facility.

One of two existing medical waste incinerators is equipped with activated carbon injection technology in combination with a fabric filter baghouse, which not only removes dioxins and furans but also captures mercury in the gas stream. Both existing incinerators are equipped with wet scrubbers and have conducted testing on stack emissions of mercury. Results from both facilities were well below the emission limit set in the Canada-wide Standard for Mercury and the limit established by the Conference of New England Governors and Eastern Canadian Premiers.

Mercury emissions from the incineration of medical waste in New Brunswick have been reduced since the early 1990's for two main reasons. All of the old inadequate incinerators were closed and replaced with incinerators equipped with appropriate pollution control equipment. As well, hospitals have made efforts to replace mercury-containing equipment (e.g. thermometers, manometers) with non-mercury type equipment, which over time has reduced/eliminated the source of mercury in the waste that is being incinerated.

Lead and Cadmium

Lead and cadmium are emitted from mining and smelting operations in the province. Through mine closures and through participation in the voluntary ARET (Accelerated Reduction/ Elimination of Toxics) program, emissions of lead and cadmium are estimated to have been reduced by 74 and 69 percent respectively between 1990 and 2002. As there

was a strike at the lead smelter for portions of 1990 and 1991, smelter emissions for 1989 were used in these estimates. For those facilities that continue to operate, the reductions were achieved primarily through changes to the grinding process and tailings management at the mine and changes in feedstock composition and incremental improvements in the management of pollution control equipment at the smelter.

In addition to changes in the grinding circuits, which removed 97 % of the sources of dust in the mill, and improvements in the integrity of tailings pile surfaces, emission reductions at the mine were achieved through the implementation of management systems that focus on preventative maintenance of pollution control equipment. At the smelter, environmental training was provided to all employees and a comprehensive environmental management plan was implemented.

NOVA SCOTIA

Nova Scotia has endorsed and is implementing Canada-wide Standards for Mercury from the following sectors: mercury containing lamps, dental amalgam waste, incineration and base metal smelters. Nova Scotia is participating in the development of the Canada-wide Standard for coal fired electrical power generation.

The province signed a Memorandum of Understanding (MOU) with the Nova Scotia Dental Association to develop dental waste reduction program. Nova Scotia is signing a MOU with the provincial electrical utility to reduce mercury emissions from its coal-fired generating facilities. This may also include programs to co-fund mercury collection programs for other sectors.

PRINCE EDWARD ISLAND

In PEI, there is no coal burning. Approximately 97% of electricity is imported from New Brunswick. In past years, the Charlottetown Municipal Solid Waste incinerator (energy from waste plant) was the primary generator of mercury in the province. In 1997, controls were installed to reduce the release of all heavy metals. Emissions are tested annually and operating permits under the *Air Quality Regulations* of the *Environmental Protection Act* specify limits and other requirements.

Operating permits require facilities to use the best available technology to control emissions of heavy metals.

NEWFOUNDLAND AND LABRADOR

The Province is actively participating on the Canada-wide Standards for Mercury Development Committee and the New England Governors Eastern Canadian Premier Mercury Task Force to reduce mercury emissions. Mercury from wet deposition is monitored at one site in Newfoundland and Labrador. Atmospheric lead was measured at a site in Newfoundland and Labrador under the National Air Pollution Surveillance (NAPS) Network. Mercury, cadmium and lead atmospheric emissions are controlled by *Air Pollution Control Regulations*. Discussions are ongoing with the NL Dental Association to implement the MOU between Environment Canada and the Canadian Dental Association. Proposed amendments to the *Air Pollution Control Regulations* will require the incineration sector to meet stack concentrations for mercury as set out in the CWS. The Department partners with industry on Nickel / Cadmium

Battery Recycling. The Province currently does not have any base metal smelting facilities. New facilities would have to meet BAT under the CWS for Mercury.

Newfoundland and Labrador's Department of Environment has purchased two fluorescent tube Bulb Eaters for mercury recovery for use at its two main government buildings.

NORTHWEST TERRITORIES

Implementation of CWS for Hg – biomedical waste incineration (includes requirement to segregate waste). Required BACT on new biomedical waste incinerator in Inuvik.

3.2.5 WASTES

BRITISH COLUMBIA

All generation, handling, collection, transporting and storing of dangerous wastes is regulated by the *Waste Management Act* which will soon be replaced by the *Environmental Management Act*.

A Municipal Solid Waste Incinerator is located in Burnaby and is regulated by permit using Emission Criteria for Municipal Solid Waste Incinerators.

Within BC, there are no hazardous waste incinerators, although regulations do exist for their operational requirements and standards of performance. For current incineration of hazardous wastes, most wastes are disposed of domestically at Swan Hills Treatment Centre in Alberta.

Burning of creosote wood, for example old railroad ties, is regulated by permits on a site specific basis.

The handling, release, transport, storage, disposal or selling of a pesticide is regulated through the *Integrated Pest Management Act* expected to come into full force in the summer of 2004. Further regulations to accompany the Act will involve public consultation outlining key issues previously identified by the Ministry. For residential use of pesticides, there are regular collections.

ALBERTA

Alberta Environment (AENV) regulates the proper storage and disposal of POP hazardous wastes through the *Environmental Protection and Enhancement Act*, *Waste Control Regulation*, and facility specific approvals (licenses). Hazardous waste limits for POP waste are identified in the *Waste Control Regulation* and the Alberta User Guide for Waste managers (1996).

AENV funds the destruction at the Swan Hills Treatment Centre of household hazardous wastes collected through the Toxic Roundup Program operated by Alberta municipalities.

Operation CleanFarm is a cooperative effort by government and non-government organizations to provide Alberta farmers with an opportunity to remove obsolete and unwanted pesticides from their farms at no cost. The 2003 Operation CleanFarm program in Central Alberta was a success, with almost 90 tonnes (90,000 kg) of old, obsolete or unwanted pesticides collected

from farmsteads across the region. The majority of pesticide products collected in 2003 was over 10 years old.

AENV regulates POPs wastes through the *Environmental Protection and Enhancement Act*, *Waste Control Regulation*, and facility specific approvals (licenses). Most POP wastes in Alberta are destroyed at the Swan Hills Treatment Centre in a rotary kiln that has a destruction removal efficiency of 99.9999% at temperatures up to 13000C. The kiln has emission limits for: total particulates, hydrogen chloride, sulphur dioxide, carbon monoxide, total PCDD/PCDF toxicity equivalent, halogenated principal organic hazardous compounds (POHCs), and non-halogenated POHCs.

SASKATCHEWAN

- The use of pesticides in Saskatchewan follows the guideline on “Pesticide Use In Municipalities” developed by the Urban Pest Management Council of Canada;⁶³
- A Container Management Program⁶⁴ has been adopted from the Crop Protection Institute;
- Saskatchewan Agriculture, Food and Rural Revitalization (SAFRR) indicates that only lindane is currently registered for use in Canada - all of the others have not been available in Canada for at least 20 years or more (e.g., DDT, aldrin) and some as far as we know have never been registered in Canada (mirex, heptachlor);
- Lindane - has many labels for use as a seed treatment - all of which are being phased out⁶⁵
- Saskatchewan Agriculture Food and Rural Revitalization’s (SAFRR) web site provides links to Pest Management.
- SAFRR web site provides the following links to Crop Residue Burning⁶⁶, the main aspects of which are to:
 - reduce the incidence of agricultural burning;
 - raise awareness of the environmental, health and safety risks associated with agricultural burning;
 - provide practical alternatives to burning including the best management practices for managing crop residues; and
 - link to current information on weather conditions and fire risk.

Transportation of POPs: Saskatchewan Highways and Transportation (Transport Compliance Branch) is charged with ensuring that trucks comply with federal and provincial *Dangerous Goods Transportation Acts*, and *Spill Regulations*. That is part of the business process for transport companies and individual haulers.

OHSD Chemical and Biological Substances Regulations (Part 21) and WHMIS requirement re: hazardous wastes (S 316(4)) are relevant for best practices relative to handling;

The province is currently reviewing a project proposal involving a Thermal Phase Separation Unit that will be able to remove and recover POPs such as PCBs, PAHs, pesticides, petroleum contaminated materials, etc., in a closed loop system that has virtually no air emissions. This system has been used successfully in a number of countries around the world, including in Australia where the technology was used to clean up the contaminated site on which the

⁶³ Available at: www.croplife.ca/english/pdf/CMP20061.pdf.

⁶⁴ Available at: www.croplife.ca/.

⁶⁵ Special Review of Lindane: www.hc-sc.gc.ca/pmra-arla/english/pdf/rev/rev2002-02-e.pdf.

⁶⁶ www.agr.gov.sk.ca/cropresidue

Sydney Olympics were held. The technology received positive recognition by the GreenPeace organization as a result of these cleanup efforts.

MANITOBA

Manitoba's *Dangerous Goods Handling and Transportation Act* (C.C.S.M. c. D12) and regulations address the registration of waste generators, licensing of waste carriers and waste disposal facilities, and manifest documentation of hazardous waste shipments.

Manitoba Conservation has conducted or participated in programs since the 1970's to collect and appropriately manage restricted pesticides such as DDT. The department currently funds a Household Hazardous Waste program that collects and manages Household Wastes (HHW) that includes pesticides.

ONTARIO

Waste management in Ontario is addressed primarily in Part V of the *Environmental Protection Act* and *O. Reg. 347* which sets out how wastes (hazardous and non-hazardous) are managed and disposed. Generators of hazardous wastes must be registered with the MOE and approvals are required to transport, handle and dispose of hazardous wastes. *O. Reg 347* requires a manifest system to track each shipment of waste from generator to final disposal.

Wastes are categorized into various waste classifications which require differing regulatory control depending on the nature of the waste. POPs waste require stringent handling and final treatment/disposal in an approved waste management facility.

NEW BRUNSWICK

Over the last 15 years, the Department has maintained a hazardous waste data base tracking the movement of waste within, into and out of the Province. Generators of wastes are registered into the data base for tracking purposes. Carriers are limited to the handling of compatible waste and waste destinations are mostly designated. Commercial receivers of wastes, such as the two hazardous waste transfer stations and the solvent recycler, are individually designated as a source that is a "danger of pollution" under the *Water Quality Regulation-Clean Environment Act*. Receivers must post a financial assurance and their activities are limited.

NOVA SCOTIA

Nova Scotia regulates the storage, handling and disposal of waste dangerous goods under the *Dangerous Goods Management Regulations*.

An industry run program to collect used pesticide containers has existed in Nova Scotia for many years with collection rates in the 90% range. Occasional province-wide collection programs for expired or de-listed pesticides are used to remove stockpiles at no cost to residential or commercial users.

PRINCE EDWARD ISLAND

The storage and disposal of POP hazardous wastes are controlled through the *Environmental Protection Act* and facility specific permits. At present, the *Waste Resource Management*

Regulations are being amended to allow greater control. The Department of Environment and Energy doesn't regulate products containing POPs or the elimination of the use of POPs.

The Island Waste Management Corporation manages the collection and disposal of household hazardous wastes. Drop-off depots, generally open from Monday-Saturday, and located across the province, are regulated by the Department of Environment and Energy.

Farm pesticide clean ups are organized on an as-needed basis.

NEWFOUNDLAND AND LABRADOR

Following are the key initiatives related to wastes:

- Ministerial Policy Document on the reduction of municipal incineration sites, comprehensive Provincial Waste Management Strategy, as well as the signing of the Canada-wide Standard for Conical Waste Combustion will result in the phase-out of conical waste combustors by 2008;
- *Used Oil Control Regulations* enacted in 2003;
- Ban on dumping/disposal of oil contaminated soil;
- Tire Recycling Program initiated in 2002;
- Partnership with industry on Nickel / Cadmium Battery Recycling and establishment of a Provincial Departments Committee in 2001/02.
- Licensed treatment system for soil and liquid wastes;
- Management Document on contaminated sites ;
- Continue to restrict the import of wastes into this Province.

In 2002 the NLDOE in partnership with various other organizations participated in an Obsolete Pesticide Collection Program. A total of 1800 kg of pesticides, including chlordane, DDT and mercury-based fungicides, were recovered for proper disposal.

NORTHWEST TERRITORIES

Numerous guidelines created under the *Environmental Protection Act* to provide advice on appropriate disposal of waste paint, waste batteries, waste solvents, waste lead and lead paint and general management of hazardous waste.

New Waste Reduction & Recovery Act provides authority to introduce regulations, programs and other initiatives to encourage recycling.

3.2.6 PRODUCT CONTROL (HM PROTOCOL)

Product control is addressed under the Heavy Metals Protocol. In general, product control is considered to be a federal responsibility. Canada-wide standards related to mercury will be implemented at the provincial/territorial level, while lead in gasoline and mercury in alkaline manganese batteries are regulated at the federal level.

SASKATCHEWAN

Battery Recycling

- Saskatchewan supports an industry-run battery collection program whereby retailers and distributors encourage consumers to return their old batteries for recycling.

Gasoline Formulation

- Saskatchewan does not regulate the formulation of gasoline with regard to lead content, vapour pressure or other characteristics. The Canadian General Standards Board (CGSB) requirements are generally accepted and referred to for Saskatchewan fuel formulation;

Ethanol Strategy

- Saskatchewan has a Greenprint for ethanol – a strategy to create a framework to stimulate investment in ethanol production. Elements of the strategy include:
 - Tax incentives by removing the Fuel Tax;
 - A mandated ethanol blend once local industry is in a position to supply provincial requirements; and
 - Removal of provincial trade barriers to open up additional markets.
- The only Provincial regulation that relates to fuel formulation is The *Ethanol Fuel Act 2002* which authorizes the creation of regulations relating to the production and use of ethanol, including matters respecting the blending of ethanol with fuel. The Act allows for a date to be prescribed after which only ethanol-blended fuels may be sold; and
- (As Above)The *Ethanol Fuel (General) Regulations 2002* state that all fuels must contain no less than 5.0% ethanol after April 1, 2004 and no less than 7.5% ethanol after January 1, 2005.

Biodiesel Strategy

- Biodiesel offers additional opportunities for expansion of the rural economy and to decrease imports of petroleum products; and
- Biodiesel is being used on a trial basis by municipal transit services.

ONTARIO

Mercury In Alkaline Manganese Batteries

As of January 1996, the manufacture of mercury oxide batteries was discontinued in Canada. The Canadian Household Battery Association has voluntarily eliminated mercury from all alkaline, zinc-carbon and zinc chloride batteries. Manufacturers still use small amounts of mercury in button cell batteries that are found in calculators, cameras, watches and hearing aids. The small size of the battery required for these applications demands use of a tightly compacted electrolyte such as mercury.

PRINCE EDWARD ISLAND

The Department of Environment and Energy is implementing the requirements of the CCME Canada-Wide Standards for mercury and those under the Mercury Action Plan of the Conference of the New England Governors and Eastern Canadian Premiers (NEG/ECP).

3.2.7 PRODUCT MANAGEMENT (HM PROTOCOL)

BRITISH COLUMBIA

Over 90 percent of reported household hazardous waste in British Columbia is now regulated under product stewardship programs. The **Post-Consumer Residual Stewardship Program Regulation** requires the producers and consumers of solvents/flammable liquids, domestic pesticides, gasoline, pharmaceuticals, paint, and waste oil and filters to take responsibility for the management of their leftovers or wastes. Additional programs for product stewardship also exist for batteries and tires.

ALBERTA

Alberta Environment implemented or will implement initiatives developed under the Canadian Council of Ministers of Environment's Canada-Wide Standards for Mercury or other hazardous air pollutants.

SASKATCHEWAN

Saskatchewan Environment is developing or supporting a number of recycling programs:

- an Electronic hardware waste collection and recycling program;
- a paint collection and recycling program in major cities, small town and rural collection is planned;
- an industry-run battery collection program whereby retailers and distributors encourage consumers to return their old batteries for recycling;

Saskatchewan promotes the concept of "Determined Efforts" as described in the CWS for waste incineration. Determined efforts for mercury and dioxins and furans are those best management practices that have been found to effectively prevent the release of contaminants into the environment. For these products, best management practices are effective procedures for handling and either recycling or disposing of the mercury-containing products. As the life of the product is complete, the product will be managed to protect the environment.

These best management practices include:

- Source reduction through eco-procurement and its contractual processes. Also called Environmentally Responsible Procurement, Eco-procurement is the adjustment of purchasing actions and policies to integrate consideration of cradle-to-grave environmental factors with performance, cost, safety and other factors. Adopting eco-procurement will ensure that consideration of environmental impacts and environmental legislation are included in purchasing decisions respecting goods, services, construction and maintenance work;
- Purchase of equipment and material that may produce mercury waste and dioxin and furan formation should include Extended Producer Responsibility criteria in their purchasing and contractual processes;
- Access to manufacturers of hospital instruments and chemicals that have a collection and recycle program in place; and
- Access to a waste management company that specifically deals with mercury either for recovery or disposal.

Fluorescent Lamps

Saskatchewan intends to promote the recycling of fluorescent lamps where the infrastructure and capacity are sufficient to make it relatively cost effective. Large facilities such as hospitals, office towers, etc. are examples where sufficient lamps are managed to make recycling cost-effective; however the dispersed nature of Saskatchewan's population may make this difficult in some areas. Saskatchewan plans to assess the feasibility of lamp recycling.

Dental Amalgam

Saskatchewan promotes the appropriate management of dental amalgam waste so mercury does not enter the environment. Appropriate management may include land filling in an approved, confined, engineered landfill with leachate collection systems, recycling to either produce reusable materials such as mercury, silver or copper, or for stabilization/immobilization in a form that may be retired permanently. Saskatchewan proposes through "Best Management Practices", a 95 per cent reduction in mercury releases from dental amalgam waste discharges to the environment, by 2005, from the base year of 2000. "Reduction in mercury releases" refers to the amount of mercury, either in the form of elemental mercury or mercury containing compounds, removed from the dental waste stream. "Best Management Practices" are defined as including the use of an International Organization for Standardization (ISO) certified amalgam separator or equivalent to remove mercury from the waste stream.

MANITOBA

Manitoba Conservation has participated in the development of Canada-wide Standards (CWS) for mercury. As part of the process, the Manitoba Dental Association has agreed to voluntarily to implement the adoption of technology to capture and collect amalgam waste from dental offices.

ONTARIO

For the past three years, the Ontario Ministry of the Environment, Environment Canada and Ontario Power Generation have funded the Mercury Switch Out program administered by the Clean Air Foundation. This program has successfully captured over 24,000 mercury switches from end-of-life vehicles in Ontario.

QUEBEC

Gasoline has been leadfree for a long time.

Québec is currently developing its "Québec Mercury Action Plan." This plan is based on the province's commitments under the regional action plan of the Conference of New England Governors and Eastern Canadian Premiers (NEG/ECP). Once approved, one of the main priorities of this action plan will be to reduce the at-source use of mercury in current products and to ensure adequate management of the related residual materials. This action plan will eventually also cover batteries. Under the provisions of the Québec Policy for the Management of Residual Materials 1998-2008 (Politique québécoise de gestion des matières résiduelles 1998-2008) for the reclamation and recovery of residual materials, Québec is promoting greater producer responsibility in the design and application of all future approaches.

NEW BRUNSWICK

The Province of New Brunswick will continue to encourage the Federal Government to review or establish regulatory limits on the concentration of heavy metals in new or imported products. It will continue to work with Industry and stakeholders on end of life management of products such as paint, batteries and electronics.

Government Departments have agreed to tender for low-energy, low-mercury fluorescent lights. Schools have eliminated mercury from the curriculum and have cleaned out the labs of old mercury. Hospitals are eliminating mercury manometers and thermometers, and are eliminating mercury from laboratory reagents.

The Province is working cooperatively with a local solid waste commission to properly manage electronic waste (ewaste) through a pilot program. All waste is being handled and processed at the Noranda facility in Brampton.

Lead-acid batteries are tracked to proper recycling facilities by requiring the use of a waste manifest. Individuals and commercial operations are encouraged to participate in the Rechargeable Battery Recycling Corporation (RBRC)⁶⁷ rechargeable battery take-back program.

As Solid Waste Commissions develop and expand their program, more and more household paints are making their way to Household Hazardous Waste collection services. The paint is shipped out of province for either high-temperature incineration or recycling.

NOVA SCOTIA

Nova Scotia has endorsed and is implementing Canada-wide Standards for Mercury from mercury containing lamps and dental amalgam waste. Nova Scotia has worked with hospitals and health boards to identify and remove sources of mercury from health care centers.

PRINCE EDWARD ISLAND

A mercury thermometer take-back week was held in 2002 to remove these devices from PEI homes. Incentives were given to replace them with digital units. The PEI Pharmacy Association then agreed to no longer carry mercury thermometers.

The Department of Environment and Energy and the Department of Education worked jointly to inventory and remove mercury-containing devices (thermometers, barometers and free mercury stockpiles) from school laboratories.

A dental amalgam waste pilot project was undertaken in conjunction with Environment Canada and the Dental Association of PEI.

A fluorescent light tube management program is being developed by the Department of Environment and Energy and the Island Waste Management Corporation.

Requirements of CWS on mercury and the Mercury Action Plan of the NEG/ECP will be met.

⁶⁷ www.rbrc.org/community/index.html

NEWFOUNDLAND AND LABRADOR

NLDOE has purchased two fluorescent tube Bulb Eaters for mercury recovery for use at its two main government buildings. Discussions are ongoing with the Newfoundland and Labrador Dental Association to implement the Memorandum of Understanding between Environment Canada and the Canadian Dental Association.

NORTHWEST TERRITORIES

New Waste Reduction & Recovery Act provides authority to introduce regulations, programs and other initiatives to encourage recycling.

3.2.8 CONTAMINATED SITES (POPS PROTOCOL, STOCKHOLM)

BRITISH COLUMBIA

Clean up of contaminated sites (including PCBs, lead, and cadmium) is regulated by the *Waste Management Act* and the *Contaminated Sites Regulation*. This includes standards for site identification, assessment, and remediation as well as providing consistent ways to ensure that human health, the environment, personal property and utilities are protected.

Regional ministry staff are at the forefront of administering contaminated sites in British Columbia. They deal directly with sites through inspections, reviewing and approving reports and plans, issuing permits, and enforcing legal controls.

ALBERTA

Under the *Environmental Protection and Enhancement Act* (EPEA), Alberta Environment protects Alberta's land resource base by ensuring that land used for specified industrial activities (specified land) is developed and reclaimed in an environmentally sound manner. The Act requires operators to employ effective conservation and reclamation measures. These measures ensure that the disturbed land is reclaimed to meet the goal of equivalent land capability. Our mandate is accomplished by: (1) Issuing approvals for complex industrial activities; (2) Collecting security for activities with approvals; (3) Conducting inspections of conservation and reclamation activities; (4) Issuing reclamation certificates; (5) Developing information documents for industry and the public; and (6) undertaking compliance and enforcement actions when necessary. Alberta Environment works closely with partners in Alberta Sustainable Resource Development and the municipalities. Each of these organizations appoints Inspectors who work on conservation and reclamation of specified land.

It is not anticipated that a POPs contaminated site exists in Alberta

SASKATCHEWAN

Spill Regulations & Environmental Management & Protection Act 2002 (EMPA2002)

Saskatchewan introduced The *Environmental Spill Control Regulations* in March 1981 mandating the reporting, management, cleanup and restoration of the area affected by the release and prior approval for the disposal of contaminated materials which result from the spill. EMPA 2002 deals with unauthorized discharges and contains a prohibition on discharges into the environment (s. 4); a duty to report a discharge (s. 5); the duty to take all reasonable measures to clean up the spill (s. 7) and to prevent, reduce and remedy the adverse effects of the discharge.

Contaminated Site Legislation

Saskatchewan Environment released a strategy for managing contaminated sites in October 1998 which closely follows the CCME principles for liability. EMPA 2002 has provisions for managing contaminated sites (section 11 to 14) by allowing the minister to designate contaminated sites (s. 11) and provide public notice of the site designated, to give notice to any person who, in the opinion of the minister, is a person responsible for the discharge that resulted in the contaminated site and requiring that every person directly responsible for a discharge to prepare a remedial action plan and the apportionment of costs for the cleanup of the site.

Contaminated Sites Clean-Up

The 4-year Centenary Fund for the clean-up of contaminated sites was designed to assist in cleaning up high-risk properties for which the responsible parties could not be found or where the owner was unable or unwilling to finance the remediation of a site. Sites selected to be remediated under the program are:

- Shragge Steel located in Regina;
- IPCO herbicide formulating plant located in the Rural Municipality of Corman Park;
- NWR Salvage property located in the Rural Municipality of Vanscoy;
- Woodland Campus creosote contamination located in Prince Albert;
- Inland Steel Salvage Yard located in Saskatoon; and
- Northern Petroleum Refinery located in Kamsack.

MANITOBA

Manitoba Conservation manages sites impacted by POPs under the *Contaminated Sites Remediation Act* (C.C.S.M. c. C205). The focus of efforts is to identify sites impacted by POPs through Environmental Site Assessment and secondly to prevent, minimize or mitigate exposures to human and environmental receptors through a variety of remedial measures including: monitoring, containing, removing, destroying or otherwise disposing of the POPs.

Sites are tracked using an impacted sites database. The majority of sites tracked in Manitoba are impacted by contaminants other than POPs; sites impacted by POPs comprise less than 5% of the sites tracked in Manitoba.

The *Contaminated Sites Remediation Act* (C.C.S.M. c. C205) designates a site as "Contaminated" if the contamination poses a threat to human health and safety or to the environment. The Act does not specify a specific remedial measure on any given site, providing

that the remedial measures chosen prevent, minimize, or mitigate exposures to human and environmental receptors. Therefore, a "best practice" on one site may not be applicable on another. The most common remedial measures undertaken in Manitoba are either containment or excavation and removal.

ONTARIO

- The *Environmental Protection Act* (Part X – Spills) sets out responsibilities and liabilities for site contamination;
- In 2001, the *Brownfields Statute Law Amendment Act* was passed to bring more certainty to site assessment and remediation. It creates an environmental site registry where Records of Site Condition (RSC) are filed;
- The environmental condition of a property plays an important role in property ownership, zoning changes and property financing;
- In 1996, Ontario issued the Guideline for Use at Contaminated Sites along with several supporting documents to set soil and groundwater criteria for more than 110 chemicals.

QUEBEC

Québec is currently developing its "Québec Mercury Action Plan." This plan is based on the province's commitments under the regional action plan of the Conference of New England Governors and Eastern Canadian Premiers (CNEG/ECP). Québec's first step in implementing this plan involves reviewing the products that contain mercury, recovery programs and methods available to recover, recycle or eliminate residual mercury. The review will develop an estimate of the mercury released into the environment during the manufacture, use and post-consumption management of such products. The results and subsequent analyses will be used to guide the Québec Ministry of the Environment in preparing future interventions and an action plan.

Once approved, one of the main priorities of the "Québec Mercury Action Plan" will be to reduce the at-source use of mercury in current products and to ensure adequate management of the related residual materials. Under the provisions of the Québec Policy for the Management of Residual Materials 1998-2008 (*Politique québécoise de gestion des matières résiduelles 1998-2008*) governing the reclamation and recovery of residual materials, Québec is promoting greater producer responsibility in the design and application of all future approaches.

Description of a "best management practice" for products:

- Since July 2002, the City of Montreal has enforced waste water regulations and has required dentist's offices in its territory to recover dental amalgams and amalgam residues. This approach is based on the systematic installation of amalgam separators, which operate at a minimum 95% efficiency, in all dentists' offices served by the City of Montreal.
- All across Québec, hydrometric stations equipped with mercury pressure gauges have been replaced and the structures have been decontaminated. Because the mercury was in liquid form and the structures were not watertight, mercury fell through cracks in the floor and contaminated the ground. Soils contaminated by the old stations will be decontaminated and the sites restored.

NEW BRUNSWICK

The Department of the Environment and Local Government (ELG) has attempted to address site contamination issues through the creation of three separate programs within the Remediation Branch. These programs deal with dump closures, petroleum storage and handling, and site remediation. While site remediation is administered separately from the other programs, it is nonetheless an over-arching concept applicable to all brownfield sites, industrial and otherwise.

The regulatory authority for ELG's existing remediation program is derived from the *Clean Environment Act*, using the Minister's authority to make orders to require the clean-up of contamination. Such orders are used to require responsible parties to clean-up sites that have been contaminated and pose an ongoing risk of environmental impact. The provincial *Health Act* also provides a legislative basis for government supervision of future use.

At the operational level, the Department, in concert with neighbouring jurisdictions, has developed an innovative technical tool for managing the remediation of contaminated sites. The tool, a computer software package, can be used to assess the risks associated with individual contaminated sites. Along with the creation of the software package, ELG has developed an accompanying "*Guideline for the Management of Contaminated Sites in New Brunswick, 1999*". Together, the software and the guideline, provide a contaminated site management system known as Risk Based Corrective Action (RBCA or "Rebecca").⁶⁸ The Department has been using the RBCA system successfully since 1999, and has recently released version 2.0 of both the model and the management guideline (Version 2.0 2003).

The advent of the RBCA approach has greatly expedited the clean-up of contaminated sites. In brief, the process quantifies the level of risk associated with a given site, and then determines the level of clean-up required, given the desired use for the land following remediation. Integral to the process is a database system used to keep track of the status of each site. The database allows the Department to ensure that future land-use at each site continues to match the level of remediation. Thus, future changes in land use can be used as triggers for additional remediation, if necessary.

The key strength of the RBCA "philosophy" is that it provides a sound, scientifically defensible basis for risk assessment and remediation management. This tool, along with other programs, such as New Brunswick's funding program for orphaned sites, has provided ELG with the flexibility required to redevelop several brownfield sites throughout the province.

ELG's successes with this process has placed New Brunswick at the forefront of remediation issues, with recent recognition from national industry associations as an appropriate test bed for more advanced brownfield development strategies. This enthusiasm is primarily attributable to the province's success at applying the RBCA system to certain high-profile developments, such as the redevelopment of the former CN Shops property in downtown Moncton. The CN Shops project successfully remediated three hundred acres of contaminated land at a fraction of the original estimated cost. In turn, this allowed for the creation of a business development park, sports fields, ice arenas, and a substantive residential development.

⁶⁸ The Atlantic RBCA web site can be found at: www.rbc.org/community/index.html

NOVA SCOTIA

Nova Scotia has identified sites containing PCBs based on old manufacturing or use practices. These have been remediated using environmentally sound management or are monitored to prioritize for future remediation.

PRINCE EDWARD ISLAND

Most contaminated sites in PEI are contaminated with petroleum hydrocarbons, from leaking storage tanks or spilled product. Both underground commercial/industrial and aboveground residential storage tanks are regulated. Those few sites that were subjected to pesticide spills were remediated by the excavation and disposal of contaminated soil. Where the contaminants entered the bedrock and could not be dealt with, monitoring wells were installed and samples taken regularly to determine plume dispersion. The Department of Environment and Energy then dictates the permitted future uses of the property, based on the levels of contaminants present and the associated risk they pose.

NEWFOUNDLAND AND LABRADOR

The Province has produced a Management Document on contaminated sites that have been identified in the Province. Within the last decade the number of PCB contaminated sites under provincial jurisdiction has been reduced from 56 to 8. Newfoundland and Labrador conducts annual inspection of PCB storage sites and areas with ongoing promotion to cleanup/export PCB containing equipment or contaminated material. The Province will continue to evaluate treatment systems/technologies as they relate to contaminated waste.

NORTHWEST TERRITORIES

New (November 2003) Guideline for Contaminated Site Remediation created under the *NWT Environmental Protection Act*.

3.2.9 PUBLIC INFORMATION, EDUCATION AND AWARENESS (POPS PROTOCOL / STOCKHOLM CONVENTION)

BRITISH COLUMBIA

The B.C. government does not regulate specific compounds but instead, regulates industries and activities on a site specific basis. Within those sector initiatives, there are public relation components to improve public awareness and education. Most public information can now be found on the provincial government website such as the inventory information and the ministry's annual reports.

Examples of public information education and awareness include:

- The involvement of the public in round table discussions and on additional regulations such as the *Integrated Pest Management Act*.
- Workshops and educational presentations like the Burn it Smart Program, a travelling road show designed to educate the public on proper woodstove techniques.
- The publishing of reports such as the Environmental Trends in British Columbia that displays and discusses various statistics, indicators and trends including the changing levels of PCBs found in the environment.
- The dissemination of information via the internet.

ALBERTA

POPs are one of many factors to consider when managing the environment. Alberta Environment's major extension programs address air, land, water, climate change and waste management. Some information on POPs is shared through these programs and through other programs in the department.

Fact Sheets

Fact sheets describe background of various POPs (e.g., PCB's, pesticides and DDT) and their impacts on the environment.

The department maintains a Pesticide Management Web site⁶⁹ detailing legislation, use, monitoring and disposal of POPs. The site includes information sheets describing appropriate disposal of pesticides for commercial applicators, services and vendors. The results of research projects measuring POPs in air, soils and wildlife are also made available through the Department's Web site.

Pesticide Education Program

The program kit is suitable for Grade 10 – adult, to help improve awareness and understanding of how to teach about the management of unwanted plants and animal species.

Alberta Environment is incorporating logic models into their program development activities. They will increase efforts on needs analysis and evaluation to improve future programming. Best practice includes identifying a clear audience, and targeting extension vehicles to reach that audience.

SASKATCHEWAN

- A Container Management Program⁷⁰ has been adopted from the Crop Protection Institute;
- Agriculture Food and Rural Revitalization's web site provides information on Integrated Pest Management and on Crop Residue Burning.⁷¹
- Pesticide Handbook and various publications on best practices (workplace) related to handling pesticides and monitoring workers for pesticide exposure. A number of pesticides are designated substances and some have Contamination Limits.
- A Brochure (When you Burn ...) a fact sheet (FarmFacts: Crop Residue Management) and a complaint form were published in September 1999. The Complaint form is to be submitted to Saskatchewan Environment;
- In August 2000 a mail drop was done for the Regina area. The drop included a letter advising farmers about residue burning health implications and the 1-800 number. Enclosed with this letter were the brochure and fact sheet;
- In September 2001 a Government News Release was published urging safe crop burning and specifically requesting farmers explore alternatives to burning.

⁶⁹ www3.gov.ab.ca/env/protenf/pesticide/index.html

⁷⁰ Available at: www.croplife.ca/

⁷¹ www.agr.gov.sk.ca/cropresidue

ONTARIO

- O. Reg.127 Monitoring and Reporting on Airborne Contaminants requires the owners and operators of approximately 5,000 facilities across the province in the industrial, commercial, institutional and municipal sectors to report on over 350 contaminants including PCBs, dioxin/furans, PAHs and hexachlorobenzene in the air. As well as reporting this information to the provincial government, these facilities are required to make their reports available to the public.
- The application of O.Reg.127/01 to various facilities was phased-in. Phase I began on May 1, 2001 and requires electricity generation facilities (Class A), and facilities with large source emissions, including iron and steel manufacturers and petroleum refineries (Class B), to monitor and report emissions in accordance with the regulation. Phase II began on January 1, 2002 and requires that facilities with small source emissions, including food manufacturers and bulk dry-cleaning facilities, as well as municipal facilities [e.g. commercial buildings, sewage treatment plants, municipal landfills and transportation maintenance yards] (Class C), monitor and report in accordance with the regulation.
- Ontario has three lists of substances that facilities may have to report on, provided they meet certain criteria: National Pollutant Release Inventory (NPRI) substances, criteria air pollutants and greenhouse gases, and air toxics. These substances were chosen to address a broad range of air issues and include PCBs, dioxins and furans, HCB, PAHs, mercury, cadmium and lead.
- Through the Ministry of Environment's OnAIR website, the public has access to timely and accurate information about the discharge of airborne pollutants.
- Under the *Environmental Bill of Rights (EBR) Act*, the public is provided the right to participate in environmental decision making (e.g. policies, regulations, licences, permits, Certificates of Approval, control orders etc.) by placing proposals on an electronic registry for a minimum of 30 days.
- Ontario and Canada have collaborated on a mercury fact-sheet that reports on progress made on mercury reductions under the Canada-Ontario Agreement.

QUEBEC

In 2001, the Québec Ministry of the Environment implemented the Regulation Respecting the Burial of Contaminated Soils (RRBCS) which prohibits burial of soils that contain certain contaminants at higher levels than the limit values specified in the regulation, unless it can be shown that Québec has no other means of treatment for such contaminants. The regulation also states that contaminated soils with levels higher than the values specified in the regulation must be removed to maximum security burial sites that are specially designed to handle such soils.

There are number of POPs in the substances covered by the regulation, including heavy metals, by-products, PCBs and some pesticides.

In March 2003, the Québec Ministry of the Environment implemented the new article IV.2.1 of the *Environment Quality Act* (to protect and rehabilitate lands) and the *Land Protection and Rehabilitation Regulation* (LPRR). Under this section of the Act, those responsible for lands that are contaminated above the limit values set in the LPRR are obliged to rehabilitate the land when they want to use it for something else or cease engaging in an industrial or commercial activity specified in the LPRR. Rehabilitating lands usually means that the contaminated soil is excavated and treated or buried in a maximum security burial site that is specially designed to handle such soils. Sometimes certain contaminated soils are confined on site.

There are number of POPs in the substances covered by the regulation, including heavy metals, by-products, PCBs and some pesticides.

NEW BRUNSWICK

The Department of Environment and Local Government maintains a public web site⁷² that includes information on a variety of topics including the management of pesticides, mercury and Class 1 air quality approvals.

PRINCE EDWARD ISLAND

Discussion of POPs issues is confined primarily to the generators of these contaminants, except in the case of pesticides. In recent years, the annual occurrence of fish kills related to pesticide run-off from farming operations has received very high public visibility. Buffer zone regulations were implemented to reduce run off to water courses, farmer education was increased and pesticide management and use requirements strengthened. All of this was played out in the media and at various public forums.

3.2.10 RESEARCH, DEVELOPMENT AND MONITORING (POPS AND HM PROTOCOLS AND THE STOCKHOLM CONVENTION)

BRITISH COLUMBIA

A process towards the development of a BC strategy to reduce the formation of dioxins and furans by the coastal pulp and paper industry was launched in 2001. The province engaged representatives from relevant stakeholder groups to help develop this strategy. Research collaboration between facility operators is being undertaken to better understand how dioxins and furans are formed and how best to eliminate or reduce them from stack emissions and the pulp & paper process.

The provincial government funds the Trail Community Lead Task Force which is mandated to reduce lead exposure in the environment and community

In 1999, the BC ministry of Water, Land and Air Protection and representatives of several large companies successfully completed a pollution prevention demonstration project (P2). The P2 project was designed to improve environmental protection by shifting from pollution control to pollution prevention while putting industries and their communities in control of their own economic, social and environmental future.

ALBERTA

Alberta Environment conducted research to assist regulation and management system development. Research conducted related to POPs and Heavy Metals recently included: "Determination of ambient PAH concentrations in proximity of solution gas flaring"

⁷² www.gnb.ca

Monitoring

- Monitoring for 65 metals in particulate matter (including cadmium, lead and mercury) has been ongoing in northwest Edmonton since July of 2001. This is a temporary monitoring survey conducted in response to the Lehigh Cement fuel conversion project.
- Alberta Environment, in partnership with Environment Canada, monitors for metals in particulate matter (including cadmium, lead and mercury) at the Edmonton Central and Calgary Central monitoring stations on a routine basis. Monitoring began at these locations in 1984.
- Monitoring for heavy metals is required as part of the approval for the power plants located west of Edmonton.
- Monitoring for heavy metals is required as part of the approval for Lehigh-Inland cement.
- Monitoring for mercury in the vapour form began at the Edmonton Northwest station in January 2003.
- Alberta Environment conducted a special air monitoring survey for dioxins, furans and PCBs in the Swan Hills area in 1997/98 and 2000/01.
- The Swan Hills Waste Treatment Centre is required to monitor for dioxins, furans and PCBs as part of their approval conditions.
- Alberta Environment has the capability of monitoring for many persistent organic compounds during emergency situations using the new mobile monitoring vehicle operated by the City of Calgary jointly with Alberta Environment. An emergency response vehicle with similar capabilities is being developed in coordination with the City of Edmonton.
- Stack testing for POPs is required for some industrial facilities in Alberta. Emissions estimates for some POPs from industries in Alberta are reported to the National Pollutant Release Inventory.

SASKATCHEWAN

- Saskatchewan and SaskPower participate in the CCME's Canadian Uniform Data Collection Program (UDCP) for Mercury from Coal-fired Electric Power Generation. This monitoring and reporting will estimate the emissions from this sector in Saskatchewan. The data is collected by SaskPower and submitted to Saskatchewan Environment and is compiled nationally through CCME;
- SaskPower with the financial assistance of the Sustainable Development Technology Corporation is constructing a pilot facility for the removal of mercury from a coal-fired flue gas stream;
- IPSCO is developing a process to minimize the formation of dioxins and furans for electric arc furnaces;
- Saskatchewan Environment employs legally enforceable drinking water quality standards as a means to monitor effects of emissions on source and produced water quality and thereby protect human and environmental health. These standards include criteria for cadmium, lead and mercury;
- Saskatchewan Environment monitors the principal water courses in the province for metals and pesticides on a quarterly basis;
- Research on the toxicity of uranium in water is being done for the development of site specific objectives;
- In conjunction with the NAPS program Saskatchewan Environment assists in air monitoring for a number of parameters (PAHs, historically for metals, VOCs); and
- Saskatchewan Environment has supported research for monitoring of stormwater effluent quality in Saskatoon in conjunction with the University of Saskatchewan.

Water quality monitoring

- Sampling has followed standard field protocols for grab samples and analyses have been done at a CCAEL accredited laboratory, this will continue; and
- Literature reviews will be done to update/develop new Provincial Surface Water Quality Guidelines in 2004/2005.

MANITOBA

Manitoba Conservation operates ambient air quality monitoring stations in various communities in Manitoba and shares the data collected with Environment Canada. At various time, special air monitoring projects have been undertaken for dioxins and furans and PAHs. In Flin Flon, Manitoba, ambient air monitoring for lead and cadmium has been undertaken in the vicinity of the local smelter since 1988.

QUEBEC

- There is no formal process for informing, educating and building public awareness with respect to this issue. We have certain materials that are only available upon request.
- A guide to best practices in the recovery, storage and recycling of auto parts that contain mercury will be provided to disassemblers/recyclers.
- Québec legislation requires all citizens to register any land the citizen knows is contaminated. This public register is also used to advise potential purchasers of the condition of the land.

NEW BRUNSWICK

- In an effort to refine the mercury emission inventory, stack testing for mercury has been conducted on all major point sources including coal burning power plants and bio-medical waste incinerators in the province.
- The Lead smelter is required to perform annual stack testing for a variety of pollutants including lead and cadmium in addition to conducting an annual environmental effects monitoring program measuring levels of lead, cadmium and arsenic in particulate, soil, forage and garden produce.
- Regular monitoring of mercury releases to the environment is a requirement of the operating approval for the Chlor-alkali plant.
- Lead and Cadmium in precipitation are two constituents of many that are measured in weekly composite samples from New Brunswick's 13 site acid rain deposition monitoring program.

PRINCE EDWARD ISLAND

Monitoring for heavy metals, dioxins/furans, and VOCS is required as part of the approval for the energy from waste plant in Charlottetown.

Environment Canada and the PEI Department of Environment and Energy have conducted two farm pesticide drift monitoring programs in recent years. There are plans to repeat the exercise in 2004.

Since 2001, continuous monitoring for ambient mercury vapour levels has been ongoing in the eastern part of the province. The equipment is located in a rural area to assess levels related to local production and transboundary effects.

NEWFOUNDLAND AND LABRADOR

Monitoring of PCB, dioxins and furans and PAH has been conducted at one site in NL. Monitoring is currently discontinued due to lack of funding. Mercury from wet deposition is monitored at one site in Newfoundland and Labrador. Atmospheric lead was measured at a site in Newfoundland and Labrador under the National Air Pollution Surveillance (NAPS) Network.

3.2.11 OTHER OBLIGATIONS (POPS AND HM PROTOCOLS, STOCKHOLM CONVENTION)

SASKATCHEWAN

Saskatchewan Environment is developing a stormwater management practices guideline and will commence implementation within the next 3 years. Stormwater draining to natural watercourses may be a potential source of heavy metal contaminants, albeit in trace levels.

ONTARIO

Pesticides

- The *Ontario Pesticides Act and Regulation 914* provide the province's regulatory framework for pesticide management to protect human health and the natural environment. The Ministry of the Environment, through the legislation, regulates the sale, use, transportation, storage and disposal of pesticides. The ministry issues pesticide applicator, operator and vendor licences. The ministry monitors compliance and enforces the regulation. Mainly through education and training, the ministry provides direction on the responsible use of pesticides and encourages and promotes reduced reliance on pesticides through integrated pest management practices.
- Regulatory changes strengthening educational requirements for exterminator licences, improving requirements for recycling pesticides containers and modernizing fumigation requirements are now in place.
- Requirements under the *Pesticides Act and Regulation 914* include:
 - Persons or businesses selling pesticides must hold a vendor's licence and employ a full-time, certified outlet representative on the premises at locations that sell higher risk pesticides.
 - Persons who run a pest control company must hold an operator's licence and carry proper insurance.
 - Persons who apply pesticides commercially must hold an exterminator's licence.
 - Farmers must hold a grower certificate to purchase and use higher risk pesticides.
 - Assistants to growers and licensed exterminators must receive basic training to use pesticides.
 - Permits are required for the use of more toxic pesticides and pesticides applied by aircraft.
- Before a pesticide product may be sold or used in Ontario, it must be classified. The Ontario Pesticides Advisory Committee is responsible for reviewing and recommending the placement of pesticide products into one of six schedules used to control sale and use.

QUEBEC

Québec is currently developing its "Québec Mercury Action Plan." This plan is based on the province's commitments under the regional action plan of the Conference of New England Governors and Eastern Canadian Premiers (CNEG/ECP). Once approved, one of the main priorities of this action plan will be to conduct research, analysis and surveillance in order to identify and evaluate sources, control models for deposits and develop indicators for follow-up.

Québec has an inventory of HAP emissions that is updated annually.

In the metallurgy sector, the Industrial Waste Reduction Program (IWRP) should be defining programs and studies to characterize emissions in the next few years (POPs and heavy metals will be considered by industrial activity).

Description of a "best practice" in R&D and surveillance:

- As an active member of the Collaborative Mercury Research Network (COMERN), based at the Université du Québec à Montréal, Québec is participating in the tracking of emissions and their impact. This group integrates research being conducted all across Québec to gain a better understanding, at the ecosystem level, of the processes that control mercury exchange and accumulation. A different network, government based, is engaged in a program to track toxic substances in the aquatic environment. This program has made it possible to produce a guide to the consumption of freshwater fish for sports fishing in Québec. The guide is published by the Government of Québec and is available on the website of the Québec Ministry of the Environment.

NEW BRUNSWICK

In June 1998, the Conference of New England Governors and Eastern Canadian Premiers (NEG/ECP), of which New Brunswick is a member, signed a Mercury Action Plan to coordinate actions in the Northeast on mercury issues. The Plan commits to an overall 50% reduction in mercury emissions by 2003 and 75% reduction by 2010, sets specific emission limits for medical waste incinerators and municipal waste incinerators, commits to enhanced mercury monitoring and sharing of data, and establishes several outreach, partnering and public education initiatives.

A Mercury Task Force was formed to coordinate actions under the Plan, and New Brunswick co-chairs the Task Force along with New Hampshire and Rhode Island. Several subcommittees were formed to deal with specific issues, including coal-fired boilers, mercury in schools, dental amalgams, monitoring and reporting, and outreach and partnering.

Current data indicates that there has been a 55% reduction in mercury emissions achieved in the NEG/ECP region to date, from the 1998 baseline.

The clean out of chemicals, including mercury, from schools in New Brunswick began twenty years ago with the Department of the Environment removing chemicals from schools upon request by the individual schools. The Department of the Environment stored the chemicals in a central area and arranged for pick-up by a hazardous waste service provider.

Mercury and its compounds have been banned from schools in New Brunswick since 1991. Between 1991 and 1994, the Department of the Environment assisted the Department of

Education in arranging for a province-wide collection of banned chemicals from schools. The clean out of mercury from schools is considered completed in the Province of New Brunswick.

NOVA SCOTIA

Canada-wide Standards

New England Governors/ Eastern Canadian Premiers Task Force established to reduce mercury released into the environment.

APPENDIX D SUMMARY OF INTERNATIONAL AND REGIONAL INSTRUMENTS AND ACTIONS FOR MANAGING HAZARDOUS AIR POLLUTANTS

4.1 International Agreements

Under Canada's constitution the federal government has the authority to negotiate and to enter into international environmental agreements. Such negotiations are undertaken by the federal government on the basis of positions developed through consultations conducted with provincial, territorial and aboriginal self-governments and Canadian stakeholders.

Once the final agreement has been negotiated, countries may sign within a specified time frame, and if they wish to become bound as a party, they may then ratify the agreement. The agreement enters into force once a minimum number of parties has ratified, as stated in the agreement. It is also possible to accede to a convention, which is a one-step approach to becoming bound once the agreement is closed for signature.

4.2 Arctic Council - Arctic Monitoring and Assessment Program (AMAP) / Action Plan to Eliminate Pollution from the Arctic (ACAP)

The Arctic Council was established in September 1996. A high level intergovernmental forum, the Council provides a mechanism to address the common concerns and challenges faced by the Arctic governments and the people of the Arctic. The member states of the Council are Canada, Denmark, Finland, Iceland, Norway, the Russian Federation, Sweden, and the United States of America.

The main activities of the Council focus on the protection of the Arctic environment and sustainable development as a means of improving the economic, social and cultural well-being of the north.

The Arctic Monitoring and Assessment Programme (AMAP) is responsible for monitoring the levels of, and assessing the effects of, anthropogenic pollutants in all compartments of the Arctic environment, including humans. From its inception, AMAP was conceived as a process integrating both monitoring and assessment activities in relation to pollution issues, to provide information for:

- producing integrated assessment reports on the status and trends of the conditions of Arctic ecosystems;
- identifying possible causes for changing conditions;
- detecting emerging problems, their possible causes, and the potential risk to Arctic ecosystems including indigenous peoples and other Arctic residents;
- recommending actions required to reduce risks to Arctic ecosystems.

AMAP's first objective was to prepare a comprehensive assessment report on threats from pollution to Arctic ecosystems and the first State of the Arctic Environment Report was published in 1997, focusing on POPs, heavy metals and radioactivity. The Report showed the main POPs of concern are organochlorine pesticides, such as hexachlorocyclohexane (HCH), industrial chemicals, such as PCBs, and combustion products, such as dioxins/furans and PAHs. Over much of the Arctic, the levels of these POPs can only be explained by long-range transport from lower latitudes. AMAP has also designed and implemented a coordinated program to monitor levels of pollutants in all compartments of the environment and has instituted an assessment process to produce reports based on data already published, its own monitoring program and traditional knowledge.

Like the Northern Contaminants Program, findings from AMAP provide strong substantiation for Canada to take a lead role in encouraging international action to control HAPs. The highlights of AMAP's second report are now available and the full report will be available shortly.

In September 1998, Arctic Council ministers instructed Senior Arctic Officials to develop an overall plan identifying actions to address the pollution sources identified through AMAP. The ministers requested that the resulting Arctic Council Action Plan to Eliminate Pollution of the Arctic (ACAP) should:

- complement existing arrangements. This should include existing legal arrangements, and existing structures and mechanisms under the Arctic Council, such as the Regional Plan of Action for the Protection of the Arctic Marine Environment from Land-based Activities;
- allow for actions on a wide scope of pollution prevention issues and corresponding remediation measures; and
- include the identification of co-operative activities for implementation.

ACAP acts as a strengthening and supporting mechanism to encourage national actions to reduce emissions and other releases of pollutants. Co-operative actions make an important and significant contribution to the overall international effort to reduce environmental damage on a global level.

4.3 The North American Agreement On Environmental Cooperation / Commission On Environmental Cooperation

The North American Agreement on Environmental Cooperation between Canada, Mexico and the US came into force in 1994. The Agreement created the Commission for Environmental Cooperation (CEC).

In 1995, Canada, the U.S. and Mexico passed a Resolution 95-05 on the Sound Management of Chemicals under the North American Agreement on Environmental Cooperation. 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 Sound Management of Chemicals initiative is directly relevant to the UNEP Stockholm Convention and the UNECE protocols on persistent organic pollutants and heavy metals. Actions under the NARAPs will therefore contribute to Canada's implementation of the Convention's Obligations.

The initial focus of work under the Resolution has been on chemicals that are persistent and toxic. A Working Group was instructed to first address the list of 12 POPs included in UNEP negotiations that resulted in the Stockholm Convention, together with "certain heavy metals."

Four North American Regional Action Plans (DDT, chlordane, PCBs and mercury) have been developed and are now at various stages of implementation. Three regional or North American action plans are now under development, one for a cluster of substances—dioxins and furans, and hexachlorobenzene— a second for lindane, and a third cross-cutting regional action plan for environmental monitoring and assessment. Lead is now under consideration for trinational action (whether an action plan or other effort) under a Council-approved Process for identifying candidate substances for regional action under the Sound Management of Chemicals initiative.

4.4 The Great Lakes Basin

4.4.1 *THE GREAT LAKES WATER QUALITY AGREEMENT*

The Great Lakes Water Quality Agreement (1987), as amended by the Protocol signed in 1987, commits the federal governments of Canada and the U.S. to eliminate, or reduce to the maximum extent practicable, the discharge of pollutants into the Great Lakes system. Several strategies and programs have been initiated to honor this commitment, including the Great Lakes Binational Toxics Strategy. Annex 15 of the amended Agreement addresses airborne toxic substances and commits the Parties to undertake research, monitoring and surveillance and to implement pollution control measures. These requirements led to the establishment of the Integrated Atmospheric Deposition Network. Annex 15 also commits the Parties to reduce and eliminate sources of emissions of persistent toxic substances which contribute significantly to the pollution of the Great Lakes. Other responsible jurisdictions are to be notified about sources outside Canada and the U.S.

4.4.2 *CANADA-ONTARIO AGREEMENT RESPECTING THE GREAT LAKES BASIN ECOSYSTEM*

The Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA) is an important administrative mechanism through which the Governments of Canada and Ontario plan and coordinate actions to restore, protect and conserve the Great Lakes Basin Ecosystem. The first COA was signed in 1971. COA has been renewed five times since that time, most recently in April, 2002. The latest Agreement will remain in force for five years.

The COA includes Annexes dealing with specific issues. POPs are dealt with under the Harmful Pollutants Annex. Leads of the Harmful Pollutants Annex Management team will develop a multi-year work plan, to be updated annually.

There are three five-year goals toward the virtual elimination of persistent bioaccumulative toxic substances and significant reductions of other harmful pollutants:

- Have in place policies and programs to make progress towards virtual elimination for persistent bioaccumulative toxic substances such as dioxins, furans, and PCBs;
- Reduce other harmful pollutants that have a significant environmental impact; and
- Have comprehensive knowledge of the sources, movement, fate and impact of harmful pollutants, including persistent bioaccumulative toxic substances, for policy and program development purposes.

Results to be achieved under the COA with respect to Hazardous Air Pollutants:

- The virtual elimination of high-level PCBs;
- An 85 percent reduction in mercury releases compared to releases in 1988 by 2005, and a 90% reduction by 2010; A 90 percent reduction in the release of dioxins and furans by 2005, compared to releases in 1988, and reduction of other persistent bioaccumulative toxic substances;
- Reductions in the release of harmful pollutants in municipal wastewater discharges;
- Improved quantification of in-Basin and out-of-Basin sources of harmful pollutant releases.

4.4.3 *THE GREAT LAKES BINATIONAL TOXICS STRATEGY*

The purpose of the Great Lakes Binational Toxics Strategy is to establish a cooperative process for the governments of Canada and the U.S. and all sectors of society to work towards the virtual elimination of mostly anthropogenic, persistent toxic substances, especially those which bioaccumulate. The Strategy identifies twelve substances as Level I substances,

including aldrin/dieldrin, benzo(a)pyrene, chlordane, DDT and its metabolites, hexachlorobenzene, alkyl lead, mercury and compounds, mirex, octachlorostyrene, PCBs, dioxins/furans and toxaphene. These substances are targeted for virtual elimination. To accomplish this, the Strategy includes specific Canadian and U.S. challenges, with deadlines. Fourteen substances are identified as Level II substances, including cadmium, endrin, heptachlor, hexachlorocyclohexane and PAHs. These substances are targeted for pollution prevention activities. Almost all of the HAPs targeted for action under the Stockholm Convention and POPs and Heavy Metals Protocols are listed as Level I or II substances under the Strategy. Therefore, actions taken under the Strategy will contribute to Canada's ability to meet with the Convention and the Protocols.

4.4.4 THE INTEGRATED ATMOSPHERIC DEPOSITION NETWORK

The Integrated Atmospheric Deposition Network (IADN) was established to conduct monitoring and research on toxic substances in air and precipitation and it is mandated under Annex 15 of the Great Lakes Water Quality Agreement. The main focus of the IADN is to determine regionally representative loadings of toxic substances from atmospheric deposition to the Great Lakes. There are two Canadian core stations and fourteen smaller satellite stations.

The goals of IADN are to:

- determine, with a specified degree of confidence the atmospheric loadings and trends (both spatial and temporal) of priority toxic chemicals to the Great Lakes and its basin on, at least, a biennial basis;
- acquire quality-assured air and precipitation concentration measurements, with attention to continuity and consistency of those measurements, so that trend data are not biased by changes in network operations or personnel; and
- help determine the sources of the continuing input of those chemicals

The substances identified for the IADN have been categorized into three groups: The first priority group includes PCBs, alpha and gamma-HCH (lindane), PAHs with benzo (a) pyrene as a representative species, and lead. The second priority group includes the chlorinated industrial chemicals and pesticides: hexachlorobenzene, DDT and its metabolites, trans-nonachlor, methoxychlor, mirex, dieldrin and aldrin. Heavy metals include arsenic, selenium, cadmium and mercury. The third priority group contains compounds which have an important atmospheric component but which require additional methods development to measure their concentrations accurately in atmospheric deposition samples. These include toxaphene, co-planar PCBs, dioxins/furans, and agrochemicals such as triazines and alachlor/metolachlor.

4.4.5 SAINT-LAURENT VISION 2000

Since 1988, the governments of Canada and Quebec have signed three agreements for joint action on the St. Lawrence (1988-1993, 1993-1998, 1998-2003). The purpose of these five-year action plans is to protect the ecosystem and human health, and to get local communities involved in promoting access to the St. Lawrence and restoring some of its former uses. To reduce pollution and help protect the St. Lawrence ecosystem, the governments took action at several industrial and urban levels.

In 15 years, these three agreements have:

- reduced the toxicity of liquid discharge into the St. Lawrence from the 50 most highly polluting industries by 96 percent, awarded certificates of acknowledgement to 80 industries that met their toxic liquid discharge reduction objectives, and virtually eliminated 11 persistent and bioaccumulating toxic substances;

- measured the toxicity of treatment plant effluents from 15 municipalities; implemented 120 industrial and municipal pollution removal technological development projects since 1988.
- A fourth action plan is currently being negotiated. Its provisions include:
 - reducing concentrations of ammonia nitrogen in effluent from municipal aerated pond treatment plants that have an impact on the St. Lawrence;
- reducing the discharge of toxic substances from municipal treatment plants that have an impact on the St. Lawrence;
- reducing the discharge of toxic substances through the development and demonstration of technologies; and
- supporting technological innovation and the development of products and services that address environmental and sustainable development issues (climate change, renewable sources of energy, etc.).

4.5 Northern River Basins Study / Northern Rivers Ecosystem Initiative / Northern Ecosystem Initiative

The Northern River Basins Study was launched in 1991. Its findings improved our understanding of the impacts of the growing number of industrial developments in these northern watersheds, particularly pulp and paper and oil sands projects, as well as the effects of human activity on these ecosystems. The study focused on the Peace, Athabasca, and Slave river systems.

Environment Canada, Alberta, and the Northwest Territories are working together through the Northern Rivers Ecosystem Initiative (NREI) to address the recommendations of the Northern River Basins Study. Building on the success of the study and working with individuals, industry, Aboriginal peoples, communities, and others, the NREI will focus on priority issues and areas of concern, including promoting pollution prevention to maintain the long-term quality of the ecosystems within these river basins.

The Northern Ecosystem Initiative (NEI) is engaging a number of partners, including northerners and communities, to improve understanding of northern ecosystems to promote sustainable development in the North.

4.6 The Georgia Basin Ecosystem Initiative

The Georgia Basin Ecosystem Initiative (GBEI) is a federal-provincial initiative that unites partners who share common ecosystem management goals, and desire a more integrated, holistic and balanced approach to decision-making. It was established in 1998, and represents a logical evolution of the Fraser River Action Plan (FRAP). The GBEI is working toward “managing growth to achieve healthy, productive and sustainable ecosystems and communities”. Governments, community groups, First nations, schools, and private corporations work collaboratively and collectively towards clean air, clean water, the conservation and protection of habitat and species, and building sustainable communities.

Over the past five years the GBEI has engaged in activities [outlined in the template below] that support the following outcomes as they relate to toxics:

- Toxic management recognizes similarities and differences between Canadian and US toxic chemical regulations.

- Partnered priority chemical identification, management and data sharing in accordance with the GBEI timeframe.
- EDC/POP assessments address the magnitude and significance of ecological effects, source management, innovative treatment options, BMPs, and environmental loadings associated with agriculture practices and municipal waste management.
- Guidelines, inspections and enforcement to protect salmon streams and ecosystems from toxic chemicals, and explain the implications of habitat loss on juvenile populations.
- Human and marine mammal health is protected from toxic chemicals in marine based food sources.
- Monitoring (EDC/POPs/Toxics) to support environmental/health risk assessments, verify success of regulatory controls, define biological/water quality impacts, and demonstrate improved environmental quality

4.7 The New England Governors and Eastern Canadian Premiers Mercury Action Plan

In June 1998, the Conference of the New England Governors and the Eastern Canadian Premiers adopted the Mercury Action Plan. The Plan identifies steps to address those aspects of the mercury problem in the Northeast that are within the region's control or influence. The Action Plan's ultimate goal is the virtual elimination of anthropogenic sources of mercury to the environment.

The Mercury Action Plan includes 45 recommendations addressing: The establishment of a Regional Mercury Task Force to coordinate implementation of the Plan; Mercury emission reduction targets for identified sources such as municipal solid waste incinerators, medical waste incinerators, sludge incinerators, utility and non-utility boilers, industrial and area sources; Source reduction and safe waste management, including recycling; Outreach and education, especially for high-risk populations; Research, analysis and strategic monitoring to further identify and quantify sources of mercury deposition and to understand deposition patterns and the development of environmental indicators to measure and track progress; and The management of mercury stockpiles. Implementation of these recommendations will contribute to Canada's implementation of the HM Protocol's Obligations.

4.8 The Mercury Deposition Network

The Mercury Deposition Network is a recently-developed Canadian/US network for monitoring mercury deposition. It includes five sites in Canada and 33 in the US. These sites are sponsored by federal, provincial, state and private agencies. The Mercury Deposition Network will help to quantify atmospheric mercury inputs, establish long-term trends and verify model scenarios. Sites in the US started collecting data in 1995 and Canadian sites started a year later in 1996

4.9 Related International Agreements

4.9.1 *BASEL CONVENTION ON THE CONTROL OF TRANSBOUNDARY MOVEMENTS OF HAZARDOUS WASTES AND THEIR DISPOSAL*

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal was adopted in 1989 and entered into force on 5 May 1992.

The Convention is the response of the international community to the problems caused by the annual world-wide production of 400 million tonnes of wastes which are hazardous to people or the environment because they are toxic, poisonous, explosive, corrosive, flammable, eco-toxic, or infectious. Its purpose is to control and reduce transboundary movements of specified wastes, minimize the generation of hazardous wastes and assist developing countries in the environmentally sound management of such wastes.

4.9.2 ROTTERDAM CONVENTION ON PRIOR INFORMED CONSENT

Governments started to address hazardous chemicals in the 1980s by establishing a voluntary Prior Informed Consent procedure. PIC required exporters trading in a list of hazardous substances to obtain the prior informed consent of importers before proceeding with the trade. In 1998, governments decided to strengthen the procedure by adopting the Rotterdam Convention, which makes PIC legally binding. The Convention establishes a first line of defense by giving importing countries the tools and information they need to identify potential hazards and exclude chemicals they cannot manage safely. If a country agrees to import chemicals, the Convention promotes their safe use through labeling standards, technical assistance, and other forms of support. It also ensures that exporters comply with the requirements. Canada ratified the PIC Convention in August 2002.

4.9.3 CANADA'S NATIONAL PROGRAMME OF ACTION FOR THE PROTECTION OF THE MARINE ENVIRONMENT FROM LAND-BASED ACTIVITIES

The major threats to the health, productivity, and biodiversity of the marine environment result from human activities on land in coastal areas and further inland. It is widely accepted that some 80% of the pollution in the oceans originates from land-based activities. As part of an international initiative to address major land-based threats in an integrated approach, Canada and 108 other nations adopted the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities in November 1995. It requires participating countries to develop national programs of action.

Canada was the first country to respond to this call for action. In June 2000, Canada released its National Programme of Action for the Protection of the Marine Environment from Land-based Activities. Developed by a federal/provincial/territorial committee over the course of four years, Canada's National Programme of Action reflects shared responsibilities and input from two extensive rounds of public consultations.

To help build the capacity of Canadians and to promote Canada's National Programme of Action (it is better known internationally than it is in Canada), an Information Clearinghouse was launched in March 2001. This online tool provides comprehensive resources on marine and coastal activities, expertise relevant to the Programme, and links to community groups, scientists, and government. The clearinghouse also serves as a focal point for the Secretariat, providing news and distributing documents to the public.

APPENDIX E EXPORT/IMPORT CONTROLS UNDER THE EXPORT AND IMPORT
OF HAZARDOUS WASTES REGULATIONS FOR THE TWELVE POPs
UNDER THE STOCKHOLM CONVENTION

POPs Chemical	CAS No.	CEPA - EIHWR (CEPA ID # - Name)	TDGR (PIN & Shipping Name)	Comments
Aldrin	309-00-2	CR1062 - Wastes that come from the production, formulation or use of biocides or phytopharmaceuticals and come within any of classes 3 to 6.1, 8, 9 of TDGR	- UN3077 Environmentally hazardous solid (leachate toxic) - UN3082 Environmentally hazardous liquid (leachate toxic) - Numerous Pesticide/insecticide entries in TDGR: UN3021 (3, 6.1), UN2902 (6.1-L), UN2903 (6.1, 3), UN2588 (6.1-S),	<i>Aldrin + Dieldrin combined are controlled under leachate test if concentration greater than 0.07 mg/L in extractant.</i> <i>Also identified as severe marine pollutant.</i>
Chlordane	57-74-9	CR1062 - Wastes that come from the production, formulation or use of biocides or phytopharmaceuticals and come within any of classes 3 to 6.1, 8, 9 of TDGR	- UN3077 Environmentally hazardous solid (leachate toxic) - UN3082 Environmentally hazardous liquid (leachate toxic) - Numerous Pesticide/insecticide entries in TDGR: UN3021 (3, 6.1), UN2902 (6.1-L), UN2903 (6.1, 3), UN2588 (6.1-S),	<i>Chlordane controlled under leachate test if concentration greater than 0.70 mg/L in extractant</i> <i>Also identified as severe marine pollutant.</i>
Dieldrin	60-57-1	CR1062 - Wastes that come from the production, formulation or use of biocides or phytopharmaceuticals and come within any of classes 3 to 6.1, 8, 9 of TDGR	- UN3077 Environmentally hazardous solid (leachate toxic) - UN3082 Environmentally hazardous liquid (leachate toxic) - Numerous	<i>Aldrin + Dieldrin combined are controlled under leachate test if concentration greater than 0.07 mg/L in extractant.</i> <i>Also identified as</i>

**STRATEGIC IMPLEMENTATION FRAMEWORK FOR INTERNATIONAL COMMITMENTS
ON HAZARDOUS AIR POLLUTANTS (HAPs): 2004 UPDATE**

POPs Chemical	CAS No.	CEPA - EIHWR (CEPA ID # - Name)	TDGR (PIN & Shipping Name)	Comments
			Pesticide/insecticide entries in TDGR: UN3021 (3, 6.1), UN2902 (6.1-L), UN2903 (6.1, 3), UN2588 (6.1-S),	<i>severe marine pollutant.</i>
Endrin	72-20-8	CR1062 - Wastes that come from the production, formulation or use of biocides or phytopharmaceuticals and come within any of classes 3 to 6.1, 8, 9 of TDGR	- UN3077 Environmentally hazardous solid (leachate toxic) - UN3082 Environmentally hazardous liquid (leachate toxic) - Numerous Pesticide/insecticide entries in TDGR: UN3021 (3, 6.1), UN2902 (6.1-L), UN2903 (6.1, 3), UN2588 (6.1-S),	<i>Endrin controlled under leachate test if concentration greater than 0.02 mg/L in extractant.</i> <i>Also identified as severe marine pollutant.</i>
Heptachlor	76-44-8	CR1062 - Wastes that come from the production, formulation or use of biocides or phytopharmaceuticals and come within any of classes 3 to 6.1, 8, 9 of TDGR	- UN3077 Environmentally hazardous solid (leachate toxic) - UN3082 Environmentally hazardous liquid (leachate toxic) - Numerous Pesticide/insecticide entries in TDGR: UN3021 (3, 6.1), UN2902 (6.1-L), UN2903 (6.1, 3), UN2588 (6.1-S),	<i>Heptachlor + Heptachlor epoxide combined are controlled under leachate test if concentration greater than 0.30 mg/L in extractant.</i>
Hexachlorobenzene	118-74-1	CR1062 - Wastes that come from the production, formulation or use of biocides or	- UN2729 : Specific PIN for HCB	<i>Hexachlorobenzene controlled under leachate test if concentration</i>

**STRATEGIC IMPLEMENTATION FRAMEWORK FOR INTERNATIONAL COMMITMENTS
ON HAZARDOUS AIR POLLUTANTS (HAPs): 2004 UPDATE**

POPs Chemical	CAS No.	CEPA - EIHWR (CEPA ID # - Name)	TDGR (PIN & Shipping Name)	Comments
		<p>phytopharmaceuticals and come within any of classes 3 to 6.1, 8, 9 of TDGR</p> <p align="center">And/Or</p> <p>CR1060 - Halogenated solvents that come within class 3, 6.1, 8, 9 of TDGR and are wastes</p>	<p>- UN3077 Environmentally hazardous solid (leachate toxic)</p> <p>- UN3082 Environmentally hazardous liquid (leachate toxic)</p> <p>- Numerous Pesticide/insecticide entries in TDGR:</p> <p>UN3021 (3, 6.1), UN2902 (6.1-L), UN2903 (6.1, 3), UN2588 (6.1-S),</p>	<i>greater than 0.13 mg/L in extractant</i>
Mirex	2385-85-5	<p>Not Controlled</p> <p>- Unless formulation of the Mirex meets the following classes in the description:</p> <p>CR1062 - Wastes that come from the production, formulation or use of biocides or phytopharmaceuticals and come within any of classes 3 to 6.1, 8, 9 of TDGR</p>	<p>Not Controlled</p> <p>Unless it meets one of the TDGR hazard classes through its formulation.</p>	<p><i>Must meet one of the TDGR hazard classes in order to be considered hazardous waste. The physical properties of Mirex itself indicate it is not flammable (Class 3); not dangerously reactive (Class 4); is not an oxidizer (Class 5); is not considered acutely toxic since LD50 (oral-rat): 235 mg/kg is >200 mg/kg criterion for class 6.1; not corrosive (Class 8); not on leachate test and is not on the environmentally hazardous substance list.</i></p>
Toxaphene	8001-35-2	<p>CR1062 - Wastes that come from the production, formulation</p>	<p>- UN2761 : Specific PIN for toxaphene</p>	<p><i>Toxaphene controlled under leachate test if</i></p>

**STRATEGIC IMPLEMENTATION FRAMEWORK FOR INTERNATIONAL COMMITMENTS
ON HAZARDOUS AIR POLLUTANTS (HAPs): 2004 UPDATE**

POPs Chemical	CAS No.	CEPA - EIHWR (CEPA ID # - Name)	TDGR (PIN & Shipping Name)	Comments
		or use of biocides or phytopharmaceuticals and come within any of classes 3 to 6.1, 8, 9 of TDGR	<ul style="list-style-type: none"> - UN3077 Environmentally hazardous solid (leachate toxic) - UN3082 Environmentally hazardous liquid (leachate toxic) - Numerous Pesticide/insectici de entries in TDGR: UN3021 (3, 6.1), UN2902 (6.1-L), UN2903 (6.1, 3), UN2588 (6.1-S), 	<i>concentration greater than 0.50 mg/L in extractant</i>
DDT (1,1,1-trichloro-2,2- bis(4- chlorophenyl)ethane)	50-29-3	CR1062 - Wastes that come from the production, formulation or use of biocides or phytopharmaceuticals and come within any of classes 3 to 6.1, 8, 9 of TDGR	<ul style="list-style-type: none"> - UN2761: Specific PIN for DDT - UN3077 Environmentally hazardous solid (leachate toxic) - UN3082 Environmentally hazardous liquid (leachate toxic) 	<p><i>Controlled as pure product or substance with specific product identification number (PIN) under UN Recommendations on TDG as well as Canadian federal TDGR. DDT has been classified as acutely toxic, Class 6.1</i></p> <p><i>In addition: DDT (total isomers) controlled under leachate test if concentration greater than 3.0 mg/L in extractant</i></p>

**STRATEGIC IMPLEMENTATION FRAMEWORK FOR INTERNATIONAL COMMITMENTS
ON HAZARDOUS AIR POLLUTANTS (HAPs): 2004 UPDATE**

POPs Chemical	CAS No.	CEPA - EIHWR (CEPA ID # - Name)	TDGR (PIN & Shipping Name)	Comments
PCB		CR0101 - Wastes that contain or consist of polychlorinated biphenyls (PCBs) at a concentration of 50 mg/kg or more	- UN2315: Specific PIN for PCBs when greater than 50 ppm	<i>PCB not controlled under the leachate mechanism federally. Hazard based on 50 ppm by mass as the cut-off value. Province of Ontario does have leachate value for PCB set at 0.3 mg/L in extractant.</i>
Dioxin and Furan		CD0002 - Wastes that contain more than 100 ng/kg of 2,3,7,8-tetrachlorodibenzo-p-dioxin equivalent, as calculated in accordance with the International Toxicity Equivalency Factors, of a) total polychlorinated dibenzofurans that have a molecular formula $C_{12}H_{8-n}Cl_nO$ in which "n" is greater than 1; or (b) total polychlorinated dibenzo-p-dioxins that have a molecular formula $C_{12}H_{8-n}Cl_nO_2$ in which "n" is greater than 1		<i>PCDD and PCDF are controlled through a cut-off TEQ value based on mass and are not on the federal leachate test. Province of Ontario have included dioxins and furans on their leachate test with a concentration set at 0.0000015 mg/L TEQ in extractant</i>