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# **Canadian Environmental Protection Act**

Report for the Period

April 1997 to March 1998

At the end of each fiscal year, Environment Canada publishes an annual report for Parliament on the *Canadian Environmental Protection Act* (CEPA). This report covers the period from April 1, 1997 to March 31, 1998

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This document is also available on the Internet at:

<http://www.ec.gc.ca/cepa/etitles.html>

Catalogue No.: EN40-11/22-1998  
ISBN: 0-662-63783-6

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## MINISTER'S MESSAGE

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Since the *Canadian Environmental Protection Act* (CEPA) first came into force in 1988, each year has seen an increase in activities and programs under the Act to achieve the statute's goal of protecting the environment and human life and health.

Some of the highlights during 1997-98 are:

- 1,647 inspections were carried out by CEPA inspectors, and there were 268 follow-up actions;
- prosecutions for a variety of offenses were initiated, and some from the previous year are still before Canadian courts;
- the new Benzene in Gasoline Regulations were promulgated;
- 17 new guidelines for toxic substances in different media were completed;
- 509 new substances and 736 transitional substances were assessed to determine if they were toxic, and eight had some form of control imposed upon them;
- 10 new products of biotechnology were also assessed to determine if they were toxic;
- 1,251 notices for export, 6,365 notices for import and 180 notices for transit shipments of hazardous waste were processed; 37,688 manifests were received by Environment Canada for hazardous waste shipments approved following those notices;
- 86 permits were issued for controlled dumping of wastes at sea; and
- a major assessment of nutrients entering the Canadian environment through human activities was initiated, in response to the recommendations of the House of Commons Standing Committee on Environment and Sustainable Development.

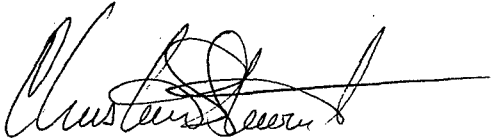
Scientific research continued in various laboratories across the country. Of particular note is the priority given to research on endocrine disrupting substances, so that we can enhance our ability to measure these substances in the environment and predict their environmental effects.

Work also continued in 1997-98 on another significant environmental milestone – proposed legislation for the renewal of CEPA. Introduced in the House of Commons for First Reading as Bill C-32 in March 1998, the proposed statute will modernize and strengthen the CEPA that we have worked with over the past 10 years. Bill C-32 makes pollution prevention the priority approach for the reduction of toxic substances in the environment. The Bill will also:

- implement a fast-track approach to evaluating substances to determine whether or not they are toxic;
- ensure that the most harmful toxic substances are not released into the environment in any measurable quantity, or are phased out altogether if their release cannot be prevented;
- improve the enforcement of the Act and its regulations;
- improve whistleblower protection to encourage more Canadians to report CEPA violations; and
- provide the means for more effective cooperation and partnership with other governments, as well as Aboriginal people.

I look forward to Parliamentary passage and implementation of the renewed CEPA. Canada will then have the tools to tackle environmental challenges well into the new millennium.

My thanks go to all the officials at Environment Canada and Health Canada who have once again made this a productive year for the administration of the *Canadian Environmental Protection Act*.

A handwritten signature in black ink, appearing to read 'Christine S. Stewart', with a long horizontal flourish extending to the right.

Christine S. Stewart  
Minister of the Environment

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## CANADIAN ENVIRONMENTAL PROTECTION ACT

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The *Canadian Environmental Protection Act* (CEPA) is an Act respecting the protection of the environment and

human life and health. It is divided into seven Parts, which include powers to:

- undertake environmental research and develop guidelines and codes of practice;
- regulate toxic substances, import and export of hazardous wastes, and fuels;
- regulate nutrients;
- regulate the environmental effects of federal operations;
- regulate international air pollution;
- regulate ocean dumping;
- enforce regulations; and
- conclude agreements with provinces and territories.

Environment Canada administers the Act on behalf of the federal government, but assesses and manages the risk of toxic substances jointly with Health Canada.

Environment Canada supports the principle that protection and conservation of the environment is a shared responsibility among all Canadians and by all jurisdictions. The Department continues to reaffirm the importance of public consultation in the design of its policies, in the development of its programs and in the delivery of its services.

### **CEPA Review and Renewal**

Section 139 requires the review of CEPA after 5 years. A renewed CEPA was drafted, and was tabled for First Reading in the House of Commons on December 10, 1996 as Bill C-74. The process was interrupted by the General Election. The Bill was reintroduced for First Reading as Bill C-32 on March 12, 1998 and, as of March 31, was still awaiting the next stage in the Parliamentary process, namely Second Reading debate on the Bill's underlying principles. These are:

- pollution prevention;
- the ecosystem approach;
- protection of biological diversity;
- science and the precautionary principle;
- user and producer responsibility;
- economic responsibility; and
- intergovernmental co-operation.

### **Advisory Committees**

Section 5 provides for the Minister to seek advice from experts on relevant issues. The Minister did not convene any such Advisory Committees during 1997-98.



## **FEDERAL-PROVINCIAL ADVISORY COMMITTEE**

This Advisory Committee, as required by section 6 of the Act, has been in place since 1988. It is composed of members from provincial and territorial environmental ministries as well as representatives from Environment Canada and Health Canada. The Committee advises the Minister on regulations relating to toxic substances and other CEPA-related environmental matters that are of mutual interest. It ensures transparency of the information and processes related to the protection of the environment and the management of toxic substances and for early and effective consultation.

Key activities coordinated by the Advisory Committee during 1997-98 were:

- the Working Group on Air Quality Objectives and Guidelines (see p. 15);
- the Working Group on Dioxins and Furans which developed both the Inventory of Releases of Dioxin and Furans and the Hexachlorobenzene Status Report ;
- a cross-Canada municipal survey on potable and wastewater systems used in estimating exposure to certain substances on the second CEPA Priority Substances List (PSL 2) (see p. 22); and
- consultations with the provinces on the Benzene in Gasoline Regulations (see p. 35).

## **Pollution Prevention**

Although the renewed CEPA seeks a legislative mandate for pollution prevention, the Administrative Duties of the current Act require the Government to take preventative measures in protecting the environment. Pollution prevention has become a cornerstone of federal environmental policy and is the priority approach to environmental protection in Canada. Pollution prevention provisions are being increasingly incorporated into Environment Canada's programs and approaches to doing business. The Department is working together with all levels of government, as well as Canadian citizens, businesses, industries and non-governmental organizations in order to advance pollution prevention. The use of a variety of approaches such as agreements, partnerships, knowledge and information sharing has created opportunities as well as efficiencies for the delivery of this common objective nationally and internationally.

For the first time, qualitative pollution prevention reporting provisions were incorporated into the National Pollutant Release Inventory (see p. 24) for the 1997 reporting year, enabling the collection of facility-specific information regarding pollution prevention. Based on the recommendation of the House of Commons Standing Committee on the Environment and Sustainable Development, Environment Canada launched, on March 18, 1998, the Canadian Pollution Prevention Information Clearinghouse, an Internet-based information tool for pollution prevention. A national awards program was established by the Canadian Council of Ministers for the Environment (CCME), providing recognition to organizations showing leadership in pollution prevention. The Department supported and participated in the development of the first Canadian Pollution Prevention Roundtable, a key example of working with industry, government and non-governmental organizations to advance pollution prevention.

A number of national pollution prevention initiatives designed to provide practical technical guidance to industry were completed. These involved sharing techniques and procedures to prevent and reduce emissions in the areas of:

- toxic substances as smog contributors;
- greenhouse gases; and
- ozone-depleting substances.

Guidelines were developed for emissions of volatile organic compounds from the plastics processing industry and technical bulletins were developed for the recovery and utilization of landfill gases as renewable energy resources.

Participants in the Program for Accelerated Reduction/Elimination of Toxics reduced their annual emissions of toxic substances into the environment by 21,499 tonnes or 61 per cent from base year levels.

The Department contributed to a number of international activities and fora to advance pollution prevention including:

- a pollution prevention course for the metal finishing industry in Brazil;
- an international workshop on information systems for clean production and clean technologies;
- an international workshop on Extended Producer Responsibility; and
- standardization related to the ISO 14000.

Community-based approaches are becoming increasingly important in advancing pollution prevention, therefore the department's regional offices are active in promoting these approaches, as outlined below. The Department supported the development of a citizen's guide to pollution prevention.

The Atlantic Region pollution prevention program continued, through direct community and association interaction, focussing on the following industry sectors:

- the Shipyard Repair Industry where a multi-agency group focussed on reducing the toxics substances associated with hull maintenance as well as their release to the sea;
- the Fabricare Industry where seminars on regulatory requirements and pollution prevention opportunities associated with use of perchloroethylene were held; and
- the Halifax Regional Municipality Pollution Prevention Program where emphasis was given to toxic emissions from vehicle service and repair facilities, metal finishers, and photo finishers.

In the Quebec Region, pollution prevention initiatives included small and medium-sized enterprises as well as federal facilities. The region initiated the development of ENVIROCLUB, in collaboration with le Développement économique Canada (Québec). A support mechanism for small and medium-sized enterprises and on-site pollution prevention projects are among the activities that have been realized to date at ENVIROCLUB. During 1997-98, the region worked to complete an update of its Guide environnemental à l'intention des ministères et sociétés d'État fédéraux au Québec.

In the Ontario Region, voluntary pollution prevention agreements and projects with a number of sectors are showing results in preventing and reducing emissions of toxic substances and other substances of concern. Members of the Canadian Vehicle Manufacturers Association have successfully reduced or eliminated emissions of more than 330,000 tonnes since 1992. Automotive parts manufacturers have reduced emissions by more than 623 tonnes since 1996. The metal-finishing industry has reduced emissions by approximately 1,951 tonnes since 1993. The printing and graphics sector has achieved a reduction of more than 369 tonnes of environmental contaminants.

In the Prairie and Northern Region, industry-government partnerships as well as education and training were key components of the pollution prevention program. In partnership with others in Manitoba, the region established a Pollution Prevention Partnership Program and pilot projects with the printing and graphics and metal finishing sectors as well as an industry-led environment program incorporating pollution prevention in the heavy construction industry. An awareness course incorporating pollution prevention into sustainable forest practices was developed for teachers. Practical fact sheets were also developed for health stations and automotive repair facilities in the Northwest Territories. The Northern Rivers Basin Study recommended the implementation of pollution prevention through law, policy and practice as the primary environmental objective for the basin. The Study will focus on municipalities within the basin.

The Pacific and Yukon Region continued to work closely with industrial sectors in the Fraser basin and Burrard Inlet. The Region completed pollution prevention guidelines for numerous industries including wood preservation, foundry, ready-mixed concrete, exposed aggregate, dairy, and brewery and winery operations. Together with other partners, the region established a working group to develop a framework of regulatory and non-regulatory instruments to encourage the adoption of pollution prevention by two small business sectors and participated on advisory committees of pilot projects for industrial pollution prevention. Green Clean workshops for the Fabricare sector were delivered jointly with the Ontario Region.

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## **PART I: ENVIRONMENTAL QUALITY**

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Part I provides the main authorities under which the Department conducts scientific research, monitoring and publication, including the State of the Environment Report. Part I also includes the obligation to develop and publish Guidelines, Objectives, and Codes of Practice.

### **Environmental Data and Research**

The following Environment Canada institutes undertake general scientific research that is related to CEPA. Scientific research specific to different parts of the Act, such as toxic chemicals, is highlighted in the appropriate section of this report.

## **ENVIRONMENTAL TECHNOLOGY CENTRE**

During 1997-98, the Centre continued to coordinate the operations of the National Air Pollution Surveillance Network, which measures ambient air quality, through the following activities:

- preparing and distributing quality assurance and control guidelines to the Network;
- measuring acid aerosols and fine particulate matter;
- maintaining an extensive ambient air toxics sampling network; and
- publishing an annual report of air quality in comparison to the National Air Quality Objectives (1994).

With respect to stationary sources, during the 1997-98 reporting period, activity at the Centre included:

- witnessing the compliance tests on emissions at the Cape Breton Municipal Solid Waste Incinerator;
- providing guidance on performance sampling of the Halifax airport incinerator retro-fitted with an afterburner;
- witnessing the compliance tests on the refining kettles and reverberatory furnace at the Canada Metal secondary lead smelter;
- developing a method to measure gaseous emissions from stationary gas turbines and reciprocating engines;
- distributing an Auditing and Witnessing Guide for Inspectors; and
- developing quality assurance and control procedures and technical guidance on stationary source sampling procedures.

The Centre also tests vehicles and off-road mobile sources for exhaust emissions. During 1997-98, exhaust emissions were measured from diesel engines in light-duty trucks, buses and ocean-going vessels and from various alternative fuels. A project was also initiated to measure exhaust emissions from in-flight jet engines. As well, methods were improved for measuring complex and hazardous substances such as polycyclic aromatic hydrocarbons (PAHs), PCBs and ozone-depleting substances. Research on technologies that prevent and control spills of hydrocarbons and other hazardous chemicals was also performed.

The Centre developed, or helped to develop, regulatory reference methods to measure toxic substances, and implemented associated quality assurance programs. For example, the Centre:

- validated and approved a reference method using the patented MAP™ (Microwave Assisted Process) technology that reduces use of toxic solvents and saves energy;
- completed two reference methods for biological testing, three for chemical testing, and one for quality assurance and control;
- selected methods for the proposed sulphur in gasoline regulation; and
- revised the sampling reference method for dioxin and furan emissions.

### ***WASTEWATER TECHNOLOGY CENTRE***

This Centre contributes technical expertise to several specific areas of CEPA. For example, the Centre supported research into endocrine disrupting substances in municipal wastewaters through the study of selected treatment technologies in various sewer networks. The protocols for the Environmental Technology Verification Program were developed and tested and will be used in the verification process. This program provides validation and independent performance claims for environmental technology. Research on conventional and biotechnological solutions to the remediation of contaminated sediments, soils and groundwater continued.

### ***CANADIAN CLEAN TECHNOLOGY CENTRE***

This Centre focuses on the development and implementation of cost-effective technologies and alternative processes for reducing waste, optimizing resources and improving production efficiency including:

- the recovery and re-use of process wastewater without chemical treatment;
- alternative solvent extraction processes;
- ion exchange and absorption in process streams that recover specific substances; and
- the recovery and regeneration of industrial cleaning solutions that will extend their useful life.

### ***NATIONAL HYDROLOGY RESEARCH INSTITUTE***

At this Institute CEPA-related research during 1997-98 was related specifically to nutrients (see p. 29).

### ***NATIONAL WATER RESEARCH INSTITUTE***

The National Water Research Institute conducts a comprehensive program of research and development in the aquatic sciences. During 1997-98, the Institute continued its research focus on endocrine disrupting substances and organized a workshop on this emerging issue to establish research priorities. The Institute developed and validated methods for the measurement of natural and synthetic hormones in effluents and receiving waters. Samples collected at 10 municipal sewage plants indicate that natural and synthetic hormones are detectable at low concentrations (nanograms per Litre) in Canadian effluents. This is similar to what has been observed in other countries. An inventory of government and academic research on endocrine disrupting substances conducted in Canada was compiled and priorities for further scientific investigations were identified.

Additionally, methods for evaluating endocrine disrupting effects are being developed and applied. These include:

- a yeast assay that evaluates potential binding to the estrogen receptor, which is used to identify estrogenic compounds in municipal and agricultural effluents;
- bioassays for the induction of the egg-yolk protein, vitellogenin, in fish, which are used to screen for estrogen mimics in effluents from pulp mills, petroleum refineries, and contaminated sites in Hamilton Harbour;

- a goldfish bioassay, which is used to determine the major pulp mill streams that cause reproductive problems;
- an *in vitro* assay employing trout liver cultures, which is used to test fractions of refinery effluent, pulp mill effluent, and suspected inducers of estrogenic activity; and
- fish bioassays, which are used to detect immunotoxic effects at contaminated sites in Hamilton Harbour.

A joint research project with industry examined reproductive problems in fish exposed to effluents from pulp and paper mills. This project focussed on:

- studying internal waste streams from a series of pulp mills in order to isolate those responsible for depressed steroid hormone levels in fish after exposure to the final effluent;
- monitoring the impact of process changes on the potency of the effluent; and
- following the impacts of the effluents on fish in the Ottawa River.

The assessment of the impact of process and treatment changes in pulp and paper mills on wild fish downstream of discharges at Kapuskasing and Smooth Rock Falls in Ontario is also continuing. Collaborative work continued on investigating the mechanisms of hormonal disruption, more specifically by concentrating on the physiological changes in the ovaries and the liver of fish. Analytical work also continued on determining the historical contamination levels at Jackfish Bay in Lake Superior in order to better understand effects observed today.

Research is also continuing on the sources and impacts of urban non-point sources of pollution and the means of preventing or remediating such impacts. For example, highway runoff affects receiving water quality causes a variety of toxic responses in fish and may require remediation through improved stormwater management practices. The occurrence and levels of metals and polycyclic aromatic hydrocarbons (PAHs) were studied. Results showed that the metal concentrations are high and may be responsible for the observed toxicity. Acute toxicity in the winter months seems to be associated with the use of road salt. The latter results are being incorporated in the environmental risk assessment of road salt, which is on the second Priority Substances List (p.22).

Two reviews were completed on techniques for estimating bioconcentration, bioaccumulation and the octanol-water partition coefficient ( $K_{ow}$ ) of substances, as well as their biodegradability. The reviews provide the background to support the application of bioconcentration factor and biodegradability tests for regulatory purposes under CEPA.

#### ***THE ST. LAWRENCE CENTRE***

The focus of the St. Lawrence Centre is the St. Lawrence Vision 2000 Action Plan to protect and conserve the St. Lawrence River ecosystem. Under this Plan, the mass balance for approximately one hundred substances in the St. Lawrence River was determined in order to estimate the relative contributions of sources to the river. A project to monitor the quality of the water in the St. Lawrence at Quebec City was completed and provided data on the concentrations and loadings of various substances. Analytical methods were developed and

validated for organophosphorous pesticides and triazines as well as for trace metals in the surface water. In addition, a new technique to extract pesticides and herbicides which eliminates the use of dichloromethane, a CEPA toxic substance usually required for extraction, was developed. The zebra mussel (*Dreissena polymorpha*) was used as a bioindicator for the bioaccumulation of trace metals in the St. Lawrence.

Long-term monitoring of mercury and PCB contamination of suspended matter in the Lake Saint-François region is proceeding. Following the dredging operation to remove contaminated sediments from the St. Lawrence downstream from the Cornwall, Ontario and Massena, New York industrial region, Environment Canada operates a network of six sites to monitor suspended matter and verify the beneficial effects of removing this active source of contamination.

Bioassays have been developed to determine genotoxicity and teratogenicity in municipal and industrial discharges and are now being made more efficient and cost effective. Also, another bioassay which uses trout liver was developed to measure various sub-lethal parameters and to screen for endocrine disruption.

#### ***NATIONAL WILDLIFE RESEARCH CENTRE***

This Centre, in collaboration with the regional offices of the Canadian Wildlife Service, has been working to identify and understand the impact of toxic substances on wildlife since the late 1960s. At that time, gross effects due to large-scale release of contaminants into the environment were prevalent. Three decades later, high levels of PCBs are still present in the eggs of common terns in the St. Lawrence. Osprey eggs recently collected in the south Okanagan valley and the upper Fraser River of British Columbia contain levels of DDE, a breakdown product of the pesticide DDT, which are associated with improper embryo development and eggshell thinning. Similarly, egg shells of black terns from Ontario and Quebec are still thinner than those from uncontaminated areas.

New findings during 1997-98 show that:

- in the bald eagle population along the north shore of Lake Erie contaminant burdens in eggs have dropped dramatically over the last 20 years and the number of nests has increased from three in 1980 to 17 in 1997;
- herring gulls breeding on Lake Superior lay smaller eggs and fledge fewer chicks than those nesting on the lower Great Lakes because of prey availability, rather than contaminants. However, contaminant levels in their eggs are higher after a cold winter when these gulls tend to migrate to the lower Lakes;
- ptarmigan collected in northern Quebec have cadmium levels in kidneys and liver that are very high;
- collaborative research with scientists from the United States suggests that the immune function of fish-eating birds from contaminated Great Lakes colonies is impaired and that there has been no improvement in the past five years;

- high levels of mercury in common loons in Atlantic Region affect the ability of adults to nest and raise young and adversely affect the behaviour of their chicks. Preliminary results in Quebec Region also show relatively high levels of mercury in loons;
- similar patterns of PCB metabolites were found in humans from northern and southern Quebec and polar bears from northern Quebec, but concentrations were much higher in polar bears. These metabolites are believed to interfere with thyroxin and Vitamin A transport in blood and studies are continuing to determine whether the concentrations of the hydroxy-PCBs are high enough to affect this transport; and
- a novel mixed chlorine/bromine containing compound was identified in seabird eggs from the Pacific and Atlantic coasts of Canada, but was absent from the Great Lakes. All evidence points to a natural source, perhaps marine bacteria. Concentrations were higher than PCBs in Pacific Ocean storm petrel eggs. This is the first reported instance of a naturally-occurring halogenated compound which accumulates in higher organisms. Until now, it had been assumed that only man-made halogenated compounds were capable of this.

Contaminant levels continue to decline in the Fraser and Columbia River Basins, suggesting the 1991 implementation of chlorine substitution at pulp mills continues to reduce the bioavailability of dioxins in local food chains. However, bald eagles breeding near a British Columbia Kraft pulp mill appear to be affected by inadequate prey availability acting in concert with high levels of dioxin-type contaminants. There is also some indication that British Columbia tree swallows are exposed to pulp mill effluent through the food chain.

There were also a number of other projects conducted, including:

- molecular methods to develop bio-markers for endocrine disrupting substances in field studies;
- immunotoxicity of PCBs in polar bears;
- linkage of recent population declines in arctic ducks to exposure to metals;
- compilation of an interactive electronic database of reptile and amphibian toxicology information aimed at relating concentrations of specific substances to amphibian deformities and population decline; and
- incorporation of the bioaccumulation of PCBs in birds into a herring gull lifecycle bioaccumulation model.

The results of six years of research on contaminants in polar bears, seabirds and game birds were included in The Canadian Arctic Contaminants Assessment Report and the International Arctic Monitoring and Assessment Program, State of the Environment Report.

#### ***ATMOSPHERIC ENVIRONMENT SERVICE***

The CEPA-related research interests of the Service are in the levels and movements of pollutants in the atmosphere. This includes data acquisition, through monitoring, and data storage for use in models that apply to Canada and that can be extrapolated to, and included in, global models.



With respect to toxic substances, research included:

- development of analytical methods for PCBs;
- planning for the next phase of the Integrated Atmospheric Deposition Network;
- collaboration on regional measurements in many areas of the country;
- improving the global model (MEDIA) by including a new soil module;
- investigating lead deposition to the Great Lakes using a regional model (BLFMAP); and
- starting the development of a global model for mercury.

The Research Data Management and Quality Control System (RDMQCS), a computer software package developed by Environment Canada, was refined to provide uniform quality control of many different types of environmental measurement data, for example, ozone, atmospheric mercury, airborne toxic chemicals, and acid rain data. Those data sets, after processing through the RDMQCS, were then added to the National Atmospheric Chemistry Database. That database is used to track changes in the concentrations of acids, persistent organic pollutants, oxidants and suspended particulate matter in air and precipitation, thereby allowing assessment of the effects of these atmospheric contaminants on Canadian ecosystems and populations, and the means to measure the efficacy of current and future pollutant emission controls. Refinements were also made to the Regional Smog Model, which allowed it to be combined with weather forecasts to predict smog levels on a day-by-day basis. The model predictions will be used to issue smog alerts in various areas of Canada.

Work was initiated on a unified air quality prediction model. This model will allow scientists to predict, with increased accuracy, the atmospheric concentrations of many different pollutants at the same time, e.g. nitrogen oxides, sulphur oxides, ozone, and particulate matter. Ultimately, the model will provide a scientific basis for determining the most effective industrial emission control strategies needed to protect the Canadian environment, and will improve the predictive capability for issuing warnings of pollution episodes that threaten public health.

Monitoring of acid rain continued through the Canadian Air and Precipitation Monitoring Network. Data from this network have been, and continue to be, used to determine where lakes and forests in Canada are at risk from acid rain, and to evaluate whether Canadian and U.S. emission control programs are adequate to reduce acid rain and its associated ecological impacts.

## **State of the Environment**

The State of Canada's Environment – 1996, was printed in 1997. This national 1996 report is the last edition in the five-year series. A new approach to reporting to Canadians on the state of the environment is being developed to take advantage of:

- policy-driven, science-based assessments related to priority issues and regions;
- new technologies for integrating and disseminating information; and
- partnerships in government-wide reporting.

Canada reports regularly on a national set of environmental indicators, through publication, in hard copy and on the State of Canada's Environment Infobase web site ([www1.ec.gc.ca/~soer](http://www1.ec.gc.ca/~soer)), of indicator bulletins on key environmental issues. The national set is designed to track trends in the state of the environment and progress towards sustainable development. Six bulletins in the National Environmental Indicator Series were published during the reporting period, namely:

- Stratospheric Ozone Depletion;
- Climate Change;
- Toxic Contaminants in the Environment: Persistent Organochlorines;
- Sustaining Marine Resources: Pacific Herring;
- Canadian Passenger Transportation; and
- Sustaining Canada's Forests: Forest Biodiversity.

Other issues of national significance for which indicators are being developed, include:

- urbanization;
- sustaining agricultural soils and marine resources; and
- biodiversity.

A framework and indicators for community sustainability have been developed as part of a multi-phased initiative to develop and implement an interactive software package that will help local governments and communities assess and monitor their progress towards sustainable development. Pilot studies continued, with the Canadian Council of Ministers of the Environment (CCME), to test the application of a prototype for a national water quality index.

Environment Canada continues to coordinate, capability upgrading, application and use of the National Ecological Spatial Framework, in response to a growing demand for its use. New developments this year included:

- revised and more user-friendly digital versions of the framework for all regional and national maps;
- a completely revised database of ecological characteristics for all levels of the framework;
- a new draft map at the eco-province level;
- a northern circumpolar map version for use in Northern Ecosystem Initiatives; and
- improved access to the information through the State of Canada's Environment Infobase web site.

The Department also participated in a project by the Commission for Environmental Cooperation to develop a North American Ecological Framework. Techniques and concepts adopted in the project benefited from the Canadian models which had already been developed. The new North American framework, published in English, French and Spanish, is designed to promote the understanding of continental environment and natural resource issues and greater cooperation among its scientists and policy makers.

There are now over 142 partners involved in the Ecological Monitoring and Assessment Network (EMAN). This is a national science network of about 100 sites across Canada characterized by long-term multi-disciplinary environmental research and monitoring activities.

The past four years have involved "building" the network, by establishing the principles of long-term ecological monitoring and by enrolling partners to participate in the Network. With this process, for the most part complete, the EMAN Coordinating Office has now undertaken a program audit and peer review to help guide the future of the Network. The annual Network National Science Meeting brought together over 300 participants from across Canada to discuss research findings and explore new directions for cooperation and partnership in ecological and monitoring activities. The EMAN web site (<http://www.cciw.ca/eman/>) serves as a means for communicating and promoting programs as well as a tool for training, observation reporting and data management.

## **Objectives, Guidelines and Codes of Practice**

### ***ENVIRONMENTAL QUALITY GUIDELINES AND OBJECTIVES***

National environmental quality guidelines developed for water, tissue, sediment and soil are mandated under Section 8. Such guidelines allow federal, provincial and territorial authorities to assess and manage environmental contamination issues. Environment Canada, working with the CCME, undertakes the development of the guidelines.

Canadian Water Quality Guidelines for chromium, arsenic, bromacil, carbaryl, chlorpyrifos, deltamethrin, and glycols were completed and published during 1997-98. Guidelines for molybdenum, thallium, PAHs, phenols, and chlorinated benzenes were developed in 1997-98 and will be published in 1998-99. Guidelines for two antisapstains were developed as part of the Fraser River program. Guidelines for reactive chlorine, inorganic fluoride, copper, silver, and selenium were initiated.

New interim sediment quality guidelines for five metals, PCBs (total PCBs and Aroclor 1254), 13 individual PAHs, DDT, toxaphene and five organochlorine pesticides were finalized during 1997-98.

Soil quality guidelines were developed for five substances; barium, nickel, thallium, DDT, and PCBs. The scientific assessment for total petroleum hydrocarbons in soil was initiated.

Work was also started on an integrated compendium of Canadian Environmental Quality Guidelines that will include environmental quality guidelines for all media and resource uses including drinking water quality, recreational water quality, aquatic life protection, agricultural uses (irrigation and livestock watering), soil quality (agricultural, residential/parkland, industrial land uses), sediment quality, tissue quality and air quality.

Health-based Tolerable Daily Intakes and Concentrations as well as Tumorigenic Doses, produced as a result of information reviewed for assessment of substances on the Priority Substances List (see p.19), were published by Health Canada. These are useful in the establishment of guidelines or standards for environmental media.

## **FEDERAL-PROVINCIAL WORKING GROUP ON AIR QUALITY OBJECTIVES AND GUIDELINES**

This Working Group of the Federal-Provincial Advisory Committee consists of environment and health representatives from both federal and provincial agencies. It published science assessments for hydrogen fluoride and carbon monoxide. The science assessment for particulate matter, both less than 10 microns as well as less than 2.5 microns, was completed and will be published during the next reporting period. Science assessments for Total Reduced Sulphur compounds and Ground-Level Ozone underwent peer review.

### **ENVIRONMENTAL CHOICE™ PROGRAM**

The Environmental Choice™ Program is Canada's voluntary eco-labelling program that develops certification criteria, including guidelines, for different types of products and services. These allow consumers to identify products and services that significantly reduce the burden on the environment. The EcoLogo™ is used to identify those products and services which meet stringent environmental criteria.

TerraChoice Environmental Services Inc., through a licensing arrangement with Environment Canada, has assumed operational responsibility for the Program. Environment Canada has retained broad ownership, control and management of the Program and of the EcoLogo™. The Program is now self-sufficient.

During 1997-98, 15 sets of certification criteria for different products and services were developed. One hundred and thirty-three applications for certification were received during that time. All applications were reviewed and 75 certifications were made. As a result of significant market and technological developments, six categories of guidelines were revoked and five others revised. Similar revisions are scheduled in the future.

The EcoBuyer Catalogue is the official catalogue of certified products and services. The catalogue continues to attract considerable interest and a second edition was published in February 1998. There is also international interest in the program, and methods for mutual recognition and equivalency are being explored with other countries. To date, Mutual Recognition Agreements have been signed with the U.S. Green Seal Program and the Green Mark Program of Taiwan.

### **GREEN LANE**

Environment Canada has established an environmental information network, the Green Lane, on the Internet (<http://www.ec.gc.ca/envhome.html>) to help Canadians make informed decisions and take action on environmental issues and sustainable development. The Network is comprised of eight World Wide Web servers located in Vancouver, Edmonton, Winnipeg, Burlington, Toronto, Hull, Montreal and Dartmouth. Anyone with access to the Internet may log onto the Green Lane and get up-to-date information on Environment Canada's activities and its CEPA-related endeavours. CEPA-related information such as State of the Environment data,

the National Pollutant Release Inventory, pollution prevention activities, releases, Priority Substance assessments, and enforcement can be found on the Green Lane. As well, regional sites contain updates on numerous region-specific CEPA-related activities, such as the Fraser River Action Plan, the Great Lakes Remedial Action Plan, the St. Lawrence River Action Plan and the Atlantic Coastal Action Plan. In general, national information is made available through the Department's home page which offers links to the home pages of regional offices.

### ***CEPA-RELATED PUBLICATIONS***

Under Part I the Minister may authorize the publication of information related to the research and monitoring activities. See pp. 47-53 for a list of publications for 1997-1998.

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## **PART II: TOXIC SUBSTANCES**

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Part II of the Act provides the legislative and regulatory authority to reduce the risks posed by new and existing substances in Canada, and to implement some of the international agreements to which Canada is a party. Part II contains provisions to determine which of these substances should be assessed, provisions to assess them and provisions to implement control measures applicable to all aspects of the life cycle for any assessed as *toxic* under the Act. A substance is considered toxic "if it is entering or may enter the environment in a quantity, or concentration, or under conditions:

- a) having or that may have an immediate or long-term harmful effect on the environment;
- b) constituting or that may constitute a danger to the environment on which human life depends; or
- c) constituting or that may constitute a danger in Canada to human life or health."

Efforts under this Part influence Canadian contributions to international initiatives of the Organization for Economic Cooperation and Development (OECD), the Intergovernmental Forum on Chemical Safety, the United Nations Environment Program (UNEP) and the North American Agreement for Environmental Cooperation that relate to the assessment and management of toxic substances.

Part II also contains authorities to regulate the import and export of hazardous wastes as well as the composition of fuels.

### **New Substances**

#### ***DOMESTIC SUBSTANCES LIST***

The Domestic Substances List (DSL) is an inventory of more than 23,000 substances manufactured in, or imported into, Canada on a commercial scale, and was based on substances deemed to be present in Canada between January 1984 and December 1986.

Substances not on this List are considered new to Canada. New substances must be assessed to determine whether or not they are toxic or capable of becoming toxic as defined above. The DSL was first published in May 1994 in the *Canada Gazette* Part II. Following assessment of new or transitional substances, (i.e., those substances imported into, or manufactured in Canada during the period from January 1987 and July 1994 - the latter being the date on which the New Substance Notification Regulations came into effect), the List is amended from time to time. In 1997-98 four amendments to the List were published in the *Canada Gazette* Part II, adding 350 substances. In addition, 98 substances that received confidential identifiers in accordance with the Masked Name Regulations were added to the List.

### ***NON-DOMESTIC SUBSTANCES LIST***

There are over 43,000 substances on the Non-Domestic Substances List that are known to be commercially available elsewhere in the world but not in Canada. When these substances are manufactured or imported to Canada for the first time, less detailed information is required than for a substance that is *new* to Canada and not listed on the Non-Domestic Substances List. The initial List appeared in the *Canada Gazette* Part I on January 26, 1991 and was subsequently amended in 1996. In 1998, the non-confidential portion of the List was republished in a format consistent with the Domestic Substances List. The initial List of January 26, 1991 and all subsequent revisions appeared in the *Canada Gazette* Part I on January 31, 1998. There are now 43,797 substances recognized as non-domestic. A revision to the confidential portion of the List was also published in the *Canada Gazette* Part I on March 28, 1998. This revision added a further 107 substances which received confidential identifiers in accordance with the Masked Name Regulations.

### ***PROGRESS ON NEW SUBSTANCES NOTIFICATION REGULATIONS***

The New Substances Notification Regulations prescribe the information required from manufacturers and importers, before new substances can be manufactured in or imported into Canada.

#### ***Chemicals and Polymers***

These regulations came into effect July 1, 1994 and require manufacturers and importers to supply specified information on new commercial substances, including chemical identity; toxicological and environmental effects data; manufacturing, processing and use data; and the volumes proposed for manufacture and import.

The Government may require additional information or testing, may impose controls, or ban the manufacture or import of a substance if it suspects the substance is toxic. Assessments were completed on 736 transitional substances and 509 new substances during 1997-98. These reviews resulted in eight substances having controls of various kinds imposed on them.

### *Biotechnology Products*

An amendment to the New Substances Notification Regulations was published in *Canada Gazette Part II* on March 5, 1997 with an implementation date of September 1, 1997. This amendment requires manufacturers and importers of biotechnology products to supply prescribed information for the purposes of an environmental and human health assessment. In addition, the amendment, along with the regulations under four Agriculture and Agri-Food Acts, firmly establishes the legal basis to implement the federal framework for regulating biotechnology products in Canada. As a consequence, all biotechnology products in Canada are being assessed as to whether they are toxic, prior to release into the environment. Assessments under CEPA were completed on 10 new biotechnology products during 1997-98.

### *Good Laboratory Practice*

This program is designed to ensure that testing data provided in support of the requirements of the New Substances Notification Regulations are consistent with the *OECD Guidelines for the Testing of Chemicals* and the *OECD Principles of Good Laboratory Practice*. The major activity during 1997-1998 was the presentation of a database, to data evaluators of new substances under the Regulations, of all Good Laboratory Practice inspections conducted in the world during the past 10 years. This information, together with other agreed procedures, will allow evaluators to ascertain quickly the underlying quality of all health and safety data submitted to them. The first Canadian facility to provide genetic toxicology tests for purposes of the Regulations was inspected in 1997 and was found to be in compliance with interim program requirements. The complete suite of testing requirements in the New Substance Notification Regulations is now available from Canadian testing facilities.

Internationally, joint Good Laboratory Practice inspections were performed with the U.S. Food and Drug Administration and the U.S. Environmental Protection Agency, negotiations on agreements with a number of countries continued, and the revised *OECD Principles of Good Laboratory Practice* were published.

### **Toxic Substances Management Policy**

The federal government's Toxic Substances Management Policy was announced in Parliament on June 2, 1995. This policy provides a science-based framework for the management of toxic substances. The key management objectives in the policy are:

- virtual elimination of releases to the environment of toxic substances that are persistent and bioaccumulative and are present in the environment primarily due to human activity (Track 1); and
- management of other toxic substances and substances of concern throughout their life cycles to prevent or minimize their release into the environment (Track 2).

Following an assessment, 13 substances were proposed for Track 1 management or virtual elimination of their release to the environment. Those substances are dioxins, furans, hexachlorobenzene, PCBs, aldrin, chlordane, dieldrin, endrin, DDT, heptachlor, mirex, and

toxaphene and short-chain chlorinated paraffins. The notice proposing the Track 1 designation of the 13 substances was published in March 1997 in Part I of the *Canada Gazette*. The 60-day comment period that is required following publication of the notice expired in May 1997. The comments received were subjected to considerable study. The action that the Minister plans to take in regard to the 13 candidate substances will be recorded in the 1998-99 CEPA Annual Report.

An Interdepartmental Forum on the implementation of the policy has been struck to ensure consistency in implementation. Virtual elimination objectives, associated issues and opportunities and departmental strategies to achieve the objectives for Track 1 substances have been prepared. Domestic action has already been taken to severely limit or ban the production, use or release of Track 1 substances in Canada. However, given that they are still used elsewhere in the world, they continue to enter the Canadian environment from foreign sources through long range transport. The formal identification of substances for virtual elimination supports on-going initiatives including:

- the Strategic Options Process (see below);
- Federal-Provincial Task Force on Dioxins and Furans;
- regional initiatives such as the Canada-Ontario Agreement respecting the Great Lakes Basin Ecosystem and the St. Lawrence Vision 2000;
- national efforts through the CCME; and
- international efforts such as the negotiations under UNEP on Persistent Organic Pollutants (POPs) and under the United Nations Economic Commission for Europe Protocol on POPs and Protocol on Heavy Metals (see p. 33).

As a follow up to the adoption of the federal policy, a national Policy for the Management of Toxic Substances was signed by CCME in January 1998. This national policy, which provides for a unified approach to the management of toxic substances, is consistent with the federal policy and has adopted the same criteria for the selection of substances for management under Track 1.

## **Priority Substances**

CEPA requires the establishment of the Priority Substances List (PSL) which contains those substances which merit priority for assessment to determine whether they are toxic or capable of becoming toxic, as defined under CEPA.

### ***PROGRESS ON THE FIRST PRIORITY SUBSTANCES LIST (PSL1) – THE STRATEGIC OPTIONS PROCESS***

Of the 44 substances on PSL1, Environment Canada and Health Canada concluded that 25 were toxic. A Strategic Options Process to determine control options was adopted and 14 Issue Tables were established (see table below). Four Issue Tables, i.e., dry cleaning, solvent degreasing, benzidine/3,3'-dichlorobenzidine and electric power generation, have completed their reports, the recommendations were accepted by the Ministers and work is underway to implement the recommendations of regulations and environmental performance agreements. Four Issue Tables, i.e., refractory ceramic fibres, steel manufacturing, base metals smelting



and metal finishing, have completed their reports, and the recommendations will be submitted to the Ministers in 1998-99. The remaining six Issue Tables are still underway and are expected to complete their reports during 1998-99.

The Chlorinated Wastewater Issue Table was delayed in its presentation to the CEPA Federal-Provincial Advisory Committee because of changes in provincial information. However, work on finalizing the *letter of intent*, controlling or eliminating the use of chlorine as a wastewater disinfectant, should start in the fall of 1998.

With respect to human health, the impact of recent mechanistic data on the human health risk assessment of dichloromethane and more recent data on exposure of the general public to diethylhexyl phthalate were assessed and the results made available to the Issue Tables. Assessment of new data on chlorinated paraffins relevant to the health risk assessment was completed, and the results of surveys of organotins in drinking water supplies were published.

International health assessments on four PSL 1 substances, specifically 1,2-dichloroethane, 1,1,2,2-tetrachloroethane, 3,3'-dichlorobenzidine and methyl methacrylate, were published by Health Canada and two others, hexachlorobenzene and chloroalkyl ethers, finalized for publication.

<b>PSL 1 Toxic Substances: 1997-98 Activities</b>	
<p><b>Established Issue Tables</b></p> <p><b>1. Substances</b></p> <p>Benzidine / 3,3'-dichlorobenzidine *</p> <p>Refractory Ceramic Fibres (23)**</p> <p>Chlorinated Paraffins (8)</p> <p>1,2-dichloroethane (2)</p> <p>Dichloromethane (11)</p> <p>Bis(2-ethylhexyl) phthalate (14)</p> <p>Hexachlorobenzene (16)</p> <p><b>2. Sectors</b></p> <p>Dry Cleaning (24)*</p> <p>Solvent Degreasing (24,25)*</p> <p>Wood Preservation (10,12,16,17,18,22)</p> <p>Iron and Steel (4,12,17,18,19,20,21,22)**</p> <p>Metal Finishing (17,19,21)**</p> <p>Base Metal Smelting (18,19,21)**</p> <p>Electric Power Generation (17,18,19,20,21)</p> <p><b>3. Federal-Provincial Advisory Committee</b></p> <p>Chlorinated Wastewater Effluents (9)</p> <p>* Completed and accepted by Ministers</p> <p>** Completed for submission to Ministers</p>	<p><b>PSL1 Toxic Substances</b></p> <p>1,1,1-trichloroethane *</p> <p>1,2-dichloroethane</p> <p>3,3'-dichlorobenzidine</p> <p>Benzene</p> <p>Benzidine</p> <p>bis(chloromethyl) ether*</p> <p>Chloromethyl methyl ether*</p> <p>Chlorinated paraffins</p> <p>Chlorinated wastewater effluents</p> <p>Creosote impregnated wastes</p> <p>Dichloromethane</p> <p>Dioxins *</p> <p>Effluents from pulp &amp; paper mills using bleach *</p> <p>Bis(2-ethylhexyl) phthalate</p> <p>Furans *</p> <p>Hexachlorobenzene</p> <p>Hexavalent chromium compounds</p> <p>Inorganic arsenic compounds</p> <p>Inorganic cadmium compounds</p> <p>Inorganic fluorides</p> <p>Oxidic, sulphidic, soluble inorganic nickel compounds</p> <p>PAHs</p> <p>Refractory ceramic fibres</p> <p>Tetrachloroethylene</p> <p>Trichloroethylene</p> <p>* Already regulated</p>

## ***PROGRESS ON OZONE-DEPLETING SUBSTANCES REGULATIONS***

The Montreal Protocol on Substances that Deplete the Ozone Layer, signed in September 1987, is designed to prevent a global environmental and health problem from reaching the crisis stage. Canada subsequently has put regulations in place enabling us to meet our commitments under this treaty. Canada has met its commitments for halons, carbon tetrachloride, CFCs, methyl chloroform, methyl bromide and hydrochloro-fluorocarbons (HCFCs). Consumption of methyl bromide has been frozen and will be reduced by 25 percent in 1998 (except for quarantine and pre-shipment applications and for feedstock use). Canada froze consumption of HCFCs beginning January 1, 1996 at the agreed level. Total consumption of HCFCs will be reduced by 35 percent in 2004; 65 percent in 2010; 90 percent in 2015; and will be eliminated in 2020.

### *Office of the Auditor General Report on the Ozone Protection Program*

On December 2, 1997, the Office of the Auditor General presented its report on an audit of the federal government's ozone layer protection program. The chapter, entitled Ozone Layer Protection - The Unfinished Journey, acknowledges the success of the Montreal Protocol, Canada's full compliance with the Protocol requirements and Environment Canada's efforts to coordinate the harmonization of federal and provincial regulations.

The Auditor General indicated that, although some progress has taken place, we are still decades away from the resolution of this issue. The Auditor General also presented recommendations to improve the federal-provincial coordination of the program as well as the inspection and enforcement activities. It also urged Environment Canada to address the issue of long-term management and safe disposal of surplus CFCs and halons for both federal facilities and nation-wide.

### *Updated National Action Plan for the Environmental Control of Ozone-depleting Substances and their Halocarbon Alternatives*

On January 29, 1998, CCME endorsed an updated National Action Plan for the Environmental Control of Ozone-depleting Substances and their Halocarbon alternatives. The National Action Plan was originally published by CCME in 1992. The updated Action Plan now covers all Ozone-depleting Substances and some halocarbon alternatives such as HFCs, which, although not Ozone-depleting, need to be controlled because of their high global warming potential. The new Action Plan incorporates new tasks and measures for the prevention, reduction and elimination of emissions of these gases. Furthermore, it addresses issues raised by the Office of the Auditor General Report including the development of a strategy to address the ultimate phase-out and disposal of CFCs and halons in Canada.

## **THE SECOND PRIORITY SUBSTANCES LIST (PSL 2)**

The PSL2, which includes 25 substances, was published in Part I of the *Canada Gazette* on December 16, 1995. Environmental and human health assessments for all substances are underway. In order to promote consistency in approaches and to seek public input, Environment Canada published a document entitled *Administrative Policy And Process For Conducting Environmental Risk Assessments For Priority Substances* in September 1997, which, together with updates on the status of each assessment, is also available on the Environment Canada Priority Substances web site (<http://www.ec.gc.ca/cceb1/eng/psap.htm>). In addition, an information letter was published to advise the public of the status of each of the environmental assessments. This follows the publication (hard copy and website) of the methods used in conducting environmental risk assessments i.e., *Environmental Assessments of Priority Substances under the Canadian Environmental Protection Act Guidance Manual* (1997). Similar documents are under preparation by Health Canada.

Data collected through authority of Section 16 of CEPA on uses, exports, imports, and environmental releases of many of the PSL2 substances were analyzed for use in the assessments. Environmental Resource Groups have been established for each priority substance, consisting of scientific and technical experts from industry, academia and federal and provincial government departments, to actively participate in the assessment process and to review all environmental assessments and supporting documents. Problem formulations, which outline the scope of each assessment, were prepared for environmental assessments and published in hard copy and on the program website for public information and comment. Literature searches and preparation of background documentation for the environmental and health risk assessments for all PSL 2 substances were completed.

Environmental assessments have been completed for four substances, acrolein, 1,3-butadiene, BBP, and HCBd. Environmental reviews have been initiated for acrylonitrile, carbon disulphide, and chloroform. Health Canada has set up an external review mechanism for reviewing human health toxicity assessments. Acetaldehyde, HCBd and phenol, have undergone external review and external reviews have been initiated for 1,3-butadiene, butyl benzyl phthalate, and formaldehyde.

### **Priority Substances List 2**

Acetaldehyde  
Acrolein  
Acrylonitrile  
Aluminum chloride, aluminum nitrate, aluminum sulphate  
Ammonia in the aquatic environment  
1,3-Butadiene  
Butylbenzylphthalate (BBP)  
Carbon disulfide  
Chloramines  
Chloroform  
N,N-Dimethylformamide (DMF)  
Ethylene glycol  
Ethylene oxide  
Formaldehyde  
Hexachlorobutadiene (HCBd)  
2-Methoxy ethanol, 2-Ethoxy ethanol, 2-Butoxy ethanol  
N-Nitrosodimethylamine (NDMA)  
Nonylphenol and its ethoxylates (NPE)  
Phenol  
Releases from primary and secondary copper smelters and copper refineries  
Releases from primary and secondary zinc smelters and zinc refineries  
Releases of radio nuclides from nuclear facilities (impacts on non-human species)  
Respirable particulate matter less than or equal to 10 microns  
Road salts  
Textile mill effluents

The Quebec Region is continuing work on both the data collection as well as the assessment of the toxicity and environmental impact of aluminium salts.

For the environmental risk assessment of chloramines, the Pacific Environmental Science Centre has developed an analytical method for measuring chloramines, which was validated by the University of Waterloo. Degradation studies using surface water from British Columbia, Alberta, and Ontario were completed, and toxicity studies on fish and *Daphnia* were conducted.

The St. Lawrence Centre in Quebec participated in the evaluation of the phytotoxicity of DMF.

The Atlantic Region is leading the assessment of textile mill effluents. Activities conducted during 1997-98 included:

- the publication of the Problem Formulation document, providing the goals and focus of the assessment;
- the completion of a textiles industry process description report; and
- the field component of a study examining the aquatic toxicity of treated and untreated textile mill effluents from eight textile mills in eastern Canada;
- a voluntary survey of processes used by textile mills conducted with assistance from the Canadian Textile Institute; and
- effluent sampling and toxicity testing of some mills.

The National Water Research Institute initiated a collaborative research program on municipal effluents to assess the fate and distribution of nonylphenol ethoxylates, and natural and synthetic hormones in a municipal treatment plant receiving textile mill effluents. The fate of the chemicals was determined at each of the major process steps in the treatment plant and in the final effluent. The potential impacts of the effluent on fish were evaluated in the receiving waters and in the laboratory. Laboratory results showed that the effluent has the potential to cause endocrine disruption in fish. This study has been expanded into a national survey of the distribution and effects of these chemicals in municipal effluents across the country. In addition, a study was initiated on the persistence of alkylphenol polyethoxylate surfactants and their metabolites in digested sludge, which is applied to agricultural land.

The National Water Research Institute continued its research on the assessment of the impact of metal smelter emissions on aquatic ecosystems. Twelve lakes, ranging in distances from 6 to 150 kilometres from Sudbury, were studied. Metal concentrations in lake sediments were used to quantify the magnitude of the contamination and effects were assessed by studying the structure of the bottom communities in the lakes, and by determining sediment toxicity. The researchers are also studying the bioavailability of the metals in order to establish the relationships between sediment toxicity and specific metals.

## **Data Collection**

Sections 15 through 18 allow the federal government to collect information, conduct investigations to support the assessment of existing substances, and to support the development of management options for substances considered toxic. Six surveys were

completed to obtain information on commercial trade and use patterns of 20 substances and classes of substances listed on PSL2, as well as for bis(2-ethylhexyl) phthalate, lead in gasoline, methylene chloride and tributyl tetradecyl phosphonium chloride. Fourteen submissions under section 17 were received and reviewed.

### ***NATIONAL POLLUTANT RELEASE INVENTORY***

This inventory is a national, publicly accessible database of specific pollutants released to the Canadian environment from industrial and transportation sources. The first annual Inventory was published in March 1995 reporting the 1993 releases and transfers and is available on the Internet (<http://www.ec.gc.ca/pdb/npri/index.html>). The report for 1994 was made available in the fall of 1996. The 1995 summary included facilities that released large quantities at low concentrations and was published in November 1997. The report is also available on the Internet. A new on-line query was developed for the 1995 report. Information required for 1996 is similar to that required for 1995. All regional offices collected and validated the data submitted by facilities within their respective areas prior to that information being included in the report. Regions also responded to enquiries from the public and media and gave training sessions. Public consultations are planned during the coming year respecting proposed changes to the Inventory.

### ***DISCLOSING INFORMATION***

In 1997-1998, Environment Canada received 71 requests under the *Access to Information Act* for information related to CEPA. Information was released, in whole or in part, for 18 of the requests. Requests were made on the following subjects:

- CEPA inspectors;
- correspondence concerning Bill C-74;
- PCB waste;
- dioxins and furans;
- import and export of hazardous wastes;
- sulphur in liquid fuels;
- sulphur emissions;
- contaminated sites; and
- environmental compliance.

Sixty-one of the above-mentioned requests concerned the environmental compliance status of properties or facilities. Compliance with respect to all Acts administered by Environment Canada were included in the search. Information did not exist for 44 requests; documents were located for 13 requests. One request was still being processed at year-end. The remaining 3 requests were abandoned by the applicants.

### ***CONFIDENTIALITY REQUESTS***

A number of companies requested confidential status for information submitted to the 1995 National Pollutant Release Inventory. These companies were asked to support their claim for confidentiality using the criteria under the *Access to Information Act*. After verification, the

information from the companies was protected. Under the New Substances Notification Regulations the claims for confidential identity of 98 substances were accepted and published on the Domestic Substances List in accordance with the Masked Names Regulations.

### **Toxic Substances Related Research**

Health Canada continues to develop methods for determining both the endocrine disrupting, as well as reproductive and developmental effects, of priority contaminants. *In vitro* screening methods have been used to evaluate the endocrine disruption potential of an array of substances, and studies have been completed that evaluated the effects of toxic substances on male reproductive physiology. Animal studies designed to assess the relevance and significance to human health of a number of endocrine disruptor end-points were initiated. Studies have also been initiated to determine the effects of mixtures of toxic substances on reproductive development and function. A pilot study to determine the exposure of subjects from the general population living in Toronto to 29 substances through air, water and food was undertaken. Also completed was a pilot study on exposure from a variety of sources to a number of PSL2 compounds. A follow-up survey was started.

Health Canada has completed studies on the systemic effects of bis-chlorobiphenylsulfone, a persistent organochlorine, and on the interactive effects of dioxin and PCB congeners. The study of interactive effects permits the assessment of real life health risks since humans are exposed to chemical mixtures rather than individual toxicants. Research on bacterial degradation of azo-type dyes are underway. Selected bacterial species were cultured with purified dyes to determine the chemical structures that may be affected by azo-reductase in the bacteria. Research continues on the biochemical mechanisms of toxicity and physiologically based pharmacokinetics, and on the development and application of biomarkers for effects on liver, kidney and lungs.

Research continued, with funding from the National Biotechnology Strategy, into the development of transgenic mouse gene mutation assays. Such assays are capable of detecting mutations in virtually any tissue. This greatly expands the capability to study tissue-specific effects. Research was centered on the evaluation and validation of this methodology, and the linking of protocols from other, complementary, assays so that they can be performed in the same animals. It also involved the inclusion of the chemicals, acrylonitrile and hexachlorobutadiene (HCB) to provide mechanistic data for PSL2 assessments.

The National Biotechnology Strategy also provided funding to address the harmonization of assessment methods for large-scale applications of microbe-based products used in the management of agriculture and forest resources and their impact on community health. Field operations were conducted with spray applicators to clarify issues such as product potency, off-target drift and dose calibrations generated by aircraft, development of methods to monitor health effects, and data collection on immunological responses of migrant workers exposed to ground-level bio-aerosols.

In addition, the project provided extensive technology transfer to stakeholders relating to new methods for assessing bio-particulate dose estimation, persistence, virulence, antibiotic tolerance and monitoring of indoor air quality and contamination of foodstuffs.

Health Canada conducted research to evaluate methods for the detection of chromosome imbalance (aneuploidy) in rodent cells and human populations, which resulted in:

- optimised methods for the recovery of dividing cells from spleen lymphocyte cultures;
- enhanced micro-dissection techniques for the production of chromosome-specific DNA probes to be used in detecting chromosome imbalance and breakage; and
- initiation of a study of human sperm samples, from a pesticide exposure assessment study, in order to validate methods for measuring heritable aneuploidy in human populations.

Gene expression bio-markers were further validated as a rapid test, which was highly accurate in predicting tumour promotion in cell cultures and in animal tissues. The utility of this approach was again demonstrated, by using the PSL1 compound, di-n-butyltin dichloride, to show that the response of the gene for murine proliferin accurately predicted the promotion of cell transformation *in vitro* and the concentrations required for the promotional effect.

At the National Water Research Institute a study showed continuous release of significant levels of arsenic, mercury, lead, thallium and other metals from abandoned gold mine tailings in Goldenville, Nova Scotia. The sedimentary records show an increasing rate of release from the tailings of metals, particularly for mercury and lead. Effects downstream from the tailings field include toxicity to bottom-dwelling organisms and a loss of fish habitat. Metal concentrations in lamprey larvae and freshwater mussels were measured in the St. Lawrence River. The bulk of the metals in rivers is found in suspended particulate matter and sediments. Lamprey larvae and freshwater mussels were evaluated for their bio-monitoring potential. The results show that, under similar ecological conditions, freshwater mussels and lampreys have different metal retention rates with metal content in mussels being two to 500 times higher than in the lampreys. Lamprey larvae can be good bio-monitors for mercury and possibly for other specific metal substances.

The National Water Research Institute is also investigating the role of contaminants on the mechanisms controlling growth and development in fish. The project is focusing on unravelling the possible mechanisms whereby these contaminants may disrupt internal functions in fish. The preliminary results show impaired thyroid function in fish exposed to co-planar PCBs and deficiencies in antioxidant vitamins in fish exposed to pulp mill effluents. This work is central to the understanding of the impacts of endocrine disrupting chemicals when the effects are not expressed through the estrogen receptor.

The National Water Research Institute also continued its program for the management and remediation of groundwater contaminated by toxic substances. The effect of humic acids on the bio-remediation of soils contaminated by PAHs was studied in the laboratory. Research continued on the application of vitamin B<sub>12</sub> to remove solvents from contaminated groundwater. An electro-spray was used to identify the unstable intermediates that are formed during the reaction and to postulate a new mechanism, which has implications in the application of the method in the field.

In British Columbia, the regional office assessed the presence of some PSL1 and PSL2 substances in the atmosphere, water, sediment, and biota of the Fraser River Basin. Results show that levels of dioxins and furans in sediment at some locations in the basin exceeded interim CCME sediment guidelines for the protection of aquatic life. Concentrations of dioxins and furans in fish tissue also exceeded interim CCME guidelines for the protection wildlife that eat fish. Some PAHs in sediments of the lower Fraser River and Thompson River, particularly in urban areas, also exceeded interim CCME guidelines for the protection of aquatic life. The likely source of the PAHs is run-off. A concerted effort has also been made to assess the impacts of pulp mill effluents on the aquatic ecosystem in the basin. This assessment is an evaluation of altered fish liver enzyme levels, wildlife reproduction and bottom-dweller community structure.

Also in British Columbia, a collaborative pilot survey was conducted on the presence of 166 contaminants, including PSL1 and PSL2 substances, in groundwater of the Abbotsford Aquifer. Levels of some PSL1 and PSL2 substances (i.e., carbon disulfide, chloroform, and 1,1,1-trichloroethane) were detected in the parts per trillion range.

In Quebec, thanks to a cooperative agreement with the private sector, it has been possible to measure the ambient concentrations of atmospheric pollutants and volatile organic compounds in the Montreal metropolitan area.

In the Atlantic Region a series of research projects were carried out, namely:

- a project to determine the levels of persistent organochlorines and heavy metals in bald eagles breeding in Placentia Bay, Newfoundland. This project will provide valuable baseline data near the proposed Voisey's Bay Nickel Company smelter and refinery at Argentia, Newfoundland.
- the possible impacts of PCBs on fish-eating wildlife near Five Island Lake, Nova Scotia were assessed. Mink, otter and raccoon carcasses, submitted by trappers, are being analyzed for PCB and mercury concentrations.
- results were published of volunteer surveys of waterbirds at the Sydney Tar Ponds and Harbour, which assessed the potential exposure of birds to local contamination;
- total gaseous mercury monitoring continued at two regional sites, Kejimikujik National Park, Nova Scotia and St. Andrews, New Brunswick. The gaseous mercury concentrations in the Atlantic Region are close to the global average of 1.5 nanograms per cubic metre and are similar to concentrations elsewhere in eastern North America. Seasonal transport patterns vary from year to year over the region. Many possible sources contribute to the levels, including local to long range transport from Europe and North America. Preliminary studies on the evasion of mercury from soils and water surfaces indicated that gas exchange occurs over both of those surfaces. Those measurements indicated that flux is important in overall mercury dynamics. Total mercury concentrations in precipitation and wet deposition are similar in magnitude to other sites in eastern North America. Mercury concentration and wet deposition are greatest in the summer and lowest in the winter;
- the first year of a two-year study to examine spatial and temporal patterns of mercury concentrations in yellow perch from over 40 headwater lakes in New Brunswick and Nova Scotia was completed. In 1997-98, 54 composite yellow perch samples were collected from 18 lakes; and



- an Inventory of Anthropogenic Sources of Mercury in Atlantic Canada was completed. The total estimated mercury emissions from all Atlantic Canadian anthropogenic sources were approximately 960 kilograms per year. That represents about 6.4 percent of the 1995 national estimate of mercury emissions of 15 tonnes per year.

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## **PART II: HAZARDOUS WASTES**

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### **Export and Import of Hazardous Wastes Regulations**

During 1997, 1,251 notices for proposed exports of hazardous wastes (including 199 for PCB wastes), 6,365 notices for imports and 180 notices for shipments in transit through Canada were processed. During the same period, 37,688 manifests were received for the tracking of shipments approved under these notices.

In support of compliance and enforcement for these regulations, a database query tool was developed for ongoing measurement and tracking of compliance. This is in addition to the computerized tracking system that was implemented in 1996. Use of the query will become an integral part of compliance promotion targeted at priority companies. Related activities during fiscal year 1997-1998 were the development of a training package for Customs inspectors and provision of electronic access to the notification and manifest computerized tracking system to regional enforcement officers.

To satisfy the requirements of section 45, after receiving a notice for proposed imports, exports and transits of hazardous wastes, the names of the Canadian importer, exporter, or notifier as well as the name and origin or destination of the waste in question must be published. This information is published semi-annually in the newsletter RESILOG, which is available on the Internet at <http://www.ec.gc.ca/resilog/resinews.htm>.

### **Basel Convention**

The *Basel Convention* addresses the management of the transboundary movement of hazardous wastes in an environmentally sound manner. The ban amendment adopted at the third Conference of Parties (September 1996), prohibits, for countries that ratify it, the export of hazardous wastes destined for both recovery and final disposal from developed to developing countries. At the fourth Conference (February 1998), the Parties agreed to adopt a list of wastes and recyclables covered by the Convention (and the ban amendment) and a list of wastes and recyclables not covered by the Convention (or the ban amendment). These lists clarify the definitions of hazardous wastes and hazardous recyclable materials that were contained in the original Convention. At the fourth Conference, the Parties also decided not to amend the list of countries until the ban amendment comes into force, which requires ratification by 62 countries. Other decisions from the fourth Conference involve the extension of the mandate of the working group that is negotiating a liability and compensation protocol and the consideration of a monitoring and compliance procedure to assist Parties in implementing their obligations.

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## **PART II: FUELS**

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Regulations are now in place restricting lead and benzene in gasoline and sulphur in diesel fuels. A number of initiatives were undertaken in 1997-98 that will result in regulations concerning fuels. A working group following up on the CCME Cleaner Vehicles and Fuels Task Force Report is developing recommendations on levels of sulphur in gasoline.

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## **PART III: NUTRIENTS**

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Part III of the Act regulates the nutrient content of cleaning agents and water conditioners. When the Act was created, the Phosphorus Concentration Regulations, previously under the *Canada Water Act*, were incorporated under Part III. During the 1960s, one of the major concerns regarding the degradation of the Great Lakes focused on nutrient enrichment or eutrophication. Phosphorus was identified as the element responsible for eutrophication and, in 1972, controls were placed on the phosphorus content of household detergents. During the same period, programs were implemented at major municipal treatment plants in the Great Lakes Basin to control effluent phosphorus levels. During 1997, the House of Commons Standing Committee on Environment and Sustainable Development recommended that Environment Canada determine whether sources of nutrients are adequately regulated. As a consequence, the Federal Government initiated a major assessment of nutrients entering the Canadian environment through human activities to determine their impacts on aquatic and terrestrial environments.

### **Related Research**

The National Hydrology Research Institute has a continuing program to determine the relationships between the quantity of added nutrients and the response of bottom-dwelling biota, the cumulative effects of long-term nutrient loading, and the ecological consequences of interactions between nutrients and toxic substances. In 1997, two new research programs were initiated to:

- evaluate indices of primary productivity, nutrient status and taxonomic composition for assessing eutrophication of rivers in response to nutrient inputs; and
- evaluate the effects of nutrient loading from agricultural runoff on primary production in receiving waters.

The National Water Research Institute continued its assessment of changing nutrient discharges from sewage treatment plants in basins such as Hamilton Harbour and Severn Sound in Ontario. In addition, the Institute examined the confounding effects of exotic species (like zebra mussels) and metals in Lake Erie and the Bay of Quinte, Lake Ontario.

The Wastewater Technology Centre is currently evaluating low-cost alternatives for enhancing nutrient removal from biological sewage treatment plants. The technologies currently being demonstrated include:

- the installation of biomass support media as a low cost alternative to upgrade for ammonia removal;
- a modification from continuous to intermittent aeration that will result in complete nitrogen removal as well as energy savings;
- the installation of simple secondary clarifiers to enhance plant capacity for nutrient removal; and
- the retrofit of a sewage treatment plant for complete biological nitrogen and phosphorous removal.

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## **PART IV: CONTROLS ON GOVERNMENT OPERATIONS**

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Part IV of the Act contains the authority to regulate waste handling and disposal practices as well as emissions and effluents from the operations of federal departments, Crown corporations and federal agencies. During 1997-98, the following were undertaken to assist federal government operations:

- regulations respecting the registration of storage tank systems for petroleum products and allied petroleum products on federal lands came into force August 1, 1997;
- a training course for storage tank owners and operators was developed and delivered;
- a Storage Tank Network to promote compliance with the storage tank regulations was initiated;
- development of a compliance promotion web site was initiated;
- a consolidated manual for storage tank owners and operators was initiated;
- Federal Halocarbon Regulations were drafted;
- drafting of federal hazardous waste management regulations commenced;
- guidelines on glycol were reviewed through a public consultation process and adopted without change.

### **Greening of Government Operations**

Through the Greening of Government Operations initiative, the government has established guidelines for all departments to follow in order to integrate environmental considerations into their operations. The guidelines are to be applied with existing regulatory and technological feasibility considerations in mind. The Federal Committee on Environmental Management Systems provided a forum for departments to exchange best practices in the following areas: procurement, waste management, water usage, energy use and fleet management.

The Greening of Government was supported through the following activities:

- publication of the first report of the Commissioner of the Environment and Sustainable Development; and
- workshops on training and environmental performance measures for the environmental management system.

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## **PART V: INTERNATIONAL AIR POLLUTION**

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Part V of the Act is designed to control domestic sources of air contaminants that create air pollution in other countries or violate international agreements.

### **Sulphur Dioxide (SO<sub>2</sub>) Protocols**

Canada has signed two protocols for managing SO<sub>2</sub> emissions under the United Nations Economic Commission for Europe Convention on Long-Range Transboundary Air Pollution. Canada has met and exceeded its commitments for both protocols.

In 1996, national SO<sub>2</sub> emissions were estimated to be 2.6 million tonnes, or 19 percent below the agreed-upon national cap of 3.2 million tonnes. Emissions southeastern Canada, referred to as the Sulphur Oxide Management Area, were estimated to be 1.25 million tonnes, or 29% below the cap set at 1.75 million tonnes for the year 2000. These emissions reductions were largely achieved as a result of the Eastern Canada Acid Rain Program, which capped provincial SO<sub>2</sub> emissions in the seven eastern most provinces. Provincial regulations have ensured that the caps were met on time. Some western provinces also set stringent emission requirements on certain major new sources, such as natural gas plants, to minimize the growth in emissions. However, even with full implementation of both the Eastern Canada Acid Rain Program and the U.S. Acid Rain Program, Canada will continue to receive harmful levels of acid deposition. As a result, a new Canada-Wide Acid Rain Strategy for Post-2000 that will further protect the environment and human health is anticipated in 1998-1999.

### **Nitrogen Oxide (NO<sub>x</sub>) and Volatile Organic Compound (VOC) Protocols**

Canada signed a NO<sub>x</sub> emission protocol in 1988 pursuant to the *United Nations Economic Commission for Europe Convention on Long-range Transboundary Air Pollution*. The NO<sub>x</sub> protocol requires the Parties, as a first step, to freeze national emissions of NO<sub>x</sub> at 1987 levels by 1994. Canada continues to meet this commitment. A second step within the context of the *Convention*, is the goal of resolving acidification, ground-level ozone and eutrophication effects in Europe and North America. The completion of a Multi-Pollutant, Multi-Effects Protocol is expected in 1999.

In 1991, Canada signed a VOC protocol pursuant to the same *Convention* that, as a first step, commits Canada, beginning in 1997, to a freeze on VOC emissions at 1988 levels and to a 30% reduction in the Lower Fraser Valley of British Columbia as well as the Windsor-Quebec corridor. Canadian VOC emissions have declined from about 2.8 million tonnes in 1990 to less than 2.7 million tonnes in 1995. However, VOC emissions are particularly difficult to estimate accurately, and emission reductions are also difficult to document. Despite this, steady progress is being made towards achieving the commitments as all levels of government are working together with industry to achieve further VOC and NO<sub>x</sub> reductions to improve emissions inventories and projections, and to better document reductions achieved.

In the reduction of emissions of NO<sub>x</sub>, VOC and ammonia, Canada has moved to harmonize its vehicle emissions standards for on-road vehicles with those in the majority of states in the United States. Vehicle fuels are also being scrutinized for possible regulatory action. New National Emissions Guidelines have now been published for commercial and industrial boilers, for printing and for certain industrial coating operations.

### **NATIONAL AND REGIONAL SMOG MANAGEMENT PLANS**

The emissions reduction measures and NO<sub>x</sub>/VOC science program launched under the 1990 Phase 1 NO<sub>x</sub>/VOC Management Plan has now set the stage for further Canadian smog management initiatives. The Federal government published its Phase 2 Federal Smog Plan and a NO<sub>x</sub>/VOC Science Assessment in late 1997. It adds further NO<sub>x</sub> and VOC reduction measures, broadens the scope of the smog problem to include fine particulate matter and begins to integrate air pollution issues including acid rain and climate change with smog. The federal government and provinces have embarked on a new co-operative initiative to harmonize their actions on environmental management, especially for issues such as smog. This will build on a series of jurisdictional smog plans, to address the issue in conjunction with the other air pollution issues, including climate change.

Health Canada scientists focussed their research on four aspects of interaction between ambient airborne particles and ozone:

- detailed morphometric evaluations of rat lungs exposed repeatedly to particle concentrations alone or in combination with ozone which have confirmed previous observations of increased ozone-particle synergy leading to increased rates of cell proliferation, and significant structural remodelling in lung ducts;
- development of bio-marker technology for measuring oxidant stress *in vivo* (patent pending);
- revalidation of dust atmosphere generation procedures for inclusion in standard operation procedures; and
- standardization and characterization of a large sample of urban particles providing two grades of the urban dust that allowed the determination of the contribution of chemical composition to particle toxicity.

Work to address smog is now proceeding rapidly in response to these findings since many populated areas could be affected. This work is proceeding under a recently signed *Canada-Wide Accord on Environmental Harmonization*. Canada-Wide Standards for ambient particulate matter as well as ozone are also being developed under the Federal-Provincial Advisory Committee referred to on page 15.

### **Canada-United States Air Quality Agreement**

The *Canada-U.S. Air Quality Agreement* was signed in 1991 to protect both countries from damage caused by transboundary air pollution. While the impetus for the agreement was acid rain, it provides a framework for cooperation on all transboundary air pollution issues. Canada and the United States committed to reductions in SO<sub>2</sub> and NO<sub>x</sub> emissions and both countries have met these commitments fully.

In 1997, an agreement to develop a Joint Plan of Action Addressing Transboundary Air Pollution was signed. The intent of this agreement was to add to the Air Quality Agreement the issues of ground-level ozone and fine inhalable particles. A Progress Report on the development of the Joint Plan of Action establishes targets and a timeline of 1999 for recommendations to negotiate a new ozone annex under the Air Quality Agreement and for the creation of a joint workplan on particles.

### **Persistent Organic Pollutants (POPs) and Heavy Metals (HMs) Protocols**

Negotiations were completed on protocols for POPs and HMs under the United Nations Economic Commission for Europe Convention (UN-ECE) on Long-Range Transboundary Air Pollution. The POPs Protocol addresses the control of 16 POPs substances by eliminating the production or use of 12 POPs, restricting the use of three POPs and controlling atmospheric emissions of four POPs from designated industrial sectors. Some of the POPs substances are subject to multiple control regimes.

The HMs protocol requires the control of the three metals cadmium, lead and mercury, by:

- controlling atmospheric emissions from new plants in designated industrial sectors;
- reducing by 50% atmospheric emissions from existing facilities (based on 1990 values); and
- controlling lead content in gasoline and mercury content in alkaline batteries.

The completion of the POPs Protocol marks a successful conclusion in the first step of Canada's international strategy for managing POPs. Preparations are currently underway to begin negotiations on a legally binding global agreement on POPs under UNEP. Canada's objective is to build on the success of the regional UN-ECE agreement by obtaining a global commitment from countries to undertake appropriate control actions on POPs, focusing initially on 12 substances of concern.

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## **PART VI OCEAN DUMPING**

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Environment Canada regulates the disposal of substances at sea and meets its international obligations under the *London Convention 1972*, by means of a system of permits under Part VI of the Act. Disposal at sea is permitted only for non-hazardous substances and where it is the environmentally preferable and practical alternative. The majority of the material disposed at sea is dredged material, which must be moved to keep shipping channels and harbours clear for navigation and commerce.

### **Permits for Ocean Dumping**

Each application for disposal at sea is evaluated separately to determine if a permit will be issued. Permits typically govern timing, handling, storing, loading, placement at the disposal site, and monitoring requirements.

Over the past year, 86 permits were issued for the disposal of an estimated 4 million tonnes of material. This quantity reflects the amount approved for disposal as opposed to the actual quantity disposed of at sea. Disposal activities are still ongoing for many of the permits issued. No applications were rejected in the past year.

### **Forecasts for 1998-1999**

In the Atlantic and Pacific Regions, the number of permits for dredging is expected to increase. In the Quebec Region, maintenance dredging is expected to decline slightly because of spending reductions. No dredging applications are expected in the Prairie and Northern Region. For fisheries waste, the number of permits issued is expected to increase slightly as some plants reopen, but quantities will remain low because of depleted fish stocks.

### **Disposal Site Monitoring**

Disposal site monitoring is an essential component of the Ocean Disposal Program and serves to provide feedback to the permit application review and to help verify that the regulatory controls are adequate. Monitoring data may also guide further research. Monitoring was undertaken at eight sites along three coasts and featured physical surveys of the sea-floor, sediment sampling, chemical analysis of sediments to determine the presence of contaminants and bioassays to examine the toxicity of the sediments. Overall, the results supported the permit decisions: contaminants were found to be below national screening levels and no biological responses were observed. For further details, an annual compendium on these activities is now available from the Marine Environment Division of Environment Canada.

### **Related Research**

Bioassays are becoming standard assessment tools to evaluate the effects of contaminants in the marine environment. Several standard protocols to assess the quality of municipal and industrial effluents are already in use. Three new sediment bioassays to evaluate trace chemical concentrations on crustacean mortality, sea urchin reproduction and fluorescence from photo-luminescent bacteria have been developed. In addition, the U.S. protocol to evaluate bioaccumulation using a clam species, *Macoma sp.*, is being used. Guidance to aid in the interpretation of these bioassays is being developed to ensure they are applied consistently.

In 1995 and 1997, two pollution gradient studies looked at the field performance of the chemical and biological tools proposed to assess marine sediments for disposal at sea. The first study, at Belledune Harbour, New Brunswick, examined responses to a gradient of metal contamination (primarily cadmium and lead). It verified that the bioassays performed consistently and generally provided support for the chemical screening levels used. The second study in Sydney Harbour, Nova Scotia, was intended to verify similar responses to a gradient of organic contaminants (predominantly PAHs and PCBs). Preliminary results suggest that the bioassays performed well as increasing bioassay responses along the gradient towards the source of contamination were seen. Statistical analysis is now underway.

## International Activities

The Parties to the *London Convention 1972* completed a three-year amendment process to update the *Convention* and address immediate and long-term disposal-at-sea issues by adopting the 1996 Protocol. The Protocol is open to ratification, and Canada intends to ratify it as soon as possible. The changes in the Protocol are reflected in the renewed CEPA. Canada is assisting in the preparation of specific technical guidance to assess permits for each type of waste permitted for disposal at sea in 1996 Protocol.

## Proposed Amendments to the Ocean Dumping Regulations

During 1997-98, work continued on the proposed new environmental assessment procedures and standards for effects on the marine environment. In January 1997, cross-Canada consultations took place on cost recovery through the *Financial Administration Act*. A proposal to recover \$470 per 1000 cubic metres of dredged and excavated soils disposed of at sea has been developed.

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## PART VII: GENERAL INFORMATION

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Part VII of the Act addresses enforcement of regulations under the Act. Under Section 34(6) the federal government can enter into an Equivalency Agreement with a province, so that its requirements are enforced in place of the equivalent CEPA regulation. In addition, under Section 98, the federal government can enter into Administrative Agreements with provinces, which include enforcement.

### Regulations

Regulations are based on science and encourage innovative solutions. The potential economic impact is considered and while they are strictly enforced, they are not inflexible. Currently, 26 regulations are in place under the Act.

#### NEW REGULATIONS

##### *Benzene in Gasoline Regulations*

The Benzene in Gasoline Regulations, published in the *Canada Gazette* Part II on November 26, 1997, prohibit the manufacture, blend and import, after July 1, 1999, of gasoline that contains

#### CEPA Regulations Currently in Force

Asbestos Regulations  
Benzene in Gasoline Regulations  
Chlor-Alkali Mercury Release Regulations  
Chlorobiphenyls Regulations  
Chlorofluorocarbon Regulations, 1989  
Diesel Fuel Regulations  
Contaminated Fuel Regulations  
Export and Import of Hazardous Wastes Regulations (as amended)  
Federal Mobile PCB Treatment and Destruction Regulations  
Fuels Information Regulations No. 1  
Gasoline Regulations (as amended)  
Masked Name Regulations  
New Substances Notification Regulations (as amended)  
    Part I - New substances other than biotechnology products or polymers  
    Part II - Polymers  
    Part III - Biotechnology Products  
Ocean Dumping Regulations (as amended)  
Ozone-depleting Substances Regulations (as amended)  
Ozone-depleting Substances Products Regulations (as amended)  
PCB Waste Export Regulations, 1996  
Phosphorus Concentration Regulations  
Prohibition of Certain Toxic Substances Regulations  
Pulp and Paper Mill Defoamer and Wood Chip Regulations  
Pulp and Paper Mill Effluent Chlorinated Dioxins and Furans Regulations  
Registration of Storage Tank Systems for Petroleum Products and Allied Petroleum Products on Federal Lands Regulations  
Secondary Lead Smelter Release Regulations  
Storage of PCB Material Regulations  
Toxic Substances Export Notification Regulations  
Vinyl Chloride Release Regulations



benzene at a concentration exceeding 1% by volume. It also prohibits the sale or offer for sale of gasoline that contains benzene at a concentration that exceeds 1.5% by volume after July 1, 2000 in certain northern supply areas, and after October 1, 1999 everywhere else in Canada.

### **Notices of Objection and Boards of Review**

The public may file a Notice of Objection respecting actions or regulations taken under the Act. The procedures set out in Part VII of the Act allow a Board of Review to be established to examine a Notice of Objection. During 1997-98, no Notices of Objection were received.

### **Enforcement and Compliance**

Part VII provides for enforcement powers, including powers to inspect, search for and seize evidence, and prosecute for offences with penalties that include fines up to \$1,000,000, jail sentences up to five years, or both, or court orders.

The CEPA Enforcement and Compliance Policy establishes principles for fair, predictable and consistent enforcement. It informs all parties who share responsibility for protecting the environment - governments, industry, organized labour and individuals - about what is expected of them and what to expect from the officials who promote compliance and enforce CEPA and its regulations.

Compliance with the law by the regulated community is the goal of the National Enforcement Program. Achieving compliance requires a continuum of activities, from promoting compliance, verifying compliance through inspections, and compelling compliance through enforcement. Promoting compliance includes involving the regulated community in the regulation development process, building awareness of regulatory requirements, identifying potential problems, and sharing technology.

CEPA provides for a variety of mechanisms to verify compliance, including inspection, taking of samples, auditing of reports, responding to tips, self-reporting and investigations.

Inspection programs verify compliance with the law and its regulations. Regular inspections are carried out according to an annual National Inspection Plan, which identifies the quantity and types of inspections and monitoring activities to be carried out each year. Inspections are also conducted in response to spill reports, tips and complaints.

When suspected violations occur, investigations are undertaken to gather evidence and information in order to make a decision on the appropriate enforcement action. Action is necessary in situations where there is non-compliance with the legislation. In provinces where cooperative arrangements have been put in place through negotiated administrative agreements (see p.42) certain inspection and/or enforcement activities, relating to CEPA as defined in these agreements, may be carried out by provincial inspectors in accordance with the roles and responsibilities.

### Federal Enforcement Activities during 1997-98

Regulations	Inspections	Investigations	Warnings sent	Directions	Prosecutions	Convictions	Acquittals/Withdrawals
CEPA Section 108*	3				2	1	1
PCB Material Storage	182	1	21			1	
Chlorobiphenyls	87	2					
PCB Waste Export	10						
Secondary Lead	53						
Vinyl Chloride	3						
Asbestos Mines and Mills Release	31						
Chlor-alkali Mercury Release	1						
Gasoline	236		2				
Ozone-depleting Substances	112	14	7				1
Ozone-depleting Products	94		2				
Ocean Dumping	73	11	5		3		
Export/Import of Hazardous Wastes	362	7	4		2	1	
Phosphorus Concentration	21						
Pulp & Paper Mill Defoamer and Wood Chips	52						
Fuels Information Regulation No. 1	20						
New Substances Notification	30	1	6				
National Pollutant Release Inventory	89	24	161				
Contaminated Fuel	3						
Diesel Fuel	140						
Pulp & Paper Mill Effluent Chlorinated Dioxins and Furans	34						
Registration of Storage Tank Systems	3						
CEPA section 46**	8						
<b>TOTAL</b>	<b>1647</b>	<b>60</b>	<b>208</b>	<b>0</b>	<b>7</b>	<b>3</b>	<b>2</b>

\* Section 108 of CEPA allows any two individuals, who are over 18 years of age and are residents of Canada, to request that the Minister investigate an alleged violation of the Act. The Minister is required by the statute to comply with that request, and to report back to the two individuals who requested the investigation.

\*\* Section 46 of CEPA prohibits production, import, offer for sale or sale of a fuel that is not in compliance with regulations made under s.47.

## ***NATIONAL TRAINING PROGRAM***

Training continues to be of major importance in maintaining and enhancing the enforcement program. It is linked to the designation of enforcement staff and the ability to perform various skills at expected levels. The National Training Program comprises a wide range of courses developed and delivered through the collaborative efforts of headquarters and regional staff. Participants include analysts, inspectors and investigators. Subjects range from those dealing with general skills, for example the Basic Inspectors Course, to very specialized regulation-specific responsibilities and advanced investigative techniques.

In 1997-98, the following courses relating to environmental enforcement were given:

- CEPA Course for Yukon Conservation Officers and Park Wardens, Royal Canadian Mounted Police, and Canada Customs Officers;
- Surveillance Training;
- New Substances Notification Regulations;
- Exercise on Marine Operations and Safety;
- Multimedia Sampling;
- 40-Hour Contaminated Site Health and Safety; and
- Expert Witness Training for Analysts.

Approximately 250 individuals received training in the above courses during the reporting period. A catalogue and training schedule of courses offered by Environment Canada is available upon request.

## ***COMPUTERIZED INFORMATION SYSTEMS***

Environment Canada took steps to implement a new National Enforcement Management Information System and Intelligence System (NEMISIS). This system was first released in June 1997 and a refined version based on user needs was subsequently released in November. NEMISIS is a tool used by enforcement staff to record, track and share among enforcement staff vital information on enforcement activities across Canada. Additionally, the system will be used to generate various detailed statistical reports related to the legislation enforced by the Department. In order to ensure consistency of enforcement information entered into NEMISIS, the definitions of a number of key enforcement activities were re-visited and were agreed upon nationally. Environment Canada is one of the first departments to standardize enforcement activity definitions and data entry requirements. The system has been well accepted by the users with over 5000 files entered between September 1997 and March 1998.

## ***DOMESTIC ACTIVITIES***

- Preliminary work was undertaken in the development of performance and compliance indicators for enforcement activities. A thorough study of relevant federal departments' approaches was completed and further work to develop a strategy on indicators was undertaken.

- The Auditor General reported that there were deficiencies in the enforcement of the Export and Import of Hazardous Wastes Regulations and the Ozone-depleting Substances Regulations. The Department has prepared action plans to respond to these recommendations and is implementing them.
- The Parliamentary Standing Committee on Environment and Sustainable Development initiated a review of Environment Canada's enforcement activities. At the very end of this fiscal year, plans were in place to initiate an action plan to strengthen components of the national enforcement program.
- Environment Canada and Manitoba as co-leads for the Inspection Sub-Agreement of the Canada-wide Accord on Environmental Harmonization have identified, through consultation with all provinces and other federal departments, the interest in a national workshop to discuss opportunities for co-operation in the areas of training of inspectors and information systems.
- A joint RCMP/Environment Canada Working Group was created to explore opportunities for developing effective means of carrying out criminal law enforcement activities performed by the RCMP and Environment Canada.
- Environment Canada continued to manage the development of a Train-the-Trainer Course for Environmental Criminal Investigations under the auspices of an INTERPOL working group. The course is designed to train local law enforcement officers to look for and recognize illegal dumping of hazardous substances, discharges of pollutants, and whom to call if environmental crimes are encountered.
- The enforcement program adopted an approach for a joint compliance promotion and enforcement strategy for implementing regulations.
- Environment Canada's Green Lane (see p. 15) contains enforcement and compliance promotion information. Development of an Environmental Law Enforcement home page was initiated. This web site will serve as the main gateway to enforcement information, and will include legislation, policies, reports, and information about successful prosecutions.

### ***INTERNATIONAL ACTIVITIES***

The North American Agreement for Environmental Cooperation, under the North American Free Trade Agreement (NAFTA) obliges Mexico, the United States and Canada to report annually to the North American Commission on Environmental Cooperation on their respective environmental enforcement activities. The third report was provided to the Commission in early 1998. The Report covers three themes, two of which were related to CEPA, specifically hazardous wastes and ozone-depleting substances.

Coordination continued on transboundary enforcement activities to meet with international conventions and agreements that Canada has signed. Canada is strengthening its working relationship with the U.S. Environmental Protection Agency and U.S. Customs to curtail the trafficking in materials such as hazardous wastes and ozone-depleting substances such as CFCs. For example, in February, 1998, a Fredericton man was ordered to pay \$20,000 in New Brunswick provincial court after pleading guilty to knowingly providing false and misleading information during a 1994 inspection related to the export of CFCs to the United States. This outcome was precedent setting as it was the first time a significant fine was imposed for obstructing and preventing Environment Canada inspectors from performing their duties. The man was also charged by the United States Attorney for the District of Maine with illegally importing approximately 75 tons of CFCs into the United States.

In both cases, the charges were in large part due to the ongoing co-operative efforts of law enforcement agencies in Canada and the United States, including Environment Canada, Canada Customs, the New Brunswick Department of the Environment, the U.S. Environment Protection Agency and U.S. Customs.

The North American Working Group on Environmental Enforcement consisting of representatives from the three NAFTA countries (Canada, the United States and Mexico), has ongoing projects to facilitate effective enforcement and cooperation. Included in its achievements are:

- publication of the North American Directory of Hazardous Waste Enforcement Officials;
- publication of the catalogue of North American Environmental Enforcement Training Courses;
- joint sponsorship of border area meetings of enforcement and customs officials to explore avenues for improved regional capacity to track and respond to illegal trade in CFCs; and
- sponsorship of the May 1997 North American Conference of Hazardous Waste Enforcement Officials, during which an action plan was developed for addressing barriers to effective enforcement.

***Prosecutions initiated under the Canadian Environmental Protection Act during 1997-1998***

**PACIFIC AND YUKON REGION, PRAIRIE AND NORTHERN REGION, QUEBEC REGION - No prosecutions under CEPA were initiated during 1997-98**

**ONTARIO REGION**

<b>Name of Individual or Company</b>	<b>Offence Date or Location</b>	<b>Date Charged</b>	<b>Regulations and Alleged Offences</b>	<b>Court Date</b>	<b>Result</b>	<b>Penalty</b>	<b>Notes</b>
Prototype Circuits Inc. and Mohammed Zadeh	May 1996 - Nov. 1996	January 1998	CEPA, 11 counts under section 43(3) of CEPA, section 3(4) of the Export/Import of Hazardous Wastes Regulations. Alleged failure to file a notice to export. 11 counts under section 44(2) of CEPA, section 16(1)c of the EHW Regulations. Alleged export without written confirmation.	Sept. 14-18 1998			
Alcan Aluminium Limited carrying business as Alcan Recycling – Division of Alcan Aluminium Limited and Peter Dalla Via	Apr. 1995 - Aug. 1996	Mar. 12, 1998	CEPA, 60 counts Export/Import of Hazardous Wastes Regulations. Allegedly failed to file a notice to export and import without written confirmation.	Oct. 16 1998			

## ATLANTIC REGION

Name of Individual or Company	Offence Date or Location	Date Charged	Regulations and Alleged Offences	Court Date	Result	Penalty	Notes
M.V. Brandenburg St.John's Newfoundland	100 Nautical Miles south of Cape St.Mary's Newfoundland	Feb. 1998	CEPA, Ocean Dumping.	July 29 1998			
La Digue Fisheries Limited and Pierre LeBlanc P.O. Box 301 Cheticamp, Nova Scotia	September 25 1997	Mar. 27, 1998	CEPA, Ocean Dumping. Allegedly loaded and dumped herring offal without a permit.	July 19 1998	Guilty Plea to dumping	\$7 500 fine	Charges for loading for the purpose of dumping were dismissed
Cheticamp Packers (1991) Ltd. And their Directors Box 580 Cheticamp, Nova Scotia	September 25 1997	Mar. 27, 1998	CEPA, Section 103. Allegedly providing an Environment Canada inspector with false and misleading information regarding an activity regulated under CEPA.	July 19 1998	Charges were dismissed		
M.V. Atlantic Cartier	November 20 1997	Nov. 20, 1997	CEPA, Ocean Dumping	July 29 1998			
City Sales Ltd, New Brunswick	March- June 1993	May 20, 1997	CEPA section 103. Allegedly provide an Environment Canada inspector with false and misleading information regarding an activity regulated under CEPA and CEPA, Ozone- depleting Substances Regulations ,13 counts Allegedly export CFCs without a valid permit.	Feb 19 1998	Pleaded Guilty	\$20 000 fine	Charges under Ozone- depleting Regulations were withdrawn.

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## REPORT ON EQUIVALENCY AGREEMENTS

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CEPA provides for Equivalency Agreements where provincial or territorial environmental legislation has provisions that are equivalent to the provisions of a regulation under CEPA. In order to satisfy these agreements the provincial or territorial regulations must achieve an equal or equivalent effect to the federal legislation. Equivalency of provincial regulations is evaluated based on the following criteria: equivalent standards, citizen's request for investigations and equivalent penalties and enforcement provisions.

The federal government retains its responsibility for reporting annually to Parliament on the administration of equivalency agreements. Only one province, Alberta, has entered into an Equivalency Agreement with the federal government, as described below.

### **Agreement on the Equivalency of Federal and Alberta Regulations on the Control of Toxic Substances in Alberta**

This Agreement was signed on June 1, 1994. By virtue of the Agreement, on May 26, 1994, the Governor in Council declared that parts of the following federal CEPA Regulations did not apply in the province of Alberta:

- Vinyl Chloride Release Regulations;
- Secondary Lead Smelter Regulations;
- Pulp and Paper Effluent Chlorinated Dioxins and Furans Regulations; and
- Sections 4(1), 6(2), 6(3)(b), 7 and 9 of the Pulp and Paper Mill Defoamer and Wood Chip Regulations.

Provincial requirements, which achieve an equivalent effect to these CEPA Regulations, continue to be enforced by provincial officials. During 1997-98, pulp and paper mills were in full compliance with the defoamer regulations and the dioxin and furan regulations. Regarding the vinyl chloride regulations, there were a total of nine exceedences of vinyl chloride releases. Seven exceedences were above the limit of 10 ppm by volume and two of these exceedences were found to be over the daily (2 kilogram per day) limit. Regarding the seven exceedences by one vinyl chloride plant, Alberta Environmental Protection investigated the incidents and worked with company officials reviewing operating procedures, in an attempt to reduce the likelihood of similar future releases. Regarding the two incidents that were above the daily limit, Alberta Environmental Protection concluded that there was a due diligence defence on the part of the company for one of these incidents and closed the file with no enforcement actions planned. The second incident, was found to be due to operator error, and the company has undertaken to enhance operations to avoid future occurrences.

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## **REPORT ON ADMINISTRATIVE AGREEMENTS**

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Administrative Agreements are work arrangements between the federal, provincial and territorial governments to streamline their efforts in administering regulations. These agreements usually cover activities in the areas of inspection, enforcement, monitoring and reporting. Under an administrative agreement the federal and provincial government each retain their legal powers.

Environment Canada currently has administrative agreements with Saskatchewan, Quebec, Yukon and the Northwest Territories. In 1997-98, negotiations took place for administrative agreements with Ontario regarding the pulp and paper industry and with British Columbia for the renewal of the Pulp and Paper Agreement, which expired March 31, 1996. These agreements would cover certain regulations under both CEPA and the *Fisheries Act*.

## **Canada - Saskatchewan Administrative Agreement for the Canadian Environmental Protection Act**

This Agreement was signed and entered into force on September 15, 1994. The agreement covers the following CEPA Regulations:

- Pulp and Paper Mill Effluent Chlorinated Dioxins and Furans Regulations;
- Pulp and Paper Mill Defoamer and Wood Chip Regulations;
- Ozone-depleting Substances Products Regulations;
- Ozone-depleting Substances Regulations;
- Chlorobiphenyls Regulations;
- Federal Mobile PCB Treatment and Destruction Regulations; and
- Storage of PCB Material Regulations.

The agreement commits both governments to share information relating to the administration of their respective legislation, to assist them in meeting statutory reporting obligations on releases that violate the requirements of their respective legislation and on enforcement activities including inspections and investigations.

### **1997-98 ACTIVITIES**

#### *Training*

Two provincial pulp and paper inspectors received training for federal inspections under Environment Canada's Basic Inspector's Course.

#### *Releases*

Saskatchewan legislation requires immediate reporting of releases or spills of substances regulated by the province. Some substances, such as PCBs, which are regulated under CEPA, are also regulated by the province. In accordance with efforts under the Canada-Saskatchewan CEPA Administrative Agreement to avoid duplication of activities, the provincial spill team receives all reports related to unauthorized releases or spills, and then notifies Environment Canada of releases of substances that fall under the federal Act. The Saskatchewan Department of Environment and Resource Management (SERM) provides Environment Canada with an annual report on spills in the province. Since the signing of the agreement in 1994, there is improved federal-provincial coordination related to reporting of spills and release.

Provincial authorities received reports of 25 releases from electrical equipment that had the potential of containing PCBs. Only one was subsequently confirmed to contain PCBs. After examining the facts in this situation, the province concluded that the corrective actions taken, which included as a standard procedure the immediate cleanup of such spills, were appropriate and no further action by either government was required.



## *Compliance Promotion and Compliance Verification*

### ***PULP AND PAPER MILL EFFLUENT CHLORINATED DIOXINS AND FURANS REGULATIONS***

There are two large pulp and paper mills in Saskatchewan. One is a state-of-the-art zero liquid discharge and, since it produces no liquid effluent, the facility is not subject to the Pulp and Paper Mill Effluent Chlorinated Dioxins and Furans Regulations. The other mill is subject to the CEPA regulations, and the SERM has incorporated into the mill's permit the requirements of the Pulp and Paper Mill Effluent Chlorinated Dioxins and Furans Regulations. A joint Environment Canada-SERM inspection of the mill in March 1998 showed compliance with the requirements of the CEPA regulations. This was fruitful as it allowed both governments to simultaneously determine whether or not there was compliance with their respective requirements.

### ***PULP AND PAPER MILL DEFOAMER AND WOOD CHIP REGULATIONS***

Pulp and paper mills in Saskatchewan do not use products listed in these regulations. Consequently, no inspection activities occurred under the CEPA Pulp and Paper Mill Defoamer and Wood Chip Regulations.

### ***OZONE-DEPLETING SUBSTANCES REGULATIONS***

These CEPA regulations control manufacture, import, consumption and export of ozone-depleting substances. There is no manufacturing of ozone-depleting substances in Saskatchewan. In 1997-98, Environment Canada conducted inspections of a refrigerant distributor and three automotive facilities who distribute or use ozone-depleting substances. These facilities were found to be in compliance with the federal regulations.

### ***OZONE-DEPLETING SUBSTANCES PRODUCTS REGULATIONS***

The CEPA regulations prohibit the sale of small containers of ozone-depleting substances. The provincial regulations also cover the sale of small containers as well as certification of refrigeration technicians and requirements for recovery. As there is potential for duplication of effort related to the prohibition of the sale of containers, Environment Canada has focused its effort on sale of small containers and Saskatchewan has focused on certification and recovery activities. Federal inspectors conducted six inspections relating to small containers of ozone-depleting substances in 1997-98. No violations were found.

### ***CHLOROBIPHENYL REGULATIONS AND STORAGE OF PCB MATERIAL REGULATIONS***

The CEPA Chlorobiphenyls (PCB) Regulations deal with in-use equipment containing PCBs. The Storage of PCB Material Regulations require storage of PCB materials that are in excess of specified quantities, and also require that PCB containing equipment that is not in use for six months or more be stored in accordance with the regulatory requirements. Environment

Canada conducted eight inspections under the Chlorobiphenyls Regulations of in-use equipment containing PCBs in 1997-98. In the course of these inspections, CEPA inspectors identified equipment that had not been used for more than six months and that was required to be stored in accordance with the Storage of PCB Material Regulations. In these cases, letters setting out the minor violations involved were issued and the site re-inspected to confirm appropriate action had been taken.

In addition, Environment Canada conducted 20 inspections under the CEPA Storage of PCB Material Regulations, 13 of which took place at federal storage sites and seven at private sector sites. Of the 20 sites inspected, CEPA inspectors found seven sites to be out of compliance. Again, letters setting out the minor violations were issued. Follow-up on these letters confirmed that the facilities were brought into compliance. Saskatchewan was informed of all Environment Canada inspection activities at non-federal sites.

Environment Canada maintains the inventory of in-use PCB containing equipment in Saskatchewan, and also maintains the inventory of stored PCB-containing equipment and other materials and waste containing PCBs.

### **Canada - Northwest Territories Framework Agreement for Environmental Cooperation in the Northwest Territories.**

This is a general framework agreement which was signed on November 15, 1996 and which focuses on maintenance and improvement of current levels of environmental protection through co-operative efforts. It includes the following areas of cooperation:

- development of, and adherence to, policies, guidelines and standards;
- development of, and compliance with, legislation and regulations; and
- response to environmental emergencies in cooperation with all responsible agencies.

The two governments intend to implement cooperative activities through annexes to the framework agreement. However, in 1997-98, Environment Canada and the Northwest Territories did not negotiate any annexes, due to on-going discussions related to the Canada-wide Accord on Environmental Harmonization, under the auspices of the Canadian Council of Ministers of the Environment.

### **Agreement between the Government of Quebec and the Government of Canada in the Context of the Application in Quebec of Federal Pulp and Paper Mill Regulations**

This agreement focuses on regulations made under two different pieces of federal legislation, namely the *Fisheries Act* and CEPA, and federal-provincial interaction in their implementation. The purpose of the agreement, which was signed on December 16, 1997 and expires on March 31, 2000, is to provide a one-window approach for the administration of the various federal and Quebec regulations relating to the pulp and paper industry. The CEPA regulations are those that are relevant in the context of this report, and they are the Pulp and Paper Mill Effluent

Chlorinated Dioxins and Furans Regulations and Pulp and Paper Defoamer and Wood Chip Regulations. Seven pulp and paper mills in Quebec are covered under these two regulations. Quebec carries out inspections under the authority of its provincial regulations, and provides Environment Canada with any data that is relevant to the federal regulations. Environment Canada identifies any non-compliance issues relating to the federal regulations, and as it retains authority in the agreement to deal with violations, it determine what interventions is necessary. Environment Canada discusses with Quebec what actions the province may be taking under its regulations which may also result in the mills coming into compliance with the federal regulations.

### **Canada-Yukon Environmental Protection Accord**

The Canada-Yukon Environmental Protection Agreement was signed on May 16, 1995. Activities during 1997-98 under the agreement related to the enabling authority in section 7(3) of part I of CEPA, under which the Minister of Environment "may sponsor or assist in any research, studies or planning and development by any government, institution or person in relation to the quality of the environment or the control or abatement of environmental pollution."

Activities included:

- Environment Canada participated on advisory committees to the Government of Yukon for the development of standards for solid waste management and air emissions;
- information exchange through Environment Canada's NEMISIS electronic system to track enforcement activities (see p. 38);
- Environment Canada offered training to Yukon officials on sampling procedures; and
- Environment Canada and Yukon officials cooperated in carrying out, evaluating and reporting on a mock spill exercise to test preparedness of government agencies to deal with an environmental emergency. An effective state-of-preparedness for such emergencies is directly related to maintaining environmental quality and the control of environmental pollution.

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#### **Health Canada**

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