



*Canadian Environmental
Protection Act*

**CEPA ANNUAL REPORT:
APRIL 1999 TO MARCH 2000**



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Canadian Environmental Protection Act

**CEPA ANNUAL REPORT:
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MINISTER'S MESSAGE

The *Canadian Environmental Protection Act* (CEPA) annual report covers achievements and activities under Canada's first comprehensive environmental protection act for the period April 1, 1999 to March 31, 2000. On March 31, 2000, the *Canadian Environmental Protection Act, 1999* came into effect, replacing the original 1988 law with legislation that provides stronger powers and new tools to protect the environment and human health.

The achievements covered by this annual report focus on both the continued implementation of the original CEPA and the preparations for the implementation of the renewed CEPA.

Canadians have even better access to environmental information

For several years, Environment Canada's Green Lane has been providing Internet users with an extraordinary resource. On the Green Lane, you will find, for example, the results of research studies, pollution prevention strategies, and information about the state of the environment. In 1999, an Environmental Registry was developed to offer Web site visitors a user-friendly, up-to-date access to CEPA-related public documents, such as regulations, notices, orders, policies, agreements and the current toxic substances lists. This site was launched on March 31, 2000. It is meant to help members of the public to find more about how the Department is putting CEPA, 1999 into effect, as well as about environmentally wise actions they can adopt. I encourage Canadians to look to our CEPA Web site (www.ec.gc.ca/CEPARegistry) for quality information about Canada's environment.

More resources mean better results

Through the February 2000 Budget, the Government of Canada has made an important investment in a number of areas that relate to CEPA. It has allocated \$40 million of new funds over the next five years to strengthen the enforcement of environmental protection laws. It has also established two funds to assist Canadian communities to improve the environment and existing infrastructure and to encourage less polluting public transportation options. The Green Municipal Enabling Fund and the Green Municipal Investment Fund are both managed by the Federation of Canadian Municipalities. These new resources build on the resources given in previous budgets for risk assessment, the management of toxic substances under CEPA and research to support these activities.

Finally, the Government of Canada has announced on February 19, 2001, an additional \$120 million to support our clean air agenda, specifically to address commitments made under the Canada-United States Ozone Annex. This includes a regulatory plan for cleaner vehicles and fuels, strengthened air quality monitoring and public reporting, as well as work to reduce emissions from the industrial sector. CEPA, 1999 provides us with an effective statutory foundation for this work.

We all want clean air, clean water and a safe environment

Canadians want to be able to trust that the air we breathe and the water we drink is safe for us. We want to feel secure that our environment is healthy and will sustain us. The new CEPA gives the Government of Canada new tools to make this wish a reality. I encourage you to look at the new Act and to consult the Registry to find out what is being done today and also what you can do to be part of the solution.



David Anderson, M.P., P.C.
Minister of the Environment

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SECTION 1: OVERVIEW OF CEPA IMPLEMENTATION, 1999–2000

“It is hereby declared that the protection of the environment is essential to the well-being of Canada...” These first words of the *Canadian Environmental Protection Act* (CEPA) set the context for the 149 sections that follow. The essential purpose of the law is to protect human health and the environment from the effects of toxic substances and other harmful substances and wastes.

CEPA and its regulations are one of the legislative tools that the federal government uses to prevent and control pollution. Environment Canada administers CEPA on behalf of the federal government and shares with Health Canada the task of assessing and managing the risks associated with toxic substances.

This year’s CEPA annual report is the last report to cover work accomplished under the original CEPA. Next year’s annual report will cover the first year of activity under *Canadian Environmental Protection Act, 1999* (CEPA, 1999).

Implementation of CEPA involves the following cycle of activities:

- *Risk Assessment* — The starting point for CEPA activity is science. Throughout the risk assessment phase, science informs decisions about how to classify substances.
- *Development of Risk Management Strategies* — Based on the scientific information available, we are able to work with stakeholders to determine how best to manage certain

substances and what kinds of controls are required. Involving other government departments, other levels of government, industry and non-governmental organizations in this process has proved to be an excellent way of doing business. We can explain the scientific assessment of a substance, increase awareness and understanding of the issues involved, learn more about the real-world factors at play and then work toward a consensus on recommendations for action. The results contribute to an improved implementation process.

- *Implementation of Risk Management Strategies* — CEPA provides a variety of mechanisms for achieving the goal of environmental protection. Objectives and guidelines, covered in Part I, set benchmarks; Part II provides for regulatory measures; while enforcement options, covered in Part VII, identify penalties for the failure to comply with the law and its regulations. We continue to explore ways to ensure that controls and limits on the production, use or release of toxic substances are respected.
- *Monitoring* — Again, science helps us to assess the effect of the measures that have been taken. Are the controls working? What else needs to be done? Is there an acceptable level of compliance

There is no doubt that the most significant achievement during 1999–2000 was the completion of the legislative process that resulted in a stronger, more dynamic and responsive Act. CEPA, 1999 came into force on March 31, 2000.



with guidelines, or do regulations need to be put in place? Other essential CEPA-related activities include monitoring the state of the environment and reporting on it so that stakeholders can participate in the evaluation of current efforts.

It is clear that the work undertaken in the context of CEPA is extremely broad. There are, in fact, many challenges associated with reporting on CEPA in any given fiscal year. The enormous volume of work to consider for the annual report means that difficult decisions have to be made about what to include. As well, it is sometimes hard to distinguish between departmental activity related to CEPA and other departmental accomplishments. Finally, many projects run over several years, as they move through the risk assessment, risk management, implementation and monitoring cycle.

The pages that follow present an overview of the activities that took place between April 1, 1999, and March 31, 2000, the day CEPA, 1999 came into effect.

- Section 2 presents information on the implementation of each of CEPA's seven major parts.
- Section 3 details some of the work that the Department did to get ready for the coming into force of CEPA, 1999.
- Section 4 provides resource information.

We encourage readers to refer to the Web sites referenced throughout this report for more information about items of interest to them.

SECTION 2: PART-BY-PART REPORT ON CEPA IMPLEMENTATION, 1999–2000

Part I Environmental Quality Objectives, Guidelines and Codes of Practice CEPA Sections 7–10

Part I authorizes the Minister to undertake scientific research relating to environmental pollution and to set objectives, guidelines and codes of practice relating to the quality of the environment.

Scientific Research and Development: The Foundation of CEPA Implementation

Through scientific research and development, we can evaluate the impact of toxics, including substances developed through biotechnology, on the environment and human health, determine minimal-risk exposure levels to contaminants, monitor changes to the environment over time and develop solutions to problems. Scientists look for ways to minimize the risk associated with exposure to contaminants. Without this knowledge, we would not know when to set limits on the use of a substance, what limits to set, how to prevent or clean up problems, or how to replace the substance with another that has fewer, and preferably no, damaging qualities.

A wide range of scientific work supports the implementation of CEPA. This work falls into four broad categories:

- monitoring,
- research and development,
- testing, and
- advice.

Monitoring

Monitoring changes in the environment and in relevant human indicators is essential for assessing the impact of toxics and the

effectiveness of measures meant to minimize environmental damage and real and potential threats to human life. While resources for large-scale, national monitoring programs have declined during the last 10 years, monitoring remains an important component of the scientific work supporting the implementation of CEPA. During 1999–2000, ongoing environmental monitoring continued through the following main efforts:

- *National Air Pollution Surveillance (NAPS) Network* — This joint federal–provincial program, established in 1969, monitors the quality of ambient air in Canadian urban centres. There are over 239 monitoring stations in 136 municipalities throughout the country. In 1999–2000, monitoring focused on the “criteria pollutants”: sulphur dioxide (SO₂), carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), and total suspended particulates. Data were also collected on other pollutants, including particulate matter with an aerodynamic diameter of less than 10 microns (PM-10), particulate sulphate, particulate nitrate and over 100 organic compounds. The NAPS annual data reports for 1997 and 1998 were published on the Internet as downloadable files; both reports are also available in hard copy.

www.etcentre.org/main/e/pubs/biennial/birepmain.html

- *Ecological Monitoring and Assessment Network (EMAN)* — Environment Canada is the coordinating partner in a national network of more than 140 agencies conducting long-term, multidisciplinary environmental assessment work. The network compiles material from over 100 sites across the country. The annual Network National Science Meeting, held in Victoria in January



1999, brought together over 400 participants from across Canada to discuss research findings and to explore new directions for cooperation and partnership in ecological and monitoring activities. The network's Web site promotes monitoring activities and provides tools for training, observation reporting and data management. It is one of the most popular Environment Canada sites.

www.cciw.ca/eman

- *Arctic Monitoring and Assessment Programme (AMAP)* — The National Water Research Institute (NWRI) continued its internationally recognized research program on the distribution, fate and effects of persistent organic pollutants (POPs) in Canada and the circumpolar Arctic. Researchers have collected data on pesticides in Russian rivers; on contaminants in the Arctic Ocean from Russian rivers; on polychlorinated biphenyls (PCBs) and organochlorine pesticides in Greenland walrus; and on circumpolar trends of POPs identified by studying ringed seals. One finding is that there are higher levels of PCBs in the Russian Arctic and of hexachlorocyclohexane in the Canadian Arctic.
- *Integrated Atmospheric Deposition Network (IADN)* — This joint Canada–United States program was established under Annex 15 of the Great Lakes Water Quality Agreement and has been in operation since 1990. It monitors the wet and dry deposition into the Great Lakes Basin of various priority toxic substances (for example, PCBs, lead, benzo(a)pyrene, hexachlorocyclohexane and other organochlorine compounds). The data are used to determine the atmospheric loadings and trends (spatial and temporal) of these substances. The IADN also estimates gas exchange of some of these substances with the lake surfaces, and attempts to identify the sources of the continuing input of these chemicals.

www.epa.gov/glnpo/iadn

- The NWRI has established a new long-term program to monitor trends in predatory fish in Great Slave Lake. The program will focus on POPs but will include mercury, arsenic and selenium. Studies are also assessing POPs trends in other freshwater systems in the high Arctic. As well, lake sediment cores are being collected in the Canadian Arctic to learn more about the sources, long-range transport and impact of new and old organic pollutants. Environment Canada's Pacific and Yukon Region is assessing atmospheric sources of POPs in the fish of lakes and reservoirs in the Georgia Basin.
- Pacific and Yukon Region completed the report *Water Quality Trends in British Columbia Waterbodies*. This report, prepared in partnership with the Province of British Columbia, summarizes the trends and status of water quality in 68 water bodies in the province. Variables monitored since 1985 include metals, nutrients and bacteriological indicators. The majority of sites had no observed changes or showed improving water trends. However, 10% of the surface water sites and 20% of the groundwater sites exhibited deteriorating trends. In addition, some sites with no changes displayed conditions that did not meet established water quality objectives or guidelines. Monitoring at many of the sites will continue and will be conducted largely under the auspices of a federal–provincial water quality monitoring agreement.

State of the Environment Reporting

There are four principal components to the federal government's "New Vision for Reporting on the State of the Environment":

- 1) environmental indicators,
- 2) State of the Environment (SOE) reports based on science assessments,
- 3) ecological monitoring, and

Researchers from Environment Canada are working with other experts in Canada and around the world to learn more about the presence and extent of contaminants in Arctic ecosystems. The research, under the AMAP, has focused on the scientific assessment of POPs in the circumpolar Arctic. Scientists involved in this northern contaminant research not only publish their work in scientific journals but also bring the information back to the North to share it with the people who are directly affected by these substances in their environment. During a tour of the eastern Arctic, organized by Indian and Northern Affairs and Inuit Tapirisat of Canada, scientists presented results from their work on POPs and metals in marine mammals and birds. The meetings provided information on wildlife health, on the benefits of eating local wild foods and on methods to minimize exposure to substances.

4) Canada's State of the Environment Infobase on the Green Lane, which provides public access to a variety of information.

on developing new indicators on smog, seabirds, climate change and water use.

www.ecoinfo.org/env_ind

1) Environment Canada continues to produce environmental indicators in the National Environmental Indicator Series. During 1999–2000, the following environmental indicator bulletins were released: *Urban Air Quality*; *Stratospheric Ozone Depletion*; *Acid Rain*; and *Sustaining Canada's Forests: Timber Harvesting*. Work continued on developing new national indicators on the environmental sustainability of Canada's agricultural soils.

2) Two State of the Environment (SOE) reports were published this year. The reports carry the new symbol for SOE reports to indicate that they meet the federal SOE reporting guidelines.

Forest Health in Canada: An Overview, produced by Natural Resources Canada, was released in December 1999. The report is available free from the Atlantic Forestry Centre, Canadian Forestry Service, 506-452-3500. *The Health of Our Water: Toward Sustainable Agriculture in Canada* was produced by Agriculture and Agri-Food Canada in March 2000 and is available electronically.

The National Environmental Indicator Series is available in hard copy and electronically on the State of Canada's Environment InfoBase Web site.

www.ec.gc.ca/soer-ree/english/national/indwelc.cfm

res2.agr.ca/research-recherche/science/Healthy_Water/toc.html

Environment Canada's Pacific and Yukon Region posted five new regional indicators on its Web site during 1999–2000. These included indicators on Trumpeter Swans, Bald Eagles, Pesticide Poisonings in Raptors, Toxins in Great Blue Heron Eggs, and Nitrate Levels in the Abbotsford Aquifer. Five existing regional indicators were updated with new information. The regional indicator Web site now reports on 14 indicators, and work is continuing

In addition, *The State of the Great Lakes 1999* was released by Environment Canada's Ontario Region and the United States Environmental Protection Agency in 1999.

www.on.ec.gc.ca/glimr/data/state-of-the-lakes/99



This symbol means that a document meets federal guidelines for State of the Environment reporting. Around the map of Canada, the words read "Contributes to reporting on the state of Canada's environment/ Contribue aux rapports sur l'état de l'environnement au Canada."



- 3) The Ecological Monitoring and Assessment Network (EMAN) is part of the “New Vision” for SOE reporting. Scientists and others have identified core variables that will provide an early warning of changes to ecosystem health. The goal is to have all EMAN partners across the country monitor these variables at the representative environmental monitoring sites they operate. To this end, two reports were produced: *A Comparison between the EMAN Core Monitoring Variables and Monitoring Activities at EMAN Sites* and *EMAN Core Monitoring Variables Field Methods Manual: A First Approximation*. An environmental monitoring survey was launched to help identify which other Environment Canada programs currently monitor these core variables.

www.cciw.ca/eman/intro.html

- 4) Environment Canada redesigned its State of Canada’s Environment Infobase Web site on the Green Lane, which has been online for four years, to improve access to environmental and ecological information and reports. The public can now access SOE-related information using different filters — national and regional. Principal information categories include the National Environmental Indicator Series; SOE reports; ecosystem status and trends; advisories on the most recent results of ecosystem monitoring and research; early warning advisories, which will include information on emerging trends in Canada’s ecosystems; and tools, including the National Ecological Framework. This framework provides a consistent, national context within which ecosystems can be described and monitored. Links connect to other Internet sites, such as ones put up by EMAN and Environment Canada’s Pacific and Yukon Region, and ones offering information about SOE reporting and about programs managed by one of the five natural resources departments (5NR) with an interest

in science and technology related to sustainable development.

www.ec.gc.ca/soer-ree

An interactive software package on sustainability community indicators helps communities to develop indicators to assess and monitor their progress toward sustainable development. It also facilitates the exchange of indicator-related information.

The Canadian Council of Ministers of the Environment (CCME) oversaw the development of a national water quality index to standardize and simplify reporting on water quality trends across Canada. This index, modified from one used in British Columbia, was tested by Alberta, Ontario and several other provincial jurisdictions. The Environmental Quality Branch (Environment Canada) will be investigating the national application of the index as a state of the environment reporting tool over the next few years.

Research and Development

It is impossible to describe all the CEPA-related research and development work that was completed or begun in the period covered by this annual report. The following section categorizes the types of research and development work undertaken and provides examples of some important projects and their results.

In general, scientific research and development related to CEPA can be grouped into four categories:

- *Classification of substances*: Is it toxic? In what situations? At what levels?
- *Detection of substances*: Is it present? At what concentration?
- Development of cost-efficient tests for substances: Is this test accurate and reliable?
- Reduction in the use, release or presence of toxic substances: Does this measure work?

The Index: Tracking Water Quality in Canada

The national water quality index is a tool to translate complex technical water quality information into a simple description of the state of water quality. The index divides water quality into categories — excellent, good, fair, poor — and describes its suitability for various uses — drinking water, recreation, irrigation, aquatic life, livestock watering. The index incorporates the CCME Water Quality Guidelines, which note the level of a substance that, according to scientific studies, would make a particular water use unacceptable. The index takes the wealth of technical information currently available and makes it accessible to the public and to managers of water resources by providing a report card on the quality of water in individual bodies of water throughout Canada.

Classification of Substances

One of the main activities under CEPA is the identification and categorization of some widely dispersed substances as toxic to the environment or human life. Solid scientific research is essential to the ongoing process of identifying and classifying toxic substances. This work leads to the development of guidelines, objectives and codes of practice for the acceptable use and disposal of substances and, when necessary, to the creation of policies or regulations to control their use and disposal. Following are some examples of 1999–2000 research relating to the classification of substances:

- Endocrine-disrupting substances (EDS) interact with the hormone-producing systems of many species, resulting in adverse effects on growth, development or reproduction. During 1999–2000, Health Canada and Environment Canada scientists made a significant contribution to the development of a science strategy to assess the impact of EDS on humans and ecosystems. There are about 50 research studies on EDS being conducted or supported by the Wastewater Technology Centre, the NWRI or the National Wildlife Research Centre in communities across the

country. Many of these studies received funding from the Toxic Substances Research Initiatives. As well, through participation in a working group of the Organization for Economic Cooperation and Development (OECD), scientists were able to ensure that Canadian perspectives were included in international work to develop screening and testing methods.

- The NWRI is collaborating on EDS research projects throughout Canada. For example: British Columbia — analysing the presence of EDS in the atmosphere and precipitation in the lower Fraser Valley; Alberta — determining the extent of endocrine disruption in fish populations downstream from pulp mills; Ontario — studying the effects of refinery and municipal effluents on trout; New Brunswick — assessing the ability of natural and synthetic hormones and hormone mimics (such as nonylphenol) to affect Atlantic salmon; and Prince Edward Island — determining the impact of pesticide residues from potato fields on hormonal balances in fish.

To prepare for the implementation of subsection 44(4), CEPA, 1999, Environment Canada and Health Canada, in partnership with other federal natural resources departments, organized a workshop in February 2000 to establish a national science agenda on EDS. Participants discussed current Canadian research and approaches to risk assessment, reviewed international activities and identified knowledge gaps.



- On the international front, the NWRI contributed expert knowledge on field monitoring of endocrine disruption to a newly published book on endocrine disruption in invertebrates. The book is the first compendium on the subject, with information on physiology, testing methods, field approaches and case studies.

Environment Canada's Pacific and Yukon Region, in partnership with Simon Fraser University, is conducting research to determine if the health and development of fish and crayfish are affected by stream waters that receive run-off from agricultural or urban activities. The research is assessing the presence of contaminants, for example suspected EDS, in the stream waters and identifying how fish and crayfish respond to these substances, using indicators such as the presence of ovarian tissue in male testes. This research is supported by the Region's Georgia Basin Ecosystem Initiative.

Other research supported by the Georgia Basin Ecosystem Initiative concerns the concentration of airborne toxins in air and precipitation in the lower Fraser Valley of British Columbia. Surveys of metals and polycyclic aromatic hydrocarbons (PAHs) in mosses, invertebrates and amphibians are underway on the forested slopes of the Coast Range mountains to assess the impact of atmospheric depositions of nitrogen, sulphur, metals and PAH pollutants emitted from the Vancouver area. The analysis of this new data with existing data on air quality, water quality and chemistry in plants will be used to evaluate potential biological impacts.

Information on clean air and clean water projects and other projects related to ecosystem health can be found at the Georgia Basin Web site.

www.pyr.ec.gc.ca/GeorgiaBasin

The Environmental Technology Centre managed several projects to assist in determining acceptable levels for CEPA substances:

- The Centre completed studies on the Level of Quantification for Hexachlorobenzene (HCB)

in soil, ash and solvents and polychlorinated dibenzodioxins and dibenzofurans (PCDD/F) in soil, ash and stack emissions in support of the Toxic Substances Management Policy (TSMP) on the virtual elimination of CEPA Track 1 substances. The final report, "Level of Quantification Determination: PCDD/F and Hexachlorobenzene," is posted on the Environment Canada Web site.

www.ec.gc.ca/dioxin/english/index.cfm

- The Centre coordinated federal input to a Canada-wide Standard for Petroleum Hydrocarbons (PHC) in Soil. The work included co-chairing a national multistakeholder workshop; preparing the draft Canada-wide Standard Ministerial Agreement; chairing the Analytical Development Technical Advisory Group; developing a draft national analytical reference method for PHC in soil; coordinating research and development on eco-toxicity testing of PHC; and developing and applying a technique to generate fractions for exo-toxicity testing.
- The Centre finalized and published a sediment toxicity test reference method for the *Ocean Disposal Regulations*.

During 1999–2000, the NWRI organized a meeting of experts to develop a common understanding of potential risks to ecosystems, wildlife and biodiversity from genetically modified organisms (GMOs) used in sectors such as agriculture, forestry and fisheries. The participants worked to identify areas of uncertainty in the environmental risk assessment of GMOs and areas where Environment Canada could and should be involved. They took the first steps in developing a strategy and action plan for Environment Canada to implement to ensure that these organisms are used in an environmentally sustainable manner.

Health Canada has several important groups of studies relating to the classification of substances.

- Experiments are being conducted to identify the specific components of particulate matter as determinants of acute and chronic toxicity. Major research efforts during the last years suggest that both soluble and insoluble fractions of particles may have a serious effect on lungs and hearts. A project funded by the Toxic Substances Research Initiative involving researchers from Health Canada, University of Ottawa, University of Manitoba and the Centre de Recherche du Centre Hospitalier de l'Université Laval is studying this effect using animal and cell culture models. Additional studies by Health Canada and the Gage Institute (University of Toronto) are making the links to humans. New biomarkers are providing clues on the effects of ambient particles on health.
- Testing is underway to assess the mutagenicity of metabolites of 1,3-butadiene, a Priority Substances List 2 (PSL2) chemical, in mouse cells using a transgenic marker gene. Health Canada, through funding provided by the Toxic Substances Research Initiative, is also assessing the ability of air pollutant chemicals to induce micro-satellite instability (changes in the DNA sequencing in lung cells) and determining if this form of genetic instability has the potential to cause adverse effects on health.
- The potential for children to develop neurological disturbances when they have been exposed to POPs has become a serious health concern. Some POPs are on the Priority Substances List 1 (PSL1) and on Track 1 of the Toxic Substances Management Plan. A Health Canada study is investigating effects on the offspring of rats that have been exposed to a reconstituted mixture of organic pollutants, similar to that of a human exposure scenario. Studying functional, neurochemical, molecular biological and morphological effects in a controlled laboratory setting will help in the assessment of health hazards of POPs and the development of guidelines and health advisories for at-risk populations, particularly children and Aboriginal peoples living in the North.
- Exposure to mixtures of chemicals could have more deleterious short and long-term health effects than exposure to a single chemical. Therefore, studies were initiated to: (1) identify appropriate regulatory testing strategies for endocrine disrupters; (2) test the short and long-term toxic effects of *in utero* and neonatal exposure to mixtures of POPs; and (3) assess if the safety guidelines established for single chemicals are still adequate when a person is exposed to a mixture of compounds. Studies are being conducted on male and female rodents, testing for adverse effects on normal development, the reproductive and thyroid system, and the risk to develop breast cancer and prostate dysfunction. These investigations are in part funded by the Toxic Substances Research Institute and are performed in collaboration with the University of Ottawa, Université du Québec, University of Toronto, McMaster University, and Fox Chase Cancer Center (Pennsylvania, USA).
- In order to reduce uncertainties caused by using toxicity data in animals to predict effects in humans, scientists in Health Canada have developed expertise in physiologically based pharmacokinetic modelling, which permits direct extrapolation of animal data to humans using physiological parameters such as organ size, heart rate and blood flow.
- Collaborative research between Health Canada and the University of Toronto has delineated underlying mechanisms of toxicity of formaldehyde, a PSL2 chemical. It has also demonstrated interactive effects between methanol, ethanol and formaldehyde. These results indicate the need to develop exposure guidelines for mixtures because of interactive effects among the chemicals.

Detection of Substances

One of the areas of rapidly evolving research is the technology associated with monitoring and



controlling the release of substances to the environment.

The NWRI developed and used a sensitive new method for the analysis of bisphenol A (BPA) to assess the extent of BPA contamination in sewage treatment plants and pulp and paper mills across Canada and in some industrial sites in the Toronto area. BPA is a compound widely used in the manufacture of many plastic products and a toxic and endocrine-disrupting substance. It appears to be widespread in the environment. Further work is being conducted on its occurrence in the environment, and Environment Canada scientists are planning to evaluate its impact on aquatic organisms.

The microwave-assisted process (MAP™) liquid-phase extraction for analytical sample preparation, developed by the Environmental Technology Centre, is now an official Environment Canada and United States Environmental Protection Agency reference method. The method can be used for the determination of over 100 analytes, including semi-volatile organic compounds, organophosphorus pesticides, organochlorine pesticides, chlorinated herbicides, phenoxy acid herbicides, substituted phenols, PCB and PCDD/F, in solids such as soils, clays, sediments, sludge and other solid waste. Commercial equipment capable of performing the method is already available through two licensees.

Through its labs at the Environmental Technology Centre and Wastewater Technology Centre, Environment

Canada continues to provide financial support for university research on the development and validation of laboratory techniques for predicting the survival and gene flow of genetically modified microorganisms prior to their release into the environment. In addition, the Wastewater Technology Centre is working on the development of microbial techniques for detecting the presence of waterborne pathogens in an aquatic environment. These activities support both regulatory development and enforcement.

Development of Cost-Efficient Tests for Substances

Cost-effective and scientifically reliable tests are essential for the ongoing monitoring of substances in the environment and for checks on particular substances. Here are some examples of tests developed by Environment Canada and Health Canada scientists that relate to the implementation of CEPA:

- Transgenic mutation assays are being evaluated by Health Canada to determine if they can be used in the testing of new substances.
- Technology developed under contract to Health Canada to measure changes in chromosome number in human sperm has been adapted for use in mice. In a project funded by the Toxic Substances Research Initiative, the method is being used to measure the induction of aneuploidy in mice exposed to trichloroethylene and its metabolites.

The Toxic Substances Research Initiative (TSRI) is a \$40 million program managed by Health Canada and Environment Canada, which was launched in 1998. The research funded by the TSRI will help to protect the health and environment of Canadians by gathering an improved knowledge of toxic substances and their adverse effects. The TSRI enhances existing research partnerships and fosters the development of new collaborations between non-government and federal government researchers to focus on emerging issues.

Technology at Work

The Environmental Technology Centre is providing support to a MAP™ (microwave-assisted process) licensee to demonstrate the potential use of MAP™ as a clean industrial process that reduces greenhouse gas (GHG) emissions. Another goal is to find a substitute for the solvent hexane, a GHG contributor, which is currently used for canola oil production.

The Environmental Technology Centre assisted with a variety of testing projects:

- it provided proficiency testing samples to the Canadian Association of Environmental Analytical Laboratories (CAEAL) for their accreditation programs on anions and trace metals on air filters and PCBs in oil. Auditors supported Standards Council of Canada and CAEAL laboratory audits, including 10 audits for biological testing methods.
- research and development work continued on the development of an airborne laser-acoustic sensor to measure oil slick thickness remotely. The prototype sensor was modified to include a new photo-refractive crystal detector, which was mounted in a new support structure in an aircraft.

A transgenic murine model has been established and is routinely used to assess genotoxicity of CEPA toxics. Another molecular-based, multigene array assay, addressing the detection of tumor-promoting chemicals, is in the final stages of validation. Also, laboratory and field research is being conducted to validate new methods for characterization (assessing quality), detection of exposure and effects in the environment and in humans to microbe-based biotechnology products.

In 1999–2000, the Canadian Biotechnology Strategy supported the completion of two key projects, which addressed immune effects in migrant worker exposure (with University of Cincinnati Medical Center, Ohio, USA) and validation of a model for screening pathogenic effects of microorganisms. These detection methods were also used to support acquisition of data from provinces and other federal departments

on identification, quantification and movement of pesticides in the environment.

Reduction in the Use, Release or Presence of Toxic Substances

Research and development can identify ways to reduce or avoid the use, release or presence of substances that may have a harmful effect on the environment or human health.

Testing

Sample tests are used to establish the presence of toxic substances and verify compliance with CEPA regulations. In 1999–2000, the Environmental Technology Centre:

- performed stack sampling in support of inventory development and strategic options planning to evaluate emissions from a variety of sources including three active landfills, conical waste incinerators, coal-fired power plants, federal heating plants and gas flaring stacks
- analysed legal samples for Environment Canada regional offices. The analyses included samples collected by regional inspectors regarding the levels of dioxins under the *CEPA Pulp and Paper Mill Effluent Regulations*; levels of dioxins and furans under the *CEPA Defoamer and Wood Chip Regulations*; and PCBs under the various CEPA regulations concerning the production, use, storage, disposal, export and discharge of PCB-containing materials.

Advice

An important contribution to pollution prevention is the sharing of expertise — internally, among regional and national offices of Environment



Canada, and externally, with other federal and provincial government departments, the regulated public, international agencies and foreign governments.

Environment Canada maintains an extensive Web site, which is a major source of CEPA-related information.

www.ec.gc.ca

In addition, as required by section 12, CEPA, 1999, an Environmental Registry has been set up to meet the commitment to encourage and support public participation. On June 14, 1999, the CEPA Registry Office began the design and development of a Web site prototype to provide user-friendly, up-to-date online access to CEPA-related public documents, including the Act, regulations, notices, orders, policies, agreements, plans and substances lists. The Environmental Registry was developed in consultation with Environment Canada and Health Canada organizations responsible for the implementation of CEPA, 1999. Stakeholders also provided input through workshops and other public events. The Web site was launched on March 31, 2000.

www.ec.gc.ca/CEPARegistry

The Environmental Technology Centre prepared a handbook on the *in situ* burning of oil spills. The handbook provides guidance to contingency planners and emergency response units who may have to respond to an oil spill situation.

Objectives, Guidelines and Codes of Practice

Environmental Quality Guidelines and Objectives

Environmental quality guidelines and objectives are established under CEPA Part I for air, water (freshwater and marine), tissue, sediment and soil. In addition, Environment Canada participates in the development of Canadian environmental quality guidelines under the Canadian Council of Ministers of the Environment (CCME). These guidelines are widely used across federal, provincial and territorial jurisdictions for

assessing the status and trends of environmental contamination in water bodies and for managing toxic substance risks in the environment. Guidelines specify a limit or concentration of a substance in the environment that is recommended in order to protect and sustain the environment and its uses. In the case of persistent and bioaccumulative toxic substances, guidelines may be used as “action levels” — interim management objectives that assist with tracking progress toward the virtual elimination of the substances.

www.ec.gc.ca/ceqg-rcqe

During 1999–2000, a significant concerted effort took place to launch the compendium on Canadian Environmental Quality Guidelines under the auspices of the CCME. Guidelines are developed for all media (water, sediment, soil and tissue), resource uses (irrigation and livestock watering) and land uses (agricultural, residential, commercial and industrial.) In 1999–2000, eight national guidelines were finalized and approved, and eight were under development:

Water Quality Guidelines

Finalized: ammonia, aluminum, reactive chlorine species, inorganic fluorides, and mercury

Initiated: nonylphenols and its ethoxylates, nitrates/nitrites, and phosphorous

Work in progress: revised guidelines for metals — copper, selenium, and silver

Sediment Quality Guidelines

Finalized: dioxins and furans

Initiated: nonylphenols and its ethoxylates

Soil Quality Guidelines

Assessment finalized: petroleum hydrocarbons

Initiated: nonylphenols and its ethoxylates, dioxins and furans

Work in progress: selenium and uranium

Tissue Quality Guidelines

Finalized: dioxins and furans

Work in progress: risk assessment of mercury to Canadian wildlife

Sydney Tar Sands Clean-up

Cleaning up the pollution at the Sydney Tar Sands is a huge challenge. The Environmental Technology Centre has evaluated innovative processes for treating the contamination using bench-scale testing samples. The next phase involves field-scale testing of the technologies that provided the best results in the laboratory.

Environment Canada's Research Facilities

- Environmental Technology Centre
 - monitors air quality through the NAPS Network
 - provides science and analysis in support of regulations
 - conducts mobile and stationary emissions measurement research, as well as audits
 - supports quality laboratory management (for example, Good Laboratory Practice)
 - develops chemical and biological test methods
 - contributes to science and technology outreach
- Wastewater Technology Centre*
 - develops and assesses novel wastewater treatment technologies
 - investigates applications of environmental genomics and DNA microassay technology
 - develops the MAP™ family of technologies and other technologies that have a high potential for reducing waste and greenhouse gas emissions
 - provides analytical support to selected Environment Canada programs (for example, EDS) as well as technical support to developing protocols for substances added to the PSL and methods in support of Wastewater Technology Centre programs
 - provides outreach, including intellectual property management, technology transfer and protocol development for technology verification programs
- St. Lawrence Centre
 - works to support the St. Lawrence Vision 2000 Project to protect and conserve the St. Lawrence River ecosystem
- National Wildlife Research Centre
 - studies the impact of toxic substances on wildlife
- Climate and Atmospheric Research Directorate
 - studies the levels and movements of pollutants in the atmosphere

* From 1994 to 1999, the Wastewater Technology Centre was operated as a government-owned, company-operated facility. Environment Canada retook possession of the Centre in mid-1999, refurbished its laboratories and redefined its mandate.



Two Important Resource Materials

Canadian Environmental Quality Guidelines 1999

This multimedia document summarizes environmental toxicity data and environmental quality guidelines for over 200 substances in air, soil, water, sediment and tissue residue for the protection of both human and environmental health. It is published by the CCME in hard copy and on CD-ROM and is the most comprehensive compilation of environmental quality guidelines in the world.

www.ec.gc.ca/ceqg-rcqe

A Compendium of Environmental Quality Benchmarks

Environment Canada's Pacific and Yukon Region has prepared, under the Georgia Basin Ecosystem Initiative, a collection of guidelines, criteria, objectives and standards from 33 countries. The document contains up-to-date benchmarks for 1200 variables, including chemicals, bacteria and physical characteristics, divided into three sections for water quality, sediment quality and tissue residues for freshwater and marine systems. The compendium is available on CD-ROM and on the Internet.

www.pyr.ec.gc.ca/GeorgiaBasin/reports/EIAS_Report_E.htm

The CEPA Federal–Provincial–Territorial Working Group on Air Quality Objectives and Guidelines (WGAQOG)

The WGAQOG consists of representatives of both environment and health departments. The group reviews scientific information and prepares recommendations for National Ambient Air Quality Objectives. Science-based guidance is also provided to support the development of Canada-wide Standards. The group was formed to support the CEPA Federal–Provincial Advisory Committee (subsequently the National Advisory Committee under CEPA, 1999).

1999–2000 achievements:

- In 1999, Health Canada and Environment Canada, through the WGAQOG, published the Science Assessment Document for ground-level ozone. This document contains a broad review of the scientific issues, including identification of the lowest levels at which effects have been demonstrated for human health, and provides a risk characterization for human health, vegetation and materials. The group also published the non-monetary risk and benefit analysis for particulate matter (PM Addendum).

- The WGAQOG completed stakeholder consultations for the non-monetary risk and benefit analysis of ground-level ozone. The risk and benefit analysis will be revised to reflect the input of stakeholders. This work will ultimately be published as an Addendum to the Science Assessment Document for ground-level ozone.

The WGAQOG has revised and updated the Science Assessment Document for Total Reduced Sulphur in the context of peer review comments.

Part II Toxic Substances CEPA Sections 11–48

Part II contains provisions to reduce the risks posed by existing substances found in Canada or new substances coming into Canada.

As defined in CEPA, a substance is “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.”* (Section 11)

Part II also authorizes the regulation of the import and export of hazardous wastes and the composition of fuels.

The Domestic Substances List

The Domestic Substances List (DSL) is an inventory of more than 23 650 substances manufactured in, or imported into, Canada on a commercial scale. It was originally based on substances deemed to have been in Canada between January 1984 and December 1986. Substances not on this list are considered new to Canada, and Environment Canada and Health Canada must be notified prior to manufacture or import to determine whether they are toxic or could become toxic.

The DSL includes the original list, published on May 4, 1994, as well as all additions or deletions subsequently published in the *Canada Gazette* as a result of the new substances assessments and auditing of original nominations. In fiscal year 1999–2000, there were 221 additions to the DSL and one deletion.

A Web site allows a search of the current DSL and Non-Domestic Substances List (NDSL) inventories.

www.ec.gc.ca/substances

New Substances Notification Regulations

Before new substances can be manufactured in or imported into Canada, the *New Substances Notification Regulations, 1994* require manufacturers and importers to provide

information on chemical identity, toxicological and environmental effects data, manufacturing, processing and use data and the amounts proposed for manufacture or import. If a substance is suspected of being “toxic,” the government may require additional information or testing, impose controls or ban the manufacture or import of the substance. New substances include new chemicals and polymers as well as products of biotechnology.

www.ec.gc.ca/substances

Chemicals and Polymers

During 1999–2000, Environment Canada and Health Canada jointly assessed 900 new substances and 179 transitional substances. Transitional substances were manufactured in or imported into Canada between January 1987 and July 1994 (when the *New Substances Notification Regulations* came into effect). These reviews resulted in the imposition of various kinds of controls on eight substances. Tributyltetradecylphosphonium chloride (TTPC), which was assessed in 1998 was added to the List of Toxic Substances (Schedule 1) on March 31, 2000.

In an effort to harmonize the notification and assessment of new substances in the United States and Canada, Environment Canada has partnered with the United States Environmental Protection Agency and American and Canadian companies and industry associations in the “Four Corners” pilot project. The pilot project, involving the exchange of technical data and assessment information, ran from July 1996 to July 1998 and has been

The OECD Working Group on Good Laboratory Practice appointed Canada to lead a new project on automated data reporting and retrieval.



renewed for two years. During 1999–2000, 10 substances were submitted under this project. Environment Canada and Health Canada jointly assessed nine substances under what is now known as the Four Corners Program. One of these substances was added to the NDSL, and waivers from specific data requirements were recommended for the remaining substances.

A bilateral agreement is being developed between the New Chemicals Program of Australia and the New Substances Program of Canada to share and compare assessment of new chemicals and polymers. The parties are exploring the feasibility of mutual acceptance of assessments for some of these substance categories to reduce duplication of work and to benefit from the collective technical expertise and information databases in the two countries.

The New Substances Notification Program is pursuing the development of cost recovery regulations to collect fees for services. Following extensive consultations, based on reports prepared in previous years and available at the Web site, the government is preparing to publish its cost recovery proposal in the winter of 2001.

www.ec.gc.ca/cceb1/cost/cost_e.htm

Environment Canada and Health Canada made a commitment, at the time of the promulgation of the *New Substances Notification Regulations*, to review the regulations three years after their implementation. A multistakeholder consultation, involving government, industry, public advocacy groups and labour representatives, has begun to identify possible amendments to the

New Substances Notification Regulations and programs. To date, five meetings have taken place and two more are scheduled for early 2001.

Biotechnology Substances

The biotechnology portion of the CEPA *New Substances Notification Regulations* came into effect on September 1, 1997. Joint Environment Canada/Health Canada assessments were completed on 10 new biotechnology substances in 1999–2000. After rigorous assessments, it was determined that no controls were required for these biotechnology substances. It should be noted that beyond the assessments conducted under CEPA, Health Canada and other departments and agencies, such as the Canada Food Inspection Agency and the Pest Management Regulatory Agency, also conduct assessments of new biotechnology substances under their respective legislative responsibilities.

International Activities

Canada now chairs a task force on new chemicals that was established in 1999–2000. Its aim is to advance the sharing of information and research on new chemicals and to establish a basis for acceptance of notifications in OECD countries.

To further international harmonization, both Environment Canada and Health Canada are participating in the OECD Working Group on Harmonization of Regulatory Oversight in Biotechnology. While the focus was previously on the development of “Consensus Documents” on the biology of microorganisms, current

Organization for Economic Cooperation and Development

There were 29 OECD member countries in 1999–2000:

Australia, Austria, Ireland, Italy, Japan, Sweden, Switzerland, Belgium, Canada, Czech Republic, Luxembourg, Turkey, United Kingdom, Korea, Denmark, Mexico, Netherlands, United States, Finland, France, Germany, New Zealand, Norway, Greece, Hungary, Iceland, Portugal, Poland, Spain.

interest is on more topic-specific documents, such as risk assessment criteria.

Priority Substances

Background

Section 34 of CEPA enables the federal government to take action, including making regulations, relating to the quantity or concentration of a toxic substance that may be released to the environment. Based on the advice of experts, two lists of substances that are the most important to assess for toxicity or the capacity to become toxic have been compiled. The PSL1 was published in 1989 and listed 44 substances. The PSL2, published in 1995, listed 25 substances.

www.ec.gc.ca/cceb1/ese/eng/psap.htm

When a substance is deemed toxic under CEPA, the government consults representatives from industry, from federal, provincial and municipal governments, and from Aboriginal and non-governmental organizations to identify management options for that substance. This multistakeholder PSL1 process, referred to as the Strategic Options Process, leads to recommendations to the ministers of the environment and health on the most effective and efficient management options to reduce releases of toxic substances.

Actions on PSL1 Substances

During 1999–2000:

- A CEPA regulation on the use of tetrachloroethylene in dry cleaning was being drafted for publication in the *Canada Gazette*, Part I, in early 2001.
- The ministers accepted 10 multistakeholder issue table recommendations concerning wood preservation.
- A report with recommendations for the management of hexachlorobenzene, (Bis-(2-ethylhexyl)phthalate (DEHP) and 1,2-Dichloroethane (DCE) was completed.
- A Memorandum of Understanding with Refractory Ceramic Fibres manufacturers and processors was initiated.

- A code of practice was being developed on dichloromethane for commercial paint-stripping applications.
- Management options were being evaluated for dichloromethane releases from aircraft, paint stripping, flexible polyurethane foam, pharmaceuticals, adhesives and cleaning applications.
- Amendments to include HCB in the Prohibition of Certain Toxic Substances Regulations were prepared.
- A recommended Memorandum of Understanding on DCE was developed, and
- further studies to identify the sources of DEHP contamination of food were undertaken.

Actions on PSL1 Substances for Which There Was Insufficient Information to Conclude on “Toxicity”

At the start of 1999–2000, there were 13 PSL1 substances for which there was insufficient information to conclude on “toxicity” under Section 11(a) of CEPA (effects on the environment) or under Section 11(c) of CEPA (effects on human health). Environment Canada and Health Canada developed research plans and obtained new information on most of the substances. The eight substances or groups of substances for which data on effects on the environment were lacking are: 1,2-dichlorobenzene, 1,4-dichlorobenzene, trichlorobenzenes, tetrachlorobenzenes, pentachlorobenzene, styrene, 1,1,2,2-tetrachloroethane and waste crankcase oils. Risk analysis on these eight substances is being updated using this new information, and the results are to be published in 2000–2001. Health Canada is also updating risk assessments for six substances with results to be published in 2000–2001. (The departments developed approaches for updating or completing the assessments on these substances in 2000–2001.)

Two Ministerial Orders proposing to add two toxic substances to the Export Control List



(Schedule 3), CEPA, 1999, were published in the *Canada Gazette*, Part I, on December 25, 1999.

The Orders concerned:

1. (4-Chlorophenyl)cyclopropylmethanone, O-[(4-nitrophenyl)methyl]oxime that has the molecular formula $C_{17}H_{15}ClN_2O_3$, and

2. TTPC.

Orders adding these substances to the Export Control List were published in the *Canada Gazette*, Part II, on March 29, 2000, and came into force on March 31, 2000

Priority Substances List 1 (PSL1) CEPA Toxic Substances

- | | |
|------------------------------------------------|--------------------------------------------------------------|
| 1. 1,1,1-Trichloroethane* | 14. Hexachlorobenzene |
| 2. 1,2-Dichloroethane | 15. Hexavalent chromium compounds |
| 3. 3,3'-Dichlorobenzidine | 16. Inorganic arsenic compounds |
| 4. Benzene* | 17. Inorganic cadmium compounds |
| 5. Benzidine | 18. Inorganic fluorides |
| 6. Bis (chloromethyl) ether* | 19. Oxidic, sulphidic and soluble inorganic nickel compounds |
| 7. Chloromethyl methyl ether* | 20. Polychlorinated dibenzodioxins* |
| 8. Short chain chlorinated paraffins | 21. Polychlorinated dibenzofurans |
| 9. Chlorinated wastewater effluents | 22. Polycyclic aromatic hydrocarbons |
| 10. Creosote-contaminated sites | 23. Refractory ceramic fibres |
| 11. Dichloromethane | 24. Tetrachloroethylene |
| 12. Effluents from pulp mills using bleaching* | 25. Trichloroethylene |
| 13. Bis (2-ethylhexyl) phthalate | |

* already regulated

Priority Substances List 2 (PSL2)

- | | |
|------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 1. Acetaldehyde** | 16. 2-Methoxy ethanol, 2-ethoxy ethanol, 2-butoxy ethanol |
| 2. Acrolein** | 17. N-Nitrosodimethylamine |
| 3. Acrylonitrile** | 18. Nonylphenol and its ethoxylates |
| 4. Aluminum chloride, aluminum nitrate, aluminum sulphate+ | 19. Phenol* |
| 5. Ammonia in the aquatic environment | 20. Releases from primary and secondary copper smelters and copper refineries |
| 6. 1,3-Butadiene** | 21. Releases from primary and secondary zinc smelters and inc refineries |
| 7. Butylbenzylphthalate* | 22. Releases of radionuclides from nuclear facilities (impacts on non-human species) |
| 8. Carbon disulphide** | 23. Respirable particulate matter less than or equal to 10 microns** |
| 9. Chloramines | 24. Road salts |
| 10. Chloroform | 25. Textile mill effluents |
| 11. N,N-Dimethylformamide | |
| 12. Ethylene glycol+ | |
| 13. Ethylene oxide | |
| 14. Formaldehyde | |
| 15. Hexachlorobutadiene | |

+ Owing to the considerable limitations of the available data on both exposure and effects of these substances, a definitive conclusion of "toxic" or "not toxic" with respect to human health could not be reached. Additional data are being collected.

* The assessment was completed. Notice of the assessment and a summary of the report was published in the *Canada Gazette*, Part I, on February 5, 2000.

** The assessment was completed. Notice of the assessment and a summary of the report was published in the *Canada Gazette*, Part I, on May 27, 2000.

Strategic Options Process

Process used to develop options for the effective management of PSL1 toxic substances

Substances

Benzidine (5)/3,3'-Dichlorobenzidine (3)**
Chlorinated paraffins (8)
Dichloromethane (11)**
Hexachlorobenzene (14)*

Sectors

Dry cleaning (24)**
Wood preservation (10, 14, 15, 16, 20, 22)**
Metal finishing (15, 17, 19)**
Electric power generation (15, 16, 17, 18, 19)

Refractory ceramic fibres (23)*
1,2-Dichloroethane (2)*
Bis(2-ethylhexyl) phthalate (13)*
Solvent degreasing (24, 25)**
Iron and steel (4, 12, 15, 16, 17, 18, 19, 22) **
Base metals smelting (16, 17, 19)**

The numbers in parentheses () refer to the relevant substance on PSL1.

* A report on recommendations for the management of the substance has been completed.

** Recommendations were completed and accepted by the Minister of the Environment and the Minister of Health under the Strategic Options Process.

Progress on PSL2 Assessments

The PSL2 list of 25 substances was published in Part I of the *Canada Gazette* on December 16, 1995. Environment Canada and Health Canada are working together to complete assessments, before December 2000, on the risks to human health and the environment associated with these substances. As of 1999–2000, eight environmental and human health assessments had been completed by Environment Canada and Health Canada, with the remaining 17 to be completed by April 2001.

www.ec.gc.ca/cceb1/ese/eng/psap.htm

www.hc-sc.gc.ca/ehp/ehd/bch/env_contaminants/psap/psap.htm

Taking Action on PSL2 Assessments

In order to manage and ensure the release of the assessment reports before December 2000, Environment Canada and Health Canada jointly prepared a PSL2 Assessment Reports Review, Approval, Publishing and Communications Process in November 1998. The plan is for assessments to be published for public review and

comment before ministers make final decisions. An examination of management options for control of release of several of the PSL2 substances, either declared toxic or expected to be declared toxic, got underway. Close cooperation between the assessment and management phases was initiated for specific PSL2 substances. This should ensure early discussions on preventive control management options for substances to be declared toxic.

Toxic Substances Management Policy

The federal government's TSMP 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 that are present in the environment primarily due to human activity (Track 1 substances); 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 substances).



All 12 substances are POPs that also enter the Canadian environment from foreign sources through long-range atmospheric transport. There is more information about Environment Canada's international efforts to control POPs in Part V, International Air Pollution. The Scientific Justification Documents that show the basis for the Track 1 designation are available on the Internet.

www.ec.gc.ca/cceb1/eng/tsmp.htm

Within Canada, action has already been taken to severely limit or ban the production, use or release of these 12 substances:

- *Dioxins and furans* — Environment Canada and a Federal–Provincial Task Force on Dioxins and Furans prepared an inventory report on releases to the environment. The report indicates that atmospheric releases of dioxins and furans declined by 43% between 1990 and 1999 due to plant closures or upgrades of existing plants, while releases to water declined by 99% due to the implementation of the 1992 *Pulp and Paper Mill Defoamer and Wood Chip Regulations* and the *Pulp and Paper Mill Chlorinated Dioxin and Furan Regulations*. The *Pulp and Paper Effluent Regulations*, which also regulate pulp and paper mills nationwide, are under the *Fisheries Act* and are supported by environmental effects monitoring programs. In addition, the Canadian Council of Ministers of the Environment is developing Canada-wide Standards for this group of substances.

www.ec.gc.ca/dioxin

- *HCB* — HCB is released from chlorinated solvents, combustion sources and pesticide use. Regulations are being developed to prohibit the commercial use of HCB alone or in a mixture in concentrations above 50 parts per billion (ppb) and are expected to be ready for publication in the winter of 2001. There will also be a reduction in HCB releases from combustion sources, because the measures to control dioxins and furans will have a direct effect on HCB releases as well.
- The remaining Track 1 substances were active ingredients in pesticides that are now prohibited in Canada.

The Accelerated Reduction and Elimination of Toxics (ARET) program is a multistakeholder pollution prevention and abatement initiative involving industry, health and professional organizations as well as governments across Canada. Through voluntary action, ARET seeks the virtual elimination of 30 substances that met the ARET criteria for persistence, bioaccumulation and toxicity during the ARET substance selection process. ARET also seeks significant reductions in emissions of another 87 substances. Overall, there has been a 67% reduction in the release of toxics included in the ARET program from base-year levels. Of 316 facilities participating in ARET, 136 have already met or exceeded year 2000 targets for all categories of substances on which they report. A commitment was made to develop a successor program, Environmental Leaders. The development of this program has been guided by the recommendations

Twelve substances met the criteria for management under Track 1 of the Toxic Substances Management Policy when it was first published in Part I of the Canada Gazette on July 4, 1998. These substances, some of which are on the PSL1, are:

- *aldrin* • *chlordan*
- *DDT* • *dieldrin*
- *endrin* • *HCB*
- *mirex* • *heptachlor*
- *PCBs* • *PCDDs*
- *PCDFs*
- *toxaphene*

of the Commissioner of Environment and Sustainable Development, the department review of ARET, the draft policy for environmental performance agreements and the latest generation of provincial and United States leadership/pollution prevention/toxic use programs.

Fuel Regulations

Sulphur in Gasoline

The *Sulphur in Gasoline Regulations* were published in the *Canada Gazette*, Part II, on June 24, 1999. These regulations will significantly lower the allowable level of sulphur in gasoline sold in Canada. The new limit is 30 parts per million (ppm) of sulphur content in gasoline by January 1, 2005, with an interim limit of 150 ppm by 2002. In 1998, the average Canadian level of sulphur in gasoline was 350 ppm, among the highest in the world.

Benzene in Gasoline

Amendments to the *Benzene in Gasoline Regulations* (1997) were published in the *Canada Gazette*, Part II, on May 26, 1999. The amendments allowed companies to apply for an extension of up to six months to comply with the *Benzene in Gasoline Regulations*.

Gasoline and Gasoline Blend Dispensing Flow Rate Regulations

The *Gasoline and Gasoline Blend Dispensing Flow Rate Regulations* were published in the *Canada Gazette*, Part II, on February 16, 2000. In general, these regulations will limit the dispensing flow rate of gasoline and gasoline blends into on-road motor vehicles to a maximum of 38 litres per minute, beginning on February 1, 2001.

The regulations will protect the health of Canadians by reducing emissions of benzene and other volatile organic compounds into the environment during the refuelling of cars and light-duty trucks.

Collecting Data to Assist with Substance Assessment and Management

Sections 15 through 18 of CEPA allow the federal government to collect information and conduct investigations to support the assessment of existing substances and the development of management options for substances considered toxic. The following surveys were completed after the notices were sent to specific companies:

- *Notice with Respect to HCB in Ferric Chloride and Ferrous Chloride, Canada Gazette, Part I, October 30, 1999.* The notice requests samples of products related to ferric chloride and ferrous chloride for the determination of HCB concentration to assist in developing regulations to prohibit the use of HCB in Canada.
- *Notice to Anyone Engaged in the Production, Import or Use of Ozone-depleting Substances (ODS), Canada Gazette, Part I, September 11, 1999.* The notice describes the criteria, process and schedule that Environment Canada will use to determine the relevance of nominations for an exemption for an essential use of ODS as agreed to under the Montreal Protocol.

It is estimated that, over a 20-year period, lowering of sulphur levels in gasoline will prevent over 2 100 premature deaths, 93 000 incidents of bronchitis in children, five million other health-related incidents, such as asthma attacks, and 11 million acute respiratory symptoms, such as coughs, pneumonia and croup.



- *Notice with Respect to Certain Hydrofluorocarbons (HFCs), Canada Gazette, Part I, May 15, 1999.* The information was requested for two purposes: to assist the climate change program in calculating the contribution of HFCs to Canadian emissions and to assist in the development of strategies to control emissions from certain uses of these chemicals.
- *Notice with Respect to Certain n-Propyl Bromide and bromochloromethane, Whether Alone or in Mixture, Canada Gazette, Part I, June 26, 1999.* The information was used to develop Canada's position for the 11th Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer and assist in the development of the amendment of the *Ozone-depleting Substances Regulations*, 1998.
- *Duty to Report Information that a Substance Is Toxic*

Section 17 puts an onus on people involved with the commercial importation, manufacture, processing or distribution of a substance to inform the Minister of the Environment of information they may obtain that reasonably supports the conclusion that a substance is toxic or is capable of becoming toxic. In 1999, eight new submissions under Section 17 were received and evaluated by Environment Canada and Health Canada officials.

Hazardous Wastes

The *Export and Import of Hazardous Wastes Regulations* provide a way of tracking the movement of hazardous wastes and hazardous recyclable material into and out of Canada, including transits passing through Canadian territory. Exports of hazardous wastes and hazardous recyclable materials from Canada have remained relatively stable over the year. Imports, however, show a consistent increase. Information

on imports and exports of hazardous waste is published twice a year in the *RESILOG* newsletter, which is available on the Internet.

www.ec.gc.ca/resilog/resinews.htm

During the 1999 calendar year, 850 notices for proposed exports of hazardous waste, 7 330 notices for imports and 220 notices for shipments in transit through Canada were processed. During the same period, 47 000 manifests were processed for tracking shipments approved under these notices. This represents an 18% increase over 1998.

In 1999, 77% of exports and 41% of imports were destined for recycling operations. In 1998, these figures were 73% and 58% respectively. The compliance rate for submitting the required documents for waste generator and waste receiver increased for imports, from 90% in 1998 to 97% in 1999, while for exports the compliance rate remained the same at 99%.

Regional Activities

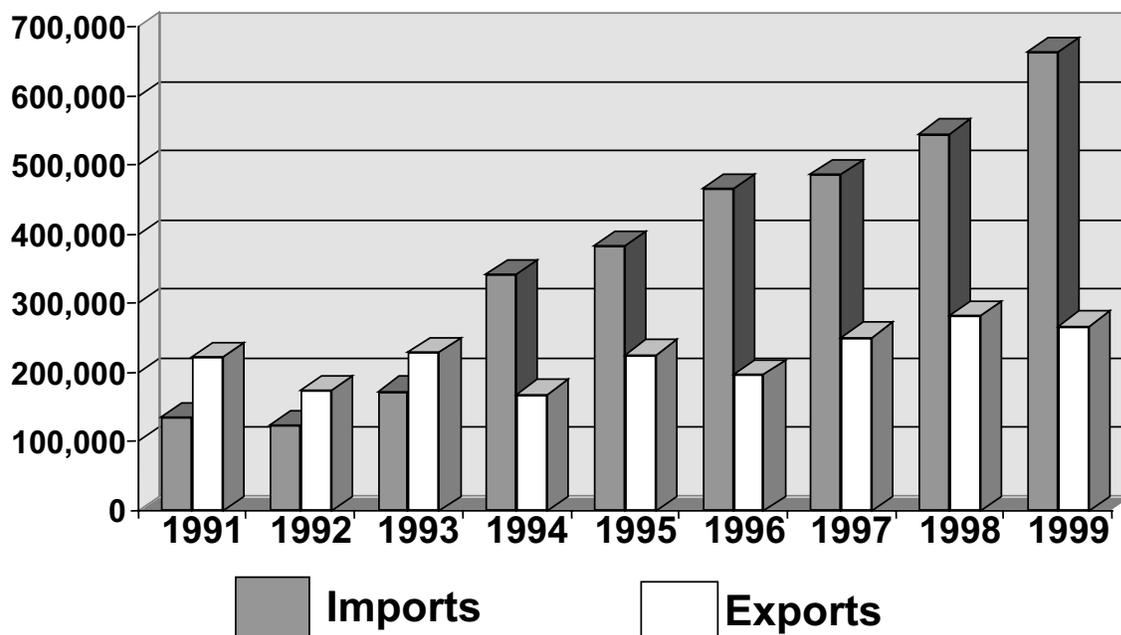
The Quebec Ministry of the Environment and Environment Canada, assisted by its Quebec Region staff, developed procedures for the enforcement of the regulations. The Quebec Region also prepared a poster on the documents required to import or export hazardous wastes for customs offices and importers and exporters. A study on the role of railways in the import and export of hazardous wastes in Quebec was also completed.

Training sessions on hazardous waste regulations were offered to businesses in the Quebec Region. Interest in the training was so high that more workshops will be offered in 2000–2001.

Ontario Region also delivered several training workshops to the private sector community, not only in Ontario but also in the Pacific and Yukon Region and the Prairie and Northern Region. Two studies focused on the rail industry's role in the export and import of hazardous waste. The first

VOLUME IMPORTED AND EXPORTED (Tonnes shipped)

Tonnes



study provided insight into the rail industry and the export and import of hazardous waste in Ontario, while the second study presented a national statistical analysis on the export and import of hazardous waste by rail and ship.

The Basel Convention

The major goals of the Basel Convention are to control the transboundary movement of hazardous wastes and to ensure that they are managed in an environmentally sound manner. At the Fifth Conference of Parties held in December 1999, the ministers signed a declaration to focus the work of the Convention for the next decade on environmentally sound management practices. As well, the Parties adopted a Protocol on Liability and Compensation, which is now open for signature. Under CEPA, 1999, Environment Canada intends to work with provinces to develop environmentally sound management criteria that will be applied to imports and exports of hazardous wastes.

www.ec.gc.ca/tmd/tmdhp.htm

Interdepartmental Cooperation

Protecting the Marine Environment from Land-Based Activities

The major threats to the health, productivity and biodiversity of the marine environment result from human activities on land — in coastal areas and further inland. Some 80% of the pollution load in the oceans originates from land-based activities. The marine environment is also threatened by physical alterations of the coastal zone, including the destruction of habitats of vital importance to maintain ecosystem integrity.

The draft document “Canada’s National Programme of Action for the Protection of the Marine Environment from Land-Based Activities (NPA)” was released for public consultation in March 1999. This initiative was co-led by Environment Canada and the Department of Fisheries and Oceans. The public consultations and the collaborative efforts of the federal, provincial and territorial governments contributed to the development of the final document. The



NPA responds to Canada's commitment under the 1995 *Global Programme of Action for the Protection of the Marine Environment from Land-based Activities*. (Environment Minister David Anderson and Fisheries and Oceans Minister Herb Dhaliwal released "Canada's National Programme of Action" on Oceans Day, June 8, 2000).

Implementation of the NPA will involve using sustainable and integrated environmental management approaches, such as the harmonization of coastal, river basin and land use plans.

www.ec.gc.ca/marine/npa-pan.htm

Arctic Regional Programme of Action

Canada continues to make progress toward the implementation of the *Global Programme of Action* through its leadership role in the development of the Arctic Council's *Regional Programme of Action for the Protection of the Arctic Marine Environment from Land-based Activities* (RPA). The RPA focuses on regional cooperation and capacity building to address pollution sources in the Arctic, particularly those found in the Russian Federation. The RPA supports the implementation of the Russian NPA-Arctic projects, which have the support of Arctic Council countries. The projects may receive financial assistance from the Global Environmental Facility (GEF).

www.arctic-council.org

National Pollutant Release Inventory

The National Pollutant Release Inventory (NPRI) is a national, legislated, publicly accessible inventory, providing Canadians with access to pollutant release information for facilities located in their communities. The NPRI tracks on-site releases of pollutants to air, water and land and underground injection and off-site transfers for recovery, reuse, recycling and energy recovery.

For the 1998 NPRI National Overview, released in 2000:

- 2007 Canadian facilities filed reports with NPRI in 1998, an increase of 12.8% from 1995, and
- 7448 pollutant reports were filed (one report is filed for each substance released or transferred), an increase of 17% from 1995.

The NPRI also has mandatory reporting data on recycling activities.

Extensive consultations during 1999 resulted in the addition of 23 substances to the NPRI for 2000, bringing the total to 268 substances. Fifty-five of these substances are CEPA-toxic. Included in the additions were dioxins and furans, HCB and PAHs at lower release thresholds. The reporting threshold for mercury and its compounds was lowered.

www.ec.gc.ca/pdb/npri

Pacific and Yukon Region held an information session in 2000 to explain the NPRI reporting requirements to British Columbia facilities.

Part III Nutrients

CEPA Sections 49–51

Part III regulates the nutrient content of cleaning agents and water conditioners.

In 1997, the House of Commons Standing Committee on Environment and Sustainable Development recommended that Environment Canada determine whether nutrients in general are causing negative environmental effects; whether certain nutrients, rather than nutrients as a class, are problematic; and whether those effects are limited to one component of the environment, such as water, or the entire ecosystem, including wildlife. The Standing Committee also recommended changing the current definition of nutrients. Currently, the definition of nutrients refers to substances that, when applied to waters in excess, provide nourishment for aquatic vegetation.

To address this, an interdepartmental working group was formed with representatives from the

departments who are parties to the Memorandum of Understanding on Science and Technology for Sustainable Development (5NR MOU). Under the leadership of the NWRI and the Guidelines and Standards Division, a major assessment of nutrients entering the Canadian environment through human activities is nearing completion. The scientific assessment, “Nutrients and their Impact on the Canadian Environment,” will undergo a multistakeholder consultation during the spring of 2001. Findings from the draft report indicate that nutrients released to the environment from human activities have an important impact on water quality. The predominant and most demonstrable impacts are occurring in aquatic ecosystems and causing water use impairments. Scientists have also observed the first symptoms of negative effects on forest ecosystems.

Continuing efforts will be made to ensure that nutrients and their impacts are incorporated as a major theme in any ongoing and emerging water quality programs and committees, at the federal and national level.

The NWRI continued its research program to determine the relationship between the quantity of added nutrients and the response of aquatic ecosystems and to evaluate appropriate endpoints to assess eutrophication. This research will provide the science to support the development of nutrient guidelines to prevent or minimize eutrophication in northern rivers.

www.cciw.ca/nwri

Part IV Federal Departments, Agencies, Crown Corporations, Works, Undertakings and Lands

CEPA Sections 52–60

Part IV provides the authority to regulate waste handling and disposal practices, emissions and effluents from the operations of federal departments, Crown corporations and federal agencies.

Through the Greening of Government Operations initiative, the government continues to establish guidelines for integrating environmental considerations into the operations of all departments. The departments are encouraged to apply these guidelines, taking into account existing regulations and current technological options.

The following activities supported the Greening of Government Operations initiative in 1999–2000:

- delivery of three ISO 14000 Environmental Management workshops, and
- a pilot project between Environment Canada and Transport Canada on the implementation of a comprehensive ISO 14001 environmental management system at a federal facility.

As well, the Federal Committee on Environmental Management Systems provided a forum for departments to exchange best practices in the areas of waste management, water usage, energy use, fleet management, wastewater, boiler emissions, contaminated sites, storage tanks and environmental emergencies.

Federal Halocarbon Regulations

Federal Halocarbon Regulations were published in the *Canada Gazette*, Part II, on July 7, 1999. These regulations address releases, recovery and recycling of ODS and their halocarbon alternatives on federal lands. Regions supported the implementation of these regulations by using a variety of ways to get the necessary information to those required to comply with them.

Ontario Region took the national lead in developing two training workshops — a half-day for managers and two days for staff — and coordinating the training of the trainers for workshop delivery. The workshops were delivered across Ontario in the fall of 1999 to approximately 120 staff of federal departments, agencies, Crown corporations and private sector operators of federal facilities. A detailed Compliance Promotion Bulletin was also produced and posted on the Federal Programs



Division home page on the Ontario Green Lane. To help explain the new regulatory requirements, several articles appeared in the quarterly *Compro Update* newsletter before and after the regulations were promulgated.

www.on.ec.gc.ca/epb/fpd/en/compro

Staff also tracked release reports from regulated facilities and made direct contact with the originators to ensure that all reporting procedures were followed. A set of environmental compliance audit protocols were developed for regulated facilities to assist them in assessing their state of compliance with the new regulations.

During the fall of 1999, Prairie and Northern Region held training sessions in Edmonton, Regina and Winnipeg for federal department employees and First Nations peoples on the *Federal Halocarbon Regulations*.

The Quebec Region hosted 17 training sessions, reaching 250 people, and published three articles about compliance in the newsletter *Virage*, which is distributed to 500 federal subscribers in Quebec.

www.qc.ec.gc.ca/protect/english/prevention/virage

In addition, the Environmental Technology Centre developed a comprehensive management strategy and action plan to ensure the proper management of its halocarbon holdings. It underwent a third-party audit in the fall of 1999, which confirmed its compliance with the new regulations.

Hazardous Waste Regulations

The draft *Hazardous Waste Regulations* are being revised. These regulations will address releases to the environment from the processing, handling, storing, recycling or disposing of hazardous waste by federal institutions. Suggested limits will cover the release of dioxins, furans and mercury and will be consistent with the proposed Canada-wide Standards addressing these substances. The

existing *Federal Mobile PCB Treatment and Destruction Regulation* is being amalgamated into these hazardous waste regulations.

Wastewater Discharges

A working group, co-chaired by Environment Canada and Transport Canada, undertook a review to identify the types of wastewater discharged from federal facilities. This work resulted in a report, *An Approach for Assessing and Managing Wastewater Effluent Quality for Federal Facilities* (final report, June 1, 2000). The working group is considering how best to update the document *Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments: April 1976*.

Environmental Emergencies

During the 1998–1999 fiscal year, work was done to ensure that appropriate systems are in place for responding to environmental emergencies at federal facilities. The National Environmental Emergency System was substantially upgraded in 1998 and now incorporates historical data from regions as well as data from various contributing agencies. This system has already been used to assess risks related to year 2000 problems.

A working group on Environmental Emergency Planning, co-chaired by Environment Canada and Transport Canada, continued to promote contingency planning at federal facilities. It helped to organize a two-day seminar in Ottawa in September 1999, which was hosted by Environment Canada's Ontario Region. Plans call for another seminar in 2000–2001.

Nitrous Oxide Emissions

A working group on Boiler Emissions, co-chaired by Environment Canada and Public Works and Government Services Canada, completed a draft guideline that addresses the emission of nitrous oxides from new and modified boilers at federal facilities. It is expected that the guidelines will be published in the fall of 2000.

Regional Activities

Ontario Region continued to provide compliance promotion and pollution prevention advice and assistance to those subject to Part IV and other parts of the Act during the year. The Federal Programs Division Web site consistently received a higher than average number of hits each month as the regulated community consulted the online compliance newsletters and bulletins.

www.on.ec.gc.ca/epb/fpd

Ontario Region revised its popular *Compro Update* newsletter for Part IV-regulated facilities to focus exclusively on environmental legislative issues, primarily related to CEPA. The newsletter was published four times during the year, presenting feature articles on the new *Federal Halocarbon Regulations*, revisions to CEPA, regulatory updates on upcoming regulations and guidelines, jurisprudence, etc., and was distributed to over 400 contacts in Ontario electronically or in hard copy.

www.on.ec.gc.ca/epb/fpd/en/compro

Ontario Region also sponsored or presented technical training for Part IV clients, including two presentations of a comprehensive five-day workshop on environmental auditing to promote this practice in anticipation of increasing the rate of compliance amongst the regulated community. This workshop, Environmental Auditor, Tools and Techniques, satisfies the 35-hour educational requirement for environmental auditor certification. The popular Environmental Issues Roadshow training package was delivered in London and Thunder Bay, providing 80 clients with training on fuel handling and storage tanks, due diligence, pollution prevention and the *Federal Halocarbon Regulations*.

In June 1999, the Quebec Region published a guide for federal departments, Crown corporations and federal agencies working in Quebec. The guide, *Guide de conformité environnementale à l'intention des ministères, organismes et sociétés d'État fédéraux oeuvrant au Québec*, covers both federal and provincial environmental regulations, providing comprehensive information on all requirements. It is a unique and valuable document for all

managers with federal facility responsibilities in Quebec.

In March 2000, 23 federal facility representatives participated in a workshop on due diligence organized by Environment Canada and presented by Justice Canada in Montreal.

In January 2000, the Pacific and Yukon Region held three contingency planning workshops in British Columbia for federal facilities and a two and one-half day workshop to help federal facilities develop strategic plans to control and ultimately phase out ODS.

Ontario Region hosted two contingency planning workshops for its federal facility clients. Six such workshops have been held in the past two years.

Part V International Air Pollution CEPA Sections 61–65

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

Canada plays a lead role on the international stage in seeking international cooperation and agreements on measures to control air pollution. This is because, due to global wind patterns and a cold climate, many more pollutants arrive in Canada by air and remain here than leave from here by air. To protect the Canadian environment, it is therefore essential not only to control domestic sources of air pollution, but also to participate in efforts to ensure that other countries control their air pollution as well.

Work under Part V of CEPA includes both international work and work within Canada, with provincial and territorial governments and multistakeholder groups, toward meeting national pollution prevention goals and international commitments.



Persistent Organic Pollutants and Heavy Metals

On June 24, 1998, Canada and 31 other countries signed the POPs and HMs Protocols under the UN ECE Convention on Long-range Transboundary Air Pollution. Canada was the first country to ratify both protocols, on December 18, 1998.

The POPs Protocol addresses the production, use and atmospheric emission of 16 persistent organic pollutants through multiple control regimes. The HMs Protocol requires the control of cadmium, lead and mercury by:

- controlling atmospheric emissions from new plants in designated industrial sectors,
- reducing atmospheric emissions from existing facilities by 50% of 1990 levels, and
- controlling the lead content in gasoline and the mercury content in alkaline batteries.

In June 1998, Canada hosted the first round of international negotiations for a global POPs agreement under the United Nations Environment Programme. Canada's objective is to obtain a commitment from countries around the world to undertake appropriate control actions on POPs. Negotiations are expected to be completed by December 2000.

In March 1999, Environment Canada and its provincial and territorial counterparts held multistakeholder consultations on a proposed Strategic Implementation Framework for International Commitments on Hazardous Air Pollutants. The Strategic Implementation Framework describes the set of programs and measures that Canada will use to tackle the issue of POP and HM releases in Canada.

In addition to these international initiatives, Canada is working in a continental context with the United States and Mexico under the North American Free Trade Agreement's Commission on Environmental Cooperation to develop and implement regional action plans on DDT, chlordane, PCBs and mercury. (On June 30, 2000,

the three countries signed a regional action plan on mercury. Initiation of regional action plans have been approved for lindane, as well as for dioxins, furans and HCB.)

Bilaterally, Canada is also working with the United States under the Great Lakes Binational Toxics Strategy to reduce emissions of POPs and HMs in the Great Lakes Basin.

Sulphur Dioxide

Canada has been successful at meeting the national caps set for sulphur dioxide emissions, largely as a result of the Eastern Canada Acid Rain Program, which capped provincial sulphur dioxide emissions in the seven easternmost provinces. Some western provinces have also set stringent emission requirements on major new sources, such as natural gas plants, to minimize increases in emissions. However, even with full implementation of these programs and the United States Acid Rain Program by 2010, ecosystems in eastern Canada will continue to receive harmful levels of acid deposition. Further action was necessary; so, in October 1998, 26 federal, provincial and territorial ministers of energy and environment signed the Canada-wide Acid Rain Strategy for Post-2000. As part of the implementation strategy, targets and schedules for further reductions in sulphur dioxide emissions will be developed for eastern Canada by the end of the year 2000.

Nitrogen Oxides

Canada is committed, pursuant to the 1988 UN-ECE Nitrogen Oxide Protocol, to freeze national emissions of nitrogen oxides at 1987 levels and continued to meet this commitment in 1999–2000.

Volatile Organic Compounds (VOCs)

Canada signed the UN-ECE Convention on Long-range Transboundary Air Pollution in 1979. The third protocol to be negotiated under the Convention was a protocol to control and reduce

International Air Quality Agreements and Protocols

Canada/United States

- Air Quality Agreement (1991)
 - basis for commitments to control acid rain: sulphur dioxide and nitrogen oxide emissions
 - agreement to negotiate a new annex to address ground-level ozone through controls on emissions of nitrogen oxides and volatile organic compounds (VOCs)
 - agreement to cooperate on joint technical analysis of transboundary fine inhalable particles leading to negotiation of another annex to the Agreement

Canada/United States/Mexico

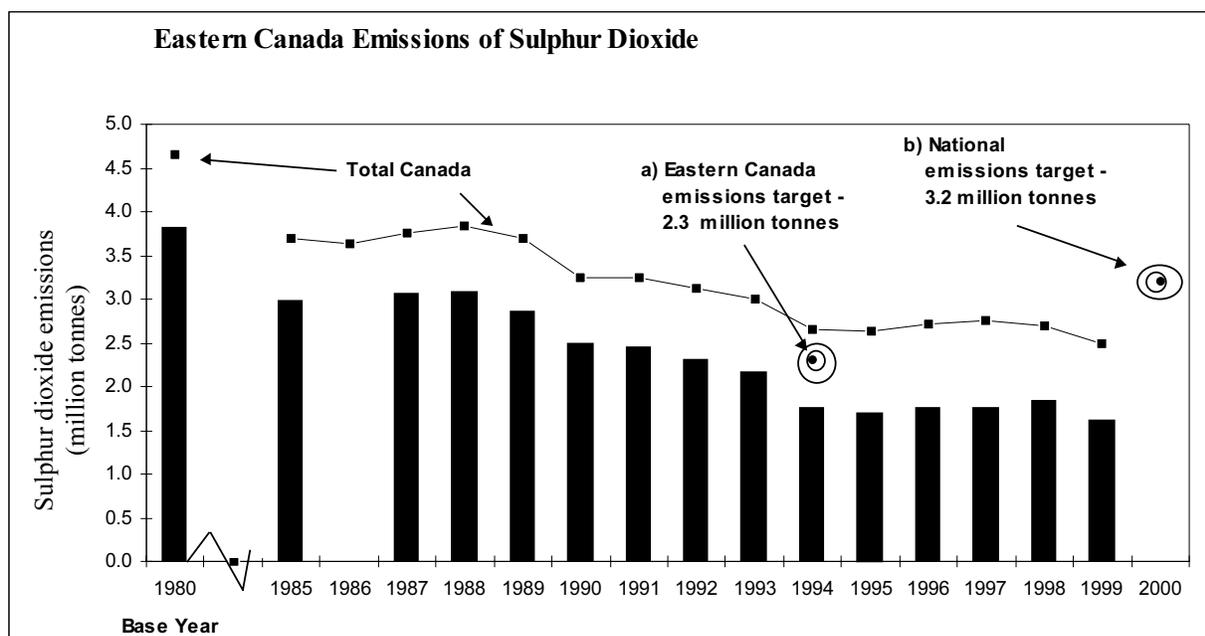
- Regional action plans on DDT, chlordane, PCBs and mercury

Europe

- UN-ECE Convention on Long-range Transboundary Air Pollution
 - two Sulphur Dioxide Protocols (1985 and 1994)
 - Nitrogen Oxide Protocol (1988)
 - Volatile Organic Compounds (1991)
 - Persistent Organic Pollutants (POPs) (1998)
 - Heavy Metals (HMs) (1998)
- NEW: Acidification, Eutrophication, Ground-level Ozone (1999)

Global

- Vienna Convention on the Ozone Layer and Montreal Protocol on Substances that Deplete the Ozone Layer (1987)
- United Nations Framework Convention on Climate Change (1992) and Kyoto Protocol on Greenhouse Gas Emissions (1997)
 - Action Plan with rules and mechanisms to implement the Protocol (1998)



VOCs, completed and signed in 1991. It is unlikely that Canada will ever ratify the VOC protocol now that the UN-ECE Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (AEGLO) has been completed and signed in 1999. This agreement also requires parties to control and reduce VOC but the protocol's main goal is the reduction of ground-level ozone. The implementation of the Canada-wide Standard for Ozone and the negotiation and signature of an agreement with the United States to reduce transboundary ground-level ozone are expected to fulfill the domestic requirements for Canada set out in the AEGLO protocol. Canada is expecting to ratify this protocol by 2002.

Ozone-depleting Substances (ODS)

Amendments to the *Ozone-depleting Substances Regulations* were drafted in the winter of 2000. These amendments include control measures to implement additional requirements under the Montreal Protocol and meet Canada's domestic commitments under the Ozone Layer Protection Program. Publication of the amendments in the *Canada Gazette*, Part II, is planned by the end of 2000.

In January 2000, the Federal-Provincial Working Group on Ozone-depleting Substances and Halocarbon Alternatives issued a proposed strategy to accelerate the phase-out of remaining uses of CFCs and halons and ensure proper disposal of surplus stocks. Consultation sessions were held in various centres in Canada during February 2000 with a view to having a strategy ready for endorsement by the Canadian Council of Ministers of the Environment in the fall of 2000.

Under the Montreal Protocol Multilateral Fund, Canada received

approval to undertake projects to assist developing countries phase out ODS in Chile, Jamaica, Uruguay, Belize, Cuba and Burkina Faso. Most of these projects are focused on providing training and equipment to facilitate the phase-out of CFCs used in refrigeration and air conditioning. Among the key activities relating to these and other approved Canadian bilateral projects was a workshop in Jamaica to train customs officials on the methods used to identify and manage ODS at the border. The workshop, organized by the United Nations Environment Programme, was important because, as one of the first of its kind, it set the blueprint for other such workshops that will take place throughout the developing world over the next few years. Ensuring that the world's customs officials are well trained to prevent illegal trade in ODS is key to the successful implementation of the Montreal Protocol.

Canada-wide Standards

In January 1998, the Canadian Council of Ministers of the Environment (CCME), except Quebec, endorsed a Canada-wide Accord on Environmental Harmonization and the Policy for the Management of Toxic Substances. Federal-provincial-territorial development committees have been working on a number of Canada-wide Standards. The Canada-wide Standards for particulate matter, ozone, benzene phase 1, and mercury emissions were endorsed by the CCME in June 2000. Work continues on others, such as dioxins and furans, petroleum hydrocarbons in soil and mercury in products, to be approved by the CCME in spring 2001.

Although sulphur dioxide emissions continued to drop throughout the 1980s and 1990s, the actual deposition of wet sulphate is still above critical load levels in some regions. The critical load for aquatic ecosystems is the amount of wet sulphate deposition that must not be exceeded in order to protect at least 95% of lakes in a region from acidifying to a pH level of less than 6.0. Many studies suggest that a pH of at least 6.0 is needed to protect most aquatic organisms.

Ozone above the earth, in the stratosphere, is beneficial, protecting the Earth's environment from the sun's damaging rays. That's why we worry about holes in the ozone layer and are taking action to control the ozone-depleting substances that contribute to the deterioration of the ozone layer.

Ozone at ground level, on the other hand, is detrimental to the Earth's environment, affecting the quality of the air we breathe and contributing to the greenhouse effect. Ground-level ozone is not beneficial, and so we are taking steps to control its presence.

Voluntary Initiatives — Memorandums of Understanding (MOUs)

MOUs — Manufacturers of Recreational Marine Engines, Utility Engines, Diesel Off-road Engines

As part of its non-regulatory approach to environmental protection, Environment Canada has developed MOUs with industry groups representing manufacturers of recreational marine engines, utility engines (for example, chainsaws and lawn mowers) and diesel off-road engines (for example, construction and agricultural equipment) to voluntarily supply cleaner engines to the Canadian market. The MOUs were developed to secure near-term environmental benefits by fast-tracking the introduction into Canada of the same cleaner, less-polluting engines designed to comply with U.S. federal emissions standards.

During 1999–2000, MOUs were signed with manufacturers of recreational marine engines, handheld utility engines (for example, string trimmers and chainsaws) and diesel off-road engines. These agreements are to come into effect in 2000 and 2001.

www.ec.gc.ca/air/engines_e.htm

MOU — Automotive Sector

In 1992, the Canadian Vehicle Manufacturers Association, the Government of Ontario and Environment Canada joined together to launch a major pollution prevention initiative for the Big Three automotive manufacturers, representing 28 Canadian assembly and parts manufacturing plants. Key environmental teams set to work designing pollution prevention plans aimed at

reducing and/or eliminating the use, generation and release of 65 targeted substances. Over the years, these plans have realized major gains in overall environmental performance in areas as varied as waste reduction, recycling, reuse, and the elimination of the targeted substances.

Individual companies are engaged in efforts to reduce pollution at source. Each company is looking to minimize the environmental impact of its operations by utilizing more energy-efficient paint application technology that reduces VOCs emissions; by incorporating state-of-the-art wastewater treatment facilities; and by putting in place solid waste, used solvent and oil recycling programs. The plan is fully supportive of the Canada–U.S. Great Lakes Water Quality Agreement and complements the ARET program.

The Automotive Pollution Prevention MOU was renewed by the three major partners in 1999.

MOU — Railway Sector

In 1995, Environment Canada negotiated an MOU with the Railway Association of Canada to voluntarily cap nitrogen oxide emissions at 115 000 tonnes per annum, approximately 9% of all nitrogen oxide emissions in the transportation sector. Continued attention is being paid to emissions from this sector. (A report on annual emissions was released in December 2000.)

Part VI Ocean Dumping CEPA Sections 66–86

Environment Canada regulates the disposal of substances at sea and meets the international



Quantities Permitted and Permits Issued Nationally, 1999–2000

Material	Quantity (tonnes)	Permits Issued	Percent of Quantity	Percent of Permits
Dredged Material	643 500	33	85%	41%
Geologic Material	50 000	1	7%	1%
Fish Waste	58 375	45	8%	55%
Organic Material	200	1	<1%	1%
Bulky Wastes	411	2	<1%	2%
Total	752 486	82	100%	100%

Quantities Permitted and Permits Issued Regionally, 1999–2000

Material	Atlantic		Quebec		Pacific		Northern	
	Quantity (tonnes)	Permits Issued						
Dredged Material	352 300	12	50 700	9	240 500	12	0	0
Geologic Material	50 000	1	0	0	0	0	0	0
Fish Waste	55 825	41	2550	4	0	0	0	0
Organic Material	0	0	0	0	0	0	200	1
Bulky Wastes	411	2	0	0	0	0	0	0
Total	458 536	56	53 250	13	240 500	12	200	1

obligations under the London Convention 1972 by means of the Ocean Dumping Regulations and a system of permits under Part VI.

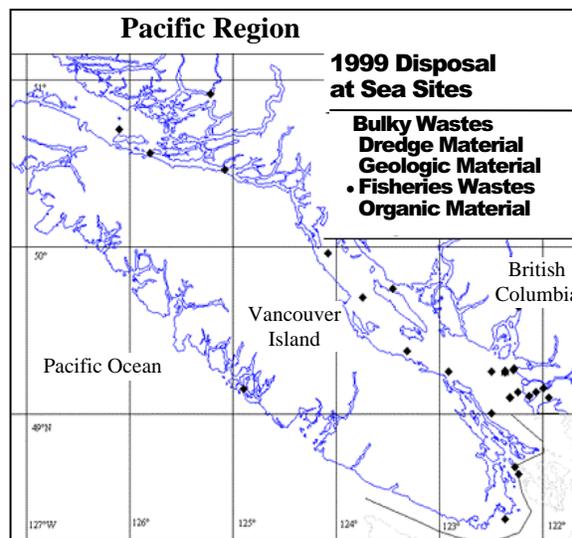
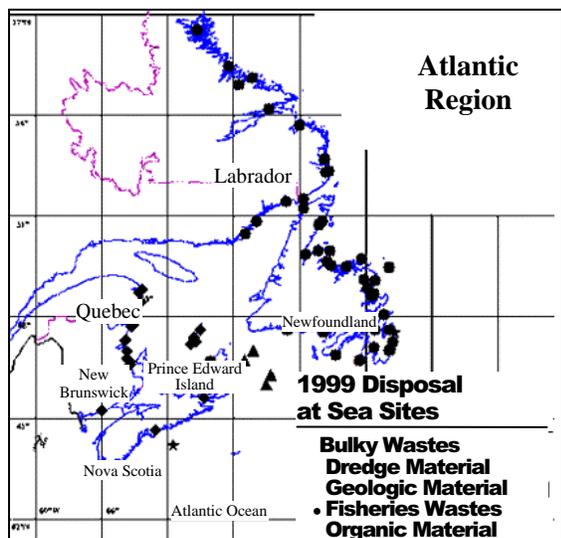
Canada is committed to strong and effective controls on disposal at sea. Disposal at sea is permitted only for non-hazardous substances and where it is the environmentally preferable and practical alternative. Permits are not granted if practical opportunities are available to recycle, reuse or treat the waste. Environment Canada considers a number of factors before granting a permit, including:

- waste audits,
- alternatives to ocean disposal,
- potential environmental impacts, and
- conflicts with other legitimate uses of the sea.

Inert materials or uncontaminated materials of natural origin are considered suitable for ocean disposal. The majority of the material disposed at sea is dredged material that must be moved to

keep shipping channels and harbours clear for navigation and commerce. Fish waste that cannot be recycled as fertilizer, animal feed or other products may be permitted for disposal at sea. Other wastes that may be considered suitable for ocean disposal include bulky wastes, such as concrete rubble, and decommissioned vessels. During the 1999–2000 period, Environment Canada issued 83 permits for the disposal of an estimated 750 000 tonnes of material. This is the amount approved for disposal as opposed to the actual amount disposed of at sea, which may be less.

The total number of permits issued in 1999–2000 decreased by 20% from the year before, while the total quantity of material approved for disposal dropped by 92%. In March 1999, a new permit fee of \$470 per 1000 cubic metres came into effect for dredged material and inert geologic material of natural origin, which resulted in the dramatic declines from previous amounts.



Part VII General

CEPA Sections 87–139

Part VII of the Act concerns the enforcement of regulations made under CEPA and other administrative matters. Under Section 34(6) of CEPA, the federal government can enter into an equivalency agreement with a province, so that provincial 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.

In 1999–2000, there were 29 CEPA regulations already in force or ready to come into force in the future:

- Asbestos Mines and Mills Release Regulations
- Benzene in Gasoline Regulations (amended May 1999)
- Chlor-Alkali Mercury Release Regulations
- Chlorobiphenyls Regulations
- Contaminated Fuel Regulations
- Diesel Fuel Regulations
- Export and Import of Hazardous Wastes Regulations
- NEW: Export Control List Notification Regulations (March 2000)*
- NEW: Federal Halocarbon Regulations (June 1999)

- Federal Mobile PCB Treatment and Destruction Regulations
 - Fuels Information Regulations, No. 1
 - NEW: Gasoline and Gasoline Blend Dispensing Flow Rate Regulations (February 2000)
 - Gasoline Regulations
 - Masked Name Regulations
 - New Substances Notification Regulations
 - NEW: Persistence and Bioaccumulation Regulations (March 2000)
 - 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
 - NEW: Sulphur in Gasoline Regulations (June 1999)
 - NEW: Tributyltetradecylphosphonium Chloride Regulations (March 2000)
 - Vinyl Chloride Release Regulations, 1992
- * The Export Control List Notification Regulations replaced the Toxic Substances Export Notification Regulations.



The Context for Enforcement: Compliance Is the Goal

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

When suspected violations occur, investigations are undertaken to gather evidence and information in order to make a decision on the appropriate enforcement action. In provinces where cooperative arrangements have been put in place through administrative agreements, certain inspection and enforcement activities relating to CEPA may be carried out by provincial employees who have been designated as CEPA inspectors for the purpose of their roles under the agreements.

Enforcement Activities within Canada

During 1999, work was completed on most of the 15 projects that were part of the National Enforcement Program's Action Plans. Among them was a "Business Case" that assessed the gaps between the National Enforcement Program and a strengthened one. The February 2000 federal budget identified \$25 million in increased resources for the National Enforcement Program over three years. Before these additional resources were received, an internal departmental reallocation of \$2.8 million bolstered the Program on a temporary basis. Of this amount, approximately 65% was earmarked for CEPA-related initiatives, including the hiring and training of Intelligence Officers and other staff,

research on the regulated community, further development of the National Enforcement Management Information and Intelligence System (NEMISIS) and work on setting performance measures. (The other 35% was designated for enforcing the pollution prevention provisions of the *Fisheries Act* for which Environment Canada has enforcement responsibilities.)

NEMISIS is a database and enforcement tool to record data relating to environmental occurrences, inspections and investigation actions. Enforcement managers also use it to track and report on enforcement activities. It is proving to be useful and effective.

Environment Canada has continued to work cooperatively with its law enforcement partners — the Royal Canadian Mounted Police (RCMP), Transport Canada and the Canada Customs and Revenue Agency — toward improved CEPA-related enforcement. Environment Canada and the Canada Customs and Revenue Agency continued to work on a Memorandum of Understanding to improve enforcement of environmental legislation at border points. The MOU was signed in September 2000.

A federal-provincial-territorial working-level enforcement meeting was held in St. Andrews, New Brunswick, in June 1999. Participants reviewed enforcement strategies, shared enforcement-related knowledge and experience, and discussed common training opportunities.

Prosecution Results

During fiscal year 1999–2000, Environment Canada brought 26 charges against four defendants for violations of CEPA. Of these 26 charges, three were withdrawn. A defendant charged with violating the *New Substances Notification Regulations* pleaded guilty and received a fine of \$30 000. In addition, the court ordered the defendant in that case to pay \$15 000 for watershed improvements under a fisheries management plan, and a further \$15 000 to an industry association for training on compliance

with environmental regulations. The remaining charges against other defendants are still before the courts.

National Training Program

Environment Canada has a responsive enforcement training program designed to meet needs as they arise. During 1999–2000, considerable effort was made to ensure that both new and experienced enforcement staff received appropriate training on CEPA, 1999. Staff participated in over 120 training sessions.

To prepare staff for their new responsibilities under CEPA, 1999 and also with a view to protecting public safety and officer safety, courses were offered in Applied Peace Officer Sciences, Enforcement Officer Safety and Defensive Tactics, Driver Training and Vehicle Safety, and Safe Boat Handling. A six-week General Enforcement Training course for CEPA Enforcement Officers was offered in conjunction with the RCMP Training Academy.

Other courses in 1999–2000 included Negotiation Skills Training for CEPA Enforcement Officers and a Forensic Interviewing course.

The National Training Plan is posted on Environment Canada's Web site. Courses advertised on the training schedule are also available to staff at other government agencies responsible for enforcing environmental legislation.

Enforcement on the Net

An enforcement home page on Environment Canada's Green Lane, which was launched in 1998—1999, drew an average of 4500 visitors a month in 1999–2000, not including Environment Canada employees. The average time visitors stayed at the site increased from approximately

five minutes in April 1999 to over 10 minutes in January, February and March, 2000.

www.ec.gc.ca/enforce/homepage/english/index.htm

Administrative Agreements

Administrative agreements are working arrangements between the federal government and provincial and territorial governments to streamline efforts in administering regulations. The agreements usually cover inspections, enforcement, monitoring and reporting, and so forth, with each jurisdiction retaining its legal authorities.

Quebec

Environment Canada signed an administrative agreement with the Government of Quebec for the application in Quebec of the federal pulp and paper mill regulations (in effect from November 24, 1997, to March 31, 2000).

This agreement deals with regulations under CEPA and the *Fisheries Act* and creates a “one-window” approach to administer regulations affecting 63 pulp and paper mills and two municipal mills in Quebec. The CEPA federal regulations covered by the agreement (the *Pulp and Paper Mill Effluent Chlorinated Dioxins and Furans Regulations* and the *Pulp and Paper Mill Defoamer and Wood Chip Regulations*) affect seven mills. The other mills are not subject to the regulations because they do not use chlorine or chlorine dioxide in their bleaching process.

In respect to the agreement, the province collects the regulated information, conducts inspections under its own regulations and relays reports to Environment Canada.

In 1999–2000, Environment Canada reviewed 1029 monthly and quarterly reports from the mills and municipalities. Of the 1029 reports reviewed,



Enforcement Activities and Actions 1999–2000

Regulations, Guidelines, etc.	Enforcement Activities			Enforcement Actions				
	Administrative Verification	Field/Site Inspections	Investigations	Verbal Warning	Written Warning	Directives	Referral to Others	Prosecutions
Asbestos	4	1						
Benzene in Gasoline	85	49			2			
Chlor-Alkali Mercury Release	10	0						
Chlorobiphenyls	9	64	5					
Contaminated Fuel	3							
Diesel Fuel	53	16			2			
Export & Import of Hazardous Wastes	327	129	9	4	25		14	10
Federal Halocarbon	5							
Federal Mobile PCB Treatment & Destruction		1						
Fuels Information No. 1	44	1	1				2	
Gasoline	22	48						
Glycol	2	5						
National Pollutant Release Inventory	95	25	10		79		8	
New Substances Notification	286	19			23			3
New Substances Notification – Biotechnology	188	32	1					
Ocean Dumping, 1988	5	48						
Ozone-depleting Substances, 1998	206	97	9		3		9	1
PCB Waste Export	181	1						
PCB Waste Export, 1996	4							
Pulp & Paper Mill Defoamer & Wood Chip	59	17		1	1			
Pulp & Paper Mill Effluent Chlorinated Dioxins & Furans	133	18	1					
Registration of Storage Tank Systems for Petroleum Products & Allied Petroleum Products on Federal Lands	257	8	1					
Secondary Lead Smelter Release	1	7						
Storage of PCB Material	206	103	7	3	252	7	1	
Sulphur in Gasoline		48						
Toxic Substances Export Notification	97							
Vinyl Chloride Release, 1992								
CEPA – Sections	241	41	20	2	81	2	14	12
CEPA Totals	2 525	779	64	10	468	9	48	26

Note: There were no enforcement actions related to the following regulations: Masked Name; Phosphorus Concentration; and Prohibition of Certain Toxic Substances.

139 related to the CEPA regulations, with the remaining reports concerning the *Fisheries Act*. Environment Canada also produced monthly reports on compliance, discussed problematic mills with Quebec authorities and took appropriate action in conformity with the enforcement and compliance policy. Twenty-six warning letters and two investigations by federal government representatives were ongoing during the year.

The agreement management committee met four times and participated in numerous conference calls during the year, mainly to negotiate the next agreement.

Saskatchewan

The Canada–Saskatchewan Administrative Agreement for the *Canadian Environmental Protection Act* came into force on



September 15, 1994. The agreement covers these 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*
- *Storage of PCB Material Regulations*

The agreement commits both governments to share information relating to the administration of their respective legislation; to ensure that statutory reporting obligations on releases that violate the requirements of their respective legislation are met; and to cooperate on enforcement activities including inspections and investigations.

Releases

Saskatchewan legislation requires the 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 the Canada–Saskatchewan Administrative Agreement and to avoid duplication of activities, the Saskatchewan Department of Environment and Resource Management (SERM) receives all reports related to unauthorized releases or spills and then notifies Environment Canada about releases of substances that fall under CEPA. SERM provides Environment Canada with an annual report on spills in the province. There is improved federal–provincial coordination related to reporting of spills and releases since the signing of the agreement in 1994.

In 1999–2000, SERM received reports of 27 releases of electrical fluids that had the potential of containing PCBs. It was confirmed that none of the spills contained PCBs over 50 ppm, and the province concluded that the appropriate corrective

actions had been taken, including the standard procedure of an immediate clean-up of the spill.

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 plant 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 SERM has incorporated the regulation requirements into the mill’s permit. The mill provides all information required by the regulations to the province and the information is copied to Environment Canada. Administrative inspections of these data showed compliance with the regulations. *Pulp and Paper Mill Defoamer and Wood Chip Regulations* — Pulp and paper mills in Saskatchewan do not use products listed in these regulations at this time. Consequently, no inspection activities occurred under the *Pulp and Paper Mill Defoamer and Wood Chip Regulations*.
- *Benzene in Gasoline Regulations* — The CEPA regulations limit the amount of benzene allowed in gasoline. Under these regulations, many regulatees are required to submit reports on their gasoline composition and reports by independent auditors describing their compliance with the regulations. A review of these reports shows some non-compliance with the regulations.
- *Ozone-depleting Substances Products Regulations* — The CEPA regulations prohibit the sale of small containers of ODS. 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 the sale of small containers, and SERM has focused on certification and recovery activities. There were no inspections conducted by Environment Canada or SERM in 1999–2000.

- *Ozone-depleting Substances Regulations* — These CEPA regulations control the manufacture, import, consumption and export of ODS. There is no manufacturing of ODS in Saskatchewan. In 1999–2000, Environment Canada conducted two inspections, one involving a farmer selling some R-12 he had in stock and the other at an automotive dealer who distributes and uses ODS. These inspections found compliance with the federal regulations.
- *Chlorobiphenyls Regulations and Storage of PCB Material Regulations* — The CEPA *Chlorobiphenyls Regulations* concern in-use equipment containing PCBs. The *Storage of PCB Material Regulations* require proper 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. There were no inspections conducted under the *Chlorobiphenyls Regulations* of in-use equipment containing PCBs in 1999–2000. SERM conducted 10 PCB storage site inspections in conjunction with its industrial site inspections. There were no inspections conducted by Environment Canada under the *Storage of PCB Material Regulations* in 1999–2000.
- 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.

Training

Environment Canada held three training sessions for SERM in 1999–2000. During these meetings, 50 SERM staff, many of whom were Conservation Officers, learned about the obligations of each agency under the Canada–Saskatchewan Administrative Agreement. On March 31, 2000, the seven Conservation Officers from the Saskatchewan Spill Control Centre were designated as Enforcement Officers, according to Section 217, CEPA, 1999, for the purposes of receiving spill reports under Section 95, CEPA, 1999.

Equivalency Agreements

CEPA Section 34(6) provides for equivalency agreements where provincial or territorial environmental legislation has provisions that are equivalent to the CEPA provisions. The intent is to eliminate the duplication of environmental regulations. Equivalency is based on the following criteria: equivalent regulatory standards (as determined by measurement and testing procedures and penalties and enforcement programs) and similar provision for citizens to request investigations.

The federal government has the responsibility to report annually to Parliament on the administration of equivalency agreements. Only one province, Alberta, has entered into an equivalency agreement with the federal government.

Canada–Alberta Equivalency Agreement

An Agreement on the Equivalency of Federal and Alberta Regulations for the Control of Toxic Substances in Alberta was signed on June 1, 1994, and came into effect on December 28, 1994. The following CEPA regulations no longer apply in Alberta:

- *Pulp and Paper Mill Effluent Chlorinated Dioxins and Furans Regulations* (all sections),

- *Pulp and Paper Mill Defoamer and Wood Chip Regulations* (Sections 4(1), 6(2), 6(3)(b), 7 and 9),
- *Secondary Lead Smelter Release Regulations* (all sections), and
- *Vinyl Chloride Release Regulations* (all sections).

In 1999–2000, the regulated facilities continued to show compliance with their provincial operating licences for dioxins, furans and vinyl chloride emissions. There were no violations.



SECTION 3: CEPA-RELATED ACTIVITIES

This section covers CEPA-related activities that concern the Act as a whole.

Public Access to Information

In 1999–2000, Environment Canada received 115 requests for CEPA-related information under the *Access to Information Act*. The requests were on the following subjects:

- CEPA legislation
- CEPA inspectors
- environmental compliance checks
- contaminated sites
- import and disposal of toxic waste
- import and export of hazardous wastes
- road salt
- methylcyclopentadienyl manganese tricarbonyl (MMT)
- fuel composition
- sulphur emissions
- sulphur in fuels

Information was released, in whole or in part, for 33 requests. The information did not exist for 53 requests. Seven requests were abandoned by the applicant. One request was for information that was totally exempt. Information was not released in two cases because the applicants did not reside in Canada and were not Canadian citizens. Nineteen requests were still being processed at year-end.

Seventy-five of the 115 requests concerned the environmental compliance status of properties or facilities. Compliance with respect to all Acts administered by Environment Canada was included in the search.

Environment Canada finished the first stage of building an online legislative resource. The Environmental Acts and Regulations Web site is a gateway to Canadian legislation and regulations

related to the environment. The Web site provides summaries of federal Acts and regulations that are relevant to Environment Canada's programs and responsibilities. It links to Justice Canada's database, where the full text of an Act or regulation is available online. When the Act or regulation is wholly or partially administered by Environment Canada, hotlinks connect to relevant program Web sites, if possible. There are also links to the Canadian Council of Ministers of the Environment Web site and to provincial and territorial legislatures and environment ministry sites. Where these jurisdictions have online access to their statutes and regulations, site visitors receive this information as well.

www3.ec.gc.ca/EnviroRegs

Environment Canada–Health Canada CEPA Management Committee

The CEPA Management Committee was established pursuant to the 1990 MOU between Environment Canada and Health Canada concerning toxic substances and CEPA. During 1999–2000, the Committee continued to oversee both departments' programs dealing with Priority Substances, new chemicals and biotechnology products, the development of control options for toxic substances, amendments to CEPA and its regulations, and other related issues.

CEPA Federal–Provincial Advisory Committee

The CEPA Federal–Provincial Advisory Committee (FPAC), established under Section 6 of CEPA, is composed of members from provincial and territorial environmental ministries as well as a representative from the federal ministries of Environment and Health. The Committee's main purpose is to ensure early and effective collaboration on environmental protection and toxic management initiatives.

It also provides a forum for sharing information between the two levels of government.

During the short period before the creation of the National Advisory Committee under CEPA 1999, FPAC:

- welcomed Nunavut as a new member of the Committee,
- worked with Health Canada on the revisions to the Hazardous Products (Liquid Coating Materials) Regulations, and
- held a Voluntary Initiatives Workshop with Ontario to explore opportunities for federal–provincial collaboration in promoting the effective use of environmental voluntary approaches in managing toxic substances.

Activities in Preparation for CEPA, 1999

After extensive consultations with Canadians that began in June 1994, a bill to renew CEPA, Bill C-32, was introduced into Parliament on March 12, 1998. On April 28, 1998, it passed second reading and was referred to the Standing Committee on Environment and Sustainable Development. It received royal assent on September 14, 1999. Bill C-32 was proclaimed into force on March 31, 2000.

In preparation for the changes in the renewed CEPA, the Department has undertaken various activities.

Amendments to Regulations

In preparation for the proclamation of CEPA, 1999, Environment Canada and Health Canada amended 24 regulations to harmonize the wording of the regulations with the terminology and scheme of the new Act.

Public Information Sessions

To ensure that individuals and organizations with an interest in CEPA, 1999 had an opportunity to learn about the new legislation and how it would be implemented, Environment Canada hosted 12 public information sessions across Canada. The sessions began on March 13, 2000, and continued

until May 24, 2000, with approximately 2000 participants attending. Sessions were held in Vancouver, Whitehorse, Edmonton, Yellowknife, Regina, Winnipeg, Toronto, National Capital Region, Montreal, Fredericton, Halifax and St. John's.

National Advisory Committee

The National Advisory Committee (NAC) began operations on November 15, 1999. Required by Section 6, CEPA, 1999, the new Committee is similar to the Federal–Provincial Advisory Committee that it replaced, although it has a broader membership and mandate. The NAC comprises representatives from provincial, territorial and Aboriginal governments and is currently co-chaired by Environment Canada and Health Canada. Its main purpose is to foster early and effective collaboration and consultation on environmental protection and toxic management initiatives. It also provides a forum for the sharing of information on various environmental matters.

The NAC was put in place in advance of the coming into force of CEPA, 1999 so that existing regulations could be amended to include appropriate references to the new legislation and be put into effect at the same time as CEPA, 1999. The new law requires the Minister to give the NAC an opportunity to advise on a proposed regulation before making the regulation.

The committee held one meeting and two conference calls during its first months of operation in 1999–2000. Topics covered included planning for the implementation of CEPA, 1999, environmental emergencies plan guidelines, pollution prevention plan guidelines, virtual elimination plan guidelines, ground-level ozone, particulate matter, six Priority Substances List substances and the Domestic Substances List.

Environmental Emergencies

Part 8, CEPA, 1999, allows Environment Canada to address the prevention of, preparedness for, response to and recovery from environmental emergencies. It introduces the concept of a



“safety net” to address gaps in or between federal and provincial/territorial legislation. Section 199, CEPA, 1999, provides authority to require environmental emergency plans for substances that are declared toxic.

Draft Implementation Guidelines on Requirements for Environmental Emergency Plans for substances declared toxic under CEPA, were drafted for public consultation in December 1999. These draft guidelines were distributed to the CEPA National Advisory Committee members for comment, and two multistakeholder consultation workshops were held in Ottawa and Calgary in January and February 2000. Approximately 80 people from industry, environmental groups, labour and other stakeholder groups attended the workshops. The workshops addressed the issue of environmental emergency planning, virtual elimination planning and the pollution prevention provisions of CEPA, 1999. Revised guidelines — *Implementation Guidelines for Part 8, Section 199, Authorities for Requiring Environmental Emergency Plans* — have been prepared and distributed for public review and comment.

www.ec.gc.ca/ee-ue/plans/plans_e.cfm

Pollution Prevention Activities

CEPA, 1999 is designed to protect the environment and human health through pollution prevention. Under the Act, people releasing toxic substances to the environment can be required to prepare and implement pollution prevention plans to minimize or eliminate the environmental and human health risks posed by these substances. The Department continued to encourage the private sector to take positive pollution prevention actions through voluntary initiatives and various pollution prevention Memorandums of Understanding.

Guidelines for the implementation of CEPA, 1999’s pollution prevention planning provisions were developed, and multistakeholder consultation workshops were held to solicit feedback.

Specific accomplishments in the regions include:

- Pacific and Yukon Region is part of a joint government–industry steering committee formed to develop a pollution prevention program for the printing industry in British Columbia. A template environmental policy for printing operations has been produced, and an environmental management system implementation guide was drafted and piloted.
- Prairie and Northern Region worked with the auto-body auto-repair sector in Manitoba to improve environmental performance and reduce the use of toxic substances in this predominantly small and medium-sized business sector. The Automotive Trades Association, Manitoba Public Insurance Corporation and Manitoba Motor Dealers Association are among the sector organizations attempting to transfer environmental protection methods learned in other jurisdictions and facilities to Manitoba through a series of pilot projects and training. As an example, the Ontario Autobody Profitability Manual/Workbook was revised to reflect the Manitoba sector and was used by the 85 member firms attending the Manitoba Autobody Profitability Workshop and Tradeshow. This project was undertaken through an existing Pollution Prevention Partnership Project with Manitoba Environment and the Alliance of Manufacturers and Exporters Canada.
- Ontario Region has promoted pollution prevention as the preferred approach to environmental protection in the Great Lakes Basin. Overall, four Ontario Region industrial pollution prevention projects have accounted for reductions of more than 9600 tonnes of priority toxics and over 334 000 tonnes of other toxics of concern. There are partnerships with five main industrial sectors — automotive manufacturing; automotive parts manufacturing; metal finishing; printing and graphics; and clothes cleaning. As well, Ontario Region continues to partner with

facilities to develop specific pollution prevention demonstration sites. Projects currently underway include the Warkworth Institution (Correctional Services Canada), the Ottawa–Carleton Regional Transit Commission, the Hamilton International Airport and Oshawa Harbour. The main objective of these demonstration sites is to promote and institutionalize pollution prevention concepts and practices.

- The Centre for Electric Vehicle Experimentation in Quebec, in partnership with Quebec Region, other federal departments, Hydro-Québec and the Government of Quebec, established an Electric Vehicle Project in the greater Montreal area. This project demonstrates the use of electricity as an alternative energy source for operating vehicles and focuses on owners of commercial and institutional fleets. To set an example, Quebec Region encourages employees to use its electric vehicle for fieldwork and short trips under 60 km in the course of their duties. So far, the vehicle has travelled more than 3800 km.
- Atlantic Region, in partnership with the Parks Canada Agency, the Government of Nova Scotia, campground owners and recreational vehicle camper associations, developed a project to reduce the use of toxics in recreational vehicles. Chemicals commonly used in treating recreational vehicle liquid wastes contain bactericides, which often interfere with septic systems and other waste treatment systems and pose a potential toxic risk when their disposal takes place at campgrounds. Through public awareness activities, such as news releases, signs at campground dumping stations, and promotional pamphlets, the public is being encouraged to use readily available, less harmful alternatives.

Partnerships with other levels of government are key to harmonizing approaches to pollution prevention. The success of the St. Lawrence River Action Plan is built on a close working

relationship between the federal and Quebec governments, which has resulted in the development of a pollution prevention program with projects aimed at reducing 18 toxic substances of concern in three industrial sectors: metallurgy, chemicals and metal finishing.

The Canadian Pollution Prevention Information Clearinghouse (CPPIC) is an Internet tool that provides pollution prevention information to anyone with access to the Internet. A variety of technical reports, fact sheets, manuals, environmental tip sheets, guides, legislation and training materials is accessible through CPPIC. In 1999–2000, the usability of CPPIC was assessed. Based on this assessment, efforts were made to increase the number and type of users visiting the site and to add other elements to the site. New sections include Pollution Prevention for Youth; Frequently Asked Questions; and a glossary that explains commonly used pollution prevention terms. As of March 2000, the number of user sessions on CPPIC increased to a high of 6 500 per month.

www3.ec.gc.ca/CPPIC

The Department's efforts to increase the capacity of Canadians to implement pollution prevention practices continued through the EcoAction Community Funding Program. The Program supports non-profit group projects that have positive, measurable environmental results. In 1999–2000, EcoAction funded over 60 projects that deal with water quality improvement, pesticide reduction, air toxics reduction and other pollution prevention issues.

The Pollution Prevention Awards, presented by the Canadian Council of Ministers of the Environment, recognize organizations that have shown leadership in pollution prevention — the use of processes, practices, materials, products or energy that avoid or minimize the creation of pollutants and wastes — at the source. Four awards were presented in 1999. Of these, two award winners worked together to eliminate the use of mercury in the production of batteries and to initiate a successful battery-recycling



Two Examples of Projects Funded through EcoAction

Oil Drum Clean-up

Abandoned, empty fuel drums in the Cumberland Sound near Pangnirtung on Baffin Island were causing concern for the community. Rust and fuel leaking from the drums can affect the lakes, rivers, seas and land. With the assistance of the EcoAction Fund, the Pangnirtung Hunters and Trappers Organization undertook an extensive clean-up and drum removal operation. At the same time, members of the organization began to educate people in the community about the hazards of abandoned drums and littering. There are also ongoing reminders through small print ads and radio announcements, helping everyone to understand that steps for a healthier environment benefit people and the environment now and in the future.

Down the Drain — With Care

What goes down the drain eventually ends up in the rivers and streams of Canada. Many household products contain hazardous chemicals that, when they go down the drain, can affect water quality, wildlife habitats and even human health. In Delta, British Columbia, volunteers are helping people to understand more about the effects of hazardous chemicals in the home. The Delta Recycling Society's program, *Toxic Free Homes*, reaches out into the community. With the assistance of the EcoAction Fund and partners in the area, the organization has visited homes to do audits of household products and distribute information about environment-friendly alternatives. Workshops on natural cleaning solutions, organic gardening and natural lawn care have been supported with public service announcements produced by Delta Cable. Brownies and Girl Guides have helped with the campaign by making posters for many locations in the community.

campaign. As of January 1996, mercury is no longer used in the production of alkaline and zinc carbon batteries. At the same time, mercuric oxide batteries were discontinued for sale in Canada. As a result, the amount of mercury entering the Canadian solid waste stream from this source, which was estimated at 75 tonnes in 1986, was reduced to four tonnes in 1991 and is now virtually zero.

Enforcement Preparations

CEPA, 1999 gives certain Environment Canada staff additional powers to enforce the law and several new enforcement tools. During 1999–2000, Enforcement Officers developed their capacity and the necessary procedures to use these powers and tools in order to be ready for the coming into force of the Act. New powers and tools include:

Peace Officer Powers

CEPA, 1999 grants designated pollution inspectors and investigators the powers of peace officers. This means that they can serve summonses and subpoenas; obtain inspection warrants; use force in certain situations; obtain tele-warrants and general warrants; stop and detain cars, trucks, boats and other conveyances; and arrest people without a warrant.

In addition, analysts who accompany Enforcement Officers on inspections have been granted the power to open containers and examine their contents, to take samples, to conduct tests and measurements, and to have access to information, on paper or computer files, in the place being inspected.

Ticketing

A ticket can be issued in situations where, for example, a warning is believed to be inadequate but a court prosecution is not warranted. Work toward implementing this authority through the *Contraventions Act* has started.

Environmental Protection Compliance Order

By issuing an environmental protection compliance order, a designated officer can stop a violation or prevent one from occurring or require actions to be taken.

Environmental Protection Alternate Measures

An environmental protection alternate measure is a negotiated settlement between offenders and the Crown. Its purpose is to avoid lengthy prosecutions and at the same time ensure that the offender gets back into compliance with the law. These measures can be used only when charges have been laid under CEPA, 1999 and the alleged offence fits certain specified criteria in the Act. The measure must be registered with the court as a public document, ensuring transparency and accountability. Once the accused complies with the measure, the Crown withdraws the charges.

Environmental Protection Actions

Any individual residing in Canada, who is at least 18 years old, can apply to the Minister of the Environment for an investigation of an alleged CEPA offence. The Minister must investigate within a reasonable time. If the investigation does not take place within a reasonable time or the response is not reasonable, the applicant may take a civil court action against the alleged offender.

Categorizing and Screening the Domestic Substances List (DSL)

Section 73 of CEPA, 1999 requires the Minister of the Environment and the Minister of Health to categorize substances on the DSL for the purpose of identifying those that are considered to present the greatest potential for exposure to individuals

in Canada, or that are persistent or bioaccumulative and inherently toxic to humans or non-human organisms. Substances considered to meet these criteria are then subject to a screening-level risk assessment (under Section 74) to determine whether they are toxic (as defined in Section 64 of the new Act) or whether they should be added to the Priority Substances List for an in-depth assessment of potential risks to the environment or human health.

To prepare for this exercise, an expert international workshop to develop modelling approaches for persistence, bioaccumulation and aquatic toxicity was held in 1999. In addition, information on persistence, bioaccumulation and toxicity is being collected for the 12 000 organic substances on the DSL.

To develop the processes, approaches and criteria for decision making for conducting the screening-level risk assessments, Environment Canada and Health Canada have initiated a pilot project involving 110 organic chemicals selected from the DSL. Assessment activities will inform both departments on the approaches for conducting screening-level risk assessments on substances categorized from the DSL. In addition, Health Canada is developing approaches to identifying those substances that may present the greatest potential for exposure to individuals in Canada, and approaches to screening-level assessments of human health risks.

Environment Canada has set up a Domestic Substances List Advisory Group with representatives from government, industry, academia, environmental organizations and consultant groups to identify and resolve issues of a scientific, technical and process nature that will emerge from its implementation of the DSL categorization and screening assessment program. This Advisory Group met on three occasions in 1999–2000.

Persistence and Bioaccumulation Regulations have been developed and went into force on March 31, 2000. The criteria for persistence and



bioaccumulation are the same as those in the Toxic Substances Management Policy.

Substances Banned or Severely Restricted by Other Jurisdictions

Another initiative begun by Environment Canada in anticipation of the new CEPA is the identification and review of substances banned or severely restricted by other jurisdictions in Canada and in OECD countries. An action plan has been prepared, proposing procedures for exchanging information on these substances with other jurisdictions.

SECTION 4: CEPA-RELATED INFORMATION

Research Publications

Environment Canada and Health Canada scientists published hundreds of reports, papers, book chapters, articles and manuscripts on CEPA-related subjects during 1999–2000. This impressive body of work appeared in books and scientific journals that are available in libraries and from the publishers. Departmental publications are available from the departmental library or the nearest regional library. Many current departmental publications are also available through Environment Canada's Inquiry Centre, located on the Main Floor of Place Vincent Massey, 351 St. Joseph Boulevard, Hull, Quebec K1A 0H3.

Further information on specific CEPA-related publications may be found on the Internet at the Web site addresses listed throughout this annual report.

Contact Name for Health Canada Information

David J. Martin
Communications Advisor
HPB Communications Division
Health Canada
Telephone: (613) 957-8656
Fax: (613) 957-8805
E-mail: David_J._Martin@hc-sc.gc.ca

Contact Names for Environment Canada Information

Headquarters

Mark Colpitts
Communications
Environmental Protection Service
Telephone: (819) 953-6603
Fax: (819) 953-8125
E-mail: Mark.Colpitts@ec.gc.ca

Ann McMonagle
Strategic Policy and Communications
Telephone: (819) 953-2853
Fax: (819) 994-6484
E-mail: Ann.Mcmonagle@ec.gc.ca

Josée Lamothe
Media Relations and Ministerial Communications Services
Telephone: (819) 953-9738
Fax: (819) 953-6789
E-mail: Josee.Lamothe@ec.gc.ca

Regional Managers of Communications

Wayne Eliuk
Atlantic Region
Telephone: (902) 426-1930
Fax: (902) 426-5340
E-mail: Wayne.Eliuk@ec.gc.ca

Clément Dugas
Quebec Region
Telephone: (418) 648-5777
Fax: (418) 648-3859
E-mail: Clement.Dugas@ec.gc.ca

Mary Salmena
Ontario Region
Telephone: (416) 739-4541
Fax: (416) 739-4776
E-mail: Mary.Salmena@ec.gc.ca

Heather Hamilton
Prairie and Northern Region
Telephone: (780) 951-8867
Fax: (780) 495-2478
E-mail: Heather.Hamilton@ec.gc.ca

Paul Kluckner
Pacific and Yukon Region
Telephone: (604) 664-9399
Fax: (604) 713-9517
E-mail: Paul.Kluckner@ec.gc.ca



Research Facilities

Climate and Atmospheric Research Directorate

Joan Masterton

Director, Science Assessment & Integration
Branch

Telephone: (416) 739-4321

Fax: (416) 739-4380

E-mail: Joan.Masterton@ec.gc.ca

Environmental Technology Centre

Dr. David Thornton, Director

Telephone: (613) 991-9550

Fax: (613) 998-1365

E-mail: David.Thornton@etc.ec.gc.ca

National Water Research Institute

Dr. Martine Allard

Manager, Science Liaison

Telephone: (905) 336-4503

Fax: (950) 336-6444

E-mail: Martine.Allard@ec.gc.ca

National Wildlife Research Centre

Keith Marshall

Chief, Wildlife Toxicology Division

Telephone: (819) 997-3044

Fax: (819) 953-6612

E-mail: Keith.Marshall@ec.gc.ca

St. Lawrence Centre

Jean Burton

Telephone: (514) 283-9930

Fax: (514) 283-1719

E-mail: Jean.Burton@ec.gc.ca

Wastewater Technology Centre

Dr. Jocelyn Paré

Interim Director

Telephone: (905) 336-4745

Fax: (905) 336-4858

E-mail: Jocelyn.Paré@ec.gc.ca



Abbreviations

5NR MOU	Memorandum of Understanding on Science and Technology for Sustainable Development among the five federal natural resources departments: Agriculture and Agri-Food Canada, Environment Canada, Fisheries and Oceans Canada, Health Canada and Natural Resources Canada
AEGLO	UN ECE Protocol to Abate Acidification, Eutrophication and Ground-Level Ozone
AMAP	Arctic Monitoring and Assessment Programme
ARET	Accelerated Reduction/Elimination of Toxics
ASTM	American Society for Testing and Materials
BPA	bisphenol A
CAEAL	Canadian Association of Environmental Analytical Laboratories
CCME	Canadian Council of Ministers of the Environment
CEPA	<i>Canadian Environmental Protection Act</i>
CFCs	chlorofluorocarbons
CO	carbon monoxide
DCE	1,2-dichloroethane
DDT	dichlorodiphenyltrichloroethane
DEHP	bis(2-ethylhexyl)phthalate
DSL	Domestic Substances List
EDS	endocrine-disrupting substance
EMAN	Ecological Monitoring and Assessment Network
GEF	Global Environmental Facility
GHG	greenhouse gas
GMO	genetically modified organism
GPA	Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities
HCB	hexachlorobenzene
HFCs	hydrofluorocarbons
HMs	heavy metals
ISO	International Organization for Standardization
MAP™	microwave-assisted process™
MOU	Memorandum of Understanding
NAC	<i>Canadian Environmental Protection Act</i> National Advisory Committee
NAPS	National Air Pollution Surveillance Network
NDSL	Non-Domestic Substances List
NEMISIS	National Enforcement Management Information System and Intelligence System
NO ₂	nitrogen dioxide
NPRI	National Pollutant Release Inventory
O ₃	ground-level ozone
ODS	ozone-depleting substance
OECD	Organization for Economic Cooperation and Development
PAH	polycyclic aromatic hydrocarbon
PBiT	persistent or bioaccumulative and inherently toxic
PCB	polychlorinated biphenyl
PCDDs	polychlorinated dibenzodioxins
PCDFs	polychlorinated dibenzofurans
PHC	petroleum hydrocarbons
POP	persistent organic pollutant
ppb	parts per billion



ppm	parts per million
PM	particulate matter
PSL	Priority Substances List
RPA	Regional Programme of Action for the Protection of the Arctic Marine Environment from Land-Based Activities
SERM	Saskatchewan Department of Environment and Resource Management
SO ₂	sulphur dioxide
TEAM	Technology Early Action Measures
TSMP	Toxic Substances Management Policy
TTPC	tributyltetradecylphosphonium chloride
UN-ECE	United Nations Economic Commission for Europe
VOC	volatile organic compound
WGAQOG	CEPA Federal–Provincial–Territorial Working Group on Air Quality Objectives and Guidelines