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Canadian Environmental Protection Act, 1999

CEPA Annual Report

April 2002 to March 2003

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Canadian Environmental Protection Act, 1999

CEPA Annual Report

April 2002 to March 2003

Message from the Minister

I am pleased to provide Canadians with the Government of Canada's annual report on the administration of the *Canadian Environmental Protection Act, 1999* (CEPA 1999) for the reporting period April 2002 to March 2003. The goals of the Act, which came into force on March 31, 2000, are to contribute to sustainable development through pollution prevention and to protect the environment, human life, and human health from the risks associated with pollution. With the close collaboration of my colleague, the Honourable Pierre Pettigrew, Minister of Health, Environment Canada and Health Canada officials are committed to fulfilling our obligations under CEPA 1999.

During the reporting period, Budget 2003 saw the government increase its support of CEPA 1999 programs by allocating $75.0 million over two years to improve the capacity within Environment Canada and Health Canada for meeting CEPA 1999 obligations. The new resources are expediting the work in numerous programs, from risk assessment and management of toxic substances to compliance promotion and enforcement, as well as monitoring environmental quality and reporting environmental information to the public. This year's accomplishments in areas such as clean air and clean water underscore the value and effectiveness of CEPA 1999 in helping us to accomplish our sustainable development goals.

The report also emphasizes the importance of collaboration with other countries, all government jurisdictions, industry, and non-governmental organizations. Canada's international agenda focused on the global assessment of mercury, a review of the Global Programme of Action to evaluate our progress in protecting the marine environment, and the adoption of the Stockholm Convention on Persistent Organic Pollutants. Effective and integrated approaches, policies, and programs supported by strengthened partnerships led to government departments working together across the board to share information. We continued to draw on a growing body of information to generate concrete solutions that address real environmental problems and health challenges, such as circulatory and respiratory diseases. We continued to engage the United States on transboundary issues and the provinces to achieve more stringent national guidelines on air and water quality. The result is that our policies and, in particular, our CEPA 1999 actions have led to a cleaner environment and better health.

As we continue to expand our scientific understanding of the impacts and risks of chemical substances released into the environment, I am confident that the authorities found in CEPA 1999 will help Canadians in their efforts to protect and conserve their health and environment.

For further information on actions being taken under CEPA 1999, and to find ways to become part of the solution, I encourage all Canadians to consult the CEPA Environmental Registry on Environment Canada's website at www.ec.gc.ca/CEPARegistry.

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

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Foreword

This annual report provides an overview of the key results achieved under the Canadian Environmental Protection Act, 1999 *(CEPA 1999) for the period April 1, 2002, to March 31, 2003.*

The report responds to the requirement under CEPA 1999 to provide an annual report to Parliament on the administration and enforcement of the Act as well as the research conducted by Environment Canada and Health Canada. The chapters in this report are organized according to the 11 major Parts of CEPA 1999. Each chapter contains introductory remarks that describe the applicable provisions of CEPA 1999, followed by a description of the key results achieved under that Part.

CEPA 1999 also makes specific mention of several provisions of the Act that need to be addressed in the report to Parliament, as follows:

- ***Activities of the CEPA 1999 National Advisory Committee and of any committees established under paragraph 7(1)(a)*** — Section 1.1 of this report highlights the activities of the National Advisory Committee during 2002–03. There were no other committees established under paragraph 7(1)(a) of CEPA 1999 in 2002–03.
- ***Administration of the Act under administrative agreements*** — Section 1.2 of this report describes the activities under the administrative agreements during 2002–03.
- ***Administration of agreements respecting equivalent provisions*** — Section 1.3 of this report describes the activities under the Canada–Alberta Equivalency Agreement during 2002–03.
- ***Administration of the international air pollution provisions*** — Although there were no activities under these provisions (Division 6 of Part 7) of CEPA 1999 during 2002–03, Section 7.6 of this report highlights results that flow from commitments on several international agreements respecting air pollution.
- ***Administration of the international water pollution provisions*** — There were no activities under these provisions (Division 7 of Part 7) of CEPA 1999 during 2002–03.
- ***Research conducted under the authority of the Act*** — Environment Canada and Health Canada scientists published numerous reports, papers, book chapters, articles, and manuscripts on subjects related to CEPA 1999. This impressive body of work appeared in books and scientific journals that are available in libraries and from the publishers. Although it is not possible to describe all of these activities, Section 3.2 of this report provides examples of the types of research initiatives under way and their key contributions in 2002–03.

1. Administration (Part 1)

1.1 National Advisory Committee (NAC)

CEPA 1999 requires the Minister of the Environment to establish a National Advisory Committee composed of one representative for each of the federal Ministers of Environment and Health, representatives from each province and territory, and not more than six representatives of Aboriginal governments drawn from across Canada.

The Committee advises the Ministers on actions taken under the Act, enables national, cooperative action, and avoids duplication in regulatory activity among governments. The Committee also serves as the single window into provincial and territorial governments and representatives of Aboriginal governments on offers to consult.

To carry out its duties in 2002–03, the Committee held two face-to-face meetings and five conference calls. Some of the federal initiatives brought to the Committee for discussion included:

- proposed pollution prevention plans regarding ammonia dissolved in water, inorganic chloramines, and chlorinated wastewater effluents;
- amendments to the *Environmental Emergency Regulations*;
- risk management strategies for road salts, nonylphenol and its ethoxylates, and textile mill effluents; and
- amendments to the *New Substances Notification Regulations*.

The character, extent, and results of the Committee's involvement in such matters vary with the nature of the issue and relative priority for each jurisdiction. With respect to municipal wastewater effluent, the Committee was engaged throughout the process of developing a proposed instrument to manage the risks posed by ammonia dissolved in water, inorganic chloramines, and chlorinated wastewater effluents. Advice from Committee members and from a working group helped to focus proposed pollution prevention planning on higher-risk wastewater systems and establish realistic objectives for the four-year implementation period. Committee members also advised on the need to engage the Canadian Council of Ministers of the Environment in a broader discussion on wastewater management issues.

In the case of the *Environmental Emergency Regulations*, the Committee provided valuable input during a series of regular briefings. As a result of comments received, the proposed regulations were amended to better address a number of technical issues, such as the additional requirement to prepare and implement an environmental emergency plan, reporting when thresholds are exceeded, and incorporation of a one-window emergency reporting mechanism to avoid duplication and facilitate more efficient emergency response.

www.ec.gc.ca/CEPARegistry/gene_info/nac.cfm

1.2 Administrative Agreements

The Act allows the federal government to enter into administrative agreements with provincial and territorial governments and contains provisions to allow for administrative agreements with Aboriginal governments as well as an Aboriginal people.

www.ec.gc.ca/CEPARegistry/agreements/Admin_Agree.cfm

1.2.1 Canada–Saskatchewan Administrative Agreement

The Canada–Saskatchewan Administrative Agreement, in force since September 1994, is a work-sharing arrangement covering certain provincial legislation and seven CEPA 1999 regulations, which include two regulations related to the pulp and paper sector, two regulations on ozone-depleting substances, and three on polychlorinated biphenyls (PCBs).

Key results under the agreement in 2002–03 included:

- ***Inspection*** — Environment Canada and Saskatchewan conducted a joint field inspection to confirm that products listed in the pulp and paper regulations were not being used. No violations were detected. Environment Canada conducted 11 field inspections under the *Ozone-depleting Substances Regulations*, which included analyzing 10 aerosol products to determine if ozone-depleting substances were present. No violations were detected. Environment Canada conducted four inspections under the *Chlorobiphenyls Regulations* and four inspections under the Storage of *PCB Material Regulations*. Provincial authorities received reports of 32 releases of electrical fluids that could potentially contain PCBs. It was confirmed that none of the spills contained PCBs at levels over 50 parts per million. The province concluded that corrective actions were taken, including immediate cleanup of spills.
- ***Training*** — Thirty-five provincial staff were trained by Environment Canada on the roles and responsibilities of each department under the administrative agreement.
- ***Promotion*** — In support of their Turn in Polluters/Poachers line for environmental offences, Saskatchewan aired a public service announcement. During this period, 79 environment-related calls were received. From these calls, two written warnings were issued.

1.2.2 Canada–Quebec Pulp and Paper Administrative Agreement

Administrative agreements concerning the pulp and paper sector have been in place between the province of Quebec and the Canadian government since 1994. The second agreement expired on March 31, 2000. On July 27, 2002, the proposed Canada–Quebec Pulp and Paper Administrative Agreement was published in Part I of the *Canada Gazette*. The response to the only comment received on the proposed agreement was published in Part I of the *Canada Gazette* on March 1, 2003.

Under the agreement, the province acts as a "single window" for the gathering of information from Quebec pulp and paper manufacturers and forwards such information to Environment Canada for the purpose of enabling the latter to implement its Act. Both levels of government retain full responsibility for carrying out inspections and investigations and for taking appropriate enforcement measures in order to ensure compliance with their respective requirements on the part of the industry.

1.2.3 Agreement Respecting the National Air Pollution Surveillance (NAPS) Program Memorandum of Understanding (MOU)

The National Air Pollution Surveillance program has been in existence since 1969 and has operated without a formal agreement (see section 3.1.1 of this report). The Report of the Commissioner of the Environment and Sustainable Development for 2000 recommended that an agreement be put in place. This has now been negotiated using the *Statement of Principles to Guide Cooperative Arrangements on Monitoring and Reporting* developed by the Canadian Council of the Ministers of the Environment (CCME). The purpose of the MOU is to define formally the roles and responsibilities of the NAPS program participants, and essentially enshrines the successful and collaborative operating arrangements that have evolved over the three decades. The CCME Deputy Ministers accepted in principle the proposed agreement on April 15, 2003. The Deputy Ministers intend to sign the agreement upon completion of their respective internal processes to secure authority to enter into the agreement (Winter 2004).

1.2.4 Canada-wide Standards

Developed under the Canadian Council of Ministers of the Environment (CCME) Harmonization Accord, Canada-wide Standards are designed to address environmental protection and health issues. Many federal actions to achieve these commitments are taken under CEPA 1999. Under the Canada-wide Accord, priority substances for Canada-wide Standards include mercury, dioxins and furans, benzene, particulate matter and ground-level ozone, and petroleum hydrocarbons in soil. While the standards are developed by the CCME, the Minister uses section 9 of CEPA 1999, related to administrative agreements, to enter into the commitments accepted by the CCME for the substance targeted by the standard.

www.ec.gc.ca/CEPARegistry/agreements/cws.cfm

www.ccme.ca

New Standards in 2002–03

In 2002–03, the Canada-wide Standards for Dioxins and Furans from Steel Manufacturing Electric Arc Furnaces and Iron Sintering Plants were approved. The Canada-wide Standard for Conical Waste Combustion of Municipal Waste was received by the CCME in November 2003. These Canada-wide Standards represent a significant step towards the ultimate goal of virtual elimination of dioxins and furans.

- ***Dioxins and Furans from Steel Manufacturing Electric Arc Furnaces and Iron Sintering Plants*** — These standards were endorsed in March 2003. Based on 1999 emission estimates, the standards will result in a 90% reduction in dioxins and furans from iron sintering plants by 2010 and a 60% reduction in dioxins and furans from steel manufacturing electric arc furnaces by 2010. The standards specify emission limits for new and existing facilities, as well as associated emission testing and reporting requirements. Multistakeholder advisory groups were formed to provide advice on the development of pollution prevention strategies and the 2003 review of the standards. Data indicate that the majority of steel manufacturing electric arc furnace facilities are already meeting the interim 2006 emission goal and that the sole remaining iron sintering plant is meeting the interim 2002 goal.
- ***Canada-wide Standard for Base Metals Smelters*** — The Canada-wide Standard is to be included as a release guideline in an Environmental Code of Practice for Base Metals Smelters and Refineries.

Implementation Plans for Existing Canada-wide Standards

Ministers have committed to being accountable to the public and each other by developing implementation plans to achieve the standards. The following list provides information on the actions taken towards meeting the commitments outlined in the implementation plans.

www.ec.gc.ca/CEPARegistry/agreements/cws.cfm

- ***Benzene Phase II*** — The 2001 national progress report shows a 30% drop in ambient benzene levels in 16 urban areas in Canada. Phase 2 of the standard calls for existing facilities addressed under Phase 1 to further reduce benzene emissions by 6 kilotonnes from the Phase 1 30% reduction total, to be realized by the end of 2010. In fact, the Phase 2 benzene emissions reduction target, originally set for achievement by 2010, has almost been reached at this date. The federal government will therefore continue to monitor progress in benzene emissions reduction in conjunction with provinces and territories and will evaluate the need for future annual reporting.
- ***Dioxins and Furans and Mercury from Waste Incineration and Coastal Pulp and Paper Boilers*** — Consultations were held with federal departments that own, operate, or manage non-hazardous waste incinerators on how to meet the standard and the possibility of implementing an Environmental Performance Agreement. Detailed information from federal departments was collected on the size of incinerator, type of waste, and process used. Work was undertaken to determine the extent of dioxin and furan emissions from residential burning of municipal solid waste and open burning of municipal solid waste and landfills. The Canada-wide Standard for dioxins and furans for conical waste combustors was drafted to phase out their operation and prevent the construction of new facilities.
- ***Mercury Emissions from Fluorescent Lamps*** — In a letter of commitment, Canadian lamp manufacturers voluntarily agreed to meet this reduction. Environment Canada is monitoring industry compliance with the standard and developing materials to promote the life cycle management of fluorescent lamps in government operations.
- ***Mercury Switches*** — Environment Canada held discussions with automobile and white goods manufacturers on removing mercury switches prior to melting down steel in electric arc furnaces.
- ***Mercury Emissions from Base Metals Smelting*** — Environment Canada has:
  - established a Strategic Options Implementation Committee, which will serve as the focal point for monitoring implementation progress;
  - maintained an emissions database in order to track emissions of mercury in the federal government;
  - supported international action to reduce anthropogenic mercury emissions; and
  - supported the National Pollutant Release Inventory as the major public reporting mechanism for mercury emission rates.
- ***Mercury from Dental Amalgam Wastes*** — Environment Canada is implementing the standard through a Memorandum of Understanding, signed in March 2002, with the Canadian Dental Association. In 2002–03, estimates for the 2000 baseline year for a number of Canadian dentists targeted for voluntary compliance were established.

- ***Petroleum Hydrocarbons in Soil*** — The federal government is responsible for the implementation of the standard at federal contaminated sites, if and when these sites are remediated. The standard will be implemented under the Treasury Board Federal Contaminated Sites Management Policy, which was issued in July 2002. Under the auspices of the interdepartmental Contaminated Sites Management Working Group, an approach to applying the Canada-wide Standard within the federal departments was developed. Environment Canada is working to develop a strategy that includes the development of a guideline to deal with those parts of the federal house not covered by the Treasury Board policy (federal works and undertakings and Crown corporations). A pilot workshop on the federal implementation of the standard was given to selected federal departments.
- ***Particulate Matter and Ozone*** — Progress in 2002–03 included the following:
  - Environment Canada worked with the provinces and territories, industry, and non-governmental organizations to complete Multi-pollutant Emission Reduction Analysis Foundation reports for seven sectors: electric power generation, iron and steel, base metals smelting, pulp and paper, lumber and allied wood, concrete batch mix plants, and hot-mix asphalt paving batch-plants. A consultation workshop was held on the draft versions of these reports in June 2002.
  - The Update Documents for the Science Assessment Reports for Particulate Matter and Ozone were completed. In these documents, the most recent scientific publications on the health effects were reviewed, and the new evidence for addressing the identified gaps was delineated.
  - Environment Canada led two pilot projects in partnership with the provinces of Quebec and Alberta to test the provisions of the Guidance Document on Achievement Determination.
  - The New Source Emission Guidelines for Thermal Electricity Generation were published in January 2003 and came into force on April 1, 2003. The Guidelines provide tighter emission limits based on current best available technology to reduce smog and acid rain pollutants from new coal-, oil-, and gas-fired electric power plants.
  - The Intergovernmental Working Group on Residential Wood Combustion held its first public consultation in October 2002, which included the update of Canadian Standards Association standards, the development of regulations on new and ecologically sound residential wood combustion appliances, the creation of public awareness programs, and an evaluation of opportunities for establishing a national program to improve and replace wood stoves.
  - In March 2003, the department, in cooperation with the CCME, sponsored a national consultation workshop to explore the elements that should be considered in developing a guidance document on ways of incorporating the principles of Continuous Improvement and Keeping Clean Areas Clean into jurisdictions' implementation plans, and the initial draft work plan for development of the guidance document was developed. The guidance document is expected to be completed in the spring of 2004.

– Environment Canada participated in the national Burn It Smart awareness campaign by acting as a project manager for projects in Quebec, British Colombia and Yukon. The 2002–2003 campaign reached more than 200 Canadian communities and over 7000 Canadians. The campaign was made possible through the involvement of different levels of government, of many non-governmental associations and industry associations.

Standards under Development in 2002–2003

Mercury Emissions from Coal-Fired Electric Power Generators — Environment Canada worked with the provinces and their utilities to develop a coal/ash sampling program that would determine the location and levels of mercury in coal.

1.3 Equivalency Agreements

The Act allows the use of equivalency agreements where, by Order in Council, a regulation under CEPA 1999 is declared to no longer apply in a province, a territory, or an area under the jurisdiction of an Aboriginal government that has equivalent requirements.

1.3.1 Canada–Alberta Equivalency Agreement

In December 1994, an Agreement on the Equivalency of Federal and Alberta Regulations for the Control of Toxic Substances in Alberta came into effect. This agreement recognizes that provincial regulations are "equivalent" to CEPA 1999 regulations governing the pulp and paper sector, secondary lead smelter releases, and vinyl chloride releases. These CEPA 1999 regulations no longer apply in Alberta.

Alberta Environment reported that no violations of the regulations under the agreement were detected in 2002–03. All four kraft mills complied with their dioxin/furan effluent limit requirements. The two regulated chemical plants did not exceed the regulated vinyl chloride emission levels.

www.ec.gc.ca/CEPARegistry/agreements/Eqv_Agree.cfm

2. Public Participation (Part 2)

Public participation in matters related to CEPA 1999 is an integral part of the success of the Act. Part 2 outlines participation requirements under the Act, such as the establishment of an environmental registry. Related provisions are also covered, such as "whistleblower protection," allowing an individual who is at least 18 years of age and a resident of Canada to request an investigation of an alleged offence, and reiterating the common law and the Quebec Civil Code right to seek compensation through civil action for loss or damage as a result of an alleged violation of the Act or regulations.

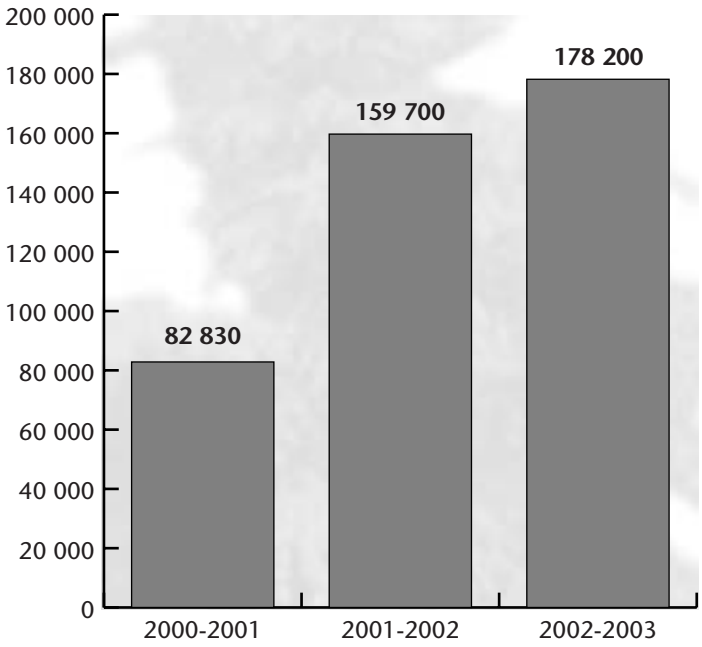
2.1 Environmental Registry

In its third year of operation, 2002–03, the Registry's trend for increased popularity continued, with more site usage than ever before. The CEPA Registry received approximately 100 000 more users and three times the number of hits than in 2000–01, its first year of operation. In comparison to its second year of operation, there was an increase of 20 000 users, with a 30% increase in the number of hits. By the end of fiscal year 2002–03, there were almost 15 000 visitors per month, generating an average of over 25 000 hits per day (over 800 000 hits per month).

As part of the CEPA Registry's effort to improve services to Canadians, web access and inquiries about the Registry have been monitored and evaluated. The private sector and general public are the most active users of the site. Significant activity also originates from federal departments, such as:

- Environment Canada;
- Agriculture and Agri-Food Canada;
- Department of National Defence;
- Health Canada; and
- Public Works and Government Services Canada.

Users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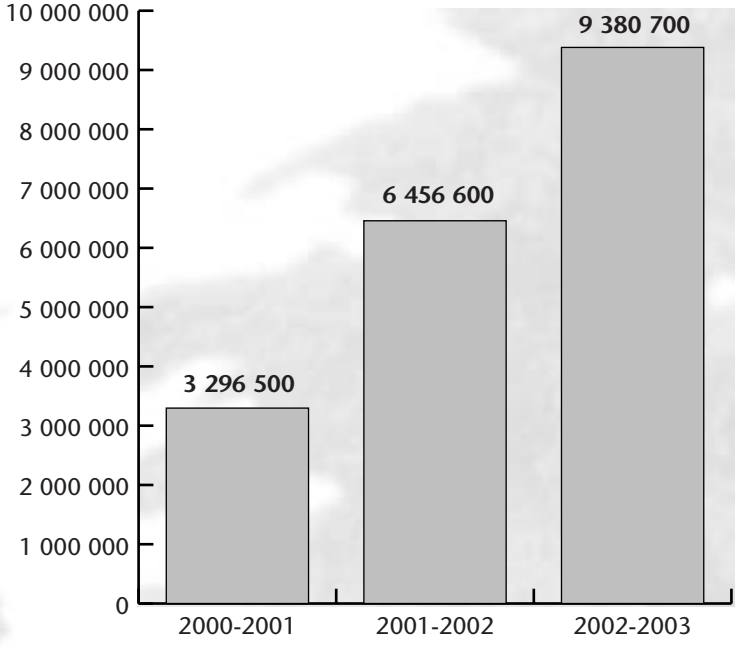
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3. Information Gathering, Objectives, Guidelines, and Codes of Practice (Part 3)

Part 3 authorizes the Minister of the Environment to:

- *establish environmental monitoring systems;*
- *collect and publish data on environmental quality in Canada;*
- *conduct research and studies on pollution control and environmental contamination;*
- *formulate plans for pollution prevention and the control and abatement of pollution; and*
- *publish information on pollution prevention, pertinent information on all aspects of environmental quality, and a periodic report on the state of the Canadian environment.*

3.1 Environmental Quality Monitoring

Environmental quality monitoring is an essential function for assessing exposure to and impacts from toxic substances and determining the effectiveness of risk reduction measures. Monitoring remains an important component of the scientific work supporting the implementation of CEPA 1999.

www.ec.gc.ca/CEPARegistry/SandT/Monitoring.cfm

3.1.1 National Air Pollution Surveillance Network

The National Air Pollution Surveillance Network is a joint federal, provincial, territorial, and municipal network, established in 1969. It is primarily an urban network, with 253 air monitoring stations in 156 communities. In total, almost 800 continuous analyzers and samplers are used to provide air quality measurements for a variety of purposes.

In 2002–03, Environment Canada replaced numerous old monitors for measuring criteria air pollutants and supplied new monitors to satisfy the monitoring needs of the Canada–United States Air Quality Agreement Ozone Annex and the Canada-wide Standards for particulate matter and ozone. Monitoring and sampling equipment worth a total of $5.3 million has now been purchased for this network under the Ozone Annex funding.

Data were also collected on other pollutants, including coarse and fine particulate matter, particulate lead, particulate sulphate, nitric oxide, over 150 organic compounds, and over 70 metals and ions. Over 15 000 samples of all types

were analyzed in support of the network and other toxics-related priorities. The 2001 annual data report was completed (**www.etc-cte.ec.gc.ca/publications/napsreports_e.html**).

www.etc-cte.ec.gc.ca/naps/naps_summary_e.html

3.1.2 Ecological Monitoring and Assessment Network

The Ecological Monitoring and Assessment Network (EMAN), coordinated by Environment Canada, links the many groups and individuals involved in ecological monitoring in Canada in order to better detect, describe, and report ecosystem changes as a result of toxic substances. Essential elements include various national and regional monitoring programs, more than 80 long-term integrated ecosystem monitoring sites, and a diversity of ecological monitoring initiatives conducted by numerous collaborators at all levels of government, non-governmental organizations, and volunteers. Projects also focus on standardization of methods and approaches, engagement of new sectors and partners, and the delivery of information to improve knowledge and the basis for choice. Working solely through the development and maintenance of partnerships, the EMAN provides Environment Canada with a mechanism to enhance its capacity to collect, access, integrate, manage, interpret, apply, and deliver sound data and information on ecosystem changes.

Notable results in 2002–03 included:

- Participation by the EMAN Coordinating Office (EMAN CO) in the development of a common approach to monitoring and assessment of target toxics in Canada, the US and Mexico under the NAFTA-CEC's Sound Management of Chemicals (SMOC) initiative. Towards the end of the 2002-2003 CEPA AR reporting period the EMAN CO took the lead in the collaborative development of the aquatic and terrestrial monitoring components which will continue in 2003–04;
- Implementation of a standardized set of ecosystem monitoring protocols with national programs for plant and lake ice phonologies and draft protocols for benthic invertebrates and lichens;
- Partial implementation of standardized protocols through NatureWatch, a suite of community-based monitoring programs implemented in cooperation with the Canadian Nature Federation. Almost 10 000 participants contribute their observations on indicators of ecosystem health from every province and territory, creating a clearer picture of the Canadian environment;
- Finalization of a second special issue of the journal *Monitoring Ecological Change in Canada*;
- A national science meeting on Enhancing the Effectiveness of Ecological Monitoring; and
- Development and testing of the Canadian Community Monitoring Network, in partnership with the Canadian Nature Federation. This is a consistent model and standardized tool-set for engaging citizens and community decision-makers in generating and using environmental information to improve local decisions related to conservation and sustainability.

www.eman-rese.ca/

3.1.3 Canadian Air and Precipitation Monitoring Network

The Canadian Air and Precipitation Monitoring Network is a non-urban atmospheric chemistry monitoring network operated and maintained primarily by Environment Canada. The network's 27 measurement locations are sited to ensure that they are regionally representative and not immediately impacted by local pollution sources.

In 2002–03, the network replaced its existing ozone analyzers and started to expand its real-time ozone and particulate matter measurement capacity to provide the background information required for Environment Canada's Environmental Prediction/Air Quality Forecasts and to meet Canada–United States Air Quality Agreement Ozone Annex commitments for the exchange of data.

Data have been collected at selected sites on a wide range of other pollutants, including particulate sulphate, ammonium, and nitrate, reactive nitrogen species, gaseous sulphur dioxide, and nitric acid. In excess of 25 000 samples of all types were analyzed in 2002–03 in support of Canadian environmental research initiatives.

www.msc-smc.ec.gc.ca/natchem/particles/n_capmon_e.html

3.1.4 Arctic Monitoring and Assessment Programme

The Arctic Monitoring and Assessment Programme (AMAP) continued to investigate the presence of persistent organic pollutants (POPs) in the circumpolar Arctic. Health Canada and Environment Canada contributed significantly to the preparation of the AMAP report on Arctic pollution, published in 2002, which summarizes the current understanding of the issues of POPs, heavy metals, radioactivity, impacts on human health and changing pathways in the North.

www.amap.no/

3.1.5 Water Quality Monitoring

In May 2001, the Canadian Council of Ministers of the Environment committed to a three-year action plan on water that will better link existing water quality monitoring networks to ensure that Canadians have access to comprehensive information. Under the leadership of Environment Canada, progress achieved in 2002–03 included:

- ***National Experts Workshop on Water Quality Monitoring*** — An Experts Workshop on Water Quality Monitoring was held in October 2002 to facilitate a national dialogue on Canadian water quality monitoring and to share information on the current state of the science, technology, and best practices in this area. Results from the workshop show that partnerships and network building will be essential in the future. Participants recommended the development of a Canada-wide Framework for Water Quality Monitoring to provide a set of nationally consistent guiding principles related to the purpose, conduct, and use of water quality monitoring in Canada.

www.ccme.ca/assets/pdf/monitoring_workshop_current_state_eng.pdf

- ***Canada-wide Water Quality Data Referencing Network*** — The network, developed with support from the Canadian Information System for the Environment, responds to a need for enhanced information access. The referencing network is a comprehensive Internet tool that uses map- and text-based queries to provide access to federal, provincial, and territorial water quality monitoring information. The network contains about 2000 federally monitored sites and about 6000 sites monitored by provincial and territorial partners. The network is currently being tested and verified by federal, provincial, and territorial partners.

3.2 Research

Part 3 requires the Ministers of Environment and Health to conduct research and studies. Ministers are also required to conduct and report on research on hormone-disrupting substances. The Act allows the Minister of Environment to collaborate with others on research and sponsor or assist research studies in relation to environmental quality, pollution prevention, environmental emergencies, or the control and abatement of pollution.

Environment Canada and Health Canada scientists published hundreds of reports, papers, book chapters, articles, and manuscripts during 2002–03. The following sections provide examples of the types of activities undertaken in 2002–03.

www.ec.gc.ca/CEPARegistry/SandT/Research.cfm

3.2.1 Air Quality

Examples of research on air quality in 2002–03 include the following:

- A tri-national (Canada, United States, and Mexico) assessment summarizing the current state of atmospheric science of particulate matter was published through the North American Research Strategy for Tropospheric Ozone;
- Particulate matter emissions from a variety of fuels used in a variety of engines with various emission control systems, including heavy-duty diesel-fuelled vehicles with catalytic reduction technology, were measured;
- Continuing analysis of data from the Pacific 2001 Air Quality Study to further improve understanding of particulate matter behaviour in the Lower Fraser Valley;
- The toxicity of several aliphatic ethers that have been proposed as new diesel fuel additives was assessed;
- Emissions data from landfills in western Canada (Calgary, Regina, and Saskatoon), the Toronto area, eastern Ontario, and the Montréal urban community were gathered;
- *In vivo* and *in vitro* methodologies for studying the comparative toxicity of new and existing airborne aldehydes and assisting in their risk assessment and management was established in collaboration between the University of Toronto and Health Canada;
- Exposure research methodologies for investigating the health impacts of indoor residential exposures and traffic-related air pollution was advanced by Health Canada. The results may impact quantitative estimates of air pollution health impacts in Canadian studies that were affected by the statistical software problems identified earlier in 2002;
- Innovative research efforts were focused on susceptible subgroups, principally children and the elderly (e.g., vascular reactivity in the elderly, chronic airways disease and medication utilization in the elderly, birth cohort study in Prince Edward Island investigating indoor air exposures);
- Efforts to improve Health Canada's ability to conduct valid health impact cost–benefit analyses to measure the health benefits of improved air quality were completed this past year. Development of the Air Quality Benefits Assessment Tool continued to be an ongoing priority;
- Improvement and development of a National Air Quality Index was facilitated by much of the acute health effects research on outdoor air completed this past year;
- Investigations related to long-term health exposures were facilitated by the information gained through the addition of a question pertaining to "residential history in the National Population Health Survey for the 2002–2003 year;

- Continuing with assessment of the contribution of residential heating wood on quantities of air-borne fine particulate matter ($PM_{2.5}$), polycyclic aromatic hydrocarbons (PAH), polychlorinated dioxins & furans, volatile organic compounds (VOC) and certain metals in a residential area of Montréal.

3.2.2 Biotechnology

Examples of research on biotechnology in 2002–03 include:

- Soil test systems for estimating the survival, persistence, gene transfer potential, and ecological effects of genetically modified organisms was reviewed;
- Transformations of the insecticidal protein in genetically modified corn as it is released into the soil and, subsequently, the water table, was studied;
- Transfer of genes introduced through biotechnology (e.g., those that improve herbicide tolerance) by pollen from genetically modified canola to its wild relatives was studied;
- New guidelines for new substances notifiers when characterizing certain biotechnology products were being developed; and
- Technique for antibiotic resistance profiling of *Escherichia coli* for fecal source tracking was developed.

3.2.3 Hormone Disrupting Substances

Examples of research activities addressing hormone disrupting substances in 2002–03 include:

- Release and fate of hormone disrupting substances during agricultural and farm practices was studied;
- Effects of exposure to mixtures of persistent organic pollutants, polychlorinated biphenyls (PCBs), and mercury on developmental neurotoxicity, based on blood contaminant profiles of Arctic populations was studied;
- Toxicity and thyroid disrupting capacity of polybrominated diphenyl ethers was examined;
- Effect of perinatal exposure to a mixture of PCBs (Aroclor 1254) on brain intracellular signalization pathways and proteomics patterns was studied; and
- Effects of postnatal exposure to a mixture of dioxins, furans, and PCBs on estrogen metabolism, expression of detoxification enzymes, and mammary tumour development was studied.

www.hc-sc.gc.ca/hecs-sesc/tsri/index.htm

3.2.4 Metals

Examples of metal studies in 2002–03 include:

- Tests on 26 metals with minimal toxicity information were conducted;
- Pharmacokinetics and epidemiology of manganese was studied;
- Capillary electrophoresis and other separation techniques for the chemical speciation of trace metals in particulate matter in ambient air was studied; and
- Long-range transport of metals (specifically mercury) from coal-fired power production, copper smelting, and forest fires and the contribution of these sources to the global mercury budget was analyzed.

3.2.5 Toxics

Examples of toxicity studies in 2002–03 include:

- Analysis of long-term trends and possible effects in humans and the environment of various organochlorine pesticides, polychlorinated biphenyls (PCBs), and mercury under the Northern Contaminants Program, was summarized and published in the *Canadian Arctic Contaminants Assessment Report — II*;
- Particle-bound and air concentrations of various organochlorine pesticides, PCBs, toxic metals, and polychlorinated dibenzo-p-dioxins and dibenzofurans in the Arctic was measured;
- Total gaseous mercury concentrations at 10 rural sites across Canada was measured; and
- Mercury in three seasons in three locations in Canada at altitudes up to 7 kilometres, to estimate the total atmospheric burden of elemental gaseous mercury was measured.

3.2.6 Water Quality

Examples of water quality studies in 2002–03 include:

- Toxicity and bioaccumulation of tributyltin (an antifoulant pesticide/paint for use on vessels) in six species of freshwater invertebrates were determined;
- Desorption properties of several pesticides was identified;
- Contamination of sewage treatment plant effluents with pharmaceuticals, personal care products, and endocrine disrupting substances, to influence risk management approaches, was investigated; and
- Biological function of urban streams and some streams in agricultural areas within the Georgia Basin area of British Columbia was studied.

3.2.7 Wildlife

Examples of wildlife studies in 2002–03 include:

- Presence of bioactive substances in the Great Lakes to wild fish health assessments and caged fish studies was correlated;
- Thyroid status in feral fishes in the Great Lakes was assessed; and
- One hundred (100) priority chemicals and up to 25 metals were measured in Canadian Arctic wildlife.

www.cws-scf.ec.gc.ca/nwrc-cnrf/toxic/what_e.cfm

3.3 Technology Development

The Act requires the Minister to conduct research and studies relating to pollution prevention and the control and abatement of pollution.

3.3.1 Emergencies Science and Technology

Examples of technology developments in 2002–03 include:

- Aircraft-mounted state-of-the-art prototype sensor that is designed to detect and identify the type of oil in a slick or on a beach was deployed;
- Cleanup techniques for the removal of bitumen from rocky shorelines were assessed;
- Innovative oil sorbents for cleanup of spills were tested;
- Performance of spill-treating agents, such as emulsion breakers, dispersants, and emulsion preventers, with a focus on testing new products entering the market was assessed;
- Feasibility on the use of natural wetlands for remediation of natural gas condensates from gas plants was assessed. Gas plant site management strategies have been refined based on evidence of abatement of contaminant plumes where there are natural wetlands

present. Industry is no longer excavating natural wetlands, which is a direct impact of the Soil and Groundwater Program's Wetlands Project (funded by the Program of Energy Research and Development);
- Monitored Natural Attenuation (MNA) for remediation of petroleum-contaminated sites in collaboration with industry and academia was developed. The findings of the assessment of the MNA are currently feeding into the development of Alberta MNA guidelines; and
- Effectiveness of phytoremediation in reducing hydrocarbon (e.g., total petroleum hydrocarbon; benzene, toluene, ethyl benzene, and xylenes) as an effective and low-cost alternative to most engineering techniques and traditional bioremediation methods was evaluated.

www.etc-cte.ec.gc.ca/organization/estd_e.html

3.3.2 Remediation of Contaminated Sites

Examples of technology developments in 2002–03 include:
- Role of sulphate reduction in the natural attenuation of hydrocarbon contaminants in groundwater and ways to enhance/stimulate the anaerobic biodegradation process was investigated;
- Feasibility of using biobarriers for the confinement of groundwater in fractured bedrock at laboratory and field scales to evaluate the formation of a biobarrier in a fractured bedrock environment subjected to contamination with petroleum products was assessed;
- Use of cyclodextrins to remediate toxic methylmercury in soil and water, the use of enhanced soil flushing for the removal of organic and heavy metal contamination, and the solar detoxification of petroleum hydrocarbon-contaminated groundwater was studied; and
- Environment Canada's adsorption/microfiltration technology for treating arsenic-contaminated water was demonstrated.

www.etc-cte.ec.gc.ca/organization/eeto_e.html

3.4 Guidelines and Codes of Practice

The Act requires the Minister of the Environment to issue objectives, guidelines, and codes of practice for preserving environmental quality. The Act also requires the Minister of Health to issue objectives, guidelines, and codes of practice with respect to the elements of the environment that may affect the life and health of the people of Canada.

3.4.1 Environmental Quality Objectives

In 2002–03, a draft Environmental Objective Framework for assessing effects of municipal wastewater effluent was developed. The framework integrates chemical (substance-specific Canadian Environmental Quality Guidelines), toxicological, and biological indicators to provide a comprehensive approach for assessing the condition of aquatic resources and identifying the effluents responsible for environmental effects. This framework will assist federal risk managers, the public, and the regulated community in assessing progress towards improving and sustaining environmental quality.

3.4.2 Environmental Quality Guidelines

A pilot test of the Water Quality Index, which reports on the overall quality of water bodies, was conducted in the Atlantic Region with participation from the four Atlantic provinces. A report and a methodological assessment were completed. The index is a federal/provincial

effort, endorsed by the Canadian Council of Ministers of the Environment. It is based on a suite of water quality guidelines and provides a consistent mechanism for reporting on the overall quality of water bodies, both regionally and nationally.

In 2002–03, seven Canadian Environmental Quality Guidelines were finalized and 14 others were under development (see Table 1).

3.4.3 Release Guidelines

In 2002–03, two guidelines were completed:

- ***New Source Emission Guidelines for Thermal Electricity Generation*** — The revised guidelines for new power plants, published in January 2003, include new emission limits for smog pollutants (nitrogen oxides and particulate matter) that are 60% and 80% lower, respectively, than the limits in the previous guidelines. The revised sulphur dioxide emission limits, to reduce the threat of acid rain, are up to 75% lower than the previous allowable limits. The guidelines align with new source emission standards in the United States.

www.ec.gc.ca/CEPARegistry/documents/glines/thermal/gl.cfm

- ***Guidelines for Volatile Organic Compounds in Consumer Products*** — The final guidelines, published in November 2002, set volatile organic compound content limits for selected consumer products, such as air fresheners, bathroom cleaners, carburetor cleaners, insecticides, hair sprays, and shaving creams. The guidelines align with the current U.S. Environmental Protection Agency standards.

www.ec.gc.ca/nopp/voc

3.4.4 Codes of Practice

Key results in 2002–03 included:

- ***Dichloromethane-based Paint Strippers*** — Dichloromethane is a toxic substance that is used in commercial furniture refinishing and other stripping applications. Environment Canada published a draft Code of Practice for the safe handling, use, and storage of paint strippers containing dichloromethane and the reduction of dichloromethane emissions from the use of paint strippers in commercial furniture refinishing and other stripping applications on July 3, 2002. The final Code was published in July 2003.
- ***Road Salts*** — A Code of Practice for the environmental management of road salts was being developed in consultation with a multistakeholder working group. The purpose of this Code is to minimize the environmental impact of road salts while maintaining roadway safety. The Code recommends the development and implementation of a salt management plan that should contain best management practices in order to protect the environment. Best management practices could include the use of better salt application technologies and better salt storage and snow disposal practices.

Other key results in 2002-2003 include:

- Publication and development of three analytical methods (for diisopropanolamine, sulpholane, and hydroxysulpholane) — These methods have influenced and will be used in the development of Canadian Council of Ministers of the Environment (CCME) guidelines on sulpholane and diisopropanolamine.
- Assessment of the effects of hydrocarbons on wetland ecosystems and the development of gas plant site management strategies that have

Table 1 Canadian Environmental Quality Guidelines from March 2002 to April 2003

Guideline	Published	In progress
Water	nitrate; fluoride; nonylphenol ethoxylates**	aluminum; diisopropanolamine*; mercury; methyl tertiary-butyl ether; phosphorus framework; sulpholane*; protocol revisions
Sediment	nonylphenol ethoxylates**	N/A
Soil	nonylphenol ethoxylates**; selenium; polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans	carcinogenic polycyclic aromatic hydrocarbons; benzene, toluene, ethyl benzene, xylenes; diisopropanolamine*; sulpholane*; uranium; protocol revisions
Tissue	N/A	N/A

* In partnership with industry.

** Substance is a Schedule 1 CEPA-toxic.

been adopted to monitor contaminant plumes in natural wetlands.

- Publication of three national soil toxicology test methods for assessing toxicity impacts in soil systems — These test methods were essential in the development of science-based national soil quality standards (CCME Canada-wide Standards for Total Petroleum Hydrocarbons). These new methods are required for application in ecological risk assessments that will lead to site-specific soil cleanup criteria relevant to the oil and gas sector.

3.5 Reporting

The Act requires that the Minister publish a periodic report on the state of the Canadian environment and establish and publish a national inventory of releases of pollutants.

3.5.1 National Pollutant Release Inventory

The National Pollutant Release Inventory provides Canadians with access to information on the releases, disposal, transfers, and recycling of, and pollution prevention activities for, key pollutants from companies located in their communities. It is the only national, legislated, publicly accessible pollutant inventory of its kind in Canada.

In 2002–03, existing guidance documents were amended and new guides for criteria air contaminants and wastewater treatment facilities were developed to support the increased reporting requirements established in 2002. Compliance promotion activities were also expanded to advise those facilities that may be required to report under the new reporting requirements of their obligations.

For the 2003 reporting year, the inventory was further expanded to require reporting of 60 new volatile organic compounds to support the scientific assessment of air pollution problems and the air quality modelling studies performed in Canada and the United States.

In April 2003, two annual reports were published. The eighth annual National Pollutant Release Inventory report, *2000 National Overview: National Pollutant Release Inventory*, provides detailed technical analysis of the year 2000 inventory data. A new report, *Informing Canadians on*

Pollution 2002, Highlights of the 2000 NPRI, targets the public with snapshots of key pollution trends, information about toxic substances, overviews on managing pollution in Canada, and tips for communities. Access to pollution data has also been enhanced through improved search tools and new web maps.

www.ec.gc.ca/npri

3.5.2 State of the Environment Reporting

State of the environment reports and environmental indicators serve two key purposes:

- Provide Canadians with timely and accurate information, in a non-technical manner, about current environmental issues; and
- Foster the use of science in policy- and decision-making.

Environment Canada publishes state of the environment reports and environmental indicators and provides support for this work within Canada and internationally. Indicators, reports, data, and tools are available through a redesigned State of the Environment Infobase.

www.ec.gc.ca/soer-ree/English/default.cfm

- ***Environmental Signals 2003*** — In early spring 2003, Environment Canada published a companion set of national environmental indicator reports:
  - *Environmental Signals*: *Canada's National Environmental Indicator Series 2003* depicts trends in the environment through the use of 55 environmental indicators, organized in four theme areas: ecological life support systems; human health and well-being; natural resources sustainability; and human activities.
  - *Environmental Signals*: *Headline Indicators 2003* highlights a small set of 13 indicators aimed at a non-specialist audience.
- ***State of the Environment Reporting at the Regional Level*** — Environmental indicator and state of the environment reports were released for several ecosystems in Canada during 2002–03, including:
  - *Georgia Basin–Puget Sound Ecosystem Indicators Report*, spring 2002 (**http://www.pyr.ec.gc.ca/georgiabasin/reports/EnvInd_Report/summary_e.htm**).
  - For the Great Lakes Basin ecosystem, a State of the Great Lakes Conference was organized in October 2002 to consider the assessments of 43 draft indicators for the upcoming State of the Lakes report (**www.epa.gov/glnpo/solec/2002/plenaries.html**).
  - New and updated regional environmental indicators were made available through Environment Canada's Pacific and Yukon Region website (**http://www.ecoinfo.ec.gc.ca/index_e.cfm**).
- ***Environment Canada Environmental Indicators and State of the Environment Reporting Strategy*** — Environment Canada's Knowledge Integration Directorate has prepared a draft Environmental Indicators and State of the Environment Reporting Strategy, with proposed options, that will foster partnerships among those developing and applying environmental indicators and other state of the environment reporting products to provide a better national picture of the state of Canada's environment. Wide consultation on the draft strategy document began in early 2003.

- ***Canadian Sustainability Indicators Network*** — Environment Canada is leading the development of a Canadian Sustainability Indicators Network. This network facilitates the exchange of knowledge and information on best practices for the development and delivery of indicators and reporting among practitioners in federal departments, provinces, communities, and non-governmental organizations. A National Steering Committee was established in the winter of 2002.
- ***New Environmental Reporting Tools*** — A Canadian Biodiversity Index is being developed that would provide Canadians and decision-makers with a clear, easy-to-understand message on the state of biodiversity in Canada. A framework was developed and widely circulated through the Federal/Provincial/Territorial Wildlife Ministers during 2002–03.
- ***Water Quality Index*** — Environment Canada, in partnership with the provinces, has developed the first national roll-up of the Canadian Council of Ministers of the Environment Water Quality Index, which was provided to the National Round Table on the Environment and the Economy for the Freshwater Quality Indicator in their report *Environment and Sustainable Development Indicators for Canada* (**www.nrtee-trnee.ca/eng/programs/Current_Programs/SDIndicators/ESDI-Report/ESDI-Report_IntroPage_E.htm**).

4. Pollution Prevention (Part 4)

Pollution prevention is a cornerstone of CEPA 1999. It represents a fundamental shift in how we address pollution in Canada. Simply put, pollution prevention is about avoiding the creation of pollution and waste, rather than trying to clean it up after the fact. By substituting raw materials with less toxic alternatives, changing the design or formulation of a product, or replacing older equipment with more efficient technology, a company can move towards pollution prevention and become more competitive and environmentally responsible.

4.1 Pollution Prevention Planning

The Act allows the Minister to require any person or class of persons to prepare and implement a pollution prevention (P2) plan to avoid or minimize pollution and wastes and to reduce the overall risk to the environment or human health. The Minister may also require pollution prevention plans from Canadian sources of international air and water pollution for substances not on the List of Toxic Substances, with the approval of the Governor in Council, and if the government responsible for the area in which the pollution source is located cannot or will not take action.

Key results on pollution prevention planning with respect to Schedule 1 CEPA-toxic substances in 2002–03 included:

- ***Acrylonitrile*** — On May 25, 2002, a proposed notice was published in Part I of the *Canada Gazette*, proposing that Canadian manufacturers of synthetic rubber prepare and implement a pollution prevention plan in respect of acrylonitrile (CAS Registry Number 107-13-1). This publication was followed by a 60-day comment period.

www.ec.gc.ca/CEPARegistry/Documents/notices/g1-13621_n1.pdf

- ***Dichloromethane*** — On August 31, 2002, a proposed notice was published in the *Canada Gazette*, Part I, which would require the preparation and implementation of Pollution Prevention (P2) plans for the use of dichloromethane in aircraft paint stripping, flexible polyurethane foam blowing, pharmaceutical and chemical intermediates, adhesive formulations, and industrial cleaning. This publication was followed by a 60-day comment period.

www.ec.gc.ca/CEPARegistry/Documents/notices/g1-13635_n1.pdf

- ***Municipal Wastewater Effluents*** — On June 7, 2003, a proposed notice was published in the *Canada Gazette*, Part I, which would require specified persons to prepare and implement a pollution prevention plan in respect of one or more of the following substances: ammonia dissolved in water; inorganic chloramines; and chlorinated wastewater effluents. This publication was followed by a 60-day comment period and is available at the following address:

www.ec.gc.ca/CEPARegistry/documents/notices/g1-13723_n1.pdf

- ***Nonylphenol and Its Ethoxylates Used in the Wet Processing Textile Industry and Effluents from Textile Mills that Use Wet Processing*** — On June 7, 2003, a proposed notice was published in the *Canada Gazette*, Part I, which would require the preparation and implementation of a pollution prevention plan in respect of nonylphenol and its ethoxylates used in the wet processing textile industry and of textile mill effluents. This publication was followed by a 60-day comment period and is available at the following address:

www.ec.gc.ca/CEPARegistry/documents/notices/g1-13723_n2.pdf

4.2 Pollution Prevention Programs

4.2.1 Pollution Prevention Awards

The Act allows the Minister to establish programs that publicly recognize significant achievements in the area of pollution prevention. Environment Canada is participating in the Canadian Council of Ministers of the Environment (CCME) Pollution Prevention Awards Program to recognize organizations that have shown leadership and innovation in adopting pollution prevention.

Seven Canadian organizations showing leadership in pollution prevention were honoured at the sixth annual CCME Pollution Prevention Awards held in Calgary, Alberta, on June 11, 2003. The Honourable Dr. Lorne Taylor, Minister of Environment, Alberta, presented each winner with a unique, specially designed plaque using natural and recycled materials.

- Small Business Award — **Aurum Experience Ltd.** of Rocky Mountain House, Alberta, for its ecotourism inn, Aurum Lodge, providing quality accommodation with the least possible adverse effects on the environment.
- Medium Business Award — **Informco Inc.** of Scarborough, Ontario, for identifying pollution prevention opportunities and improving practices used in its commercial printing and lithographic processes.
- Large Business Award — **Novopharm Ltd.** of Toronto, Ontario, for eliminating the use of dichloromethane, a possible carcinogen, in its pharmaceutical tablet coating process operations.
- Organization Award — **City of Toronto Works & Emergency Services Department, Water & Wastewater Services Division, Industrial Waste & Storm Water Quality Unit**, for becoming the first municipality in Canada to incorporate pollution prevention requirements into a Sewer Use By-law and requiring industries to prepare a pollution prevention plan that addresses the quality of industrial discharges to a municipal sewer system.
- Organization Award — **Labour Environmental Alliance Society** of British Columbia, for its Cleaners, Toxins and the Ecosystem project, which showed the effectiveness of a labour–environmental cooperative approach in eliminating the use of

cleaning products containing toxic chemicals.

- Innovations Award — **Mountain Equipment Co-op**, for its new Winnipeg retail facility, designed to be one of the most sustainable commercial buildings in the world, by incorporating innovative techniques and technologies to reduce its impact on the natural environment.
- Greenhouse Gases Reduction Award — **Alberta-Pacific Industries Inc.** of Boyle, Alberta, and their Carbon Central Team, for finding solutions to challenge their greenhouse gas emissions, which will enable Alberta-Pacific's pulp mill to become carbon neutral by 2006.

www.ccme.ca/initiatives/pollution.html?category_id=19

4.2.2 Extended Producer Responsibility and Stewardship

Extended producer responsibility is an environmental policy approach whereby a producer's responsibility for a product is extended to the post-consumer stage of the product's life cycle.

Publications released in 2002–03 included:

- *Proceedings for the Second National Extended Producer Responsibility Workshop*; and
- *Economic and Environmental Performance of Alberta's Used Oil Program*.

www.ec.gc.ca/epr

4.3 Promoting Pollution Prevention

There are a number of outreach programs across the country that are intended to educate Canadians about pollution prevention and enable them to implement pollution prevention practices in their everyday lives. The outreach activities also provide pollution prevention tools to help industries reduce their impacts on the environment.

In 2002–03, a series of fact sheets was developed for the Canadian public and for the private sector. Several fact sheets related to activities in the health sector were produced to encourage other institutions to implement pollution prevention practices:

- *Pollution Prevention in the Health Sector*; and
- *Current Mercury Reduction Initiatives in Ontario Hospitals*.

www.ec.gc.ca/nopp/docs/fact/en/index.cfm

4.4 Regional Pollution Prevention Activities

Examples of projects undertaken by Environment Canada's Regional Offices in 2002–03 include:

- ***Chemical Use Surveys*** — Environment Canada conducted chemical use surveys with several businesses in Halifax and St. John's. The surveys resulted in recommended pollution prevention activities for chemical products of concern under CEPA 1999 and the National Pollutant Release Inventory's 16 industrial sectors.
- ***Lunenburg Pollution Prevention Project*** — A Green Business Network was launched in Lunenburg, Nova Scotia, as part of a larger Lunenburg Municipal Water Pollution Prevention Program. The objective of the larger program is to involve community residential and business sectors and educational institutions in developing plans and actions to reduce the discharge of hazardous materials and pollutants to the municipal sewage system. The Green Business Network, a partnership of Nova Scotia Department of Environment and Labour, Environment Canada, and the Lunenburg Board of Trade, promotes the specific environmental and economic benefits of adopting a pollution prevention approach to small and medium-sized

businesses. A final draft of a pollution prevention workbook for Nova Scotia business has been developed for use in Lunenburg, as well as throughout Nova Scotia.

- ***Corporate Smog Action Plan*** — The plan became fully implemented at Ontario Region's Downsview facility in 2002–03. Actions taken by staff in the summer of 2002 resulted in a reduction of approximately 3000 kilograms of air pollutants.
- ***Business Water Quality Program*** — In partnership with the Regional Municipality of Waterloo, Environment Canada continued the Business Water Quality Program into year two. Twenty-nine businesses participated in the program in the first 18 months. Verified pollution prevention reductions to date include:
  - elimination of 5000 litres of nonylphenol ethoxylates per year;
  - elimination of 415 litres of ethylene glycol/chlorinated cleaning solvents per year;
  - elimination of 337 000 kilograms of phenolic resin filter paper per year;
  - reduction of 200 tonnes of paint sludge per year;
  - reduction of 110 000 cubic metres of water used per year;
  - reductions in biochemical oxygen demand, suspended solids, and phenols in wastewater effluents; and
  - reduction of 8800 tonnes of greenhouse gases per year.
- ***Toronto Region Sustainability Program*** — Environment Canada assisted 18 small to medium-sized enterprises in Toronto in reducing their environmental impact by implementing eco-efficiency improvements through pollution prevention planning. This project has realized an annual cost savings of $653 000 and a total capital investment of $775 000 for the participating businesses. Annual anticipated reductions include:
  - 342 tonnes of volatile organic compounds;
  - 2.5 tonnes of particulate matter;
  - 24 kilograms of metals;
  - 1.8 kilograms of toxic chemicals;
  - 910 tonnes of generic waste diversion (to recycling);
  - 8500 tonnes of water; and
  - 7 tonnes of greenhouse gases.
- ***Enviroclub*** — This program is delivered through a partnership between Environment Canada, Export Development Canada, and the National Research Council. Based in Quebec, the program seeks to encourage small and mid-sized manufacturing firms to voluntarily reduce harmful emissions and reduce their reliance on natural resources while increasing their competitiveness. The initiative has two components: in-plant execution of viable pollution prevention projects and workshops to raise awareness. For the 18 participating firms, in-plant pollution prevention projects produced real environmental and economic benefits. Environmental results include the annual reduction of the following:
  - 400 kg of nonylphenol and its ethoxylates (NPE);
  - 4.3 tonnes of volatile organic compounds (VOC);
  - 35 tonnes of trichloroethylene (TCE);
  - 70 kg of 2-butoxyethanol;
  - 24 000 tonnes of greenhouse gases measured in carbon dioxide equivalents (equivalent to the average annual operation of 5000 cars);
  - 508 tonnes of hazardous wastes (including toxics such as organic sludge and solvents);
  - 1000 cubic metres of wood (equivalent to 10 000 trees);
  - 1300 litres of petroleum products;
  - 51 000 cubic metres of water; and
  - 355 000 cubic metres of natural gas.

The Enviroclub concept was also implemented as a pilot project in federal departments and agencies. The Enviroclub program in federal facilities was launched in May 2001 and ended successfully in September 2003. As a result of the project, eleven federal facilities modified their management practices or operations with a view to reducing the environmental impact of these, through the implementation of 14 pollution prevention projects.

Together, these P2 projects allowed the achievement of noticeable annual environmental improvements. These included the following reductions:

- greenhouse gases: 17 tonnes of CO_2 equivalents per year;
- use of Varsol: 330 litres per year;
- methyl ethyl ketone (MEK): 75 litres per year;
- gasoline: 6400 litres per year;
- 2-butoxyethanol: 42 kilograms per year;
- nonylphenol ethoxylates: 9 kilograms per year;
- hazardous waste: 435 litres per year;
- mineral oil: 615 litres; and
- hydrochloric acid: 205 litres per year.

- **Environment Canada** helped develop the *Waste Management Guide for Small and Medium Sized Enterprises*, a simple, easy-to-read guide for small- and medium-sized business managers that explains the principles of waste management for companies. This working guide and inventory of resources by province and territory equips business managers with the tools they need to assess and modify how they manage their waste, i.e., refuse and recyclable or reusable materials.
- ***Environmental Management Systems*** — Environment Canada's Prairie and Northern Region continued to implement facility-level environmental management systems. Facility environmental management systems now exist for the M.J. Greenwood Centre in Edmonton, Stony Plain Upper Air Station, Prairie and Northern Region Wildlife Research Centre in Saskatoon, and the Eureka Weather Station. A generic environmental management system was developed for the contract upper air stations in the region as well. Environment Canada is responsible for providing information and support relating to environmental management systems and the overall departmental direction.
- ***CleanPrint BC*** — This program addresses environmental concerns relating to the BC printing industry and is delivered through a partnership between Environment Canada, Industry Canada, Greater Vancouver Regional District, City of Vancouver and the BC Printing and Imaging Association. The project's specific objectives are to encourage printing operations to adopt Environmental Management Plans (EMP) and reduce volumes of toxics. Four facilities completed the EMP process this year, receiving CleanPrint BC accreditation and achieving significant environmental results. Estimated annual achievements at the four facilities include:
  - up to 99% reduction in the use of isopropyl alcohol from some operations;
  - reduced solvent use by more than 1000 litres;
  - up to 10% reduction in the use of ink at one facility;
  - reduced solid waste by more than 800 m^3; and
  - close to $200 000 savings and earnings as a result of reduction and recycling activities.
- ***Cleaners, Toxics and the Ecosystem Project*** — With support from Environment Canada, the Vancouver Foundation, and VanCity, the Labour Environmental Alliance Society (LEAS)

conducted this project to help the cleaning industry identify cleaning products containing toxic substances and substitute them with non-toxic alternatives. LEAS delivered nine workshops across British Columbia and provided follow-up assistance to institutional work sites. In total, 143 people participated in the workshops, with many of the participants representing large organizations, such as hospitals, schools, long-term care facilities, hotels, and recreation centres. As a result of the project, it is estimated that more than 20 000 litres of cleaning products containing toxic chemicals have been eliminated from B.C. work sites annually. Many participating facilities have now implemented green purchasing policies. LEAS received a 2002 Canadian Council of Ministers of the Environment Pollution Prevention Award for this work.

For more examples of regional initiatives, you may wish to look through the Pollution Prevention Progress Report at

www.ec.gc.ca/p2progress

4.5 International Actions

Environment Canada undertook projects in various developing countries to train refrigeration technicians and customs officers on practices and technologies to identify, control, and reduce consumption of ozone-depleting substances. Highlights include customs officers training workshops in Belize, Cuba, and Uruguay and refrigeration training workshops in Chile and Jamaica. Evaluations of these workshops by participants were very positive.

Environment Canada's National Office of Pollution Prevention provided direction to the governments of Canada, Mexico, and the United States on how to reduce the exposure of North American ecosystems to mercury through the prevention and reduction of releases of mercury from anthropogenic sources to the environment. Canada continues to play a leading role in the development and implementation of the North American Regional Action Plan on Mercury. For more information, visit Environment Canada's website at

www.ec.gc.ca/mercury

Environment Canada's Atlantic, Quebec, and Ontario regions were involved in a three-year international assessment of the depositional, geological, geographical, and biological factors that control mercury distribution and ecological effects in aquatic ecosystems of northeastern North America. The Northeastern Ecosystem Research Cooperative Mercury Research Group is funded by the U.S. Forest Service and involves over 50 scientists from universities, federal, state, and provincial government agencies, and non-profit groups in Canada and the United States.

5. Controlling Toxic Substances (Part 5)

5.1 Risk Assessments of Existing Substances

There are currently about 23 000 substances manufactured in, imported into, or used in Canada on a commercial scale that have not been assessed for the risks that they pose to human health or the environment. These substances are on the Domestic Substances List (DSL). Substances that are not on that list are considered to be new and are subject to the New Substances Program.

Risk Assessment of Existing Substances is a joint Environment Canada and Health Canada program driven by strict legislative requirements. Among others, CEPA 1999 requires that the Ministers:

- Categorize substances on the DSL by September 2006. This involves identifying substances, based on available information, that:
  - may present, to individuals in Canada, the greatest potential for exposure or
  - are persistent and/or bioaccumulative, in accordance with the Persistence and Bioaccumulation Regulations, and inherently toxic to humans or non-human organisms;
- Conduct a screening-level risk assessment for all substances "categorized in" to determine whether or not the substances are CEPA toxic;
- Establish a Priority Substances List, which identifies substances to be assessed on a priority basis; and
- Review decisions of other jurisdictions (within Canada or the OECD) with which the Minister has developed procedures to exchange information to ban or seriously restrict a substance for environmental or health reasons and determine if the substance meets the definition of toxic under CEPA 1999.

Canada is the only country in the world taking such a comprehensive approach to examining all substances in commerce.

5.1.1 Categorizing the Domestic Substances List

Results in 2002–03 included the following:

- Health Canada developed a proposal for the first stage of priority setting for categorization for the greatest potential for human exposure based on information on the Domestic Substances List (DSL) and identified approximately 1250 compounds as priorities for further consideration.
- Health Canada developed an approach for categorization of organic substances on the DSL for inherent toxicity to humans, based on operational familiarity from draft categorization decisions for 1500 organic substances.
- A multistakeholder workshop was held in October 2002 by Environment Canada to address the technical aspects of persistence and bioaccumulation.
- A Draft Guidance Manual entitled *DSL Environmental Categorization Guidance Document* prepared by Environment Canada for the categorization of organic and inorganic substances on the DSL was posted on the web in June 2003 for a 60-day comment period (**www.ec.gc.ca/substances/ese/eng/dsl/guidance_document.cfm**).

- Ecological toxicity and bioaccumulation data on approximately 900 inorganic substances on the DSL were collected and reviewed by Environment Canada.
- Electronic copies of all the computer-generated estimates and empirical data collected to date for 12 000 organic substances on the DSL were made available to the public and to stakeholders by Environment Canada.

www.ec.gc.ca/substances/ese/eng/dsl/dslprog.cfm

5.1.2 Screening Assessments

In 2002–03, accomplishments at Environment Canada included:

- Problem formulations — a systematic review of available data in order to set priorities — were completed for all 123 organic substances on the Domestic Substances List (DSL) pilot project list.

In 2002–03, accomplishments at Health Canada included the following:

- Finalizing the format of, and refinement of the approaches for, screening health assessments of existing substances; and
- Developing models for category screening health assessments based upon the internal draft screening health assessments for polybrominated diphenyl ethers and perfluorooctane sulfonate and its precursors.

www.ec.gc.ca/substances/ese/eng/dsl/dslprog.cfm

5.1.3 Priority Substances List Assessments

Updates on the First Priority Substances List

Environment Canada and Health Canada released draft conclusions and follow-up assessment reports for public comment on 13 substances from the first Priority Substances List for which there was originally insufficient information to conclude whether they were "toxic" under the 1988 *Canadian Environmental Protection Act*:

- Two substances (di-n-octyl phthalate and non-pesticidal organotin compounds) were proposed not to constitute a danger to human health.
- One substance (1,1,2,2-tetrachloroethane) was proposed not to be harmful to the environment and not to constitute a danger to human health.
- Four substances (styrene, 1,2-dichlorobenzene, 1,4-dichlorobenzene, trichlorobenzenes) were proposed not to be harmful to the environment.
- Three substances (tetrachlorobenzenes, pentachlorobenzenes, and used crankcase oils) were proposed to be harmful to the environment. Tetrachlorobenzenes and pentachlorobenzenes were also proposed for virtual elimination, as they were found to meet the persistence and bioaccumulation criteria and are released primarily as a result of human activity.
- Three substances (3,5-dimethylaniline, aniline, and bis(2-chloroethyl ether)) were suspected to constitute a danger in Canada to human health.
- A draft Assessment Report for chlorinated paraffins (medium- and long-chain) was completed.

www.ec.gc.ca/substances/ese/eng/psap/PSL1_IIC.cfm

Updates on the Second Priority Substances List

Results in 2002–03 included the following:

- Five substances on the second Priority Substances List (nonylphenol and its ethoxylates, textile mill effluents, inorganic chloramines, ethylene oxide, ammonia dissolved in water) were added to the List of Toxic Substances.
- Final decisions were published for three substances (ethylene oxide, N-nitrosodimethylamine, and formaldehyde), which concluded that these three substances are toxic under CEPA 1999. Final Orders to add these substances to the List of Toxic Substances were published in the *Canada Gazette*, Part I, on April 13, 2002.

Progress in 2002–03 on suspended assessments included the following:

- Health Canada worked with an Expert Steering Committee to refine design parameters for a study on the neurological effects of aluminum.
- Health Canada worked with representatives of the American Chemistry Council to develop and refine proposals and protocols for industry-sponsored studies to address uncertainty concerning the progression of renal lesions in male rats following exposure to ethylene glycol.

www.ec.gc.ca/substances/ese/eng/psap/final/main.cfm

5.1.4 Other Assessments

Work continued on the preparation of a guidance document for assessing decisions made by other jurisdictions to ban or restrict substances of concern.

Canada participated in a variety of Organisation for Economic Cooperation and Development (OECD) committees and task forces to develop Screening Information Data Sets for high-production-volume chemicals and to assess the hazards of these chemicals. Member countries are sponsoring initial assessments of the data sets, with Canada sponsoring five. Health Canada worked with representatives of the American Chemistry Council to develop and sponsor a Screening Information Data Set Initial Assessment Report on a group of ethylene glycols for the OECD's high-production-volume assessment program. Environment Canada and Health Canada are also part of a pilot project to review the chemical assessment reports that are being generated under the International Council of Chemical Associations initiative to collect data on and assess 1000 high-production-volume chemicals by 2004.

5.2 Management of Toxic Substances

Substances that are found to meet the definition of toxic under CEPA 1999 are managed throughout their life cycle to minimize the risks that they pose to the environment and human health. Toxic substances that persist in the environment for several months or years, bioaccumulate in the tissue of living organisms, and are predominantly the result of human activity are targeted for virtual elimination. Virtual elimination is the ultimate reduction of the quantity or concentration of the substance in the release below the lowest concentration that can be accurately measured using sensitive but routine sampling and analytical methods.

The Act sets specific timelines for taking preventive or control action to manage the risks posed by toxic substances. Preventive or control instruments for each toxic substance are developed through the Toxics Management Process. The Toxics Management Process is a new,

more streamlined approach to controlling substances that meet the criteria for toxic under CEPA 1999. This process ensures that risk management actions are developed in a way that ensures that industry and public stakeholders are effectively consulted and that the obligations to protect the environment and human health set out in CEPA 1999 are met.

5.2.1 Data Collection and Generation

Under section 68 of CEPA 1999, the Minister has the authority to collect or generate data for the purpose of assessing whether a substance is toxic or capable of becoming toxic or for the purpose of assessing whether to control, or the manner in which to control, a substance. Under section 71 of CEPA 1999, the Minister has the authority to request information that may be in the person's possessions or to which the person may reasonably be expected to have access. Section 71 (1) c) provides the Minister with the authority to request that person or persons described in the Notice generate **new** data through technological and other tests specified in the Notice

In 2002–03, three information-gathering notices (one pursuant to s. 68, and two pursuant to s. 71 (1) b)) were published — no notices under section 71 (1) c) were published.

- S. 68 notice to anyone engaged in the production, import or use of ozone-depleting substances (ODSs) (2002–06–08);
  The Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer agreed to phase out the production and consumption of ODSs. The Fourth Meeting of the Parties decided to allow for possible exemptions to these production/consumption phase-out dates in order to meet the marketplace demand for uses that are considered "essential". The Parties have established criteria and a procedure to assess nominations for "essential" use exemptions. Canada, as a signatory to the Montreal Protocol, must ensure that the requirements of this international treaty are implemented in Canada. During the reporting period, no information was submitted to EC requesting exemption status.
- S. 71 (1) b) notice with respect to short-, medium-, and long-chain chlorinated paraffins (2002–11–30);
  Chlorinated paraffins are used as secondary plasticizers for polyvinyl chloride, as extreme pressure additives in metal machining fluids, and as fire retardants. They are imported into Canada for use mainly as lubricants in the metal working sector. They are also used as flame retardants and/or plasticizers in items including PVC, synthetic rubber, paints and sealants. The information collected is being used to further an ongoing environmental assessment related to chlorinated paraffins, and will be considered in the development of any future management tools.
- S. 71 (1) b) notice with respect to certain hydrochlorofluorocarbons (2003–01–25);
  Hydrochlorofluorocarbons (HCFCs), which have measurable, albeit low, ozone depletion potentials, are included in the list of substances controlled by the Montreal Protocol on Substances that Deplete the Ozone Layer. Parties, including Canada, agreed to control their production and their consumption, monitor their use of these substances, monitor their impact on ozone layer depletion, and encourage the production of alternative products and technologies. The information assisted EC in developing a proposal to amend the Ozone-depleting Substances

Regulations,1998 in order to help those subject to the regulation more effectively comply with the Montreal Protocol requirements.

5.2.2 Risk Management Strategies

Central to the Toxics Management Process is the development of a risk management strategy for toxic substances. Each strategy describes how the risks to human health and the environment posed by the use or release of a particular toxic substance will be addressed. In developing the risk management strategy, Environment Canada identifies the sources that pose the greatest risk to the environment and human health, guided by the science in the risk assessment. A risk management objective is then identified. This objective is usually based on the results achieved from the best available practices, technologies, or techniques and, in some cases, environmental quality objectives are established (see Section 3.4.1).

Once a risk management objective has been set, management measures and instruments to achieve the objective are selected. These management measures may be used to control any aspect of the substance's life cycle, from the design and development stage to its manufacture, use, storage, transport, and ultimate disposal.

Substances that were being considered for addition and substances that were added to the List of Toxic Substances in 2002–03 are found in Table 2. Risk Management Strategies will be proposed for these substances and will be published in the *Canada Gazette* for public review.

In 2002–03, risk management strategies were developed for the following seven toxic substances:

- Acrylonitrile (life cycle management) — The Risk Management Strategy proposed pollution prevention planning as the most effective instrument to reduce releases from synthetic rubber manufacturing facilities. The proposed pollution prevention notice was published in the *Canada Gazette*, Part I, on May 25, 2002. Environment Canada's objective is to reduce releases of acrylonitrile from major industrial sources to the lowest achievable levels through the application of the best available techniques that are economically achievable.

www.ec.gc.ca/TOXICS/EN/detail.cfm?par_substanceID=89&par_actn=s1

- Ethylene oxide (life cycle management) — The Risk Management Strategy proposed guidelines under CEPA 1999 to manage ethylene oxide released from sterilization applications in health care facilities. Application of these guidelines would achieve a 99% reduction of emissions at establishments with no pollution control equipment.

www.ec.gc.ca/TOXICS/EN/detail.cfm?par_sectorID=77&par_actn=s2

- Hexachlorobutadiene (virtual elimination) — Completed in fall 2002, the Risk Management Strategy proposed that hexachlorobutadiene be prohibited under the *Prohibition of Certain Toxic Substances Regulations*, since it meets the criteria for virtual elimination. Hexachlorobutadiene has never been commercially produced in Canada.

Table 2 Substances Added to the List of Toxic Substances (Schedule 1) in 2002–03 and Substances Being Considered for Addition to the List

Substance	Proposed Order adding to Schedule 1 – date	Final Order adding to Schedule 1 – date	Sectors/sources involved
Ozone and the precursors to particulate matter and ozone (gaseous ammonia, ozone, sulphur dioxide, nitric oxide, nitrogen dioxide, volatile organic compounds [VOCs], as specified in the Order)	July 27, 2002	July 2, 2003	Ozone is a gas formed in sunlight and warm stagnant air from reactions involving the precursor gases of nitrogen oxides and volatile organic compounds (VOCs). Fuel combustion processes in the transportation and power generation sectors, releases during the use of solvents, the application of inks and paints and other industrial coatings, the manufacturing of fertilizer in the chemical industry and animal husbandry and fertilizer application in the agricultural sector.
Road salts	December 1, 2001		Application as a de-icer on road surfaces.
Particulate matter containing metals	November 2, 2002	August 13, 2003	Copper smelters and refineries, and zinc plant operations.
Ammonia dissolved in water	November 2, 2002	January 1, 2003	Municipal wastewater treatment plants, agricultural activity, fertilizer production and use, pulp and paper mill operations, mine operations, food processing.
Nonylphenol and its ethoxylates	June 23, 2001	January 1, 2003	Industrial and municipal wastewater treatment plant effluents (liquid and sludge), fertilizer production and direct discharge, pesticide production.
Effluents from textile mills using wet processing	June 23, 2001	January 1, 2003	Most wet processing mills in Canada (96%) discharge to municipal wastewater systems, and 99% of these municipal wastewater systems have primary, secondary, or tertiary wastewater treatment prior to release into receiving water. Approximately 70% of municipal wastewater systems in Canada receive secondary or tertiary treatment.
Ethylene oxide	April 27, 2002	June 4, 2003	Used as a de-icer, use as a sterilizer of health care materials and heat-sensitive products.
Formaldehyde	April 17, 2002	June 4, 2003	Automotive and other fuel combustion, industrial on-site sources, and natural sources (including forest fires).
N-Nitrosodimethylamine (NDMA)	April 27, 2002	June 4, 2003	No industrial or commercial uses of NDMA in Canada; released as by-product and contaminant from various industries, municipal wastewater treatment plants, pesticides, rubber tires, alkylamines, and dye manufacture.
Inorganic chloramines with molecular formula $NH_nCl_{(3-n)}$, where n = 0, 1, 2	June 23, 2001	January 1, 2003	Sewage treatment plants, industrial and cooling water processes treated with chlorine or chloramines, breaks and leaks in water mains, fire-fighting runoff, stormwater runoff from domestic water supplies treated with these substances.
Hexachlorobutadiene	June 1, 2002	August 13, 2003	Used to make rubber compounds. Also used as a solvent and to make lubricants, in gyroscopes, as heat transfer liquid, and as a hydraulic fluid. Mainly released from disposal following industrial uses.

Formerly, the substance was imported into Canada for use as a solvent, but it is no longer imported. There are no natural sources of hexachlorobutadiene in the environment.

www.ec.gc.ca/TOXICS/EN/detail.cfm?par_substanceID=70&par_actn=s1

- Road salts (life cycle management) — Consultations were held on a strategy for reducing releases of road salts to the environment while maintaining road safety. A proposed Code of Practice was developed in consultation with a working group.

www.ec.gc.ca/nopp/roadsalt/reports/en/rms.cfm

- Ammonia dissolved in water, inorganic chloramines, and chlorinated wastewater effluents (life cycle management) — A series of one-day consultation sessions were held in 13 centres across Canada in 2002 on a proposed Risk Management Strategy. The proposed Risk Management Strategy, addressing ammonia dissolved in water, inorganic chloramines, and chlorinated wastewater effluents, was published in August 2002 on the CEPA Registry. The strategy proposed pollution prevention planning for the owners and operators of selected wastewater systems as an integrated step towards a long-term strategy for managing wastewater effluents. The proposed notice requiring the preparation and implementation of pollution prevention plans was published in Part I of the *Canada Gazette* on June 7, 2003.

www.ec.gc.ca/CEPARegistry/documents/part/mwwe/summary.cfm

- Nonylphenol and its ethoxylates (life cycle management) — Environment Canada began implementing the Risk Management Strategy, which proposed pollution prevention planning. The implementation will result in a 50% reduction by December 2006 and a 95% reduction by December 2009 of these substances, which are found in soap and cleaning products, processing aids used in textile wet processing, and pulp and paper processing aids. A working document as well as related instructions were published on the CEPA Registry in June 2003. The document outlines the proposed pollution prevention planning requirements for products containing nonylphenol and its ethoxylates.

www.ec.gc.ca/TOXICS/EN/detail.cfm?par_substanceID=72&par_actn=s1

- Textile mills that use wet processing (life cycle management) — Environment Canada began implementing the Risk Management Strategy, which proposed pollution prevention planning to reduce the use of nonylphenol and its ethoxylates by 97% from textile mills and to lower the toxicity of effluent from these mills. The proposed notice requiring the preparation and implementation of pollution prevention plans was published in the *Canada Gazette*, Part I, on June 7, 2003.

www.ec.gc.ca/TOXICS/EN/detail.cfm?par_substanceID=72&par_actn=s1

The status of the development of management tools and instruments for 2002–03 is summarized in Table 3.

Table 3 Status of Development of Risk Management Instruments and Tools in 2002–03

Management tool	Status
REGULATIONS	
Federal Halocarbon Regulations, 2003	Proposed December 7, 2002
Solvent Degreasing Regulations	Proposed December 7, 2002
Regulations Amending the Gasoline Regulations	Finalized April 9, 2003
Regulations Amending the Sulphur in Gasoline Regulations	Proposed February 1, 2003; Finalized October 8, 2003
Regulations Amending the Benzene in Gasoline Regulations	Proposed February 1, 2003; Finalized October 8, 2003
Off-Road Small Spark-Ignition Engine Emission Regulations	Proposed March 29, 2003
On-Road Vehicle and Engine Emission Regulations	Finalized January 1, 2003
Export of Substances Under the Rotterdam Convention Regulations	Finalized August 28, 2002
Environmental Emergency Regulations	Proposed August 10, 2002; Finalized September 10, 2003
Tetrachloroethylene (Use in Dry Cleaning and Reporting Requirements) Regulations	Finalized March 12, 2003
Living Modified Organisms Regulations	Proposed September 28, 2002
New Substances Fees Regulations	Finalized November 6, 2002
Regulations Amending the Disposal at Sea Regulations	Proposed February 1, 2003
Regulations Amending the New Substances Notification Regulations	Finalized June 18, 2003
Regulations Amending the Export and Import of Hazardous Wastes Regulations	Proposed April 20, 2003
Interprovincial Movement of Hazardous Waste Regulations	Proposed April 20, 2003; Finalized August 15, 2003
Sulphur in Diesel Fuel Regulations	Finalized July 31, 2002
POLLUTION PREVENTION PLANS	
Canada Gazette Notice requesting the preparation and implementation of pollution prevention plans for dichloromethane	Proposed August 31, 2002
Canada Gazette Notice requiring the preparation and implementation of pollution prevention plans in respect of nonylphenol and its ethoxylates used in the wet processing textile industry and effluents from textile mills that use wet processing	Proposed June 7, 2003
Canada Gazette Notice requiring the preparation and implementation of a pollution prevention plan in respect of one or more of the following substances: ammonia dissolved in water; inorganic chloramines; and chlorinated wastewater effluents	Proposed June 7, 2003
Canada Gazette Notice requesting the preparation and implementation of pollution prevention plans for acrylonitrile	Proposed May 25, 2002
CODES OF PRACTICE	
Reduction of Dichloromethane Emissions from the Use of Paint Strippers in Commercial Furniture Refinishing and Other Stripping Applications	Finalized June 2003
Code of Practice for On-Road Heavy-duty Vehicle Emission Inspection and Maintenance Programs	Finalized November 2002
GUIDELINES	
Guidelines for Volatile Organic Compounds in Consumer Products	Finalized November 2002
ENVIRONMENTAL PERFORMANCE AGREEMENTS	
Environmental Performance Agreement (EPA) with the Automotive Parts Manufacturers' Association	Signed June 3, 2002
ADMINISTRATIVE AGREEMENTS	
Canada-wide Standards for Dioxins and Furans from Steel Manufacturing Electric Arc Furnaces and Iron Sintering Plants	Endorsed March 2003
Administrative Agreement Between the Government of Canada and Quebec Pertaining to the Pulp and Paper Sector	Proposed July 27, 2002

5.2.3 Regulations

Progress in 2002–03 included:

- ***Chlorobiphenyls Regulations*** — A final round of stakeholder consultations was held in 2002–03 on the proposed amendments to these regulations. These amendments will accelerate the phase-out of use of polychlorinated biphenyls (PCBs), require an earlier phase-out at environmentally sensitive locations, add new provisions on the tracking of PCBs until they are disposed of, and lower the manufacturing control limit.
- ***Storage of PCB Material Regulations*** — A final round of stakeholder consultations was held in 2002–03 on the proposed amendments to these regulations. These amendments will accelerate the destruction of PCBs already in storage, prohibit the storage of PCBs at environmentally sensitive locations, and limit the storage time of PCBs before their disposal.
- ***Tetrachloroethylene (Use in Dry Cleaning and Reporting Requirements) Regulations*** — Final regulations were published in Part II of the *Canada Gazette* on March 12, 2003. The regulations reduce the use and releases of tetrachloroethylene by requiring newer, more efficient dry cleaning machines, minimizing spills, and managing the collection and disposal of residues and wastewater.
- ***Solvent Degreasing Regulations*** — The proposed regulations were published in Part I of the *Canada Gazette* on December 7, 2002. The regulations reduce the use and releases of trichloroethylene and tetrachloroethylene into the environment from solvent degreasing facilities.

5.2.4 Environmental Performance Agreements

An Environmental Performance Agreement is a voluntary agreement negotiated among parties to achieve specified environmental results. These agreements are not CEPA instruments but may be used where they are cost-effective, where they support the policy and regulatory framework, where participants have the capacity to implement them, and where they are deemed appropriate. An agreement must consider specific core design criteria in the negotiating process. The Policy Framework for Environmental Performance Agreements provides assurance of transparency and accountability as well as a solid basis for negotiating agreements.

Environment Canada negotiated an Environmental Performance Agreement with the Automotive Parts Manufacturers' Association. The agreement represents a voluntary commitment by participating companies to reduce releases of volatile organic compounds and carbon dioxide. Companies can also choose to address other toxic substances, depending on their facility operations and business cycles. The Environmental Performance Agreement with Dow Chemical requires the preparation of an environmental management plan, establishment of emission reduction goals, an air monitoring program, and reporting on releases. An Environmental Management Plan was submitted in October with a goal of a 48% reduction in emissions. Data from 2002 indicate that the goal has already been accomplished, but further evaluation is required to determine if this is sustainable.

www.ec.gc.ca/epa-epe/pol/en/framewktoc.cfm

5.2.5 Municipal Wastewater Effluents

On January 1, 2003, ammonia dissolved in water, inorganic chloramines, effluents from textile mills that use wet processing, and nonylphenol and its ethoxylates were added to the List of Toxic Substances (Schedule 1) for CEPA 1999 (see Table 2). Chlorinated wastewater effluents were added to the list on March 4, 1999. These substances are primarily discharged to surface waters through municipal wastewater effluents.

Environment Canada, in consultation with the National Advisory Committee (see Section 1.1), developed a proposed instrument for these substances. Two documents were prepared by Environment Canada: *A Proposed Risk Management Strategy Addressing Ammonia, Inorganic Chloramines and Chlorinated Wastewater Effluents under CEPA 1999;* and *Pollution Prevention Planning for Ammonia, Inorganic Chloramines and Chlorinated Wastewater Effluents Working Document*. These documents propose pollution prevention planning requirements for the owners/operators of selected wastewater systems as an integrated step towards a long-term strategy for managing wastewater effluents. The proposed notice requiring the preparation and implementation of pollution prevention plans was published in Part I of the *Canada Gazette* on June 7, 2003.

Environment Canada hosted a series of one-day consultation sessions in 13 centres across Canada from August 20 to November 4, 2002. The Department also provided information to stakeholders and interested parties and collected feedback on the proposed risk management strategy for ammonia, inorganic chloramines, and chlorinated wastewater effluent.

www.ec.gc.ca/etad/default.asp?lang=En&n=9F3404CF-1

5.2.6 International Actions

Many toxic substances that are produced, used, and released into the environment are of global concern. Key international activities in 2002–03 included:

- ***Green Power*** — Together with the Netherlands, Environment Canada co-sponsored a networking seminar on international perspectives on green power development at the national Green Power Trade Show. This event promoted dialogue and facilitated information exchange on wind energy.
- ***National Environmental Policy*** — Environment Canada continued to participate on the new Working Party on National Environmental Policy under the Organisation for Economic Co-operation and Development. In 2003, a book entitled *Environmentally Sustainable Buildings — Challenges and Policies* was released. Canada was also used as a case study for a forthcoming publication on voluntary approaches, which describes environmental performance agreements as an example of voluntary approaches with industry.
- ***The Great Lakes Bi-national Toxics Strategy*** — Environment Canada's Ontario Region, the U.S. Environmental Protection Agency, and various stakeholders work together towards the goal of virtual elimination of certain targeted persistent toxic substances resulting from human activities in the Great Lakes basin. Measurements of emissions of various persistent toxic substances were undertaken at Ontario industrial facilities as a voluntary initiative. Environment Canada completed an evaluation of biomedical incinerators in Toronto and Hamilton, a copper smelter in Kidd Creek, a recovery boiler in Red Rock, and a crematorium in Roselawn.

5.3 Substances New to Canada (Chemicals and Polymers)

The New Substances Program ensures that no new substances are introduced into the Canadian marketplace before they have been assessed to determine whether or not they are toxic or capable of becoming toxic to the environment or human health. The risks of substances determined to be, or suspected of being, toxic or capable of becoming toxic may be managed, as necessary, through the imposition of conditions or the prohibition of their import or manufacture. The program operates under the *New Substances Notification Regulations* and is jointly administered by Environment Canada and Health Canada.

Chemicals, polymers, and inanimate products of biotechnology that are new to Canada are covered under Part 5 of CEPA 1999. Animate products of biotechnology that are new to Canada are dealt with under Part 6 (see Section 6). Parts 5 and 6 of CEPA 1999 are integral parts of the federal government's approach to pollution prevention.

Substances that are not on the Domestic Substances List are considered to be new to Canada. These cannot be manufactured or imported until:

- the Minister has been notified prior to manufacturing or importation of the substance;
- relevant information needed for an assessment of its potential toxicity has been provided by the notifier; and
- the period for assessing the information (as set out in regulations) has expired.

5.3.1 Risk Assessments

Environment Canada and Health Canada received 917 new substance notifications in 2002–03. Risk management measures imposed included seven conditions and five Significant New Activity Notices.

When a new substance has been assessed and there is a suspicion that it is toxic or capable of becoming toxic, the Minister may prohibit any person from manufacturing or importing the substance, request any person to provide any additional information or submit the results of any testing that is considered necessary, or place restrictions/conditions upon the substance (e.g., on how and where it is used or on storage or disposal methods).

When Environment Canada and Health Canada suspect that there is significant new activity in regards to a substance that has already been assessed, a notice is issued to ensure that adequate additional information is provided to the Minister by the notifier or any other proponent who wishes to manufacture or import the substance for activities not specified by the notice. The additional information allows Environment Canada and Health Canada to assess the potential environmental and human health risks associated with the new activities and take any actions necessary to protect the environment and human health.

During 2002–03, 55 submissions were made to Health Canada of new substances in products regulated under the *Food and Drugs Act*. Of those, 43 submissions were accepted and were being assessed, and 12 were screened and rejected as incomplete or withdrawn by the notifier.

5.3.2 Consultations on the New Substances Program

When the *New Substances Notification Regulations* were promulgated in 1994, a commitment was made by Environment Canada and Health Canada to review them after the first three years of implementation. This review was to enable adjustments to be made to the regulations and to the New Substances Program, if necessary.

To help fulfil this commitment, a multistakeholder consultative process was established in June 1999, to work towards a common understanding of the *New Substances Notification Regulations* and the overall program and to provide consensus recommendations for their improvement. Eight meetings were held in 1999–2001. The consultations resulted in 76 consensus recommendations. The final report of the multistakeholder consultations was released in 2001. The government response report to address the consensus recommendations was released in September 2002. The stakeholders recommended improvements in five areas: Risk Assessments, Regulatory Framework, Transparency, Responsiveness of the Regulations and the New Substances Program in an International Context, and Service Delivery. The recommendations reflect the government's fundamental goal to protect human health and the environment while enhancing the efficiency and effectiveness of the *New Substances Notification Regulations* and the New Substances Program. The recommendations will continue to be implemented over the next few years.

www.ec.gc.ca/CEPARegistry/documents/regs/nsnp_nsp/toc.cfm

5.3.3 Regulations

In 2002–03, the following regulations were completed or in the process of being developed:

- ***New Substances Notification Regulations*** — As per the recommendations from the multistakeholder consultations, the proposed amendments to the chemicals and polymers portion of the regulations will improve and streamline the regulations, while not compromising the protection of human health and the environment. The revised regulations were published in the *Canada Gazette*, Part II on June 18, 2003.
- ***New Substances Fees Regulations*** — Section 328 of CEPA 1999 gives the Minister of the Environment and the Minister of Health the authority to make regulations to help recover part or all of the costs involved in processing and assessing new substance notifications. The fees structure was developed as a result of multistakeholder consultations that included representatives from the federal government, the chemical industry, and non-governmental organizations. The fees are projected to recover approximately 20% of the New Substances Program's total annual costs for providing service. The *New Substances Fees Regulations* came into effect on January 1, 2003.

www.ec.gc.ca/substances/

5.3.4 Scheduling of Other Acts

CEPA 1999 allows for the waiving of its notification and assessment requirements for new substances (chemicals, polymers, animate and inanimate products of biotechnology) if they are met by another Federal Act. Schedule 2 identifies the other Acts that chemicals and polymers may fall under (see Table 4). These provisions mean that CEPA 1999 sets the standard for notice and assessment and acts as a safety net for new substances that are not regulated by other Acts of Parliament. The legal provisions that authorize the schedules came into force on September 13, 2001.

The *Food and Drugs Act* is not scheduled under CEPA 1999 at this time. New substances in products regulated under the *Food and Drugs Act* must therefore be notified under the *New Substances Notification Regulations* of CEPA 1999. Health Canada held a series of consultation meetings in 2002–03 with stakeholders to explain the development of new regulations for the environmental assessment of *Food and Drugs Act* products, which

Table 4	Scheduled Acts and Regulations
Schedule 2 (chemicals and polymers)	
Pest Control Products Act and *Pest Control Products Regulations*	
Feeds Act and *Feeds Regulations*	
Fertilizers Act and *Fertilizers Regulations*	

would meet the CEPA 1999 requirements. A multistakeholder workshop was held in February 2003 on a Draft Issue Identification Paper.

www.hc-sc.gc.ca/ear-ree/index_e.html

5.3.5 International Actions

Key international activities in 2002–03 included:

- ***Four Corners Arrangement*** — The Four Corners Arrangement focused on providing a mechanism to expedite the movement of substances from the U.S. *Toxic Substances Control Act* (TSCA) Inventory to Canada's Non-Domestic Substances List (NDSL) before the five-year waiting period elapsed or to identify Canadian data requirements that could be waived based on U.S. assessment of the same new substance.

  The Non Domestic Substances List (NDSL), contains those substances that while new to Canada, are already in commerce in the U.S. and appear on the U.S. EPA *Toxic Substances Control Act* (TSCA) Inventory. NDSL substances are still subject to notification requirements in Canada, but face less onerous information requirements under the *New Substances Notification Regulations* (NSNR).

  The NDSL is updated annually by adding those substances that were introduced to the U.S. TSCA five years prior (e.g., substances added to the TSCA in 1990 were added to the NDSL in 1995). One of the recommendations from the recent *New Substances Notification Regulations* multistakeholder consultations was to reduce the waiting period for the addition of new TSCA listings to the NDSL from five years to one year and to make changes to the information requirements set out in the notification schedules of the NSNR.

  The Signatories and Supporting Partners (Environment Canada, Health Canada, U.S. Environmental Protection Agency, Industry Coordinating Group, and the American Chemical Council) have agreed that it is necessary to change the Agreement into a less formal "Arrangement," which could have a broader, more global scope and provide greater benefits. Discussions on the Four Corners Agreement resulted in a proposal to revise the Four Corners Arrangement.

  The proposed Arrangement aims to achieve efficiencies of resources for all parties with respect to the introduction of new substances to the North American marketplace, while continuing to protect human health and the environment.

  During 2002–03, four substances were submitted and reviewed under the original Agreement. Assessments were completed for all four of these substances. None of these substances was added to the NDSL.

- ***Canada–Australia Arrangement*** — A cooperative arrangement between the National Industrial Chemicals Notification and Assessment Scheme of Australia, Environment Canada, and Health Canada was signed in May 2002.

  This arrangement is in keeping with wider Organisation for Economic Co-operation and Development (OECD) efforts aimed at learning from each other, enhancing information and work sharing, and harmonizing national new industrial chemicals schemes. The benefits associated with such a bilateral arrangement would be to increase the efficiency of new industrial chemical notification and assessment schemes by providing greater transparency in assessments. It can also lead to a possible reduction in animal testing, a reduction in resources needed for new industrial chemicals work in governments and industry, and a more expedient process of product introduction into the marketplace for some substances.

  This arrangement between Australia and Canada will provide a model for the cooperation envisaged with other OECD countries and will be consistent with the initiatives undertaken by the OECD New Chemicals Task Force.

  A "lessons learned" report, which compared assessment methodologies, was completed in March 2003. Canada provided assessment reports on six new substances notifications to Australia.

- ***OECD New Chemicals Task Force*** — The OECD New Chemicals Task Force was established to manage a work program aimed at improving information and work sharing associated with notification and assessment of new industrial chemicals. Its overall objective is to provide greater transparency and to reduce the resources needed to manage new industrial chemicals programs without compromising the protection of the environment and human health. The New Substances Branch of Environment Canada is closely involved in this international work and chairs the Task Force.

  Activities fall within seven Work Elements, including the establishment of bilateral/multilateral agreements, development of a standard notification format, development of a standard format for country assessment reports, acceptance of hazard assessments, the investigation of low-concern and exempt chemicals, the handling of confidential business information, and the feasibility of a global inventory.

- ***Good Laboratory Practice*** — Government and industry are concerned about the quality of non-clinical health and environmental safety studies upon which hazard assessments are based. As a consequence, OECD member countries have established criteria for the performance of these studies. The OECD principles of Good Laboratory Practice (GLP) set out managerial concepts covering the organization of test facilities and the conditions under which preclinical safety studies are executed. Their purpose is to ensure the generation of high-quality and reliable test data (*in vitro* and *in vivo*) related to the safety of chemicals and preparations in the framework of the Mutual Acceptance of Data.

  In 2002–03, information was provided to CEPA New Substances Notification scientific evaluators on the GLP compliance status of private-sector

laboratories in OECD countries that supply testing data to Canada. Work continued on development of the database that stores this information and training Environment Canada staff responsible for validating the quality of the data and carrying out recruitment activities to add GLP testing laboratories to the inspection program. Drafting of a GLP guidance document in support of the new *New Substances Notification Regulations* was initiated.

www.etc-cte.ec.gc.ca/organization/spd_e.html

5.4 Export of Substances

The Act allows the Minister to establish an Export Control List containing substances whose export is controlled because their manufacture, import, and/or use in Canada are prohibited or severely restricted or because Canada has accepted, through an international agreement such as the Rotterdam Convention, to control their export. The Act also allows the Minister to make regulations in relation to substances specified on the Export Control List.

5.4.1 Export Control List

The *Export Control List Notification Regulations* require exporters to provide notice of the proposed export of substances on the Export Control List and to submit annual reports. In 2002, 10 notifications of export were received.

www.ec.gc.ca/CEPARegistry/subs_list/ECLNRExLst2002.cfm

Environment Canada amended the Export Control List (Schedule 3) to add a total of four substances (see Table 5).

5.4.2 Regulations

Environment Canada finalized the *Export of Substances Under the Rotterdam Convention Regulations* in August 2002. The regulations permit Canada to implement the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade. The regulations ensure that certain chemicals and pesticides are not exported to Parties to the Convention unless the importing Party has provided its "prior informed consent" to the export.

www.ec.gc.ca/CEPARegistry/regulations

Table 5 Substances Added to the Export Control List (Schedule 3) in 2002–03

Substance	Finalized	Sectors involved
Binapacryl (CAS No. 485-31-4)	August 28, 2002	Pesticides
Toxaphene (CAS No. 8001-35-2)	August 28, 2002	Pesticides
1,2-Dichloroethane (CAS No. 107-06-2)	August 28, 2002	Pesticides
Ethylene oxide (CAS No. 75-21-8)	August 28, 2002	Pesticides

www.ec.gc.ca/CEPARegistry/subs_list/Schd3_08_02.cfm

6. Animate Products of Biotechnology New to Canada (Part 6)

The Act establishes an assessment process for living organisms that are new animate products of biotechnology that mirrors provisions in Part 5 of CEPA 1999 respecting new substances that are chemicals or polymers. Animate products of biotechnology may pose several potential risks to the environment, including possible impacts on natural biodiversity. They may introduce toxins, interfere with naturally occurring plants and animals, and harm natural genetic diversity. Inanimate products of biotechnology will continue to be dealt with as "substances" under Part 5.

Living organisms that are not on the Domestic Substances List are considered to be new. These cannot be used, manufactured, or imported until:

- the Minister has been notified;
- relevant information needed for an assessment has been provided by the applicant; and
- the period for assessing the information has expired.

CEPA 1999 requirements apply to new living organisms that are manufactured or imported unless other applicable Acts provide for notice and assessment and are specifically identified on Schedule 4 of the Act (see Table 6). The Act provides the means to recognize equivalent assessment processes under other federal statutes and regulations. New living organisms regulated under those statutes can be exempt from CEPA 1999 if they provide for notification and assessment prior to import, manufacture, or sale. The Governor-in-Council determines, by order, which federal Acts and Regulations meet these criteria and lists them specifically in Schedule 4 of the Act.

6.1 Risk Assessments

In 2002–03, five new substance notifications and one significant new activity notification were received. When Environment Canada and Health Canada suspect that a significant new activity in relation to a living organism that had been previously assessed and found not to be toxic may result in the organism becoming toxic, a notice is issued to ensure that adequate additional information is provided to the Minister by the notifier or any other proponent who wishes to manufacture, import, or use the organism for activities not specified by the notice. The additional information allows Environment Canada and Health Canada to assess the potential environmental and human health risks associated with the new activities. No control actions were necessary during 2002–03. A number of pre-notification consultations were conducted with several potential notifiers to deal with regulatory issues involving microorganisms and other organisms, with specific emphasis on the necessary test data to determine the substance's potential

Table 6	Scheduled Acts and Regulations
Schedule 4 (animate products of biotechnology)	
Pest Control Products Act and *Pest Control Products Regulations*	
Feeds Act and *Feeds Regulations*	
Fertilizers Act and *Fertilizers Regulations*	
Seeds Act and *Seeds Regulations*	
Health of Animals Act and *Health of Animals Regulations* (veterinary biologics)	

effects on terrestrial and aquatic plant, invertebrate and vertebrate species.

6.2 Research

Environment Canada undertakes research in support of our regulatory function, in particular the biotechnology portion of the *New Substances Notification Regulations*. Specifically, the research focused on advances in microarray technology that may be used for risk assessment purposes for identifying environmental isolates and also as a potential tool for verifying compliance. In addition, the program supported research that may generate standard methodologies for testing the survival and persistence of microorganisms in the environment (see Section 3.2.2).

6.3 International Actions

Key international activities in 2002–03 included:

- ***Cartagena Protocol on Biosafety to the Convention on Biological Diversity*** — The Protocol was signed by Canada in April 2001. It addresses the safe transfer, handling, and use of living modified organisms (LMOs) that may have adverse effects on biodiversity, taking into account human health, with a specific focus on transboundary movement. The Protocol also establishes a Biosafety Clearinghouse to facilitate information exchange. Cross-Canada consultations were held in September 2002 on whether or not the Government of Canada should ratify the Protocol. Over 300 organizations were invited to participate and were provided with an opportunity to comment on the proposed *Living Modified Organisms Regulations* under CEPA 1999. The proposed *Living Modified Organisms Regulations*, which were published in the *Canada Gazette*, Part I, on September 28, 2002, would provide Canada with the national legal measures to support ratification of the Protocol by implementing those regulatory requirements not currently covered under Canadian law. The *Living Modified Organisms Regulations* under CEPA 1999 would require Canadian exporters to provide documentation to accompany all shipments of LMOs as well as information to allow importing Parties to make decisions regarding first-time imports of LMOs for intentional exposure to the environment.
- ***OECD Working Group on Harmonization of Regulatory Oversight in Biotechnology*** — The working group ensures that environmental, human health, and safety aspects of products of biotechnology are properly evaluated while avoiding non-tariff trade barriers to these products. There were two meetings of the working group in 2002–03. A first draft of the *Guidance Document on Detection of Micro-organisms in the Environment* was presented to the working group in February 2003.

7. Controlling Pollution and Managing Wastes (Part 7)

7.1 Nutrients

Nutrients are defined as substances that promote the growth of aquatic vegetation. CEPA 1999 provides the authority to regulate nutrients in cleaning products and water conditioners that degrade or have a negative impact on an aquatic ecosystem.

Inputs of nutrients, in the form of nitrogen and phosphorus, to aquatic ecosystems as a result of human activity can result in excessive aquatic plant growth, depletion of oxygen, and deleterious changes in abundance and diversity of aquatic invertebrates and fish. In March 2003, researchers at the National Water Research Institute completed an assessment of the impacts of nutrient loading from municipal and industrial sources on water quality in northern Alberta rivers (Athabasca and Wapiti). Their studies produced an approach for setting scientifically credible nutrient guidelines for these cold-water rivers and specified recommended guidelines for nitrogen and phosphorus to prevent deterioration in water quality. Research conducted during the past several years on agricultural watersheds in Saskatchewan, Manitoba, and Ontario examined effects of land management practices on nutrient transport from cropland to surface water and groundwater. These studies resulted in the development and adoption of better management practices for reducing nutrient loss from agricultural lands.

7.2 Protection of the Marine Environment from Land-based Sources of Pollution

The Act provides authorities to issue non-regulatory objectives, guidelines, and codes of practice to help implement Canada's National Programme of Action for the Protection of the Marine Environment from Land-based Activities. These provisions are intended to supplement the authorities that exist in other federal, provincial, territorial, and Aboriginal government laws.

In 1995, Canada, together with over 100 maritime nations, adopted the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities in Washington, D.C. Developed under the auspices of the United Nations Environment Programme, and in response to Agenda 21, the Global Programme of Action is an international, non-legally binding agreement that calls on countries to develop national and regional programmes of action to protect human health and prevent, reduce, and control land-based activities that threaten the health, productivity, and biodiversity of marine and coastal environments and associated freshwater systems. Recognizing the merits of an integrated and coordinated approach and that marine pollution from land-based sources is a significant threat to Canada's marine and coastal environment, Canada was the first country to release a National Programme of Action in response to the Global Programme of Action in June 2000.

7.2.1 Canada's National Programme of Action

Canada's National Programme of Action (NPA) aims to prevent marine pollution from land-based activities and protect habitat in the nearshore and coastal zones of Canada. In 2002–03, the NPA Advisory Committee developed a four-year (2002–06) National Action Plan to guide NPA implementation activities. Priority areas of activity in 2002–03 included the following:

- Once the NPA National Action Plan was approved, the Atlantic regional NPA team initiated the development of a regional action plan, and the St. Lawrence, Pacific, and Arctic regional teams gave early consideration to possible actions on regional priority issues;
- Initial scoping was carried out for reviewing the NPA description of nutrients and sewage to facilitate reporting of progress on these issues;
- A preliminary inventory and assessment of the adequacy of existing pollution prevention and habitat protection guidelines were undertaken;
- A communications outline was developed to promote awareness, understanding, and engagement in implementing the NPA federally, provincially, and territorially; and
- The NPA Advisory Committee was renewed to increase federal and provincial engagement across Canada.

Implementation of the NPA is now progressing at the national and regional levels as NPA partners work to integrate NPA objectives into ongoing federal/provincial/territorial programs and activities. For example, the Atlantic regional NPA team initiated a project in 2002–03 to examine fish plant processing effluents and sustainability issues. The results of this project will provide useful information and data for other regions with similar issues, including the St. Lawrence (Quebec) and Pacific regions.

www.npa-pan.ca

7.2.2 Regional Programme of Action for the Arctic

In response to the 1995 Global Programme of Action, Canada and seven other circumpolar nations of the Arctic Council agreed to develop a Regional Programme of Action for the Protection of the Marine Environment from Land-based Activities (RPA) to address marine pollution issues in the Arctic. Canada played a major role in the development of the RPA, which was adopted by Arctic Council Ministers in 1998.

During 2002–03, Canada continued to promote the implementation of the RPA through its participation in the Arctic Council's Working Group on Protection of the Arctic Marine Environment. The working group met in April 2002 in Iceland and in February 2003 in Sweden. It agreed to expand the RPA to better address land-based activities in the context of sustainable development through collaboration with the Arctic Marine and Assessment Programme, Arctic Council projects, and the other Arctic Council Working Groups. At the 2002 and 2003 meetings, Canada confirmed its continued financial and technical support of the implementation of the Global Environmental Facility project on the Russian National Programme of Action for the Arctic.

www.pame.is/

7.3 Disposal at Sea

These provisions prohibit the disposal of wastes at sea within Canadian jurisdiction, and by Canadian ships in international waters, unless the disposal is done under a permit issued by the Minister. A permit for disposal at sea will be approved only if it is the environmentally preferable and practical option. Incineration at sea is banned except under emergency situations. CEPA 1999 provides additional controls on disposal at sea, including:

- a ban on the export of a substance for disposal at sea;
- a list of six substances that may be considered for disposal at sea (Schedule 5);
- an assessment framework for reviewing permit applications, based on the precautionary principle, which must be followed (Schedule 6); and
- a legal obligation for Environment Canada to monitor disposal sites.

It should also be noted that the requirement for a CEPA 1999 permit also triggers an assessment under the *Canadian Environmental Assessment Act*.

Environment Canada's Pacific and Yukon Region collaborated with Fisheries and Oceans Canada, the forest industry, dredging contractors and recycling companies in the development and implementation of a Log Bundling Strand Recycling Initiative. Prior to this initiative, an estimated 38 million feet of log bundling strand was deposited annually on the bottom of forest industry water lots and designated ocean disposal sites. Since its inception, the initiative has had a profound effect on the amount of bundling strand deposited in coastal waterways. The recycling industry reported a 450% increase in bundling strand recovery between 2001 and 2002. The cooperative effort between the forest industry, dredging contractors, strand manufacturers, regulatory agencies and interested stakeholders has made the recycling of bundling strand simple and economically feasible. Further information on this initiative is available at: **http://www.pyr.ec.gc.ca/EN/ocean-disposal/english/bundlewire_e.htm**

7.3.1 Disposal at Sea Permits

In 2002–03, 95 permits were issued in Canada for the disposal of 4.86 million tonnes of waste and other matter (see Tables 7 and 8). Most of this was dredged material that was removed from harbours and waterways to keep them safe for navigation. The number of permits issued has remained relatively stable since 1995. The quantities permitted were higher than in 2001–02 but still remain well below totals

Table 7 Quantities Permitted (in tonnes) and Permits Issued in Canada in 2002–03

Material	Quantity Permitted*	Permits Issued	Percentage of Quantity	Percentage of Permits
Dredged material	4 010 500	40	82	42
Geological matter	741 000	4	15	4
Fisheries waste	110 025	48	2	51
Vessels	312	2	<1	2
Organic	200	1	<1	1
Total	**4 862 037**	**95**	**100**	**100**

* Dredged material and geological matter were converted to tonnes using an assumed density of 1.3 tonnes per cubic metre.

Table 8	Quantities Permitted (in tonnes) and Permits Issued by Region in 2002–03							
	Atlantic		Quebec		Pacific and Yukon		Prairie and Northern	
Material	Quantity permitted	Permits issued	Quantity permitted	Permits issued	Quantity permitted	Permits issued	Quantity permitted	Permits issued
Dredged material*	1 016 600	11	464 100	11	2 529 800	18	0	0
Geological matter*	0	0	0	0	741 000	4	0	0
Fish waste	104 625	43	2 600	4	2800	1	0	0
Vessels	0	0	0	0	312	2	0	0
Organic	0	0	0	0	0	0	200	1
Total	**1 121 225**	**54**	**466 700**	**15**	**3 273 912**	**25**	**200**	**1**

* Dredged material and geological matter were converted to tonnes using an assumed density of 1.3 tonnes per cubic metre.

seen in the previous decade (see Figure 1). Quantities fluctuate each year as a result of several factors, such as how much sediment is deposited due to the spring freshets (the rise in river levels due to snowmelt in the spring) and changes in the market cycle or practices. Overall, permitted quantities since 1999 are lower and will remain lower due to the more accurate estimation of quantities of dredged or excavated geological material to be disposed of. Historically, according to client reports and surveys, the quantity of dredged material permitted for disposal was greater than the actual quantity disposed of at sea (often by 30–50%). This was due to the industry practice of applying a "bulking factor" so that they would not have to amend their permit if they needed to dredge more than expected. However, in 1999, user fees, which charged by quantity permitted, were introduced for dredged material and geological matter, resulting in more precise estimates of the quantities.

One emergency permit was issued to dispose of fish from an aquaculture facility killed by an algal bloom. Any emergency permit requires consultation with the International Maritime Organization. As well, input was solicited from Fisheries and Oceans Canada, the Canadian Coast Guard, and the Enforcement and Emergencies Division of Environment Canada to ensure that all necessary measures were in place to limit impacts to the marine environment and avoid unacceptable risk to human health.

7.3.2 Monitoring Program

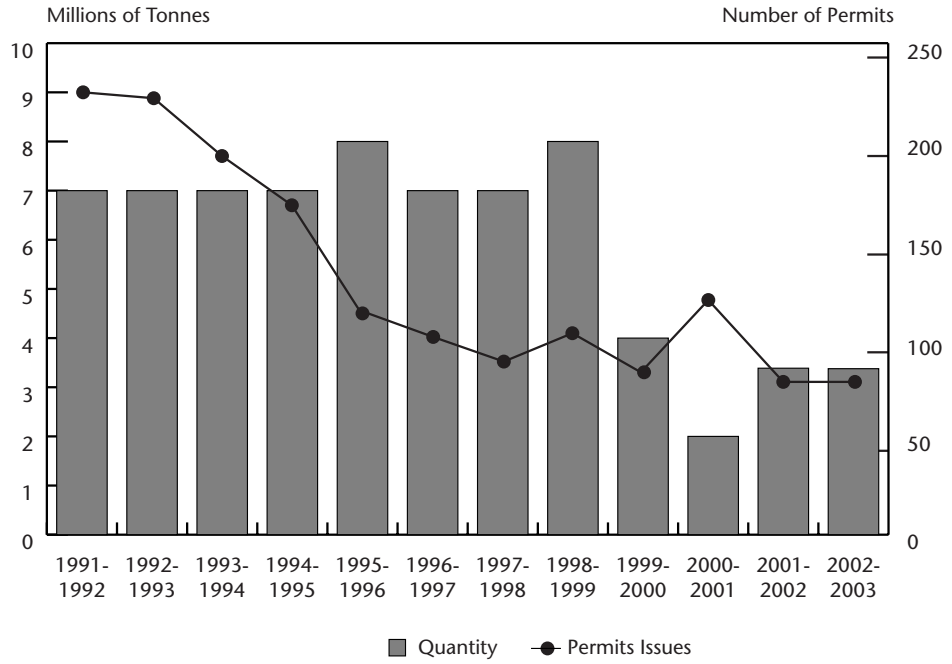
As required by CEPA 1999, disposal site monitoring is used to verify that permit conditions were met and that scientific assumptions made during the permit review and site selection process were correct and sufficient to protect the environment. In 2002–03, field monitoring was conducted at a total of eight sites. Details can be found in the *Compendium of Monitoring Activities at Ocean Disposal Sites*, which is sent to permittees and submitted to the International Maritime Organization annually.

www.ec.gc.ca/seadisposal/reports/index_e.htm#Compend

7.4 Fuels

CEPA 1999 provides for a performance-based approach to fuel standards and allows for a range of fuel characteristics to be regulated to address emissions. Regulations may distinguish between different sources of fuels or the place or time of use of the fuel.

Figure 1 **Trends in Quantities Permitted and Permits Issued, 1991–92 to 2002–03**



There are also provisions for regulations to establish a "national fuels mark" that may be used only if a fuel conforms to specific requirements provided for by regulations.

7.4.1 Risk Assessment

Based on the information requested in a notice, a report on use and releases of methyl tertiary-butyl ether in Canada was released in March 2003. This information will be used to determine whether this substance is capable of becoming toxic and whether to control it under CEPA 1999.

7.4.2 Regulations

Progress in 2002–03 included:

- ***Sulphur in Gasoline Regulations*** — Proposed amendments to the regulations were published in the Canada Gazette, Part I, on February 1, 2003. The amendments update the test method for measuring sulphur content to a recently developed method that provides for more accurate measurement of sulphur at low levels. At the same time, a number of other minor technical changes are being made to update the regulations, clarify some provisions, and make the regulations more consistent with other federal fuel regulations.
- ***Benzene in Gasoline Regulations*** — Proposed amendments to the regulations were published in the Canada Gazette, Part I, on February 1, 2003. The amendments update the benzene test method and make a number of other minor technical changes to update the regulations, clarify some provisions, and make the regulations more consistent with other federal fuel regulations.

- ***Sulphur in Diesel Fuel Regulations*** — The final regulations were published in the *Canada Gazette*, Part II on July 31, 2002. The regulations, aligned with standards in the United States, limit sulphur in diesel fuel for on-road use to 500 mg/kg, reduced to 15 mg/kg starting in 2006.

7.5 Vehicle, Engine, and Equipment Emissions

Vehicle and engine emissions are a major contributor to Canada's air pollution problem. Provisions in CEPA 1999 include the authority to set emission standards for on-road vehicles and engines. CEPA 1999 also includes authorities to set emission standards for vehicles and engines used in a variety of off-road applications, such as lawnmowers, construction and agricultural equipment, hand-held equipment, and recreational vehicles.

7.5.1 Vehicle Inspection Clinics

Environment Canada, together with partners all across the country, holds free clinics across Canada each summer where motorists can have check-ups on their vehicles' tailpipe emissions, tire pressure, and gas cap seal. Over the summer of 2002, 5914 vehicles were tested at 30 clinics across Canada.

www.ec.gc.ca/transport/clinics.htm

7.5.2 Emissions Verification/Audit Testing

Forty-five light-duty vehicles (involving over 200 independent test sequences), 65 utility engines, and one heavy-duty engine were tested to assess conformance of emissions with standards at the Tier 1 and Tier 2 emissions levels.

7.5.3 Regulations

Progress in 2002–03 included:

- ***On-Road Vehicle and Engine Emission Regulations*** — The final regulations were published in the *Canada Gazette*, Part II, on January 1, 2003. The regulations are aligned with the emission standards in the United States for light-duty passenger vehicles, light-duty trucks, heavy-duty vehicles, and motorcycles. The stringent new standards will be phased in beginning January 1, 2004, and will reduce allowable emission levels by up to 95%. When fully phased in by 2009, the regulations will subject all cars and light-duty trucks to the same set of stringent emission standards.
- ***Off-Road Small Spark-Ignition Engine Emission Regulations*** — Proposed regulations to reduce smog-forming emissions from small engines were published in the *Canada Gazette*, Part I, on March 29, 2003. These regulations introduce exhaust emission standards for small spark-ignition engines (e.g., lawn and garden machines), light-duty industrial machines (e.g., welders, pressure washers), and light-duty logging machines (e.g., chainsaws, log splitters).

www.ec.gc.ca/CEPARegistry/regulations

7.5.4 International Vehicle Standards and Harmonization

Environment Canada along with other countries, including the United States, participated in the United Nations World Forum for Harmonization of Vehicle Regulations (WP. 29). As a signatory to the June 25, 1998 "Agreement Concerning the Establishing of Global Technical Regulations for Wheeled Vehicles, Equipment and Parts which can be fitted and/or be Used on Wheeled Vehicles", Canada promotes progressive emission standards while at the same time promoting economic availability

of vehicles manufactured to one set of standards. Canada's participation on environmental issues by Environment Canada and on safety issues by Transport Canada involves expert technical contributions as well as regulatory process contribution to standards development.

7.5.5 Codes of Practice

Environment Canada led the development of a new Code of Practice for On-Road Heavy-duty Vehicle Emission Inspection and Maintenance Programs, which was approved by the Canadian Council of Ministers of the Environment in November 2002.

7.6 International Air Pollution

This section reports on results that flow from commitments in several international agreements respecting air pollution. Progress in 2002–03 included:

- ***Canada–United States Air Quality Agreement*** — The targets set in the 1991 Canada–United States Air Quality Agreement and its 2000 Ozone Annex are on track. Key emission reduction commitments made by Canada for vehicles and fuels are aligning Canada and United States standards. Progress has been made to ensure compliance with respect to the commitment to cap annual nitrogen oxides (NO_x) emissions from fossil fuel-fired electric power plants in the southern parts of Quebec and Ontario at 5 and 39 kilotonnes respectively by 2007.

  In 2002 and 2003, the National Pollutant Release Inventory was expanded to include air pollutants that contribute to smog and other forms of air pollution. Yearly reports to Canadians on these air pollutants will begin in 2004. The requirement to begin to report to the public on ozone air quality levels within 500 km of the border in 2002 was met.

www.ec.gc.ca/air/ozone-annex_e.shtml

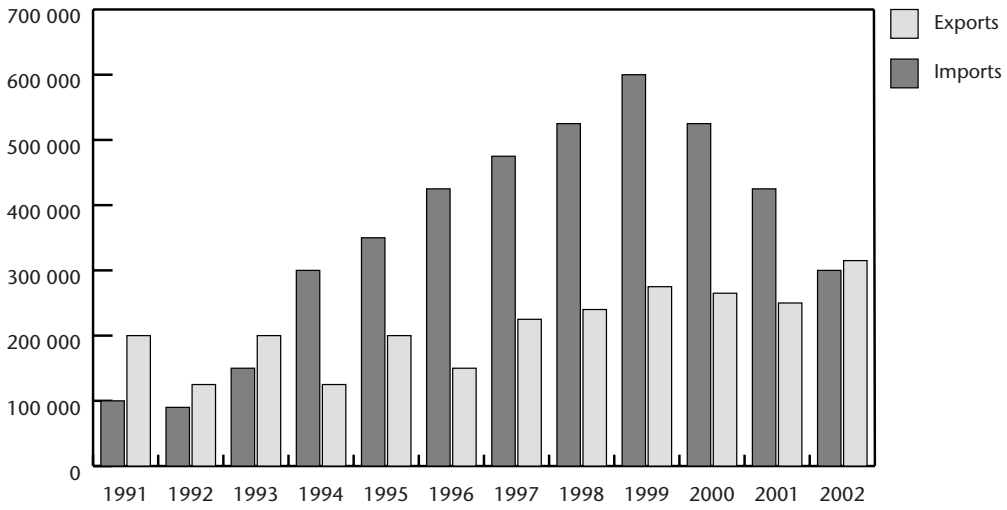
- ***Hazardous Air Pollutants*** — In 2002–03, 32 projects totalling almost US $1.5 million were approved under the $20 million, five-year Canada Persistent Organic Pollutants Fund. The fund helps developing countries and countries with economies in transition to build their own capacities to deal with persistent organic pollutants. The World Bank administers the fund. Canada was an active participant in the February 2003 meeting of the United Nations Environment Programme Governing Council, which found that there is sufficient evidence of significant global adverse impacts from mercury and its compounds to warrant further international action and encouraged initiation of national, regional, and global actions.

www.ec.gc.ca/air/introduction_e.html

www.ec.gc.ca/pops/index_e.htm

- ***Persistent Organic Pollutant Reductions*** — Canada continued to participate in activities that will facilitate implementation of the Stockholm Convention on Persistent Organic Pollutants (POPs), including the seventh intergovernmental negotiating committee meeting in July 2003 and the Expert Group on Best Available Techniques and Best Environmental Practices in March 2003. Canada also actively participated in the regional United Nations Economic Commission for Europe's POPs Expert Group, which compiled information on substances that may be considered for addition to the Protocol on Persistent Organic Pollutants when it comes into force.

Figure 2 **Imports and Exports of the Hazardous Wastes, 1991–2002 (Tonnes)**



- ***Montreal Protocol*** — Environment Canada led Canada's participation at negotiations on the replenishment of the Multilateral Fund for the Implementation of the Montreal Protocol, which were held in December 2002. Canada was an important player in the negotiations, which resulted in a replenishment level of US $474 million, the amount required to help developing countries comply with their obligations under the Montreal Protocol, for 2003–05. Canada's share of that amount will be US $14.88 million.
- ***Ozone-depleting Substances Reduction*** — In collaboration with various partner organizations, Environment Canada continued the implementation of 12 projects in developing countries to assist them in reducing their consumption of ozone-depleting substances. Between 2001 and 2002, chlorofluorocarbon reductions occurred in the following countries, partly as a result of these projects: Cuba (15 tonnes), Jamaica (16.9 tonnes), and Uruguay (31 tonnes).
- ***UNECE Convention on Long Range Transport of Air Pollution (LRTAP)*** — In 2003, the Protocols on Heavy Metals and Persistent Organic Pollutants, under the United Nations Economic Commissions for Europe's Convention on Long Range Transboundary Air Pollution, entered into force. Canada is a Party to both of these Protocols.

7.7 Hazardous Waste, Hazardous Recyclable Material, and Non-hazardous Waste

These provisions provide the authority to enact regulations governing the export and import of hazardous waste, including hazardous recyclable materials. They also include authorities to:

- introduce regulations on the export and import of prescribed non-hazardous waste for final disposal;
- require exporters of hazardous wastes destined for final disposal to submit export reduction plans; and

- develop and implement criteria to assess the environmentally sound management of transboundary movements prior to issuing permits for export and import.

CEPA 1999 contains provisions that require the Minister to publish notification information for exports, imports, and transits of hazardous waste and hazardous recyclable material.

7.7.1 Exports and Imports of Hazardous Wastes

In 2002, more than 7300 notices were processed for proposed exports, imports, and transits of hazardous wastes and hazardous recyclable materials. During the same period, more than 89 407 manifests were processed for tracking individual shipments approved under these notices.

In 2002, total imports of hazardous wastes were 423 067 tonnes, down 15.4% from 500 000 tonnes in 2001 (see Figure 2). Approximately half of these imports were destined for recycling. There was a 12.5% reduction in imports destined for final disposal from the 2001 calendar year. Exports from Canada increased marginally from 314 000 to 340 261 tonnes between 2001 and 2002. In 2002, more than 70% of these exports were destined for recycling. Of all 2002 exports, all but 729 tonnes were sent to the United States. The balance was exported to Belgium, Germany, and Finland for recycling purposes. Table 9 compares the amounts recycled with total exports and imports.

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

7.7.2 Regulations

Results in 2002–03 included:

- ***Interprovincial Movement of Hazardous Waste Regulations and minor amendments to the Export and Import of Hazardous Wastes Regulations*** — Proposed regulations were published in April 2002 and final regulations in August 2002. The regulations ensure the status quo following the promulgation of the "Clear Language" *Transport of Dangerous Goods Regulations*, including maintaining the current manifest tracking and classification requirements for the transboundary movements of hazardous wastes as under the old *Transport of Dangerous Goods Regulations*.
- ***Major review of the Export and Import of Hazardous Wastes Regulations*** — A final round of stakeholder consultations was held in January–February 2003 on proposed amendments. The revisions to the *Export and Import of Hazardous Wastes Regulations* are necessary to further contribute to the protection of the environment and human health, to adapt to evolving international obligations, to incorporate authorities under CEPA 1999, and to modernize the regulations' control regime, which was established over a decade ago.

www.ec.gc.ca/CEPARegistry/regulations

Table 9	Hazardous Waste Management in Canada								
	Imports					Exports			
	1999	2000	2001	2002		1999	2000	2001	2002
Recycling	40%	50%	47%	46%	Recycling	77%	73%	76%	70%
Total imports (tonnes)	663 000	560 000	500 000	423 000	Total exports (tonnes)	268 000	323 000	314 000	340 000

8. Environmental Emergencies (Part 8)

The Act provides authorities to require environmental emergency plans for substances once the Ministers of Environment and Health have declared them toxic. It further provides the authority to establish regulations respecting emergency prevention, preparedness, response, and recovery for the uncontrolled, unplanned, or accidental releases of a substance that has been identified as posing potential harm to the environment or to human health. Part 8 also provides authority to issue guidelines and codes of practice. In addition, it establishes a regime that makes the person who owns or controls the substance liable for restoring the damaged environment and for the costs and expenses incurred in responding to an environmental emergency.

8.1 Environmental Emergency Plans

In 2002–03, Environment Canada used its Risk Evaluation Framework to identify those substances currently on the List of Toxic Substances or assessed as toxic that warrant the preparation and implementation of environmental emergency plans. Environmental emergency plans must address prevention, preparedness, response, and recovery.

Factors taken into consideration under the Framework included acute and chronic toxicity; other hazardous properties, such as flammability; historical spill frequency and severity; and the quantities of the substance in Canadian commerce. Consideration was also given as to whether other existing federal and provincial/territorial requirements adequately managed the risks posed by an uncontrolled, unplanned, or accidental release of the substance.

In 2002–03, 16 of the 65 substances currently on the CEPA 1999 List of Toxic Substances or assessed as being toxic were identified as warranting the requirement to prepare and implement environmental emergency plans. Data gathering and evaluation continue on the remaining 49 substances.

8.2 Environmental Emergency Regulations

As part of the federal government's overall response to security issues, Environment Canada built on its work under section 199 of CEPA 1999 to address the risks posed by the uncontrolled, unplanned, or accidental releases of a broader range of substances in addition to those currently on the List of Toxic Substances or assessed as being toxic under the Act. The approach taken was similar to that under section 199, in that it identified substances whose risks could be

reduced by developing and implementing environmental emergency plans.

Through this work, 158 such substances were identified as warranting environmental emergency plans. When added to the 16 substances or groups of substances evaluated under section 199 of the Act, this brings the total number of substances to 174. Draft regulations covering these 174 substances were published in the *Canada Gazette*, Part I, in August 2002. The regulations require any person who owns or manages any of the substances above specified thresholds to notify the Minister of their location and quantity and to prepare and implement environmental emergency plans.

Key deliverables for 2002–03 included:

- publication of the proposed regulations in the *Canada Gazette*, Part I;
- amendments to the draft regulations and Regulatory Impact Analysis Statement, which were made in response to comments received following publication;
- development of a website to receive electronic notification from persons who own or manage listed substances; and
- initial development of compliance strategies, compliance promotion plans, and enforcement and plans.

www.ec.gc.ca/CEPARegistry/regulations

9. Government Operations and Federal and Aboriginal Land (Part 9)

Part 9 of CEPA 1999 provides the authority to regulate departments, boards, and agencies of the Government of Canada, federal works and undertakings, federal land, Aboriginal land, persons on that land and other persons insofar as their activities involve that land, and Crown corporations. These entities are commonly referred to as the "federal house." It also requires the Minister to establish objectives, guidelines, and codes of practice for the purpose of carrying out the Minister's duties and functions under this Part related to the quality of the environment.

9.1 Federal Committee on Environmental Management Systems

Since 1995, the Federal Committee on Environmental Management Systems has provided an interdepartmental forum for discussing and coordinating crosscutting issues related to environmental management systems. The committee promotes sustainable development within the federal government by providing ongoing advice as it relates to setting priorities and strategic directions for greening government.

In 2002–03, the activities of the committee and its subcommittees were reviewed by the newly created Environmental Management System Task Group under the Sustainable Development in Government Operations initiative. The committee officially ceased its activities, but most of its subcommittees are being taken over by the Task Group.

www.ec.gc.ca/emsinfo/

9.2 Regulations

Key results in 2002–03 included:

- ***Proposed Federal Petroleum Products and Allied Petroleum Products Storage Tank Systems Regulations*** — In 2002–03, Environment Canada initiated consultations on the proposed *Federal Petroleum Products and Allied Petroleum Products Storage Tank Systems Regulations*. The regulations will provide a more comprehensive framework to effectively prevent pollution from these storage tank systems. In February and March 2003, 17 information or consultation sessions with stakeholders were conducted in nine cities. Five of these sessions targeted Aboriginal peoples living in Yukon, British Columbia, Alberta, Saskatchewan, and Manitoba.

- ***Federal Halocarbon Regulations, 2003*** — Proposed regulations were published in December 7, 2002. The regulations achieve an orderly transition from chlorofluorocarbons and halons to alternative substances and technologies. It is estimated that the regulations will reduce the release of 1146 tonnes of chlorofluorocarbons and halons into the atmosphere between 2003 and 2014.
- ***Federal Mobile PCB Treatment and Destruction Regulations*** — A stakeholder consultation was held in 2002–03 on the proposed modifications to these regulations. These amendments will incorporate more stringent control limits on emissions of treatment and destruction processes of polychlorinated biphenyl (PCB) on federal land or land under contract with federal institutions.

10. Enforcement (Part 10)

CEPA 1999 provides enforcement officers with the authority to address cases of alleged non-compliance with the Act. Enforcement activities include inspection to verify compliance, investigation of alleged violations, measures to compel compliance without resorting to formal court action, and measures to compel compliance through court action.

The Act provides a wide range of responses to alleged violations, including the following:

- warnings;
- directions;
- tickets;
- prohibition orders;
- recall orders;
- detention orders for ships;
- injunctions to stop or prevent a violation;
- prosecutions;
- Environmental Protection Alternative Measures (EPAM); and
- Environmental Protection Alternative Compliance Orders (EPACO).

CEPA 1999, Part 10, provides enforcement officers with a wide range of powers to enforce the Act, including these powers of a peace officer. Enforcement officers can:

- carry out inspections to verify compliance with the Act;
- conduct investigations of suspected violations;
- enter premises, open containers and examine contents, take samples;
- conduct tests and measurements;
- obtain access to information (including data stored on computers);
- stop and detain conveyances;
- enter, search, seize, and detain items related to the enforcement of the Act;
- secure inspection warrants to enter and inspect premises that are locked and/or abandoned or where entry has been refused;
- seek search warrants; and
- arrest offenders.

Officers responsible for responding to environmental emergencies have limited enforcement powers. They can receive notifications of and written reports on environmental emergency incidents, access the site of an environmental emergency, and conduct inspections. They can also give direction to take remedial or preventive measures and collect relevant information regarding the emergency. Relevant information can include examining substances, collecting samples, and preserving other physical evidence.

CEPA analysts can also enter premises when accompanied by an enforcement officer. They can exercise the following inspection powers: open containers, examine contents and take samples, conduct tests and measurements, and secure access to information. Although CEPA analysts have no authority to issue warnings, directions, tickets, or orders, they may be called as expert witnesses for the purpose of securing an injunction or conducting prosecutions.

10.1 Designations

In 2002–03, 28 additional persons were designated as enforcement officers under CEPA 1999. This brings the total number of designated CEPA enforcement officers to 107. In addition, there are 33 enforcement officers within the department whose main responsibility is to respond to environmental emergencies and who have limited enforcement powers.

10.2 Training

Enforcement training needs continue to grow as new regulations are developed and officers receive their designation. In 2002–03, a number of steps were taken to meet the evolving training needs of the enforcement program. A new training model was developed based on innovative techniques and stronger partnerships between subject matter specialists and enforcement staff. In addition, the inspection, investigation, sampling, and health and safety courses were improved. These courses are required for enforcement officer designation. Finally, multidisciplinary training teams responsible for designing and delivering courses on regulations were established.

Courses provided in 2002–03 included:

- ***Pollution Enforcement Course*** — Successful completion of this course is a requirement for designation as an enforcement officer.
- ***General Enforcement Training*** — The Royal Canadian Mounted Police provided this course. Successful completion of the course is a requirement for designation as an enforcement officer.
- ***Environmental Protection Compliance Orders Course*** — This course provides enforcement officers with guidance on issuing orders to compel persons to stop an illegal activity or require action to correct a violation.
- ***CEPA Analysts Training Course*** — This course was provided to Environment Canada officials who may accompany enforcement officers in carrying out their duties.
- ***Regulation-specific Courses*** — Courses were also provided on the fuel-related regulations and the *Export and Import of Hazardous Wastes Regulations*.

10.3 Reinforcing the Compliance Continuum

In 2002–03, Environment Canada took steps to reinforce the linkages among the complementary segments of the "compliance continuum": compliance promotion, compliance monitoring, compliance verification, and enforcement. A compliance assurance function was developed in order to conduct research and evaluation and provide functional guidance so that the department makes better priority-setting, targeting, and resource allocation decisions relating to compliance promotion and enforcement activities.

An important component of the compliance assurance functions is the Compliance and Analysis Planning database. This database integrates information on Environment Canada's regulated community for all CEPA 1999 and *Fisheries Act* regulations. It will be used to improve Environment Canada's planning and reporting of compliance activities and results. Another important component is the national compliance promotion focal point, which is designed to coordinate the planning, development, and implementation of compliance promotion activities nationally. These components complement two existing roles, one dedicated to the development of compliance strategies and plans and the

other to ensuring the enforceability of new regulations.

This approach will enhance Environment Canada's ability to develop priority-based, nationally coherent strategies and plans for compliance promotion and enforcement and to achieve greater consistency in environmental protection program implementation.

10.4 Compliance Promotion

Compliance promotion activities are designed to help those who are subject to CEPA 1999 understand and achieve compliance with the law. The following are some examples of compliance promotion activities conducted in 2002–03:

- ***Federal Halocarbon Regulations, 2003*** — Prairie and Northern Region coordinated the development and delivery of an information package to regulatees. Prairie and Northern and Pacific and Yukon regions organized and delivered information sessions in Whitehorse and Yellowknife. Ontario Region distributed newsletters and information packages to federal facilities and First Nations peoples. Quebec Region delivered four information sessions to over 100 stakeholders.
- ***Solvent Degreasing Regulations*** — All Environment Canada regional offices participated in compliance promotion activities in coordination with headquarters. Copies of the proposed regulations, a compliance guide with frequently asked questions, and information fact sheets with important dates were distributed to the requested community and other stakeholders. Information sessions were held in Montréal, Toronto, and Vancouver. Site visits were also conducted across Canada.
- ***Tetrachloroethylene (Use in Dry Cleaning and Reporting Requirements) Regulations*** — All regions participated in the Clean Canada trade show. Copies of the proposed regulations, bulletins, and fact sheets were distributed to several hundred stakeholders. Compliance promotion workshops were held in all regions of Canada. The national inventory of dry cleaners was updated by a combination of site visits and telephone surveys. Compliance promotion materials were prepared, distributed and posted on the Green Lane at: **http://www.pyr.ec.gc.ca/dryclean**.
- ***Environmental Emergency Regulations*** — Ontario Region organized and delivered spill prevention workshops to approximately 75 participants from the private sector and municipalities. Workshop objectives included promoting prevention planning and educating participants about the proposed regulations.
- ***National Pollutant Release Inventory*** — Quebec Region distributed information brochures to approximately 800 potential notifiers as part of a compliance promotion campaign. The campaign highlighted the addition of seven atmospheric pollutants to the list of substances on which facilities must report. Since then, the total number of notifiers has increased by 30%. Quebec Region also held 11 information sessions for 280 participants.
- ***Pollution Prevention Planning for Dichloromethane*** — Ontario Region and Pacific and Yukon Region delivered a pollution prevention planning workshop on dichloromethane, which provided information on and promoted the proposed notice requiring the preparation and implementation of pollution prevention plans. The other three Environment Canada regions

(Quebec, Prairie and Northern, and Atlantic) provided information on the proposed notice, including requirements and timeframes, to potential notifiers.

- ***New Substances Notification Regulations*** — Atlantic Region and the Quebec Region developed and distributed fact sheets on the *New Substances Notification Regulations* for the environmental, metal mining, and oil and gas sectors. Presentations on the regulations were delivered across the country. Prairie and Northern Region distributed over 100 CEPA Registry cards and information kits on the *New Substances Notification Regulations* to potential regulatees at the Agricultural Biotechnology International Conference.
- ***Other Compliance Promotion Activities*** —
  - Ontario Region delivered 17 workshops to over 220 attendees from federal facilities and First Nations. Workshops addressed the National Pollutant Release Inventory, *Federal Halocarbon Regulations*, 2003, hazardous waste management, and the proposed *Federal Petroleum Products and Allied Petroleum Products Storage Tank Systems Regulations*. Some of the workshops were developed in collaboration with Health Canada and the Ontario Ministry of the Environment. Atlantic Region delivered a Contingency Planning Workshop for federal facilities and First Nations.
  - Quebec Region held a briefing session in the Îles-de-la-Madeleine for members of the public as well as commercial and recreational fishermen and fish farmers, fish plant processors and others, on the federal mollusc program, climate change and disposal at sea.
  - Quebec Region also delivered training to regulatory compliance promotion officers of other programs on the legal framework of compliance promotion activities.

10.5 Inspections

Every fiscal year, Environment Canada develops a national inspection plan for the regulations it administers under CEPA 1999 and the *Fisheries Act*. The number of planned inspections carried out under the plan is supplemented by a large number of unplanned inspections resulting from complaints or other information. Factors used in developing the plan include risk to human health and the environment, departmental priorities, new/amended regulations, compliance rates, and domestic and international commitments and obligations.

In 2002–03, National Inspection Plan priorities were set to verify compliance with all current regulations, with special emphasis and priority for the following:

- *Export and Import of Hazardous Wastes Regulations*;
- *New Substances Notification Regulations*;
- the seven fuels regulations;
- subsection 36(3) of the *Fisheries Act*; and
- the regional level, the *Disposal at Sea Regulations* were identified as a priority where applicable.

10.6 Investigations

There are two instances when enforcement officers conduct investigations:

- when they have reasonable grounds to believe that an offence has been committed under the Act; or
- when an individual at least 18 years of age and a Canadian resident petitions the Minister to investigate an alleged violation of the Act.

In 2002–03, 36 investigations were initiated; 10 were completed, and 26 are ongoing. In addition, there were 24 investigations that were initiated before 2002–03; 16 were completed in 2002–03, one of them resulting in the negotiation of an Environmental Protection Alternative Measures agreement, and the remaining 8 are ongoing.

10.7 Environmental Protection Alternative Measures

In 2002–03, an Environmental Protection Alternative Measures (EPAM) agreement was negotiated between the Attorney General of Canada and a corporation operating in Prairie and Northern Region. The corporation was charged with the unlawful storage of polychlorinated biphenyl (PCB) material contrary to the *Storage of PCB Material Regulations*, the unlawful deposit into a landfill of equipment containing PCBs contrary to the *Chlorobiphenyls Regulations*, and failure to report to an enforcement officer a potential release of a toxic substance listed in Schedule 1 of CEPA 1999. An EPAM agreement allows, after the laying of charges, for negotiated settlements that avoid the time and expense of lengthy court cases. In this case, the corporation agreed to:

- contribute $40 000 to the Environmental Damages Fund (the fund is used for environmental assessments and other activities to restore damaged areas of the environment);
- develop a standard operating procedure for handling ozone-depleting substances and PCBs;
- incorporate these procedures into its environmental management system;
- develop a training program for its employees and contractors; and
- publish an article in an approved magazine to alert others to environmental legislation governing PCBs.

10.8 Environmental Protection Compliance Orders

These orders can be issued to prevent a violation from occurring or to stop or correct one that is occurring or continuing over a period of time. In 2002–03, Quebec Region issued an Environmental Protection Compliance Order requiring a company to submit information on the manufacturing of microorganisms. The company appealed to the Chief Review Officer, who upheld the order.

10.9 Prosecutions and Key Court Cases

Key prosecutions and court cases in 2002–03 included the following:

- An Alberta company was assessed a penalty of $20 000 ($5000 fine and $15 000 contribution to the Environmental Damages Fund) after pleading guilty to one count of violating the *Storage of PCB Material Regulations*. Charges related to failing to inspect and maintain the concrete floor at an organic liquid tank farm.
- An Alberta company was assessed a penalty of $10 000 ($2000 fine and $8000 contribution to the Environmental Damages Fund) after pleading guilty to one charge of

violating the *Chlorobiphenyls Regulations* under CEPA 1999. The charge related to the illegal disposal of equipment containing PCBs.

- A Canadian company with an office in Alberta pleaded guilty to violating the *Benzene in Gasoline Regulations* by unlawfully importing gasoline with a benzene concentration above the regulatory limit and failing to report these imports. The company was assessed a penalty of $50 000 ($7000 fine and $43 000 contribution to the University of Calgary's Faculty of Environmental Design for environmental research).
- An Ontario company was convicted of exceeding its consumption allowance of hydrochlorofluorocarbons, contrary to the *Ozone-depleting Substances Regulations*, 1998. A fine of $35 000 was assessed.
- An Ontario company was convicted of illegally importing chlorofluorocarbons, contrary to the *Ozone-depleting Substances Products Regulations*, and fined $20 000. The company was also fined $20 000 for a violation under the *Transportation of Dangerous Goods Act*.
- An Ontario company was convicted of violating the *Ozone-depleting Substances Regulations*, 1998 with respect to the manufacture and sale of products containing hydrochlorofluorocarbons. A Ministerial Order was issued to recall non-compliant products in the Canadian marketplace and to destroy them in an environmentally sound manner. The company was also ordered to pay $35 000 to a local community college for bursaries in support of environmental education.
- A recycling company, with locations in Quebec and New Brunswick, pleaded guilty to three charges of importing hazardous wastes (waste lead acid batteries) in violation of the *Export and Import of Hazardous Wastes Regulations*. The company was fined $4500 and ordered to dispose of the batteries according to law. This was the first conviction of this type in Atlantic Canada.

Table 10 Enforcement Activities Carried Out under CEPA 1999 during 2002–03

Tools	Total inspections	On-site inspections	Off-site inspections	Investigations	Contraventions	Directives	Written warnings	Prosecutions	Charges	Convictions
Benzene in Gasoline	254	122	132	1	0	0	5	2	2	2
CEPA 1999 - Section(s)	469	314	155	7	0	1	55	2	2	0
Chlor-Alkali Mercury Release	4	1	3	0	0	0	0	0	0	0
Chlorobiphenyls	64	44	20	2	0	0	2	0	0	0
Contaminated Fuel	1	1	0	0	0	0	0	0	0	0
Diesel Fuel	136	50	86	0	0	0	1	0	0	0
Disposal at Sea (Ocean Dumping)	82	54	28	0	0	0	0	0	0	0
Export and Import of Hazardous Wastes	866	444	422	16	0	0	41	2	2	1
Export Control List Notification	162	8	154	0	0	0	0	0	0	0
Export of Substances under the Rotterdam Convention	82	2	80	0	0	0	0	0	0	0
Federal Halocarbons, 2002	173	119	54	1	0	0	27	0	0	0
Federal Registration of Storage Tank Systems for Petroleum Products and Allied Petroleum Products on Federal Lands or Aboriginal Lands	12	6	6	0	0	0	0	0	0	0
Fuels Information, No. 1	142	13	129	0	0	0	3	1	1	0
Gasoline	26	8	18	0	0	0	1	0	0	0
Gasoline and Gasoline Blend Dispensing Flow Rates	11	11	0	0	0	0	0	0	0	0
Glycol	2	2	0	0	0	0	0	0	0	0
National Pollutant Release Inventory	238	24	214	1	0	0	171	0	0	0
New Substances Notification	271	88	183	1	0	1	2	0	0	0
New Substances Notification – Biotechnology	283	116	167	0	0	0	0	0	0	0
Ozone-Depleting Substances, 1998	446	222	224	9	1	0	28	1	2	0
PCB Waste Export	160	6	154	0	0	0	0	0	0	0
Prohibition of Certain Toxic Substances, 2003	109	6	103	0	0	0	0	0	0	0
Pulp and Paper Mill Defoamer and Wood Chip	109	16	93	0	0	0	0	0	0	0
Pulp and Paper Mill Effluent Chlorinated Dioxins and Furans	194	23	171	0	0	0	6	0	0	0
Secondary Lead Smelter Release	11	11	0	0	0	0	0	0	0	0
Storage of PCB Material	285	77	208	1	0	1	3	0	0	0
Sulphur in Diesel Fuel	64	46	18	0	0	0	1	0	0	0
Sulphur in Gasoline	141	99	42	0	0	0	1	0	0	0
Vinyl Chloride Release, 1992	7	1	6	0	0	0	0	0	0	0
TOTAL – CEPA 1999	**4804**	**1934**	**2870**	**36**	**1**	**3**	**345**	**4**	**9**	**3**

Explanatory notes:

- The number of inspections relates to the number of regulatees inspected for compliance under each of the applicable regulations.
- Investigations are tabulated by number of investigation files. An investigation file may include activities relating to more than one Act or regulation.
- All measures (except prosecutions) are tabulated at the section level of a regulation. For example, if the outcome of an inspection is the issuance of a written warning that relates to three sections of a given regulation, then the number of written warnings is three.
- The number of prosecutions is represented by the number of regulatees that were prosecuted, regardless of the number of regulations involved.

11. Miscellaneous Matters (Part 11)

The Act sets out general authorities or conditions for:

- disclosure of information;
- general regulation-making provisions;
- regulations regarding cost recovery;
- use of economic instruments, namely deposit/refund systems and tradeable unit systems;
- requirements governing publication of various CEPA 1999 instruments in the *Canada Gazette*;
- boards of review; and
- review of the Act by Parliament every five years.

11.1 Economic Instruments

Economic instruments and incentives are a core element of Environment Canada's environmental innovation agenda. In 2002–03, a federal government committee, led by Environment Canada and Natural Resources Canada, undertook a comprehensive analysis of the impact of the Kyoto Protocol. The analysis examined a package of possible government actions to address climate change, including:

- the domestic measures announced in Action Plan 2000 and in the 2001 Budget;
- agricultural and forest sinks from current practices;
- a domestic emissions trading system for the use of large industrial emitters;
- about 40 additional targeted measures (some of which are enhancements of Action Plan 2000 measures); and
- a system of offsets.

The analytical work provided a foundation for the Government of Canada's Climate Change Plan for Canada, which was released in November 2002. The plan includes two key market-based economic instruments: an output-based emissions trading system for the large final emitters in the economy and an offset credit trading system for other sectors.

In October 2002, Environment Canada launched the Pilot Emission Removals, Reductions and Learnings Program (PERRLP). This is a five-year, $15 million pilot project to encourage Canadian companies and organizations to take immediate action to reduce greenhouse gas emissions. The first purchase round was held in fall 2002 and focused on landfill gas capture and combustion, carbon dioxide capture, and geological storage projects.

In 2002, Environment Canada launched a preliminary analysis of multipollutant emissions trading. The Canadian and U.S. governments also established a work plan for analysis of the potential for cross-border emissions trading of air pollutants.

Environment Canada continues to be an active participant in the National Round Table on the Environment and the Economy Ecological Fiscal Reform (EEEFR) project. The project has two main objectives: to conduct an in-depth exploration of the concept of ecological fiscal reform and to focus on a few specific environmental issues with a view to developing a suite of concrete measures. Case studies were completed on the potential for economic instruments and incentives in the areas of conservation of agricultural landscapes, cleaner transportation, sulphur in heavy fuel oils, and substances of concern. The case studies showed that there is a role for ecological fiscal reform in Canada and that it can offer

many benefits over traditional policy instruments.

An initial exploration of the use of economic instruments such as charges or taxes to deal with toxic substances has been done, including the formation of a multidepartment working group that sponsored a paper examining the use of ranking indices and a workshop to discuss the paper and next steps.

Environment Canada commissioned a paper that analyzes international experience with economic instruments and suggests areas where they might be successfully applied in Canada. The department also participated in the process headed by the External Advisory Committee on Smart Regulation, which was mandated by the Prime Minister to recommend areas where the government needs to redesign its regulatory approach to create and maintain a Canadian advantage. The committee examined the issue of increasing the use of economic and other non-regulatory instruments to provide the optimum mix of policy tools for achieving objectives such as sustainable development. It will shortly make its recommendations to the Prime Minister.

Contacts

Further information on specific CEPA-related programs can be found at the website addresses listed throughout this annual report. Further information on CEPA 1999 and related activities can be found online at:

- CEPA 1999 Environmental Registry (**www.ec.gc.ca/CEPARegistry**);
- Environment Canada's Green Lane™ (**www.ec.gc.ca**);
- Health Canada's Safe Environments Programme Web site (**www.hc-sc.gc.ca/hecs-sesc/hecs/sep/index.htm**); and
- Health Canada's Product Safety Programme Web site (**www.hc-sc.gc.ca/hecs-sesc/psp/index.htm**).

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 at 70 Crémazie, 7th Floor, Gatineau, Quebec K1A 0H3.

The following communications contacts are also available to provide additional information:

Health Canada – Headquarters
David J. Martin
Health Canada
Telephone: (613) 946-6538
Fax: (613) 948-8085
E-mail: David_J._Martin@hc-sc.gc.ca

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

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

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

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

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

Ontario Region
Nemone Musgrave
Telephone: (416) 739-5978
Fax: (416) 739-4776
E-mail: Nemone.Musgrave@ec.gc.ca

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

Pacific and Yukon Region
Doug McCallum
Telephone: (604) 664-9094
Fax: (604) 713-9517
E-mail: Doug.McCallum@ec.gc.ca

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