Annual Report 2000

Commission for
Environmental Cooperation
of North America

Published by the Communications Department
of the CEC Secretariat.

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Disponible en français – Disponible en español

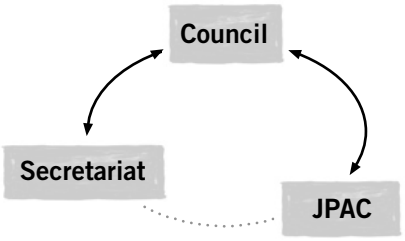
Paper

Cover:	Fraser Genesis, 100% de-inked post-consumer
Interior:	Rolland New Life, 30% post-consumer fiber, 100% elemental chlorine-free

Printed in Canada

Mission

The CEC facilitates cooperation and public participation to foster conservation, protection and enhancement of the North American environment for the benefit of present and future generations, in the context of increasing economic, trade end social links among Canada, Mexico and the United States.



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Message from the Council

When the North American Free Trade Agreement (NAFTA) was first negotiated, Canada, Mexico, and the United States jointly recognized that increased trade and economic activity would require enhanced cooperation among our three countries to protect our shared environment.

The Commission for Environmental Cooperation (CEC) was created to strengthen this cooperation in support of the North American Agreement on Environmental Cooperation, NAFTA's adjunct environmental accord. The CEC's mandate reflects the recognition by our three countries that economic and social progress, as well as the health of our people, is fundamentally tied to the quality of the environment we share.

In the intervening years, NAFTA has brought about an unprecedented expansion of trade and investment. As our economic integration deepens, so too does the responsibility to manage our shared environment.

The Commission is responding to this challenge. Its initiatives are indicative of a collective NAFTA commitment to ensuring that trade liberalization is accompanied by the innovative environmental policies required to achieve sustainable development.

The year 2000 saw the Commission make important steps in this regard.

In October 2000, for example, the CEC hosted the first North American Symposium on Understanding the Linkages between Trade and the Environment. This groundbreaking symposium resulted in a new framework for evaluating the environmental impacts of free trade, which has also contributed to an improved methodological approach in the work of the Commission.

Moreover, the identification of species of common concern, in particular those dependent on our shared Great Plains ecological region, is a major step in the creation of a trinational grasslands conservation strategy. In addition, in accordance with special direction from the Council last year, the Commission began the development of a comprehensive agenda to improve the protection of our children from environmental harm.

We are pleased to present the Commission's Annual Report elaborating on these and other CEC achievements during 2000.

David Anderson
Canada
Minister of the Environment

Victor Lichtinger
Mexico
Secretary of Environment and Natural Resourses

Carol M. Browner
United States
Environmental Protection Agency Administrator

Report from the Joint Public Advisory Committee

I look back on this landmark year for the Joint Public Advisory Committee (JPAC) with a sense of satisfaction and optimism. Public persistence and the resolve of Council led to a JPAC mandate ending the unrest over the citizen submission process under Articles 14 and 15 of the North American Agreement for Environmental Cooperation.

A Council resolution now tasks JPAC with the responsibility of designing a public review process for issues concerning the implementation and further elaboration of Articles 14 and 15. Council also asked JPAC to report on the public history of submissions and identify lessons learned. Working closely with the public, and with the assistance of outside experts, the review process was built and the lessons learned report carefully prepared. The report was submitted to Council for consideration in June 2001.

In addition, JPAC held four regular sessions in 2000 and developed seven Advice to Council on various matters. Other highlights of our work in 2000 were:

- Holding a joint workshop with the Conservation of Biodiversity program and indigenous peoples on the Strategic Directions for the Conservation of Biodiversity project.

- Soliciting public input on the draft *Guide: Elements for Improving Environmental Performance and Compliance through Effective Environmental Management Systems* in coordination with the Law and Policy program.

- Participating in the North American Symposium on Understanding the Linkages between Trade and Environment.

- Organizing plenary discussions with the National Advisory Committees and the Governmental Advisory Committee on Emerging Environmental Trends in North America.

It was a great honor for me to serve as chair of the Joint Public Advisory Committee for the year 2000. I firmly believe that JPAC is an excellent vehicle for public involvement and, as a group of citizens expert in their own right, members bring focus and direction to the work of the CEC.

I would like to thank my colleagues on the committee for their unwavering commitment to our activities. I would also like to thank the governments of the three Parties for respecting the autonomy of JPAC. And, of course, my sincere thanks go to the people of North America who, with their criticisms, suggestions, ideas and evaluations, have ensured that the work of this great team never stops improving.

Regina Barba
JPAC Chair for 2000

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Message from the Executive Director of the CEC Secretariat

This year has been marked by significant achievements in the growth of the CECas an innovative institution, and in terms of fulfilling our far-reaching work program in support of sustainable development in North America.

A core responsibility of the Secretariat is to provide high quality research and policy analysis that brings objective, science-based information and options to policy makers.

In November, the first North American Symposium on Understanding the Linkages between Trade and the Environment marked a notable achievement towards meeting that objective. The symposium also stands as a demonstration of the CEC's role as a forum for participation. The meeting, held at the World Bank, attracted 300 people from across North America, representing industry, government, research and development groups and environmental NGOs. The results bring much-needed rigour to the trade-environment debate, and include the first solid framework for evaluating the environmental impacts of free trade. Moreover the results set the stage for sector-specific research and advice over the years ahead.

This ground-breaking accomplishment is just one example of the success we achieved this year and I invite you, through this annual report, to examine the other progress achieved with our partners across North America in 2000.

Janine Ferretti

Cooperative Achievements

2000 Program Summary

Environment, Economy and Trade

The goal of the Environment, Economy and Trade Program is to encourage mutual compatibility of trade environmental and economic policies and instruments within North America and between North America and other trade alliances or regions.

- Critical and Emerging Environmental Trends in North America
- Assessing Environment and Trade Relationships
- Financing and the Environment
- Facilitating Trade in Green Goods and Services: Promoting Sustainable Agricultural Production and Trade
- Facilitating Conservation of Biodiversity as it relates to Trade in Wildlife Species
- Sustainable Tourism in Natural Areas

Conservation of Biodiversity

The goal of this program is to promote and conserve ecosystem health and integrity, and foster and encourage the conservation, protection and sustainable use of biodivesity and its components.

- Strategic Directions for the Conservation of Biodiversity
- Ecosystem Monitoring Initiative
- Cooperation on the Protection of Marine and Coastal Ecosystems
- Mapping Marine and Estuarine Ecosystems of North America
- North American Marine Protected Areas Network
- North American Biodiversity Conservation Mechanisms
- North American Biodiversity Information Network

Pollutants and Health

The goal of the program on Pollutants and Health is to facilitate cooperative initiatives to reduce pollution risks and minimize pollution impacts.

- Facilitating Trinational Coordination in Air Quality Management
- Developing Technical and Strategic Tools for Improved Air Quality in North America
- Trinational Air Quality Improvement Initiative: North American Trade and Transportation Corridors
- Sound Management of Chemicals
- North American Pollutant Release and Transfer Register
- Capacity Building for Pollution Prevention
- First North American Symposium on Children's Health and the Environment

Law and Policy

The goal of the Law and Policy program is to facilitate the development of law, policy and economic instruments; to aid the development of alternative approaches to achieving compliance, including effective enforcement; and to promote greater public participation and transparency in decision-making.

- Cooperation between Environmental Laboratories
- North American Regional Enforcement Forum
- Enforcement and Compliance Capacity Building
- Indicators of Effective Environmental Enforcement

Cooperative Achievements

Environment, Economy and Trade

The Environment, Economy and Trade program area supports the goals of NAAEC to:

- promote sustainable development based on cooperation and mutually supportive environmental and economic policies,
- support the environmental goals and objectives of NAFTA,
- avoid creating trade distortions or new trade barriers,
- promote economically efficient and effective environmental measures, and
- promote "win-win" opportunities for achieving environmental and economic development objectives.

Critical and Emerging Environmental Trends in North America

In December 2000, the Secretariat presented the findings of two analytical reports: the first, making use of a quantitative economic model, examines potential pressure on freshwater resources based on competition between urban water use and the agricultural sector, to the year 2020. The second pulls together data from Canada, Mexico and the US on two sectors—forestry and agriculture—to examine changes in material resource flows (MFA). In addition, the results of a limited public survey on the views of the public on environmental futures and a survey of environmental challenges in the three countries were presented at a joint public meeting with JPAC in December.

Assessing Environment and Trade Relationships

The CEC hosted the first North American Symposium on Understanding the Linkages between Trade and Environment in October at the World Bank in Washington, DC. The meeting attracted 300 people from across North America, representing industry, government, research groups, development groups and environmental NGOs. During the two-day meeting, 14 original research papers were presented and discussed. The symposium represents a step forward in providing empirical and rigorous analysis to the trade-environment debate.

Green Goods and Services

In March 2000, coffee-growers, distributors, roasters and retailers met to identify ways to increase the market share of shade coffee. They identified labeling as an important area for the CEC to examine. That meeting built on information presented in February through a background paper entitled, "Environmental and Other Labeling of Coffee: The Role of Mutual Recognition Supporting Cooperative Action." To support this work, the CEC developed a coffee certification database as an online resource designed for stakeholders in the coffee industry. It is intended to provide information to those interested in organic, shade and fair trade coffee labeling and certification schemes.

In May, the CEC published a follow up report to the Playa del Carmen workshop: *Promoting Sustainable Tourism in North America's Natural Areas: The Steps Forward*. Work continued on a summary report of "best practices" in sustainable tourism in North America's natural areas, as well as on the online Sustainable Tourism Resource Database.

Conservation of Biodiversity

The Conservation of Biodiversity program area seeks to promote cooperation between Canada, Mexico and the United States in fostering conservation, sound management and sustainable use of North American biodiversity in three ways: first, a diagnosis to identify the current state of the conservation of biodiversity in the region; second, the development of strategies based on priorities of ecological regions and conservation actions that have consensus among the countries and diverse interest groups; and third, the implementation of mechanisms, projects and information management systems.

North American Biodiversity Conservation Strategies

Work in 2000 toward developing a long-term strategy on the conservation of biodiversity was based on the *Report on the Status of Biodiversity in North America—Integrated Baseline Summary*, which was submitted for comments from stakeholders. As part of this work, the CEC organized, in May, a unique workshop with 21 leading ecologists from the three North American countries who identified important regions for biodiversity conservation. The workshop identified fourteen regions as prime candidates for focusing CEC's attention, based on biological continental significance and a high level of threat.

Stewardship for Shared Terrestrial and Marine Ecosystems

At its June session, the CEC's Council stated its commitment to initiate trinational cooperation aimed at conserving species of common concern. Working in close cooperation with the Canada/Mexico/US Trilateral Committee for Wildlife and Ecosystem Conservation and Management, and reflecting both the need and opportunity for working on a regional scale, the Parties agreed to focus initially on 17 species of common concern.

Improving Information on North American Biodiversity

The CEC has focused on helping to develop information and making it more accessible to assist decision-makers, wildlife managers and conservation organizations in their biodiversity conservation efforts. The North American Biodiversity Information Network (NABIN), through the collaboratively developed Species Analyst tool, constitutes a major breakthrough in establishing a network of collectors and users of biodiversity data in North America. Working with more than 50 of North America's most important centers of biodiversity information, the CEC has helped make 75 data sets and 45 million data points accessible via the Internet.

Pollutants and Health

The Pollutants and Health program promotes cooperative initiatives through: encouraging technical cooperation between the Parties; promoting pollution prevention techniques and strategies; recommending appropriate limits for specific pollutants, taking into account differences in ecosystems; recommending approaches for the comparability of techniques and methodologies for data, gathering and analysis, data management, and electronic data communications; and promoting access to publicly available information concerning the environment that is held by public authorities of each Party.

Cooperation on North American Air Quality Issues

In October, the CEC presented a study conducted by researchers at the Center for the Biology of Natural Systems, Queens College, City University of New York, entitled, *Long-range Air Transport of Dioxin from North American Sources to Ecologically Vulnerable Receptors in Nunavut, Arctic Canada.* The study modeled dioxin deposition in Nunavut based on emissions from July 1996 to June 1997, creating a "snapshot" of atmospheric transport during that time. The study illustrated the dynamics of long-range transport on a continental scale.
More than 200 officials from all three countries attended the first annual meeting of North American air pollution management officials, held in Asheville, North Carolina, in April.

Work also began to identify likely environmental impacts (with special emphasis on the air environment) of North American trade and transportation corridor development and describe opportunities for the prevention or mitigation of these impacts. The project covers the full multi-modal definition of "trade and transportation corridors" (trucking, rail, inland and ocean waterways, air, pipelines, and electric transmission).

Sound Management of Chemicals

In 2000, the Sound Management of Chemicals Program continued implementation of several North American Regional Action Plans already in place, including plans on chlordane, DDT, mercury and PCBs. In June, Council took further action on mercury by formally approving a new phase II component that provided additional guidance in the form of specific goals, objectives and actions to reduce mercury levels in and fluxes among, selected indicative environmental media in order to approach natural levels and fluxes and target for reduction, through life cycle management approaches, the sources of anthropogenic mercury pollution.

Work continued on a proposed regional action plan for lindane—a persistent organic pollutant that is registered for use as a pesticide and insecticide in all three of the North American countries—to reduce human and environmental exposure to the substance. Comments on the draft plan were made available on the CEC's web site in July.

North American Pollutant Release and Transfer Register Program

In May 2000, the CEC published the fifth in the annual series of *Taking Stock* reports on North American pollutant releases and transfers. The reports present an overview and analysis of data on pollutant releases and transfers from industrial facilities in North America, based on data collected through the national PRTR programs.

In June 2000, during its seventh annual regular session in Dallas, Texas, the CEC Council issued Resolution 00-07 on Pollutant Release and Transfer Registers (PRTRs). In this resolution, the Council recognized a set of basic elements that are central to the effectiveness of PRTR systems, reaffirmed its commitment to publish an annual report on pollutant releases and transfers in North America (*Taking Stock*), and agreed to continue its individual and collective efforts to promote PRTRs, including public access to and use of PRTR data domestically, regionally and internationally.

Pollution Prevention

The Fund for Pollution Prevention (*Fondo de Prevención de la Contaminación*—Fiprev) continued to make loans to small- and medium-size enterprises in Mexico. As of September, 12 loans totaling approximately 2.7 million pesos (US$300,000) had been granted, and 16 more for approximately 3.4 million pesos (US$ 375,000) were authorized. Of these financed projects, 10 are in the tanning industry, one is in electroplating and another is in food. There are 16 projects currently being formalized: 12 in tanning and

the others in electroplating, dry cleaning, chemicals and metalwork. Currently, funding requests for many more projects are being studied, primarily in the areas of tanneries and electroplating.

During 2000, the CEC also promoted the work the Round Table on Pollution Prevention. The Round Table commenced its activities in January 2000, the date the Organizing Committee met for the first time. The Organizing Committee is made up of 11 representatives from government, industry, academia, technical and financial assistance organizations and nongovernmental organizations. Since then, seven more meetings have been held, the most recent to assess the results of the first dissemination meeting that took place 24–25 August 2000, in Jurica, Querétaro, with the participation of the state government and about 150 attendees.

First North American Symposium on Children's Health and the Environment

Recognizing the need for greater coordination and cooperation to protect children from environmental threats in North America, in June 1999 the CEC Council announced a special initiative to explore opportunities for the CEC involvement in this area. The Symposium on Children's Health and the Environment in North America, held on 10 May 2000 in Toronto, and the government meeting on 11 May 2000 were important first steps in the process of identifying a common agenda for action among the three countries. The outcomes of the symposium and government meeting provided important groundwork for Council Resolution 00-10 on Children's Health and the Environment, which was adopted by the CEC Council during its session in Dallas, Texas, in June 2000.

Law and Policy

The goal of the Law and Policy program area is to address regional priorities regarding obligations and commitments in NAAEC related to environmental standards and their implementation. Program initiatives monitor and report on regional trends in implementing and enforcing environmental standards, including innovations in regulation, economic instruments and voluntary initiatives.

Enforcement Cooperation

In June 2000, Council endorsed the Guidance Document on environmental management systems produced by the Enforcement Working Group. Entitled *Improving Environmental Performance and Compliance: 10 Elements of Effective Environmental Management Systems,* the document has been available since June on the CEC web site, has been produced in pamphlet form in the three languages, and has been distributed to various interested international organizations.

In conjunction with the North American Wildlife Enforcement Group (NAWEG), a network of senior wildlife enforcement officials from Canada, Mexico and the United States, the CEC organized a workshop on illegal traffic of wildlife in North America. Held in August in Monterrey, Mexico, the workshop was part of a series of enforcement training sessions sponsored by the CEC that have addressed trade in fur-bearing species, wild birds, reptiles, and corals and marine invertebrates. Over 70 wildlife enforcement officials from the three countries met to coordinate efforts to crack down on wildlife poaching and smuggling.

Other Initiatives

Article 13 Report

Early in 2000, the CEC Secretariat launched an initiative on the "Environmental Challenges and Opportunities of the Evolving Continental Electricity Market" under Article 13 of the North American Agreement on Environmental Cooperation (NAAEC). The initiative coincides with an emerging interest from Canada, Mexico and the United States in building a more seamless North American energy market and is intended to assist the Parties in identifying the environmental issues and areas of opportunity within the continental electricity marketplace. Guided by a multistakeholder Advisory Board, the initiative set out to:

- examine the environmental challenges and opportunities presented by the evolving continental electricity market, including the effects of restructuring, development and increased trade;
- examine the challenges and potential of "green electricity" in North American markets, including the identification of trends in the definition, production and marketing of "green electricity;" and
- foster a dialogue among a diverse group of representatives from business, government and the nongovernmental community, concerning the most significant environmental dimensions of the evolving North American electricity market.

Registry of Submissions on Enforcement Matters 2000

ID. NUMBER	SUBMITTERS	STATUS
SEM-97-001	B.C. Aboriginal Fisheries Commission et al.	*Factual record released*
SEM-97-002	Comité pro Limpieza del Río Magdalena	*Awaiting additional information under Article 21(1)(b) from Party*
SEM-97-003	Centre québécois du droit de l'environment (CQDE)	*Process terminated under Article 15(2)*
SEM-97-006	The Friends of the Oldman River	*Deferred decision on factual record*
SEM-97-007	Instituto de Derecho Ambiental	*Process terminated under Article 15(1)*
SEM-98-001	Instituto de Derecho Ambiental (Guadalajara)	*Process terminated under Article 14(1)*
SEM-98-003	Department of the Planet Earth, et al.	*Reviewing under Article 15(1)*
SEM-98-004	Sierra Club of British Columbia, et al.	*Reviewing under Article 15(1)*
SEM-98-005	Academia Sonorense de Derechos Humanos, et al.	*Process terminated under Article 15(1)*
SEM-98-006	Grupo Ecológico "Manglar", A.C.	*Awaiting Council's decision on development of factual record*
SEM-98-007	Environmental Health Coalition, et al.	*Preparing the factual record*
SEM-99-001	Methanex Corporation	*Process terminated under Article 14(3)(a)*
SEM-99-002	Center for International Environmental Law	*Awaiting Council's decision on development of factual record*
SEM-00-001	Rosa María Escalante de Fernández	*Process terminated under Article 14(1)*
SEM-00-002	Neste Canada Inc.	*Process terminated under Article 14(3)(a)*
SEM-00-003	Hudson River Audubon Society of Westchester, Inc., et al.	*Process terminated under Article 14(1)*
SEM-00-004	David Suzuki Foundation et al.	*Reviewing under Article 15(1)*
SEM-00-005	Academia Sonorense de Derechos Humanos et al.	*Awaiting Party's response under Article 14(2)*
SEM-00-006	Comisión de Solidadridad y Defensa de los Derechos Humanos, AC	*Awaiting correction of a minor error of form*

■ Submission ID: SEM-97-001/BC HYDRO

Submitter(s): **B.C. Aboriginal Fisheries Commission et al.**
Party: Canada
Date received: 2 April 1997

Summary of the matter addressed in the Submission:

The Submitters allege that the Canadian Government is failing to enforce the Fisheries Act, and to utilize its powers pursuant to the National Energy Board Act, to ensure the protection of fish and fish habitat in British Columbia's rivers from ongoing and repeated environmental damage caused by hydro-electric dams.

2000 Events:

1. On 28 March 2000, the Secretariat submitted the Draft Factual Record to the Council.
2. On 11 May 2000, the Secretariat received the Parties' comments to the Draft Factual Record.
3. On 31 May 2000, the Secretariat submitted the Final Factual Record to the Council.
4. On 11 June 2000, the Council voted unanimously to instruct the Secretariat to make the final factual record publicly available.
5. On 11 June 2000, the Secretariat released to the public the Final Factual Record, in accordance with Council Resolution 00-04. The process is terminated.

■ Submission ID: SEM-97-002/RÍO MAGDALENA

Submitter(s): **Comité Pro Limpieza del Río Magdalena**
Party: United Mexican States
Date received: 15 March 1997

Summary of the matter addressed in the Submission:

The Submitters allege that wastewater originating in the municipalities of Imuris, Magdalena de Kino, and Santa Ana, located in the Mexican state of Sonora, is being discharged into the Magdalena River without prior treatment. According to the Submitters, the above contravenes Mexican environmental legislation governing the disposal of wastewater.

2000 Events:

This submission was active during 2000, but no new determinations were made.

■ Submission ID: SEM-97-003/QUEBEC HOGS FARMS

Submitter(s): **Centre québécois du droit de l'environnement (CQDE), et al.**
Party: Canada
Date received: 9 April 1997

Summary of the matter addressed in the submission:

The Submitters allege "the occurrence of failure to enforce several environmental standards related to hog production on the territory of the Province of Quebec. Specifically, that the Quebec Government has failed, for many years, to enforce certain environmental protection standards regarding agricultural pollution originating from animal production facilities, mainly from hog farms."

2000 Events:

On 16 May 2000, the Council by a two-thirds majority decided not to direct the Secretariat to develop a factual record. In accordance with section 10.4 of the Guidelines, the submission process is terminated.

■ Submission ID: SEM-97-006/OLDMAN RIVER II

Submitter(s): **The Friends of the Oldman River**
Party: Canada
Date received: 4 October 1997

Summary of the matter addressed in the submission:

The Submitter alleges that Canada is failing to apply, comply with and enforce the habitat protection sections of the Fisheries Act and the Canadian Environmental Assessment Act.

2000 Events:

On 16 May 2000, the Council decided to defer consideration of the Secretariat's notification that a factual record was warranted and directed the Secretariat to review expeditiously any relevant assertions of fact about other cases that the submitter may provide, after having given Canada an opportunity to provide a response to those assertions; and to convey its recommendation to Council for a decision.

■ Submission ID: SEM-97-007/LAKE CHAPALA

Submitter(s): **Instituto de Derecho Ambiental**
Party: United Mexican States
Date received: 10 October 1997

Summary of the matter addressed in the Submission:

The Submitters allege that Mexico is failing to enforce environmental law, in connection with the citizen complaint filed on 23 September 1996, concerning the degradation of the Lerma Santiago River – Lake Chapala Basin.

2000 Events:

On 14 July 2000, the Secretariat determined not to recommend the preparation of a factual record. Under guideline 9.6, the process was terminated.

■ Submission ID: SEM-98-001/GUADALAJARA

Submitter(s):	**Instituto de Derecho Ambiental, A.C.** in conjunction with the citizens affected by the explosions of 22 April 1992
Party:	United Mexican States
Date received:	9 January 1998

Summary of the matter addressed in the submission:

The Submitters allege that Mexican Federal Attorney General and the Federal Judiciary did not duly enforce the General Law of Ecological Balance and Environmental Protection (LGEEPA) in relation to the explosions in the Reforma area of the city of Guadalajara, state of Jalisco.

2000 Events:

On 11 January 2000, the Secretariat determined that the revised submission does not meet the criteria of Article 14(1) and terminated the process.

■ Submission ID: SEM-98-003/GREAT LAKES

Submitter(s):	**Department of the Planet Earth, et al.**
Party:	United States of America
Date received:	27 May 1998

Summary of the matter addressed in the submission:

The submitters assert that the US Environmental Protection Agency's regulations drafted and programs adopted to control airborne emissions of dioxin/furan, mercury and other persistent toxic substances from solid waste and medical waste incinerators violate and fail to enforce both: 1) US domestic laws, and; 2) the ratified US-Canadian treaties designed to protect the Great Lakes that are partly referenced in the US Clean Air Act.

2000 Events:

1. On 24 March 2000, the Secretariat requested additional information from the United States under Article 21(1)(b).
2. On 15 November 2000, the Secretariat received the requested information from the United States.

■ Submission ID: SEM-98-004/BC MINING

Submitter(s): **Sierra Club of British Columbia, et al.**
Party: Canada
Date received: 29 June 1998

Summary of the matter addressed in the submission:

The Submission alleges a systemic failure of Canada to enforce the Fisheries Act to protect fish and fish habitat from the destructive environmental impacts of the mining industry in British Columbia.

2000 Events:

This submission was active during 2000, but no new determinations were made.

■ Submission ID: SEM-98-005/CYTRAR

Submitter(s): **Academia Sonorense de Derechos Humanos, A.C., et al.**
Party United Mexican States
Date received: 11 August 1998

Summary of the matter addressed in the submission:

The submitters allege that Mexico has failed to effectively enforce environmental law by having authorized the operation of a hazardous waste landfill (CYTRAR) less than six kilometers away from Hermosillo, Sonora.

2000 Events:

On 26 October 2000, the Secretariat determined not to recommend the preparation of a factual record. Under guideline 9.6, the process was terminated.

■ Submission ID: SEM-98-006/AQUANOVA

Submitter(s): **Grupo Ecológico Manglar, A.C.**
Party: United Mexican States
Date received: 20 October 1998

Summary of the matter addressed in the submission:

The Submission alleges that the Mexico is failing to effectively enforce its environmental laws with respect to the establishment and operation of Granjas Aquanova S.A. de C.V., a shrimp farm located in Isla del Conde, San Blas, Nayarit, Mexico.

2000 Events:

On 4 August 2000, the Secretariat informed Council that the Secretariat considers that the submission warrants development of a factual record.

■ Submission ID: SEM-98-007/METALES Y DERIVADOS

Submitter(s):	**Environmental Health Coalition, et al.**
Party:	United Mexican States
Date received:	23 October 1998

Summary of the matter addressed in the submission:

The Submitters allege that Mexico has failed to effectively enforce its environmental law in connection with an abandoned lead smelter in Tijuana, Baja California, Mexico, that poses serious threats to the health of the neighboring community, and to the environment.

2000 Events:

1. On 6 March 2000, the Secretariat informed Council that the Secretariat considers that the submission warrants development of a factual record.
2. On 16 May 2000, the Council voted unanimously to instruct the Secretariat to develop a factual record.
3. On 30 May 2000, the Secretariat placed a work plan. and a repository of documents in its web site or otherwise made these available to the public and stakeholders

■ Submission ID: SEM-99-001/METHANEX

Submitter(s):	**Methanex Corporation**
Party:	United States
Date received:	18 October 1999

Summary of the matter addressed in the submission:

The submitters allege that the United States has failed to enforce California's environmental laws and regulations related to water resource protection and to the regulation of underground storage tanks (UST's).

2000 Events:

1. On 30 March 2000, the Secretariat determined that the submission met the article 14(1) and 14(2) criteria and requested a response from the United States.
2. On 31 May 2000, the Secretariat received a response from the United States and began considering whether to recommend a factual record.
3. On 30 June 2000, the Secretariat determined that, under Article 14(3)(a), its review of submissions SEM-99-001 and SEM-00-002 shall not proceed further because they are subjects of a pending judicial or administrative proceeding. The process is terminated.

■ Submission ID: SEM-99-002/CIEL-MIGRATORY BIRDS

Submitter(s):	**Alliance for the Wild Rockies, et al.**
Party:	United States
Date received:	19 November 1999

Summary of the matter addressed in the submission:

The Submitters allege that the United States Government is failing to effectively enforce the Migratory Bird Treaty Act (MBTA) against logging operations on federal and non-federal lands throughout the United States.

2000 Events:

1. On 29 February 2000, the Secretariat received a response from the United States and began considering whether to recommend a factual record.
2. On 15 December 2000, the Secretariat informed Council that the Secretariat considers that the submission warrants development of a factual record.

■ Submission ID: SEM-00-001/MOLYMEX I

Submitter(s):	**Rosa María Escalante de Fernández**
Party:	United Mexican States
Date received:	27 January 2000

Summary of the matter addressed in the submission:

The Submitter asserts that the town of Cumpas, Sonora, Mexico, has been affected by air pollution from the Molymex, S.A. de C.V. plant which produces molybdenum trioxide from molybdenum sulfide, allegedly in violation of the provisions of LGEEPA regarding air quality and Official Mexican Standards for environmental health that establish limits for sulfur dioxide and particulate matter of ten microns or less (PM10).

2000 Events:

1. On 1 February 2000, the Secretariat acknowledged receipt of the submission.
2. On 25 April 2000, the Secretariat notified the submitter(s) that the submission did not meet the Article 14(1) criteria and the submitter(s) had 30 days to provide the Secretariat with a revised submission that conforms with Article 14(1).
3. The thirty day deadline expired without the Secretariat receiving a submission that conformed to Article 14(1). Under Guideline 6.2, the process was therefore terminated on 8 June 2000.

■ Submission ID: SEM-00-002/NESTE CANADA

Submitter(s): Neste Canada Inc.
Party: United States
Date received: 21 January 2000

Summary of the matter addressed in the submission:

The Submitter believes that "applicable regulatory agencies in California are not enforcing environmental laws, as defined in the NAAEC, relating to underground storage tanks (USTs) with the result that significant volumes of gasoline continue to leak into and contaminate soil, water and air in that State."

2000 Events:

1. On 8 March 2000, the Secretariat acknowledged receipt of the submission.
2. On 17 April 2000, the Secretariat determined that the submission related to the same facts and the same asserted failure to enforce an environmental law as another submission already under consideration by the Secretariat. Under guideline 10.3, the Secretariat consolidated the submission with submission SEM-99-001 (Methanex).
3. On 30 May 2000, the Secretariat received a response from the United States and began considering whether to recommend a factual record.
4. On 30 June 2000, the Secretariat determined that, under Article 14(3)(a), its review of submissions SEM-99-001 and SEM-00-002 shall not proceed further because they are subjects of a pending judicial or administrative proceeding. The process is terminated.

■ Submission ID: SEM-00-003/JAMAICA BAY

Submitter(s): Hudson River Audubon Society of Westchester, Inc., et al.
Party: United States
Date received: 2 March 2000

Summary of the matter addressed in the submission:

The Submitters allege that the United States Department of Interior – National Park Service, is failing to enforce and proposing to violate: (i) Section 703 of the Migratory Bird Treaty Act (MTBA) 16 U.S.C. 703-712, which prohibits the killing of migratory birds without a permit from the US Fish and Wildlife Service; and (ii) Sections 4 through 10 of the Endangered Species Act of 1973 (ESA), which prohibit the taking of endangered and threatened species, require the protection of such species "whether by protection of habitat and food supply," and require the designation of "critical habitat."

2000 Events:

1. On 8 March 2000, the Secretariat acknowledged receipt of the submission.
2. On 12 April 2000, the Secretariat determined that the submission does not meet the criteria of Article 14(1) of the NAAEC. The process is terminated.

■ Submission ID: SEM-00-004/BC LOGGING

Submitter(s): **David Suzuki Foundation et al.**
Party: Canada
Date received: 15 March 2000

Summary of the matter addressed in the submission:

The Submitters allege that the Government of Canada "is in breach of its commitments under NAAEC to effectively enforce its environmental laws and to provide high levels of environmental protection." They allege that the Fisheries Act is "routinely and systematically violated by logging activities undertaken by British Columbia… [s]pecifically, section 35 of the Fisheries Act, which prohibits the harmful alteration, disruption or destruction of fish habitat, and section 36 of the Fisheries Act, which prohibits the deposition of deleterious substances in waters frequented by fish…"

2000 Events:

1. On 17 March 2000, the Secretariat acknowledged receipt of the submission.
2. On 30 March 2000, the Secretariat requested the submitter(s) to correct minor errors of form under guideline 3.10.
3. On 31 March 2000, the Secretariat received a the additional information that corrected the errors of form.
4. On 8 May 2000, the Secretariat determined that the submission met the article 14(1) and 14(2) criteria and requested a response from Canada.
5. On 10 July 2000, the Secretariat received a response from Canada and began considering whether to recommend a factual record.

■ Submission ID: SEM-00-005/MOLYMEX II

Submitter(s): **Academia Sonorense de Derechos Humanos, A.C. and Domingo Gutiérrez Mendívil**
Party: United Mexican States
Date received: 6 April 2000

Summary of the matter addressed in the submission:

The Submitters allege that Mexico has failed to effectively enforce the General Law of Ecological Equilibrium and Environmental Protection (Ley General del Equilibrio Ecologico y la Proteccion al Ambiente—LGEEPA) in relation to the operation of the company Molymex, S.A. de C.V. (Molymex) in the town of Cumpas, Sonora, Mexico.

2000 Events:

1. On 27 April 2000, the Secretariat acknowledged receipt of the submission.
2. On 13 July 2000, the Secretariat notified the submitter(s) that the submission did not meet the Article 14(1) criteria and the submitter(s) had 30 days to provide the Secretariat with a revised submission that conforms with Article 14(1).
3. On 31 July 2000, the Secretariat received a revised submission and began to analyze it.
4. On 19 October 2000, the Secretariat determined that the submission met the article 14(1) and 14(2) criteria and requested a response from the concerned government Party.

■ Submission ID: SEM-00-006/TARAHUMARA

Submitter(s):	**Comisión de Solidaridad y Defensa de los Derechos Humanos, AC**
Party:	United Mexican States
Date received:	9 June 2000

Summary of the matter addressed in the submission:

The Submitters allege a failure by Mexico to effectively enforce its environmental law by denying access to environmental justice to Indigenous communities in the Sierra Tarahumara in the State of Chihuahua. They particularly assert failures to effectively enforce environmental law relative to the citizen complaint process, to alleged environmental crimes and other to alleged violations with respect to forest resources and the environment in the Sierra Tarahumara.

2000 Events:

On 19 June 2000, the Secretariat acknowledged receipt of the submission and requested the submitter(s) to correct minor errors of form under guideline 3.10.

Linking North American Communities

In 2000, the North American Fund for Environmental Cooperation (NAFEC), awarded grants to 16 community-based environmental projects across North America for up to US$25,000 each, totaling US$387,000. Including the grants awarded in 2000, NAFEC has issued a total of 142 grants amounting to US$5.4 million since the first grants were awarded in 1996.

In 2000, an effort was made to further focus NAFEC. The Call for Proposals outlined two categories: (1) Linking biodiversity conservation with trade in green goods and services and (2) Pollutants and Health—improving public access to information, decision-making and environmental justice. Within each category, specific criteria were outlined in order to link the grants closely to current CEC projects. Despite the effort to narrow the field, 400 proposals were received.

In addition to receiving funding for their community-based projects, 2000 grantees were invited to participate in a collective effort to identify common problems and solutions, best practices, supportive policies, etc. At the outset of their projects, grantees were to meet with representatives from similar community-based projects and from the CEC in order to define issues that they would examine during the course of their projects.

During 2000, the Secretariat also undertook to evaluate NAFEC. The evaluation was completed just prior to the Council Meeting. It concluded that there was strong support among stakeholders for maintaining NAFEC within the CEC. It also underlined the importance of returning NAFEC funding to a level that will ensure open access for North American communities.

Grants awarded in 2000

(all figures in US dollars)

Linking Biodiversity Conservation with Green Goods and Services

New Mexico Wolf Tourism Project (US) *Southwest Environmental Center,* Las Cruces, New Mexico, USA ($20,000) • **Ecotourism Program in the Indigenous Community of Nuevo San Juan Parangaricutiro, Mich.** (Mexico) *Comunidad Indígena de Nuevo San Juan Parangaricutiro,* Nvo. San Juan Parangaricutiro, Michoacán, México ($24,000) • **North American Guide Exchange Project–Strengthening Communities Through Sustainable Tourism** (Canada-Mexico-US) *Saskatchewan Wetland Conservation Corporation,* Regina, Saskatchewan, Canada ($25,000) • **The Millennium Trek–A Gwich'in Journey to the Birthing Grounds of the Porcupine Caribou Herd** (Canada-US) *Porcupine Caribou Management Board*, Lister, British Columbia, Canada ($18,000) • **Realizing the Transition to a Conservation Based Approach to the Forests and Economy** (Canada) *Sierra Club of British Columbia*, Victoria, British Columbia, Canada ($25,000) • **Community capacity-strengthening for sustainable forest management in the Sierra Madre of Chihuahua** (Mexico) *Comision de Solidaridad y Defensa de los Derechos Humanos, A.C. (COSYDDHAC),* Chihuahua, Chihuahua, México ($25,000) • **Strengthening sustainable use and marketing of non-timber forest products in the Mexican humid tropics** (Mexico) *Methodus Consultora, S.C.,* Oaxaca, Oaxaca, México ($25,000) • **Conservation and restoration of biodiversity in the cultivation of coffee and other organic products in Chiapas** (Mexico) *Federación Indígena Ecológica de Chiapas,* Motozintla, Chiapas, México ($25,000) • **North American cooperation for sustainable coffee: Beyond the niche market** (Canada-Mexico-US) *Eco-Research Chair of Environmental Law and Policy, University of Victoria,* Victoria, British Columbia, Canada ($25,000)

Pollutants and Health—Improving Public Access to Information, Decision-Making and Environmental Justice

Clean production project for the Great Lakes Basin communities (Canada-US) *Union Saint-Laurent, Grands Lacs (Great Lakes United),* Montréal, Québec, Canada ($25,000) • **Building an Environmental Justice Network through Citizen Monitoring, Air Sampling and using Geographic Information Systems** (US) *Little Village Environmental Justice Organization (LVEJO),* Chicago, Illinois, USA ($25,000) • **PRTR (Pollutant Release and Transfer Registry): an exercise in community use** (Mexico) *Enlace Ecológico, A.C.,* Agua Prieta, Sonora, Mexico ($20,000) • **Strengthening Community Level Use of PRTR (Pollutant Release and Transfer Registry) Data in North America** (Canada-Mexico-US) *Canadian Institute for Environmental Law and Policy (CIELAP)*, Toronto, Ontario, Canada ($25,000) • **A Virtual Forum for the Pollutant Release and Transfer Registry** (Mexico) *Programa La Neta, S.C.*, México D.F., México ($25,000) • **Strengthening the Farmworker Community's Capacity to Monitor Pesticide Risks and Forming Alliances for Alternative Solutions** (US) *Farmworker Health and Safety Institute,* Glassboro, New Jersey, USA ($25,000) • **Southeast Houston: Cleaner Communities for Better Health** (US) *Mothers for Clean Air,* Houston, Texas, USA ($25,000)

Country Reports

Canada

Country Report on Implementation of the Commitments Derived from the NAAEC.

The following report was submitted to the CEC Secretariat by Environment Canada in accordance with NAAEC.

■ Article 2—General Commitments

Article 2(1)(a) State of the Environment Reports

Two reports were published under the federal government's new Vision for State of the Environment (SOE) Reporting in 2000. Environment Canada produced *Ecological Assessment of the Boreal Shield Ecozone,* and Agriculture and Agri-Food Canada published *The Health of Our Water—Toward Sustainable Agriculture in Canada*. SOE reports serve two key purposes: to report to Canadians on environmental issues and ecosystems of national significance; and to foster the use of science in policy and decision-making.

Each report satisfies the content and presentation guidelines for the federal government's reporting program described in the New Vision for SOE Reporting under the five Natural Resource Departments (5NR) Memorandum of Understanding on Science and Technology for Sustainable Development. These reports are accessible in print and on the Internet at <http://www.ec.gc.ca/soer-ree/English/National/soeass.cfm> (see also <http://res2.agr.ca/research-recherche/science/Healthy_Water/toc.html> for the Agriculture report).

Three other Environment Canada SOE reports were largely completed by the end of 2000, for publication in the first half of 2001:

- *Tracking Key Environmental Issues;*
- *The State of Municipal Wastewater Effluents in Canada; and*
- *Nutrients in the Canadian Environment*—This report will accompany the science assessment *Nutrients and Their Impact on the Canadian Environment,* which will also be published in 2001.

Statistics Canada published an SOE-related report, *Human Activity and the Environment 2000*, which provides a statistical picture of Canada's environment with special emphasis on human activities and their relationship to ecosystems such as: air, water, soil, plants, and animals. This report is available as a package—book and CD-ROM. See <http://www.statcan.ca/english/ads/11-509-XPE/> for further information.

The State of the Great Lakes Ecosystem Conference (SOLEC) produced two background papers for its 2000 Conference: *Selection of Indicators for Great Lakes Bas Ecosystem Health* (March 2000), and *SOLEC 2000—Implementing Indicators* (November 2000).

One new bulletin in Canada's *National Environmental Indicator Series* was published in 2000: *Environmental Sustainability of Canada's Agricultural Soils*. The *National Environmental Indicators Series* is available in hard copy, and electronically on the State of Canada's Environment Infobase web site <http://www.ec.gc.ca/soer-ree/English/National/IndWelc.cfm>. New and updated regional environmental indicators are posted on Environment Canada's Pacific and Yukon Region Environmental Indicators web site <http://www.ecoinfo.org/env_ind>.

The State of Canada's Environment Infobase

The State of Canada's Environment Infobase web site on Environment Canada's Green Lane <http://www.ec.gc.ca/soer-ree/>, operational for the past five years, continues to evolve and provides access to an increasingly broad range of environmental and ecological information and reports. The web site provides access to: SOE reports; Canada's National Environmental Indicator Series; the National Ecological Framework; and environment-related Tools, including electronic links to: the Ecological Monitoring and Assessment (EMAN) Network; Pacific and Yukon Region's environmental indicators, 5NR SOE-related products, and provincial, territorial, and some international agency documents related to SOE Reporting.

Sustainable Community Indicators

The Sustainable Community Indicators interactive software package was released in June 2000. It is designed to help communities develop indicators, monitor their progress towards sustainable development and facilitate the exchange of indicator-related information. In response to client reactions, plans for more flexible tools, directly available on the Internet, have been developed. Further information can be found on the Environment Canada web site at: <http://www.ec.gc.ca/scip-pidd>.

National Water Quality Index

After testing and refining the index, the Water Quality Index Technical Subcommittee of Canadian Council of Ministers of the Environment's (CCME) Water Quality Guidelines Task Group produced the Canadian Water Quality Index Technical Report in March 2000.

Canadian Information System for the Environment

In August 2000, Minister Anderson invited top level experts with diverse backgrounds to form a Task Force to advise him on a design and implementation strategy for a Canadian Information System for the Environment. The mandate of the Task Force was to develop plans for a demand driven information system that could meet three specific goals: to enable informed public policy decisions; to provide accountability to citizens concerning the management of Canada's environment; and, to enable citizens and civil society to make informed decisions which include environmental implications. An interim report from the Task Force was provided to the Minister in May 2001. This report was used as the basis for wide consultations.

Wild Species 2000—The General Status of Species in Canada

Wild Species 2000 provides an overview of the status of Canada's species. It brings the results of Provincial, Territorial, and Federal monitoring efforts onto a single platform for the first time. This report is the first of a series, with others to be released every five years. This is the commitment of all of Canada's Ministers responsible for wildlife in the Accord for the Protection of Species.

In this first report are the general status assessments for a broad cross-section of over 1 600 Canadian species, from all provinces, territories, and ocean regions. In addition to the written report, datasets are available on a companion CD and on the web site <http://www.wildspecies/ca> where the following are available: a report card to all Canadians; a guide indicating where more information is needed; an effective tool for improved conservation; and a testament to the cooperative will of Canadians to protect wild species.

Biodiversity Portrait of the St. Lawrence

In August 2000, the Quebec Region of Environment Canada published a *Biodiversity Portrait of the St. Lawrence* (available on the Internet). This work is a synthesis of knowledge about the fauna and flora of the St. Lawrence acquired over more than thirty years; it was carried out as part of the St. Lawrence Vision 2000 Action Plan (SLV2000) and is currently unique in Canada. The work both assists decision-making on conservation and sustainable development issues and serves as an outstanding pedagogical tool.

ALBERTA

In 2000, Alberta changed the calculation and format of the Alberta Surface Water Quality Index to be consistent with the Alberta Agricultural Water Quality Index (AAWQI), a reporting tool that follows trends in agricultural impacts on small streams. The Alberta Surface Water Quality Index is intended to serve as a composite descriptor of river water quality in various areas of the province. The index incorporates three factors representing key aspects of water quality: the number of variables not meeting objectives (scope); the number of times objectives are not met (frequency); and the amount by which objectives are not met (amplitude). The overall index value is based on the mean of four sub-indices that are calculated for metals, nutrients, bacteria, and pesticides. It is similar to the Canadian Water Quality Index proposed by the CCME.

Alberta Environment operates nine continuous automatic air quality monitoring stations within Alberta. Current data are available to the general public over a telephone system, and historic data are available over the Internet. A quarterly summary report titled "Air Quality in Alberta" is also available on the Internet.

QUEBEC

In 2000, Quebec published six technical reports and nine scientific or interpretive papers on the state of rivers and their surrounding environments; it also held ten conferences on similar subjects. Several reports and articles dealt with river water quality or with potential swimming areas in the St. Lawrence river in relation to urban, industrial, or agricultural effluents. Others dealt with contamination by PCBs, PAHs, and other toxins in the Saguenay region and in lakes Massawippi-Lovering. There were several publications on indicators of biological integrity used to evaluate the health of aquatic ecosystems. Two publications referred to the properties of acid pollution and to the potential impact of nitrogen deposition on the acidification and eutrophication of waterways. Two technical guides were also published, one on monitoring water quality in rivers and small watercourses and another on working in the aquatic environment during cleanup and infrastructure projects. Finally, the environment ministry continuously made available various data on air quality (ozone, smog) and meteorology. Quebec published an annual report (1999–2000) on monitoring of the biological diversity action plan to implement the Convention on Biological Diversity; it published a report on ten years (1989–1999) of protecting threatened and vulnerable species in Quebec and has kept its data centre on Quebec's natural heritage (*Centre de données sur le patrimoine naturel du Québec*—CDPNQ) up to date.

Also in 2000, Quebec produced an overview of contaminated sites, made public its 1997 annual overview of environmental compliance in the pulp and paper industry and its 1997 overview of pesticide sales in Quebec, and produced a leaflet on integrated pest management in green spaces.

Article 2(1)(b) Environmental Emergency Preparedness Measures

Environmental Emergency Plans for Toxic Substances:

Under the new Canadian Environmental Protection Act (CEPA, 1999) proclaimed in 1999, once a substance is declared "toxic" to human health or to the environment, the Ministers of health and the environment have new authorities to manage these toxic substances. This ministerial action can take several forms, including regulations, pollution prevention plans, environmental emergency plans, guidelines, codes of practice and economic instruments.

A plan under Section 199 of CEPA 1999 represents one of the important components of a comprehensive emergencies management framework and will assist in reducing gaps in or between federal and provincial legislation for the prevention of, preparedness for, response to, and recovery from an environmental emergency. However, environmental emergency plans will not be required for all substances that have been declared toxic under CEPA. Rather, the process to determine which substances require an environmental emergency plan involves the review of substance specific data such as the quantity in commerce or storage, toxicity of the substance, spill frequency and severity, and whether or not the risks posed by an uncontrolled, unplanned, or accidental release of the substance are being adequately managed.

To date, guidelines for the Implementation of the Environmental Emergency Planning Provisions of Part 8 of CEPA 1999 have been published. Parties who may be required to prepare and implement environmental emergency plans will have to submit two declarations to the Minister the first stating that an environmental emergency plan has been prepared and is being implemented, and the second stating that the implementation of the environmental emergency plan has been completed. These declarations will be posted on the CEPA Registry where they will be available for public review.

Business Plan for the Environmental Emergencies Program:

After consultation with all stakeholders the implementation of the Environmental Emergencies Program Mandate Renewal is well underway. HQ/Regional Working Groups have been formed to implement each initiative identified in the business plan and the progress is being monitored. The current program activities are reviewed against mandated responsibilities and strategies are developed to take advantage of efficiencies and alternative service delivery opportunities. The objective is to build capacity for the next five years to address gaps and vulnerabilities in the existing capacity to effectively deliver the program.

Emergency Simulation Exercises:

During the coverage period, two emergency simulation drills were carried out by the EPB-Quebec Region in collaboration with local intervention communities (municipalities, industries, fire and police departments, etc.) and government partners (Coast Guard, Transport Canada, and Department of Fishery and Oceans). One exercise was held in May 2000 with the Groupe Alliance 2000 on the hydrocarbon handling facilities of the company IMTT in Quebec city; the other was held in June 2000 with the company Montréal Pipeline in Boucherville.

QUEBEC

In 2000, Quebec undertook to revise the primary documentation upon which its operations in the area of environmental emergencies are based (ministerial emergency plan, intervention guide for spills of dangerous materials, etc.). This process should be completed during 2001. During the same period, work on an emergency measures plan in case of a nuclear accident at the Gentilly II nuclear power plant was begun.

Article 2(1)(c) Environmental Education

Environment Canada has been engaged in a nation-wide consultation with environmental educators to determine how best to respond to the commitments made by Canada for Chapter 36 of Agenda 21: Promoting Education, Public Awareness and Training. Over 5000 Canadians have participated in this process and Environment Canada is leading in the drafting of a broad-based multi-stakeholder national framework on environmental education and sustainability, with a view to tabling action plans from all supporters at the 10th Anniversary of the Rio Summit to be held in Johannesburg in the fall of 2002.

The Biosphère

As defined by its mission, the Biosphère of Environment Canada is dedicated primarily to the transmission of knowledge and to education related to the environment, water, and ecosystems such as the St. Lawrence River and the Great Lakes.

Over the course of the year 2000, the Biosphère mounted the exposition "Climate Warning!" aimed at making people of all ages aware of global warming on our planet and of its consequences on our lives.

ALBERTA

In Alberta, environmental education programs on the topics of water quality, wetlands, waste management, forest protection, and climate change were delivered to a variety of audiences. These audiences included teachers, students, communities and the general public. On the issue of climate change, workshops were presented at teachers' conferences across the province. A provincial workshop was delivered to teachers on climate change in co-operation with a number of other stakeholders.

Working in conjunction with the Clean Air Strategic Alliance (CASA), a pilot community education program called Climate Wise was developed and delivered to several Alberta communities. Environment Week activities in a number of Alberta communities also focused on the issue of climate change.

New resource materials were developed to support the government's work on biodiversity and threatened and endangered species. *Stream Connections*, an educational poster dealing with the ecology of streams and rivers, the value of riparian areas, fisheries management, and the impact of urban development, was introduced.

QUEBEC

The Quebec Action Plan on Climate Change 2000–2002 was adopted in October 2000 and includes provisions for a vast public awareness program, promotion, support, the development of youth education activities, the pursuit of cooperation with partners, and the implementation of a mobilization plan for decision makers. Moreover, in 2000, through its *Action—Environnement* program, Quebec gave grants to 32 Bruntland Green Schools and to 38 projects of various other groups.

Article 2(1)(d) Scientific Research and Technology Development

Canada, through the Environmental Technology Centre (ETC), undertook a variety of initiatives:

Federal-provincial National Air Pollution Surveillance (NAPS) Network for monitoring criteria pollutants SO_2, CO, NO_x, and O_3 and total suspended particulate matter was sustained. Data were also collected on other pollutants, including PM with aerodynamic diameter less than 10 microns (PM_{10}) (using hi-volume, dichotomous, and real-time 'TEOM' samplers), $PM_{2.5}$ (using dichotomous and real-time TEOM samplers), particulate lead, particulate sulphate, nitric oxide, and over 100 organic compounds and over 70 metals and ions.

Stack sampling in support of inventory development and strategic options planning was performed to evaluate greenhouse gas emissions from a variety of sources. The work involved measurement of: emissions from three active landfills in Calgary; gas flaring; waste incineration from "TeePee" burners in Newfoundland; mercury emissions; volatile organic compounds (VOC) from landfills; fine particulate emissions; polycyclic aromatic hydrocarbons (PAH) emissions from coal-fired power plants in Alberta; and priority pollutants from federal heating plants in the National Capital Region.

Landfill gas contains numerous aliphatic, aromatic and halogenated compounds. Volatile organic compounds (VOC), which are present in the order of a few hundred ppm, are major precursors for smog formation, while Freons are known ozone-depleting substances. The VOC also contain vinyl chloride and 1,3-butadiene, which are CEPA toxic substances. VOC data have been collected from landfills in western Canada (Calgary, Regina and Saskatoon), the Toronto area, eastern Ontario and the Montreal urban community. A database on emissions has been developed. Development work was undertaken and is still underway for sampling and analytical procedures for other organic compounds of interest such as aldehydes and ketones, sulphur species and mercury.

In support of the Toxic Substance Management Policy (TSMP) on virtual elimination of CEPA Track-1 substances, studies on the Level of Quantification (LOQ) for PCB in stack emissions, ash and landfill gas was completed and a report published. Two emission sources, an enclosed flare burning landfill gas and a bio-medical incinerator, were used to collect the stack samples. The PCB LOQ included the co-planar isomers. The LOQ for hexachlobutadiene (HCBD) was also determined and reported. A study of the LOQ for five (tetra and penta) chorobenzenes is ongoing, and a screening run was conducted to determine the suitability of a combustion sources for the determination of the LOQ.

The effectiveness of flares, engines, turbines and boilers for the destruction of non-methane components of landfill gas was assessed. The study included measurement of VOC and other toxic substances such as polycyclic aromatic hydrocarbons (PAH) and polychlorinated dibenzo dioxins and furans (PCDD/F). Other pollutants of interest include particulate matter, hydrogen chloride, hydrogen fluoride, oxides of nitrogen, sulphur dioxide, and carbon monoxide. Measurements were earlier completed at two sites—an 800-kW reciprocating engine in Montreal and a 30-MW boiler in Toronto. Two additional sources were completed this fiscal year—a 900-kW engine in Waterloo and an enclosed flare in the Ottawa-Carleton Region. Some preliminary testing was conducted on a micro-turbine burning landfill gas.

The ETC is providing technical support to CanAmera Foods, a MAP™ (Microwave-Assisted Process) licensee and the world's largest canola oil manufacturer and Canada's leading oilseed processing company. BC Research, which also became a MAP™ licensee during the year is supporting the work. The work is aimed at demonstrating the potential use of MAP™ as a low-GHG emitting, "clean" industrial process. The project also aims at providing a substitute to the solvent hexane for canola oil production, which is a GHG contributor.

Laboratory testing was undertaken for a number of collaborative projects that will lead to reductions in emissions of GHG (primarily CO_2 and methane) from mobile sources. This work included the second year of the PERD-sponsored cold-start efficiency program, which resulted in the evaluation of a number of technologies designed to reduce cold-start fuel consumption by 10%. Alternative power sources as a Georgetown-University-developed urban bus powered by a fuel cell and a gasoline-electric Toyota Prius were tested over normal operational cycles to determine the energy efficiency and GHG reductions. A fuel emulsion of 20% water and 80% diesel was investigated for potential GHG, oxides of nitrogen (NO_x) and particulate matter (PM) reductions from medium-speed diesel engines. The results using an International Standards Organisation (ISO) marine engine test indicated the potential for 30% reductions in the regulated exhaust emissions and an average reduction of 10% for CO_2.

Research continued on a PERD-sponsored university/government collaborative project to determine the concentration, composition and sources of airborne carbonaceous particles in Canada. Partners included

Natural Resources Canada (NRCan), Health Canada, National Research Council, Meteorological Service of Canada, and the ETC. This year, the Panel on Energy Research and Development (PERD) accepted the plan for a further four years of funding. The project is now applying the tools developed to generate the knowledge required to evaluate possible fuel and transportation standards and/or codes that may be needed to meet future particulate matter (PM) air quality objectives in Canada. The ETC is conducting the exhaust emissions measurements from transportation sources, and coordinating the analytical method development needed for chemical characterisation of particulate matter emitted from sources and in ambient air. Detailed emissions measurements of a number of advanced technology vehicles (gasoline direct-injection technology and advanced light-duty diesel vehicles) were made in an effort to understand the potential environmental benefits of these fuel-efficient vehicles. Emissions measurements designed to validate sampling and analytical methodologies were also undertaken. New particle-size-distribution-measurement and particle-counting instruments were commissioned and employed.

The state-of-the-art Scanning Laser Environmental Airborne Fluorosensor (SLEAF) prototype sensor was installed in the DC-3 aircraft and de-bugging largely completed on the unit. Specific software and hardware was developed. The earlier-generation Laser Environmental Airborne Fluorosensor (LEAF) was modified to make it available as a backup.

A final report on the first phase of evaluation of potential innovative processes applicable to the Sydney Tar Ponds (STP) was completed, using bench-scale testing on samples from the site. A number of technologies were investigated to determine their effectiveness at targeting and removing selected contaminants from the samples. Technologies were chosen based upon their previous performance at treating similar contamination, in addition to a few novel technologies that have shown promising bench-scale results.

A comprehensive report on applying and interpreting toxicity testing data was finalized and published. The guidance document is relevant to seven Environment Canada programs that use toxicity tests for assessing impacts and regulatory compliance (i.e., CEPA New Substances, CEPA Priority Substances, Ocean Disposal Permitting and Monitoring, Environmental Assessment, Contaminated Sites, Environmental Effects Monitoring, and Environmental Choice).

In a joint program with NRCan, the ETC designed and conducted a testing program to establish the best practices for light-duty vehicle idling, and cold and hot starting for reducing CO_2 emissions. The work was conducted in both cold and warm ambient conditions. Additional work is planned for heavy-duty vehicles.

As part of a multi-year collaborative RandD program with Transport Canada and the marine industry, the ETC participated in the exhaust emissions measurement of a medium-speed marine diesel engine that powers the Cabot, a Ro-Ro vessel owned by Oceanex. This is the first stage of a development program to design, fabricate and implement a computer-controlled water injection system to reduce exhaust emissions from this type of heavy-duty engine application.

Flaring is widely employed in Alberta to manage the disposal of waste hydrocarbon products from the oil and natural gas industries. Some of these flares have been identified as sources of odour, smoke and air-quality-related health concerns with local residents. In cooperation with NRCan's Energy Technology Centre, screening studies were performed at the Flare Test Facility to determine the test parameters for the speciation of flaring emissions. The flare tunnel was designed to simulate the real-world conditions of cross winds under various fuel compositions.

In a joint program with New York State's Office of Research on Heavy Duty Engine Emissions, the ETC participated in a complete characterization of the exhaust stream from a small fleet of New York City urban buses. New York State scientists set up their fine particulate characterization instrumentation at the ETC laboratory for a detailed analysis of particulate sizing and distribution. At the same time, the ETC collected gaseous sample for VOC, carbonyls, PAH/n-PAH (nitro-PAH), semi-VOC, and specific target

compounds. The sampling and analysis was conducted on four buses with and without a Continuous Regenerative Technology (particulate filter) manufactured by Johnson-Matthey.

The ETC provided exhaust emissions field-testing expertise and unique prototype instruments in a collaborative project with the City of Houston and United States Environmental Protection Agency (US EPA) to develop a test methodology for conducting emissions testing of off-road vehicles. A general test procedure was developed to measure the exhaust emissions from off-road vehicles while the vehicles were operated under normal in-service conditions. With this procedure, a fleet of 27 different vehicles was tested for emissions. The fleet included fire trucks while pumping water, Gradalls digging ditches, large industrial lawnmowers, street sweepers, and vacuum trucks.

The Great Lakes Binational Toxics Strategy (BNS) is a collaborative process by which the Ontario Region of Environment Canada, the US-EPA, and various other stakeholders work towards the goal of virtual elimination of targeted persistent bioaccumulative toxic substances (PBTS) resulting from human activities in the Great Lakes Basin. The primary emphasis of the BNS is to achieve toxic reductions via pollution prevention and other voluntary initiatives. Emission measurements for various PBTS are being undertaken at Ontario industrial facilities under the Great Lakes BNS. The first facility tested under this program was the Hospital for Sick Children in Toronto, where the ETC conducted source testing for various target compounds. These pollutants included PM, metals, PCDD/F, PAH), hexachlorobenzene (HCB), octachlorostyrene (OCS), and VOC. A preliminary survey was also completed at a base metal smelter in Timmins Ontario. Testing on this facility will be completed in the next fiscal year.

Residential wood combustion has been identified as a major source of PCDD/F in the atmosphere. In order to develop a sound reduction strategy, it is necessary to establish the difference in PCDD/F emissions from conventional and certified advanced-combustion stoves. The results of this work are needed to guide to the Canada Wide Standards (CWS) process and to update emissions factors used in calculating air emissions nationally. The testing program was a joint effort between a number of federal and provincial government organizations and industry stakeholders. The main participants included the ETC, the CWS Development Committee, Intertek Testing Services NA Ltd., and the Hearth Products Association of Canada. In addition to PCDD/F, samples of flue gas were collected and analyzed for PAH, VOC, and PM. The final report was released in Feb 2001 and will be posted on the Green Lane.

Both PCDD/F and HCB are Track-1 substances slated for virtual elimination. Industrial sectors/activities identified for the potential development of control options include base metal smelters, electric arc furnaces and sinter plants in the steel manufacturing industry. Since there are no North American stack-testing data for these sources, the Stakeholder Consultation (Strategic Options) Report for the Steel Manufacturing Sector recommended that source testing of representative Canadian operations be performed. In cooperation with the Minerals and Metals (2M) Division of the National Office of Pollution Prevention, the ETC measured emissions from the electric arc furnace at Gerdau Courtice Steel in Cambridge, Ontario. This program also investigated the effects of evaporative cooling on PCDD/F levels at the exit of the bag-house. These results are used to support the PCDD/F inventory for electric arc furnaces and setting Canada-wide Standards. Reviews were conducted of the independent sampling conducted at IPSCO in Regina and Alta Steel in Edmonton. A review was also conducted of US PCDD/F data from sintering plants and electric arc furnaces. A presentation was made at the 2000 National Consultation Workshop on the Development of Environmental Performance Standards for the Steel Sector. Discussions were undertaken with the 2M Division to identify future ETC support for the measurement of Track-1 substances from base metal smelters in Canada.

Research work was conducted on water-in-oil emulsion ('chocolate mousse') formation mechanisms. The work focused on the large-scale formation of emulsions including tank tests at the US federal OHMSETT facility in New Jersey. The emulsion formed after the ERIKA spill in France was studied and confirmed the formation mechanisms noted in the laboratory. Some work on the kinetics of emulsion formation was also completed. The data was entered into the Oil Properties database. Four research papers on this work

were published in the international AMOP Technical Seminar proceedings or other international oil spill conference proceedings.

Tests have been developed to evaluate the performance of biodegradation agents (both fertilisers and organisms), emulsion-breakers, and emulsion-preventers. The biodegradation tests for both salt and fresh water were finalised and are now broadly accepted. Dispersant research focused on quantifying the performance of several new dispersant formulations entering the market. The test procedure used to measure the laboratory effectiveness of oil spill dispersants became the American Society for Testing and Materials (ASTM) standard procedure. This was by request of the ASTM Committee on Oil Spills.

This new second edition was published of the popular Shoreline Cleanup Assessment Teams (SCAT) manual. It incorporates the experience of recent spill usage, contains new information, and was developed in consultation with the US National Oceanic and Atmospheric Administration, the Texas Government Land Office, and the California Oil Spill Preparedness and Response organisation to enhance uniformity and compatibility where modifications had occurred due to agency-specific adaptations.

The scientific results on the levels of substances like CO_2, Volatile Organic Compounds (VOC), particulate matter (PM), and carbonyls, in the emissions and residues from meso-scale oil-burn experiments were published. A handbook on *in-situ* burning of oil spills was also published.

In collaboration with the US Minerals Management Service (USMMS), and sorbent manufacturers and distributors, the performance of a variety of commercial oil sorbents was tested and the results posted in a Sorbents Database on the ETC web site. In addition, in partnership with the Canadian Coast Guard (CCG), some specialised countermeasures equipment for pumping of heavy oils (annular water injection in 4- and 6-inch hoses) was also tested. Progress continued within the American Society for Testing and Materials (ASTM) forum on the development of protocols for testing sorbents for chemical spills and for the performance-based evaluation of hazardous material and marine spill countermeasures equipment. A state-of-the-art review was completed on containment and recovery equipment used in fast-flowing waters. Additionally, a review and summary report were completed on marine oil/water separator systems.

A report was produced to summarize available spill countermeasure technologies and technology gaps for treating soil contamination caused by six selected CEPA toxics (arsenic, cadmium, chromium, benzene, benzidine, and creosote).

Various technology information transfer steps were taken to promote the increased use in Canada of the 'green' MAP™ liquid-phase extraction Reference Method for organic compounds in a variety of matrices that has also been validated and approved by the US Environmental Protection Agency. Commercial equipment capable of performing the method is available through MAP licensees. The Reference Method is environmentally friendly and requires low solvent consumption (~90% volume reduction) and reduced energy usage (~99% reduction).

In 2000, Environment Canada - Quebec Region put into place pollution prevention programs in three sectors of national concern: textiles, aircraft maintenance, and dry cleaning.

Two Enviroclubs (20 small and medium-size businesses) were initiated. In support of the delivery of these clubs, the EPB-Quebec Region produced a guide for the identification and implementation of pollution prevention programs in businesses.

In 2000, the Quebec Region continued to measure atmospheric mercury and precipitation at sites in Saint-Anicet and Mingan. It also continued its studies of lindane in corn production; regional representatives joined a group of national experts to continue research and increase knowledge of the atmospheric lifecycles of pesticides.

QUEBEC

In 2000, the Quebec environment ministry authorized the expenditure of C$2 million to fund 11 technological research and development projects as part of the environment portion of the government's funds for priorities in science and technology (*Fonds des priorités gouvernementales en science et en technologie*—FPGST-E). Projects funded focused on water, air, soil, and on the management of residual materials and agricultural practices. During the same period, nine projects received grants totaling nearly C$1 million from the government's research and development assistance program (*Programme d'aide à la recherche et au développement*—PARDE). This program is aimed primarily at developing strategic environmental knowledge for intervention programs connected with environmental quality and sustainable development according to the priorities of the environment ministry. The projects funded dealt with water and air management and with biodiversity conservation. In addition, a number of other programs handed out grants for various projects. These programs include Revi-Sols, a program for the rehabilitation of contaminated sites in urban areas; an assistance program for social economy enterprises in the area of residual materials management; and an assistance program for environmental priorities (*Programme d'aide relatif aux priorités en environnement*—PAPE). Also in 2000, a sustainable development fund was set up (*Fonds d'action québécois pour le développement durable*—FAQDD)

The Quebec Action Plan on Climate Change 2000–2002 adopted in October 2000 includes provisions to fund both research and development projects and pilot projects as well as to carry out an opportunity study on setting up a climate change research institute.

Article 2(1)(e) Environmental Impact Assessment

The Canadian Environmental Assessment Agency (CEAA) is responsible for administering the federal environmental assessment process. In the 2000 fiscal year, federal departments and agencies reported a total of 6,138 screenings and 8 comprehensive studies, in accordance with their environmental obligations under the *Canadian Environmental Assessment Act*. During the same time period, CEAA managed one panel review.

ALBERTA

Comprehensive environmental reviews were carried out for every approval issued under the *Alberta Environmental Protection and Enhancement Act*. This includes preparation of Environmental Impact Assessment reports for twenty-two major resource projects, as well as two fuel conversion projects that were screened. During the course of the year, the Minister of Environment halted a recreation project proposal that was subject to the environmental assessment review process. Public reviews were completed for five projects, three of which were subject to public hearings. Since the Canada-Alberta Agreement for Environmental Assessment Cooperation was signed in June 1999, the Alberta and federal governments have been working together in areas where each requires an assessment of the same proposed project. This includes the establishment of joint technical review teams and information sharing on new project proposals and timing of reviews.

QUEBEC

Quebec has applied its environmental assessment process to projects that fall under the Regulation respecting environmental impact assessment and review. Thus, in 2000, 81 projects were the examined under one step or another of the environmental impact assessment process in effect in southern Quebec. Fifteen of these project received governmental authorization, and 26 new projects were registered. The projects assessed break down as follows: 51 involving land (roads, landfill sites, high-voltage electric transmission lines), 19 involving water (hydro generating stations, dredging, backfilling), and 11 involving industrial projects.

With respect to the application of the James Bay and Northern Quebec Agreement, 46 projects were assessed, of which 25 were new files and 14 were decisions. The projects examined were related to road

infrastructure; caribou hunting; and the establishment of outfitting, mining, and waste burial operations. The Quebec Action Plan on Climate Change 2000–2002 adopted in October 2000 includes a provision to set up a commercial pilot project for the reduction of greenhouse gas emissions. This project will experiment with national or international trade in emission reductions. Among other things, it will focus on learning to follow up on, monitor, and verify project results in a context of commercial trade.

Article 2(1)(f) Economic Instruments

The federal government has been taking action in the past few years to provide incentives for sustainability. Among these is the Ecological Gifts Program (1995) that improved the capital gains taxation of lands donated to conservation. The government has since made changes that provide preferential tax treatment to firms using energy-efficient equipment and equipment for the production and distribution of heat. They have also improved the tax treatment of rail assets to make this relatively energy-efficient mode of transport more competitive with trucking.

In December 2000, Environment Canada also sponsored, with the OECD, an international conference in Vancouver to share knowledge and experience on the application of economic incentives for environmental purposes. Environment Canada continues to work with other Departments, specifically the Department of Finance, on the exploration and development of potential applications of such instruments.

With respect to climate change issues, Canada's National Climate Change Process explored the use of economic instruments for greenhouse gas abatement. The Tradeable Permit Working Group published its report on the potential use of permit trading to reach a national emission target. Ministers of the environment and energy supported the creation of several federal/provincial/territorial working groups to inform them on key aspects of a national strategy to reduce greenhouse gases. These working groups include domestic emissions trading in their work plan as well as in-depth economic modeling of the potential benefits of emission trading.

In addition, the Government of Canada is exploring emissions trading in ongoing Canada-US Air Quality Agreement discussions. The Ozone Annex to the agreement opens the door to transboundary trading for NO_x emissions. In the context of the Ozone Annex, Canadian and US officials have met to discuss transboundary trading and follow-up meetings are expected.

ALBERTA

The Government of Alberta continued its active support of stewardship programs. The industry-led program to recycle used oil, filters and containers uses varied Environmental Handling Charges at the wholesale product level and has reached return rates of 70%, 81% and 36% respectively. The scrap tire program, which currently places a $4.00 Advanced Disposal Surcharge on tires at the retail level, reached a milestone of 18 million tires processed since the program's inception in 1993. The deposit-refund program for recycling beverage containers achieved a return rate of 75% and the Alberta Dairy Council's voluntary stewardship program, set up to recycle plastic milk jugs, achieved a province-wide return rate of 48%.

The Alberta Leaders Environmental Approval Document (LEAD) Program began in 1999 as the Alberta Environment Alternative and Innovative Regulatory Approaches initiative. This is a voluntary emissions reduction program that gives positive recognition to facilities with exemplary performance histories. Consultations and a proposal for a test case were completed in 2000.

Alberta Environment has been supporting the work on Ecological Fiscal Reform by the National Round Table on the Environment and the Economy. Particular focus has been wetlands conservation and fiscal and other instruments that might be used in Alberta and more widely throughout Canada.

QUEBEC

In Quebec, a bill was introduced to allow the use of economic instruments to reach environmental objectives.

■ Article 3—Levels of protection

Species at Risk Legislation

The federal government introduced Bill C-33, the Species at Risk Act (SARA), in the House of Commons on 11 April 2000. Bill C-33 was envisioned as part of Canada's three-part strategy to protect species at risk, which includes stewardship programs and the Accord for the Protection of Species at Risk, as well as federal legislation.

The proposed SARA would cover all wildlife species at risk and their critical habitats, and apply to all lands in Canada. The Bill set out a rigorous, independent scientific process to assess species and provided the Government of Canada with the mechanisms and powers to mandate plans for species recovery. Bill C-33 would be complemented by a stewardship program to empower Canadians to take actions to protect habitat, and by the Accord for the Protection of Species at Risk that unifies the efforts of the provinces, territories and the federal government on this issue. This approach was designed to use incentives as the preferred way of protecting critical habitat, but would be backed up with strong prohibitions when necessary. Budget 2000 allocated $180 million over five years to implement the federal strategy. One quarter of these resources will be invested in stewardship activities across the country.

Bill C-33 died on the Order Paper at the dissolution of Parliament when an election was called for November 2000. However, the Government planned to re-introduce species-at-risk legislation.

Additions to the List of Toxic Substances

On 10 June 2000, the following substances were proposed to be added to the List of Toxic Substances (Schedule 1) of CEPA 1999.

- Acetaldehyde
- 1,3-Butadiene
- Acrylonitrile
- Respirable particulate matter less than or equal to10 microns
- Acrolein

In addition, Bromochloromethane, that has the molecular formula CH_2BrCl, was proposed for addition to the List of Toxic Substances of CEPA 1999 on 2 June 2000.

NO_x and VOCs

In December 2000, Canada and the United States signed the Ozone Annex to the Canada-United States Air Quality Agreement. This agreement commits the two countries to take action to reduce the emissions and transboundary flow of nitrogen oxides (NO_x) and volatile organic compounds (VOCs). Both countries will report every two years on progress in reaching their targets and will, in 2004, revisit the agreement to see if further reductions are required.

ALBERTA

In March 2000, the Government of Alberta announced the incorporation of Climate Change Central and provided $6 million over three years to establish its operations. Climate Change Central is led by a multi-sector board that includes Premier Ralph Klein as executive chair and David Tuer, Chief Executive Officer of Pan-Canadian Petroleum Ltd. and Dr. Lorne Taylor, Minister of Alberta Environment, as co-chairs. Climate Change Central is a unique partnership for action on climate change. Key focus areas include technological innovation, public outreach and education. Climate Change Central will implement strategies to remove obstacles and barriers to change, to adapt to climate change effects, and to improve energy efficiencies.

In 2000, Alberta continued its strong support for CASA and the operation of the comprehensive air management system through collaborative decision-making by industry, government and public interest organizations. Projects under CASA include: Acidifying Emissions Implementation Design, Animal Health, Climate Change, Particulate Matter and Ozone, Pollution Prevention/Continuous Improvement, and Priority Setting for Ambient Air Quality Guidelines. Four zonal air management systems (air sheds) have also been established to address sub-provincial scale issues.

The key to CASA's ongoing success is its ability to bring a very disciplined approach to the resolution of complex and volatile air issues such as flaring and target loading. The Acidifying Emissions Management Implementation Team presented a framework for managing acidifying emissions and acid deposition in Alberta. The Multi-Stakeholder Group (MSG) for Particulate Matter and Ozone developed a multi-stakeholder consultation process for providing advice to the Department in the development of Canada-Wide Standards (CWS) for particulate matter and ozone. In the fall of 2000, CASA convened a workshop on behalf of Alberta Environment to set priorities for ambient air quality guideline development over the next three years.

In 2000, Alberta amended its "Ozone-Depleting Substances and Halocarbons Regulation" to expand the ODS schedule to include HCFCs, HFCs, and PFCs (where used as refrigerants); to ban the use of CFCs for recharging of mobile air conditioning systems; to require use of refillable containers only; and incorporate the "Halon Code of Practice."

QUEBEC

In accordance with the program for the reduction of industrial waste, on 14 March 2000, Quebec signed a memorandum of understanding with the Québec Forest Industries Association concerning the process of issuing depollution attestations in the pulp and paper sector and, on 9 June, began to actually issue the attestations. By 31 December 2000, 20 attestations had been issued—nearly one-third of the pulp and paper mills affected by depollution attestations. The province is also in the final phase of revising its mining industry guidelines; it developed an effluent monitoring program for the aluminum-smelting sector; and, in March, launched a strategy for the management of ozone-depleting substances and their replacements. Bill 156, which concerns the protection of land and the rehabilitation of contaminated sites, was introduced for adoption in the National Assembly. Finally, under the St. Lawrence Vision 2000 Agreement, the Government of Quebec and the Federal Government jointly issued certificates of environmental recognition to 72 of 107 SLV-2000 industrial establishments; the SLV-2000 pollution prevention program also produced and distributed a promotional leaflet. Moreover, two environmental diagnoses were carried out as a pilot project; a bill on nature preserves on private land was introduced; the framework for a Quebec strategy on protected areas was introduced; and the general framework for the future Quebec water management policy was published.

Quebec continued with prepublication of the regulation on the elimination of residual materials, amended its regulation on used tire storage, and set up a program to empty Quebec's used tire storage sites. Quebec also proceeded with prepublication of a proposed amendment to the Drinking Water Regulation with a view to public consultations on updating quality standards, improving quality control, adjusting procedures for cases in which water quality standards are exceeded, requiring minimum treatment, and training operators. During the public consultations for the proposed modifications, Quebec received nearly fifty submissions from various stakeholders. Quebec also extended the moratorium on water exports from its territory until 1 January 2002.

The amendment to the Regulation respecting wastewater disposal systems for isolated dwellings came into force. This amendment was aimed primarily at allowing new technology in private treatment systems to be developed by introducing a mechanism whereby new technology can be certified by an organization recognized by the Quebec standards bureau (*Bureau de normalization du Québec*); the amendment also introduced classes of treatment and performance standards according to the courses of water and effluents.

■ Article 4—Publication

The following notices were published in *Canada Gazette*, Part I during 2000:

- Agreements Respecting Canada-Wide Standards for Benzene—Phase I, for Particulate Matter (PM) and Ozone, and for Mercury, in which jurisdictions agreed to meet reduction targets for ambient concentrations of these substances by 2010;
- Agreement Respecting Canada-Wide Standards for Dioxins and Furans, Mercury in Dental Amalgams, Mercury-containing Lamps, and Petroleum Hydrocarbons in soil; and,
- Notice of intent to recommend that Precursors to Respirable Particulate Matter Less than or Equal to 10 Microns (sulphur dioxide, nitrogen oxides, ammonia and volatile organic compounds) be added to the List of Toxic Substances in Schedule 1 to the Canadian Environmental Protection Act, 1999.

QUEBEC

Over the course of 2000, the Quebec environment ministry ensured that its legislation, regulations, procedures, and administrative decisions concerning the subjects covered under the NAAEC were published in a timely fashion and made available to the public, especially and systematically on the ministry's Internet site, <http://www.menv.gouv.qc.ca>.

■ Article 5—Government Enforcement Action

2000 CEC Annual R***eport on Enforcement***

What's New?

The majority of the provisions of the *Canadian Environmental Protection Act, 1999* (CEPA, 1999) came into force on 31 March 2000. The sections related to "environmental protection compliance orders" (EPCOs) would not come into force until 31 March 2001. EPCOs are similar to "stop orders" and "cease and desist orders" available under environmental statutes of Canada's provinces as well as under the environmental laws of other nations. Persons subject to EPCOs and ordered to return to compliance under such an order, are allowed to request review of the EPCO by a review officer. The Minister of Environment is required to appoint a roster of review officers and select one of them as the Chief Review Officer. This remains to be done, and the Minister is seeking qualified candidates for these positions.

From an enforcement point of view, the most important aspects of CEPA, 1999 are:

1. the obligation imposed by Parliament on the Government of Canada to enforce the Act in a fair, predictable and consistent manner;
2. the obligation similarly imposed by Parliament on the Government of Canada to implement the precautionary principle in all aspects of its administration of the Act;
3. the granting of all the powers of a peace officer to CEPA enforcement officers;
4. the setting out of powers for analysts under the Act, giving them the authority to enter any place when accompanied by an enforcement officer, to take samples, to conduct tests and measures, and to examine data and documents. Analysts can be laboratory personnel, accountants (including those trained in forensic accounting), engineers, chemists, biologists and other environmental specialists who can bring their expertise to compliance verification and investigations;
5. the expansion of definitions such as that for "place" which leads to an expanded power of entry for enforcement officers and analysts;
6. inclusion of inspection warrants for abandoned premises or premises where an enforcement officer and/or an analyst has been refused entry;
7. the power given to enforcement officers to stop conveyances, such as trucks, trains, planes and ships, for inspection purposes;
8. expansion of the enforcement officer's power to direct remedial measures, to deal not only with alleged illegal releases of toxic substances and discharges by federal facilities as under the previous CEPA, but also alleged illegal discharges of regulated substances in the context of international air pollution, international water pollution and environmental emergencies;
9. the provision of two new enforcement tools, including EPCOs (discussed above) and "environmental protection alternative measures," which, like similar alternative measures for adult offenders under Canada's *Criminal Code* and under the federal *Young Offenders Act*, allow negotiation of a compliance agreement once charges have been laid and with the requirement to register the agreement in court as a public document;
10. the obligation for directors, officers and executives of corporations to ensure compliance with CEPA, 1999 and its regulations – an obligation often referred to as a "duty of care";
11. expanded subject matter for court orders; and,
12. guidelines to assist the courts in imposing sentences for CEPA, 1999 offenses.

It has been the policy of the federal Department of Justice that all federal departments publish compliance and enforcement policies that set out how they will administer the laws for which they are responsible. As was done for the previous *Canadian Environmental Protection Act* in force from 1988 to March 2000, Environment Canada prepared a Compliance and Enforcement Policy. The policy contains guiding principles including the following:

- Compliance with the Act and its regulations is mandatory;
- Enforcement officers will apply the Act in a manner that is fair, predictable and consistent. They will use rules, sanctions and processes securely founded in law;
- Enforcement officers will administer the Act with an emphasis on prevention of damage to the environment;
- Enforcement officers will examine every suspected violation of which they have knowledge, and will take action consistent with the Compliance and Enforcement Policy; and,
- Enforcement officers will encourage the reporting of suspected violations of the Act.

The policy strikes a balance between the promotion of compliance and enforcement activity. In addition, the chapter on "Measures to Promote Compliance" specifies the compliance promotion role of Environment Canada engineers and environmental scientists. The compliance promotion role for enforcement officers is necessarily more limited, in order that action by enforcement officers, including the inspections and investigations that an officer may carry out as well as the measures available to officers to enforce the law and restore compliance, do not conflict with the technical role of Environment Canada scientists and engineers.

The document also contains a discussion of the new enforcement powers under CEPA, 1999 and how enforcement officers will use them. It sets out the factors that an enforcement officer must consider when choosing an action after investigation and confirmation of a violation of the Act or one of its regulations.

In May 2000, the Compliance and Enforcement Policy for CEPA, 1999 was published on the CEPA Environmental Registry, followed by a sixty-day comment period, which ended on 28 July 2000. The final text will be published both on the registry and in paper form within the first quarter of calendar year 2001.

Environment Canada's National Enforcement Program: Action Plan

Fisheries Act

A new Compliance and Enforcement Policy for the Habitat Protection and Pollution Prevention Provisions of the *Fisheries Act* is being finalized, and the document, in draft form, will be available for public consultation in the near future. This policy was developed jointly by Environment Canada and the Department of Fisheries and Oceans over an eleven year period. Its purpose is to ensure consistency in the application of the pollution prevention provisions of the *Fisheries Act* by both Environment Canada and the Department of Fisheries and Oceans. The draft document incorporates guiding principles similar to those in the Compliance and Enforcement Policy for CEPA, 1999, in the context of an Act respecting the protection and conservation of fish, fish habitat and human use of fish. The draft policy must be approved first by the Deputy Minister of Environment Canada and the Department of Fisheries and Oceans. There will then be a sixty day period for public comment. It is anticipated that these steps will be completed and the policy in effect during calendar year 2001.

ALBERTA

In June of 2000, Alberta Environment published the *Compliance Assurance Principles*, which provide the minimum requirements for the development and delivery of legislation-specific compliance assurance programs, and are designed to do the following:

- describe Alberta Environment's approach to ensuring compliance;
- maintain and enhance Alberta Environment's credibility by ensuring consistency, clarity, and coordination in Alberta Environment's compliance assurance activities;
- embody Alberta Environment's vision and direction for the future of its compliance assurance programs (i.e. this is a forward looking document, it does not merely describe existing approaches); and
- provide standards for assessing and measuring the effectiveness and efficiency of Alberta Environment's compliance assurance activities.

MANITOBA

Following the fall 1999 election, a new administration took over the provincial government of Manitoba. Manitoba Conservation integrates the former Departments of Environment, Natural Resources and Energy. The new department's mission is to conserve the use of energy and natural resources, protect the integrity of the environment, minimize the impacts from natural disasters; while optimizing opportunities for sustainable economic benefits and recreation. The vision is that Manitobans will enjoy, and prosper in, a healthy environment from sustained energy and an abundance of diverse natural resources. The former Natural Resources and Environment departments continue to report their enforcement statistics separately.

Compliance and Enforcement

For those involved in law enforcement programs, the goal is compliance, and in 2000, Environment Canada (EC), Quebec Environment (MENV), Manitoba Conservation (MC), and Alberta Environment

(AENV) continued to promote compliance with legislation by providing information in printed form and on the Internet, at seminars, conferences, meetings with the regulated community, bulletins and other publications for specific audiences and publication of the names of those found guilty by the courts.

The monitoring of compliance by the federal, provincial and territorial governments is aided by regulatory requirements to submit information, permits, licenses and other authorizations that are required for many activities, such as the transboundary movement of hazardous wastes, ocean disposal, international trade in endangered species, hunting and trapping, and activities that pose a risk of releasing toxic substances and contaminants into the environment. For example, in fiscal year 99/00, Environment Canada processed 6,220 notices for proposed international shipment of hazardous wastes and 44,059 manifests associated with actual shipments. Approximately 99% of these are between the United States and Canada.

Licences, Permits and Authorizations

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) to which more than 130 countries are signatories, helps to control the international trade in endangered and protected species.

The following table summarizes the CITES permits that were issued in Canada during 2000.

CITES Permits issued in Canada during 2000

Jurisdiction	Import	Export	Export/import (temporary)	Scientific
Canada	188	7135	216	36
Alberta[1]		NA		
British Columbia		1867		
Manitoba		1218		
New Brunswick		403		
Newfoundland		92		
NWT		110		
Nova Scotia		34		
Ontario		932		
PEI		1		
Quebec		1038		
Saskatchewan[2]		649		
Yukon		254		
Nunavut		2		
TOTAL	**188**	**13735**		**36**

[1]Alberta does not issue CITES export permits. Source: CITES Office, Canadian Wildlife Service

Training

Environment Canada, Manitoba Conservation, Quebec Environment and Alberta Environment all have specialized training courses for their respective enforcement staffs. Courses are specifically designed to accommodate needs as they emerge as a result of variables such as changing priorities, or new or updated legislation and regulations.

In order for EC enforcement officers to employ new authorities and enforcement tools under CEPA, 1999 in a way that ensures their safety as well as the safety of the public, training was provided to enforcement managers and staff in several areas, including:

- Applied Peace Officer Sciences
- Enforcement Officer Safety and Defensive Tactics
- Driver Training and Vehicle Safety

During 2000, approximately 200 staff members received enforcement-related training in the following courses:

- General Enforcement Training (GET) for CEPA enforcement officers;
- *Wild Animal and Plant Protection and Regulation of International and Inter-provincial Trade Act (WAPPRIITA)* Course for Environment Canada wildlife enforcement officers;
- *WAPPRIITA* Course for Customs Officers (Ontario);
- Negotiations Skills Training Course for CEPA enforcement officers;
- Annual Firearms Training for Wildlife Officers;
- Forensic Interviewing Course;
- Safe Boat Handling Course;
- World Customs Organizations CITES training course;
- Migratory Bird Enforcement and Waterfowl Identification (Prairie and Northern Region);
- Storage of PCB Material Regulations (under CEPA, 1999);
- (9mm) Firearms Conversion Course for wildlife officers;
- Metal Mining Liquid Effluent Regulations (under the *Fisheries Act*);
- Ocean Disposal Regulations (under CEPA, 1999); and,
- NEMISIS (computer-based information recording and management system for enforcement data)

MANITOBA

During fiscal year 00/01, Manitoba Conservation provided training for approximately 75 Environment Officers and 135 Natural Resource Officers.

ALBERTA

Alberta Environment ensures that all enforcement staff receive training in the skills required to fulfill the Department's enforcement mandate. Some areas in which enforcement staff receive training include, but are not limited to, the following:

13. Legislation: training is provided to familiarize enforcement staff with the legislation relevant to the service area where the investigator or Conservation Officer works, including the authority, powers and duties of enforcement staff. This training provides a fundamental understanding of all legislation that enforcement staff are empowered to enforce;
14. Basic investigative skills: note-taking, photographic techniques, maintenance of investigation diary, and other requisite skills are developed through both course instruction and mentoring;

15. Basic and advanced interviewing skills and statement collection, forensic interviewing and statement analysis skills;
16. The Canadian Charter of Rights and Freedoms as it relates to the rights of a potentially accused person, the recognition of officially induced error, and the evaluation of due diligence;
17. Securing and protecting evidence, requirements for "Chain of Custody" and handling exhibits, preparation and execution of search warrants;
18. Communication and conflict management skills;
19. Basic and advanced sampling techniques for all matrices (liquid, solid, and gaseous);
20. Data acquisition and management systems;
21. Courtroom procedures;
22. Firearms qualification and re-certification (Conservation Officers only);
23. Defensive tactics (Conservation Officers only); and,
24. Water safety and small vessel training (Conservation Officers only);

The training received by Alberta Environment staff during the last fiscal year can be broken down as follows:

- Pollution Control Training: Approximately 200 person-days of specialization training, including advanced interviewing techniques, advanced sampling, and other innovative techniques training. There was no program of basic training for new investigator recruits for the last fiscal year. The number of person-days of instruction does not reflect training for re-certification for specialized functions (e.g., Pollution Emergency Response).
- Wildlife and Fisheries Training: 43 recruits received 22 weeks of intensive instruction specific to the role of the Conservation Officer in Alberta. Where Conservation Officers received additional or re-qualification training for specific functions (e.g., chemical immobilization techniques, firearms re-qualification, specialized water craft instruction, search-and-rescue training, etc.) account for a vast number of person-hours, where up to 100+ participants attend multi-day training programs. This training is ongoing.

QUEBEC

Among other training programs, Quebec implemented a program to train municipal inspectors in charge of enforcing the Regulation respecting wastewater disposal and treatment for isolated dwellings.

In 2000, the Quebec ministry of environment offered enforcement- and inspection-related courses on the following topics: the import and export of dangerous materials, the Act respecting the access to information held by public bodies, the new regulations on drinking water quality, the industrial waste reduction program (paper mills), the Transportation of Dangerous Substances Regulation, the regulation respecting the elimination of residual materials, testifying in court, environmental emergencies, and the program "environment-beaches." It also offered a soil treatment seminar, workshops on residual materials management and on solid wastes, an agricultural conference, a seminar on biosolids, a regional conference on agro-environment, training in groundwater for the wood processing industry, basic emergency training, and training in potable water. And it offered courses in residual fertilizer management, integrated domestic residual materials management, watershed management, bovine manure management, and manure storage.

Inspections

On-site and off-site inspections that involve the verification of obligatory information, submitted to the Minister of Environment by regulatees, are undertaken to confirm compliance with regulations. Investigations are normally carried out when non-compliance is discovered. Each year, the Enforcement Branch of Environment Canada and the five regional offices prepare an inspection plan that targets specific priority regulations. Such a plan is formulated using criteria that includes: the number and types of targeted populations or activities; the profiles, compliance histories, operational complexity and capacities of the target companies; the environmental significance and geographic scale of their operations; and the nature of the applicable regulatory provisions.

Likewise, Alberta Environment and Quebec Environment prepare plans for their respective jurisdictions. Manitoba Conservation follows a systematic inspection program for the industrial, municipal, agricultural, and natural resources sectors. As well, consideration and response are given to tips, complaints and referrals from the public or other agencies. Quebec has conducted approximately 14,000 inspections and initiated approximately 200 inquests.

Among the inspections which took place over the course of 2000, approximately 2,143 were conducted by EC's wildlife inspection staff under the federal WAPPRIITA, (which implements Canada's commitment to the Convention on International Trade in Endangered Species (CITES)). In 2000, EC's environmental protection inspection staff conducted 2,027 inspections under CEPA, 1999 , and 1525 under the *Fisheries Act* during the same period.

ALBERTA

Alberta Environment administers many acts and regulations in fulfillment of the Department's regulatory and enforcement role. Compliance is assessed by conducting inspections, reviews, and audits of regulated activities to verify compliance with the applicable statutory requirements.

Alberta Environment establishes targets for compliance assessments for measuring compliance with the legislation administered by the Department. Compliance assessments take the form of unannounced site inspections or patrols, reviews of compulsory reports required by statute, authorization or Code of Practice, and audits to verify that designated methods of data gathering and collection meet quality control/quality assurance objectives. This information is published for annual release to the public, and provides details of compliance assurance activities for the fiscal year, as well as projections for targets for the coming year.

Achieving a high rate of compliance through education of regulated parties about their statutory obligations, and maintaining a high profile within the regulated community are key objectives of Alberta Environment's compliance assurance work. The degree of success for these endeavors is substantiated by the high rate of compliance within the sectors regulated by the Department. The proactive, unannounced industrial inspection program for industries with approvals or authorizations shows that most non-compliance cases are relatively minor in nature, are rectified voluntarily or on a co-operative basis with the Department, and have little or no potential for environmental impact.

Most enforcement responses under the *Environmental Protection and Enhancement Act* (EPEA) reflect the reactive side of the Department's compliance assurance business for this regulatory area. The importance of identifying non-compliance with the legislation via information from routine complaints, contacts initiated by informants or other agencies, or mandatory reporting under *EPEA* cannot be overstated. Non-compliance identified through these less predictable sources constitutes the primary source of investigative and enforcement actions under *EPEA*.

The opposite holds true for enforcement actions under the fisheries and wildlife legislation. Most non-compliance is identified through proactive compliance checks of individuals using the resources that are regulated under the fisheries and wildlife legislation. In most instances, non-compliance with the fisheries and wildlife legislation brings an immediate enforcement response.

The high numbers of users checked, and the volume of compliance assurance work done in this regulatory area, shows a rate of compliance that is consistently in the mid- to high-ninetieth percentile despite the seemingly high number of charges laid under the legislation. This suggests that the high profile of Alberta Environment's Conservation Officers within the community, and the ongoing education efforts by this service area, continue to produce consistently high results in achieving high rates of compliance within this regulated community.

Table Five shows the details of the enforcement actions undertaken by these service areas of Alberta Environment during the 1999–2000 fiscal year. The figures expressed for convictions include convictions for charges laid during the previous fiscal period. Conversely, charges laid during the 1999–2000 fiscal year may not be resolved at some point in time beyond this fiscal period.

The annual compliance assessment plan targets activities and operations based on the following criteria:

- A broad range of regulated activities and operations are assessed for compliance.
- Over the long term, a sample of each regulated community will be assessed.
- Targets set for particular activities/operations are based on environmental/resource management priorities including:
  - risk to the resource or environment associated with a particular activity/operation
  - the history of compliance of the regulated parties associated with the activity/operation
  - information on trends and emerging issues determined from strategic analysis

The compliance assurance activities undertaken by Alberta Environment are summarized as follows:

1. Environmental Protection and Enhancement Legislation (Alberta, for fiscal year ending 31 March 2000)

- 5,882 compliance assessments (225 inspections, 5,560 reviews, 97 audits) were completed on industrial facilities;
- 2,047 compliance assessments (590 inspections, 1457 reviews) were completed on municipal (potable water and wastewater) facilities;
- 42 inspections were completed on activities or facilities that are regulated by a Code of Practice under *EPEA*;
- 109 inspections were completed on pesticide related activities under *EPEA*;
- 357 inspections were completed on activities where land conservation and land reclamation work was being completed; and,
- 3,446 compliance assessments (3,266 inspections, 180 reviews) were completed on reclamation certificate applications;

2. Fisheries Legislation (Alberta-for the calendar year 2000)

- 54,867 anglers were checked in Alberta during 2000;
- 272 commercial fisheries operations were inspected for a total of 1,443 individual inspections;
- 127 inspections were completed on fish processing facilities during 2000; and,
- 325 inspections of subsistence fishers were conducted in 2000.

3. Wildlife Legislation (Alberta)

- 35,952 hunters were checked in Alberta during 2000;

- 260 subsistence hunters were checked in 2000;
- 176 inspections were completed on activities regulated by the *Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act (federal)*;
- 779 inspections were completed on commercial operators, including guides and outfitters, meat processors, fur dealers, and taxidermists; and
- 53 inspections were completed on various wildlife facilities (i.e., zoos, game farms, and elk farms).

Information Management and Reporting

All parties maintain records of key enforcement activities, including inspections, investigations, warnings issued, and prosecutions. Alberta Environment and Quebec Environment have computerized databases that track enforcement activities, including incident reviews, inspections and investigations. Likewise, Manitoba Conservation maintains records of similar enforcement activities through alternate record-keeping systems.

During the fiscal year 99/00, Manitoba Conservation's Environment Officers recorded 17,099 inspections and 3,512 complaints, which reflect environmental and public health enforcement activities. A total of 205 charges were laid and 355 warnings and 72 orders were issued. MC Natural Resource Officers are responsible for enforcement of wildlife protection and other legislation. There were 345 prosecutions and 113 warnings issued under *The Wildlife Act* in 99/00. They are assisted in their job by the province's "Turn-in-Poachers" toll-free hotline which received 758 calls during the year.

There is a legislated requirement for Environment Canada to report to Parliament annually on the implementation of the *Canadian Environmental Protection Act* (CEPA) and the *Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act* (*WAPPRITTA*). EC also contributes to the Department of Fisheries and Oceans Annual Report to Parliament on the *Fisheries Act*. The 99/00 fiscal year report is available at <http://www.dfo-mpo.gc.ca/habitat/annrep97/english/index_e.htm >.

The *CEPA* Environmental Registry, established under *CEPA*,1999, stores materials noted in the list below. These are available to the public at <http://www.ec.gc.ca/CEPARegistry/default.cfm>.

- Enforcement and Compliance Policy for CEPA, 1999
- Notices published under CEPA, 1999 in the *Canada Gazette*
- Annual Reports on the administration and enforcement of the Act, including a description of research carried out under CEPA, 1999
- CEC Annual Reports on Enforcement (when they deal with CEPA, 1999 issues)
- Historical court decisions on guilty parties
- Press releases and media advisories
- The complete legislative text of CEPA, 1999 and its regulations
- Brief "plain language" summaries of CEPA, 1999 regulations
- Enforcement activities reports and enforcement statistics
- Compliance Reports related to CEPA, 1999 regulations
- International Conventions/Accords that Canada has signed and are implemented in Canada by means of CEPA, 1999 and its regulations. (e.g., The Basel Convention on the transboundary movement of hazardous wastes, The London Convention on the disposal of wastes at sea)
- Proposed new regulations under CEPA, 1999 and the amendment of existing regulations
- Substances Lists, including the Toxic Substances List, the Domestic Substances List, the Export Control List, and the Priority Substances List

Enforcement of environmental and wildlife legislation for all parties is conducted within the context of the overall Canadian legal framework, which includes the *Canadian Charter of Rights and Freedoms*, the *Criminal Code*, the *Privacy Act*, *Access to Information Act*, *Mutual Legal Assistance Act*, and the *Canada Evi-*

dence Act. Most federal, provincial and territorial environmental and wildlife legislation provides for the authority to search, seize and detain under the rules established by legislation. In Quebec, their provincial *Charter of Rights and Freedoms*, *Civil Code* and *Penal Code* are in effect as well.

2000 Enforcement Information/Statistics

Environment Canada Enforcement Information.
Enforcement information, reports and statistics can be found on EC's web site at <http://www.ec.gc.ca/enforce/homepage/english/index.htm>.

Provincial Statistics

QUEBEC

For the ministry of the environment, information concerning enforcement in Quebec is available at <http://www.menv.gouv.qc.ca>. Statistics on convictions appear in the table below.

Table one • **Statistics on Convictions–2000, Quebec**

Acts and Regulations	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Environmental Quality Act	7	14	10	11	3	9	6	7	10	12	6	4	**99**
Regulation respecting the quality of the atmosphere	4	5	2	2	1	1	1	4	3	1	1	1	**26**
Regulation respecting pits and quarries	1	-	2	-	-	-	-	-	-	-	1	-	**4**
Regulation respecting solid waste	2	3	3	1	5	1	2	-	2	5	2	1	**27**
Act on the sale and distribution of beer and soft drinks in non-refillable containers	-	1	-	-	-	1	-	2	-	-	2	-	**6**
Regulation respecting the prevention of water pollution in livestock operations	-	1	-	-	-	-	-	-	1	-	-	-	**2**
Regulation respecting the reduction of agricultural pollution	-	1	-	2	1	3	-	-	-	-	-	1	**8**
Regulation respecting public wading and swimming pools	-	1	-	-	-	-	-	-	-	-	-	-	**1**
Regulation on dangerous substances	-	-	2	1	1	1	-	-	1	1	-	2	**9**
Hazardous Waste Regulation	-	-	-	-	1	-	-	-	2	-	-	-	**3**
Pesticides Act	-	-	-	-	-	-	-	-	-	-	1	-	**1**
Act on ecological reserves	-	-	-	-	-	-	-	-	-	-	1	2	**3**
TOTAL	14	26	19	17	12	16	9	13	19	19	14	11	**189**
FINES	15, 500	54, 200	44, 400	29, 300	98, 300			24, 100	42, 513	35, 150	18, 360	26, 450	388, 273

Quebec Ministry of the Environment

Table two • **Environmental Sector Program Operating Statistics: 1999/00, Manitoba**

(The scope of MC's responsibilities include, but are not limited to, environmental matters.)

Program Activity (mandated)		Number of Inspections	Complaints Responded To
PUBLIC HEALTH ACT			
Food Service Establishments		3,935	438
Temporary/Seasonal Food Service		640	7
Retail Food Stores		674	152
Mobile Food Units		117	2
Food Processors		450	53
Uninspected Meat Processors		72	4
Public Water Supply		376	43
Swimming Facilities		679	34
Industrial and Construction Camps		18	3
Recreational Camps		50	3
Public Accommodation		140	19
Care Facilities		416	19
	Total	7,567	777
ENVIRONMENT ACT			
Waste Disposal Grounds		681	146
Livestock Production Operations		1,142	119
Municipal Wastewater Facilities		367	27
Scrap Processors and Auto Wrecking		14	5
Agricultural Operations		13	2
Mining Operations		36	4
Forestry Operations		50	15
Manufacturing and Industrial Plants		210	73
Recreational Developments		7	1
Incinerators		34	4
Water Development/Other EA Licences		239	63
	Total	2,793	459
DANGEROUS GOODS HANDLING and TRANSPORTATION ACT			
Petroleum Storage Facilities		836	25
Pesticide Storage and Container Facilities		161	29
PCB Storage Facilities		21	-
Anhydrous Ammonia		95	-
Hazardous Wastes Sites		284	65
Dangerous Goods Handling and Transportation		65	4
Contaminated Sites		515	21
	Total	1,977	144
REQUEST/RESPONSE ORIENTED PROGRAMS			
Subdivision, Landsplits, Planning Schemes and Development Plans		783	131
Litter		878	681
Campgrounds		22	1
Dwellings and Buildings		1,090	819
Private Water Supplies		320	33
Insanitary Conditions		177	146
Communicable Disease Investigations		101	65
Private Sewage Disposal		886	153
Other (Crop Residue, Ozone, WRAP, NSHPA)		505	191
	Total	4,762	2,220
	Grand Total	**17,099**	**3,600**

These statistics cover the full range of enforcement activities for which Manitoba Conservation is responsible.

Table three • **Enforcement Statistics 1999–2000 Fiscal Year, Manitoba**

Legislation	Charges Laid	Convictions	Formal Warnings Issued	Director/EO/MOH Orders Issued	Fines Imposed
The Dangerous Goods Handling and Transportation Act	123	120	26	12	28,207.00
The Environment Act	63	54	213	36	28,547.00
The Contaminated Sites Remediation Act	-	-	-	-	-
The Ozone Depleting Substances Act	1	1	2	1	294.00
The Public Health Act	17	14	91	21	4,189.00
Municipal By-laws	1	1	23	-	150.00
TOTAL	**205**	**190**	**355**	**70**	**$61,387.00**

ALBERTA

Alberta Environment administers many acts and regulations in fulfillment of the Department's regulatory and enforcement role. Compliance is assessed by conducting inspections, reviews, and audits of regulated activities to verify compliance with the applicable statutory requirements. The enforcement activities undertaken by Alberta Environment for the 1999–2000 fiscal year are presented in Table Five.

Alberta Environment maintains an Internet web site for public access to information about the programs and initiatives undertaken by the Department. The "Compliance Assessment and Enforcement Activities Annual Report", which describes the compliance assurance activities undertaken by Alberta Environment per each fiscal year, and the calendar year statistics reports, which include details of concluded charges, are available for public viewing at <http:/gov.ab.ca/env/protenf/enforcement/index.html>.

Table four • **Summary of Enforcement Actions 1999–2000 Fiscal year, Alberta**

Legislation	*Environmental Protection and Enhancement Act* and Regulations	*Fisheries Act* and Regulations	*Wildlife Act* and Regulations	*Water Act* and Regulations	*Parks* and Protected Areas	*Criminal Code of Canada and associated Acts* and Regulations	Other Acts and Regulations*
Enforcement Response							
	Actions / Penalties	**Actions / Penalties**	**Actions / Penalties**	**Actions / Penalties**	**Actions / Penalties**	**Actions / Penalties**	**Actions / Penalties**
Prosecution	93 / $283,257	1,779 / $198,094	1,656 / $289,458	n/a	533 / $17,131	48 / $1,482	2,556 / $217,140
Administrative Penalty	34 / $137,000	n/a	n/a	n/a	n/a	n/a	n/a
Enforcement Order	3 / n/a	n/a	n/a	n/a	11 / n/a	n/a	n/a
Env. Protection Order	15 / n/a	n/a	n/a	n/a	n/a	n/a	n/a
Warning (Written)	87 / n/a	674 / n/a	455/n/a	30 / n/a	285 / n/a	5/n/a	308 / n/a
Warning (Verbal)	n/a	8 / n/a	33 / n/a	n/a	4/n/a	1 / n/a	1 / n/a
Sub-Total	**232 / $420,257**	**2,461 / $198,094**	**2,144 / $289,458**	**30 / n/a**	**833 / $17,131**	**54 / $1,482**	**2,865 / $217,140**

* Other statutes enforced by Alberta Environment include the *Off-Highway Vehicle Act* and Regulations, the Small Vessel Regulation, the Boating, Restriction Regulation, the *Gaming and Liquor Act* and Regulation, the *Highway Traffic Act* and Regulations, the *Motor Vehicle Administration Act*, the *Petty Trespass Act*, and the *Provincial Offences Procedure Act*.

Table five • **1999–2000 Enforcement Activities, Alberta**

Legislation	Charges Laid*	Charges Concluded	Convictions	Pending (charges not concluded)*
EPEA	41	31	18	17
Pesticides Sales, Handling,….	19	0	0	19
Pesticide (Ministerial Regulation)	0	0	0	0
Waste Control	0	0	0	0
Substance Release	1	1	1	0
EPEA and Regs Subtotal	**61**	**32**	**19**	**36**
Fisheries (Alberta) Act	288	196	160	**
General Fisheries (Alberta) Regulation	77	23	20	**
Fisheries Act (federal)	39	44	16	**
Alberta Fishery Regulation	1,548	1,161	1,001	**
Fisheries Act and Regs Subtotal	**1,954**	**1,424**	**1,197**	**
Wildlife Act	1,546	1,228	786	**
Wildlife Act Regulations	135	111	72	**
Migratory Bird Convention Act (federal)	1	1	1	**
Migratory Birds Regulation	1	1	1	**
Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act (federal)	4	2	1	**
Wildlife Act and Regs Subtotal	**1,687**	**1,343**	**861**	**
Forests Act	101	47	37	**
Forest and Prairie Protection Act	6	5	3	**
Timber Management Regulation	0	1	0	0
Forest Land Use Zone Regulation	9	5	5	**
Forest Recreation Regulation	1	0	0	**
Forestry Acts and Regs Subtotal	**117**	**58**	**45**	**
Provincial Parks Act	532	345	306	140
Wilderness Areas, Ecological Reserves and Natural Areas Act	1	0	0	**
Provincial Parks Act and Regs Subtotal	**533**	**345**	**306**	**140**
Public Lands Act	0	0	0	0
Mines and Minerals Act	0	0	0	0
Exploration Regulation	0	0	0	0
Public Lands Act Subtotal	**0**	**0**	**0**	**0**
Water Act	0	0	0	0
Water Management Subtotal	**0**	**0**	**0**	**0**
Controlled Drugs and Substance Act	1	0	0	1
Criminal Code	49	45	13	14
Boating Restrictions Regulations	2	2	2	0
Gaming and Liquor Act	475	320	279	108
Gaming and Liquor Regulation	474	377	342	43
Highway Traffic Act	179	139	124	16
Liquor Control Act	4	1	0	4
Motor Vehicle Administration Act	264	177	152	46
Off-Highway Vehicle Act	354	262	250	20
Off-Highway Vehicle Regulation	32	26	26	2
Petty Trespass Act	3	2	1	2
Provincial Offences Procedures Act	64	34	18	35
Small Vessel Regs	36	31	28	4
Storage, Display, Trans. and Handling of Fireaarms by Individuals Reg.	1	1	0	0
Other Acts and Regs Subtotal	**1,938**	**1,417**	**1,235**	**295**
TOTALS	**6,288**	**4,619**	**3,663**	**471**

* These data cannot be compared to each other or unshaded portions of this table. ** These data were not available at the time of the report. Charges Laid—includes all charges laid during the report period. Charges Concluded—includes Charges that resulted in a conviction, acquittal, charges withdrawn, stayed, or dismissed. Pending—includes charges laid before or during the report period that have not been concluded. Prosecution Penalties—includes penalty and creative sentencing amounts Days in Jail—does not include days in lieu or default days Suspensions—include licences (e.g., Wildlife Act), approvals. Appeals: includes appeals of charges to higher level court, administrative penalties and orders appealed to EAB for EPEA legislation, and Administrative penalties appealed to a director for Forestry and Public Lands legislation. Admin Penalty #'s—indicates number of parties who received an administrative penalty Orders—Environmental Protection Orders (EPO), Emergency Environmental Protection Orders (EEPO), Enforcement Orders (EO), Enforcement Orders (Waste), Eviction Orders, Ministerial Orders

Prosecution Penalties $$	Jail Days	Suspensions	Appeals	Court Orders	Written Warnings	Admin Penalties #s	Admin Penalties $$	Orders
$56,680.00	0	0	5	0	81	27	$154,000.00	14
$0.00	0	0	0	0	5	0	$0.00	0
$0.00	0	0	0	0	2	0	$0.00	0
$0.00	0	0	0	0	10	1	$2,500.00	0
$115.00	0	0	0	0	0	0	$0.00	0
$56,795.00	**0**	**0**	**5**	**0**	**98**	**28**	**$156,500,00**	**14**
$17,061.00	5	5	**	0	191	n/a	n/a	0
$3,362.00	0	1	**	0	20	n/a	n/a	0
$4,870.00	4	0	**	0	6	n/a	n/a	0
$164,475.00	24	66	1	0	302	n/a	n/a	0
$189,768.00	**33**	**72**	**1**	**0**	**519**	**n/a**	**n/a**	**0**
$310,031.50	249	284	1	0	196	n/a	n/a	0
$12,209.00	12	15	**	0	27	n/a	n/a	0
$100.00	0	0	**	0	6	n/a	n/a	0
$200.00	0	0	**	0	0	n/a	n/a	0
$7,000.00	0	0	**	0	0	n/a	n/a	0
$329,540.50	**261**	**299**	**1**	**0**	**229**	**n/a**	**n/a**	**0**
$2,428.00	0	0	**	0	32	4	$10,817.84	0
$250.00	0	0	**	0	2	n/a	n/a	0
$0.00	0	0	**	0	25	13	$8,236.50	0
$430.00	0	0	**	0	6	n/a	n/a	0
$0.00	0	0	**	0	1	n/a	n/a	0
$3,108.00	**0**	**0**	****	**0**	**66**	**17**	**$19,054.34**	**0**
$13,532.00	0	6	**	0	149	n/a	n/a	135
$0.00	0	0	**	0	1	n/a	n/a	0
$13,532.00	**0**	**6**	****	**0**	**150**	**n/a**	**n/a**	**135**
$0.00	0	0	**	0	64	36	$58,623.05	0
$0.00	0	0	0	0	**	2	$15,000.00	0
$0.00	0	0	0	0	**	2	$15,000.00	0
$0.00	**0**	**0**	**0**	**0**	**64**	**36**	**$58,623.05**	**0**
$0.00	0	**	0	0	**	0	$0.00	0
$0.00	**0**	****	**0**	**0**	****	**0**	**$0.00**	**0**
$0.00	0	0	0	0	0	n/a	n/a	0
$2,779.00	0	1	0	0	2	n/a	n/a	0
$200.00	0	0	0	0	0	n/a	n/a	0
$37,317.00	0	5	0	0	19	n/a	n/a	0
$39,355.00	0	23	0	0	4	n/a	n/a	0
$11,211.00	0	8	0	0	9	n/a	n/a	0
$0.00	0	0	**	0	0	n/a	n/a	0
$61,224.00	120	10	0	0	56	n/a	n/a	0
$17,232.00	0	15	0	0	63	n/a	n/a	0
$757.00	0	0	0	0	5	n/a	n/a	0
$75.00	0	0	0	0	0	n/a	n/a	0
$1,927.00	0	1	0	0	0	n/a	n/a	0
$3,307.00	0	2	0	0	6	n/a	n/a	0
$0.00	0	0	**	0	0	n/a	n/a	0
$175.384.00	**120**	**65**	****	**0**	**164**	**n/a**	**n/a**	**0**
$768,127.50	**414**	**442**	**7**	**0**	**1,290**	**83**	**$249,177.39**	**149**

Internet References:

EC < http://www.ec.gc.ca/enforce/homepage/english/index.htm >

ME <http://www.gov.mb.ca./environ/prgareas/enforce.html >

AENV < http://www.gov.ab.ca/env/protenf/enforcement/Jan-Dec99_CalendarYearStats.pdf >

MENV < http://www.mef.gouv.qc.ca/>

■ Article 6—Private Access to Remedies

Persons with a recognized legal interest have access to remedies before administrative tribunals and the courts. Interested persons, in addition to being able to institute private prosecutions, may also put forth to a competent authority, a request to investigate alleged violations of environmental laws and regulations.

For example, CEPA, 1999 provides statutory authority for a person to apply to the Minister of the Environment for an investigation concerning any alleged offence under that Act. As well, persons with a recognized legal interest in a particular matter have access to administrative, quasi-judicial and judicial proceedings for the enforcement of Canada's environmental laws and regulations. In this regard, CEPA, 1999 has introduced the concept of "environmental protection actions" which allow any person to seek a court order prohibiting a continued violation of the statute and/or to mitigate harm caused by a violation of the statute. As well, CEPA, 1999 provides the statutory authority to request the review of administrative decisions or proposed regulations.

In 2000, the complaints office of Quebec's Ministry of the Environment received 85 complaints, of which 10 were related to quality of services and 75 related to environmental issues.

■ Article 7—Procedural Guarantees

Canada has administrative, quasi-judicial and judicial proceedings available for the enforcement of environmental laws and regulations. Both the *Canadian Charter of Rights and Freedoms* and the courts have ensured that persons are given an opportunity, consistent with the rules of procedural fairness and natural justice, to make representations to support or defend their respective positions and to present information or evidence. Decisions are provided in writing, are made available without undue delay, and are based on information or evidence on which the parties were offered the opportunity to be heard. In accordance with its laws, Canada provides parties to such proceedings, as appropriate, the right to seek review and where warranted, correction of final decisions by impartial and independent tribunals. An example of fair, open and equitable proceedings at the administrative level is the Board of Review process available under CEPA,1999.

Mexico

Country Report on Implementation of the Commitments Derived from the NAAEC.

The Following report was submitted to the CEC Secretariat by the Secretariat of Environment and Natural Resources in accordance with NAAEC.

The government of Mexico hereby presents its annual report for the year 2000 in accordance with the North American Agreement on Environmental Cooperation.

■ Article 2—General Commitments

1. Each Party shall, with respect to its territory:

2(1)(a) Periodically prepare and make publicly available reports on the state of the environment

- A CD-ROM containing statistical information and environmental indicators was produced.
- Users were given direct access, through the web site of the Ministry of the Environment and Natural Resources (*Secretaría de Medio Ambiente y Recursos Naturales*—Semarnat), to information produced by the Environmental Statistics and Information Branch (*Dirección General de Estadística e Información Ambiental*—DGEIA) under the Deputy Minister for Planning and Environmental Policy.

2.1(b) Environmental emergency preparedness measures

Prevention

In terms of progress on Semarnat's environmental risk agenda, several internal meetings were held, reports were filed with the National Security Council (*Consejo de Seguridad Nacional*), and pilot projects were proposed in several states. The Environmental Risk Unit (*Unidad de Riesgos Ambientales*) was given support in producing the mapping for its projects, and Semarnat participated in its working group.

- A total of 239 accident prevention programs were implemented in industry, representing 61 percent
  of the total establishments registered during the reporting period.
- Under the Comprehensive Environmental Licensing program (*Licencia Ambiental Única*—LAU), an instrument for direct regulation of industry, 42 licenses were issued, 57 percent of them mandatory. Of these, 34 percent corresponded to new establishments and 66 percent to establishments not previously subject to regulation.

- A total of 5,613 jobs and 493,931 person-days of wage labor were generated with funding from the Temporary Employment Program (*Programa Empleo Temporal*—TEP) to solidify prevention measures. The work involved opening 5,188 km of firebreaks, managing combustible materials on 2,200 ha, surfacing 917 km of roads and applying controlled burning.
- Radio and television spots, design and distribution of printed matter on forest fire prevention.
- Extension work with 3,524 communities on preventing and fighting forest fires.
- Formation of 2,004 voluntary groups to prevent and combat forest fires.
- Building and maintenance of 14,798 km of fire breaks.

Forest Fire Detection

- 294 forest fire control centers (national, state and regional) in operation.
- 138 fire towers in operation.
- 6,484 fire reconnaissance flights with 84 aircraft owned by the Mexican Air Force, the state governments, and others.
- 31,121 land brigade missions.
- Heat source information was obtained from the satellite image sensing system operated by the National Commission for the Knowledge and Use of Biodiversity (*Comisión Nacional para el Conocimiento y Uso de la Biodiversidad*—Conabio), as well as the Forest Fire Weather Index System created by the Canadian Forest Service.
- Concerning heat source detection, Conabio, with support from the Natural Disaster Fund (*Fondo de Desastres Naturales*), purchased and installed a high-resolution picture transmission (HRPT) system, consisting of a receiving antenna, a personal computer, and image navigation, rectification and calibration software. From reception to e-mail transmission, the images go through a completely automated data acquisition and management process. The results are published on the Conabio web site; they are relayed daily to 70 fire officials and technicians, most of them working under Semarnat, the Ministry of National Defense (*Secretaría de la Defensa Nacional*—Sedena) and the National Natural Disaster Prevention Center (*Centro Nacional de Prevención de Desastres Naturales*).

Protection and Control

- Application of National Forest Fire Protection Program 2001.
- Dissemination of Mexican official standards (*Norma Oficial Mexicana*—NOM) regulating the use of fire to 1,462 critical municipalities.
- Delivery of 104 forest fire prevention training courses.
- Operation of 1,115 forest fire brigades by Semarnat, the state governments and forestry producers.
- Hiring of 4,615 seasonal firefighters by Semarnat and other bodies.
- Use of 15 Semarnat and state government fire helicopters as well as availability of 37 Mexican Air Force craft equipped with helibuckets for dousing with water and retardant.

Restoration of Fire Damaged Areas

With the support of the government of Finland, a sustainable forestry development strategy was developed for Mexico. This plan was developed through a wide-ranging process of stakeholder consultation. It contemplates four major areas of intervention: controlling and reducing external pressures on the resource, developing forest resources, timber production, and environmental services. It also includes an investment program and some proposed adjustments to the legal and institutional framework.

Weather Phenomena

The National Civil Protection System (*Sistema Nacional de Protección Civil*), the media, the state governments, and the general public received timely information on atmospheric phenomena via 9,149 weather reports and bulletins. The National Weather Service (*Servicio Meteorológico Nacional*) web site was visited 347,991 times. This medium was used to transmit various notices and to publicize weather-related products. In addition, 8 long-term precipitation forecasts and reports were produced for the country's hydrological regions.

With a view to improving and expanding the weather observation network, administrative procedures were initiated to purchase 30 automated weather stations, three GOES image receivers, three GPS radiosonde stations, two electrolyzers, and telecommunications and computing equipment, instrumental for the observatories and computing programs, as well as radiosondes and sounding balloons for the radiosonde network. A total of 228 weather stations and 70 hydrometric stations were rehabilitated; all of this to ensure that the hydrological and hydrometric databank is continually supplied with secure and reliable data for consultation and analysis throughout the country.

Risk Prevention and Flood and Drought Response

The weather, climate and water sensing and management systems were maintained and modernized in an effort to attenuate the impacts of extreme weather phenomena such as storms, floods and droughts. The resulting weather forecasts made it possible to prevent flood damage and to protect human settlements and productive areas from flooding.

- Flood control infrastructure was built on an area of 9,845 ha.
- To achieve optimum use of surface water and to protect human settlements and productive areas, 432 monthly reservoir inflow forecasts and 35 determinations of additional withdrawal from irrigation reservoirs were produced, along with 30 simulations of reservoir operation in the Amistad and Falcon International Reservoirs with a view to revising the accumulated water debt under the 1944 Water Utilization Treaty.

Mexico Valley Hydrological System

The system consists of a set of hydraulic structures (rivers, dams, canals and drains) for control and evacuation of storm water and wastewater produced in the Mexico Valley. Work was planned for desilting of watercourses and dams as well as rehabilitation of other structures (walls and weirs) and their mechanisms, so as to protect the urban and productive areas of eight municipalities of the Mexico Valley Metropolitan Area (*Zona Metropolitana del Valle de México*—ZMVM).

Under the Natural Disaster Prevention Program (*Programa de Medidas Preventivas contra Desastres Naturales*), partial desilting and gate and mechanical maintenance were done on 17 dams; partial desilting was also done for six rivers and canals. Of particular importance was the repair work on the intakes of the old and new Tequixquiac tunnels that drain water from the Valley of Mexico, as well as the raising and grouting of weirs on critical sections of the La Compañía river. With the preventive measures in this program, the commitments established in the Federal Expenditures Budget (*Presupuesto de Egresos Federal*) for this period for the municipalities of Huixquilucan, Naucalpan, Chimalhuacán, Nezahualcóyotl, La Paz, Valle de Chalco-Solidaridad, Ixtapaluca and Chalco were met. Expenditures on this work are estimated at P$53 million.

Protection of Productive Areas

As part of the flood control program for productive areas, an infrastructure budget of P$58.1 million was allocated to protect an area of 9,845 ha. This objective was met under budget at P$43.9, or only 76 percent of the budgeted amount.

Weather Contingency Response

During the reporting period, six weather emergencies were addressed, along with three water-related environmental emergencies, five drinking water distribution campaigns and two basic sanitation campaigns.

Specialized Emergency Response Team

State	Municipality	Equipment	Hours of Work	Observations
Chiapas	Pijijiapan	Gorman Rupp 8"	9,243	Support to SAPAM as operational organization
Michoacán	Sahuayo	2 Gorman Rupp 8" Hydraflo 18"	1,250	Urban drainage issues. La Yerbabuena drain.
Guerrero	Acapulco	2 Gorman Rupp 6"	236	Support for construction of catchment facilities, water supply lines and distribution system for the El Rincón irrigation unit.
		2 Gorman Rupp 12"	-	Mala Espina pumping station, to support construction of the de-sander.
San Luis Potosí	El Porvenir pumping station	Hydraflo 18"	2,423	Support for contingency occurred 23 August 2000.
Quintana Roo	Chetumal	Hydraflo 18"	6.75	Pumping of leak in supply line of González Ortega II water supply system.
Federal District	Campo Militar No.1, puerta 7	Gorman Rupp 4"	145	Treatment plant testing.
México	Canal de Sales, Texcoco federal zone	2 Gorman Rupp 12" 2 Hydraflo 18"	1,604	Emergency support for irrigation water transfer.
Morelos	Tepoztlán and Xochitepec	Gorman Rupp 4"	15	Pumping in storage reservoir and desilting of San Ramón spring

Emergency Plans

The regional and state offices of the National Water Commission (*Comisión Nacional del Agua*—CNA) and the constitutional governors were given the emergency plans for the following rivers: Aguanaval in Coahuila; Huejutla in Hidalgo; Huixtla in Chiapas; Chiquito in Oaxaca; and Tuxpan, Misantla, La Antigua, Jamapa-Cotaxtla, Cazones, and Tecolutla in Veracruz. In addition, the emergency plans for the Actopan, Coatzacoalcos, Nautla and Papaloapan rivers in Veracruz were updated.

Regional Emergency Response Centers

The final design and calls for tender for construction of the regional emergency response centers in the cities of Mérida, Yucatán, and Acapetahua (Chiapas) were produced.

Environmental Contingency Response in the ZMVM

In the metropolitan area, the air emissions partially responsible for environmental contingencies were reduced and controlled through the application of the inspection and enforcement program for sources under federal jurisdiction. Since no such contingency has occurred in nearly 18 months, no phase of the Environmental Contingency Plan was ever triggered. Another factor in keeping pollutant concentrations below the contingency thresholds in Mexico City during the period was that weather conditions favored the dispersion of pollutants.

2(1)(c) Education in environmental matters, including environmental law

More than 4,000 environmental educators and communicators were trained. In addition, approximately 130,000 members of the public benefited from environmental education provided through cultural events and the publication of educational materials and specialized publications. The creation of environmental information clearinghouses at community training centers was extremely important in giving users access to education, training and knowledge about the environment and sustainable development. For 2001, clearinghouses will be set up in Pátzcuaro, Michoacán; the Guadalajara, Jalisco metropolitan area; Tulum, Quintana Roo; and Valle de Bravo, México state. These centers will benefit all segments of the population, including women, youth, children, peasants, fishermen, native communities, academics and researchers. In parallel with this initiative, more than 1,600 people in different communities were benefited by a training and technology transfer initiative; 3,654 more were supported by the Temporary Employment Program, with an investment of P$14.7 million.

In the area of primary and secondary education, liaison and coordination mechanisms were established with the Ministry of Public Education (*Secretaría de Educación Pública*—SEP), and various educational demands of society were addressed. As a result, on 5 June 2001 a coordination agreement was signed between Semarnat and SEP to take joint action on an environmental protection and improvement program in the country's public and private educational institutions.

Two campaigns were undertaken: the National Forests and Water Campaign and the National Campaign for a Clean Mexico. The first creates a broad alliance between civil society and government to address the serious degradation of Forests and Water resources, which are strategic to national security. It has become urgent to clean up the country's principal bodies of water, rationalize water use, stop the loss of forest cover and preserve the natural vegetation and wildlife, all of these being critically threatened natural resources. The primary focus of the second campaign involves enforcement of the Mexican official standards (NOM) whose objective is to decrease the quantity of solid waste sent for final disposal. These actions were complemented by public awareness and action campaigns on the importance of clean streets, rivers, lagoons, lakes, parks and green spaces. In both campaigns, direct contact was established with primary school students, so as to inform and involve them in achieving the campaign objectives as far as watersheds, woodlands and solid waste management are concerned. The Forests and Water Campaign

involves concrete action to deal with the most critical countrywide problems; however, problems considered to be high priority by citizens at the regional, state and municipal levels will also be addressed, with input from the three levels of government and various societal groups.

The Citizens Water Movement (*Movimiento Ciudadano por el Agua*—MCA) was designed as a continuous, long-term public awareness process. It began as an initiative of several leaders and subsequently took on the character of a broad social movement. Its purpose is to instill in civil society and government a culture of water use, conservation and pollution reduction, for this is essential if future generations are to be guaranteed a continued supply of water for the country's economic and social development. If leaders and organizations are aware of the problem, they will be better able to elicit societal participation in finding relevant ways to improve the environment. In the long run, it is hoped that the efforts of the MCA and their multiplier effect will produce a durable change in how Mexicans relate to the water resource.

The MCA began by setting up a Water Advisory Council (*Consejo Consultivo del Agua*) convened by the Federal Executive Branch (*Ejecutivo Federal*). This body is made up of high-profile citizens from all segments of society who are able to mobilize large numbers of people. The executive director of the CNA represents the federal government on the MCA.

In terms of water education and culture, 141 teachers were given six workshops in the program *¡Encaucemos el Agua!* (Channeling Water). Three of these workshops were given at the Mexican Institute of Water Technology (*Instituto Mexicano de Tecnología del Agua*—IMTA) with participants from Veracruz, Puebla, Aguascalientes, Coahuila, San Luis Potosí, Hidalgo, Baja California, Nuevo León, Querétaro, Morelos, Michoacán and México; another took place at Universum, the science museum of the Universidad Nacional Autónoma de México (UNAM); one took place at the Regional Environmental Competitiveness Center (*Centro Regional de Competitividad Ambiental*) in Celaya, and the last took place at the Semarnat Sustainable Development Education and Training Center (*Centro de Educación y Capacitación para el Desarrollo Sustentable*—Cecadesu).

A children's workshop on water was given at the request of the Veracruz state water commission. Participating were 25 technicians working for 15 operational organizations. By the end of the reporting period, six states had requested this workshop, representing 187 persons trained, including technicians, teachers and environmental educators.

Impulso Ambiental, a newsletter published by Cecadesu, reports on these campaigns and the principal policy guidelines established by Semarnat.

2(1)(d) Further scientific research and technology development in respect of environmental matters

Environmental Land-use Planning and Ecosystem Conservation

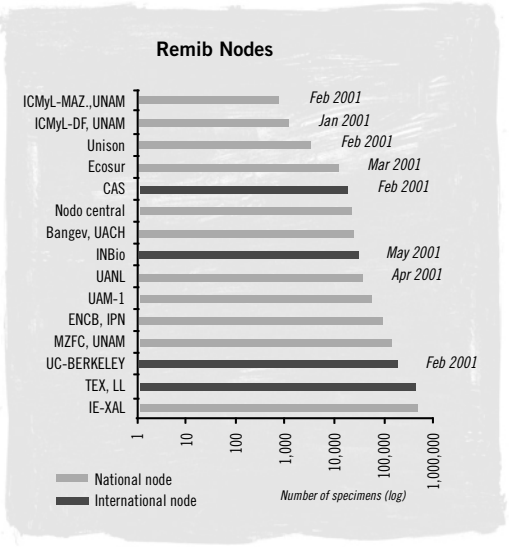
- Regarding environmental land use planning, as part of the program *100 Días de Acciones* implemented by the Federal Executive Branch when the new administration took office, advances were made on research into natural resource conservation and protection, and maps were produced to identify critical areas (requiring urgent action) and priority areas (requiring conservation measures). This study will be used to guide the national security portion of the policy agenda as it relates to the prevention of forest, woodland and water degradation.
- The outlines of the National Environmental Land-use Plan (scale of 1:4,000,000) were updated and adapted for each hydrographic region through the construction of typologies of each industrial sector, including maps (agriculture, livestock, forestry, secondary and tertiary sectors). In addition, the ecological regionalization of the country was defined at different geographical scales.

- Work began on creating a PC-based management module as part of the Environmental Land Use Planning Information System (*Sistema de Información para el Ordenamiento Ecológico*), a useful tool for Semarnat decision-makers. The system provides access to digital mapping information and various databases.
- The Ministry of Communications and Transportation (*Secretaría de Comunicaciones y Transportes*) commissioned a comparative environmental study of potential sites for the new Mexico City international airport. An agreement was signed with the Universidad Autónoma de México (UAM) to conduct a detailed assessment of the environmental costs, risks, and protection measures for each scenario.
- The technical and financial proposal for the comparative environmental assessment of two alternate sites for the new Mexico City international airport was produced as a collaborative effort. Information was provided by the state governments of Hidalgo and Mexico, and Semarnat helped to supervise progress in line with the previously stipulated terms of reference. More than 90 specialists in hydrology, urban development, pollution, flora and fauna, geotechnics, GIS and soils participated in the inter-institutional working group. The technical results of the study will be made public in August 2001.
- In coordination with the Mexico state government, the Universidad Autónoma del Estado de México and various nongovernmental organizations, technical support was provided for the environmental land use planning exercise for the Valle de Bravo. In coordination with the Semarnat Office of the Deputy Minister of Planning (*Subsecretaría de Planeación*), assistance was provided for environmental land use planning and ecosystem protection for the Escalera Náutica and Plan Puebla-Panamá projects as well as various regional planning exercises.
- The island ecosystem conservation project continued, with an effort to eradicate exotic species on Isla Clarión in the Revillagigedo Archipelago, Colima state, and on Isla Guadalupe in Baja California.

Information Networks

The objective is to update, incorporate, and consolidate the information networks and systems on national, regional and world biodiversity so as to meet the country's needs.

From its inception, Conabio has actively participated in the development of electronic communication protocols on biodiversity and in national and international initiatives such as the Mexican Biodiversity Information Network (*Red Mundial de Información sobre Biodiversidad*—REMIB), the North American Biodiversity Information Network (NABIN), the InterAmerican Biodiversity Information Network (IABIN), the Global Biodiversity Information Facility (GBIF) and the Meso-American Biodiversity System (Simebio).



Likewise, Conabio implemented and continues to operate the National Biodiversity Information System (*Sistema Nacional de Información sobre Biodiversidad*). From its inception in 1992 to the end of the reporting period, this system had accumulated data on 56,066 species of plants, fungi, algae, vertebrates and invertebrates in the form of 7,093,451 records, which were pared down to 3,382,457 after a rigorous taxonomic validation process. This data was obtained primarily by academic and research institutions through funding for specific projects, as well as through intensive repatriation of specimen records held by various Mexican and foreign collections.

Since 1993, Conabio has been actively involved in creating and maintaining a biodiversity information network in Mexico called Remib. It should be noted that this network, though based in Mexico, is truly

international in character since it contains information on specimens from more than 150 countries. Remib is now one of the main mechanisms for updating taxonomic and museological information, and represents México on the NABIN, IABIN and GBIF international networks. Remib is made up of 15 nodes (11 national and 4 international) comprising 55 collections plus data on 3,978,652 specimens. During the period December 2000–August 2001, five international nodes and two national nodes were added, while one new collection was added to an existing node.

Further to a trilateral agreement among the North American countries, Conabio is in charge of developing the Mexican portion of the Integrated Taxonomic Information System (ITIS). This will be an effective reference system, backed by taxonomic specialists, for research on more than 370,000 accepted scientific names, synonyms, and more than 66,000 common names of terrestrial, marine and freshwater species whose center of abundance is in North America. The database will be accessed through an interface located in Canada (Agriculture Canada) and coordinated by the United States Geological Survey. The taxonomic information included will also be added to Species 2000, the world species catalogue. Mexico contributed to ITIS with 2,609 plant common names and 2,584 vertebrate common names.

Coordination was done with the ministries and state governments involved in addressing various aspects of the country's biosecurity. These entities included the Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food (*Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación*—Sagarpa), Semarnat, the Ministry of Health (*Secretaría de Salud*—Ssa), the Ministry of the Treasury and Public Credit (Secretaría de Hacienda y Crédito Público—SHCP), Cibiogem and various academic institutions. Networks of experts organized into specialized subcommittees were established. Conabio sat on two subcommittees, one for agriculture, coordinated by Sagarpa's Plant Health Branch, and the other for the environment, coordinated by Semarnat as part of the Cibiogem Technical Committee. The role of these subcommittees was to assess requests to release, import and/or move genetically modified organisms (GMOs) in the country, and to assess and manage the corresponding risks. The work performed included the drafting of legal instruments to regulate the release of GMOs into the environment in pilot projects and semi-commercial and commercial crops.

Technology Assessment and Application to Improve Infrastructure and Decrease Losses

- Studies were conducted to raise the elevation of the Casa de Janos dam on the San Pedro River, Chihuahua, and to build the El Chihuero dam on the stream of the same name in Huetamo, Michoacán. In addition, the necessary studies were conducted on a physical model of its overflow structures. Up to the end of the reporting period, the necessary information had been gathered, the model and the experimental plan designed and construction of the models begun.
- In the development of a methodology for assessment of the hydrological safety of small reservoirs, the applicability of several rain/runoff models was reviewed. The purpose was to estimate the design flood at the sites for which hydrometric data are lacking. Computer programs were developed including various probability distribution functions as well as procedures for channeling floodwater into reservoirs. For the review of the design flood for five dams, basic information consisting of hydrometric, weather and reservoir data was compiled, along with maps.
- With the goal of systematizing water measurement and controlling its distribution in irrigation zones, an electronic data acquisition and storage device was developed for streamflow gaging stations, as well as a float-type sensor to measure canal water levels in a range of 0–3.30 meters. The data acquisition device can store up to 32,000 measurements in 32 kB of memory, expandable up to 128 kB. This data was then downloaded into a database of control points for each irrigation district.
- Contour plowing, terracing with fruit trees, cover cropping with forage oats, reforestation with Christmas pine and minimum tillage was practiced on 205 ha located in the Amanalco river basin, in cooperation with the union of ejidos of the municipality of Amanalco, Mexico state.

To retain fine particles that would otherwise have been lost from the agricultural plots, three stone weirs fitted with geotextile were built on the bed of La Garrapata stream. Water samples were taken before and after the addition of the geotextile to measure its effect on water quality.

Air Quality

The following research was conducted for the purpose of air quality improvement:

- The first phase of a study on wind field patterns in Mexico City was concluded and the second phase was initiated. Participating are the UNAM, the UAM, and the Japanese International Cooperation Agency (JICA).
- Characterization of breathable suspended particles produced by emissions from Popocatépetl volcano.
- Research on environmental quality at the Molymex plant in Cumpas, Sonora.
- In addition, the following studies are in process:
- Analysis of vertical profile of air pollutants and weather parameters using a tethered sonde.
- Analysis of PM_{10} and $PM_{2.5}$ particulate matter in the area surrounding the Manzanillo, Colima thermal power plant.
- Implementation of the National Air Quality Information System (*Sistema Nacional de Información de la Calidad del Aire*) for online access to air quality information for Mexico City, Guadalajara, Monterrey, Toluca and Ciudad Juárez.
- Development of a real-time biogenous air emissions inventory for the ZMVM.
- Characterization of chemical components of rainfall in the natural areas of the Mexico Valley.
- Participation in a study to design a $PM_{2.5}$ monitoring network in coordination with the government of Mexico City and Inin Tlalli (a civic association founded in 1999 to create and foster a culture of environmental protection).

Hazardous Waste

In the area of hazardous waste, the following research was initiated:

- Biomembrane reactors as a new alternative for treatment of PCBs and related compounds.
- Chemical dechlorination of hexachlorobenzene.
- Treatability studies for remediation of hydrocarbon-contaminated weathered soils. Long-term study with four-year plan (the reporting period corresponds to the second year).
- Characterization of industrial and hazardous waste incinerator ash.
- Development of 12 test protocols in various companies practising thermal hazardous waste treatment.

The National Environmental Research and Training Center (*Centro Nacional de Investigación y Capacitación Ambiental*—Cenica) directly supported the studies and projects carried out on air pollution and hazardous waste. Additionally, the following projects were conducted in the environmental laboratory:

- Technical assessment for approval of eight environmental analysis laboratories.
- Development and implementation of a quality system as part of the Cenica accreditation process.
- Development of the analytical methodology for "determination of 1,4,7,8-dibenzodioxine in potable and untreated water by low resolution gas chromatography/mass spectrometry."
- Morphological and elemental characterization of air particulates.
- Speciation of volatile organic compounds in the atmosphere in Mexico City.
- Assessment of *Chlorella vulgaris* sensitivity through the use of two reference toxicants.
- Eco-toxicological assessment of leachates through a battery of tests.
- Effect of acid rain on lettuce and amaranth seed germination.

- PCB toxicity assessment using *Daphnia magna* and nematodes. Cenica offers an annual environmental training and dissemination program. In the reporting period, the following activities were carried out: five seminars on passive monitoring, methodology and monitor types; pollution control; formation, transportation and impact of air particulates; ISO 14000 and environmental management; a course on environmental management; a workshop on cleaner production with the support of United States Agency for International Development and the Cleaner Production Center (*Centro de Producción más Limpia*); and an international seminar in coordination with JICA on waste treatment and recycling, with the participation of domestic and international exhibitors and the assistance of technicians from government, industry, academia and the general public.

In coordination with the Cecadesu, four courses were given in Mexico City and Querétaro (on environmental management, atmospheric monitoring and solid waste management) to Semarnat and state officials.

The catalogue of the National Institute of Ecology (*Instituto Nacional de Ecología*— INE) was enriched with the following publications and activities:

- New edition of *Áreas naturales protegidas de México* containing the state decrees (those of Nuevo León were incorporated, and a presentation by the head of the National Protected Natural Area Commission (*Comisión Nacional de Áreas Naturales Protegidas*—Conanp) was added).
- Production of the work *Plantas de la región de Zapotitlán Salinas, Puebla* (co-published with INE and UNAM).
- Publication of number 58 of the *Gaceta Ecológica* and preparation of numbers 59–61.
- Definition of editorial criteria for production of the report and atlas of environmental land-use plans.
- INE publications page posted online, with 120 publications as well as periodic mailing of e-newsletters to announce new editions and various services.
- Proceedings of workshop on assessment, management and communication of risks associated with mining and metallurgical waste, produced by Cenica.

2(1)(e) Environmental Impact Assessment

The backlog of environmental impact projects existing prior to the reporting period was reduced by 68 percent, as well as some of the environmental risk studies for existing plants.

2(1)(f) Promotion of the use of economic instruments for the efficient achievement of environmental goals

With the TEP budget assigned to Semarnat, 24,000 temporary jobs relating to soil, forest and wildlife conservation were created. The work of the Federal Attorney for Environmental Protection (*Procuraduría Federal de Protección al Ambiente*—Profepa), Conanp and the National Reforestation Program (*Programa Nacional de Reforestación*—Pronare) was supported.

A medium-term plan was proposed involving tax deductions for physical and financial environmental investments; amendment of the other Semarnat charges prescribed by the Federal Duties Law (*Ley Federal de Derechos*—LFD); eliminating distorting subsidies in the areas of energy, transportation, fuel and damaging agricultural practices, and offering new incentives for environmentally desirable practices, such as Alianza para el Campo Verde, the Forestry Development Program (*Programa de Desarrollo Forestal*—Prodefor), Commercial Forest Plantation Development Program (*Programa para el Desarrollo de Plantaciones Forestales Comerciales*—Prodeplan), Pronare, the Sustainable Development Program (*Programas para el Desarrollo Sustentable*), and others.

Through administrative cooperation agreements relating to fiscal affairs, a fund was established for the Federal Coastal Zone (*Zona Federal Marítimo-Terrestre*—ZFMT), consisting of 30 percent of the total collected by the municipalities. This fund was allocated to the preservation, maintenance and cleanup of beaches, to inspection and enforcement, and to other projects.

Under the impetus of the new taxation policy, fiscal proposals concerning duties were designed. For reasons of efficiency, the work was performed as a collaboration of Semarnat and the SHCP and approval was sought from the Congress of the Union. An initial group of proposals was discussed and several additional proposals were prepared subsequently.

A program of research was conducted to develop economic instruments and public policies designed to enhance pollution reduction, environmental conservation, and sustainable natural resource use.

The following topics were included:

- New cars: a contribution was made to defining the Environmental Tax on New Foreign Cars (*Impuesto Ecológico sobre Autos Nuevos Extranjeros*—ISANE), involving adjustments and additions of an environmental nature to the existing New Car Tax Law (*Ley del Impuesto sobre Autos Nuevos*).
- Extractive wildlife use: The fees for hunting activities established by the LFD were adjusted.
- Non-extractive wildlife use: A fee was established in the LFD for whale-watching activities.
- Water consumption and treatment charges: Assistance was provided in adjusting the water use charges prescribed by the LFD, including consumption and treatment charges.
- Mexican marine parks: an adjustment was made to the charges prescribed by the LFD for access to and enjoyment (non-extractive use) of these natural areas.

Research on the following subjects is at different stages of advancement:

- New cars: possible adjustments to the design of the ISANE as well as assessment and follow-up to this measure.
- Existing cars: technical proposals on economic instruments to promote air emission control.
- Substance phase-outs: research on economic instruments to promote the phase-out of these substances.
- Packaging: proposed economic instrument to reduce volumes and promote recycling.
- Pesticide containers: proposed economic instrument to promote proper disposal of pesticide containers.
- National parks: proposed fee structure and investment fund to finance natural resource conservation in marine and land natural areas.
- Wildlife: initiative to revise the LFD to promote wildlife conservation and sustainable use.
- Drinking water: analysis of viability, impact and considerations for eliminating water tax exemptions.
- Wastewater: technical proposal to induce municipalities to charge for water treatment and recycling.
- Waste oils: technical proposals for economic instruments to promote the proper disposal of waste oils. In cooperation with the Metropolitan Environmental Commission (*Comisión Ambiental Metropolitana*) in the pilot project for the ZMVM on management of waste oils.
- Economic valuation: development of methods for economic valuation of natural resources and goods and services generated by Mexican ecosystems.
- Bioprospection: identification of various measures to meet policy objectives (to be determined).
- Poverty and environment: analysis of the links between poverty and environmental degradation, as well mapping of relevant public policies.

- Environmental services: identification of alternatives and strategies concerning payment for environmental services to poor communities who own or possess forest resources.
- Ejidos and natural resources: identification of links between ejidos, different types of resource organization and management, both individual and collective, and environmental and natural resource conservation.
- Development of joint environmental economics projects with universities and research centers.

In addition, a presentation titled "The Status of Economic Instruments in Mexico" was given at an international seminar on economic instruments held in Montreal, Canada by Environment Canada; Semarnat also participated in a workshop on fiscal reform held by the Congress of the Union.

Under the TEP for protected natural areas, a total budget of P$6,435 million was distributed to 56 projects representing 574,982 person-days. This directly benefited 10,801 persons in 198 communities of 27 municipalities in 12 states of the republic (Baja California Sur, Campeche, Coahuila, Chihuahua, Chiapas, Hidalgo, Jalisco, Morelos, Puebla, Querétaro, San Luis Potosí and Oaxaca).

Prodeplan

Responsibility for this program was transferred to the National Forestry Commission (*Comisión Nacional Forestal*). The projects selected in the first round of funding in 1997 were carried out, for a total amount of P$3,205,412. Advance payment of subsidies to another project amounted to P$133,500.

The amount of P$285,884,000 was allocated for the establishment and maintenance of 39,724.81 ha of commercial forestry plantations, and P$5,940,000 for the development of reports on forestry and integrated environmental management programs.

First-time support was provided for the development of non-timber plantations (bamboo and Chamaedorea palm), with all available subsidies allocated. Social participation in the Prodeplan program was very popular (a 1,000-percent increase over previous years), particularly in the community sector, the main participants being farmers, ranchers, forest producers and forestry companies.

Prodefor

- The participation of 30 states was elicited. The states will provide a total of P$56 million which, added to the federal contribution of P$131 million, will total P$187 million to be allocated in 2001.
- The program was announced to producers in 25 states.
- 15 accreditation courses were given to technical service providers.

Pronare

Forestry coordination agreements were signed with 14 states, representing a total investment of P$332 million designed to incorporate 1,156 ejidos and 500,000 ha into forestry production. This investment included reforestation of 83,584 ha, protection of 4,190 km of fire breaks, support for restoration of 7,577 ha, maintenance of 7,052 ha and conservation of 238 seed crop areas, among other actions.

■ Article 3—Levels of Protection

Concerning environmental policy, technical progress was made on developing the Environmental Land Use Planning Regulation (*Reglamento de Ordenamiento Ecológico*), which will make possible the full exercise of this environmental planning instrument. The integration of this policy with related areas, such as water, forests and tourism, was furthered. Internal working groups were formed to discuss the issues, and mechanisms were developed to establish guidelines for multi-sector coordination. The environmental land-use plans for the state of Hidalgo and for Isla Mujeres, Quintana Roo, went into force, and two coordination agreements were signed to create and implement regional environmental land-use plans for Sian Ka'an park and Laguna de Bacalar, both in Quintana Roo.

In the interest of achieving high levels of environmental protection, the following Mexican official standards were revised:

- **NOM-52-ECOL-94** respecting hazardous waste. The revision aims to provide incentives for waste reuse, recycling and treatment, to reduce the quantities sent for incineration and final disposal, and to decrease the treatment and final disposal costs, all in an effort to achieve a higher percentage of voluntary compliance.
- **NOM-040-ECOL-2000,** as a complement to the policies designed to reduce waste sent for final disposal. The purpose of the revision was to incorporate criteria for reuse of cement plant waste, which will decrease the treatment and final disposal cost; the waste will be reincorporated into the productive process as an auxiliary fuel.
- **NOM-125-ECOL-2000,** to include timelines for compliance in the area of ozone-depleting substances.

During this period, two new standards were developed. The first concerns wetlands and provides for the economic growth of the neighboring human settlements. The second establishes criteria and guidelines to reduce the quantity of packaging sent for final disposal. This standard establishes the properties of packaging that render it conducive to recycling and reuse, and promotes deposit-return and compensation mechanisms to induce companies to bear the cost of the environmental harm they cause.

Semarnat contributed actively with regard to the legal framework. During this period, it worked together with the agriculture and rural development commissions of the Chamber of Deputies (*Cámara de Diputados*). It succeeded in incorporating various environmental criteria into draft legislation, in particular a concept of resource sustainability based not only on productivity but also on social and environmental considerations.

Legal Reinforcement and Management of Protected Natural Areas

Legislative and judicial aspects are of great importance in this process. Following six years of experience with the operation of the protected natural areas, the need was contemplated to amend the General Law on Ecological Balance and Protection (*Ley General del Equilibrio Ecológico y la Protección al Ambiente*—LGEEPA) to create a more appropriate foundation for management programs, the regulation of protected natural areas, and enforcement activities (sanctioning of offenses). Notable under this heading was the analysis of the existing legal framework by Conanp, so as to develop proposed amendments to the LGEEPA and other applicable provisions.

A commitment was made to enact the legal provisions necessary to guarantee the uninhibited operation of the protected natural areas. In this regard, the four management programs were published, along with summaries for 13 areas.

■ Article 4—Publication

A text setting out the guidelines and general strategies for the furtherance of environmental management of the funds of the administrative offices of the agencies of the Federal Public Administration was drafted and published on 15 March 2001 in the Official Gazette of the Federation (*Diario Oficial de la Federación*—DOF).

4(2)(a) To the extent possible, each Party shall publish in advance any measure that it proposes to adopt

During this period, a legislative reform proposal concerned primarily with environmental offenses and decentralization was submitted to the Legal Affairs Office (*Consejería Jurídica*) of the Federal Executive Branch.

Mexican official standard NOM-008-CNA-1998, "Toilets for sanitary use: specifications and test procedures," was published in the DOF. This standard plays an important role in strengthening the regulation framework for water conservation.

Various workshops were held on accreditation of regional water quality laboratories for five regions; facilitation for the formation of field inspection units for enforcement of the water-related NOMs; guidelines for risk analysis and safety assessment of water tanks. In addition, the quality system implemented by the National Reference Laboratory was given publicity.

In support of technological development of the water sector, certificates were issued for three products (regular and reinforced concrete pipes) under NOM-001-CNA-1995, "Sanitary sewer systems: hermeticity specifications."

In support of the water-related Mexican official standards, particularly concerning the cleanup of national bodies of water and water reuse, a declaration was published in the DOF to announce the taking of effect of 13 water quality analysis standards promoted and coordinated by the CNA.

Article 4(2)(b) Provide interested persons and Parties a reasonable opportunity to comment on such proposed measures

The publication of two calls for proposals is noteworthy. The first concerns projects relating to the biological knowledge of species included in draft standard PROY-NOM-059-ECOL-2000, whose principal contribution will be to produce data sheets on 1,355 rare, threatened or endangered species. The result will be a set of documented, expert-validated data on the status of these species in the country. The second call for proposals concerns knowledge of the biological resources of the Sierra Tarahumara. This will give rise to a unique international and inter-institutional cooperation project in which the Tarahumara and Tepehuan peoples will participate actively from the project-planning phase onward.

The National Advisory Committee on Environmental Protection Standards (*Comité Consultivo Nacional de Normalización para Protección Ambiental*) approved the revised version of NOM-059-ECOL, which determines the risk categories for wild species in Mexico.

■ Article 5—Government Enforcement Action

5(1)(b) Monitoring compliance and investigating suspected violations, including through on-site inspections

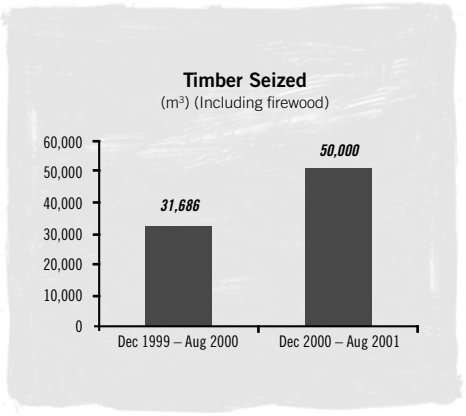
For the period 2001–2006, the CNA has set the following priorities, among others: developing an inspection program to address the problem of non-compliance with the maximum contaminant limits established by NOM-001-ECOL-1996 and the discharge conditions established by wastewater discharge permits; verifying compliance with the conditions and volumes established by water concessions, and curtailing non-payment, late payment and irregular payment of water royalties. During the reporting period there were 738 inspection visits, an increase of 34.7 percent over the 548 that had been planned. The goal for 2001 is 1,239 visits, while the six-year program includes inspection of 15,800 industrial and service water use permits and 234 wastewater discharge permits, all of them corresponding to organizations operating in cities with populations of 50,000 or more. Given the importance to national security of protecting the country's ecosystems, this responsibility is now covered by the "law and order" group of cabinet ministers (*Gabinete de Orden y Respeto*); in particular, there is a specific plan of action to combat illegal deforestation under the auspices of the Forests and Water Campaign.

In this context, a new form of collaborative action was undertaken by the Sedena, the Ministry of the Marine, the Ministry of Public Security, and the Office of the Attorney General of the Republic (*Procuraduría General de la República*) to break up organizations involved in illicit natural resource exploitation. Moreover, significant coordination arrangements were established with the ministries of health, agriculture, tourism, labor and social welfare, and agrarian reform. The coverage of environmental compliance and enforcement activities was expanded by bringing local stakeholders into the process and establishing or strengthening cooperation mechanisms. In particular, collaborative work was done under coordination or cooperation agreements with local governments and authorities in the states of Mexico, Campeche, Chiapas, Durango, Baja California Sur, Puebla, Tlaxcala, Aguascalientes, Michoacán and Quintana Roo as well as Mexico City.

To address the crucial priority of preserving the country's biological wealth and containing environmental degradation, the inspection and enforcement of forest, marine and wildlife resources was stepped up. Enforcement activities were also enhanced for the ZFMT and in regard to environmental impact, as well as for industrial and service activities under federal jurisdiction.

These actions led to heightened legal compliance by pollution sources. Likewise, stricter enforcement of the environmental laws resulted in a larger number of criminal charges being laid for improper use of forest and wildlife resources, damage to coral reefs, environmental impacts caused by industrial facilities, and improper management of biological/infectious waste.

Various actions aiming to improve the enforcement of natural resource law called for furthering the empowerment of civil society to participate in law enforcement activities, strengthening coordination between the federal government and other orders of government, and modernizing inspection and enforcement methods through the development of intelligence systems to combat environmental crime.



Under the aegis of the Forests and Water Campaign, steps were taken to improve forestry inspection and enforcement. These include operations carried out in critical forest zones such as the Monarch Butterfly Biosphere Reserve, the Ocuilán and Cahuacán zone in the state of Mexico, and Zoquiapan National Park in the Izta-Popo region of the states of Mexico and Puebla.

A total of 654 operations were carried out. Inspection and enforcement actions in critical forestry areas proved more effective in preventing, discouraging and punishing illegal deforestation by obtaining timely knowledge of the *modus operandi* of organized bands involved in these practices. Also important was the coordination of inter-institutional efforts involving the Sedena and the Federal Preventive Police (*Policía Federal Preventiva*).

In total, more than 4,800 inspection actions and more than 4,000 monitoring actions took place throughout the country. Among other results, more than 340 alleged offenders were placed in the custody of government prosecutors, and 50,000 cubic meters of timber and 1,000 tons of coal were seized.

Wildlife Inspection and Monitoring

Law enforcement activities included 1,375 inspections and 249 operations; irregularities were detected in 750 cases, resulting in the seizure of 44,780 specimens, 7,700 products and 74,600 subproducts, as well as 739 administrative procedures. With the goal of involving the public in protecting these natural resources, support was provided for the formation of 42 community-monitoring committees.

A total of 3,280 inspections and 43,280 phytosanitary inspections were carried out at ports, airports and borders. The result was to detect 247 cases of forest pests, 6 of which required quarantine measures; that is, had they entered the country, they would have caused serious damage to our forests.

Inspection and Monitoring of Environmental Impact, ZFMT and Environmental Land-use Planning

Four special operations and 2,112 inspection visits were carried out to assess environmental impact and compliance with the ZFMT provisions. There were 12 operations to monitor and verify compliance with environmental land use plans, as a result of which 10 technical reports and corresponding sets of recommendations were issued.

Meanwhile, 16 natural resource contingencies were addressed, representing the sum total of events reported to Profepa.

Inspection and Monitoring of Natural Resources in Protected Natural Areas

Inspection and monitoring actions took place in the 35 priority protected natural areas of the country, covering an area of more than 10 million ha. These are located in 24 states of the republic, particularly in the south and southeast, i.e., Chiapas, Oaxaca, Campeche, Quintana Roo and Veracruz.

There were 522 inspection actions, 1,932 monitoring actions and 188 operations, for a total of 2,642 actions. In particular, 147,644 ha were inspected, with irregularities detected in 86 percent of cases.

As a result of the inspection and monitoring actions, 3,830 m^3 of timber, 36 vehicles, and 41 items of forestry equipment and tools were seized. In the marine protected areas, 68 tons of fish products, 62 vehicles, engines and boats, and 210 nets were seized.

Regarding community participation in crime prevention and detection, 94 community-monitoring committees were formed in protected natural areas.

Inspection and Monitoring of Fisheries and Marine Resources

During the reporting period, 2,150 inspection visits, 5,840 monitoring actions, and 1,415 special inspections were conducted. These actions led to 1,467 administrative procedures and the precautionary seizure of 963 tons of marine products, 521 vehicles and boats, and 2,796 nets and fishing equipment.

The presence of marine turtle excluder devices on trawl nets was certified for the entire shrimping fleet. Our country is now fully compliant with its own laws in this area, but also with the international agreements on protection of these species.

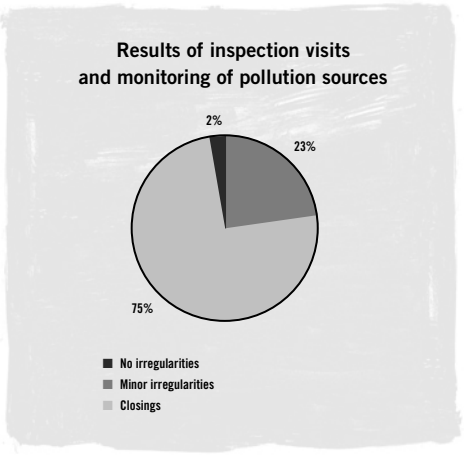
In the same period, 1,708 administrative procedures were resolved, leading to the definitive confiscation of 4,315 tons of marine products, 55 vehicles, motors and boats, and 1,752 nets and other fishing equipment.

Regarding community participation, 12 community-monitoring committees and subcommittees were set up for fisheries and marine areas, enhancing law enforcement support to the authorities for these resources.

Enforcement of Provisions Governing Pollution Sources under Federal Jurisdiction

With the aim of fulfilling its environmental enforcement function, Profepa operated four nationwide programs and a fifth program specific to the ZMVM:

1. Inspection and Monitoring of Sources under Federal Jurisdiction
2. In-Plant New Vehicle Inspection
3. Environmental Compliance Indicators
4. Regional Environmental Control Laboratories
5. Environmental Contingency Response in the ZMVM



Inspection and Monitoring of Sources under Federal Jurisdiction

Through 5,462 visits nationwide, it was determined that 23 percent of inspected companies were in total compliance with the applicable law; 75 percent had committed minor violations, and were sanctioned accordingly. Only 2 percent of the establishments visited were found to be in serious violation, leading to their partial or total closing.

Environmental Compliance Indicators

As backup to the inspection and monitoring visits for pollution sources during the reporting period, the performance of 891 establishments was assessed against the compliance indicators; the result was 33.7 percent fewer establishments were evaluated compared to the previous period.

However, compliance levels increased with respect to the previous period: air pollutant emitters improved from 49.3 to 49.8, hazardous waste generators from 49.7 to 52.9, hazardous waste service providers from 43.0 to 55.3, biological/infectious waste generators from 57.8 to 63.3, high-risk activities from 16.1 to 19.7, and environmental impact from 43.5 to 44.4.

In-Plant New Vehicle Inspection

A total of 144 vehicle or engine families produced or imported by the country's 30 assembly plants were inspected. For 99 of these, air emission and noise control tests were performed, yielding satisfactory results with respect to the maximum allowable limits. For 15 imported vehicle families and 30 imported engines, inspection was limited to verifying the existence of an emissions certificate issued by the authorities in the country of origin.

Regional Environmental Control Laboratories

The national network of laboratories operating in Mexicali (Baja California), Ciudad Juárez (Chihuahua), Guanajuato (Guanajuato), Villahermosa (Tabasco) and Mexico City provided a solid foundation for industrial inspection and monitoring visits, and 1,380 samples were taken during these visits to help assess compliance. These samples gave rise to 8,405 tests, including 225 CRETI (waste with corrosive, reactive, explosive, toxic or ignitable characteristics), 5,910 atomic absorption and 2,270 gas chromatography tests.

Legal Affairs

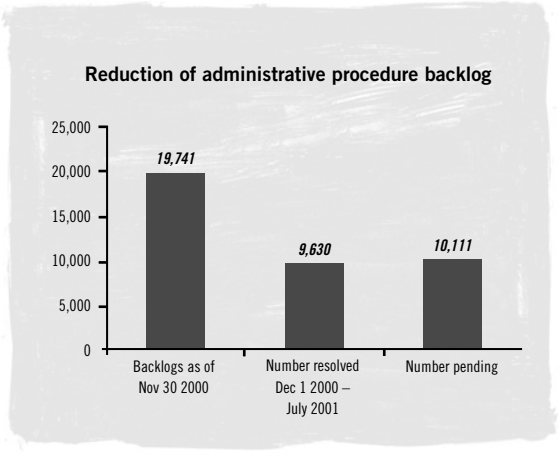
It is important to note the augmented powers given to Profepa through the enactment of the Internal Regulation of the Semarnat, published in the DOF on 4 June 2001. This regulation reorganized and strengthened the agency by bringing the Federal Environmental Offenses and Litigation Branch (*Dirección General de Delitos Ambientales Federales y Litigio*) and the Administrative Procedures and Advisory Branch (*Dirección General de Control de Procedimientos Administrativos y Consulta*) under the newly created Legal Affairs Division (*Subprocuraduría Jurídica*) of Profepa.

Concerning environmental offenses, and in an effort to create a fairer system of environmental criminal liability as well as to define certain environmental offenses as serious, a proposed reform of the Federal Criminal Code (*Código Penal Federal*) and the Federal Code of Criminal Procedure (*Código Federal de Procedimientos Penales*) was drafted. Also drafted was a proposed amendment to the LGEEPA to decentralize inspection and enforcement functions.

Various coordination agreements were signed with the state governments in different areas, to provide for greater cooperation among the three levels of government around environmental protection.

Finally, the Emergency Backlog Reduction Program (*Programa Emergente de Atención al Rezago*—PARE) for the central and state Profepa offices has the objective of reducing the backlog of administrative procedures initiated through the use of the inspection and enforcement powers of this decentralized body. The following results were obtained:

5(1)(f) Promoting environmental audits



In the area of environmental auditing, the accreditation scheme for environmental auditors was made more transparent and more strictly compliant with the Federal Metrology and Standards Law (*Ley Federal de Metrología y Normalización*) and the relevant LGEEPA regulation, thus eliminating certain excessive discretionary powers previously held by the authority.

Environmental Auditing Program

The results of the environmental auditing program from 1992 to 2000, in particular its social and environmental impacts, were assessed. The conclusion is that the transparency of the program's design must be improved and that environmental auditing processes must be governed by a set of standards.

It is hoped that if the program operates in a more transparent manner, it will elicit broader participation from representatives of industrial, commercial and service organizations, municipalities, and organizations involved in exploiting natural resources. The most important objective is to provide structures for

more active and committed participation in environmental protection to small, medium-size and micro-businesses as well as the population neighboring these facilities.

The program provides for public recognition of the performance of organizations possessing a good environmental compliance record, and in particular those that go beyond minimum legal compliance by adopting international standards and good engineering practices.

The program includes promotion of environmental risk assessment and minimization by companies, the creation of a database of environmental emergencies, and the provision of statistical data as well as safety measures for the use, management and transportation of hazardous chemicals.

During the reporting period, the following actions were taken:

- Progress was made on two draft Mexican standards in this area and on the guide to the environmental auditing program, so as to improve the transparency and solidity of this program.
- 108 facilities joined the program, bringing the total to 1,839, of which 1,729 are large and medium-size businesses considered to be high priority due to the risk level of their activities. These companies represent 41.6 percent of the companies registered with Profepa.
- 130 clean industry certificates were issued to organizations showing satisfactory compliance with the commitments arising from their environmental audits; 19.3 percent of the registered companies held this certificate.
- 49 companies renewed their clean industry certificate, indicating their continuing interest in the program and their positive attitude towards environmental protection.
- 156 action plans were signed to address opportunities for improvement detected through environmental audits, representing investments of P$381.4 million. This brings the total investment committed by companies participating in the environmental auditing program to P$13,329 million from 1992 to the present.
- 307 environmental emergencies associated with the management of chemicals were reported and registered. In 195 cases, information was provided on the proper response. In addition, information was provided in response to 41 requests concerning the safe management of chemicals and environmental emergencies, among other aspects.

Despite the following factors, the program's effectiveness was improved during the period:

- Due to the economic conditions during the period, many companies were uncertain as to whether they would join the program.
- The ongoing redesign of the Environmental Auditing Program gave many companies serious concerns about the new guidelines.
- The detection of variable levels of compliance by some certified companies was one of the reasons leading to the decision to strengthen the program and improve its transparency.

■ Article 6—Private Access to Remedies

In coordination with the Ministry of Control and Administrative Development (*Secretaría de Contraloría y Desarrollo Administrativo*), a new agency called the Integrated Service Center (*Centro Integral de Servicios*—CIS) was created. The mission of this center is to improve citizen communication with the environmental authorities so as to facilitate the delivery of services by Semarnat and to expedite the filing of requests, complaints and proposals by members of the public. Channels of communication include telephone lines, printed matter, offices, e-mail and Internet. In coordination with the Environmental Land-use Planning and Environmental Impact Branch (*Dirección General de Ordenamiento Ecológico e Impacto Ambiental*), environmental impact authorizations became the first process to be channeled through the CIS.

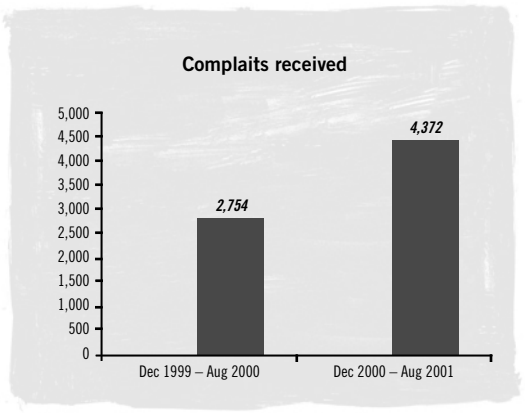
6(3)(c) Request the competent authorities to take appropriate action to enforce that Party's environmental laws and regulations in order to protect the environment or to avoid environmental harm

Special treatment was given to citizen complaints, since citizen participation through this channel is an important means for the authorities to take cognizance of environmental problems and develop strategies for action.

Response to Citizen Complaints on Environmental Matters

Citizen complaints are a means for society to participate directly, in conjunction with the government, in monitoring and conserving natural resources and in improving environmental protection.

To incorporate the efforts, capacity and interest of civil society and its organizations, it was important to establish a national-, state- and municipal-level mechanism for constant, responsible community-monitoring. This made it possible to achieve the following actions and results:



- Complainants were informed of the status of their complaint within the 10-day period prescribed by the LGEEPA.
- The response time for environmental complaints was reduced, and complainants were informed of the results of the authorities' actions.
- The reforms to the internal Regulation of Semarnat included, as a responsibility of Profepa, priority investigation of acts, facts or omissions arising from an environmental complaint.
- Environmental information offices were established to guide the public on environmental matters, and especially to channel a larger number of environmental complaints and facilitate their filing by members of the public. Complaint boxes were also installed at Profepa offices.
- The web-based public information mechanism about Profepa's role in handling environmental complaints was updated, and complaints can now be received through this channel.
- Public interest in filing complaints was fostered by means of broad campaigns to elicit greater citizen participation in responding to environmental problems.
- A national environmental complaint system involving a Profepa toll-free telephone line was set up.

Thanks to the broader range of mechanisms making the complaint process more accessible, 4,372 complaints were received, 1,618 (37 percent) more than the previous year.

Of these, 3,575 complaints (1,725 more than were received in the same period the previous year), 82 percent were resolved while 18 percent are in process. The rate of resolution of these complaints represents an increase of 28.45 percent over the previous year.

■ Article 7—Procedural Guarantees

7(1)(d) Each Party shall ensure that its administrative, quasi-judicial and judicial proceedings are not unnecessarily complicated and do not entail unreasonable charges or time limits or unwarranted delays

The ongoing process of deregulation and streamlining of administrative procedures is designed to eliminate one-fifth of the procedures recorded in the Federal Register of Procedures and Services (*Registro Federal de Trámites y Servicios*) by 2001. By then, it is planned that all procedures registered will have a corresponding form to facilitate their use by individuals and public servants. A biannual regulatory improvement program was created with the fundamental objectives of avoiding the tendency to overregulate in certain areas, rendering the existing legislation more internally consistent, and giving citizens more legal certainty. Taken together or separately, these elements will assist in improving environmental protection.

United States

Country Report on Implementation of the Commitments Derived from the NAAEC.

The Following report was submitted to the CEC Secretariat by the Government of the United States in accordance with NAAEC.

Introduction

The information included in this section of the 2000 Annual Report is intended to highlight certain US activities and developments related to environmental protection for the year 2000. It does not represent the full range of activities undertaken by the US Government in compliance with the NAAEC, nor is it intended to reflect environmental protection efforts at the state, tribal, territory, or local level.

■ Article 2—General Commitments

Art. 2(1)(a) State of the Environment Reports

Below are some highlights of reports that the US federal government prepared and made publicly available on the state of the environment.

- **Climate Change:** In November, President Clinton announced the completion of the First US National Assessment, "Climate Change Impacts on the United States: The Potential Consequences of Climate Variability and Change." The US National Assessment process is mandated by Congress in the Global Change Research Act of 1990. The report is a landmark in the major ongoing effort to understand what climate change means for the US. The Assessment initiated a national process of research, analysis, and dialogue about the coming changes in climate, their impacts, and what Americans can do to adapt to an uncertain and continuously changing climate. Copies of the report are available at: <http://www.gcrio.org/nationalassessment>.
- **Conserving and Enhancing US Waters:** In the latest national inventory of water quality, states, tribes, territories, and interstate commissions report that about 40 percent of the US streams, lakes, and estuaries assessed (about 32 percent of all US waters) were not clean enough to support uses like fishing and swimming. The leading pollutants in impaired waters are sediment, bacteria, nutrients, and metals. Runoff from agricultural lands and urban areas is the primary source of these pollutants and will further increase the need for beach closings. As described in the Clean Water Action Plan, states are working to identify, from among the 2,262 watersheds nationwide, those high priority watersheds for which restoration plans will be developed and actions taken to restore water quality. For 2000, EPA established an ambitious goal of having improvement projects underway in 350, or about 40 percent, of the 889 high-priority water-

sheds identified by states through last year's unified watershed assessments. Funded largely through increased grants to states for implementation of nonpoint source controls, projects are underway in 324 high priority watersheds. This indicates a significant promise of real water quality improvements in impaired watersheds.

- **Mid-Atlantic Integrated Assessment**: In 1989, concurrent with the beginning of the Environmental Monitoring and Assessment Program (EMAP), EPA began the Mid-Atlantic Integrated Assessment to provide integrated environmental assessment information as input into future environmental policy decisions. Ten years of representative regional monitoring provided by EMAP have produced several interim assessment products that decision-makers are already using. These reports include: *An Ecological Assessment of the United States Mid-Atlantic Region: A Landscape Atlas* and *The Condition of the Mid-Atlantic Estuaries*. Copies of the reports are available at: <http://www/epa/gov/maia/html/reports.html>.
- **Great Lakes Basin Ecosystem**: The Great Lakes Basin contains one-fifth of all the world's surface fresh water (210 trillon square meters, enough to cover the entire conterminous United States to a depth of about 3 meters). Environmental data on the health of the basin are indicating some improvement, yet some areas show no sign of recovery. EPA's ability to assess environmental progress and challenges in the Great Lakes Basin was further enhanced in 2000 with the release of 31 reports on proposed comprehensive, basin-wide indicators. Copies of the reports are available at: <http://www.on.ec.gc.ca/solec/indicators2000-e.html>.
- **Report on Atlantic Large Coastal Shark Species:** In 2000, National Oceanic Atmospheric Administration (NOAA) Fisheries Program prepared a report on the status of shark fishery resources in the Atlantic. The report focused on updating commercial and recreational landings, by-catch, and average weights through 1997 and providing estimates of the quantity of Atlantic large coastal sharks harvested by US fishers in 1999. The US commercial shark fishery is primarily a southern coastal fishery extending from North Carolina to Texas. Total commercial landings in 1998 and 1999 exceeded the allowed quotas. This can be attributed to catches in state waters occurring after federal semi-annual season closures.

Art. 2(1)(b) Environmental Emergency Preparedness

Below are some of the highlights on the federal government's work on environmental emergency preparedness.

- **Toxics Release Inventory**: The legislation that creates the Toxics Release Inventory (TRI) is the Emergency Planning Community Right-to-Know Act, which has a goal to provide information on toxic chemicals to the public and other users to facilitate public participation in the sound management of chemicals, including emergency preparedness. The year 2000 brought a number of significant achievements in the Toxics Release Inventory (TRI) Program, which published data on the releases and transfers of toxic chemicals. On 11 May 2000, the Agency released the *1998 TRI Public Data Release Report*, which included data for seven new industry sectors, including electric utilities; metal mining; coal mining; chemical wholesalers; petroleum terminals; solvent recovery; and hazardous waste treatment, storage, and disposal facilities. These sectors accounted for nearly 2,000 new facilities and more than 15,000 chemical reports addressing nearly 2.3 billion kilograms of toxic chemicals, increasing the quantity of chemicals accounted for in the TRI Database by 67 percent. The 1998 TRI data are available on EPA's web site at <http://www.epa.gov/tri>. Trend data for the core set of TRI chemicals and manufacturing sectors (that is, it does not include data from the seven new industry sectors), shows a marked decrease in releases over the past 10 years.
- **West Nile Virus:** EPA addressed the potential threat to the public from mosquito-borne viruses such as the West Nile virus, which can cause encephalitis. The Agency engaged in a broad, preemptive communication strategy to provide information on the risks and benefits of pesticide applications for mosquito control before and during major outbreaks. Communication prod-

ucts were targeted to the public, states, localities, pesticide registrants, formulators, pesticide applicators, other federal agencies, environmental groups, and other interested parties. EPA also ensured that states and localities applied pesticides according to proper application methods to protect the public from pesticide exposure.

- **Monitoring Hazardous Natural Events:** Department of Interior's US Geological Survey (USGS) enhanced its ability to characterize and monitor hazardous events in near-real and real time by using telemetered stream gauges and earthquake sensors that are capable of delivering information almost instantaneously. In 2000, the USGS met its performance goals by increasing the quarterly average number of stream gages readings on the Internet (cumulative) to 4,872 (past the target of 4,700) and the number of real-time earthquake sensors (cumulative) to 291 (target was 200). The long-term goal is to ensure the continued transfer of hazards-related data, risk assessments, and disaster scenarios needed by USGS customers before, during, and after natural disasters.
- **Wildland Fires:** The calendar year 2000 was one of the worse wildland fire seasons in the US on record. Nationally, more than 92,000 fires burned nearly 30 million square meters. It started on New Year's Day and ran deep into the fall, costing $6.1 billion to fight. In the wake of this, Department of Interior and other agencies committed to working with communities that are near public lands in the "urban-wildland interface" in a federal program to reduce the threat to wildfires. Federal government agencies will work with these communities to reduce fuels, restore and rehabilitate areas damaged by the 2000 fires, ensure federal firefighting forces are fully prepared for future wildfire seasons, and enhance local firefighting efforts through the local rural fire districts. In addition, Congress increased the 2001 budgets of federal wildfire fighting agencies by $1.8 billion to fully fund fire preparedness, fire operation, and rural fire assistance efforts.
- **NOAA Responds to Spills:** NOAA responded to calls for assistance for more than 100 spills of oil and chemicals into the Nation's coastal waters. In one incident in Maryland, a pipeline ruptured, releasing about 126,000 gallons of oil into surrounding marshes, Swanson's Creek, and the Patuxent River. NOAA and other natural resource trustees worked with the pipeline owner to assess and restore the damaged natural resources. NOAA and its partners also closed six cases, recovering funds for restoration of spill damaged coastal resources. Included was a large settlement for the 1996 North Cape oil spill off Rhode Island, where over one million lobsters will be restocked and $8 million will be provided to restore other natural resources.

Art.2(1)(c) Environmental Education

The US federal government funds many state, local, and nongovernmental organizations to provide environmental education in a variety of areas. Below are some highlights of environmental education successes from 2000.

- **Education on Air Pollution:** In a program that combines EPA's commitment to accurate, timely environmental information with cutting edge technology, AIRNOW displays the smog levels throughout the day and tracks changes hour by hour. AIRNOW presents the information in easy-to-understand maps. "Real-time" data are available for 35 states and Washington DC. Air pollution forecasts for 135 cities appear in ***USA Today*** and on the Weather Channel. The goals of EPA's AIRNOW web site are to (1) provide real-time air pollution data in an understandable, visual format; (2) provide information about health and environmental effects of air pollution; (3) provide the public with information about ways in which they can protect their health and actions they can take to reduce pollution. More information on this program is available at <http://www.epa.gov/airnow>.
- **Education on Indoor Air Pollutants and Asthma:** In 2000, EPA took action to raise public awareness about the role of triggers of asthma in increasing the severity and frequency of asthma episodes in indoor settings. The action was part of the Childhood Asthma Initiative and focused particularly on children of low-income families. The Ad Council, which provides

advertising campaigns for the public good, selected EPA for a multi-year partnership through which the Council is providing pro bono creative services to help the Agency develop a series of public messages about the relationship between indoor pollutants and asthma.

- **Radon:** EPA met its goal in 2000 to educate the public about the health risks of indoor radon exposure by collaborating with states through the federal radon grants program and working in partnership with nongovernmental organizations such as the National Environmental Health Association and the Consumer Federation of America Foundation. Based on sales of radon mitigation fans, EPA estimates that as a result of various outreach activities some 52,000 residential radon mitigation took place in 2000, meaning that approximately 138,800 more people lived in homes where radon exposure has been reduced than last year.
- **Consumers Information on Drinking Water**: As a result of the new Consumer Confidence Report Rule, for the first time ever approximately 253 million Americans have access to annual consumer confidence reports on the quality and safety of their drinking water. These reports give customers of drinking water systems the information they need to make their own health decisions. More than 100 million Americans are able to read their water quality reports online. Water systems, states, and EPA worked hard to assure compliance with this rule in its first year, providing reports for 99 percent of the population covered by the rule. In May 2000 the Agency also revised the Public Notification Rule to require public water systems to alert consumers within 24 hours if there is a serious problem with their drinking water that might pose a health risk.
- **EPA and CDC Mosquito Control Web Site:** In 2000, EPA and the Centers for Disease Control (CDC) initiated a web site that describes how the two agencies are collaborating in the effort to halt the emergence and spread of infectious diseases via mosquitoes. The web site describes the mosquito life-cycle, mosquito control programs, integrated pest management options and the importance of education in maximizing mosquito control efforts. More information on this program is available at <http://www.epa.gov/pesticides/citizens/mosquitojoint.htm>.
- **Sun Wise School Program:** In 1999, EPA launched the Sun Wise School Program to promote sun safety practices. The program's goal is to protect children from skin cancer, cataracts, and other long-term UV-related health effects. Sun Wise now reaches 10,000 children between the ages of five and 15 in 42 states across the nation. In 2000 EPA set a target that 60 percent of children in Sun Wise schools would be very likely to use Healthy People 2000 "safe sun" practices. EPA has found, however, that an "all of the time" standard is more likely to be associated with greater risk reduction and less disease. Using this revised metric, in 2000 the proportion of Sun Wise children who used sunscreen all of the time was 26 percent; hats, 18 percent; long-sleeve shirts, 23 percent; and sunglasses, 25 percent. The action steps recommended by Sun Wise are provided at <http://www.epa.gov/sunwise/actionsteps>.
- **Parks as Classrooms:** The National Parks Service (NPS) "Parks as Classrooms" program encourages parks to work with local school districts to integrate park themes into multi-disciplinary curriculum and to share those results nationally. In 2000, the NPS funded 57 projects reaching 182,000 students and over 19,700 teachers. Parks have worked with K-12 schools on activities such as: bringing students into the Parks to help with seed collection and restoration projects; developing education modules that tie "Student Stewardship" activities into the K-12 science curriculum; taking students on experiential learning expeditions into the parks; among many other types of projects.
- **Educational Partnerships to Reduce Incidental and Direct Takes of Sea Turtles:** Grade school educators and students are learning about marine biology and living marine resources through a new curriculum in Texas called "Living Classrooms." The cooperative program between the NOAA Fisheries' Galveston Laboratory, the Moody Gardens Aquarium, the Galveston Historical Foundation and the Galveston Independent School District provides interactive teaching between field trips and the classroom. At the Galveston Laboratory, students are given instruction about sea turtle life histories and NOAA's international sea turtle conservation and recovery efforts. During 2000, approximately 12,600 students and adults were given instructional tours and educational materials by the staff at the NOAA Fisheries Galveston Sea Turtle Facil-

ity. More information about the program can be seen at <http://galveston.ssp.nmfs.gov/galv/turtles/brochure/barn.htm>.

- **Sustainable Seas Explores Hawaii and More:** The Sustainable Seas Expeditions (SSE) is a five-year project using advanced undersea technology to explore the marine environment and increase public awareness of marine sanctuaries. In 2000, SSE missions took place at four National Marine Sanctuaries: Hawaiian Islands Humpback Whale, Channel Islands, Monterey Bay, and the Florida Keys, as well as across the West Florida Shelf. Exploration and research activities were tied to education and outreach programs through events in all of the National Marine Sanctuaries.
- **Marine Debris Conference—A Success:** In response to growing concern over the large amount of derelict fishing gear washing ashore on remote beaches and coral reefs, NOAA and its Hawaiian Islands Humpback Whale sanctuary hosted the International Marine Debris Conference in Hawaii. The conference covered policy and legal issues, source identification, impacts of marine debris, industry considerations, and outreach efforts to deal with this unique threat to the marine environment.
- **NOAA Supports Showcase Communities:** NOAA provided technical support to several Brownfields Showcase Communities, including Glen Cove, NY; Providence, RI; and East Palo Alto, CA. These projects demonstrate the positive results of public and private collaboration in addressing brownfield challenges to clean up and reuse of underutilized industrial facilities impacted by environmental contamination.

Art. 2(1)(d) Scientific Research and Technology Development

Numerous government agencies, departments, state programs, and universities are conducting environmental research and developing new technology. Below are some of the highlights of the research and development activities at the federal level. The highlights are broken out into the following areas: Air, Hazardous Waste, Water, Toxic Substances, Pesticides, Land Management, Fisheries and Geological Survey.

Air

- **Air Quality Models:** In 2000, EPA completed key research on an atmospheric model (the Community Multi-scale Air Quality (CMAQ) model, or Models-3/CMAQ), that will allow state, tribal, and local air quality managers to more accurately forecast the benefits of alternative ozone, particulate matter (PM), and regional haze source controls. Models-3/ CMAQ simultaneously looks at ozone, PM, visibility, acid rain, and some toxics, as an aid in evaluating control strategies for one or several ozone precursors. EPA offices and regions are working together to encourage states to use the model for upcoming State implementation plans.
- **Exposure to Air Particulate Matter:** EPA leads research efforts to characterize human exposures to PM and to evaluate the biological mechanisms behind PM's respiratory and cardiovascular effects. PM-related research in FY 2000 included assessments to determine the best means to estimate health outcomes and the susceptibility of sensitive subgroups, including children and senior citizens. A recently completed exposure study indicates that exposure of senior citizens to PM creates health risks. Research in FY 2000 also included the evaluation of the role of various components of PM, such as transition metals, in producing toxicity. EPA is also conducting research to evaluate, improve, and develop control technologies for industrial and commercial sources. Results of these efforts will ensure that the Agency's review of the PM standard is based on the most up-to-date scientific standards available. Additional research focuses on measurements, methods, and models to support the review of the PM standard, including the evaluation of the Models-3/CMAQ for PM, which the states can use to predict which reductions in emissions sources will likely achieve attainment of PM National Ambient Air Quality Standards.

- **Air Toxics Research:** In FY 2000 EPA's air toxics research program developed and demonstrated new methods to assess risks from urban toxics and conducted research to develop integrated control and pollution prevention approaches for source categories (such as utilities, waste combustors, and industrial boilers) that have the greatest adverse effect on urban air quality. Results of this research will support the Agency's efforts to develop strategies to reduce the risks posed by the multitude of hazardous air pollutants present in many urban areas across the United States.

Hazardous Waste

- **Contaminated Wastes**: Research efforts in 2000 were devoted to improving methods for measuring, monitoring, and characterizing complex wastes in soils and groundwater; developing approaches that enable risk assessors to accurately estimate the amount of a contaminant found in a soil matrix; and developing more cost-effective technologies for characterizing and remediating contaminated soils, sediments, and groundwater. Research focused on understanding the fate, transport, and treatment of fuel oxygenates, particularly methyl-tertiary butyl ether, to help improve source control to reduce impacts on drinking water supplies.

Water

- **Evaluation of Chemicals and Microbial Contaminants in Drinking Water:** In 2000 EPA continued to strengthen the scientific basis for drinking water standards by providing improved methods and new data to better evaluate and control the risks associated with exposure to chemical and microbial contaminants in drinking water. To support the Safe Drinking Water Act and its 1996 amendments, EPA's drinking water research program focused on the development of health effects data, analytical tools, and risk assessment methods for disinfectant byproducts (DBPs), waterborne pathogens, and arsenic. The Agency also continued to develop and evaluate cost-effective treatment technologies for removing pathogens from water supplies while minimizing DBP formation, and for maintaining the quality of treated water in the distribution system. Increased emphasis was placed on filling key data gaps and developing methods for chemicals and microbial pathogens on the Contaminant Candidate List.
- **Aquatic Systems:** Research in 2000 evaluated exposures to stressors and their effects on aquatic systems and will improve EPA's understanding of the structure, function, and characteristics of those systems. This research will be used to improve risk assessment methods to develop aquatic life, habitat, and wildlife criteria. EPA is also developing assessment methods and cost-effective management technologies for contaminated sediments, with an emphasis on identifying innovative in situ solutions. Also, in 2000, NOAA completed a synthesis of scientific recommendations for assessing the effects of chemical contaminants in estuaries and marine sediments for three classes of chemical contaminants: polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), and tributyltin (TBT).
- **Toxic Constituents of Wet Weather Flows:** In 2000 EPA continued to develop diagnostic tools to evaluate the exposures to toxic constituents of wet weather flows. The Agency also continued to develop and validate effective watershed management strategies for controlling wet weather flows, especially high-volume, toxic flows. Research was also conducted to develop the effective beach evaluation tools necessary to make timely and informed decisions on beach advisories and closures.

Pesticides and Toxic Substances

- **Asbestos:** A 1999 consumer scare over asbestos-contaminated vermiculite prompted EPA to undertake an analysis of the level of asbestos in vermiculite. Vermiculite is a product whose absorbent properties make it useful in lawn and garden, agriculture, and horticulture products. EPA's analysis found that consumers face only a minimal health risk from using vermiculite products at home or in their gardens. However, because the analysis showed that occupational vermiculite exposure might be higher, EPA provided the analysis to the Occupational Safety and Health Administration (OSHA) for further study.
- **New Methods of Estimating Ecological Risk:** EPA has developed preliminary methods that estimate the magnitude, probability, and certainty of ecological risk. These probabilistic methods have been peer reviewed by the Scientific Advisory Panel, and EPA has started using these new methods in its ecological risk assessments.
- **Ecotoxicity Database:** In 2000, EPA added 500 new ecotoxicity studies to the ecotoxicity database, including wildlife and plant toxicity information for over 630 pesticide active ingredients. The toxicity data is compiled from actual studies submitted by pesticide manufacturers, reviewed by EPA, and judged for acceptability for use in EPA's ecological risk assessment process. The database also contains acceptable studies performed by EPA, USDA, and US Fish and Wildlife Service laboratories.
- **More Precise Estimates for Measuring Pesticide Concentrations:** EPA worked with the US Geological Survey (USGS) to develop advanced models to estimate more precise pesticide concentrations at specific drinking water intakes (point at which water is drawn). These models will allow EPA to tailor its risk management decisions to specific locations and help the program measure exposure to pesticides in drinking water across a large segment of the population.
- **Pesticide Aggregate and Cumulative Risk Model:** This model comes out of a cooperative agreement between EPA and the Hampshire Research Institute (HRI) and will support the development of an aggregate and cumulative risk modeling tool to be made available to the general public. The computer-based modeling tool will allow persons interested in risk assessment to better engage in a discussion of exposure and risks from pesticides in the environment. This effort is geared to more effectively protect public health and the environment through fostering the dissemination of reliable information on risk, and by increasing the public's ability to analyze, understand and make decisions about environmental problems.
- **New Pesticide Multianalyte Methods:** As a result of its collaborative relationship with the pesticide industry, EPA developed 10 new Multianalyte Methods (MAM) to detect certain groups of acetolactate synthase (ALS) inhibitor herbicides in soil and water at limits of quantitations (LOQ) between 2.0 and 0.01 parts per billion.
- **Protocols for Testing the Efficacy of Disinfectants Against HBV:** EPA's Office of Pesticide Programs has developed new guidance regarding a Hepatitis B virus (HBV) testing alternative. As part of EPA's commitment to continue to advance scientific methodologies that will protect the public and also reduce animal testing, EPA has endorsed the *in vitro* (test tube) duck assay as the appropriate and preferred alternative to animal testing. The FIFRA Scientific Advisory Panel has also endorsed and supported this approach. The *in vitro* duck assay uses duck Hepatitis B virus as a surrogate for human Hepatitis B virus. This method maintains the rigorous efficacy testing requirements to ensure public health protection. An additional benefit of this method is the potential for a significant reduction in the use of animals for such testing, while maintaining EPA's high standards for testing accuracy and reliability.

Land Management

- **Pilot Reservoir Monitoring Program:** Working with US Geological Survey (USGS), EPA designed and implemented a pilot reservoir monitoring program that provides monitoring data from raw and finished water in 12 reservoirs throughout the United States. The results of this monitoring study will be made public in 2001.

- **Natural Science Data for Land Management Decisions:** USGS environment and natural resource programs focus on understanding, modeling, and predicting how multiple forces affect natural systems. In 2000, USGS developed or improved six decision support systems that enable land managers, decision makers, and citizens to make sound decisions about how to live on and manage the land. The USGS provided these customers with a better understanding of natural systems at all scales, with more and better predictive tools and decision support systems, and with easier access to natural science data.
- **Coastal Erosion Hazards Evaluated:** To assist managers in making decisions related to coastal erosion, NOAA worked with the Oregon Department of Land Conservation and Development to create computer dune erosion modeling program. In partnership with the Washington (state) Department of Ecology, NOAA enhanced this tool by adding Airborne Topographic Mapping LIDAR data. The resulting science-based, cutting-edge technology product, called the Dune Hazard Assessment Tool, will help coastal managers identify risks from coastal erosion.

Fisheries

- **Monitoring of Bio-toxin Levels in Pacific Northwest Shellfish Stocks:** NOAA Fisheries scientists working in cooperation with the Washington State Department of Fish and Wildlife (WDFW) have greatly improved the state's ability to monitor domoic acid in razor clams (*Siliqua patula*). Because of high domoic acid variability between clams, current sampling protocols have led to false openings and closures on Washington state beaches. As a result, the recreational and commercial fishers lose confidence in the risk management of this resource, leading to poaching and ignoring of closures. In 2000, work was completed on a study describing the variability of domoic acid in Washington state razor clams on Kalaloch Beach. NOAA Fisheries scientists examined the spatial variability of biotoxin levels in razor clams and determined that if the sampling protocol was modified to increase the number of clams tested for domoic acid, fewer problems with false closure/openings would occur.
- **Marine Protected Areas as Supplemental Management Tool for Rebuilding Pacific Groundfish Stocks:** In 2000, current information on the use of marine protected areas (MPAs) in managing California's resources was distributed to a wide audience of managers, conservationists, policy makers, and scientists in proceedings of the symposium "A Continuing Dialogue on No-take Reserves for Resource Management." The proceedings include an introduction to the symposium and eight original papers on an analysis of California's existing MPAs and options for the future; critical considerations for using MPAs to manage fisheries; genetic variability in marine populations; human disturbance and regulatory compliance; and economic and social implications of MPAs. The information from this symposium already is helping to direct future research and managerial decisions regarding protection and conservation of Pacific groundfish resources along the West Coast of the US.
- **Manage Mitchell Act Program for Increased Fishery Benefits and Conservation of Species Listed on the Endangered Species Act (ESA):** Biological Assessments were completed in 2000 on the Mitchell Act hatchery program and water diversion screening program. These assessments include measures to minimize adverse effects on ESA-listed species. Upcoming Biological Opinions will confirm or alter these measures. Program cooperators are now preparing detailed Hatchery and Genetic Management Plans for each hatchery, including performance standards and associated performance indicators, that will guide future hatchery management toward strategies that increase biological and/or public benefits while minimizing biological risks.
- **Ecological Value of Natural and Restored Estuaries Habitats in the Gulf of Mexico:** The following projects related to coastal and marine habitats were completed by NOAA Fisheries in 2000: (1) An approach to refining Essential Fish Habitat (EFH) designations for Gulf of Mexico (GOM) estuaries was developed that coupled analyses of brown shrimp, density data, environmental factors and habitat types in Galveston Bay, Texas, with a geographical information system (GIS), resulting in a more spatially resolved estimate of potential EFH; (2) Studies sup-

porting the design of salt marsh restoration projects in GOM estuaries showed that the value (based on utilization) of a 1-hectare marsh island for commercially-important decapod crustaceans could be increased 4-6 times by replacing 20–26% of the created marsh surface with creeks; and (3) Research on the habitat value of "terracing" (a relatively new wetland-restoration technique using existing bottom sediments to form terraces at marsh elevation), showed that replacing shallow non-vegetated bottoms with terraces will benefit fishery resources.

- **Mandatory Ship Reporting System to Prevent Ship Strikes with Endangered North Atlantic Right Whales:** Under NOAA and US Coast Guard (USCG) lead, the United States developed and submitted to the International Maritime Organization (IMO) a proposal to create Mandatory Ship Reporting (MSR) systems in two locations along the US East Coast to reduce the threat of ship strikes to North Atlantic right whales. The IMO adopted the proposal in late 1998. It is the first and only IMO-endorsed ship reporting system to protect a marine species (most are for human safety.) The MSR requires all commercial ships over 300 tons to report to a shore-based system upon entering designated areas that encompass right whale critical habitat. The ship's report prompts an automated return message that provides information to the mariner about (a) the vulnerability of right whales to ships strikes (the major cause of death in this population); (b) precautions that can be taken to reduce the likelihood of striking a whale; and (c) recent right whale sighting locations. Incoming reports are parsed to a database for later analysis of ship traffic patterns and volume the first such information of its kind. NOAA Fisheries worked with the USCG to develop the satellite-linked communication system and ship-shore-ship messaging systems. All costs are shared between the two agencies. A contract to run the system was awarded by the USCG and, as planned, the system became operational in July 1999.
- **Gulf of Mexico Hypoxia Studies Continue**. NOAA provided support for mapping the hypoxic, or "dead zone" off the Louisiana coast. Each summer, nutrient discharge from the Mississippi River causes a zone of oxygen depleted water to develop off the Louisiana coast in the middle of a critical commercial and recreational fishery. NOAA led its partners in efforts to complete the national plan to reduce, mitigate, and control hypoxia in the Gulf of Mexico.

Geological Survey

- **NOAA and USGS Create New Mapping Product**. NOAA partnered with the US Geological Survey on the NOAA-USGS Bathy/Topo/Shoreline Tampa Bay Demonstration Project. The team developed a bathymetric/topographic digital elevation model (DEM) for the Tampa Bay region. Decision-makers will use this map, along with updated shoreline and other geographic tools, to manage coastal resources and protect property from coastal hazards.

Art. 2(1)(f) Economic Instruments

Completion of Phase I and beginning of Phase II of the US SO_2 Emissions Trading Program (Title IV of the CAAA): The SO_2 Emissions Trading Program sets a cap on total SO_2 emissions from electricity generating sources, then allocates each source a certain number of "allowances" each year. Allowances are the limited authorization to emit SO_2, one allowance is equivalent to one ton of SO_2. The total number of allowances is set by the cap. Allowances can be bought, sold or saved for future use. Sources must have an allowance for each ton of SO_2 emitted during the year. Sources must also continuously measure and report their emissions data using the most accurate technology available. If sources reduce emissions below their allowance level, they can save or sell the surplus allowances, providing an incentive for further reductions. Sources have a variety of compliance options including; installation of control equipment, fuel switching, increasing efficiency, purchasing allowances or a combination of these alternatives. By harnessing market forces, the program has led to significant emissions reductions and cost savings.

Phase I of the SO_2 Emissions Trading Program (1995–1999) resulted in a 50% reduction, over 5 million tons, of SO_2 from the highest-emitting electric utility sources primarily located in the eastern half of the

United States. The Program achieved 100 percent compliance and reductions were achieved on time and were greater than expected. These SO_2 reductions have resulted in measurable environmental improvements. Sulfate deposition levels (an indicator of acid rain) decreased by as much as 25 percent over sensitive ecosystems in the Eastern US. Regional air quality also improved as noted by reductions in ambient sulfate levels. Costs have been dramatically lower than anticipated. Early estimates from 1990 anticipated costs for compliance in 2010 to be over $5 billion dollars, more recent estimates from 1998 anticipate total costs to be less than one billion dollars at full implementation. Beginning in 2000 Phase II of the Program covers all large electricity generating units in the country, over 2,300 units. In the year 2000, all major utility sources reduced emissions of SO_2 by 35 percent from 1980 levels. This is the lowest emission level achieved by the utility sector since the 1970s. By 2010, SO_2 allowances will drop to 8.95 million tons collectively for all sources, representing a reduction of 50 percent from 1980 levels. More information is available at <http://www.epa.gov/airmarkets>.

The efficacy of the SO_2 emissions trading program in both reducing emissions and compliance costs has spurred policy makers to consider using emissions trading for other suitable environmental problems. An emissions trading program, known as the NO_x Budget Program, was established collectively by Northeastern State to help reduce the unhealthful levels of smog during hot summer months. Participating States asked EPA to help administer their NO_x trading program. As a result of the Program, over 260,000 tons of NO_x were reduced during the 2000 ozone season.

Art. 2(3) Measures Prohibiting or Severely Restricting the Use of Pesticides and Toxic Substances

EPA continues to protect the human health, the environment and food safety by reviewing all new and existing chemicals and pesticides. EPA makes a regulatory determination about the safety of each chemical and pesticide, and denies or restricts the use of the chemical or pesticide that does not meet current health or ecological standards. The US informs Canada and Mexico under NAAEC and other international treaties of such restrictions. The following are some of the most significant restrictions that occurred in 2000.

- **Nearly All Household Uses of Dursban Eliminated:** To protect children and public health, EPA and the manufacturer of the pesticide Dursban agreed, on 8 June 2000, to eliminate its use for nearly all household purposes and to move to significantly reduce residues of it on several foods regularly eaten by children. Dursban, also known as chlorpyrifos, is the most widely used household pesticide produced in the US. It is an ingredient used for a broad range of lawn and home insecticide products, for agricultural purposes, and for termite treatment. Under the agreement, production will cease and there will be a phase-out of all home, lawn and garden uses, and the vast termite control uses.
- **EPA Reviews Older Pesticides:** EPA reviewed the safety of 19 pesticide active ingredients found in approximately 2,000 pesticide products on the market and completed 121 tolerance reassessment decisions. Of the 19 pesticides, all uses of one pesticide are being cancelled–ethyl parathion; some uses of six pesticides are being cancelled–terrazole, vinclozolin, fenthion, oxamyl, phorate, propetamphos; and other types of risk mitigation measures were taken for all except mevinphos and fenitrothion. Examples of risk mitigation measures include prohibiting certain application methods, increasing re-entry intervals, requiring protective clothing, and restricting use near bodies of water.

■ Article 3—Levels of Protection

In 2000, the United States proposed and finalized various rules designed to increase levels of environmental protection. Additionally, executive orders were issued addressing specific environmental concerns and the US engaged in international negotiations for similar purposes. The following provides summary information on these and other actions taken by the US to maintain and increase national levels of environmental protection.

Water, Ocean, and Water Ecosystems

- **Estuaries and Clean Waters Act:** On 7 November 2000, President Clinton signed the Estuaries and Clean Waters Act of 2000. This legislation reauthorizes the National Estuary Program, the Chesapeake Bay Program, the Long Island Sound Program, the Clean Lakes Program, and authorizes pilot programs of alternative water sources, a Lake Ponchatrain restoration program and funds for the cleanup of the Tijuana River near San Diego. It establishes a national goal of restoring four million square meters of estuary habitat by 2010 and authorizes a total of $275 million over the next five years for matching funds for local estuary habitat restoration projects. It also establishes an Estuary Habitat Restoration Council that is responsible for developing a National Habitat Restoration Strategy within one year and for reviewing and establishing funding priorities among restoration projects. EPA serves on the Council, which is chaired by the US Army.
- **Oceans Act:** On 8 August 1999, President Clinton signed the Oceans Act of 2000 mandating the establishment of a new high-level "Commission on Ocean Policy" for the purpose of making policy recommendations designed to promote the protection of the United States' oceans and coastal resources. The Oceans Act of 2000 follows up on the President's commitment to work with Congress to establish a commission to address the present and future protection of America's oceans and coastal waters. The Act went into effect on 20 January 2001. The Commission, which will be comprised of 16 members and will include representatives from government, academia, industry, and environmental and scientific communities, will report to both the President and Congress.
- **Protection and Sustainable Use of Marine Resources:** President Clinton signed Executive Order 13158 on Marine Protected Areas to protect the marine environment by "strengthening and expanding the Nation's system of marine protected areas (MPAs)," on 26 May 2000. A Marine Protected Area is defined as "any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein." The Order requires the federal government, with the Department of Commerce and the Department of Interior as the lead agencies, to develop a national system of MPAs in order to identify and protect sensitive marine ecosystems. In response to the Order, the EPA launched a new Clean Water Act regulatory initiative to develop comprehensive regulations to protect sensitive coastal water bodies.
- **Thunder Bay National Marine Sanctuary Designated**: The waters of Lake Huron's Thunder Bay were designated as a National Marine Sanctuary and Underwater Preserve in October 2000. The region contains about 160 shipwrecks that span more than a century of Great Lakes maritime history. This sanctuary is the thirteenth in the network of National Marine Sanctuaries and the first in the Great Lakes.
- **New Effluent Limitations:** In 2000 EPA promulgated four new effluent limitation guidelines for the landfill, commercial hazardous waste combustor, transportation equipment cleaning, and centralized waste treatment industries, which should result in combined pollution reduction benefits of more than 29 million kilograms of pollutants per year. The Agency also proposed a rule to prevent large fish kills at cooling water intakes at new facilities and issued the 2000 Effluent Guidelines Plan, which outlined a new strategy for future regulation. EPA published a final test procedure for cyanide that will help NPDES permit writers set limits and help regulated facilities demonstrate compliance with those limits.

- **Watershed Approach to Federal Land and Resource Management:** The final Unified Federal Policy for a Watershed Approach to Federal Land and Resource Management was published in the *Federal Register* on 18 October 2000. The policy—which was signed by the Environmental Protection Agency; the Departments of Interior, Energy, Agriculture, Defense, and Commerce; the National Oceanic and Atmospheric Administration; the Army Corps of Engineers; and the Tennessee Valley Authority—is intended to provide a framework to enhance watershed management for the protection of water quality and the health of aquatic systems on federal lands through a unified inter-agency watershed approach. The policy is expected to enhance current watershed approaches by improving consistency among federal agency watershed protection programs and by expanding cooperation among federal, tribal, state and local partners. This policy is one of 111 action items in President Clinton's February 1998 Clean Water Action Plan: Restoring and Protecting America's Waters.
- **Bioaccumulative Chemicals:** In November 2000, the EPA published a rule to significantly reduce direct discharges of the most toxic chemicals into the Great Lakes in an effort to protect public health and help restore the Great Lakes. The chemicals, referred to as "bioaccumulative chemicals of concern" (BCCs), include mercury, polychlorinated biphenyls or PCBs, dioxin, chlordane, DDT and mirex. Specifically, the rule prohibits the use of "mixing zones" for BCCs in the Great Lakes System, subject to certain exceptions. (A mixing zone is an area where discharges of toxic chemicals are allowed to mix with receiving waters and dilute). The rule prohibits new discharges of BCCs into mixing zones in the Great Lakes System and phases out the use of existing mixing zones for BCCs in the Great Lakes System over 10 years. EPA expects the rule to reduce mercury from direct water discharges, like outfall pipes, into the Great Lakes by up to 90 percent.
- **Concentrated Animal Feed Operations:** On 15 December 2000, the EPA proposed strict new controls to protect public health and the environment from animal wastes from large, industrial feedlot operations. Over the past twenty years, many smaller, scattered livestock facilities have been consolidated into fewer but much larger feeding operations that result in greater and more concentrated generation of wastes. It is estimated that the 370,000 or so large and small livestock operations that confine animals generate approximately 58 billion kilograms of manure each year. Pollution from livestock is associated with many types of waterborne disease, as well as problems like *Pfiesteria* outbreaks. The new requirements would apply to as many as 39,000 concentrated animal feed operations (CAFOs) nationally. Among the proposed regulations are requirements for CAFOs to restrict the spreading of manure on their land to the amount needed for proper agriculture use, in order to limit runoff of pollutants to waterways. The new controls are deemed an important step in the implementation of the Unified National Strategy for Animal Feeding Operations, issued by the EPA and the US Department of Agriculture in March 1999.
- **Beach Protection Program:** In 2000, EPA and state officials worked to strengthen the voluntary beach protection program to help states and local communities protect their residents from exposure to contaminated waters at their beaches. EPA's internet site posted information provided by state and local officials on 1,981 beaches—35 percent more beaches than last year, and approximately 50 percent more beaches than when the program began in 1997. This information included 150 digitized maps available to the public, meeting EPA's goal for 2000. Approximately 460 beaches (24 percent of the reported beaches) had at least one advisory or closing during the year. Although the number of beaches reported has increased significantly during the past three years, the percentage of beaches with a closing or advisory has remained consistent at approximately 25 percent. Leading causes of impairment included rain leading to storm water runoff which caused elevated bacterial levels.
- **Work Continues on Forecasting Harmful Algal Blooms.** Harmful algal blooms, including "red tides," are toxic growths of phytoplankton and other algae and can kill fish, birds, sea mammals, and even humans. NOAA worked to detect and forecast the occurrence of harmful algal events. NOAA made progress identifying *Pfiesteria's* mechanisms of toxicity and its effects on humans and fish in coastal waters from Delaware to North Carolina.

Wildlife

- **National Wildlife Refuges:** In 2000, Fish and Wildlife Services designated nine new National Wildlife Refuges to increase the total acres protected under the National Wildlife Refuge System to 38 million hectares (an increase of 138,000 hectares). The number of acres designated as Wilderness (lands that are protected in their natural condition) increased by 15,000 hectares. In addition, five new National Monuments were created. In total, federally owned lands under the jurisdiction of the Department of Interior, such as the designations described above, at the end of 2000 increased by approximately 264,000 hectares from 1999.
- **Endangered Species:** The Fish and Wildlife Service improved or stabilized 58 percent, or 309 species out of 532 species listed as endangered or threatened under the Endangered Species Act (ESA). Fish and Wildlife Service approved 19 species for removal from listing under the ESA, exceeding the target of 15 species.

Hazardous Waste

- **Institutional Control of Hazardous Waste:** The EPA issued Institutional Control guidance on 29 September 2000. The Guidance states that institutional controls are "administrative and/or legal controls that minimize the potential for human exposure to contamination by limiting land or resource use." The Guidance is intended to serve as an EPA tool to assist site managers identify and evaluate institutional control options for Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA) sites.
- **Hazardous Waste Cleanup**: As a measure of achieving progress in hazardous waste cleanups, EPA has selected construction completion, the point at which a cleanup remedy is in place. During 2000, 87 Superfund sites reached construction completion, exceeding the Agency's goal of 85 sites, for a total of 757 sites over the life of the program which is on track with the long-term goal of achieving 900 construction completions by the end of 2002. The location and other information about these sites can be found at <http://www.epa.gov/superfund/sites/query>.
- **Corrective Action Program**: Addressing near-term threats, EPA's Corrective Action Program documented that current human exposure to contamination is under control at an additional 191 of the high priority facilities and that migration of contaminated groundwater is under control at an additional 168 facilities. Over the life of the program, EPA and its state partners have documented that current human exposures have been controlled at a total of 642 facilities and that migration of contaminated groundwater has been controlled at a total of 565 facilities. Although cumulative facility totals remain ahead of the long term goals projected for the program in 1998, several sites that had previously been recorded as meeting the environmental indicators in 1999 had their determinations reversed because of new data provided by authorized states. These included 26 sites previously recorded for current human exposures controlled and 43 sites previously recorded for groundwater release controlled. For additional information on the Corrective Action Program accomplishments: <http://www.epa.gov/epaoswer/hazwate/ca/index.htm>.

Air

- **Heavy-Duty Trucks and Diesel Fuel:** On 21 December 2000, the EPA announced a major action to provide the cleanest running heavy-duty trucks and buses in history. The action represents the first-ever comprehensive standards for diesel fuel and heavy-duty trucks and buses and is expected to lead to vehicles that will be 95 percent cleaner than trucks and buses currently on the road. Additionally, this action calls for a 97 percent reduction in the sulfur content of highway diesel fuel from 500 parts per million to 15 parts per million. The fuel provisions will go into effect in 2006. The rule allows for a phase-in approach and provides engine manufacturers with flexibility to meet new standards between 2007 and 2010. Once the program is fully implemented, it is predicted it will reduce 2.4 million metric tons of smog-causing nitrogen

oxide emissions each year. This reduction is expected to result in the prevention of 8,300 premature deaths, 5,500 cases of chronic bronchitis, 17,600 cases of acute bronchitis in children, over 360,000 asthma attacks and more than 386,000 cases of respiratory symptoms in asthmatic children each year. Furthermore, it is anticipated that this action will prevent 1.5 million lost work days, 7,100 hospital admissions and 2,400 emergency room visits for asthma annually.

- **Monitoring Levels of Air Pollutants:** In 2000, as the result of sustained improvements in air quality and the fulfillment of other Clean Air Act (CAA) requirements, 13 additional areas, with a population of 5.2 million people, were found to have improved air quality enough to meet at least one of the standards for the criteria pollutants (some core performance measures for criteria pollutants). Despite this progress in air quality improvement, more than 62 million people still live in counties with monitored pollution levels that do not meet one or more national air quality standards (this number does not consider the 8-hour ozone standard). To address the persistent air pollution problems in those areas, EPA is working with the states, tribes, and local governments on additional strategies and has proposed a program to control regional haze, which is largely caused by particulate matter.

Toxic Emission Performance Requirements: On 21 December 2000, the EPA announced that new toxics emission performance requirements are being set for conventional gasoline and cleaner-burning reformulated gasoline. Under these new requirements, refiners must maintain their average 1998–2000 toxics performance levels, which are better than what regulations require, for benzene, formaldehyde, acetaldehyde, 1,3-butadiene, and particulate organic matter, identified as "toxic air pollutants." All five of these air toxics are known or probable human carcinogens. Levels of air toxics from mobile sources are decreasing as a result of EPA's clean air programs that have produced cleaner cars and cleaner burning gasoline. For example, benzene levels in urban areas decreased nationwide by almost 40 percent between 1993 and 1998. This trend is expected to continue because of more stringent standards for cars and light- and heavy-duty trucks and cleaner diesel fuel. This rule helps to ensure that the positive steps already taken to reduce mobile source air toxics will continue. Because motor vehicles emit a variety of toxic air pollutants, in 2003, EPA will begin to re-evaluate emissions of these pollutants to ensure adequate protection of public health and the environment.

For stationary sources, EPA has also continued to set technology-based standards to reduce toxic air emissions from large industrial sources. In 2000, EPA proposed eight Maximum Achievable Control Technology (MACT) standards covering 12 types of emission sources. The Agency also issued three final MACT standards for four source categories. These rules will reduce an estimated 56,000 metric tons of emissions each year when fully implemented and, combined with all other MACTs standards set thus far, will reduce nearly one million metric tons of emissions each year.

Trade

- **Environmental Review of Trade Agreements:** In an effort to ensure that environmental considerations are taken into account in the trade context, on November 16, 1999, President Clinton signed Executive Order 13141 on Environmental Review of Trade Agreements aimed at reinforcing the United States' commitment to a "policy of careful assessment and consideration of the environmental impacts of trade agreements." The Executive Order calls for environmental reviews of the following types of agreements that the United States may negotiate: comprehensive multilateral trade rounds; bilateral or plurilateral free trade agreements; and major new trade liberalization agreements in natural resource sectors. The United States Trade Representative (USTR) and the Chair of the Council on Environmental Quality (CEQ), in consultation with other appropriate federal agencies, were charged with overseeing the implementation of the order. In December 2000, USTR and the CEQ announced guidelines for implementation of E.O. 13141.

Pesticides and Toxic Substances

- **Pesticides–Acute Dietary Exposure:** On 22 March 2000, EPA published a notice of availability in the Federal Register for a revised science policy that the Agency will use to regulate potential exposures to pesticides resulting from their use on food crops. The policy, titled "Choosing a Percentile of Acute Dietary Exposure as a Threshold of Regulatory Concern," was one of the issues identified by the Tolerance Reassessment Advisory Committee as crucial to implementing tolerance reassessment under the Food Quality Protection Act of 1996. Under the Act, EPA is required to reassess the maximum pesticide residue limits on food. If EPA determines that 99.9 percent of the population are exposed to a pesticide at levels below the dose determined to pose negligible risk, then acute dietary exposure to the pesticide would generally meet EPA's standard of reasonable certainty of no harm. The revised policy explains the Agency's rationale for using the 99.9th percentile as a standard for regulating pesticides based on short-term exposures through food. EPA believes that setting the regulatory standard at the 99.9th percentile of exposure is fully protective for all populations and is supported by the most current scientific information
- **Public Health–Pesticides:** In 2000, the EPA and the Centers for Disease Control and Prevention (CDC) signed a Memorandum of Understanding (MOU) that formalized the process by which the two agencies collaborate on implementing the public health provisions of the Food Quality Protection Act of 1996. The MOU establishes a broad framework and working relationship for coordinating on-going activities between the Agencies. These activities include carrying out particular goals such as developing and implementing programs to improve and facilitate the safe use of methods necessary to combat and control pests of public health concern. The memorandum designates liaisons in both agencies and establishes a process for regular consultation and information sharing. Other goals include ensuring the continued availability of effective minor use public health pesticide products and ensuring that regulatory decisions regarding public health pesticides are based upon sound science and expert consultation.
- **Asbestos**: In 2000 EPA proposed extending the Asbestos Worker Protection Rule issues under the authority of the Toxic Substances Control Act. The proposal is intended to extend protection from the risks associated with asbestos exposure to state and local government workers in 27 states not otherwise covered by Occupational Safety Health Administration (OSHA) asbestos standards, or by OSHA-approved state Worker Protection plans, as well as employees in the automotive brake and clutch repair industry.

■ Article 4—Publications

The Federal Register is the official daily publication for rules, proposed rules, and notices of federal agencies and organizations, as well as Executive Orders and other Presidential Documents. The *Federal Register* is issued by the Government Printing Office and is the publication which all federal agencies use to publish their regulations and legal notices. EPA maintains The *Federal Register Site* which includes the full-text of selected *Federal Register* documents that deal with environmentally-related issues and provides notices from October 1, 1994 through the present. This site can be accessed by going to the following address <http://www.epa.gov/fedrgstr/>.

The National Service Center for Environmental Publications maintains and distributes EPA publications in hardcopy, CD ROM and other multi-media formats. The current publication inventory includes over 7,000 titles. NSCEP also develops and distributes the annual EPA National Publications Catalog. For more information on this service go to <http://www.epa.gov/ncepihom/index/htm> or call (800) 490-9198.

Government agencies, including the EPA, also issue publications on a variety of topics. For example, for each fiscal year (which runs from October through September), EPA issues the "Summary of the EPA's Budget" (also known as the "Budget in Brief") which provides an overview of the Agency's Budget and of

Agency activities as a whole. The Summary is available online for fiscal years going back to 1997 at <http://www.epa.gov/ocfopage/budget/budget.htm>. EPA program offices also frequently issue one-time publications designed to educate citizens on a particular environmental concern. For example, the Office of Pollution Prevention and Toxics issued a publication designed to help citizens concerned about lead, titled "Lead in Your Home: A Parent's Reference Guide." The guide was issued to educate parents and homeowners about lead hazards and lead poisoning prevention in the home and is available on the Internet at <http://www.epa.gov/opptintr/opptpubl.htm>.

■ Article 5—Government Enforcement Action

What's New

In 2000, EPA's performance in its enforcement and compliance program reflected strong progress in achieving the goal of a credible deterrent to pollution. The program relied on traditional measures coupled with new outcome-oriented measures to evaluate progress and document results. Continuing its focus on the most serious health and environmental violations, EPA placed a high priority on correcting violations among major corporations with multiple facilities throughout the United States.

The US Government through EPA and the Department of Justice took a record cumulative total of 6,027 civil judicial, criminal and administrative enforcement actions, requiring parties to pay $2.6 billion in injunctive relief for environmental cleanup, Superfund site remediation, pollution control and cleanup, improved monitoring and additional environmental improvements. Violators were also required to pay $224.6 million in civil and criminal penalties. The combined level of civil and criminal penalties assessed in fiscal year 2000 was the third-largest total in EPA history.

Enforcement actions were taken in response to significant emissions or discharges or toxic or hazardous pollutants. The major pollution reductions realized through civil enforcement included: 410 million kilograms of soil and sediments contaminated with toxics; over 5 million kilograms of chromium, a heavy metal, which can cause neurological illness; over 5.5 million kilograms of fecal coliform, which can cause severe illness from drinking contaminated water; over 53 million kilograms of solvents, which can be carcinogenic and are used in numerous industries; and over 9 million kilograms of PCB wastes. The cases resolved by the criminal enforcement program included those involving the illegal management or release of serious pollutants such as: over 36 million kilograms of lead, which can cause neurological damage and reduce learning in children; 3.4 million kilograms of asbestos, another carcinogen; and over 0.4 million kilograms of ozone-layer depleting CFCs.

Concluded enforcement actions also require changes in facility practices that bring environmental improvements. In 2000, approximately 14 percent of concluded enforcement actions required improvements in the use or handling of pollutants, such as changes in industrial processes or storage and disposal practices to achieve emission and discharge reductions. Approximately another 61 percent required improvements to environmental management systems. Violators were required to spend more than $2.6[1] billion to correct violations, known as "injunctive relief," and take additional steps to protect the environment. Settlement of enforcement cases also produces supplemental environmental projects (SEPs) in which violators perform additional environmentally beneficial projects in exchange for a penalty reduction. In 2000 SEPs totaled $66.8[2] million, with Clean Air Act (CAA) settlements accounting for 60 percent of the total.

1. The money spent by polluters to correct violations includes $1.6 billion from FY2000 cases and $1billion from the Tampa Electric Company (TECO) settlement.
2. The money spent by polluters on SEPs includes $55.8 million from FY 2000 enforcement cases and $11 million from the TECO settlement.

The US Fish and Wildlife Service is responsible for enforcing US regulations and laws to implement international agreements that protect wildlife resources. Its Special Agents are charged with enforcing eleven domestic wildlife protection laws and US laws implementing five international treaties, including the Convention on International Trade in endangered Species (CITES). It also manages migratory bird populations, restores nationally significant fisheries, conserves and restores wildlife habitat, such as wetlands, and helps foreign governments with their conservation efforts.

Actions to conserve and protect our living marine resources are taken by NOAA Fisheries Office for Law Enforcement (OLE). These actions are multi-fold and stretch beyond the physical borders of the United States. In conjunction with the US Coast Guard, the OLE has prosecuted foreign fishing vessels for illegally fishing within the US's Exclusive Economic Zone (EEZ). Protective measures that have been implemented provide protection for our fish stocks, marine mammals, sea turtles and the habitats in which they dwell.

The NOAA Fisheries OLE has now developed an ongoing plan and two pilot programs in cooperation with the NOAA's National Ocean Service (NOS) Sanctuaries Program. The plan developed includes agreements for the OLE to assign agents to conduct enforcement work within the Stellwagen Bank Sanctuary off Cape Cod and in the Monterey Bay Sanctuary in the waters off of Southern California. Basic planning for the program was completed in 1999 and the agents were selected and assigned in early 2000. Enforcement activities combining the use of outreach, education, patrol, and investigations as the primary approaches have been well received by the Sanctuaries Managers and constituents.

Article 5(1)(a) Training Inspectors

EPA provides support to regulatory partners through development of user-friendly guides, reference materials, assisted inspections, and training. To enhance the expertise of state and tribal inspectors, EPA conducted 713 assisted inspections. In addition the Agency conducted 154 training classes or seminars for states, localities, and tribes to improve their ability to identify and reduce noncompliance. EPA also provided 34 states with direct access to the user-friendly on-line targeting and information system, exceeding its target of 21 states. This system provides states with enhanced information about noncompliance patterns.

NOAA Fisheries OLE conducts training sessions for various Federal, tribal and state enforcement agencies and departments. These sessions are conducted in all 23 coastal states, Idaho and US commonwealths and territories. Training covers fishery regulations, Turtle Excluder Devices (TEDs), habitat destruction, Closed Areas for fishing, Endangered Species Act, Marine Mammal Protection Act, marine wildlife standings, illegal wildlife importations, marine resources protection awareness, and many other issues.

Article 5(1)(b) Monitoring Compliance and Investigations

In 2000, EPA conducted 20,123 inspections and 660 intensive civil compliance investigations. The investigations, which are more complex and intensive assessments of a facility's compliance status, are a key component of EPA's strategy to identify and resolve the most serious environmental violations involving significant environmental or public health impact.

Also, EPA put into place several outcome measures that allow the Agency to evaluate the compliance behavior of the regulated community. For example, to assess the Agency's effectiveness in deterring recurrence of significant noncompliance problems, EPA is now establishing a baseline for the percentage of violators with recurring significant violations within two years of returning to compliance. EPA is now also measuring the time taken by significant violators to return to compliance or begin implementing enforceable agreements. (Significant noncompliance is carefully defined for each media program based primarily on criteria of severity and duration.)

The US Fish and Wildlife Service's efforts to combat unlawful commercial exploitation of US resources included investigations of: Hawaiian coral trafficking, interstate sale of oysters from polluted waters, unlawful commercialization of paddlefish and white-tailed deer along the Missouri River, theft of cacti from Federal lands in the southwest, and the killing of bald eagles in the Midwest for the Native American handicraft trade. Also, agents investigated a major steel mill and railroad company for creating environmental hazards that harmed migratory birds and worked on cases involving pesticide abuse, including the deliberate misapplication of Furadan on an Illinois farm where it killed more than 26,000 protected birds.

In 2000, wildlife inspectors stationed at major US ports and border crossings monitored some $1 billion worth of wildlife imports and exports for compliance with wildlife protection laws and treaties. Caviar smuggling, which has been a significant enforcement challenge since new global protections for sturgeon went into effect in 1998, remained a problem. Interceptions of illegal roe occurred at most major ports of entry staffed by the Service, with frequent arrests and seizures in New York, Los Angeles, and Miami, where five "suitcase" smugglers were stopped in one four-day period alone in April 2000.

In 2000, NOAA Fisheries OLE spent over 9,000 man-hours conducting aerial, boat and land-based patrols, while another 89,000 were spent investigating over 3,200 cases. These investigations primarily fall under the jurisdiction of five legislative acts: Magnuson-Stevens Fishery Management and Conservation Act, Marine Mammal Protection Act, Endangered Species Act, Lacey Act and Marine Sanctuaries Act.

Article 5(1)(c) Voluntary Compliance

In 2000, the National Compliance Assistance Clearinghouse, a new innovative web site, was launched. Using a network of web links, the Clearinghouse is a single repository of directories to federal, state, local and other compliance assistance providers, their web sites and the products/services they have developed. It provides the most comprehensive source of compliance assistance materials for the compliance assistance community.

EPA's 10th Compliance Assistance Center was established to help improve environmental compliance by federal agencies. The centers offer interactive web sites, telephone assistance lines, document fax-back systems and e-mail discussion groups. In FY 2000, the centers were used over 400,000 times by regulated entities and the public, a 56 percent increase over FY 1999. Other compliance assistance tools such as hotlines, workshops and guidance materials effectively reached more than 450,000 regulated entities, a 36 percent increase over the number reached in FY 1999. EPA targets compliance assistance activities to regulated facilities, states, trade associations, compliance assistance providers, the public, universities, and nonprofit organizations.

The Fish and Wildlife Service emphasized partnerships with industry and public outreach to promote voluntary compliance with wildlife protection laws. Special agents worked with oil and gas companies and electric utilities to reduce migratory bird mortality associated with their activities. When oil producers in Arkansas, Oklahoma, Texas, New Mexico, Wyoming, and North Dakota were notified concerning problems at their facilities, most completed the necessary remedial action needed to remove threats to birds. Agents presented seminars on bird protection laws and techniques for preventing avian electrocutions to electric power industry groups in New Mexico, Alaska, South Carolina, Colorado, and Quebec province and teamed with a number of utilities to produce an award-winning video promoting "bird friendly" electric power distribution. They secured corrective measures from utilities in Washington, New Mexico, Arizona, and California, where the state's major power supplier agreed to increase efforts to retrofit power lines responsible for electrocuting migratory birds.

The Service was also successful in educating airline officials and Asian food markets in the New York City area about the dangers of importing live mitten crabs (an injurious species). While shipments containing thousands of crabs had been intercepted in the fall of 1999, Service inspection alerts from September through December 2000 uncovered no violations during the "season" for trade in this ecologically harmful Chinese delicacy.

While many interactions with marine resource violators result in penalties, fines and jail time, agents and officers of NOAA Fisheries OLE have numerous other tools available to deter crime, educate the public and enforce the laws. Through the Community Oriented Policing and Problem Solving (COPPS) philosophy the OLE has developed six components (programs) which it them to deal with situations and activities through a variety of means. These six components include: Community Outreach, Fix-It Notice program, ProAction NOAA Fisheries Enforcement Hotline, Recognition and Awards, and Community Relations Team (CRT). In FY 2000, OLE spent over 5,000 man-hours on Voluntary Compliance Program issues and an undeterminable amount of hours on other COPPS related issues.

Article 5(1)(f) Promotion of Environmental Audits

EPA has two significant incentives policies pertaining to audits that are designed to address different groups of the regulated community—the Audit Policy/Self-Policing Policy and the Small Business Policy. It has continued to successfully use its several incentive programs to encourage industries to self-audit their facilities and correct violations. These policies provide incentives for regulated facilities to detect, disclose, and correct environmental violations and they produce excellent results. In FY 2000, 430 companies disclosed potential violations at nearly 2,200 facilities under EPA's Audit Policy, a sizeable increase over last year's results of 260 companies disclosures at 989 facilities. The Agency continues to expand the use of its voluntary self disclosure policies, working cooperative with multi-facility corporations and whole industry sectors to use the policy to correct and disclose violations.

The Small Business Compliance Policy provides penalty waivers to small businesses that, following the policy's criteria, voluntarily discover, disclose, and correct a violation. FY 2000 modifications to the policy expanded the situations in which a business could use this tool to include any voluntarily discovered violations, not merely violations discovered as a result of on-site compliance assistance or audits. The updated policy also extends the disclosure period from ten to 21 days, allowing small businesses more time to consider the policy, resolve any questions, and prepare their disclosure letters.

Article 5(1)(h) Encouraging Mediation and Arbitration Services

EPA strongly supports the use of alternative dispute resolution (ADR) to deal with disputes and potential conflicts. EPA uses the definition of ADR in the Administrative Dispute Resolution Act of 1996: "any procedure that is used to resolve issues in controversy, including but not limited to, conciliation, facilitation, mediation, fact finding, minitrials, arbitration, and use of ombuds, or any combination thereof" (5 U.S.C. § 571(3)). All these ADR techniques involve a neutral third party, a person who assists others in designing and conducting a process for reaching agreement, if possible. The neutral third party has no stake in the substantive outcome of the process. Depending on the circumstances of a particular dispute, neutral third parties may be Agency employees or may come from outside EPA. Typically, all aspects of ADR are voluntary, including the decision to participate, the type of process used, and the content of any final agreement.

EPA encourages the use of ADR techniques to prevent and resolve disputes with external parties (e.g., state agencies, industry, environmental advocacy groups) in many contexts, including adjudications, rulemaking, policy development, administrative and civil judicial enforcement actions, permit issuance, protests of contract awards, administration of contracts and grants, stakeholder involvement, negotiations, and litigation. In addition, EPA encourages the use of ADR techniques to prevent and resolve internal disputes such as workplace grievances and equal opportunity employment complaints, and to improve labor-management partnerships. Information on the current accomplishments for EPA's ADR program are available at <http://www.epa.gov/adr/adrrept.pdf>.

Article 5(1)(j) and 5(3) Judicial, Quasi-Judicial or Administrative Proceedings to Seek Appropriate Sanctions or Remedies

In FY 2000, EPA took a total of 5,791 civil judicial and administrative enforcement actions, the highest number taken in the past 10 years. A record 1,763 administrative complaints and 3,660 administrative compliance orders and field citations were issued, almost double the number issued in FY 1999. More than 1,700 of the administrative orders were issued to local water suppliers to ensure that they provided reports to their consumers on the quality of their drinking water, a major "public right to know" requirement of the 1996 amendments to the Safe Drinking Water Act. EPA also took 32 enforcement actions against federal agencies in FY 2000, involving violations of the Clear Air Act, Clean Water Act, Resource Conservation and Recovery Act, and the Safe Drinking Water Act.

The criminal enforcement program, used for those who violate the law knowingly or willfully, initiated 477 cases, referred 236 cases to the US Department of Justice, and resulted in criminal charges against 360 defendants. The federal courts imposed 146 years of criminal sentences in FY 2000. The courts also assessed $122 million in criminal fines, the second highest in the history of the program and almost double the FY 1999 total of $61.6 million.

As a result of the settlement agreement between EPA and Willamette Industries, the release of approximately 27,000 tons of pollutants to the air will be prevented per year. The agreement covers 13 facilities in four states for violations of Clean Air Act (CAA) provisions designed to ensure that air quality does not deteriorate in areas that have been previously deemed to have clean air. The company will pay the largest CAA civil penalty ever assessed for factory emissions of air pollution—$11.2 million—which will be shared with EPA and three states (Arkansas, Louisiana and South Carolina) joining EPA in the action.

Koch Industries, a petroleum refining firm, agreed to pay a record fine of $30 million to improve its leak-prevention programs and spend $5 million on environmental projects for very serious violations of the Clean Water Act stemming from more than 300 oil spills in six states. Texas joined the US in suing Koch Industries, and the landmark penalty will be divided equally between Texas and the federal government.

A US Fish and Wildlife Service investigation of caviar trafficking that involved both US and Russian roe resulted in an American caviar company being fined $10.4 million (the largest ever in a US wildlife trafficking case) and a 41-month prison sentence for the company's former president. A multi-year probe of two companies that smuggled more than 300 high-value shahtoosh shawls, which are made from the hair of the protected Tibetan antelope, marked the first criminal prosecution in the United States for profiteering in this contraband fashion item. Service agents teamed with Canadian counterparts to expose a complex African finch smuggling scheme undertaken by an Ontario aviary; the case secured landmark penalties against the company's owners in both countries, including the first prison sentence ever assessed under the Wild Bird Conservation Act.

Additional Information: Each year the EPA issues a report providing specific and summary information on EPA achievements in enforcement and compliance assurance in the areas of policy development and implementation by headquarters and regional offices. The 2000 report, "Enforcement and Compliance Assurance Accomplishments Report for Fiscal Year 2000," can be obtained from the National Center for Environmental Publications and Information at (800) 490-9198 or on the Internet at <http://www.epa.gov/oeca/>.

■ Article 6—Private Access to Remedies

Article 6(2) provides that Parties "shall ensure that persons with a legally recognized interest under its law in a particular matter have appropriate access to administrative, quasi-judicial or judicial proceedings for the enforcement of the Party's environmental laws and regulations."

Many US federal environmental laws include provisions that allow members of the public to initiate a lawsuit in federal court against the government or private parties that violate federal environmental laws and regulations. Such lawsuits are referred to as citizen suits. In order to bring a citizen suit, however, a plaintiff must have a legally recognized interest in the matter ("standing" pursuant to Article III of the US Constitution). In January 2000, the US Supreme Court reviewed the issue of "standing" in the context of a citizen suit brought under the Clean Water Act. The opinion is of general interest and importance for its ruling on the question of standing to bring a citizen suit.

In a 7-2 decision, the Court held that: (1) groups had standing to bring citizen suits seeking both injunctive relief and civil penalties, and (2) a suit was not automatically rendered moot because a defendant came into compliance with the law after a suit is filed. Friends of the Earth v. Laidlaw Environmental Services, Inc. 528 US 167 (2000).

The first issue addressed by the Court was whether citizens have standing to file suit seeking penalties against an alleged violator of the CWA, even though the plaintiffs would not receive any direct benefit if penalties were imposed, since payment of penalties would be made to the US Treasury, not the plaintiffs. The Court ruled that the plaintiffs did have standing, explaining that payment of civil penalties to the government for CWA violations satisfies the standing requirement of Article III of the US Constitution. The Court explained that "[h]ere, the civil penalties sought by [the plaintiffs] carried with them a deterrent effect that made it likely, as opposed to merely speculative, that the penalties would redress [the plaintiffs'] injuries by abating current violations and preventing future ones." (Id. at 187)

The second issue involved whether defendant's post-complaint compliance with the CWA rendered plaintiffs' action moot. The Court reversed the lower court's ruling and held that defendant's compliance with the CWA after the complaint was filed did not moot the plaintiffs' claims for civil penalties.

2000 Financial Review

2000 Audited Financial Statements

Financial statements of

COMMISSION FOR ENVIRONMENTAL COOPERATION

December 31, 2000

COMMISSION FOR ENVIRONMENTAL COOPERATION

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Auditors' report

To the Council of the
Commission for Environmental Cooperation

We have audited the balance sheet of the Commission for Environmental Cooperation as at December 31, 2000 and the statements of revenue and expenditures, capital and cash flows for the year then ended. These financial statements are the responsibility of the Commission's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation.

In our opinion, these financial statements present fairly, in all material respects, the financial position of the Commission as at December 31, 2000 and the results of its operations and its cash flows for the year then ended in accordance with Canadian generally accepted accounting principles.

Samson Bélair
Deloitte & Touche

Chartered Accountants

March 30, 2001

COMMISSION FOR ENVIRONMENTAL COOPERATION

Statement of revenue and expenditures

year ended December 31, 2000
(in Canadian dollars)

	2000	1999
	$	$
Revenue		
Contribution - Canada	**4,431,000**	4,445,000
Contribution - Mexico	**4,431,000**	4,445,000
Contribution - United States	**4,431,000**	4,445,000
Other revenue	**179,571**	128,124
	13,472,571	13,463,124
Expenditures		
Expenses related to work program - Schedule	**2,339,411**	2,490,380
Expenses related to specific obligations - Schedule	**518,196**	743,630
Expenses related to the Council meetings - Schedule	**241,004**	288,050
Expenses related to the JPAC - Schedule	**230,140**	234,509
Expenses related to the Directorate operations	**285,677**	234,589
Expenses related to North American Fund for Environmental Cooperation	**149,823**	158,509
Public outreach	**417,607**	522,218
Salaries and fringe benefits		
Program related	**2,847,177**	2,828,453
Departmental operations	**842,590**	613,598
Relocation and orientation expenses	**122,569**	92,559
Office expenses	**116,148**	164,218
Telecommunications	**86,251**	86,248
Rent, utilities and office maintenance	**445,722**	410,814
External administrative support	**243,010**	268,917
Operating equipment	**140,803**	126,452
Expenditures related to contingency fund	**110,353**	13,761
(Gain) loss on foreign exchange	**(29,945)**	149,473
	9,106,536	9,426,378
Excess of revenue over expenditures (balance carried forward)	**4,366,035**	4,036,746

COMMISSION FOR ENVIRONMENTAL COOPERATION

Statement of revenue and expenditures (cont'd)

year ended December 31, 2000
(in Canadian dollars)

	2000	1999
	$	$
Excess of revenue over expenditures (balance carried forward)	**4,366,035**	4,036,746
Contributions transferred to the following year budget (Notes 2(a) and 5)	**(3,078,586)**	(2,272,106)
Contributions from prior year	**2,272,106**	2,889,000
Expenditures related to prior year commitments - Schedule	**(2,083,547)**	(2,204,762)
Excess of revenue over expenditures before the following items	**1,476,008**	2,448,878
Amortization of capital assets	**(109,517)**	(194,877)
Grants disbursed	**(1,230,418)**	(1,724,739)
Excess of revenue over expenditures	**136,073**	529,262

COMMISSION FOR ENVIRONMENTAL COOPERATION

Statement of capital

year ended December 31, 2000
(in Canadian dollars)

	Invested in capital assets	Restricted for North American Fund for Environmental Cooperation	Restricted for currency fluctuation	Unrestricted	Total	
					2000	1999
	$	**$**	**$**	**$**	**$**	$
Balance, beginning of year	**268,719**	**1,012,778**	**-**	**(627,101)**	**654,396**	125,134
Excess of revenue over expenditures	**(109,517)**	**(1,230,418)**	**-**	**1,476,008**	**136,073**	529,262
Transfer	**-**	**590,000**	**353,000**	**(943,000)**	**-**	-
Investment in capital assets	**72,184**	**-**	**-**	**(72,184)**	**-**	-
Balance, end of year	**231,386**	**372,360**	**353,000**	**(166,277)**	**790,469**	654,396

COMMISSION FOR ENVIRONMENTAL COOPERATION

Balance sheet

as at December 31, 2000
(in Canadian dollars)

	2000	1999
	$	$
Assets		
Current assets		
Cash and term deposits	**3,383,312**	2,792,939
Goods and services tax (Note 3)	**1,523,860**	1,275,932
Other assets	**109,741**	186,713
	5,016,913	4,255,584
Capital assets (Note 4)	**231,386**	268,719
	5,248,299	4,524,303
Liabilities		
Current liabilities		
Accounts payable and accrued liabilities	**405,820**	427,722
Leasehold inducements	**973,424**	1,170,079
Deferred contributions (Note 5)	**3,078,586**	2,272,106
	4,457,830	3,869,907
Capital		
Invested in capital assets	**231,386**	268,719
Restricted for North American Fund for Environmental Cooperation	**372,360**	1,012,778
Restricted for currency fluctuation	**353,000**	-
Unrestricted	**(166,277)**	(627,101)
	790,469	654,396
	5,248,299	4,524,303

COMMISSION FOR ENVIRONMENTAL COOPERATION

Statement of cash flows

year ended December 31, 2000
(in Canadian dollars)

	2000	1999
	$	$
Operating activities		
Excess of revenue over expenditures	**136,073**	529,262
Items not affecting cash and cash equivalents		
Amortization of capital assets	**109,517**	194,877
Amortization of leasehold inducements	**(196,655)**	(174,272)
Contributions transferred to the following year budget	**3,078,586**	2,272,106
Contributions from prior year	**(2,272,106)**	(2,889,000)
	855,415	(67,027)
Changes in non-cash operating working capital items (Note 6)	**(192,858)**	365,598
	662,557	298,571
Investing activities		
Acquisition of capital assets	**(72,184)**	(74,406)
Net cash inflow	**590,373**	224,165
Cash and cash equivalents, beginning of year	**2,792,939**	2,568,774
Cash and cash equivalents, end of year	**3,383,312**	2,792,939

1. Nature of activities

The Commission for Environmental Cooperation is an international organization that was created by the North American Agreement on Environmental Cooperation for the purpose of meeting NAFTA's environmental provisions. The Commission became operational in July 1994.

2. Significant accounting policies

The financial statements are presented in accordance with Canadian generally accepted accounting principles including the following significant accounting policies.

a) Contributions

The Government of Canada, the Government of the United Mexican States and the Government of the United States of America (the Parties) contribute to the Commission's annual budget by mutual agreement.

Funds contributed remain available for three months following the end of the financial year to discharge related obligations incurred during the year.

Any surplus funds in excess of 5% of the budget are credited to the Parties by an adjustment of the assessments for the subsequent financial year.

b) Capital assets

Capital assets are recorded at cost and are being amortized on a straight-line basis at the following annual rates:

Computer equipment	20%
Computer equipment and software - projects	30%
Computer software	30%
Furniture and fixtures	20%
Telephone system	30%
Equipment	30%
Leasehold improvements	12%

c) Foreign currencies

Transactions conducted in foreign currencies are translated using the temporal method. Exchange gains and losses are included in the results for the period.

2. Significant accounting policies (continued)

d) Leasehold inducements

Leasehold inducements relate to the rental of office space by the commission. These inducements, which are amortized over the term of the lease, are offset against rent expenses.

3. Goods and Services Tax

These receivables relate to QST, GST and HST receivable. Given the international status of the Commission, special agreements must be signed between the Federal and Québec governments and the Commission before the goods and services taxes paid on purchases are reimbursed. An agreement with the Federal government was signed in June 1997 and published in the *Canada Gazette* on September 23, 1997, establishing the right to reimbursement of GST and HST taxes from September 1997 onward. Furthermore, under a remission order published in the *Canada Gazette* of August 18, 1999, the Commission is entitled to receive a remission of tax for the period from September 1994 to September 1997. No agreement has yet been signed between the Commission and the Québec government regarding QST. Management is of the opinion that this amount will be recovered.

4. Capital assets

	2000			1999
	Cost	Accumulated Amortization	Net Book Value	Net Book Value
	$	$	$	$
Computer equipment	**440,833**	**289,070**	**151,763**	143,395
Computer software	**147,514**	**138,814**	**8,700**	44,709
Furniture and fixtures	**367,030**	**363,696**	**3,334**	11,715
Telephone system	**120,088**	**113,938**	**6,150**	12,781
Equipment	**140,424**	**136,275**	**4,149**	9,130
Leasehold improvements	**95,747**	**38,457**	**57,290**	46,989
	1,311,636	**1,080,250**	**231,386**	268,719

5. Deferred contributions

For the 2000 financial year, contributions available to discharge related obligations during 2001 amount to $3,078,586 (1999 - $2,272,106). These contributions are presented as deferred contributions in the balance sheet.

6. Changes in non-cash operating working capital items

	2000	1999
	$	$
Goods and services tax	**(247,928)**	684,086
Other assets	**76,972**	(5,905)
Accounts payable and accrued liabilities	**(21,902)**	(312,583)
	(192,858)	365,598

7. Commitments

a) The Commission leases premises under an operating lease which expires in November 2004. Total minimum payments required in future years, are as follows:

	$
2001	**464,413**
2002	**511,009**
2003	**557,606**
2004	**546,733**
	2,079,761

The Commission has the option to cancel the lease upon payment of a penalty that ranges from $573,000 to $244,000 over the years 2001 to 2003.

b) The Commission has commitments of $2,835,930 related to environmental projects and of $242,656 related to administration and support, for a total of $3,078,586.

c) The Commission has commitments for equipment and furniture leases which expire on or before March 2003. Total payments required in future years are as follows:

	$
2001	**111,696**
2002	**42,292**
2003	**4,718**
	158,706

8. Comparative figures

Certain of the comparative figures have been reclassified in order to conform to the current year's presentation.

COMMISSION FOR ENVIRONMENTAL COOPERATION

Schedule

Expenses related to the work program, specific obligations under North American Agreement, Council meetings, Joint Public Advisory Committee (JPAC) meetings, and prior year commitments

year ended December 31, 2000
(in Canadian dollars)

	2000	1999
	$	$
Work program		
Professional fees	**1,184,436**	1,420,533
Travel, accommodation and meeting expenses	**825,927**	711,621
Translation and interpretation	**219,385**	206,723
Office expenses	**109,663**	151,503
	2,339,411	2,490,380
Specific obligations under North American Agreement on Environmental Cooperation		
Professional fees	**226,676**	178,395
Travel, accommodation and meeting expenses	**34,552**	95,440
Translation and interpretation	**79,327**	132,843
Publication	**76,386**	114,128
Office expenses	**101,255**	222,824
	518,196	743,630
Council meetings		
Translation and interpretation	**60,426**	124,548
Travel, accommodation and meeting expenses	**147,254**	119,984
Office expenses	**28,934**	25,591
Professional fees	**4,390**	17,927
	241,004	288,050

COMMISSION FOR ENVIRONMENTAL COOPERATION

Schedule

Expenses related to the work program, specific obligations under North American Agreement, Council meetings, Joint Public Advisory Committee (JPAC) meetings, and prior year commitments (cont'd)

year ended December 31, 2000
(in Canadian dollars)

	2000	1999
	$	$
Joint Public Advisory Committee (JPAC) meetings		
Travel, accommodation and meeting expenses	**142,867**	112,941
Translation and interpretation	**42,182**	59,105
Professional fees	**33,924**	37,683
Office expenses	**11,167**	24,780
	230,140	234,509
Expenditures related to prior year commitments		
Expenditures related to project commitments		
Professional fees	**1,124,811**	1,434,543
Travel, accommodation and meeting expenses	**67,836**	68,498
Translation and interpretation	**120,644**	49,449
Publications and communications	**66,724**	30,015
Office expenses	**6,102**	-
	1,386,117	1,582,505
Expenditures not related to project commitments	**697,430**	622,257
	2,083,547	2,204,762

Looking Ahead

IV

2001 Annual Program and Budget Overview

Program

This item includes:

- project costs, including costs of publications (please note that the apparent decreases in the Environment, Economy and Trade program area reflect the re-location of the Trade in Wildlife Species project into the Conservation of Biodiversity program area);
- salaries of staff whose activity relates directly to projects, Council, JPAC and Executive Management;
- NAFEC—including management costs as well as funds for grants of up to $100,000 and funds for projects not exceeding $10,000;
- specific obligations under NAAEC;
- a portion of rent (85 percent);
- costs of Council Sessions, JPAC meetings and public meetings;
- telecommunication costs; and
- executive management, including costs for the Mexico liaison office.

Administration and support

These items support the Commission as a whole and include Administration and Accounting, Public Outreach, the remaining part of rent (15 percent), external administrative support, relocation expenses for staff, office equipment and supplies, and operating equipment that include the payments for ongoing equipment leases.

Contingency Fund

Set aside for unforeseen costs.

2001 Project Budget Summary

Projects		Budget (C$)
I—Environment, Economy and Trade		
1.1.1	Emerging Environmental Trends in North America	167,000
1.1.2	Assessing Environment and Trade Relationships	185,000
1.2.1	Supporting Biodiversity Conservation through Green Goods and Services: Shade Coffee, the Chamaedorea Palm and Sustainable Tourism	270,000
1.2.2	Market and Financial Mechanisms in Support of the Environment	128,000
II—Conservation of Biodiversity		
2.1.1	Strategic and Cooperative Action for the Conservation of Biodiversity in North America	220,000
2.1.2	North American Bird Conservation Initiative	245,000
2.1.3	Species of Common Conservation Concern	100,000
2.1.4	Mapping Marine and Estuarine Ecosystems of North America	115,000
2.1.5	North American Marine Protected Areas Network	138,000
2.1.6	Global Programme of Action for the Protection of the Marine Environment from Land-based Activities in North America	80,000
2.1.7	Closing the Pathways of Aquatic Invasive Species across North America	80,000
2.1.8	North American Biodiversity Information Network	197,000
III—Pollutants and Health		
3.1.1	Facilitating Trinational Coordination in Air Quality Management	241,000
3.1.2	Developing Technical and Strategic Tools for Improved Air Quality in North America	142,000
3.1.3	Trinational Air Quality Improvement Initiative: North American Trade and Transportation Corridors	95,000
3.2.1	Sound Management of Chemicals	917,000
3.3.1	North American Pollutant Release and Transfer Register	419,000
3.4.1	Capacity Building for Pollution Prevention	115,000
3.4.2	Children's Health and the Environment in North America	153,000
IV—Law and Policy		
4.1.1	Cooperative Report on Environmental Standards	70,000
4.2.1	North American Regional Enforcement Forum	108,000
4.2.2	Enforcement and Compliance Capacity building	223,000
4.2.3	Enforcement/Compliance Reporting	60,000
4.2.4	Environmental Management Systems to Promote Compliance and Environmental Performance	85,000

Budget Summary for 2001

Programs		Budget (C$)
1–4. Program		**4,553,000**
1. Environment, Economy and Trade		750,000
2. Conservation of Biodiversity		1,175,000
3. Pollutants and Health		2,082,000
4. Law and Policy		546,000
7. Program support		**6,020,000**
7.1 Salaries		3,685,000
7.2 Telecommunications		89,000
7.3 Rent		617,000
7.4 Operating equipment		148,000
7.5 Office supplies		140,000
7.6 Relocation and orientation		96,000
7.7 Executive Management		350,000
7.7.1 Office of the Executive Director	*140,000*	
7.7.2 Program Directorate	*37,000*	
7.7.3 Communications Directorate	*30,000*	
7.7.4 Mexico Liaison Office	*143,000*	
7.8 Public outreach		436,000
7.9 Planning and evaluation		89,000
7.10 Contingency fund		370,000
7.10.1 Unforeseen needs	*148,000*	
7.10.2 Reserve for reimbursement of Quebec taxes	*74,000*	
7.10.3 Reserve for currency fluctuations	*148,000*	
8. Other initiatives		**2,443,000**
8.1 SOUN		1,022,000
8.2 NAFEC		739,000
8.3 Council		312,000
8.4 JPAC		370,000
Grand total for program related-costs		**13,016,000**
9. Administration and finance		**1,073,000**
9.1 Salaries		637,000
9.2 Telecommunications		12,000
9.3 Rent		84,000
9.4 Operating equipment		15,000
9.5 Office supplies		16,000
9.6 Relocation and orientation		22,000
9.7 External administrative support		287,000
Total Expenses		**14,089,000**

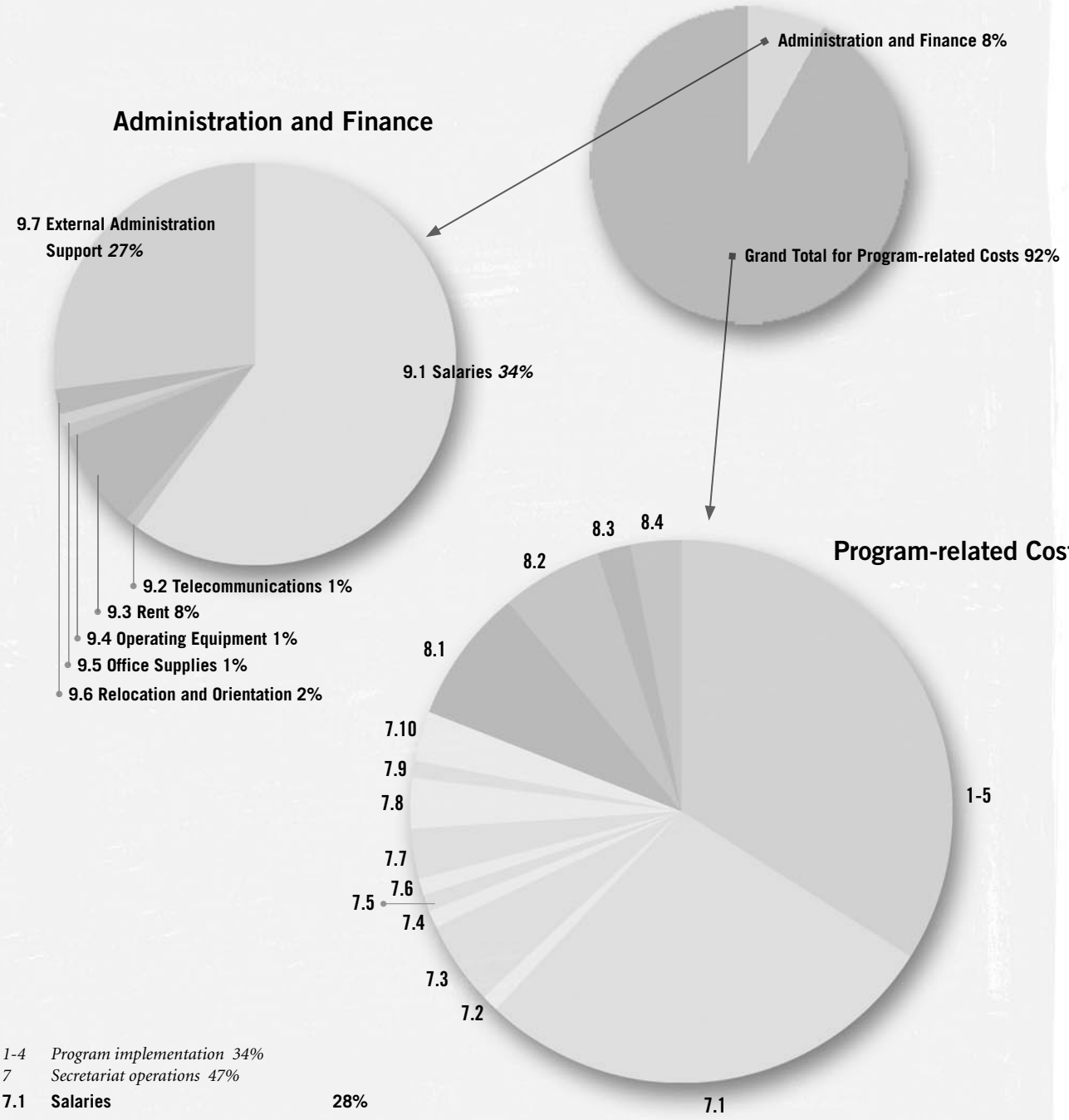
Summary

Description	2001
1-8. Program	13,016,000
9. Administration and finance	1,073,000
Total Expenses	**14,089,000**

Revenues

Income	2001
Parties' contributions	13,293,000
Carry over	663,000
Interest	133,000
Total Income	**14,089,000**

Graphic Overview 2002



1-4 Program implementation 34%
7 Secretariat operations 47%

7.1	Salaries	28%
7.2	Telecommunications	1%
7.3	Rent	5%
7.4	Operating equipment	1%
7.5	Office supplies	1%
7.6	Relocation and orientation	1%
7.7	Executive Management	3%
7.8	Public outreach	3%
7.9	Planning and evaluation	1%
7.10	Contingency fund	3%

8 Other initiatives 23.5%

8.1	SOUN	8%
8.2	NAFEC	6%
8.3	Council	2%
8.4	JPAC	3%

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*from December 2000