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Providing

Cleaner Air

to Canadians

February 2001



Message from the Minister



Providing cleaner air to Canadians is a priority for the Government of Canada, because the evidence continues to mount that air pollution affects our health much more than previously believed. Children, the elderly and those who suffer from cardiac and respiratory ailments are particularly vulnerable.

Work has been under way for several years to improve our air quality, and was accelerated in 2000 as the scientific evidence demonstrated that more and quicker action is necessary.

In December 2000, Canada and the United States signed an historic agreement to significantly reduce smog-causing pollutants and improve air quality for millions of residents on both sides of the Canada-U.S. border.

The agreement, known as the Ozone Annex to the *1991 Canada-United States Air Quality Agreement*, sets out our commitment to act on transboundary pollution. It is one of five components in the Government of Canada's Clean Air Campaign, which I launched in May 2000. The Campaign also includes actions on science, transportation, industrial sectors and public engagement.

Now that the agreement has been signed, it's time to move on to action. The Speech from the Throne indicates clearly our commitment to the Clean Air Campaign. "The Government will move quickly to implement this agreement and other measures, working with the provinces and territories to achieve cleaner air."

This booklet provides details on a \$120.2-million package of initiatives to implement the Annex and deliver our Clean Air goals. It outlines the actions we will take to reduce emissions from vehicles and the fuels that power them, provides details on steps to improve our air quality monitoring networks, and states how we intend to use the National Pollutant Release Inventory to meet new reporting commitments contained in the Annex. It also outlines initial actions to be taken to reduce pollution from industrial sources and products. Finally, this booklet will help Canadians track our progress.

Over the months ahead, the Government of Canada will act on a number of fronts to provide cleaner air for Canadians. We will continue to work with the provinces and territories and our industrial partners on strategies to reduce emissions. And we will continue to keep Canadians informed of our progress through regular updates. This is our commitment.

A handwritten signature in black ink that reads "David Anderson". The signature is fluid and cursive.

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

Introduction

Ground-level ozone is a main component of summer “smog” or “haze” that is found in many Canadian cities. It is a direct cause of serious health problems, including respiratory distress, which leads to increased hospital visits and admissions. Scientific evidence indicates that air pollution is linked to the premature deaths of more than 5,000 Canadians every year and that ground-level ozone is an important component of the air pollution mix.

The Government of Canada has already launched a series of initiatives to bring cleaner air to Canadians and to protect their health, including:

- ▶ enacting regulations to reduce the sulphur content in gasoline to 30 parts per million by January 1, 2005;
- ▶ starting work with the provinces and industrial sectors to establish emission reduction strategies;
- ▶ proposing as toxic, particulate matter (PM) less than or equal to 10 microns (PM₁₀);
- ▶ providing additional funding to enhance science and monitoring programs on acid rain;
- ▶ establishing daily smog forecasts in the Maritimes and committing to a national program that, in 2001, will build upon existing smog advisories and forecasts in Quebec, Ontario and British Columbia;
- ▶ investing in more clean air science through the newly created Canadian Foundation for Climate and Atmospheric Sciences.

While domestic action is the first priority, transboundary measures to curb air pollution are particularly important, because studies show that between 30% and 90% of smog in Ontario, Quebec and Atlantic Canada comes from the United States during the summer. The Ozone Annex, which was negotiated and signed in less than ten months, shows the commitment of both Canada and the United States to work together to improve air quality in North America. By significantly reducing the transboundary flows of air pollutants that cause smog, the Ozone Annex will benefit 16 million people in central and eastern Canada. It has also opened the door to the next round of discussions to address the concerns of the millions of Canadians and Americans who live on the border of British Columbia and Washington State.

Taking action in both Canada and the United States under the Ozone Annex will address health and environmental challenges by reducing emissions of nitrogen oxides (NO_x) and volatile organic compounds (VOC), which are precursors of ground-level ozone.

The Ozone Annex complements many other initiatives already under way to improve air quality in Canada, including the Canada-Wide Standards for Particulate Matter and Ozone agreed to by the federal, provincial and territorial governments, except Quebec, in June 2000. These standards commit governments to significantly reduce PM and ozone by 2010. The Government of Canada is also using new powers under the *Canadian Environmental Protection Act, 1999* (CEPA 1999) to improve air quality.



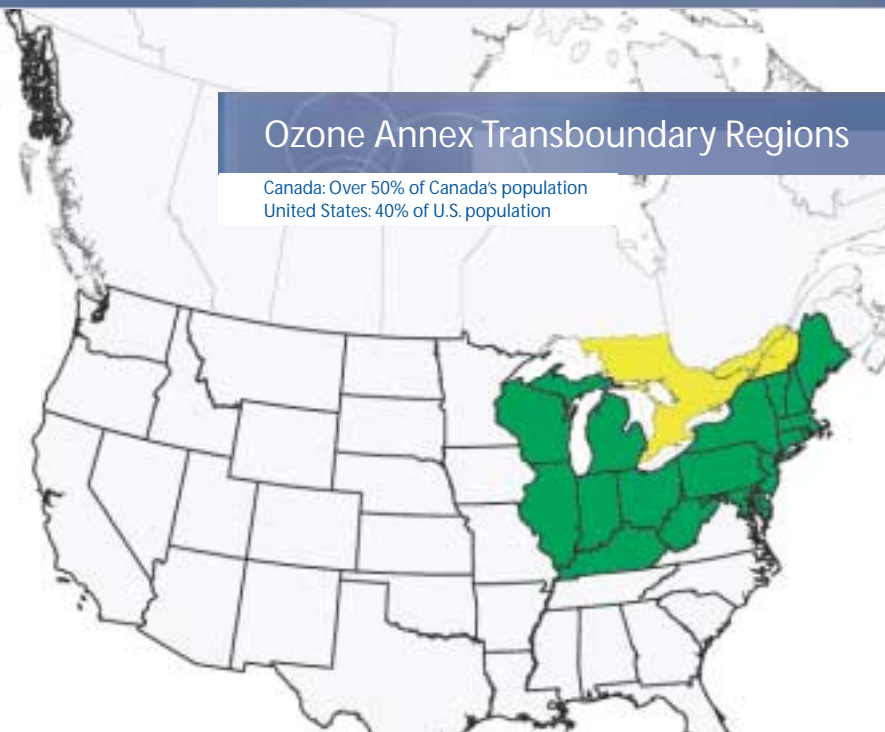
Introduction (cont'd)

Canadian and American Commitments under the Ozone Annex

The Ozone Annex deals with both national and regional aspects of air pollution. It defines a region in each country that is the source of transboundary pollution and to which the commitments in the Annex will apply. In Canada, this area includes central and southern Ontario and southern Quebec. In the United States, it includes 18 north-eastern and midwestern states and the District of Columbia.

Ozone Annex Transboundary Regions

Canada: Over 50% of Canada's population
United States: 40% of U.S. population



Canadian Commitments

- ▶ Annual caps by 2007 of 39 kilotonnes of NO_x (as nitrogen dioxide, or NO_2) emissions from fossil-fuel power plants in central and southern Ontario, and five kilotonnes of NO_x in southern Quebec. In the case of Ontario, this represents a 50% reduction in emissions of NO_2 from the 1999 average of 78 kilotonnes.
- ▶ Stringent national emission reduction regulations, aligned with those in the United States, for: cars, vans, sport utility vehicles (SUVs) and light-duty trucks; off-road gasoline utility engines, diesel engines, outboard motors and fuel standards.

Canada estimates that total NO_x reductions in the Canadian transboundary region will be 44% year-round by 2010. Canadian emissions of VOC will be reduced to levels required to meet the Canada-Wide Standard for Ozone by 2010. This includes a 45% reduction in Ontario and a 35% reduction in Quebec by 2010. Additional measures, including regulations on solvents and the development of industrial sector emission reduction strategies, will be required to meet this objective.

American Commitments

- ▶ Summertime NO_x emissions will be reduced by about 35% by 2007 in the U.S. transboundary region. The U.S. Environmental Protection Agency (EPA) expects this to be achieved by a reduction of more than 70% in summertime NO_x emissions from fossil fuel power plants and major industrial sources.
- ▶ Reductions of NO_x and VOC from U.S. on-road and off-road vehicles, off-road engines and fuels.
- ▶ An aggressive VOC emission reduction program that applies to solvents, coatings, and consumer and commercial products.

The United States estimates that the total NO_x reductions in the U.S. transboundary region will be 36% year-round by 2010 (43% during the summertime ozone season). VOC emissions from the transboundary region will be reduced by 39% by 2007.

The Plan

Implementation of the Ozone Annex by the Government of Canada will focus on three major areas: **transportation, monitoring, and reporting.**

Transportation

Transportation is the largest contributor to air pollution in Canada. Following extensive consultation that began in the spring of 2000, Environment Canada developed its agenda for regulations and other measures to reduce emissions from vehicles, engines and fuels over the next decade to further protect the health of Canadians and the environment.

The Government is investing \$48.4 million over four years to implement the new emissions standards for vehicles and engines and the fuels that power them. The funding will allow for:

- ▶ the development and implementation of regulations for vehicles, off-road equipment, and fuels;
- ▶ the upgrading of the vehicle testing laboratory at Environment Canada's Environmental Technology Centre in Ottawa;
- ▶ laboratory testing of vehicles; and
- ▶ expansion of in-use vehicle emissions work, including inspection and maintenance programs for heavy-duty vehicles and support for high-emitting vehicle scrappage programs.

The current regulated vehicle standards will be replaced by new standards that will reduce NO_x emissions by approximately 88% from passenger cars and up to 95% for light-duty trucks, including sport utility vehicles (SUVs). Another important goal of the new regulatory regime in both Canada and the United States is to bring the performance standards for light-duty trucks in line with those for passenger cars.

Vehicles and Engines

- ▶ Regulations will be developed by 2002 to align Canadian emission standards for on-road vehicles and engines with those of the U.S. EPA, which are generally recognized as the most stringent in the world. The regulations will apply to light-duty vehicles and light-duty trucks (for example, cars, pick-ups, SUVs), and will be phased in starting with the 2004 model year. New regulations for heavy-duty vehicles and engines will come into effect in the 2007 model year.
- ▶ An interim agreement with vehicle manufacturers to bring low-emission vehicles into Canada has been developed for model years 2001-2003.
- ▶ A code of practice for heavy-duty vehicle inspection and maintenance programs will be developed in 2001.
- ▶ Emission control programs for off-road engines will be aligned with those in the United States by 2002, to take effect in the 2004 model year. Programs are also planned for the off-road sector, including gasoline utility engines such as those used in snowblowers, portable generators, lawnmowers, and chainsaws, and diesel engines used in construction and agricultural equipment. These small engines are often many times dirtier and less friendly to the environment than modern car engines.



Fuels

Environment Canada will continue its general approach of aligning Canadian fuel requirements with those in the United States. In some cases, however, additional measures may be warranted. Proposed initiatives include:

- ▶ new regulations to reduce sulphur in on-road diesel fuel to 15 parts per million by 2006, down from today's average of 320 parts per million;
- ▶ initiating work to support a reduction in sulphur in off-road diesel fuel and home heating and industrial fuel oils;
- ▶ requiring companies to provide information on their use of methyl tertiary butyl ether (MTBE) in gasoline (spills of MTBE, which is sometimes used in gasoline, can contaminate groundwater);
- ▶ launching studies to determine future standards for gasoline to further reduce emissions of toxic substances such as benzene from vehicles, and to promote the earlier introduction of cleaner fuels.

Full details on the contents of the Government's Notice of Intent for Cleaner Vehicles and Cleaner Fuels are available on Environment Canada's web site at www.ec.gc.ca.

Transportation is the largest contributor to air pollution in Canada (1995 - gasoline & diesel)

Nitrogen oxides (NO _x)	41% of national emissions
Volatile organic compounds (VOC)	19% of national emissions
Carbon monoxide (CO)	38% of national emissions
Carbon dioxide (CO ₂)	31% of national emissions
Benzene	53% of national emissions
Fine particulate matter (PM _{2.5})	25-30% of contribution to urban air pollution
Sulphur dioxide (SO ₂)	20-60% of contribution to urban air pollution

Notes: In urban areas, the contribution of vehicles to urban air pollution is much higher.

Benzene levels were reduced in gasoline in 1999, thus reducing the contribution of transportation to overall emissions.

Further details on the emissions indicated in the above table are available on Environment Canada's web site at: www.ec.gc.ca/pdb/ape/ape_tables/canada95_e.htm.



Monitoring

In order to track progress on commitments made under the Ozone Annex to the *1991 Canada-U.S. Air Quality Agreement*, both Canada and the United States will improve monitoring and reporting on air quality within 500 kilometres of the Canada-U.S. border. The more we know, the faster we will be able to identify problem areas and take action to prevent pollution and promote better health for Canadians and Americans in border areas.

Environment Canada will invest more than \$29 million over five years to expand and refurbish federal and provincial networks of monitoring stations across Canada. The new funding, in addition to the \$1.2 million allocated for monitoring in 2000, will ensure these networks meet the monitoring and measurement requirements of the Ozone Annex and the Canada-Wide Standards for Particulate Matter (PM) and Ozone, and provide Canadians with the information on air quality they need.

Canada maintains two air monitoring networks. The National Air Pollution Surveillance (NAPS) Network is a joint federal, provincial, territorial and municipal network established in 1969. It is primarily an urban network, with 239 air monitoring stations in over 136 sites. The augmented Canadian Air and Precipitation Monitoring Network (CAPMoN) is a rural network with 23 air monitoring stations in Canada and one in the United States.

The NAPS Network gathers measurements on the components of smog. These are ozone, PM, sulphur dioxide (SO₂), carbon monoxide (CO), nitrogen oxides (NO_x) and volatile organic compounds (VOC). Air quality data collected by the NAPS Network have been used to demonstrate the links between air pollution and human health and also to evaluate air pollution control strategies, identify urban air quality trends and forewarn of emerging air pollution issues. Information from the NAPS Network is used by land-use planners, public transportation and urban planners, and many others who must take air quality into account in their decisions.

The new funding will be used to establish up to ten new monitoring stations, refurbish approximately 50 critical monitoring stations as well as to replace aging instrumentation throughout the network. This will include replacing outdated monitors as well as upgrading or replacing the equipment used to calibrate monitoring instruments. In some cases, new samplers will be added to existing sites to provide more detailed data on levels and components of PM.

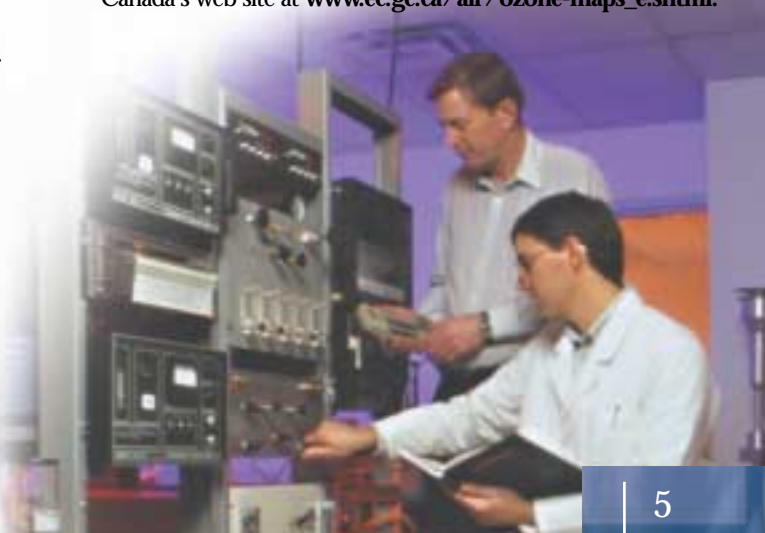
National Air Pollution Surveillance Network

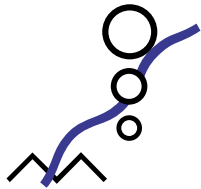
239 stations
over 136 sites
Total of 360 monitors
and 233 samplers



The CAPMoN has been in operation for over 20 years. Its initial focus was on acid rain, but now smog pollutants (NO_x, PM and ozone) are also measured at some sites. Locations are chosen to ensure measurements are regionally representative and are not affected by local sources of air pollution. Data from the CAPMoN are used to assess transboundary transport of pollutants. The new funding will add measurements of ozone and PM at several stations of the augmented CAPMoN.

The investment to improve monitoring complements existing work under way by the New England Governors and Eastern Canadian Premiers, who initiated a joint Eastern Canada-U.S. mapping-without-borders project in the summer of 2000. The project provides seamless, animated, near real-time Canadian and U.S. ground-level ozone maps for, on the Canadian side, New Brunswick, Nova Scotia, Prince Edward Island, Ontario and Quebec. The maps are available to the public during the smog season – May through September – on Environment Canada's web site at www.ec.gc.ca/air/ozone-maps_e.shtml.

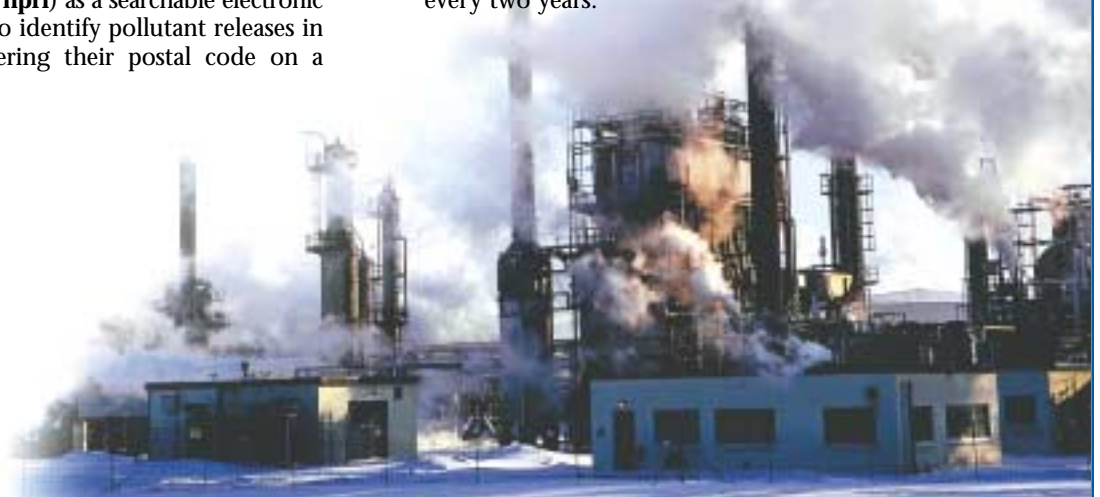




The third major component of the funding to implement the Ozone Annex is a \$22.9-million expansion of the National Pollutant Release Inventory (NPRI), Canada's only legislated, nationwide, publicly accessible inventory of pollutants released to the environment. The NPRI was established in 1992 to provide Canadians with information on pollutants released by facilities in their communities. All facilities that manufacture, process or use more than threshold amounts of the 268 substances on the NPRI list are required to report. The NPRI is published annually, and is available on Environment Canada's web site (at www.ec.gc.ca/pdb/npri) as a searchable electronic database that allows users to identify pollutant releases in their communities by entering their postal code on a computer keyboard.

The NPRI list of substances will be expanded in 2002 to include precursors of ground-level ozone and components of smog such as NO_x, VOC, sulphur oxides (SO_x), PM₁₀, PM_{2.5}, and CO. At the same time, the number of industrial facilities reporting pollutant emissions is expected to rise from 2,100 in 1999 to more than seven thousand by 2005. This expansion of the NPRI will enable improved tracking and reporting of industrial emissions. It will also allow us to measure the reductions that will be achieved through the various commitments included in the Ozone Annex for these air pollutants.

The Canadian and American governments are required to report their progress in implementing the Ozone Annex every two years.



Other Measures Under the Ozone Annex

Other investments totalling \$19.8 million will go toward a number of initial actions for reducing NO_x and VOC emissions from industrial sectors (e.g., the electric power generation sector) and products (e.g., paints and paint coatings, degreasing agents and solvents), developing a regional risk analysis to characterize major sources of smog in Canada, and modelling transboundary flows to assess progress in meeting the goals of the Ozone Annex.

In June 2000, federal, provincial and territorial Ministers, except Quebec, agreed to a set of joint initial actions in support of the Canada-Wide Standards for Particulate Matter and Ozone. These actions include the development of multi-pollutant emission reduction strategies (MERS) for key industrial sectors, such as electric power generation,

iron and steel, as well as base metals smelting. Work on the MERS will proceed in 2001 with the participation of representatives of industry, environmental groups and governments. While each MERS will be tailored to a specific sector, the overall MERS processes will complement and support governments' development of emissions reduction programs and enable a national roll-up of all sectors' contributions to achieving the emission reductions required under the Canada-Wide Standards for Particulate Matter and Ozone.

The Ozone Annex will be revisited in 2004 to gauge progress and to determine whether it should be expanded. Air pollution problems identified along the British Columbia–Washington State border could be discussed at that time.

Complementing Other Clean Air Initiatives

Over the last year, the Government of Canada has taken aggressive action on a number of fronts to provide cleaner air to Canadians. It has:

- ▶ initiated joint work with provinces and territories on implementing the Canada-Wide Standards for Particulate Matter and Ozone;
- ▶ chaired and played a leading role in negotiations for an international agreement, reached in December 2000, to reduce and eliminate persistent organic pollutants (POPs), such as PCBs and dioxins and furans, which are some of the most dangerous toxic substances to human health and the environment;
- ▶ ratified changes to the 1987 *Montreal Protocol* to ensure stronger controls on the production and consumption of chemicals, such as CFCs and halons, that deplete the stratospheric ozone layer;
- ▶ implemented voluntary agreements with manufacturers of outboard engines and personal watercraft, small gasoline utility engines and off-road diesel engines. Under these agreements, industry participants have voluntarily committed to supply cleaner engines to the Canadian market until the new regulations are in place;
- ▶ established the \$100-million Sustainable Development Technology Fund to help companies and entrepreneurs bring new technology onto the market that reduces greenhouse gas emissions and pollutant releases into the air.

As well, two other government-wide initiatives, Infrastructure Canada and the *Action Plan 2000 on Climate Change*, have particular benefits for cleaner air.

Infrastructure

Infrastructure investments that improve air quality are important for the health and safety of Canadians and their environment. Through Infrastructure Canada, the government is investing \$2 billion over the next six years, with another \$4 billion expected from municipalities and provinces. Part of this total investment of \$6 billion will help communities address local air quality issues by adopting improved incineration technologies, by capturing landfill gases such as methane, by promoting energy efficiency systems, and by implementing sustainable transportation initiatives such as commuter and light rail lines, park-and-ride facilities, and public transit using alternate fuels.

Improved urban air quality will not only promote the future economic and environmental sustainability of communities, but also directly benefit the health of Canadians by reducing the number of premature deaths, hospital admissions, and emergency room visits directly attributable to air pollution.

Climate Change

In addition to the transboundary effects of air pollution, including ground-level ozone, Canada is experiencing the effects of climate change in northern ecosystems and communities. Canada is committed to finding effective solutions to climate change. While actively supporting international negotiations, Canada is taking concerted domestic action. The Government of Canada is working with provincial and territorial governments and with industry to achieve significant reductions of greenhouse gases in a number of key sectors.

Canada has already been successful in uncoupling greenhouse gas emissions from economic growth. While our economy has increased by more than 30% since 1990, greenhouse gas emission increases have been capped at only 13%. When fully implemented, the Government's \$500-million *Action Plan 2000 on Climate Change* will take Canada one third of the way to achieving our target under the 1997 Kyoto Protocol to the United Nations Framework Convention on Climate Change.

Specific initiatives in the *Action Plan 2000 on Climate Change* will deliver cleaner air and related health benefits. Measures include:

- ▶ promoting cleaner-burning fuels such as hydrogen for fuel cells through development of a fuel cell refuelling infrastructure;
- ▶ assisting the development of best urban transportation technologies;
- ▶ promoting the switch from coal to natural gas in electric power generation plants;
- ▶ encouraging the retrofitting of older buildings and the adoption of standards to reduce energy consumption in new buildings;
- ▶ supporting the development of renewable energies such as wind and solar power;
- ▶ capturing and storing CO₂ emissions in deep underground reservoirs to take CO₂ out of the air, along with other pollutants such as SO₂, NO_x, and PM.

In the past year, the Government has announced more than \$1.1 billion in funding for climate change reduction activities ranging from new technology and alternate fuel development measures to research and public education programs. Federal, provincial and territorial governments, and all sectors of the economy, are engaged in this collective process. All partners understand that action on specific issues such as ground-level ozone or transboundary pollution produces benefits in other areas, and will over time ensure cleaner air and promote improved health for Canadians.

The Road Ahead

The Government of Canada has a firm strategy with clear commitments to achieve clean air goals by 2010. The implementation plan for the Ozone Annex is a core component of that strategy and is a major step towards cleaner air—but more will be done.

The federal government will work with the provinces and territories to develop strategies to reduce emissions from specific industrial sectors and to support jurisdictional implementation plans to achieve the Canada-Wide Standards for Particulate Matter and Ozone.

Initial work will begin with key sectors to reduce ozone emissions. This work will include the electric power generation sector, and sectors that produce or use large quantities of solvents, a significant source of VOC emissions. These actions will provide the initial momentum for a much broader industrial strategy to achieve the targets set out in the Canada-Wide Standards for Particulate Matter and Ozone.

The broader Clean Air agenda will require expanding this initial work with provinces and territories to include numerous other industrial sectors, and greater efforts in sustainable transportation and engaging communities.

Emissions that contribute to unacceptably high ambient levels of fine PM will also be targeted. This could set the stage for future negotiation of a PM Annex with the United States.

Canada has also been at the forefront of initiatives to control emissions of mercury to the environment, and more recently the Government has been focusing on the need to reduce mercury emissions to the air. Our scientists have confirmed that emissions from both Canadian and foreign sources are responsible for the high levels of this toxic air pollutant in the food chain. Northern Canadians are particularly susceptible, as levels in some parts of the Eastern Arctic are above food consumption guidelines. Mercury contamination is also responsible for the vast majority of fish advisories in southern regions of Canada.

Internationally, Canada is working with the Economic Commission for Europe and with the United States and Mexico to reduce air emissions of mercury. Domestically, Canada is working with the provinces and territories to develop Canada-Wide Standards for the management and reduction of mercury in the environment. At present, agreement has been reached on controls for mercury emissions from incinerators and the metal smelting sector.

We are also working with the Canadian Dental Association and fluorescent lamp manufacturers to reduce the amount of mercury entering the environment from their waste management practices. Future directions will involve the reduction of mercury emissions from the coal-fired electric power generation sector. We anticipate that this will be accomplished through a strategy of multi-pollutant reductions from this sector.

These initiatives to improve air quality demonstrate that the Government of Canada considers clean air, and smog reduction in particular, to be one of its main environmental priorities. The measures described in this booklet will provide the health and environment benefits of cleaner air to Canadians for many years to come.

Additional information can be obtained on Environment Canada's website at www.ec.gc.ca or from the Inquiry Centre at 1 800 668-6767.

National Library of Canada cataloguing in publication data

Main entry under title: Providing cleaner air to Canadians

Issued also in French under title:
De l'air pur pour les Canadiens.

ISBN 0-662-29811-X
Cat. No. En40-617/2001E

1. Air – Pollution – Canada – Measurement.
 2. Atmospheric Ozone – Canada – Reduction.
 3. Environmental monitoring – Canada.
- I. Canada. Environment Canada.

TD883.7S52 2001 363.73'92'0971 C2001-980010-X

