

Environmental
Commissioner
of Ontario



Commissaire à
l'environnement
de l'Ontario

Gord Miller, B.Sc., M.Sc.
Commissioner

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January 17, 2003

The Rt. Hon. Herb Gray
Chairman, Canadian Section
International Joint Commission
234 Laurier Avenue, West, 22nd Floor
Ottawa, Ontario K1P 6K6

Dear Mr. Gray:

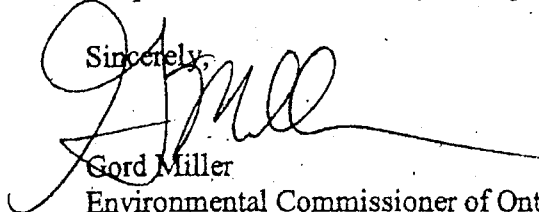
Thank you for offering an opportunity to comment on the 2002 Progress Report of the Canada – United States Air Quality Agreement. As the Environmental Commissioner of Ontario, my mandate does not extend to commenting on bi-national agreements. I do, however, review and comment on environmental decisions taken by Ontario ministries, including decisions on air quality issues. I have enclosed my most recent annual report for 2001/2002, which reviews a number of recent provincial government decisions relating to air quality in Ontario.

For your purposes, you may be particularly interested in the following pages:

- emission trading (NOx and SO2 emission limits for the Electricity Sector) (pp. 84-87)
- emission limits for the Lakeview Thermal Generating Station (p. 88)
- monitoring and reporting on emissions of airborne contaminants (pp. 91-94)
- changes in the Drive Clean Program (pp. 97-99)
- control orders for Sudbury Smelters (pp. 108-110)
- update on air issues (pp. 64-66)

I hope this information may be helpful to your work.

Sincerely,


Gord Miller
Environmental Commissioner of Ontario

enclosure

1075 Bay Street, Suite 605
Toronto, Ontario, M5S 2B1
Tel: (416) 325-3377
Fax: (416) 325-3370
1-800-701-6454



1075, rue Bay, bureau 605
Toronto (Ontario) M5S 2B1
Tel: (416) 325-3377
Télé: (416) 325-3370
1-800-701-6454

Emissions Reduction Trading and NO_x and SO₂ Emission Limits for the Electricity Sector

Almost 30 per cent of electricity produced in Ontario is presently created by burning coal or oil, which contributes significantly to Ontario's air quality problems. The electricity sector was responsible for almost 15 per cent of Ontario's nitrogen oxides (NO_x) emissions and 24 per cent of sulphur dioxide (SO₂) emissions in 1999. In October 2001, MOEE finalized a regulation (O. Reg. 397/01) that sets new sector-wide caps on airborne emissions of NO_x and SO₂ from the electricity sector. The reductions will occur in two steps: the first at the end of 2001, followed by a larger reduction in 2007. MOEE states that the reductions required by 2007 will cut this sector's emissions of NO_x by 53 per cent and SO₂ by 25 per cent from 2000 levels.

The new regulation also sets out rules for a system of emissions reduction trading, giving power plants the option either to cut their own emissions directly or to buy emission reduction credits (ERCs) to help meet their new emission limits. The power plants can trade allowances among themselves, but they can also buy ERCs from other uncapped industries or organizations that have demonstrated emission reductions.

ERCs are intended to encourage emission reduction projects that might otherwise not be economical. They can also spur technological innovations, which may then be more widely adopted. Emissions trading systems are often considered best suited for pollutants that have region-wide environmental effects (like NO_x and SO₂), since it is argued that "the environment doesn't care" exactly which smokestacks are emitting less of these pollutants, as long as overall emissions are reduced in the region.

This is one of the first regulated emissions reduction trading system in Ontario and, in fact, in Canada, designed to help industry meet legally mandated reduction targets. A previous pilot-scale program, Pilot Emissions Reduction Trading (PERT), was established in 1996 and was used by Ontario Hydro (now by its successor company, Ontario Power Generation) to meet voluntary NO_x reduction targets in 2000 and 2001.

MOEE also made several closely related announcements in October 2001 that helped to flesh out the ministry's next steps on controlling industrial sources of air pollution. First, the ministry proposed imposing NO_x and SO₂ emission limits on other industry sectors, such as iron and steel, petroleum refineries, chemicals and non-iron metal smelters. Second, MOEE proposed moving up the province-wide targets for reductions of NO_x and SO₂ emissions from the year 2015 to the year 2010. Third, MOEE finalized the regulation requiring the Lakeview Generating Station in Mississauga to convert from burning coal to natural gas. (See page 88 of this report and pages 71-75 of the Supplement.)

The emissions reduction trading scheme is complicated by the fact that Ontario's electricity sector is also currently being restructured from a near monopoly to an industry with more players and more competition. By the year 2008, all electricity generators emitting NO_x will be competing for emission allowances based on their electricity production, rather than on their historical emissions of NO_x and SO₂. MOEE expects that this feature will encourage cleaner electricity production.

One important variable in future emissions from electrical generation in Ontario is the extent of nuclear generation capacity expected to come on-line in the next few years from refurbished nuclear units. If nuclear power is priced lower than coal-fired generation, it may displace coal-fired plants in the market place, reducing fossil fuel output. If this scenario materializes, actual emissions may fall, although not as a result of Regulation 397/01.

MOEE states that the new caps and trading system will reduce NO_x and SO₂ emissions from the electricity sector, and will provide incentives to other sectors to reduce emissions. The new regulation should also provide more regulatory certainty for this industry through to the year 2010. The regulation also has many critics, however, who have a range of concerns about new regulatory burdens, unfair treatment of Ontario Power Generator's competitors, and environmental weaknesses.

Trading with Uncapped Sectors

In effect, the trading system will allow the electricity sector to reduce its own gross emissions by far less than the above-stated targets. Through buying credits, OPG is permitted to exceed its NO_x cap by up to 33 per cent and its SO₂ cap by up to 10 per cent. MOEE has decided to allow capped power plants to purchase these credits from uncapped industry sectors. These uncapped sectors may be increasing their overall emissions (e.g., through increased production) while at the same time selling credits for site-specific emission reductions. Since the emissions of uncapped sectors can continue to grow, the net effect is that overall emissions are free to rise. In summer 2001, both Environment Canada and the U.S. Environmental Protection Agency stated that the ministry's design does not protect the environment and is not compatible with the Canada/U.S. Ozone Annex (see below).

MOEE has countered that Ontario's fossil fuel power sector cannot support an effective trading market on its own right now, since it consists of just six plants, all owned by the same corporation. A fluid market in ERCs, and the flexibility this provides to capped emitters, can develop only among a group of players that have a wide range of capacities to reduce their emissions. In contrast, it is expected that the U.S. system will allow more than 200 coal-fired stations, as well as several industrial facilities, to trade allowances.

Ontario and Canada's Obligations under the Ozone Annex

Under the Canada-U.S. Ozone Annex signed in December 2000, the fossil fuel power sector in southern Ontario will be required to cut nitrogen oxide emissions (measured as NO₂) to 39,000 tonnes by the year 2007. Environment Canada has stated that MOEE's cap would be able to meet the Ozone Annex, as long as MOEE did not allow trades between capped and uncapped sectors.

Weak SO₂ Cap

Because the cap is very lenient, a number of commenters raised concerns that Regulation 397/01 will not result in any real reductions in SO₂ emissions, at least until 2007. Until the year 2007, the regulation sets an overall SO₂ cap of 157.5 kilotonnes per year. This is more SO₂ than OPG's six fossil fuel power plants have actually been emitting in most recent years.

Emissions of other Toxic Pollutants from Power Plants

Ontario's fossil fuel power plants produce significant air emissions of mercury, lead and a range of other contaminants. For example, in 1999 this sector emitted 22 per cent of Ontario's total mercury emissions. Ontario Regulation 397/01 will not reduce these emissions, since its focus is strictly on NO_x and SO₂. Environmentalists have argued that OPG should instead invest in converting more of its coal-fired power plants to natural gas, since this would not only dramatically cut emissions of NO_x and SO₂, but would also eliminate emissions of mercury, lead and a number of carcinogens. So far, only the Lakeview Generating Station must cease burning coal by April 2005.

Finalizing this regulation has been an important step for MOEE and the outcome of much painstaking negotiation. MOEE staff also carried out very high-quality public consultation on this regulation, described in more detail on page 20. The two central concepts embodied in the regulation — sector-specific emission caps and an emissions trading scheme to help ease compliance costs — are both supported in principle by many industry and environmental organizations. But the many complex details are hotly debated. Some informed observers take the view that a badly designed trading system may be worse than no system at all, because it will give the illusion of progress and reduce the urgency to take other measures to cut air emissions. Others have concluded that Ontario needs to "lock in" the policy gains it has made so far, and that this regulation is a reasonable, though imperfect, first step. MOEE itself seems to have taken this latter view, and has indicated that it is willing to adjust its trading program over time — for example, to harmonize it with the U.S. trading program.



Stakeholder comments certainly had an effect on the outcome of this consultation, since the final regulation included several key changes from earlier versions. (More detail is provided on pages 76–85 of the Supplement.) Commenters have highlighted some significant weaknesses in this regulation, particularly the weak SO₂ cap and the fact that emissions of other contaminants such as mercury remain unaddressed. A critical feature of O. Reg 397/01 is that it permits the electricity sector to purchase ERCs from uncapped sectors. In the short term, any real reductions in emission loadings will depend on the quality of the ERCs approved, which will in turn depend on how carefully MOEE oversees this approval function.

To its credit, MOEE has signaled its intention to cap other industrial sectors, and this will do much to strengthen the integrity of the trading system. However, these other sectors have only just begun to monitor and report their NO_x and SO₂ emissions under Ontario Regulation 127/01 (see pages 91-94). Until now, MOEE has not had reliable emission inventories for either NO_x or SO₂. It is not clear how soon (or whether) MOEE will be able to assemble accurate emission inventories from the newly required emission reports, or by what process sector-specific caps will be allocated. Early indications are that negotiations on capping emissions of Ontario's other industries will be complicated and protracted. However, it is clear that MOEE is developing this regulatory framework for the medium and long term, and that immediate air quality improvements should not be expected. *(For ministry comments, see page 177.)*

Recommendation 11

The ECO recommends that the Ministry of Environment and Energy strengthen its emissions reduction trading system by quickly expanding NO_x and SO₂ emission caps to other industrial sectors.

Emission Limits: The Lakeview Thermal Generating Station

Lakeview Generating Station is a very large coal-fired power plant in Mississauga, on the shore of Lake Ontario. Built in the 1960s, it is the oldest of Ontario's fossil fuel power plants and a significant source of air pollution. Lakeview's current emissions are considerable: the plant accounts for about 26 per cent of overall SO₂ emissions in the Greater Toronto Area and 8 per cent of overall NO_x emissions. Lakeview is also among the top emitters of mercury in the GTA, emitting 83 kilograms in 1999.

Lakeview was built and operated for many years by Ontario Hydro, and is now owned by its successor company, Ontario Power Generation (OPG). With the restructuring of Ontario's electricity market, however, OPG will be required to sell or give up control of many of its electricity-generating assets. In February 2000, OPG announced that Lakeview was one of its first candidates for sale. Closing the Lakeview plant altogether was not an option, since it provides a reliable electricity supply for the nearby Toronto area during peak periods. Later in 2000, to reduce air emissions, the province made a commitment that the Lakeview plant would have to be converted to natural gas before being sold.

To formalize this requirement, in October 2001, MOEE finalized a regulation that states that after April 30, 2005, Lakeview must meet emission limits of a gas-fired generating station and, in effect, must cease burning coal. There are also new rules for the short term: between now and April 2005, the NO_x emissions of the facility will be capped 40 per cent below 2000 emission levels, and the cap can be exceeded only under special circumstances.

MOEE's decision has important positive environmental aspects. In the long term, Lakeview's emission rates will improve. Switching to natural gas — even using the existing

old boilers — will cut the NO_x emission rate from the Lakeview plant by an estimated 75 per cent after April 2005. At the same time, this will eliminate the facility's emissions of mercury and SO₂. The energy efficiency of the plant will also improve, and the carbon dioxide (CO₂) emission rate is predicted to drop by an estimated 38 per cent.

While the new regulation will improve Lakeview's emission rates by 2005 (measured in kg of NO_x/Megawatt-hour), there is, however, no certainty that *total* emissions will be reduced. This is because Lakeview has been operating far below its production capacity in recent years, and once it is converted to gas, it might increase its production, thus partially or completely offsetting the improvements in emission rates.

Unfortunately, MOEE retreated from its earlier March 2001 proposal that the facility should be equipped with efficient gas technology by 2005. The final regulation requires conversion to gas, but allows the facility to use its existing inefficient boilers and, in effect, to emit more air pollutants per unit of energy produced. If MOEE had maintained its earlier position, the NO_x emission rate of the facility would have been cut by 95 per cent by 2005. CO₂ emission rates would also have improved by over 60 per cent. CO₂ emissions are important, since OPG's fossil fuel power plants were responsible for about 14 per cent of Ontario's greenhouse gas emissions in 1997, and their emissions have risen since that time.

Some groups are now urging the Ontario government to take the next step by also requiring that OPG or successor owners convert the Nanticoke power plant to natural gas. Nanticoke is the largest coal-fired power plant in North America, and in 1999, its NO_x emissions were almost as much as Ontario's other five coal-fired plants combined.

(For ministry comments, see page 177.)

Commenters raised a wide array of issues during the two comment periods for this proposal when it appeared on the Environmental Registry. These include issues about process, technology, threshold levels and interaction with other regulatory and legislative processes. (For a fuller description, see the review of this decision in the Supplement.) MOEE deserves credit for attempting to balance the objectives of proponents with the views of the public and the imperative of protecting the environment, and its approach to designing the new regime displayed adaptability and sensitivity to a range of concerns.

However, MOEE's objectives of making the new process "efficient and fair" and of meeting the related stakeholder preference for a streamlined approvals process were not totally realized. For example, MOEE decided to keep separate approval processes for the successor companies of Ontario Hydro, while applying the screening process to the same types of projects brought forward by other proponents.

Finally, the ECO remains concerned about certain aspects of the Category B environmental screening, which is expected to be the most frequently exercised process of the three, capturing most of the significant electricity projects proposed in the years ahead. The permits for such projects will not be subject to the public notice, comment and appeal provisions of the *EBR*. This gap may curtail public appeal rights on future electricity project decisions. (For ministry comments, see page 177.)

Monitoring and Reporting of Emissions of Airborne Contaminants

Facilities in the electricity generation, industrial, municipal and institutional sectors will be required to monitor and report their emissions of airborne contaminants under a new regulation (O.Reg. 127/01) of the *Environmental Protection Act*. The reports must be submitted to the Ministry of Environment and Energy and be made available to the public, either on a Web site or at the facility or company head office. The ministry says that the new regulation will lead to reductions in airborne contaminants, since the public's right-to-know will be an incentive for companies to reduce their emissions. MOEE also says that the regulation will provide a means of tracking progress in ministry programs for reducing smog, acid rain, air toxics and climate change, and will give MOEE an information base for developing policies in the future.

Under the regulation, facilities meeting certain criteria must report annually on their annual and smog season emissions of a number of contaminants. Facilities with significant emissions of SO₂ and NO_x must also submit quarterly reports.

Electricity generators and facilities MOEE classifies as "large sources" (such as iron and steel mills, pulp and paper mills and chemical manufacturing facilities) became subject to the requirements of the regulation on May 1, 2001. The first quarterly reports for SO₂ and NO_x were due by August 29, 2001, and the first annual reports by June 1, 2002. Facilities classified as "small sources" (such as auto body repair shops, dry cleaning services, mines, quarries and many types of manufacturing plants) became subject to the regulation on January 1, 2002, and their first annual reports are due by June 1, 2003.

O.Reg. 127/01 sets out screening criteria for determining what monitoring and reporting each facility must undertake. Details of the program, such as the lists of contaminants, the reporting thresholds and the reporting methods, are set out in a separate guideline, which may change from time to time without requiring amendment of the regulation. The program is rather complicated because the contaminants, 358 in all, are grouped under three separate tables, each listing different contaminants and each with a different set of criteria. (Facilities will monitor and report only on the contaminants that apply to them.)

One of the tables lists the 268 contaminants that Ontario facilities must report on to Environment Canada under the National Pollutant Release Inventory (NPRI). Under the new regulation, facilities must now report this same information to the Ministry of Environment and Energy. MOEE also introduced two other tables of contaminants not already covered by the NPRI. One of the tables lists seven smog-related contaminants MOEE calls "criteria air contaminants" and four greenhouse gases. The ministry says it is the first jurisdiction in the world to require monitoring and public reporting of this "full suite of key greenhouse gases and the key contributors to smog and acid rain." In December 2001, Environment Canada added these same criteria air contaminants to the NPRI, beginning with the 2002 reporting year. A third table lists 79 contaminants — not included in the NPRI — that MOEE refers to as toxics.

MOEE began consulting on the broad concepts of the proposed program in January 2000, but the complex draft regulation and 600+-page guideline were not released until November 2000. The notice on the Environmental Registry provided a 30-day comment period and a planned implementation date of January 1, 2001. This phase of the consultation was rushed, with too little time for review and comment on the proposal and only seven weeks for industry to prepare to meet the new requirements. The ministry received 41 comments on the Registry posting. The comments included a number of significant concerns and almost unanimously requested an extension of the comment period and implementation date. As a result of public and stakeholder comments, MOEE made a few changes to the regulation and guideline and delayed the proposed implementation date by four months.

After the regulation was finalized, the ministry continued to meet with industry groups and held over 40 workshops, and MOEE and Environment Canada began working to integrate their two programs, held joint workshops and set up a telephone help line. MOEE has also established a multi-stakeholder committee to provide advice on improving the program, including future revisions to the substance list and reporting thresholds contained in the guideline. MOEE has made a good effort to assist companies in understanding the requirements, and staff have made efforts to refine the program based on industry input. Nevertheless, the regulation has significant cost and resource implications for industry.

Each facility must submit its reports electronically to the ministry within 60 days after the end of the reporting period, and the reports are concurrently made available to the public. In May 2002, MOEE created a Web site where the public may access the posted reports by searching for a specific facility or for all facilities within a municipality. With an estimated 3,000–4,000 facilities reporting, however, it will not be easy for a member of the public to use the database for regional or provincial-level analysis. The ECO encourages MOEE to provide a summary or analysis of the data to the public, as the ECO has recommended in the past. MOEE will need to prepare such a summary in any case, since the ministry will compile and analyse the data to provide the province-wide information it needs to develop ministry programs and track progress.

Some concern has been raised by industry, regulators and other stakeholders about the quality of the data that will be produced, since any of a number of estimation or measurement methods may be used. In response to those concerns, MOEE says that the data will be of sufficient accuracy to meet Ontario's objectives without being unduly burdensome on industry, and that direct measurement is not necessary since many common estimation methods provide reliable data. MOEE also says that facilities are responsible for the quality and accuracy of their data. However, MOEE says it will occasionally review the estimation techniques and audit air emissions data. The ministry will need to rely on the data to regulate industry, set emission caps, oversee emissions trading and discuss emission reduction agreements with other jurisdictions. The ECO encourages the ministry to review and audit facility reports and records periodically in order to verify the data, assess compliance with the regulation, and evaluate whether the data being generated are comparable, reliable and sufficient for the ministry's stated purposes.

The ECO agrees with MOEE that creation of an information base and a means of tracking progress in ministry air programs is an important step toward improving air quality. The ministry has goals to reduce emissions under its Anti-Smog Action Plan and other programs and to help the province meet Canada's emission-reduction

commitments under the Ozone Annex with the U.S. But until now MOEE has had no inventory or measurement of actual emissions and no reliable means to measure progress. The ECO has expressed concern in the past that MOEE's progress reports on the Anti-Smog Action Plan did not clearly quantify actual smog reduction achievements and compare them to stated targets. This new regulation will provide an information base to track emission trends and develop new programs if these are needed to achieve emission reductions. However, the ministry will have to compile and analyze the data to verify whether real emission reductions are being achieved.

With this regulation, MOEE has attempted to balance several competing policy goals — answering the need for high quality data while minimizing the regulatory burden on industry. The ministry has indicated it will consider refining the program. The ECO urges the ministry to ensure there is broad public consultation, including notice on the Environmental Registry, on any major reforms to the guideline that might be suggested by the multi-stakeholder committee. Depending on how MOEE employs the information, this monitoring and reporting program could lead to environmental benefits. The ECO commends MOEE for developing the program. *(For ministry comments, see page 177.)*

Recommendation 12

The ECO recommends that the Ministry of Environment and Energy provide analysis of the reported emissions of airborne contaminants and any tracking of emission reduction programs in an annual summary report to the public.

for the revenues. This would assure users of the system (generators) and the public that MOEE's accounting of costs and estimation of revenues were accurate, and that revenues were being dedicated to the purpose for which they were collected.

Despite the limitations noted above, the registration and reporting system is an improvement over what existed previously. Finally, the ECO recognizes that MOEE is planning further improvements to hazardous waste management in the province, and looks forward to further information about these developments. (*For ministry comments, see page 178.*)

Changes in the Drive Clean Program

Air quality is a critical and ongoing issue for all residents of Ontario, especially those living in southern Ontario. In our 1998 annual report, the ECO suggested that the Drive Clean program would contribute to reducing only a small fraction of the smog-causing agents emitted by vehicles. The ECO also observed that Drive Clean would make these modest contributions only if identified weaknesses in the program were corrected.

In the summer of 2001, the Ministry of Environment and Energy made a number of important changes to the Drive Clean program and its regulations that should improve the transparency of the program as well as implementing policy changes that will help the ministry achieve its goal of reducing smog pollution. Regulation 628, R.R.O. 1990, under the *Highway Traffic Act (HTA)*, and Ontario Regulation 361/98, under the *Environmental Protection Act (EPA)*, were amended by three new regulations: O. Reg. 343/01, O. Reg. 353/01 and O. Reg. 237/01.

The amendments included:

- Expansion of the Drive Clean program to include Ontario's entire smog zone
- Increase of the Ongoing Repair Cost Limit (RCL) from \$200 to \$450
- Extension of the validity of a pass report for vehicles tested to 12 months
- Exemption of "kit cars" from Drive Clean testing
- Empowerment of the director of the Drive Clean office to suspend or decertify emissions inspectors and repair technicians for improper activities. (Prior to this change, only Drive Clean facilities could be suspended or terminated.)

In addition to the regulatory amendments described above, MOEE made the following policy changes to the Drive Clean program:

- Allowing the use of a vehicle's on-board diagnostics in Drive Clean testing
- Allowing light-duty diesel vehicles to be tested at heavy-duty vehicle testing facilities

- Exploring options to begin evaluation of program performance measures and goals
- Exploring options for a partnership with municipalities for annual emissions tests for taxis.

By expanding the program area, MOEE has reduced confusion about which communities are involved in the Drive Clean program and has ensured that most residents living in southwestern Ontario are treated in a similar manner. Effective July 1, 2002, the program will include car owners resident in counties in southern Ontario who were not already covered. Ottawa and the Kawartha Lakes region, along with all eastern Ontario counties to the Quebec boundary, will be covered as well. This change will make approximately 5.7 million vehicles in southern Ontario subject to the program's testing requirements.

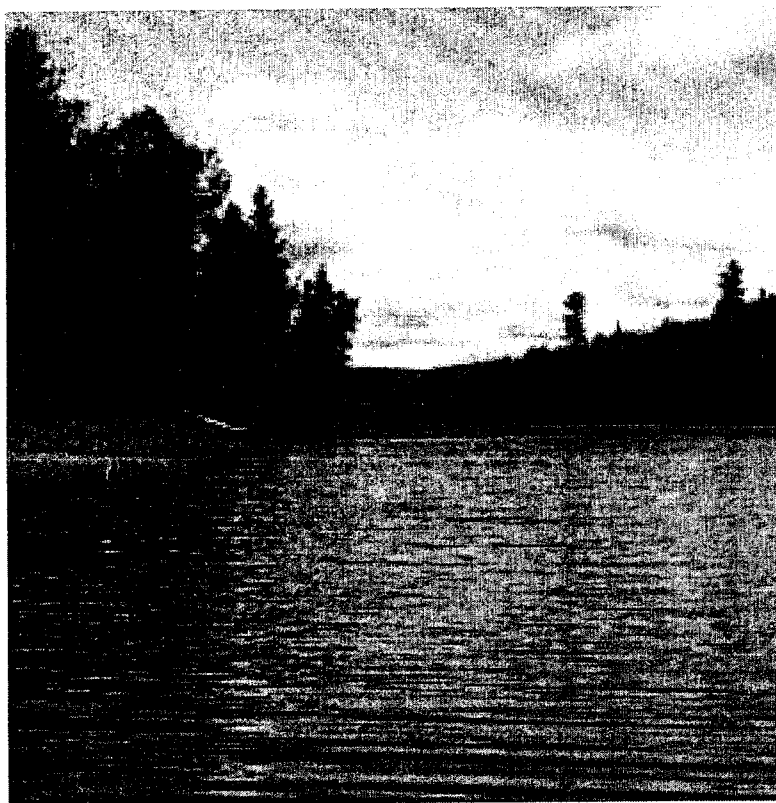
MOEE says the new increased repair cost limit (RCL) more accurately reflects the cost of required emissions-related repairs, assisting those vehicle owners who cannot pass the emission test without repairs. According to MOEE data, about 4 per cent of vehicles tested between 1999 and early 2001 used the \$200 RCL to obtain a conditional pass without being fully repaired. With the \$450 RCL, MOEE projects that the number of car owners who will seek to obtain a conditional pass will drop sharply, since the ministry has estimated that most vehicles can be fully repaired for that amount or less.

The ECO commends MOEE for proposing that the Drive Clean office work with municipalities to implement an annual test for taxis — a good first step toward ensuring clean operation of high-mileage taxis. Requiring retraining and recertification for emissions inspectors and repair technicians when there are significant program changes is also a logical change, as is clarifying and creating consistency in terminology between Drive Clean regulations under the *HTA* and the *EPA*. The ECO also commends MOEE for proposing additional performance measures for Drive Clean so that its results in reducing vehicle emissions can be assessed in terms of the Ontario Government's overall air quality strategy. The credibility of the program will be enhanced if MOEE can objectively quantify the reductions of pollutants resulting from Drive Clean, including greenhouse gases. MOEE should clarify how and when it intends to implement these new performance measures. As noted in the ECO's 2000/2001 annual report, MOEE should also give the public full access to the underlying assumptions that are being used to calculate the reductions in pollutants attributed to the Drive Clean program (see the 2000/2001 ECO annual report, page 67).

MOEE provided a 60-day comment period, which allowed the public an adequate amount of time to research and comment on the issues. MOEE posed seven questions to the public for comment. Each question had a short explanatory note about current

Drive Clean Program practices. MOEE received 236 comments on the Registry proposal. In addition, MOEE held six public consultation meetings in Ottawa, Cornwall, Kingston, Oakville, Waterloo and Chatham. MOEE also consulted its Multi-Stakeholder Committee on the program. In sum, the ECO believes that MOEE did a good job in its consultations on Drive Clean program changes, and commends MOEE for holding public meetings about the proposed changes.

Finally, there are many implementation issues that arise in relation to these program changes. Vehicle emissions testing is extremely technical and complex. The ECO will be monitoring the application of the revisions to O. Reg. 361/98 to see how MOEE handles these implementation issues.



The recent expansion of the Drive Clean program is a positive move, but on its own, it will not be sufficient to control Ontario vehicle emissions. Although MOEE says that Drive Clean, when fully deployed, will be equivalent to taking 23,000 vehicles off the road permanently, the ministry acknowledges that the transportation sector "is experiencing significant growth — characterized by increases in total number of vehicles, typical vehicle size and total number of vehicle kilometers per year." Indeed, MOEE's *Air Quality in Ontario, 2000*, released in early 2002, states that the number of vehicle-kilometres travelled went up by 20 per cent in the decade

from 1991 to 2000. Ontarians experience this first-hand through ever-worsening traffic congestion in most urban areas. In effect, emission reductions achieved by the Drive Clean program are being counteracted by the growing number of new drivers and vehicles on Ontario's highways and roads. A much more comprehensive provincial strategy is still needed to address this problem. Needed measures include strong provincial support for public transit and cleaner fuels, effective transportation demand management programs, and a provincial land use planning system that discourages urban sprawl. The ECO will continue to monitor provincial initiatives to determine whether these types of measures are being developed. (For ministry comments, see page 178.)

While MOEE has made useful background materials available to support the implementation of O. Reg. 505/01, more must be done to provide clarification and assistance to the owners of water systems serving institutions subject to the regulation. The regulation is complex, and it will be difficult for owners of many water works, particularly small systems in rural areas, to comply without assistance. (For ministry comments, see page 179.)

Control Orders for Sudbury Smelters

In February 2002, the Ministry of Environment and Energy finalized two new orders requiring Sudbury's two large smelters to reduce both their total annual loadings and their ground-level concentrations of sulphur dioxide (SO₂). MOEE's new orders include requirements for Inco Ltd. and Falconbridge Ltd. to:

- reduce allowable ground-level concentrations of SO₂ from 0.5 parts per million (ppm) to 0.34 ppm (averaged over one hour) by April 1, 2002
- reduce allowable limits of annual SO₂ emissions by 34 per cent by December 31, 2006

(More detail on this decision can be found in the Supplement on pages 67–70.)

The companies will have to provide annual progress report updates and trends regarding reductions of short-term peaks of SO₂. The companies will also have to submit a final report by December 31, 2010. This final report must include a plan to reduce SO₂ emissions further to meet the provincial standard for ground-level concentration of SO₂ that will be in effect by then. The companies will then have a further five years (until 2015) to meet the provincial standard. The exact numerical concentration is not stipulated, since MOEE expects that the Ontario standards for ground-level SO₂ will be reviewed and updated over the next several years.

MOEE notes that these orders are the first significant steps taken to address local ground-level SO₂ peaks in Sudbury in over 20 years. Past acid rain control efforts for these smelters focused on regional ecosystem protection, by reducing total annual emissions of SO₂. Very substantial SO₂ emission reductions (between 57 and 70 per cent) were achieved by the smelters between 1980 and 1996. There has been some ecosystem recovery as a result of these emission reductions: for example, pH levels have improved in many lakes in the area, to the extent that lake trout are being experimentally stocked. (See pages 157-160 for a description of lake trout management.)

Ground-level Peak Concentrations to be Cut

For Sudbury residents, these new control orders represent a significant reduction (from 0.5 ppm to 0.34 ppm) in allowable short-term peaks of ground-level SO₂. Since 1983, the two smelters have been allowed to emit SO₂ off-property at a ground-level concentration of 0.5 ppm, or double the limit allowable elsewhere in Ontario.

Short-term concentration peaks of SO₂ can impact human health and damage vegetation. Since at least 1991, MOEE's annual air quality reports have noted that SO₂ concentrations as low as 0.26 ppm are injurious to sensitive vegetation, and that concentrations of 0.34 ppm are odourous and cause increasing vegetation damage. Exposure to high concentrations of SO₂ can cause breathing discomfort, respiratory illness, and the aggravation of existing lung and heart disease. The new control orders give the two smelters until the year 2015 to comply with the SO₂ concentration limit that is applicable everywhere else in Ontario.

SO₂ Emissions to be Reduced by 34 per cent by End of 2006

Total annual emissions of SO₂ also have a damaging impact on ecosystems far downwind of the Sudbury region. Acidic deposition continues to impact Ontario lakes and forests (see "Central Ontario Forests: Under Stress from Acid Precipitation," on page 111, on nutrient depletion in forest ecosystems). The new control orders require Inco and Falconbridge to reduce their total annual emissions of SO₂ by 34 per cent (from current regulated limits) by the beginning of 2007. Until then, SO₂ emission caps remain at 265,000 tonnes per year for Inco, and 100,000 tonnes per year for Falconbridge.

Ontario has proposed reducing the province's total emissions of SO₂ by 50 per cent (from 1990 levels) by the year 2010, under the Canada-Wide Acid Rain Strategy for Post-2000. According to MOEE, research indicates that this scale of reduction will protect 95 per cent of the province's lakes. Since SO₂ emissions from smelters represent by far the largest single source (an estimated 42 per cent) of Ontario's total SO₂ emissions, significant reductions from this one sector will clearly be needed to meet the province-wide target. Without major improvements from Ontario's smelters, other sectors would have to be willing to cut their emissions by a disproportionately greater amount — an unlikely scenario.

MOEE announced a new soil sampling program in the Sudbury area in the same week as it posted proposals for the new control orders on the Registry. The sampling program focuses on arsenic and metals such as nickel, copper and cobalt in local

soils, garden vegetables and berries. Arsenic and metals are known to be elevated in the Sudbury area due to historical industrial activity, and the ministry has been sampling in the area periodically since 1971. The highest metal concentrations are typically found in the upper soil layers, indicating air emissions as the source. MOEE also announced that, with the local Medical Officer of Health, it was requiring the two Sudbury smelters to conduct a human health risk assessment.

ECO Comment

These orders represent important environmental improvements, since they require significant reductions in both long-term SO₂ emissions in eastern Canada as well as in local short-term SO₂ concentration peaks in Sudbury. The reductions in total emissions should go some way toward alleviating the continuing negative impacts of acidic deposition on forest ecosystems in the region. Nevertheless, the orders also mean that for the next 13 years, Sudbury residents and vegetation in the Sudbury area may be exposed to short-term SO₂ concentration peaks that are over 30 per cent higher than levels permitted elsewhere in Ontario.

MOEE carried out good quality public consultation on the proposed control orders, providing 60 days for public comment, releasing relevant background information and hosting several open houses. MOEE's new metal sampling program and health assessment study in the Sudbury area are also prudent decisions, and are in keeping with the ministry's commitment in its Statement of Environmental Values to consider cumulative effects on the environment and the interdependence of air, land, water and living organisms. At a minimum, the study's results will form an important baseline for comparison with future monitoring, to check whether metal and arsenic deposition levels decline, as predicted by MOEE. Nevertheless, MOEE should reveal its plans for updating air quality standards for nickel and arsenic.

MOEE should also ensure that Sudbury residents and other Ontarians are kept updated about the progress of emission reductions at these smelters, and, more generally, about the status of impacts of acid deposition on the ecosystem and the activities Ontario is taking to control it. (*For ministry comments, see page 179.*)

Update: Air Issues

In the 2000/2001 annual report, the ECO provided a detailed review of Ontario's air quality issues (pages 65-72). This current update is intended, in part, to refer readers to air-related issues of interest in this year's annual report.

Air quality concerns remain a high priority both for the Ontario public and for the Ministry of Environment and Energy. This is clearly demonstrated by the flurry of air-related notices MOEE has posted on the Registry during the reporting period, as well as the volume, passion and high quality of public comments responding to MOEE's proposals. Evidence of public concern with air quality is also found in the applications that Ontario residents have submitted to the ECO in this past year.

Many Decisions Posted on the Registry

During this reporting period, MOEE finalized a number of important new regulatory mechanisms intended to reduce air emissions from industries and vehicles. The ECO has reviewed several of these decisions, and readers are encouraged to refer to the following pages for detailed analyses:

- Emissions Trading and NO_x and SO₂ Emission Limits for the Electricity Sector, pages 84-87.
- Emission Limits: The Lakeview Thermal Generating Station, page 88.
- Environmental Assessment Requirements for Electricity Sector Projects, pages 89-91.
- Monitoring and Reporting on Emissions of Airborne Contaminants, pages 91-94.
- Changes in the Drive Clean Program, pages 97-99.
- Control Orders For Sudbury Smelters, pages 108-110.
- Managing Ozone Depleting Substances, pages 160-165.

Most observers expect that the impacts of these decisions on Ontario's air quality will become evident over the next decade, and in some cases may be rather subtle and indirect. For example, this is the first year that large and mid-sized industries in Ontario (an estimated 3,000-4,000 facilities) are being required to report their total annual air emissions to MOEE. On its own, this reporting requirement will not reduce industrial emissions. However, it could have important implications if the ministry uses the data to compile more accurate emission inventories. For example, more accurate emission inventories would help the ministry follow through on its November 2001 proposal for developing emission caps to control the emissions of a wide range of

industrial sectors. Similarly, MOEE's new searchable public database (accessible on the Internet) will provide an incentive for companies to avoid public criticism by reducing emissions.

Many Proposals Still In Development

Many important air-related policy proposals remain undecided at the time of writing (May 2002). The ECO will continue to monitor the following MOEE initiatives, and will review them in future annual reports.

- Discussion paper for a risk management framework (PA01E0002), posted April 6, 2001
- Discussion paper: updating air dispersion models (PA01E0003), posted April 6, 2001
- Rules for reporting sulphur levels in gasoline (RA01E0018), posted August 23, 2001
- Emission caps on other industry sectors (PA01E0026), posted October 24, 2001
- Accelerating target date for cuts to NO_x and SO₂ (PA01E0025), posted October 24, 2001
- Phase-out proposal for hospital incinerators (RA01E0023), posted Dec. 18, 2001
- Several air standards currently at proposal stage

Public Concerns About Local Industrial Air Emissions

In this reporting period, MOEE responded to two *EBR* applications from Ontario residents with complaints about air emissions from specific local industrial facilities. The two responses, prepared by two different district offices of the ministry, contrasted sharply in quality. MOEE's West Central Region Office prepared a very good response to an application for review of an aging municipal waste incinerator, the SWARU incinerator in Hamilton (see pages 123-126 of this report). In this case, MOEE carried out a thorough and wide-ranging review, drawing in ministry staff with a variety of expertise. Ministry reviewers prepared a detailed set of recommended improvements to the operation of SWARU, although amendments to the incinerator's certificate of approval were still being negotiated in May 2002.

The second example related to emissions from two manufacturers of kitchen cabinets north of Toronto (see pages 126-129 of this report). In this case, MOEE denied a request to investigate complaints of strong odours and alleged contraventions of certificates of approval by the facilities. MOEE stated that investigations were already ongoing, but described activities that appear to be components of routine

abatement. In this instance MOEE failed to take a fresh look at a chronic local problem, which has involved numerous odour complaints and abatement activities over a number of years.

Weak Support for Energy Conservation, Cleaner Fuels

In this reporting period, the ECO also reviewed two *EBR* applications concerned with the environmental policy implications of Ontario's electricity market reform (see the Supplement, pages 212–217). This issue has important air quality implications, because almost 30 per cent of electricity generated in Ontario is currently produced by burning coal or oil. The applications, submitted in March 2001, raised concerns about inadequate encouragement for either energy efficiency initiatives or for cleaner energy sources under the policies guiding Ontario's electricity market reform. Both MOEE and MEST denied the requests for review, stating that policies were still under development, that there would be opportunities for public consultation, and that some measures to address these issues had already been implemented.



At the end of the reporting period, MOEE/MEST was still developing its policies relating to energy efficiency and support for renewable energy, even though the electricity market opened to competition on May 1, 2002. For example, MOEE/MEST is still working on an environmental labelling program intended to help consumers make informed choices about their electricity sources. MOEE/MEST has committed to posting a proposal for Phase II of this program on the Registry once it is ready, but the time frame is unclear. With regard to energy conservation

programs, the Ontario Energy Board is expected to begin stakeholder consultations in late 2002 on a range of issues, including demand-side management programs, and how electricity retailers and local utilities might promote energy efficiency. Any resulting MOEE/MEST and Ontario Energy Board regulatory initiatives would not be implemented before 2004. Finally, recommendations on alternative fuels are expected in May 2002, in the final report of a legislative committee established to examine alternatives to fossil fuels. The ECO will continue to monitor the development of policies to encourage energy conservation and to promote the use of less polluting fuels. *(For ministry comments, see page 175.)*