

Synthesis of Public Comment

on the 2004 Progress Report
under the Canada/United States
Air Quality Agreement

International
Joint Commission
Canada and United States

December 2005

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The views expressed in this synthesis are from the individuals and organizations who participated in the public comment process. They are not the views of the International Joint Commission.

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Executive Summary

Under Article VIII of the 1991 *Canada-United States Air Quality Agreement*, the governments of Canada and the United States established a bilateral Air Quality Committee to assist with implementation of the Agreement, to review progress made and to prepare Progress Reports at least every two years. Environment Canada and the United States Environmental Protection Agency are the lead agencies on the Committee. Under Article IX of the *Agreement*, the International Joint Commission (IJC) is assigned responsibility to invite comments on each Progress Report prepared by the Air Quality Committee, to submit a synthesis of the comments received to the governments, and to release the synthesis of comments to the public.

This report provides a synthesis of the comments received on the 2004 Progress Report for the years 2002-2004. The views expressed are not those of the IJC but of individuals and organizations. Thirty-five written submissions were received (eight from the United States and 27 from Canada). Of these, 14 represented state, provincial or municipal governments, 15 represented non-governmental organizations and 6 came from private individuals (see Appendix). Comments from 15 individuals were also received at two consultation meetings.

Respondents were generally satisfied that progress has been made by both countries relative to reductions of sulfur dioxide, nitrogen oxides, and volatile organic compounds in the eastern part of the continent. Nearly a third commented that the Progress Report is a useful document that provides a good summary of initiatives and achievements under the *Air Quality Agreement*. Several suggested, however, that the Report's conclusion that "human health and the environment have benefited greatly from progress under the Agreement" was not adequately supported with data and sound science. Some said that while the report provides summaries of national programs and progress in emissions reductions, it is lacking in evaluation of the impact of the emissions reductions achieved. Others asked whether the reported improvements are really achieving overall human health and environmental protection goals.

The general consensus appeared to be that the current sulfur dioxide and nitrogen oxide objectives are not sufficient for full recovery of ecosystems or for the protection of human health. It was suggested that gains made in reducing sulfur dioxide may soon be offset by increases in nitrogen oxides and, thus, that acidity will not be improving in sensitive areas. Concern was expressed about emissions trading and the potential to create localized air pollution problems. It was suggested that a redoubling of effort is required to ensure that the emissions reductions achieved are truly protective of human health and the environment. The need for public education and understanding of "emissions trading" and "banking of credits" as means to achieve air quality improvement was also raised.

The Ozone Annex section of the Progress Report received the greatest number of comments. Some applauded achievements while others were critical of action plans and what were deemed to be overly optimistic statements about achieving objectives in the future. Approximately one fifth of the respondents commented on the Health Effects section of the report. There was much concern that not enough work is being done to assess human health impacts of the emissions under the *Air Quality Agreement* and that current objectives are not sufficient to reduce high smog and ozone levels to be protective of human health. Several respondents noted a disconnect between statements made in the Progress Report and what Canadians are experiencing and learning from other published sources.

The need to address a number of issues that are not currently covered by the Agreement was identified by numerous respondents. Several mentioned the transboundary particulate matter science assessment and encouraged governments to incorporate specific objectives for particulate matter in the *Agreement*. The airborne transport of mercury and persistent toxic chemicals were also recognized as being missing from the Agreement.

Several respondents commented on the lack of a critical or independent analysis of governmental actions to achieve the objectives of the Agreement. The limited role of the IJC was noted and suggestions were made that the Commission should be given a more meaningful role to review progress and policy directions, to evaluate performance, and to identify challenges and risks.

Introduction

President George H. W. Bush and Prime Minister Brian Mulroney signed the *Canada-United States Air Quality Agreement* to establish “a practical and effective instrument to address shared concerns regarding transboundary air pollution” in March 1991.

Under Article VIII, the governments of Canada and the United States established a bilateral Air Quality Committee to assist with implementation of the *Agreement*, review progress made, and prepare Progress Reports at least every two years. Environment Canada and the United States Environmental Protection Agency are the lead agencies on the Committee.

In accordance with Article IX, the International Joint Commission (IJC) invites comments on each Progress Report prepared by the Air Quality Committee, submits a synthesis of views to the governments, as well as the full record of views if either government requests, and releases the synthesis of views to the public.

The 2004 Progress Report is the seventh under the 1991 *Agreement* and was released in November 2004. It reviews key actions taken by Canada and the United States in the previous two years to address transboundary air pollution under the *Agreement*. The Air Quality Committee noted that, in preparing its 2004 Progress Report, it took into account the public comments that were received by the IJC on the 2002 Progress Report.

“To prepare the 2004 Progress Report, the Air Quality Committee took into account public comments it received through the International Joint Commission (IJC) regarding the 2002 Progress Report. (A summary of nearly 40 comments received can be found on the IJC Web site at www.ijc.org/php/publications/html/airquality/index.html).

Canada-United States Air Quality Agreement Progress Report 2004

Following release of the Progress Report in November 2004, the IJC invited public comment in a variety of ways through:

- A notice in the 2004 Progress Report;
- the IJC’s newsletter *Focus*;
- the IJC website;
- the IJC electronic mail list of organizations and people interested in Canada-U.S. Air Quality Agreement (list serve);
- letters to a targeted list of over 200 agency, environmental, industry and individual contacts in both countries;
- follow-up telephone calls to targeted groups; and
- consultation meetings in Ottawa on February 11, 2005 and in Toronto on February 17, 2005.

Comments were requested by February 28, 2005 and a total of 35 written submissions (eight from the United States and 27 from Canada) were received. Of these, 14 represented state, provincial or municipal governments, 15 represented non-governmental organizations and six came from private

individuals (see Appendix). In addition, 15 presentations were received at the two consultation meetings.

This report contains a synthesis of written comments received by the IJC on the 2004 Progress Report as well as the views expressed at the consultation meetings. Comments ranged from general support for the efforts being made by the governments to very detailed comments on specific aspects of the *Agreement*. In the following text, each comment is attributed to the respondent or respondents who provided it, or to the two consultation meetings; the numbers in parentheses correspond to the respondents and meetings listed in the Appendix.

Every effort has been made to accurately reflect the views expressed and comments received, and the IJC apologizes for any errors that may have occurred. The views expressed are those of the respondents, not of the IJC. This is as required by Article IX of the *Agreement*. The full text of all comments received can be viewed on the Commission's website at www.ijc.org.

General Comments on the 2004 Progress Report

Nearly one-third of the respondents found the 2004 Progress Report to be a valuable product containing useful information. A typical comment was that it “provides a very good summary of the initiatives and achievements in meeting the commitments made by Canada and the United States” (respondent 25). Some thought it was “a service to citizens” (respondent 20) that gave a “unique binational perspective” (respondent 24); several thought it was informative (respondents 1, 2, 4, 5, 6, 17) and gave a good understanding of progress being made (respondents 2, 11, 17, 28); others expressed the views that tougher and stronger commitments are needed in the future (respondents 14, 15). One said that it is “important to have a check on each country’s progress” (respondent 11), while another felt that the 2004 Progress Report provided “a more critical assessment than 2002 Report” (respondent 28).

The new design and extensive use of graphics in the 2004 Report were also well received. Several thought it was “well written and illustrated” (respondents 3, 4, 24, 28, 29). The web site references at the end of sections of the report were seen as useful (respondent 29).

Despite many favorable comments, some respondents felt that the concerns they raised about the 2002 Progress Report had not been fully addressed. These concerns included the need for a critical analysis of progress and needs, and more focus on human health and environmental impacts of air pollution (respondents 17, 26, 28).

Suggestions offered for improving future reports included:

- Recommendations for further action should be added, such as recommendations to improve observation networks, to move bilaterally to strengthen Corporate Average Fuel Efficiency (CAFE) standards for vehicles, to further examine why ozone concentrations have not fallen along with NO_x and VOC (volatile organic compounds) emissions, and to monitor mercury emissions and deposition and report on this topic in subsequent Progress Reports (respondent 4).

- *Air Quality Agreement* targets should be shown in all relevant figures and tables so readers could easily see how much progress has been made (respondent 10).
- Two-dimensional plots with two ordinate scales should be used for plotting two sets of data (it was unclear to this respondent which scale applies in Figures 22-25), and arithmetic scales to plot data of very different magnitudes on the same graph (e.g., Fig. 12-15) should be replaced by non-arithmetic scales such as a natural log (respondent 10).
- An index and a glossary of terms should be included (respondents 11, 29).
- Future evaluations should describe air quality improvement in terms of outcome in addition to cataloguing emission reduction initiatives, as is currently done; the Report should indicate whether the air is healthy to breathe, not just whether emission reduction targets are being met (respondent 13).
- Data should be timelier; publishing data that are three years old makes it difficult to assess whether commitments will be met (respondent 18).
- Emission amounts and volumes should be described in language that ordinary citizens can more easily understand; the 2004 Progress Report made some effort in this direction but could have gone further (respondent 29).
- While the 2004 Progress Report provides a summary of national programs and their progress, future Reports should note enforceable programs in the immediate vicinity of the border which have been undertaken by the two countries solely to address air pollution in the border region; if no such measures have been undertaken, future Reports should indicate whether it is because of lack of authority or because border air problems are not viewed as distinctly different from air pollution problems being addressed through other national or broad regional programs which might have occurred even in the absence of the *Air Quality Agreement* (respondent 24).
- The Report could be strengthened with an evaluation of the overall impact of the emissions reductions achieved; it would be useful to know if the commitments made are achieving overall health and environmental protection goals (respondent 25).
- The Report should specify what is happening, in addition to describing what is being accomplished; despite progress, emissions reductions from stationary sources remain above target levels and it is unlikely that Canada will be able to comply with a cap on NO_x emissions from large fossil fuel-fired power plants; acid rain is still affecting the Canadian environment and the health of Canadians (respondent 28).
- The next Report should be more definitive and less business as usual; concern was expressed that the 2004 Report fails to present the facts in a manner that motivates society to move the air quality agenda down a more determined path of change and improvement (respondent 29).

General Comments on Progress

Respondents were generally satisfied that progress has been made by both countries relative to reductions of sulfur dioxide, nitrogen oxides, and volatile organic compounds in the eastern part of the continent, but several noted the impact of the reductions on human health and the environment have not been adequately addressed (respondents 5, 13, 19, 37). There needs to be a redoubling of efforts in understanding, ameliorating and mitigating the environmental effects of reduced air quality (respondent 37). While the improvements described in the 2004 Progress Report are commendable, and emission reductions are on track, dangerous air pollution continues to blow both ways across the border. This suggests that the measures included in the *Agreement* are not sufficient to ensure that Canadians have clean air to breathe (respondent 13).

Some respondents criticized as unduly complacent the 2004 Progress Report's concluding statements that "the United States and Canada have continued to fulfill the obligations set forth in the *Air Quality Agreement* successfully" and that "human health and the environment have benefited greatly from progress" made under the *Agreement*. These assertions in the Report were challenged with empirical evidence and it was pointed out that they generally conflict with public perception. Reference was made to the increasing number of smog and health advisories in Ontario and New Brunswick since the last Progress Report, and data were cited from a number of recent reports from various organizations (respondents 15, 18, 21, 23, 29, 35). It was pointed out that there appears to be a credibility gap, between the 2004 Report's conclusions and what Canadians experience and know from publicly available sources (respondents 10, 29).

Part of the problem was said to be that other factors contribute to air quality, such as mercury, Persistent Organic Pollutants (POPs), stratospheric ozone-depleting substances, and greenhouse gases beyond those identified in the *Air Quality Agreement*, and that readers of the 2004 Progress Report are provided with no connections to such issues and no information as to trends (spatial or temporal) in these endpoints (respondents 10, 14).

Ontario and Nova Scotia indicated that air quality remains a top priority in those provinces (respondents 5, 6). Alberta restated its commitment to the Canada-wide Acid Rain Strategy for Post-2000 and the Canada-wide Standards for Particulate Matter and Ozone (respondent 9). The information provided in the 2004 Progress Report for Newfoundland and Labrador was said to be somewhat sparse and, possibly, misleading; in contrast to information provided in the Progress Report, for example, the province's own monitoring indicates that acid deposition is still of some concern (respondent 2). Michigan raised the Canada-U.S. Border Air Quality Strategy Pilot Project for the Detroit-Windsor area as a mechanism to share information related to inventories, monitoring technology and health effects data, and developed relationships that will last for years to come, and said it looks forward to working with federal and provincial agencies in Canada when developing strategies to meet the 8-hour ozone and fine particulate standards (respondent 12).

Maximizing the success of the *Air Quality Agreement*, it was stated, will require that coal-fired power plants be completely phased-out and alternatives found for coal-burning methodologies in industries on both sides. The continuation and proliferation of these plants in the United States was said to increase transboundary air pollution problems in Canada and, until a complete phase-out can be achieved, coal-fired plants must be made to comply with modern emission control standards. Imposi-

tion of more stringent caps on all air pollutants, including nitrogen oxides and sulfur dioxide, particularly from the power sector is necessary (respondent 21).

A commitment to adaptive management was seen as necessary to make controls tighter and to lessen the impact of air emissions; more work is needed on monitoring, basic science and impacts; futuristic policies are needed to recognize our forests, wetlands, and the functionality of our landscapes (Ottawa consultation meeting).

The report was said to appear to guarantee future outcomes while ignoring the difficulties in achieving them. Examples offered included problems in maintaining security of electricity supply, and commitments were said not to match expectations in many areas (respondent 17). If progress is being made, one asked, "Why are asthma rates increasing and the first smog day this year was in February?" (Toronto consultation meeting).

It was noted that the Progress Report acknowledges the fact that (a) Canada is still a top producer of harmful air pollutants such as sulfur dioxide (SO₂), nitrogen oxides (NO_x) and volatile organic compounds (VOCs) among Organization for Economic Cooperation and Development (OECD) countries on a per capita basis and (b) in absolute terms, the United States produces the maximum amount of these air pollutants among all OECD countries (respondent 21).

A weakness in the Report was said to be its failure to address the status of U.S. policies vis-à-vis President George W. Bush's "Clear Skies" proposal and what was understood to be projected cuts in funds to support the U.S. Environmental Protection Agency and environmental protection in general. Even if President Bush's proposal does not make it through Congress, it was asserted, the general movement to weaken the domestic pollution reduction regulations regarding utilities (the largest producers of sulfur dioxides in the United States) will have serious consequences for the goals of the *Air Quality Agreement* and should be addressed in a more comprehensive manner in the Progress Report. Ignoring these realities puts too much of a rosy slant on where we are heading (respondent 11).

General Comments on the Air Quality Agreement Process

Respondents observed that the *Agreement* is important because citizens of Canada and the United States breathe the same air, drink the same water, and share a common responsibility to provide future generations with a healthy environment (respondent 13). When measured against the commitments made, one respondent said, the *Agreement* has been successful: the ozone and acid rain problems have not been eliminated, but emissions of pollutants that contribute to these problems have been reduced in a manner agreed to by both countries. The *Agreement* was said to continue to provide a mechanism to cooperatively plan to achieve air quality standards in border areas, and has led to information sharing and research related to particulate matter, emissions inventory trends, air quality measurements, health effects, and other topics. It is important that air quality data and emission inventories are generated in both countries in a compatible manner so that the data can be easily compared. Also, the *Agreement* was seen as helping to assure that this will be continued (respondent 12).

Another useful outcome noted was that the *Agreement* process has resulted in personal relationships and procedures that will facilitate information sharing and joint participation in developing control strategies. This will benefit joint work to improve the air quality in the Detroit-Windsor area and other border areas (respondent 12).

One respondent said that, while there is still a long way to go, the *Air Quality Agreement* has institutionalized a way for the United States and Canada to ensure that each country is following their domestic policies regarding reduction of cross-border pollution (respondent 11). The Progress Reports were described as a useful and crucial way to receive feedback on the success of the *Agreement*. While the *Agreement* has had successes, much more still remains to be accomplished (respondent 31).

One organization supported the notion that air quality improvements should not come at the cost of significant economic hardship to the public and industry. The Progress Report was described as an example of how a strong economy and environmental concerns are being successfully managed in the Pollution Emission Management Area (PEMA), a transboundary region defined in the Ozone Annex to the *Air Quality Agreement*. Improvements noted throughout the Report were said to indicate that a cooperative approach sensitive to economic need is a workable approach to air quality issues (respondent 36).

Concerns were raised with respect to the *Agreement* process, including the view that there is no political accountability in the membership of the Air Quality Committee and that this has implications for the credibility of the data presented. The smelter in Flin Flon, Manitoba was cited as an example of the need for political accountability; increasing production at the smelter is resulting in more mercury releases and dust from tailings and, despite the children's health problems attributable to this, there is little will to regulate the releases (respondent 14).

Others suggested that there needs to be a more meaningful role for the IJC under the *Agreement*, including the ability to comment on the scope of *Agreement*, emission limits, progress, and policy options (respondents 14, 28). The commitments of the two governments were described as being presented without critical analysis in the Progress Report, leaving the reader with the inevitable sense that all is well in the area of cross-border air quality. There is a need for a more critical evaluation of performance and the risks and challenges ahead (respondent 17).

Some concern was expressed about a perceived geographic imbalance in the Progress Report. The document was seen to deal more with the air quality problems in the eastern portions of both countries, although a growing body of health evidence indicates that air quality is an issue in western areas as well. The Air Quality Committee and the Parties were advised to provide an equal focus on western issues, particularly as they relate to the Georgia Basin-Puget Sound airshed. This would be particularly relevant if a decision is made to develop a Particulate Matter Annex (respondent 19).

The Progress Report was said to fail to establish any useful context in which members of the public can assess the impacts of reductions in contaminants in relation to continuing risks to human health and the environment according to another commenter. For example, the Report states that Canada will comply with its commitment to cap NO_x emissions from large fossil fuel power plants in Ontario and Quebec at 39 kt and 5 kt, respectively; it would be more useful for the Report to evaluate the changes in emissions in the context of continuing impacts on human health and the environment (respondent 32).

One respondent stated that when citizens become engaged and start demanding improvements, change comes whether through regulatory or voluntary action. It was suggested that improvements in New Brunswick are worth exploring as a model for other communities, and that the next Progress Report should include a section on innovative models for other jurisdictions in North America. Disappointment was expressed that there was no summary or write up on citizen engagement, advocacy, and public participation activities in the report; it would be encouraging and interesting to highlight citizens/public engagement activities, and all jurisdictions in both countries should work harder to engage, inform and empower citizens to support emission reductions (respondent 29).

Additional Issues Requiring Attention

Several respondents identified a number of issues not currently covered by the *Agreement* and not reported on in the Progress Reports. The most widely recognized as missing from the *Agreement* deliberations were said to be airborne transport of mercury (respondents 4, 10, 12, 14, 20, 25, 28, 30) and airborne persistent toxic chemicals (respondents 10, 20, 25, 28, 30). Given the knowledge about gradual movement from water bodies to eventually reach the Canadian Arctic at unacceptable concentrations, there should be some focus on the transboundary movement of mercury (respondent 4). Considerable information on the environmental and human health impacts of these substances is available (respondent 28). It was pointed out that these issues have been raised previously in comments on earlier Progress Reports (respondent 14). It would be useful if future Reports included a section on emerging issues that might need consideration by the Parties, including changes to the *Agreement* to accommodate such issues (respondent 25).

Respondents noted that other important air quality issues are not required to be reported on under the *Agreement*. These include ozone-depleting substances and greenhouse gases (respondents 10, 20); SO₂, NO₂ and particulate emissions from ships -- data for Halifax and the St. Lawrence Seaway might be particularly important (respondent 3); and radioactive particulates emitted from CANDU reactors (respondent 15). One organization indicated that it has data for releases from the CANDU reactors that it would be willing to provide, and suggested that much closer attention should be paid to the continuous airborne emissions from these nuclear reactors (respondent 15).

In the future, it was suggested, it may be necessary to prepare a report on knowledge gaps and policy options, especially in regards to the co-benefits that may occur between actions that mitigate emissions contributing to acid deposition, air quality and climate change. It may be prudent to provide measures of uncertainties in future assessments, along with measures of progress. There may also be a need to evaluate the effectiveness of the *Agreement*, in addition to addressing the broader issue of air quality, and help identify the policies that must still be implemented to protect the environment and human health (respondent 28).

It was noted that the Great Lakes Commission (GLC) has a multi-jurisdictional air toxics emissions inventory that targets 213 pollutants, including all of the 188 hazardous air pollutants identified in the U.S. *Clean Air Act*, as well as a number of ozone precursors, and with a higher spatial and temporal resolution than other inventories. It was suggested that the GLC could work with the Air Quality Committee and any appropriate partners to facilitate use of this information in future Reports or assessments (respondent 30).

The Report was said not to indicate any progress with respect to persistent bioaccumulative toxic substances, such as mercury and other metals, dioxins and furans, chlorinated and brominated organic compounds, and polycyclic aromatic hydrocarbons. Many of these substances, although of greatest concern because of their impact on aquatic ecosystems and on people through fish consumption, are emitted primarily to the atmosphere and can be transported across North America. These substances are clearly within the definitions of "air pollution" and "transboundary air pollution" contained in Article I of the *Agreement*; and are, therefore, subject to the general objective of the *Agreement* "to control transboundary air pollution between the two countries" (respondent 30).

It was proposed that persistent toxic substances be considered subject to the Assessment, Notification and Mitigation; Scientific and Technical Activities and Economic Research; and Exchange of Information programs specified under Articles V-VII. In particular, the language in Annex 2 was seen as sufficient to include assessment of emissions, monitoring and modeling of persistent toxics with regard to their adverse effects on aquatic ecosystems and human health (respondent 30).

It was stated that although there are many binational programs that target persistent toxic substances, emissions inventories, monitoring programs and modeling efforts are needed in this area. Future Reports should include specific mention of programs undertaken and progress being made regarding atmospheric transport and deposition of these substances. In addition, the Parties should consider including specific objectives and actions regarding these substances when the *Agreement* is revised (respondent 30).

The assessment of particulate matter (PM) was seen as especially important, given the recent formal notification by the United States Environmental Protection Agency of nonattainment areas (that fail to meet the standards for one or more of the six criteria pollutants in the *Clean Air Act*) and the subsequent attainment strategies that now must be developed (respondent 17). Efforts to address PM levels in the air are important in both the United States and Canada (respondent 15). One organization noted the reference made in the Progress Report to “PM and other air-related matters with priority given to the eastern half of the two countries and with due consideration given to the issues identified in the shared airshed in the Georgia Basin-Puget Sound and the Rocky Mountain region.” Its Board has taken the position that an articulate Annex to the *Air Quality Agreement* is the best strategy to manage air quality and to reduce emissions in this larger airshed, since it appears that impressive progress has been made in the east through implementation of the existing annexes to the *Agreement* (respondent 19).

Acid Rain Annex

The Acid Rain Annex portion of the Progress Report received considerable attention in the comments received. About half of the respondents provided comments on this section. The comments are summarized under each of the headings presented in the Report.

Progress on SO₂ and NO_x Emissions Reductions

Several respondents noted the positive results achieved with respect to reductions of the emission levels for sulfur dioxide (SO₂) and nitrogen oxides (NO_x) and the success that has been achieved in meeting the goals to date (respondents 4, 11, 29, 31, 37). But much more needs to be done before full recovery of ecosystems can take place (respondents 4, 7, 11, 29, 31, 32). Scientists are convinced that acid rain pollution remains a serious problem; SO₂ emissions have largely leveled off in the period since 1995, leaving wet deposition of sulfate and nitrate from the air at worrisome levels in some regions (respondent 4).

One respondent said that even though phase two of Title IV of the *Clean Air Act* has been implemented in the United States, additional emissions reductions in SO₂ and NO_x continue as entities exhaust their early reduction credits. The improvements in precipitation acidity are also evident in reduced fine particulate concentrations being observed in Ohio. This program has had significant benefits in the Ohio River Valley separate from the originally intended acid rain reductions (respondent 8).

It was noted that, in the 2002 Annual Progress Report on the Canada-Wide Acid Rain Strategy for Post-2000, Canada reported that it still has a large acid rain problem in eastern Canada despite almost halving its SO₂ emissions since 1980. Recent atmospheric modeling results suggest that without further significant reductions of SO₂ emissions from the United States, the acid rain problem in Canada will not be resolved. The need for further reductions in transboundary acid rain-causing emissions was presented again at the 2002 Air Quality Committee meeting. This problem was said to be glossed over in the Report, thus leaving the public with the impression that it as been solved (respondent 32).

Several respondents said there needs to be a more in-depth look at NO_x (respondents 11, 14, 29, 31). Many scientists in both Canada and the United States were said to believe that emission targets set by the current acid deposition control programs will not protect sensitive ecosystems and that gains made in reducing sulfur dioxide may soon be offset by increases in nitrogen oxides such that acidity is not improving in sensitive areas (respondent 11). There needs to be a more comprehensive explanation of the problems, challenges, and future efforts in the section "Progress on Canada and U.S. Nitrogen Oxides Emissions Reductions" (respondent 29). It was also suggested that there needs to be consideration of NO_x reductions on a year-round basis (respondent 31). It was stated that New York, through state regulation, began mandating a year-round nitrogen cap that went into effect October 2004 (respondent 31).

It was noted that a footnote in the Progress Report, related to Canada's progress, mentions that the relative importance of nitrogen deposition is expected to increase but that the section on the United

States emphasizes reductions in sulfur dioxide with no mention of the relative importance of nitrogen oxides. This was said to suggest that adequate consideration may not be given to nitrogen oxides (respondent 11).

Comments on emissions trading were offered by several respondents and were mainly critical of the practice (respondents 21, 29, 35, 37). However, one suggested that Ontario's emissions trading program should be highlighted as progress (respondent 18), and another suggested that a cap and trade allowance system should be put in place for nitrogen oxides (respondent 11).

Concerns with respect to emissions trading and banking of credits included the following:

- Emissions trading may give rise to localized air pollution problems adversely affecting the environment and health in certain communities by creating pollution hot spots and intensifying regional imbalances in environmental health (respondent 21).
- Banking of SO₂ emissions credits one year and emitting them in subsequent years is not in the spirit of overall emissions reductions and would hamper needed ecosystem recovery (respondents 29, 35).
- Banking of emissions could lead to an over-estimation of ecosystem impacts in one season and underestimating ecosystem impacts of acid rain in those years when banked emissions are used to relieve emission restrictions (respondent 37).
- It was not possible from the report to assess the magnitude of banked emissions; therefore, the overall impact on the ecosystem is uncertain (respondent 37).

It was suggested that it would be helpful for readers unfamiliar with a cap and trade program if information was provided in Progress Reports on what these programs are, how they work, and their effectiveness. There also needs to be a public education program for Canadians on this emissions trading regime, especially if it becomes a government regulatory initiative (respondent 29).

The following questions and comments were raised with respect to the data and information presented in the Acid Rain Annex portion of the Progress Report:

- On nitrogen oxides, it is reported that Canada's agenda "to reduce the largest source of NO_x emissions -- from vehicles and fuels -- is aggressive." Yet the Report was said to provide little in the way of data to substantiate this claim. Where, precisely, is the evidence that Canada's agenda is indeed aggressive? (respondent 23).
- In Figure 1, SO₂ emission data do not extend beyond 2001, yet the corresponding data for the United States include data to 2003. To what is this difference attributable? (respondent 23).
- The data for NO_x emissions from Ontario electrical generating stations may reflect preliminary information (respondent 33).
- It is reported on page 3 that Canada has "a range of emission control options." What are these options? (respondent 22).
- Virtually all of the emission data are estimates, yet there is no indication of the associated uncertainties. Future Reports should indicate precision for estimated quantities (respondent 10).

It was stated that the Report on Air Quality Monitoring Results in New Brunswick for 2003, released in February 2005, illustrates that smog levels across the province of New Brunswick were similar in 2003 to 1980, smog over Saint John has either remained the same or gotten worse, and progress that New Brunswick had been showing between 1989 and 1995 on reducing acid rain seems to have stopped. Steps must be taken to guarantee a steady decrease year by year. More funding needs to be

allocated for partnerships, and demonstration projects for the development of alternative renewable energy sources (respondent 29).

The Progress Report was said to place much greater emphasis on the emission from fixed sources of nitrogen and sulfur oxides with less emphasis on mobile sources. The totality of the problem requires consideration of the combined outputs (respondent 37). The Report shows a downward trend in NO_x emissions from electric power generation facilities in the United States for 1990-2003, but there is no analysis of the overall trends in NO_x emissions for both Canada and the United States from all sources (respondent 29).

Emissions Monitoring

Monitoring and reporting efforts were described as critical to provide the necessary feedback to determine if the emissions reduction programs are having the desired effects. In fact, U.S. programs such as the Clean Air Status and Trends Network (CASTNET), the National Atmospheric Deposition Program (NADP) and Temporally Integrated Monitoring of Ecosystems/Long-Term Monitoring (TIME/LTM) need to be enhanced and budgets increased over the next several years, instead of facing cuts as has been the case. The use of Continuous Emission Monitoring Systems (CEMS) is crucial to data collection and extrapolation of the information for policy decisions in the future (respondent 31).

Programs that monitor the water chemistry of impacted areas and biological recovery studies were also seen as necessary. One respondent said that, while much is known about the changes to water including its pH and acid neutralizing capacity, much less is clear about the recovery of the plant and animal life in these water bodies. Funding for expanded research is again crucial to help determine the success of programs and future actions to be taken when reducing sulfur, nitrogen and mercury (respondent 31).

Acid Deposition Monitoring, Modeling, Maps, Trends

Information in the progress report on Newfoundland and Labrador was said to be sparse and not indicate, as provincial monitoring shows, that acid deposition is still a concern in the region (respondent 2).

The reduction of SO₂ and NO_x emissions and reduced acid deposition was seen as having proceeded well, although SO₂ emissions have largely leveled off in the period since 1995, leaving wet deposition of sulfate and nitrate at worrisome levels in 2002 in some regions. However, it was disconcerting to see maps with no data in some of Canada's most sensitive areas such as the Muskokas and north on the Canadian Shield (respondent 4).

With respect to emissions monitoring, there was a perceived need to report Canadian and U.S. data in self-consistent fashion to facilitate ease of comparison and to standardize through intercomparisons. Although deposition is reduced, likely due to the reduction in power station emissions, it was not clear if the deposition maps show decreases in proportion to the reductions in emission (respondent 37).

Simply calculating estimates for all Program Affected Sources (PASs) in a given year and plotting temporal trends was said to obscure important differences between historical PASs and new PASs. It was seen as important to know whether declines in emissions are due primarily to better performance of traditional sources, or better (comparative) performance of new sources (respondent 10).

Preventing Air Quality Deterioration and Protecting Visibility

It was noted that Canada is now moving to develop policies related to Continuous Improvement and Keeping Clean Areas Clean (respondents 8, 19). These are meant to achieve the intent of the U.S. Prevention of Significant Deterioration and the Regional Haze Program. An organization that has had some input to these Canadian initiatives believes that they will help to improve air quality in both countries, particularly in transboundary areas (respondent 19). This effort to address both new and existing sources will assist in attaining the long term goals of visibility improvement (respondent 8).

One association suggested that Canada should have a visibility monitoring program. It commented that its primary interest is in the Keep Clean Areas Clean program, which includes visibility, acid deposition, smog (ozone and fine particulates, air quality reporting) and effects on human health and vegetation. It expressed concern that air quality in its area is degrading due to pollution transported from the populated and developed areas in southern Ontario and the mid and eastern United States (respondent 35).

It was noted that the 2004 Progress Report describes Canada as using “continuous improvement” (CI) to improve air quality and address pollutants involved in visibility impairment, and goes on to say that “CI applies to areas with ambient pollutant levels below those of existing standards but still above levels associated with observable health effects.” The Report, it was suggested, should be specific as to what are the remedial and preventive actions that would allow for continuous improvement (respondent 22).

The U.S. Regional Haze Program, noted in the Progress Report, requires states to develop plans to improve visibility conditions at Class I areas with the goal of restoring natural visibility conditions in about 60 years. It was suggested that the time frame should be reduced substantially; long time frames are inconsistent with public expectations and do not adequately consider the health impacts (morbidity and mortality) on the community (respondents 22, 29).

One respondent was discouraged to read that “data from the Improve (Interagency Monitoring of Protected Visual Environments) network indicate little change in visibility during the past decade” and “overall visibility in the East is still significantly impaired in national parks and wilderness areas especially on haziest days.” Both countries and all jurisdictions are encouraged to implement emission reduction plans at a more accelerated rate (respondent 29).

Consultation and Notification of Significant Transboundary Air Pollution

The consultation and notification process for transboundary air pollution sources was said to have been tested in the past year during the notification in connection with the permitting of a coking facility. Issues were resolved relating to how and by whom the notification was to have been made, and future notifications will be made in a timelier manner (respondent 8).

Respondents commented on the reference to emissions from the Algoma Steel plant in the Progress Report and the continuing concerns by Michigan citizens. Some explanation of the concerns and how they are dealt with in the transboundary context would have been helpful (respondents 22, 29).

Ozone Annex

More comments were received on the Ozone Annex than on any other section of the Progress Report. The comments included positive remarks on progress achieved and critical comments on action plans and overly optimistic statements about meeting objectives in the future. Specific comments are organized by headings used in the Progress Report.

Progress under the Ozone Annex

While respondents expressed satisfaction that progress is being achieved in reducing ozone precursors NO_x and VOCs, many believe that ozone concentrations remain unacceptably high (pages 21-22) and composite trends of maximum 8 hour concentrations have even gone up in 2002. Some further analysis of why ozone concentrations have not declined with the precursors would be worthwhile, especially as the warmer climate may exacerbate the problem further in the future. Tighter Corporate Average Fuel Economy (CAFE) standards for vehicles could address some of the more intractable emission controls (respondent 4).

It was noted that Part I of the Ozone Annex states that the objective of the Annex is to help “both countries attain their respective air quality goals over time to protect human health and the environment” and that atmospheric concentrations of ozone not exceed the Canada-wide Standard and the National Ambient Air Quality Standard in the United States. No clear determination was seen in the Progress Report of progress toward this objective, and there is no way to gauge whether the emission reduction commitments that have been made are working to clear the air. A clear picture of reductions in ambient pollution levels could help to determine health benefits; much less useful in this regard is the cataloguing of emission reductions initiatives, with no clear analysis of the net benefit (respondent 26).

One respondent expressed a concern that there is a lack of critical analysis of governmental actions to achieve the objectives committed to in the *Agreement*. The credibility of the reporting was said to be strained by statements such as “Canada will comply with its commitment to cap NO_x emissions from large fossil fuel-fired power plants in the Ontario and Quebec portions of the PEMA at 39 kt and 5 kt, respectively” (respondent 17). It was also suggested that much of the National Pollution Release Inventory (NPRI) data is unverified and not accurate enough to support the definitive statements made in the Progress Report (respondent 35).

The provision of overall average trends in the Report was said to obscure important variations in local areas. For example, the Report notes that “Ozone trends are nearly flat for the period, though there is a complex regional pattern;” it would be helpful to look at trends at a more regional scale, such as major metropolitan areas. In addition to annual averages, more information on the frequency and magnitude of high pollution events would be useful indicator of potential health impacts (respondent 25). The next Progress Report should address the annual versus the traditional ozone season (respondent 18).

It was suggested that the Ozone Annex section contains weak wording on actions and plans, no procedure to evaluate the effectiveness or success of the programs, and confusing rhetoric. Examples

include: “B.C. is preparing to propose regulations;” “the guidance will provide national guidance;” “Canada intends to monitor market uptake;” and “publication of the final guideline will be considered” (respondent 35). Readers of the Progress Report were said not to get a clear picture of current progress, how the allocated funds have been invested, and how much still needs to be done to achieve the objectives of the Agreement (respondent 23). It was stated that analysis in the Report is shallow with reference made to meeting targets, but the evidence is that the number of smog days are increasing; the credibility gap between reporting and actual trends needs to be addressed (Ottawa and Toronto consultation meetings).

One respondent said that the U.S implementation of Phase 2 of the NO_x Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone (SIP Call) resulted in significant reductions of NO_x in the Great Lakes region. There are significant efforts to evaluate additional ways to reduce emissions of both VOCs and NO_x to attain the revised ozone standards throughout the region. The lack of an accurate Canadian inventory has been a hindrance to the development of a complete inventory for the evaluation of regional ozone and fine particulate (respondent 8).

While Canada has not adopted revised ozone and PM 2.5 ambient standards consistent with the United States, the expansion of the emission reporting requirements in Canada, which will address the precursors to fine particulate, was expected to be beneficial to efforts to develop plans to attain the revised air quality standards (respondent 8).

As indicated in the Progress Report, Canada is “on track to implement all of its commitments for vehicles, engines and fuels” in order to reduce ground level ozone. These steps were seen as positive (respondents 13, 29). However, the stationary emissions of NO_x were said to remain above target levels and it was noted that the Progress Report acknowledges that ozone levels were high in 2002 relative to a multi-year average reflecting weather patterns of that year as well as emissions (respondent 29). An aggressive strategy to reduce NO_x and VOC to lessen smog, and the adverse health impact on Canadians and Americans, is urgently required (respondents 13, 29). Ground level ozone even at the National Air Quality Objectives level is not protective of health. This conclusion was reported at the Ozone PM National Multi-Stakeholder Consultation Meetings when the first Ozone Annex was finalized several years ago. Even with reductions in some pollutants, some progress has been made, but it is insufficient to protect people from adverse health impacts (respondent 29).

Smog and climate change were said not to be distinct problems because a large proportion of the smog pollutants that cause serious cardiac and respiratory problems in Canada are emitted from the same tailpipes and industrial smokestacks as greenhouse gases, which the Kyoto Protocol aims to reduce. Canada’s commitment to the Protocol provides an opportunity to significantly reduce smog and achieve cleaner air. The purchasing of emission credits from foreign countries to make up for a shortfall in the reductions of greenhouse-gas emissions was described as short-term thinking that does not address the long term goals outlined in the Protocol. Climate change measures under the Protocol will yield additional benefits through improved local and regional air quality, but more can and needs to be done. Canada must bring air pollution down to safe levels and to cut greenhouse gas emissions to halt climate change, and choose a climate change strategy that satisfies the country’s international commitments while maximizing the clean air co-benefits and smog-reduction potential of any greenhouse gas reduction initiatives (respondent 13).

In order to realize substantial reductions in ambient air levels of PM₁₀ (and respirable particulate matter) and ozone in Hamilton, Ontario, significant reductions in emissions of precursors were said to be needed from upwind sources in the United States. A 1997 source attribution study estimated

that long-range transport was responsible for about 70 percent of the ambient PM_{10} detected in the residential areas of Hamilton and for about 40 percent of the PM_{10} measured in the industrialized north end of the city. Ozone modeling performed for the Air Quality Committee suggests that U.S. sources are responsible for a significant percentage of the nitrogen oxides (NO_x) and ground-level ozone measured in the ambient air in southern Ontario. The 2004 Progress Report indicates that southern Ontario falls into the region of Canada that experiences the highest ambient levels of ground-level ozone and respirable particulate matter ($PM_{2.5}$). Coal-fired power plants in the United States are responsible for 67 percent of that nation's SO_2 emissions and 22 percent of its NO_x emissions. Many of the heaviest SO_2 and NO_x emitters are located upwind of southern Ontario (respondent 16).

The Progress Report identifies the Clean Air Interstate Rule (CAIR) proposed by the U.S. Environmental Protection Agency (EPA) in January 2004 as a rule that could significantly reduce SO_2 emissions from power plants in 29 states by 2015. However, one respondent cited a report that, while emissions of SO_2 and NO_x from all power plants in the United States were reduced by 10 percent and 29 percent respectively between 1995 and 2003, air emissions of SO_2 and NO_x from the heaviest emitting coal-fired power plants increased by 54 percent and 38 percent, respectively. Data included in that report confirm that the states with the greatest increases in emissions from coal-fired power plants over the last decade include those that are upwind of southern Ontario, such as Ohio and Indiana (respondent 16).

These findings were said to suggest the need for two actions: significant reductions in emissions of SO_2 and NO_x from U.S. coal-fired power plants and the use of regulatory provisions that ensure that emission reductions are achieved by all coal-fired power plants. The Air Quality Committee should describe the air quality benefits that could accrue to Canada if the New Source Review provisions were applied to coal-fired power plants that have been expanded or retrofitted in the PEMA airshed. They would also like the committee to compare the applications of the CAIR Rule, the Clear Skies Bill, and the existing *Clean Air Act* in terms of their potential impacts on air quality in southern Ontario (respondent 16).

One association noted that its comments on the 2002 Progress Report stated that Ontario's emissions trading program confuses the issue of the province attaining its Ozone Annex commitments. The electricity sector NO_x emissions cap outlined in the Annex (39 kt in 2007) is a hard cap and cannot be achieved through emissions trading. The most recent inventory reported by Ontario for the PEMA is 74.2 kt. Regardless of Ontario's promise to phase out its coal-fired power plants by the end of 2007, it is essential that a plan be presented that clearly shows how Ontario will achieve this 35 kt reduction and meet its Annex commitments (respondent 26).

It was noted that Ontario's emissions trading program is undergoing an expansion. Through the Industry Emissions Reduction Plan (IERP), there will be more sectors with emissions caps, but these caps vary widely from sector to sector. As well as trading allowances, the capped sectors will be able to purchase Emission Reduction Credits (ERCs) from the United States and Canada to apply to their caps. As these ERCs do not ensure actual emission reductions, it was stated, a clear picture of our emissions trajectory is hard to determine. Some of the emission reductions that Ontario is claiming in the 2004 Progress Report may be the result of emission credits and not actual emission reductions (respondent 26).

The section of the Progress Report that deals with "Measures for NO_x and VOC Emissions to Attain Canada-wide Standards for Ozone" suggests that the Canada-wide Standard for ozone will be achieved by undertaking (by 2005) measures to reduce NO_x emissions for key industrial sectors.

Within Ontario, described by one respondent as Canada's most important border region from an Air Quality Agreement standpoint, five of these industrial sectors will only have to reduce NO_x emissions by one percent from current levels by 2010-2014. Ontario was said not to be currently close to attaining the ozone standard by the 2010 compliance date (respondent 26).

Under "Stationary Sources of NO_x," one respondent was discouraged to read that "Emissions from power plants in the Ontario PEMA were approximately 78 kilotonnes in 1990 and approximately 79 kilotonnes in 2002." The report states further "but progress is underway towards reductions by 2007." Ontario's decision not to permit coal use as fuel for these big power plants was described as good news and the province was congratulated for its decision to move away from coal fired power facilities to a less polluting fuel source such as natural gas for co-generation applications. The situation in Quebec, where NO_x (as NO₂) emissions from power plants are above the 5 kilotonne cap (preliminary data for 2003), was not seem as encouraging (respondent 29).

Under "Measures to Reduce VOCs," it was noted that significant reductions in VOC emissions will be achieved through reductions of perchloroethylene (PERC) emissions resulting from new regulations on dry cleaning establishments. In 1996, EPA excluded PERC from the definition of VOC on the basis that it has negligible photochemical reactivity. In light of this, it was suggested, the expected reductions in PERC emissions should not be listed as part of the effort to reduce VOC emissions under the Ozone Annex to the Air Quality Agreement (respondent 27).

Under the same heading, the regulations regarding dry cleaning and solvent degreasing were seen as positive steps but a "drop in the bucket" in comparison to fugitive emissions (emissions not caught by a capture system that are often due to equipment leaks and evaporative processes) of VOCs from the 19 petroleum refineries in Canada. The initiative sponsored by the Canadian Council of Ministers of the Environment (CCME) under the National Framework Emissions Reductions for Petroleum Refineries (NEPFER) deserved to be mentioned: the process was unique and effective and will lead to reductions in emissions from this sector of up to 50 percent over the next ten years. The CCME Codes of Practice and Guidelines for VOCs should be cited, as these initiatives are expected to reduce VOCs emissions even more from this industry. A section on regulatory changes in progress or finalized should have been in the report (respondent 29).

The discussion of the cap and trade programs for emissions was said to raise a number of questions but not answer them. These questions include whether the proposed emission trading will actually lead to a decrease in ozone production, and whether the cap and trade policies will lead to a net reduction of ground level ozone concentrations or the export of pollution to other U.S. states not included in the program. The Progress Report noted the importance of weather on ground level ozone and PM₁₀ concentrations, and this can not be overstated. Thus, the state of the science regional models of atmospheric composition that incorporate the short term variations due to weather are an essential tool for assessing the likely changes in pollutant concentrations resulting from changes in emissions (respondent 37).

In offering comments on the "Stationary Sources of NO_x" section of the Report, one organization noted that NO_x emissions from power plants in Ontario are essentially unchanged since 1990. It attributed this to policy uncertainty at the political level and made the case that the turbulent nature of Ontario's electricity sector has prevented proper investment in the province's coal-fired generation stations, resulting in increased emissions and rate increases. The suggestion was that this is not in keeping with what is sought through the *Air Quality Agreement*, which is to keep a balance between a strong economy and clean environment. The organization also pointed out that there are 55 million automobiles upwind of Ontario and, accordingly, there ought to be programs that would provide

better results per unit cost of implementation than shutting down coal stations in Ontario whose acid rain emissions could be reduced to almost zero with comparatively inexpensive emissions control technology (respondent 36).

Despite Canada's efforts, elevated levels of smog and ground level ozone were said to continue to plague the southern and western areas of New Brunswick, and up to 70 percent of ozone and smog conditions in the region were attributed to long range transport from the Boston-Washington corridor. Local efforts aimed at reducing the precursor emissions (VOC and NO_x) do not provide relief because the emissions are still heavy in the northeastern United States, from where they drift in a northerly direction and elevate ozone levels on hot sunny summer days. Recently in Toronto, there was a bad three-day period of winter smog with advisories. This is a serious worry affecting millions of people. This is why it is hard to recognize the progress cited in some parts of the Progress Report (respondent 29).

The United States information presented in the Report was said not to be current. EPA designated 126 areas as non-attainment for the eight-hour ozone standard. There needs to be political will to tackle this major public health problem with the vigor it deserves. Citizens have not been protected sufficiently, despite the progress claimed in the Report. Much more has to be done (respondent 29).

The Progress Report cites the Clean Air Interstate Rule that would cover 29 states and District of Columbia. Under this rule, the proposed cap and trade program, if adopted by the states, would annually reduce power plant SO₂ emissions by approximately 3.6 million tons by 2010, with reductions ultimately reaching more than 5 million tons annually. One respondent said that the Report should be clearer that unadopted proposals are not indications of real progress (respondent 29).

Anticipated Additional Control Measures and Indicative Reductions

It would have been useful, one respondent suggested, had the Progress Report included a review of the potential impact of the proposed "Clear Skies Legislation in the United States on the commitments made in the Air Quality Agreement and in achieving the overall health and environmental goals of the Agreement would have been useful. This should be considered in future reporting (respondent 25).

Another respondent noted that the Progress Report states that Ontario "has committed to reducing NO_x and VOC emissions by 45 percent below 1990 levels by 2015 under the Anti-Smog Action Plan." Although this promise is a key part of Ontario's Canada-wide Standards commitments as well, the target was said to be not binding. It was also not clear if this Action Plan is still in place, as neither the Anti-Smog Action Plan Operating Committee nor the Steering Committee have met in several years. Although there has been a long-term ministerial promise to accelerate this target to 2010, this promise has not been backed up by policy (respondent 26).

The quantitative analysis of the overall emission reductions expected to result from the measures in the Air Quality Agreement was seen as very important; therefore, the means to achieve the overall reductions that are reported need to be articulated, sector-specific reductions identified, and measures defined to determine successful attainment of these reductions. The fact that the estimated emission reductions attributable to the Ozone Annex have changed since 2000, but the measures themselves have not, was confusing. In order to provide a clearer picture of emissions trajectories, it was suggested, such emission reduction targets should be codified into the Agreement itself and detailed Progress Reports mandated. Such provisions must also be part of future Annexes, such as

the proposed Particulate Matter Annex. This would allow for a better gauge of progress and overall impacts (respondent 26).

The Progress Report shows significant NO_x emission reductions from the NO_x SIP Call (a 1998 action by the United States Environmental Protection Agency to set NO_x reduction requirements for certain states) that will likely be unchanged by any new U.S. legislation, but it was not clear whether other parts of the *Agreement* could change. Concern was expressed that Bill S. 131, commonly referred to as “The Clear Skies Act of 2005,” will supersede parts of the U.S. *Clean Air Act*, including Titles I and IV, and could have a significant impact on cross-border pollution flow. This was said to be just one of a number of U.S. initiatives that has the potential to influence the attainment of *Air Quality Agreement* goals and that should be further investigated (respondent 26).

The Progress Report notes that, by 2005, all Canadian jurisdictions will publish their implementation plans outlining the measures they will take to achieve the Canada-wide standard. One respondent was encouraged to learn that Ontario continues to make progress toward its commitments under Ozone Annex, but disappointed to read that only two jurisdictions (Ontario, Quebec) have area specific reductions. It would have been useful information for the public if the Report had listed all jurisdictions with a report on their progress, even if there was none (respondent 29).

Reporting PEMA Emissions

Comments on this section were mixed. The Pollution Emission Management Area (PEMA) concept was seen as useful, but the accuracy and reliability of the data presented in the Report was questioned (respondent 14). It was pointed out that the U.S. 2002 National Emissions Inventory (NEI) data come from a draft version of the 2002 NEI (respondent 27). It was also pointed out that the Progress Report notes that the data presented are preliminary, and some missing elements were identified (respondent 18).

One respondent suggested that the time has come for a more prescriptive approach as opposed to a voluntary one. It was felt that voluntary Agreements have been ineffective to get the major industrial sources of air pollution reduced. The efforts of Ontario, with its Drive Clean Smog Patrol, were recognized and the suggestion was made that a similar program should be implemented in New Brunswick. Also, the Progress Report should have highlighted similar programs and initiatives in U.S. jurisdictions with a review of their effectiveness (respondent 29).

Reporting Air Quality for All Relevant Monitors within 500 km of the Border

The formation and long distance transport of ozone was described as complex processes. It was noted that the fourth highest 8-hour ozone maxima for sites within 500 km of the U.S.-Canada border have shown an upward trend both in Canada and the United States. This, it was suggested, may be the reason why it has been reported that the ozone level over the North Atlantic has been steadily rising over the same period. Some integrating comments on this would be of interest (respondent 3).

With respect to ozone controls, the Canadian approach was seen as much softer than that of the United States and needing to be strengthened because codes and guidelines require no commitment for buy-in. The Canada Wide Standards were said to be misnamed as Quebec is not party to them; they are not really standards, as standards come with consequences. Concern was expressed that all

multistakeholder committees have been sunset as of March 31, 2005; thus, there is no real commitment to work with stakeholders (respondent 14).

A question was raised as to why Figure 19 shows data for Canada and the United States on different graphs, when Figures 17 and 18 show their data on the same plot (respondent 14).

Summary of Ozone Annex Review Meeting

One respondent was discouraged to learn that “within 500 km of the United States-Canada border, ozone levels were high in 2002 relative to a multi year average, reflecting weather patterns of that year as well as emissions” (respondent 29). Others said that this further emphasizes the point made that current control limits do not appear to be adequate and that more needs to be done to protect public health (respondents 4, 11, 13, 18, 26, 35).

The Progress Report notes that, at the Quebec City Ozone Annex Review Meeting, “continued efforts in health and environmental effects tracking were described.” One respondent had a different recollection and expressed concern about the lack of sufficient health tracking, stating that this is essential to reporting real progress, that more governmental resources are required to facilitate this tracking, and that other participants echoed these concerns at the meeting (respondent 26). A great deal more information related to health impacts was presented at the Quebec City meeting and the Progress Report should have included some of the highlights. The reports and presentations from health leaders and environmental non-government organizations (ENGOS) should have been cited or referenced (respondent 29).

Related Air Quality Efforts

The Conference of New England Governors and Eastern Canadian Premiers was described as one of the most impressive structures within jurisdictions of North America, both as a unique political organization and in terms of concrete outcome. Section 2 of the Progress Report was said not to do justice to this organization. There is no reference to the various Agreements and public commitments these Governors and Premiers have made to reduce emissions by establishing emission reduction target caps for a number of pollutants. This model should be followed by the Western Canadian Premiers and Western U.S. Governors to collaborate on air quality issues in their regions (respondent 29).

Scientific and Technical Cooperation and Research

General Scientific Issues

The Parties to the *Air Quality Agreement* were encouraged to increase the reliance on research-grade regional transport models in understanding the processes at work in the trans-boundary region, the impact of long-range transport on local events, and the potential outcomes on various control strategies (respondent 37).

One respondent pointed out that survey results show that an overwhelming number of scientists believe that the emission targets set under current acid deposition control programs in North America will not protect sensitive ecosystems, that nitrogen oxides are undermining the benefits of controlling sulfur dioxide emissions, that a cap-and-trade allowance system should be put in place for nitrogen oxides, and that present policies are not sufficient. Concern was expressed that coupled with funding cuts for the study and monitoring of acid rain pollution, the prognosis for future reductions may not be as optimistic as the conclusions of the Progress Report suggest (respondent 11).

Scientific capacity was also raised in this context. The quality and quantity of monitoring and surveillance data, and the ability of monitoring programs to “adapt” to new information was said to depend on scientific capacity, and the ability of the Canadian government to provide high quality, accurate and anticipatory scientific information and data was said to have been compromised by budget reductions in several departments during the last decade. It was noted that, in an appearance before the House of Commons Standing Committee on Environment and Sustainable Development, Finance Minister Ralph Goodale explicitly made reference to a “scientific deficit” within the Canadian federal government. It is, therefore, incumbent on the Parties to include in the Progress Reports information on changes in science capacity in those domains of inquiry that have a direct effect on the quantity, accuracy, and precision of the data in the Progress Reports (respondent 10).

Cross-border cooperation was described as strong and one of the truly good things about the linkages that the *Air Quality Agreement* has established, but concern was expressed that there is still too much work going on in each country in isolation from the other. Each country was said to continue working separately on its pollution problems rather than sharing in the burden (respondent 11).

Emission Inventories and Trends

Several respondents specifically referred to data and information presented in the Emission Inventories and Trends portion of Section 3 of the Progress Report. The data were said to have been generally presented in a useful manner, but they prompted a number of questions and concerns. For example, it was suggested that the potential importance of the electric power sector in Canada as a source of sulfur dioxide (SO₂) emissions may be understated (respondent 24). The Report states that “Canadian SO₂ emissions stem mostly from coal-fired combustion in the industrial sector, with few emissions from the electric power sector, due to the large hydroelectric capacity in Canada.”

Based on a recent compilation by the North American Commission on Environmental Cooperation (CEC), the electric power sector in Canada contributes about 20 percent of national SO₂ emissions, or one-fifth of the national total. This amount is also consistent with the pie chart of Canada's 2002 SO₂ emissions in the Progress Report. From an air management point of view, it was suggested, any a future national strategy in Canada to further reduce SO₂ emissions should consider the electric power sector as one sector among several where a sizable contribution of SO₂ emissions continues to occur (respondent 24).

With respect to the graph showing emissions by sector for both countries, it would be useful to have a table with actual data rather than having the reader guess at the breakdown (respondent 22).

A statement in the Progress Report that "the U.S. has shown greater emission reductions than Canada for VOCs and NO_x" was seen as significant and raised the question of what data is used (respondent 23). Medical Officers of Health were said to be concerned about trends in emissions and air quality. With respect to the graph of U.S. and Canadian SO₂ emissions, an explanation was sought for why Canadian SO₂ emissions appear not to have declined significantly since 2003. What really counts is the sulphate deposition per hectare per year. and the absence of such data was said to be regrettable. What will be achieved, in terms of kilograms per hectare per year, by 2010 through the Canada-Wide Acid Rain Strategy? These data and goals should have been included in the Progress Report (respondent 23).

Air Quality Reporting and Mapping

A significant number of the comments received related directly to air quality data collection, reporting and the accuracy of data presented in the Progress Report. These have generally been covered under other topic headings when they referred to other aspects of the Agreement. However, some of the points should be noted here:

- Long-term commitments are needed to enhance monitoring networks to monitor basic science and the impacts of emission reduction programs and initiatives (respondents 11, 14, 29, 31, 35).
- The Canadian government's ability to provide high quality, accurate and anticipatory scientific information and data has been compromised by budget reductions; the resultant reduction in scientific capacity not only widens the credibility gap but it also tends to confound temporal trends in collected data (respondent 10).
- The timelines for publication of data is too slow; some data reported in the 2004 Progress Report are only up to 2001, and this impacts on the ability to evaluate and manage reductions, and meet deadlines (respondent 35).

Transboundary Particulate Matter Science Assessment

Thirteen respondents raised the issue of particulate matter (PM), a matter of concern with respect to human health impacts. The joint science assessment was seen as a good initiative. Results from the three binational workshops identified several key objectives for a Canada-United States transboundary assessment. The findings reinforce the concern that particulate matter has adverse health effects (respondent 29). The statement that "U.S. and Canadian controls that are expected to be implemented were found to result in a maximum annual reduction of PM_{2.5} of 2.3 ug/m³ in 2020" raised questions: Will such reduction be sufficient to protect health? What kind of percentage

reduction is 2.3 ug/m³ in 2020 compared to now? Do both countries believe these reductions are sufficient to protect both vulnerable and healthy populations? The view was expressed that these reductions will not be health protective (respondent 29).

With respect to the statement in the Progress Report that PM_{2.5} can be high in the Windsor-Quebec Corridor, it was noted that it can also be high north of this corridor and extend to Georgian Bay and the Muskoka lakes. Questions were raised as to why this area was ignored and why there are no data in the Progress Report from the monitors at Parry Sound (respondent 35).

It was stated that the same attention should be given to air quality issues in the Georgia Basin-Puget Sound area as have been given to the eastern regions of Canada and the United States, and pointed out that the Canadian government has been asked to consider establishing an appropriate Annex under the Air Quality Agreement to address air quality and health concerns in the Lower Fraser Valley Airshed, especially regarding fine particulate matter. Future emissions of primary particulate matter (including diesel PM) and pollutants such as sulfur oxides and ammonia, which contribute to secondary fine particulate formation, are expected to rise in the region. In addition, there have been recent proposals to build large power plants close to the British Columbia-Washington border. These issues suggest that any improvement in regional air quality will require the close cooperation of both countries (respondent 34).

Another respondent also raised the need for more focus on particulate matter and the incorporation of an annex in the *Air Quality Agreement*. An annex was seen as the best strategy to manage air quality and to reduce emissions in the airshed, given the progress made through implementation of the existing annexes to the *Agreement* (respondent 19).

The lack of any mention of emissions of SO₂, NO₂ and particulate emissions from ships was noted, and it was suggested that data for Halifax and the St. Lawrence Seaway would be particularly important (respondent 3). In addition, radioactive particulates being emitted from CANDU reactors were identified as a matter of some significance (respondent 15).

One respondent expressed concerns about ozone and fine particulates and their effects on human health and vegetation. Air quality is being degraded by pollution transported from the populated and developed areas in southern Ontario and the mid and eastern United States (respondent 35). Significant reductions in emissions of precursors from U.S. sources are required to realize substantial reductions in ambient air levels of PM₁₀ (and respirable particulate matter) and ozone, in Hamilton, Ontario (respondent 16).

Health Effects

About one fifth of the respondents commented on the human health effects associated with emissions of substances covered by the *Agreement*. For example, the Progress Report was said not to fully describe the seriousness of health effects (respondent 29), and concerns were expressed about the human health effects from breathing polluted air (respondent 15), and that little is being done to track health impacts (respondent 26).

It was suggested that the Report should have had a more in depth analysis of adverse health and death statistics caused by air pollution as reported by the lung associations of both countries, medical associations, or jurisdictional public health agencies; this type of data tends to refute the Report's concluding statement that human health and the environment have benefited from progress made under the *Agreement* (respondent 29). It was also suggested that there is no air quality monitoring

data or health effects data to support the above concluding statement (respondent 35). Considering the consistently higher number of smog alert days over the past few years, the standards are not rigidly enforced or they are not tight enough; the *Agreement* has a long way to go to address air quality in eastern regions (respondent 15).

One respondent described the section on health effects as brief and unbalanced. Mention should be made of recent experimental work in the Hamilton, Ontario region, and a considerable body of work on ozone – of which examples were provided -- was not mentioned in the Report (respondent 3).

One respondent stated that “The emission levels given in the Progress Report are much too high, resulting in thousands of citizens getting sick, causing asthma events and even premature deaths.” The current levels of VOCs and NO_x interacting with hot sunny days cause ground level ozone levels to be high; even the “good” and “fair” readings are unacceptable, and much more has to be done. Information from two community stakeholders was cited as evidence that there is a disconnect between statements in the Progress Report and what Canadians experience and know from publicly available sources (respondent 29).

A respondent expressed concern about the pollutants that are affecting the health of Canadians, and recommended that there be appropriate mechanisms to warn those who are vulnerable and at risk, so that they can act to protect themselves from contaminants in the air, water, or food. The government of Canada, it was noted, has been called upon to establish a national Air Quality Index so that real-time air quality information and predictive forecasting is made available to all Canadians. Health-based reporting about pollutants is a way to allow Canadians to partner in their own health protection, while such pollutants are being addressed by policies aimed at producing cleaner air (respondent 13).

Another respondent said that there is a need for ongoing efforts by Canada and the United States to improve air quality and reduce the health impacts of air pollution on human health (respondent 26). One respondent encouraged governments to continue work on human health effects, citing a peer-reviewed study that links air pollution, especially polycyclic aromatic hydrocarbons (PAHs), to genetic changes in developing fetuses (respondent 20).

A respondent called for research on the health effects of the manganese present in Canadian gasoline. This respondent said that Environment Canada’s review of manganese only assessed it for health effects when ingested but that, as a known neurotoxin, its health effects when inhaled – by, for example, users of marine outboard motors -- also need to be assessed. (respondent 35)

Another respondent noted that that, during the August 2003 Northeast blackout, sulfur dioxide levels were 90 percent lower; ozone was about 50 percent lower; and light scattered by particles was reduced by 70 percent--increasing visibility by 20 miles. These data were cited to demonstrate the benefits of cleaning up coal-fired power plants (respondent 20).

Fine particle pollution from U.S. power plants was said to cut short the lives of nearly 24,000 people each year, including 2,800 from lung cancer, and 38,200 non-fatal heart attacks annually were attributed to power plant pollution. At least 90 percent of the deaths due to fine particle pollution could be avoided by capping power plant sulfur dioxide and nitrogen oxide pollution at levels consistent with the installation of today’s best available emissions controls (respondent 21).

The suggestion was made that, for the three health-related research results presented in the Progress Report, actual data would have been helpful. For instance, the report states that “Multiple hypotheses now exist describing the biological mechanisms by which very small concentrations of inhaled

PM produce cardiovascular and pulmonary changes" References and specific information on the studies should have been presented (respondent 22).

It was noted that Health Canada completed health science updates for PM_{2.5} and ozone in support of the Canada Wide Standards process, and that the updates concluded that the new evidence gathered from clinical toxicological and epidemiological studies continues to support the standards. This was questioned by one respondent, who said that the Science Background documents for the Canada-wide Standards showed health harm at these regulatory levels. In New Brunswick, significant ozone episodes were said to occur on average about six times per summer, mainly affecting the southern part of the province; much of this ozone was said to originate from populated regions of the north eastern United States, especially the Washington, D.C. to Boston corridor. Accordingly, more needs to be done to address transboundary air pollution (respondent 29).

One respondent said that recent health research suggests that there is no clear "safe" threshold for ozone. The question was raised as to how, in the Progress Report's section on health effects, the health assessments for PM and ozone conclude that the current standards can be supported when, on the same page, the Report notes that "Recently published epidemiologic studies have continued to provide evidence linking serious health effects with exposure to fine particles," and "Multiple hypotheses now exist describing the biological mechanisms by which very small concentrations of inhaled PM produce cardiovascular and pulmonary changes contributing to increased illness and death." The results cited in this section make it difficult to understand how the new Canada-wide Standards, when they come into effect, can be supported from a health protection perspective. These health effects results cited should serve as a powerful reminder to both governments that more must be done in respect to emission reductions, industrial practice, life style changes of populations, and regulatory interventions (respondent 29)..

Forest Effects

Two respondents commented on the Forest Effects Section. It was noted that data are given for sulfate deposition and for critical loads for forest soils, but no data were presented on the level of pH in rain or snow melt over the region affected by acid rain. Presumably, it was stated, these measurements have been made continuously over at least ten years, and the reader might expect to be shown not only the reduced emissions levels, but the resulting changes one would expect in rain acidity as a result of the reductions achieved (respondent 3).

This respondent noted that the table showing USDA Ozone Biosite Index Categories applies to black cherry and other naturally occurring species, and stated that the issue of ozone impact on crops is also important and should be reported. The ozone at its present level in the Fraser Valley is believed to be having substantial economic effects due to reduced yields of crops such as alfalfa; and similar data for the Niagara peninsula should be noted as well (respondent 3).

The section in the Progress Report on the 2004 Canadian Acid Rain Assessment description was said to be confusing and hard to understand. It was also suggested that a Canadian site on the Canadian Shield with coniferous trees, lichens and mosses is needed similar to the Free-Air Carbon Dioxide Enrichment (FACE)) Experiment site in northern Wisconsin, a multidisciplinary study to assess the effects of increasing ozone and carbon dioxide levels on aspen forest ecosystems (respondent 35).

Comments on the IJC Process and Synthesis

While recognizing the limited role of the IJC under the Agreement process, respondents noted that there should be a more meaningful role for the Commission to review progress and directions, and to identify gaps and policy options (respondents 14, 28). A more critical evaluation is needed of performance, challenges and risks (respondent 17).

The synthesis reports were generally regarded as useful and informative documents. The suggestion was made that future synthesis reports could be made more useful by instituting a number of structural changes, including building a taxonomy for comments, and classifying comments according to this taxonomy (respondent 10)

Signed on this 13th day of December, 2005 as a synthesis of views received from the public on the 2004 Progress Report of the Canadian and United States Governments under the Canada-United States Air Quality Agreement of March 13, 1991.

APPENDIX

Sources of Comments Received on the United States-Canada Air Quality Agreement Progress Report 2004

1. December 21, 2004 - Gord Miller, Environmental Commissioner of Ontario
2. December 22, 2004 - Paul L. Dean, Deputy Minister of Environment and Conservation, Government of Newfoundland and Labrador
3. December 29, 2004 - Dr. David V. Bates, Vancouver, BC
4. January 4, 2005 - James P. Bruce, Canadian Policy Representative Soil and Water Conservation Council (SWCS), Ottawa, ON
5. January 7, 2005 - Virginia M. West, Deputy Minister of Environment, Ontario
6. January 7, 2005 - Hon. Kerry Morash, Minister of Environment and Labour, Nova Scotia
7. January 28, 2005 - J. Barry Turner, Ducks Unlimited Canada
8. January 31, 2005 - Joseph P. Koncelik, Director, Ohio EPA.
9. February 1, 2005 - C. Peter Watson, Acting Deputy Minister, Alberta Environment
10. February 7, 2005 – Professor C. Scott Findlay, Director, Institute of the Environment, University of Ottawa
11. February 8, 2005 - Les Alm, Professor and Chair, Director of Graduate Studies, Boise State University
12. February 3, 2005 – G. Vinson Hellwig, Chief, Air Quality Division, Michigan Department of Environmental Quality.
13. February 11, 2005 – Dr. Albert Schumacher, President, Canadian Medical Association
14. Staff Summary of Consultation Meeting in Ottawa – February 11, 2005
15. February 12, 2005 – Siegfried (Ziggy) Kleinau, Coordinator for Citizens for Renewable Energy
16. February 14, 2005 - Brian McCarry, Chair, Clean Air Hamilton
17. February 16, 2005 – Dan McDermott, Director, Sierra Club of Canada, Ontario Chapter
18. Staff Summary of Consultation Meeting in Toronto – February 17, 2005
19. February 22, 2005 - Terry Raymond, Chair, Board of Directors, Fraser Valley Regional District
20. February 22, 2005 - Edith Chase, Kent, Ohio

21. February 24, 2005 - Anne Mitchell, Executive Director, Canadian Institute for Environmental Law and Policy
22. February 24, 2005 - Siobhan Kearns, Director, Environment and Health Protection, Ottawa Public Health, City of Ottawa
23. February 24, 2005 - Charles Caccia, Institute of the Environment, University of Ottawa
24. February 25, 2005 - Paul Miller, Montreal (personal opinions, not official comments of CEC)
25. February 24, 2005 – Dr. David McKeown, Medical Officer of Health, City of Toronto
26. February 28, 2005 - John Wellner, Director Environmental Program, Ontario Medical Association
27. February 28, 2005 - Orlando Cabrera-Rivera, Bureau of air Management, Wisconsin Department of Natural Resources
28. February 28, 2005 - Dr. Chiotti and Rick Findlay, Pollution Probe
29. February 28, 2005 - Gordon Dalzell, Saint John Citizens Coalition for Clean Air, Saint John, N.B.
30. February 28, 2005 – Dr. Michael J. Donahue, President and CEO, Great Lakes Commission
31. February 28, 2005 - Scott M. Lorey, Legislative Director, The Adirondack Council
32. March 1, 2005 - Albert Koehl, Staff Lawyer, Sierra Legal Defense Fund
33. March 1, 2005 - James Gillis, Deputy Minister, Ontario Ministry of Energy
34. March 2, 2005 - J. Marvin Hunt, Chair, Greater Vancouver Regional District Board
35. March 17, 2005 - John Pepperell - President, The Georgian Bay Association
36. March 23, 2005 - Don MacKinnon, President, Power Workers' Union
37. April 5, 2005 - Veda Emmett, Executive Assistant to the Director, National Center for Atmospheric Research, Boulder, CO

