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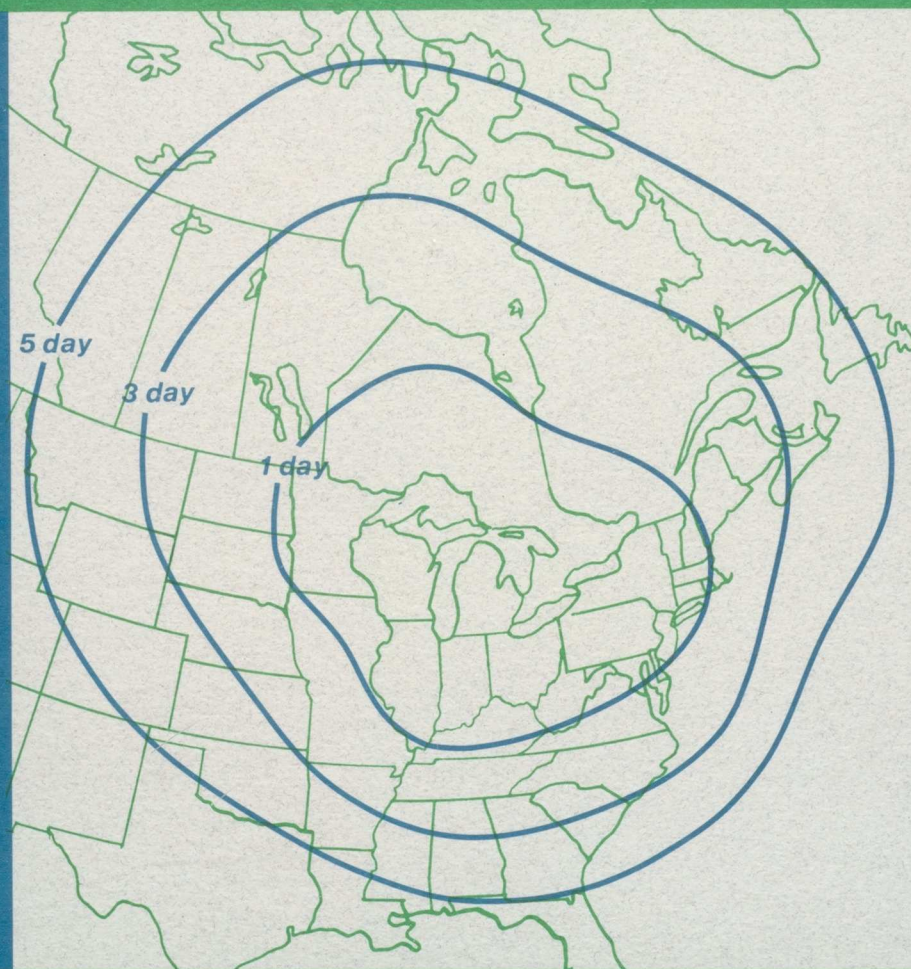
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# International Air Quality Advisory Board

## Progress Report 21 to the International Joint Commission



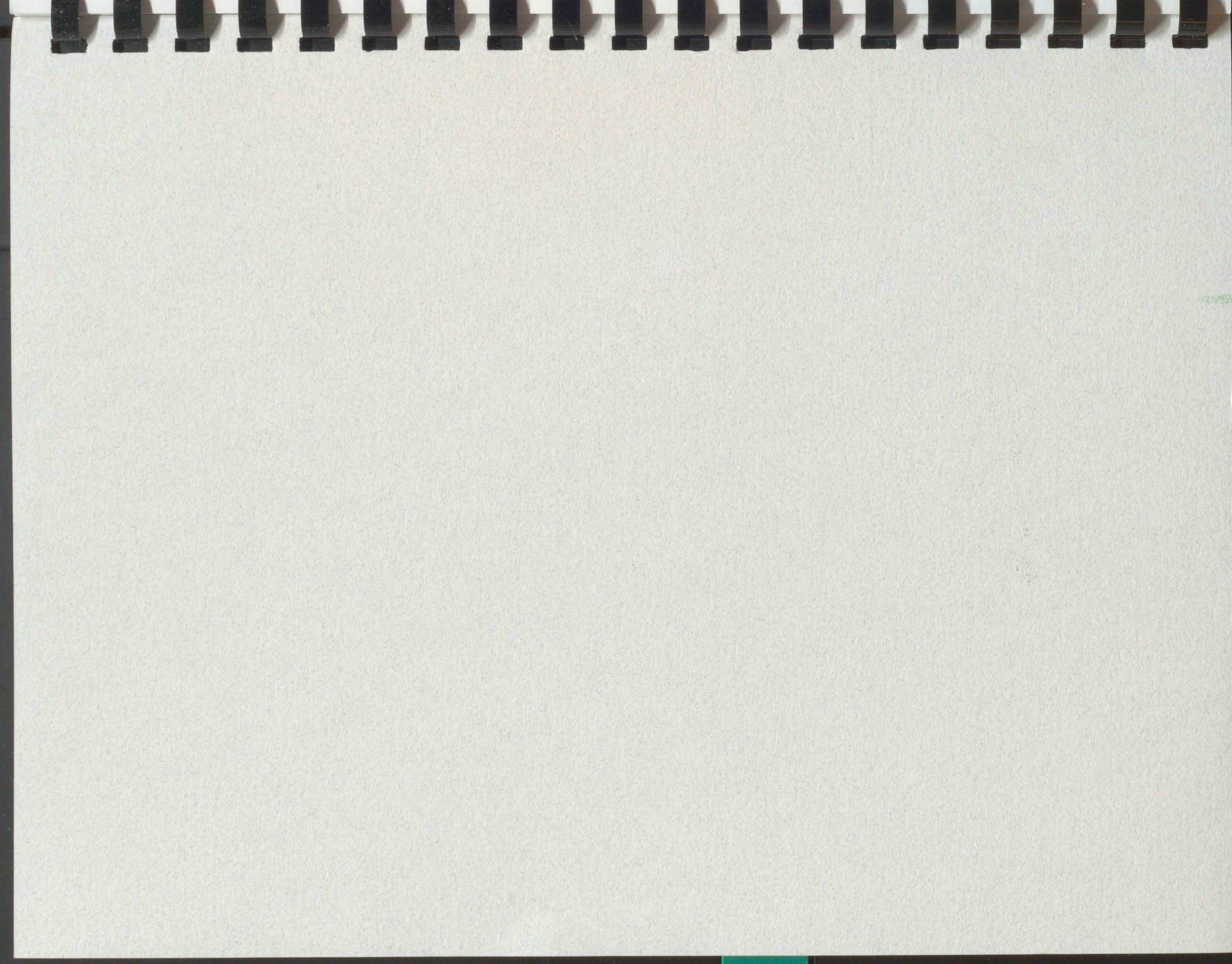
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## TABLE OF CONTENTS

### EXECUTIVE SUMMARY

### CURRENT ISSUES AND PROGRESS REPORTS:

- 1.0 HARMONIZATION OF AMBIENT AIR QUALITY STANDARDS
- 2.0 REPORT ON CURRENT TROPOSPHERIC OZONE ISSUES IN MICHIGAN/ONTARIO
- 3.0 EMISSION INVENTORIES:  
THE REGIONAL AIR POLLUTION INVENTORY DEVELOPMENT SYSTEM
- 4.0 REPORT ON THE PACIFIC TRANSBOUNDARY WORKSHOP
- 5.0 CLIMATE CHANGE UPDATE
- 6.0 U.S. EPA DIOXIN REASSESSMENT UPDATE

### EMERGING ISSUES:

- 7.0 DIMINISHED VIGILANCE: REDUCTIONS IN ENVIRONMENTAL MONITORING AND RESEARCH
- 8.0 OTHER EMERGING ISSUES

### CLIPPING SERVICE:

- 9.0 CANADA
- 10.0 UNITED STATES

19. UNITED STATES

20. CANADA

21. OTHER COUNTRIES

22. OTHER INFORMATION

AND REFERENCES

23. DIMENSIONS AND WEIGHTS (LENGTH, WIDTH, HEIGHT, WEIGHT)

24. MATERIALS

25. CONSTRUCTION AND ASSEMBLY

26. OPERATING INSTRUCTIONS

27. REPORT ON THE RESULTS OF TESTING AND EVALUATION

28. THE RESULTS OF ANALYSES PERFORMED BY THE MANUFACTURER

29. EMPLOYMENT INSTRUCTIONS

30. REPORT ON THE RESULTS OF TESTING AND EVALUATION

31. HANDLING AND STORAGE INSTRUCTIONS

32. GENERAL NOTES AND ADDITIONAL INFORMATION

33. OTHER INFORMATION

TABLE OF CONTENTS

## EXECUTIVE SUMMARY

Since its last Semi-Annual report (October 1995), the International Air Quality Advisory Board convened a two-day workshop in Vancouver, British Columbia (November 1-2, 1995) and held a formal two-day meeting in Denver, Colorado (February 27-28, 1996). In addition, the Board continues to hold monthly conference calls as well as calls on specific subjects as necessary.

This report includes three major sections: (1) Current Issues and Progress Reports, (2) Emerging Issues, and (3) Clipping Service.

Under Current Issues, we report on aspects of harmonization of ambient air quality standards. This issue was been on the Board's agenda for some time, and we present our current thinking on how to resolve the differences in air quality standards and objectives on either side of the border by recommending that the Commission call on Governments to form a bilateral task force to harmonize standards for primary and secondary pollutants transported across our common border.

The second current issue is a report on the status of tropospheric ozone concentrations measured in the border region of southwestern Ontario and southeastern Michigan, with emphasis on the preliminary reports of ozone exceedances of the U.S. standard during summer 1995 on both sides of the border. We review the planned changes in Michigan's emission control programs as a result of these ozone exceedances and commit the Board to a continued monitoring of this situation, as exceedances in this area may well continue.

The Board reports on the status of a new emission inventory available for air toxics in the Great Lakes basin: the Regional Air Pollution Inventory Development System (RAPIDS). We recommend that the state and Federal agencies continue to support this emission inventory development effort and the Province of Ontario formally fund participation in the inventory.

We provide a brief report on the two-day workshop held in Vancouver, B.C. on November 1-2, 1995 to investigate air quality issues of importance in the Pacific Transboundary region, with a focus on cooperative arrangements between the State of Washington and the Province of British Columbia. We recommend consideration of preparation of a more extensive workshop report.

Climate change and its environmental and societal impacts are also considered in this section. We have also included a brief discussion of the status of the U.S. EPA's reassessment of dioxins; the Board commits to a continued monitoring of developments on both of these issues.

Under the discussion of emerging issues we outline: (1) possible reductions in air and related monitoring programs in the U.S. and Canada due to reductions in funding, (2) comments on particulate air pollution and health and the long-range transport of toxics such as PCBs and dioxins.

The Clipping Service provides short updates on regulatory items of interest to the air pollution community.

## EXECUTIVE SUMMARY

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## 1.0 HARMONIZATION OF AMBIENT AIR QUALITY STANDARDS

### Introduction

Human beings everywhere respond to air pollution in a similar fashion. At certain levels health (particularly lung function) can be affected. The same can be said for other lifeforms, such as crops, native vegetation and biota in lakes and streams. The impacts depend upon the types of contaminants present in the air, their concentrations and the degree of exposure. Recognizing the potential risks from exposure to pollutants, governments have adopted various approaches to limit the release of pollutants into the air. Ambient air quality standards, which represent acceptable levels or concentrations of a pollutant in the air, have been widely adopted as one method for controlling emissions of pollutants from sources.

Wind does not respect international boundaries. Canada and the United States, two countries that share a common airshed, have not developed and implemented air quality standards that recognize this fact. The result is that each country has, in some cases, adopted different air quality standards, guidelines or objectives or management plans for the same air pollutant. Air pollution, while created independently by the two nations, is subject to international winds, with the laws of nature determining the pollutant's ultimate fate.

While sovereignty limits each nation to controlling matters within its own borders, meteorology dictates that borders do not exist. At this sovereignty-meteorology interface, meteorology always wins out. Humankind is no match for mother nature.

### Background

Given that the wind is carrying pollutants originating in Canada and the United States from their sources to humans and other organisms living in the biosphere, we need to accept the fact that these humans and other lifeforms react basically the same way to exposure. Science should determine the acceptable level of exposure.

This agreed-upon level should be in harmony in all jurisdictions. This principle of "harmony" should not be subject to political structure or subservient to "sovereignty."

International recognition of the sovereignty of nations and their responsibility with respect to transboundary pollution came to the forefront at the 1972 Stockholm Conference on the Human Environment, with adoption of Principle 21, which states the following:

"States have, in accordance with the charter of the United Nations and the principles of international law, the sovereign right to exploit their own natural resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction."



This Principle recognizes that nations can pursue their own environmental policies, but it also clearly states that they shall not cause damage to other jurisdictions outside of their boundaries. An interesting situation arises when standards for ambient air quality are not the same in two neighbouring countries and pollutants are transported across the international boundary at levels which are above the standards set by the receiving country. In some cases, precursor pollutants can be transported across a boundary and form secondary products in a downwind sovereign country. While the air mass may meet the standard in the country of origin, is it not appropriate, and in keeping with Principle 21, to export pollutants only at levels that meet the standards of the receiving country?

Both Canada and the United States began the development of ambient air quality standards several decades ago. They were meant to (1) provide a basis for designing emission control programs for industry and (2) provide the public with an appropriate level of assured protection of their health and that of the environment in which they live. These standards were developed independently by each nation; control programs to achieve these standards also differ. This sovereign approach led to different standards and thus different levels of protection for humans and the environment in each country. In recent years, there has been increasing recognition that pollutants are transported over long distances by air masses, and that transboundary air impacts are a reality. Despite this recognition there has been little effort, if any, to harmonize ambient air quality standards or control programs in order to provide a uniform level of protection to people and the environment in both countries.

As one example, a comparison of existing ambient air quality standards in Canada and the United States illustrates this lack of harmony. As indicated in Table 1, there are significant variations in the acceptable concentrations of several of the common air pollutants such as sulphur dioxide (SO<sub>2</sub>), particulate matter less than 10 microns (PM<sub>10</sub>) and ozone (O<sub>3</sub>).

Table 1: Air Quality Standards or Objectives (ug/m<sup>3</sup>)\*

| Pollutant | Sulfur Dioxides<br>(SO <sub>2</sub> ) | Particulate Matter<br>(PM <sub>10</sub> ) | Ozone<br>(O <sub>3</sub> ) |
|-----------|---------------------------------------|---|----------------------------|
|           | (**)                                  | (24 h average)                            | (1 h average)              |
| U.S.      | 1300                                  | 150                                       | 235 (120 ppb)              |
| CANADA    | 900                                   | 120                                       | 160 (80 ppb)               |

\* U.S. - Primary Standards; Canada - Maximum Acceptable Objective

\*\* U.S. = 3 hour average; Canada = 1 hour average

### Harmony

The International Air Quality Advisory Board of the International Joint Commission has expressed its concern on a number of occasions with respect to the difference in ambient air

quality standards and national control programs for pollutants known to be transported across the international boundary (primary pollutants) or for precursors that are transported across and form pollutants downwind (secondary pollutants).

One might ask, why should individuals in communities that are side by side have different standards for the acceptable levels of pollutants in their air?

Similarly, why should ecosystems in a state or province be exposed to different levels of SO<sub>2</sub> than those prevailing in the neighbouring state or province across the international boundary? Rationalization of the standards development process for transboundary pollutants in both countries is required.

It makes sense that governments, within their respective legislative and regulatory frameworks, have a responsibility to recognize that atmospheric processes do not respect geographic or political boundaries and to strive to achieve a common level of protection for all citizens and ecosystems found in an airshed. In particular, governments have a responsibility not to allow injurious levels of pollution to cross a state, provincial or international boundary.

#### **What Do We Want to Accomplish?**

The Board wants to continue to encourage nations, particularly the United States and Canada, to manage air quality within Principle 21 of the Stockholm Declaration. Further, a mechanism is needed to recognize the right of each person, regardless of national origin, to the same level of environmental protection. This includes minimizing the risk of exposure of humans and the environment to airborne contaminants through the adoption of compatible ambient air quality standards for those pollutants transported across international boundaries. A new strategy needs to be developed which:

- 1) recognizes the role of nature in influencing the geographic scope and extent of exposure to air pollution,
- 2) acknowledges that jurisdictions are responsible for the effects of air pollution generated within their boundaries beyond those boundaries, and
- 3) leads to both a scientific and a political consensus on the targets that must be achieved in transboundary areas.

A bilateral process, to (1) identify primary and secondary air pollutants that are transported across the Canada-United States boundary, (2) develop the scientific data and criteria on exposure and related effects of these pollutants, (3) determine common acceptable levels of exposure to these pollutants, and (4) agree on the type of control programs that will efficiently achieve these standards, is essential to the development of such a strategy. The long term goal would be to develop a consensus approach to harmonize ambient air quality and related control measures in each country.

The development and deployment of a binational structure to immediately begin to cooperatively address the second item (determining acceptable exposure levels), with a commitment to a sustained effort to continue through item 4 (control programs) would be a substantive response by both countries to this need. These harmonizing activities would bring us closer to achieving the same level of protection to all ecosystems regardless of the airshed, and would have the added benefit of avoiding disputes over differing standards in adjacent boundary regions.

### **Recommendations**

**To harmonize and ensure comparable environmental and human health protection in Canada and the United States from exposure to airborne contaminants that are transported across the international boundary, the International Joint Commission recommends the Governments of Canada and the United States:**

- 1) show international leadership by recognizing that air does not respect international boundaries, and commit to the development of "harmonized" or "airshed" ambient air quality protection;**
- 2) harmonize ambient air quality protection for sulphur dioxide, ozone, and particulate matter less than 10 micrometers which are generally recognized as being transboundary pollutants having the potential for deleterious impacts on the human populations and sensitive ecosystems; and**
- 3) convene a bilateral task force to examine means to achieve the previous recommendations while preserving sovereignty and providing flexibility in dealing with the transport of pollutants across the international boundary.**

## 2.0 REPORT ON CURRENT TROPOSPHERIC OZONE ISSUES IN MICHIGAN AND ONTARIO

### Background

Ground-level or tropospheric ozone is formed from the interaction of volatile organic compounds (VOCs) and nitrogen oxides (NO<sub>x</sub>) in the presence of sunlight. Significant sources of VOCs include utilities and other industrial sources, the fuelling and operation of motor vehicles, and solvent utilization by industry and others. Transportation also is one of the two major sources of NO<sub>x</sub>, the other being large point source combustion operations, such as electrical utilities and industrial boilers.

Sustained ozone concentrations above 80 ppb result in reduced yield and growth in many plants, including those farmed in the Midwest and Southern Ontario. Sensitive native vegetation, such as black cherry, some pines, and aspen species, are also negatively affected by ozone concentrations in excess of 80 ppb. In addition, significant respiratory impacts on the human population have been found at this level and below.

In response to concerns over human and ecosystem health, jurisdictions have established various air quality standards for tropospheric ozone. The World Health Organization has established a 1-hour guideline of between 76 and 100 ppb and an eight-hour average of between 50 and 60 ppb. The United States standard is a concentration of 120 ppb over one hour; the applicable Ontario level is 80 ppb.

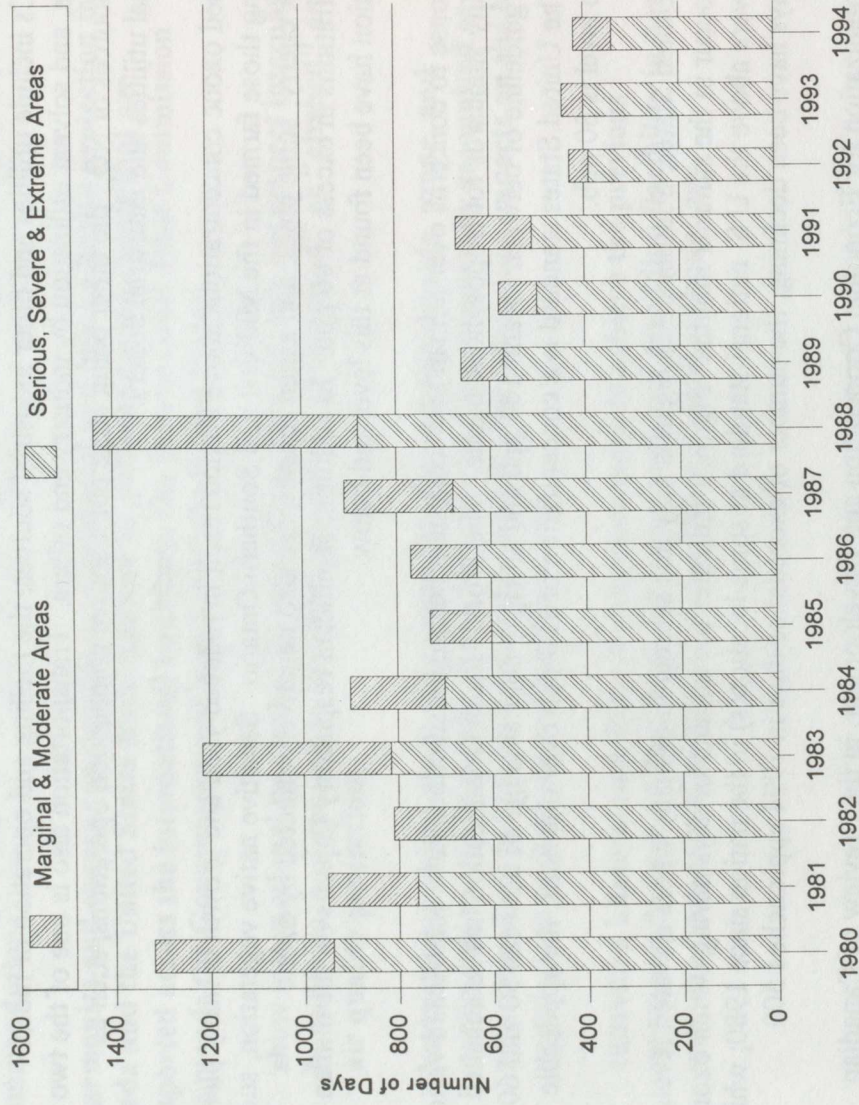
In the United States, Southeast Michigan is only one subregion of many where elevated levels of ozone occur in the summer months. Figure 1 indicates the number of days during which ozone levels were above the U.S. national standard at some location(s) in the nation since 1980; while such days have been declining, the number of exceedance days in 1994 approached 500.

The Organization for Economic Cooperation and Development, in their review of Canadian environmental initiatives, noted that, in major urban centres of Canada, such as Montreal and Toronto (along the Windsor-Quebec City corridor), Vancouver (Lower Fraser Valley), and portions of Atlantic Canada, air quality is occasionally inadequate for human health. Ozone is identified as a major contaminant contributing to this poor air quality.

### Regulatory Developments

In response to a suit brought by the American Lung Association in October of 1994, emphasizing the need to further review the ozone standard in light of new data on the health and vegetation effects, the U.S. Environmental Protection Agency is now concluding its review of the U.S. ozone standard. As noted in the Board's last report (October 1995), options for the new U.S. standard include replacement of the current one hour concentration standard of 120 ppb, with an eight-hour average concentration of between 70 and 90 ppb. Changes to the number of allowable exceedances to between 2 and 5 times per year over a three-year period are part of this

Figure 1: Days with Ozone Levels above the U.S. National Standard



Reference: U.S. EPA

consideration, as is a new secondary, more stringent standard for the protection of commercial crops and other vegetation. The EPA Administrator remains committed to announcing a standard by the end of 1996; the final rule is due in June 1997.

Any significant downward revision in the numerical standard, even over an extended number of hours, would result in further nonattainment nationwide, which would likely include the Midwestern subregions, such as Southeast Michigan. Modelling by the Ozone Transport Commission and others has suggested that a strategy of further NO<sub>x</sub> controls beyond current mandated levels would reduce, but not eliminate, ozone exceedances of the 120 ppb standard in the Northeast corridor of the United States; however, further NO<sub>x</sub> and VOC controls will be necessary if the entire corridor is to be in compliance with the current standard much less any more stringent successor.

More recently, the Ozone Transport Assessment Group (OTAG), which includes 37 states from North Dakota to Texas and all states eastward, has set a target for developing super-regional ozone control strategies by December 1996. OTAG states have agreed to first examine further control of NO<sub>x</sub> emissions throughout the region. As coal-fired power plants are a significant source of this pollutant, the coal industry is organizing activity to counter any regulatory strategy that includes additional NO<sub>x</sub> controls. The industry is now advocating legislation that would prevent individual eastern states from entering into an interstate compact requiring certain levels of emission reductions without first gaining the explicit endorsement of their legislature.

#### **Status of Ozone Levels in Michigan/Ontario**

Some border regions, particularly the Windsor-Detroit corridor, experience ozone levels that are injurious to human ecosystem health. Exceedances of the U.S. one hour 120 ppb ozone standard were recorded at air quality monitors at Algonac and New Haven (Table 2). Similar exceedances were recorded on four days in southwestern Ontario during 1995 (Table 3), all associated with southwesterly transboundary flows from the neighbouring states of the U.S. Figure 2 shows the 48-hour history of air parcels into southern Ontario on the four days, namely July 13, July 14, August 14 and September 6. These trajectories suggest that source regions for ozone and its precursors in Ontario include adjacent U.S. states such as Illinois, Michigan and Ohio.

Based on preliminary information received on ozone measurements in Michigan during June and July 1995 (Table 2), six ozone excursions (i.e. days with one hour levels greater than 124 ppb) were recorded there (June 17, June 22, July 12, July 13, July 14 and July 15). Over this same time period, two days, namely July 13 and 14, showed an overlap in ozone exceedances between Michigan and Ontario. On the other four excursion days in Michigan, peak levels over southern Ontario were relatively high, namely 118 ppb on June 17, 102 ppb on June 22, 74 ppb on July 12 and 100 ppb on July 15. A majority were in excess of the Ontario hourly standard of 80 ppb.

Excursion ozone statistics for Michigan and Ontario (Table 4) over the past three years indicate that 1995 had more hours of excursions than observed in the previous two years. Locations of the Michigan and Ontario monitoring sites are given in Figure 3.

## Status of Ozone Regulation in Southeast Michigan

In 1994 the State of Michigan requested that the U.S. EPA declare a portion of Southeast Michigan as being "in attainment" with respect to the U.S. ozone standards. This "redesignation" from non-attainment meant that certain air pollution control measures mandated by the federal Clean Air Act would no longer be required. Questions and objections were raised over the redesignation request by several entities, including the Commission. Notwithstanding these concerns, the U.S. EPA, on April 6, 1995, conditionally approved Michigan's request for redesignation. However, the conditions for redesignation required that certain control measures be available for prompt implementation in the event that ozone levels exceeded the standard in future years.

During summer 1995, as noted in Table 2, air quality monitors at Algonac and New Haven, Michigan confirmed violations of the standard. In accordance with federal law, Michigan informed the EPA of these violations in fall 1995, and indicated it would go through a public process to implement appropriate control measure(s), as identified in the Michigan Air Quality State Implementation Plan. A review of auto emission testing was a part of this response.

Under legislation passed in 1980, Wayne, Oakland and Macomb counties were to implement an Auto Emission Testing (AET) program to further control VOCs and NO<sub>x</sub> from automobiles. The program was not actually implemented until 1986 and included several restrictions which limited its effectiveness: (1) testing of vehicles only at simple idle, (2) testing of cars and light trucks restricted to those nine years old or less, (3) exemptions for owners receiving General Assistance or Medicaid, and (4) waivers for vehicles which either pass a simple low emission tune-up or receive emission related repairs up to a limit indexed to inflation (currently \$86 US). Prior to the 1995 redesignation, the AET program was audited by the EPA, which found that it did not meet the federal requirements of a basic inspection and maintenance (I/M) program.

As part of its redesignation request, the State established legislative authority to upgrade the existing program to meet prevailing EPA I/M performance standards. A basic I/M program was included in the contingency measures under the redesignation for possible use in response to a 'triggering event' (i.e. an exceedance of the ozone hourly standard of 120 ppb) such as occurred in 1995.

In considering this AET program option as a response to the summer 1995 exceedances, the State of Michigan and the Southeast Michigan Council of Governments contended that extension of the current AET program would result in a reduction in VOCs of 3.8 tons for a typical summer weekday or 1.6% of the total mobile source emissions, and reduction of 0.5% percent of the total VOC emissions from all sources. For NO<sub>x</sub>, the reduction was estimated at 2.2 tons for a typical summer weekday or 0.6% of the mobile source emissions, and reduction of 0.2% of the total NO<sub>x</sub> emissions from all sources.

An upgraded program would require: (1) testing of several more model years or testing of several hundred thousand additional vehicles, (2) an increase in the minimal repair expenditure to \$200 to obtain a waiver, and (3) deletion of the Medicaid exemption.

Table 2: Ozone Excursions 1993 to 1995  
 Revised October 2, 1995 (Michigan Stations)

| SITE ID    | 1993<br>No. | 1994<br>No. | 1995 Concentration (ppb)<br>Date                              | Total Excursions<br>1993-9/30/95 |
|------------|-------------|-------------|---|----------------------------------|
| Holland    | 1           | 0           | 137 (6-17-95), 178 (7-13-95)<br>145 (7-14-95), 135 (8-13-95)  | 5                                |
| Frankfurt  | 0           | 0           |   | 0                                |
| Coloma     | 0           | 0           | 136 (8-12-95)   | 1                                |
| Bath TWP   | 0           | 0           |   | 0                                |
| Otisville  | 1           | 0           |   | 1                                |
| Harbor Sch | N/A         | 1           |   | 1                                |
| Flint      | 0           | 0           |   | 0                                |
| Lansing    | 0           | 0           |   | 0                                |
| Grattan    | 0           | 0           |   | 1                                |
| GR Rapids  | 1           | 1           |   | 3                                |
| Tecumseh   | 0           | 0           |   | 0                                |
| New Haven  | 0           | 2           | 129 (6-17-95), 140 (7-31-95)                                  | 4                                |
| Warren     | 1           | 1           |   | 2                                |
| Ludington  | 2           | 0           | 125 (6-17-95), 127 (7-13-95)                                  | 4                                |
| Muskegon   | 1           | 1           | 142 (6-17-95), 171 (7-13-95),<br>130 (7-14-95), 136 (7-31-95) | 6                                |
| Oak Park   | 0           | 1           | 138 (7-14-95), 125 (7-15-95)                                  | 3                                |
| Jenison    | N/A         | 0           | 133 (7-13-95)   | 1                                |
| Pt. Huron  | 1           | 1           | 126 (7-13-95)   | 1                                |
| Algonac    | 0           | 2           | 135 (7-14-95), 137 (7-31-95)                                  | 4                                |
| Ann Arbor  | 0           | 0           |   | 0                                |
| Allen Pk.  | 0           | 1           |   | 1                                |
| McMichael  | 0           | 0           |   | 0                                |
| Osborn     | 0           | 2           | 126 (8-26-95)   | 3                                |
| Cassopolis | 0           | 0           | 150 (7-14-95)   | 1                                |
| Kalamazoo  | 0           | 0           | 125 (7-14-95)   | 1                                |
| Kellogg    | 0           | 0           |   | 0                                |

NOTES:

1. The NAAQS for ozone is 0.12 ppm. An exceedance occurs when the ozone concentration is greater than or equal to 12 ppb.
2. 1995 sample measurements have not been validated and are subject to change. The measurements prior to 1995 have been verified and are valid.
3. N/A indicates that the site was not in operation that year.
4. This report was created by the Air Quality Division, Air Monitoring Unit, Michigan Department of Environmental Quality



Table 3: Maximum Hourly Ozone Concentration >124 ppb  
in Ontario (Jan.-Sept. 1995)

| Station/Location            |            | Episode Date |         |         |        | Number of Hourly Exceedances |
|-----------------------------|------------|--------------|---------|---------|--------|------------------------------|
|                             |            | 7/13/95      | 7/14/95 | 8/14/95 | 9/6/95 |                              |
| 13021                       | Merlin     |              | 125     |         |        | 1                            |
| 14064                       | Sarnia     |              |         |         | 127    | 1                            |
| 15001                       | London     |              | 140     |         |        | 1                            |
| 15020                       | Grand Bend | 157 (2)      |         | 129     |        | 3                            |
| 18007                       | Tiverton   | 142          |         |         |        | 1                            |
| Total number of Days        |            | 4            |         |         |        |                              |
| Total of Hourly Exceedances |            | 7            |         |         |        |                              |

Preliminary data from 'Summary of 1995 Ground Level Ozone Exceedances in Ontario' Air Quality and Meteorology Section, Environmental Monitoring and Reporting Branch, Ontario Ministry of Environment and Energy.

Table 4: Ozone Excursions >124 ppb (Ontario (SW) Stations)

| Station/Location |                    | 1993 No. | 1994 No. | 1995 No. | Date of Maximum Ozone Reading | Total Excursions (1993 - Sept. 1995) |
|------------------|--------------------|----------|----------|----------|-------------------------------|--------------------------------------|
| 12008            | Windsor University | 0        | 1        | 0        |                               | 1                                    |
| 12016            | Windsor College    | 0        | 1        | 0        |                               | 1                                    |
| 13021            | Merlin             | 0        | 0        | 1        | (125) 14 Jul. 1995            | 1                                    |
| 14064            | Sarnia             | 1        | 0        | 1        | (127) 6 Sep. 1995             | 2                                    |
| 15001            | London             | 0        | 0        | 1        | (140) 14 Jul. 1995            | 1                                    |
| 15020            | Grand Bend         | 1        | 0        | 2        | (157) 13 Jul. 1995            | 3                                    |
| 18007            | Tiverton           | 1        | 0        | 1        | (142) 13 Jul. 1995            | 2                                    |
| 22901            | Long Point         | 1        | 1        | 0        |                               | 2                                    |
| 29105            | Hamilton East      | 0        | 1        | 0        |                               | 1                                    |

Figure 2: Air Parcel Trajectories into Southern Ontario  
 During Ozone Excursions above 124 ppb (Jan.-Sept. 1995)

Source: Ontario Ministry of Environment and Energy

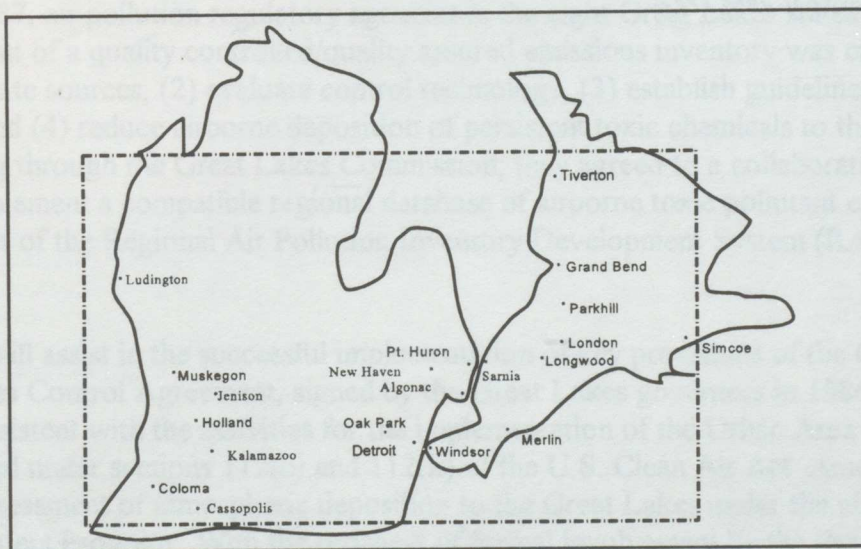
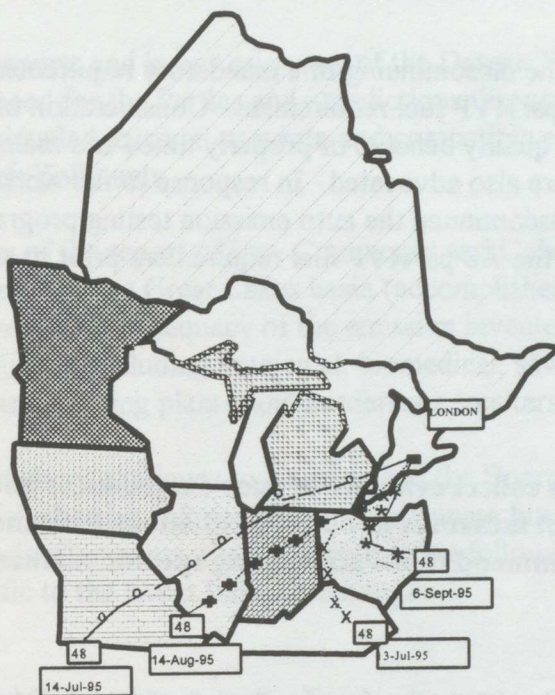


Figure 3: Ozone Monitoring Stations  
 Southern Michigan and Southwestern Ontario

Adapted by IJC-GLRO

Projected reductions in VOCs from such a revamped I/M program for the year 2005 were estimated at 12.4 tons/day, with costs in excess of \$30 million per year. By comparison, VOC emission reductions associated with marketing of 7.8 psi (pounds per square inch) RVP (Reid vapor pressure) gasoline in Michigan were estimated to be 26.8 tons/day in 2005 at an annual cost of \$14M.

The state review promoted the discontinuing of a mandatory requirement for AET in southeast Michigan in favour of a 7.8 psi RVP fuel requirement. Consideration of a public information campaign focused on the air quality benefits of properly tuned and maintained vehicles, and a voluntary AET program, were also advocated. In response to the workgroup recommendation, the Governor of Michigan discontinued the auto emission testing program as of January 1, 1996; he is expected to implement the 7.8 psi RVP fuel requirement prior to summer, 1996.

### **Proposed Board Actions**

**The Board will continue to collect evidence of such exceedances and will undertake a review of associated control measures in both jurisdictions with the objective of providing the Commission with recommendations advocating specific further appropriate actions, as necessary.**

#### *References:*

*Discussion of Michigan Control Operations taken from "An Analysis of the Auto Exhaust Testing Program in Southeast Michigan." Michigan Department of Natural Resources and the Southeast Michigan Council of Governments (SEMCOG), June 1995.*

### 3.0 EMISSION INVENTORIES: THE REGIONAL AIR POLLUTION INVENTORY DEVELOPMENT SYSTEM

#### **Background**

In several previous Board reports and in our overview of the Detroit/Windsor Reference, the Board has emphasised the need for the Parties and jurisdictions throughout the United States and Canada to further develop detailed, current, accurate and compatible emission inventories of sources of persistent toxic air pollutants.

Most recently, in our review of the report of Drs. Commoner and Cohen on the transport of dioxins and hexachlorobenzene to the Great Lakes basin (accomplished during our February 27, 1996 meeting with Dr. Cohen), the inadequacy of the emission inventories associated with the sources of toxic air contaminants, including municipal, biomedical, sewage sludge and hazardous waste incinerators, sintering plants, and nonferrous smelters was again noted.

Nationwide, progress, albeit slow, continues to be made and the Board hopes that current budget reductions on both sides of the border will not reduce or eliminate future progress. While remaining attentive to such developments, the Board offers the following comments on a most encouraging initiative specific to the Great Lakes basin region.

#### **Great Lakes Regional Air Toxics Emissions Inventory Activities (RAPIDS)**

Beginning in 1987, air pollution regulatory agencies in the eight Great Lakes states recognized that establishment of a quality controlled/quality assured emissions inventory was crucial to (1) define and regulate sources, (2) evaluate control technology, (3) establish guidelines for siting new facilities, and (4) reduce airborne deposition of persistent toxic chemicals to the Great Lakes. Working through the Great Lakes Commission, they agreed to a collaborative effort to develop and implement a compatible regional database of airborne toxic pollutant emissions. The first product of the Regional Air Pollution Inventory Development System (RAPIDS) is now available.

This inventory will assist in the successful implementation of key provisions of the Great Lakes Toxic Substances Control Agreement, signed by the Great Lakes governors in 1986. In addition, this work is consistent with the activities for the implementation of the Urban Area Source Program required under sections 112(c) and 112(k) of the U.S. Clean Air Act Amendments of 1990 and the assessment of atmospheric deposition to the Great Lakes under the efforts of U.S. EPA's Great Waters Program. With the prospect of formal involvement by the Province of Ontario, it will also begin to address provisions of Annex 15 of the Great Lakes Water Quality Agreement.

## An Overview of Inventory Development

The Great Lakes states, working together through the Great Lakes Commission, are creating this regional database with their personnel and resources and funding from the Great Lakes Protection Fund and U.S. EPA. Specifically, the program's goal is to establish a baseline inventory using 1993 data on point and area source emissions of 49 toxic air pollutants identified as significant contributors to the contamination of the Great Lakes. These compounds, and the programs or agencies that have targeted them, are listed in Table 5.

The basis for the inventory assembly, RAPIDS, is the first-ever multi-state pollutant emissions inventory software system. The RAPIDS steering committee, which includes emission inventory specialists from the Great Lakes states, U.S. EPA and the Province of Ontario, guides development of the regional inventory and associated products, including RAPIDS and the associated Air Toxics Emissions Inventory Protocol.

The Protocol provides instructions necessary for the Great Lakes states to develop a regional inventory that is complete, accurate and consistent from state to state. It guides the efforts of all eight Great Lakes states in 1995-96 as they prepare the first full statewide toxic air emissions point and area source inventories for 1993 and populate the regional repository.

### Southwest Lake Michigan Pilot Study

An important milestone in the progress of this initiative is the pilot implementation of all work products under the Southwest Lake Michigan Urban Areas Toxic Air Emissions Inventory, which focuses on the urban areas of Chicago, Milwaukee and Gary. The states of Illinois, Indiana and Wisconsin led this effort, completed in December 1995, to compile an inventory of toxic emissions from the 12 counties in these three jurisdictions along the southwest shore of Lake Michigan. This work was funded by a \$1 million grant from U.S. EPA and a \$300,000 grant from the Great Lakes Protection Fund, and resulted in a document of several hundred pages available both in hard copy and on computer disk. The pilot project was guided by the Southwest Lake Michigan Subcommittee of the Regional Emission Inventory of Toxic Air Contaminants Steering Committee.

### Future Plans

U.S. EPA's Great Waters Program recently committed another \$1 million in grant funds to the project to support compilation of full statewide inventories in the eight-state region. This brings the total invested in the Great Lakes application of the RAPIDS system to over \$5 million (U.S.); direct funding accounts for \$3.23 million with the balance as in-kind contributions by participants. Under the full regionwide development plan, each state will compile an inventory of point and area sources of the 49 targeted toxic compounds using the 1993 calendar year data and submit this inventory in electronic format to the RAPIDS repository at U.S. EPA, Great Lakes National Program Office in Chicago, Illinois.

Table 5: RAPIDS Targeted Toxic Compounds

| 1. Pollutant                                  | 2. GW | 3. GLC | 4. U.S. Clean Air Act Amendment | 5. Carc. | 6. CAS#    |
|---|-------|--------|---------------------------------|----------|------------|
| Arsenic                                       | Yes   | Yes    |                                 | Yes      | 7440-38-2  |
| Atrazine                                      | Yes   |        |                                 |          | 1912-24-9  |
| Benzo(a)anthracene                            |       | Yes    |                                 |          | 56-55-3    |
| Benzo(a)pyrene*                               | Yes   | Yes    |                                 | Yes      | 50-32-8    |
| Cadmium                                       | Yes   | Yes    |                                 | Yes      | 7440-43-9  |
| Carbon tetrachloride                          | Yes   | Yes    |                                 | Yes      | 56-23-5    |
| Chlordane                                     | Yes   |        |                                 | Yes      | 57-74-9    |
| Chromium                                      | Yes   | Yes    |                                 |          | 7440-47-3  |
| Chrome (6)                                    |       | Yes    |                                 | Yes      | 18540-29-9 |
| Chrysene                                      |       | Yes    |                                 |          | 218-01-9   |
| Cobalt  | Yes   |        |                                 |          | 7440-48-4  |
| Coke oven emissions                           | Yes   |        |                                 | Yes      |            |
| Copper  | Yes   |        |                                 |          | 7440-50-8  |
| 1,2-Dichloroethane                            |       | Yes    |                                 | Yes      | 107-06-2   |
| Diethylhexyl phthalate                        |       | Yes    |                                 | Yes      | 117-81-7   |
| Di-n-butyl phthalate                          |       | Yes    |                                 | Yes      | 84-74-2    |
| Di-n-octyl phthalate                          |       | Yes    |                                 |          | 117-84-0   |
| Dioxins                                       | Yes   |        |                                 | Yes      |            |
| Ethylbenzene                                  | Yes   |        |                                 |          | 100-41-4   |
| Fluoranthene                                  |       | Yes    |                                 |          | 206-44-0   |
| Heptachlor                                    | Yes   |        |                                 | Yes      | 76-44-8    |
| Hexachlorobenzene*                            | Yes   | Yes    | Yes                             | Yes      | 118-74-1   |
| Hexachlorobutadiene                           |       | Yes    |                                 | Yes      | 87-68-3    |
| Hexachloroethane                              |       | Yes    |                                 | Yes      | 67-72-1    |
| Lead  | Yes   | Yes    |                                 | Yes      | 7439-92-1  |
| Alkylated lead compounds*                     |       | Yes    | Yes                             | Yes      | 7439-92-1  |
| Manganese and compounds                       | Yes   |        |                                 |          |            |
| Mercury*                                      | Yes   | Yes    | Yes                             |          | 7439-97-6  |
| Methoxychlor                                  | Yes   |        |                                 |          | 72-43-5    |
| Methylene Chloride                            | Yes   |        |                                 |          | 75-09-2    |
| Napthalene                                    |       | Yes    |                                 |          | 91-20-3    |
| Nickel and compounds                          | Yes   |        |                                 |          |            |
| Parathion                                     | Yes   |        |                                 |          | 56-38-2    |
| Pentachloronitrobenzene (quintobenzene)       | Yes   |        |                                 | Yes      | 82-68-8    |
| Pentachlorophenol                             | Yes   |        |                                 |          | 87-86-5    |
| Phenol  | Yes   |        |                                 |          | 108-95-2   |
| Total polychlorinated binphenyls (PCBs) *     | Yes   | Yes    | Yes                             | Yes      | 1336-36-3  |
| Total polychlorinated dibenzodioxins (PCDDS)  | Yes   | Yes    |                                 | Yes      |            |
| Total polychlorinated dibenzofurans (PCDFs)   |       | Yes    |                                 |          |            |
| Total polycyclic aromatic hydrocarbons (PAHs) | Yes   | Yes    |                                 | Yes      |            |
| Polycyclic organic matter (POM)               | Yes   |        | Yes                             |          |            |
| 2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD)*  |       | Yes    | Yes                             | Yes      | 1746-01-6  |
| 2,3,7,8-tetrachlorodibenzofuran (TCDF)*       | Yes   | Yes    | Yes                             | Yes      | 51207-31-9 |
| Tetrachloroethene                             |       | Yes    |                                 | Yes      | 127-18-4   |
| Trichloroethene                               |       | Yes    |                                 | Yes      | 79-01-6    |
| 1,1,1-trichloroethane                         |       | Yes    |                                 |          | 71-55-6    |
| 2,4,5-trichlorophenol                         |       | Yes    |                                 |          | 95-95-4    |
| 2,4,6-trichlorophenol                         |       | Yes    |                                 | Yes      | 88-06-2    |
| Trifluralin                                   | Yes   |        |                                 | Yes      | 1582-09-8  |

Coleum 2: Compounds listed (among others) on U.S. EPA "Great Waters" program list of targeted toxic chemicals

Column 3: Compounds originally targeted by Great Lakes Commission. The full Great Lakes Commission list now includes all 49 listed above.

Column 4: Compounds identified (among others) in the U.S. Clean Air Act Amendments of 1990 (Section 112 (c)(6)).

Column 5: Compounds identified as carcinogens.

Column 6: The CAS Number is a standard code that uniquely identifies a chemical substance from the Chemical Abstracts Service (CAS) Registry of chemical substances.

\* Contaminants identified as Critical Pollutants by the Water Quality Board - 1985.

Each state air agency will receive up to \$111,000 U.S. to compile its share of the regional inventory and will follow the established Air Toxics Emissions Inventory Protocol in developing a quality-assured statewide inventory. The intent is to provide data and reports accessible via the Internet. This inventory will assist in identifying the most significant sources and source categories contributing to the total toxic emissions of the selected contaminants in the eight-state geographic area.

The Province of Ontario consistently provided staff time to support RAPIDS and recently signed a letter of intent to formally participate in the development of the RAPIDS basin inventory. The Ontario Ministry of Environment (MOEE) is represented on the RAPIDS Steering Committee and the MOEE staff are capable of using the RAPIDS software. Ontario should submit a point source inventory for 1993 in the near future; their financial commitment to the project is still undefined.

Should formal participation and financial support be secured from Ontario, annual point and area source data bases will be augmented with (1) a mobile source module, (2) a graphical display of sources and associated emissions, and (3) enhancement of the RAPIDS software. A meeting of emission inventory personnel from the state, provincial and federal governments, along with modellers and other data users, is tentatively scheduled for August, 1996.

Work has begun on a scoping study for the mobile source module which will:

- i) clarify the significance of toxic air emissions from mobile sources to the Great Lakes
- ii) identify and characterize target toxic air pollutants from mobile sources which are significant contributors to the contamination of the Great Lakes
- iii) determine the level of detail needed in the estimation of mobile sources
- iv) collect and develop the emission factors for the toxic compounds of concern
- v) outline tasks for software development

### **Recommendations**

**As the RAPIDS inventory system is a timely and valuable initiative, the Board recommends that:**

- 1) **the Commission encourage the Province of Ontario and state and federal governments to develop a long-range plan and formal commitment to the continued routine funding, support and enhancement of this initiative, including the addition of a mobile source module;**

- 2) the Commission encourage the United States and Canadian governments to give serious consideration to the extension of this effort to other parts of the boundary region, and that the Governments use similar methods to improve and integrate their other emission inventories.

*References:*

*Prepared with the assistance of Ms. Carol Ratza, RAPIDS Coordinator, Great Lakes Commission*

This workshop was "fact-finding" in nature; the IC and IAQAB members wanted to be educated on the air quality issues and policy arrangements in the Washington State/ British Columbia border region, specifically defined as the area west of the Cascade Mountains crest. The purpose of the meeting was to allow the region's experts to exchange technical and scientific information and policy experience regarding regional air quality issues in the Pacific Coastal region.

*Workshop Summary*

The first day of the workshop included presentations and discussions on the following technical topics: (1) Air Pollution Levels and Emission Inventories, (2) Regional Ozone Concentrations, (3) Health and Ecosystem Effects of Ozone, (4) Particulate Air Pollution, (5) Health and Visibility Effects of Particles, (6) Deposition of Sulfur and Nitrogen, (7) Effects of Deposition on Ecological Systems, and (8) Toxic Air Contaminants. The technical experts shared their data and insights on the issues of air quality and its effects in the Pacific transboundary region. There have been a number of intensive air quality investigations in this region during the 1990s, including studies of visibility degradation in parks and protected areas, and a comprehensive study of ozone and particulate pollution transport in the Fraser River Valley.

There is evidence of transport of pollutants through the region bounded by the Fraser River on the north, the Cascades on the east, the Puget lowlands on the south and the Pacific Ocean on the west. The urban areas in the Pacific transboundary region produce most of the air emissions, from both stationary sources (power plants, refineries, saw mills, pulp mills, textile sources (cars, trucks, shipping), and dispersed sources, such as slash burning, and forest slash burning in the forests and residential wood burning. The major urban areas include the Greater Vancouver region, the Seattle-Tacoma area, and the Interstate 5 corridor linking from Seattle/Tacoma to Vancouver. These urban areas produce ozone precursors (NO<sub>x</sub> and VOCs) in sufficient amounts to result in summer ozone concentrations in excess of the standards and objectives set on both sides of the border. It is also important to note that vegetation is a significant source of VOCs in the region, with these natural compounds contributing to ozone formation.

These high ozone concentrations may damage natural ecosystems. Health impacts of ozone levels were demonstrated during a study of forest workers in the Fraser Valley, where lung function was reduced by ambient ozone levels of about 70 ppb. Fine particles produced by transportation sources, stationary sources, and wood burning have contributed to reduced



### 3. The Commission's objectives for these grants are:

- (a) to provide financial support for the development of mobile services which will be of benefit to the community;
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#### 4.0 REPORT OF THE PACIFIC TRANSBOUNDARY WORKSHOP

##### **Background**

On November 1-2, 1995 the IAQAB convened a "Workshop on Air Quality Issues in the Pacific Transboundary Region" in Vancouver, British Columbia.

This workshop was "fact-finding" in nature; the IJC and IAQAB members wanted to be educated on the air quality issues and policy arrangements in the Washington State/British Columbia border region, specifically defined as the area west of the Cascade Mountains crest. The purpose of the meeting was to allow the region's experts to exchange technical and scientific information and policy experience regarding regional air quality issues in the Pacific Coastal region.

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There is evidence of transport of pollutants through the region bounded by the Fraser River on the north, the Cascades on the east, the Puget lowlands on the south and the Pacific Ocean on the west. The urban areas in the Pacific transboundary region produce most of the air emissions, from both stationary sources (power plants, refineries, smelters, pulp mills), mobile sources (cars, trucks, shipping), and dispersed sources, such as slash burning, and prescribed burning in the forests and residential wood burning. The major urban areas include the Greater Vancouver region, the Seattle-Tacoma area, and the Interstate 5 corridor leading from Seattle-Tacoma to Vancouver. These urban areas produce ozone precursors ( $\text{NO}_x$  and VOCs) in sufficient amounts to result in summer ozone concentrations in excess of the standards and objectives set on both sides of the border. It is also important to note that vegetation is a significant source of VOCs in the region, with these natural compounds contributing to ozone formation.

These high ozone concentrations may damage natural ecosystems. Health impacts of ozone levels were demonstrated during a study of farm workers in the Fraser Valley; their lung function was reduced by ambient ozone levels of about 70 ppb. Fine particles produced by transportation sources, stationary sources, and wood burning have contributed to reduced

visibility in both urban areas and in parks and protected areas of British Columbia and Washington. In the Fraser Valley this reduced visibility is primarily attributable to aerosol nitrate.

Policy discussions that took place during the second day of the workshop, with presentations by agency representatives, included consideration of: (1) the BC/Washington Environmental Cooperation Council, (2) Activities of the Greater Vancouver Regional District and the Northwest Air Pollution Authority (of Washington), (3) Activities of B.C. Environment and Washington State Department of Ecology, (4) Activities of Environment Canada and EPA-Region X. The general sense of the group was that transboundary cooperation and coordination is well developed in this region, especially with reference to the creation of the Environmental Cooperation Council in 1992, and the signing in April 1994 of the Memorandum of Understanding on air pollution new source permit notification for the area within 100 km of the border. On both sides of the border agencies have instituted programs to deal with ozone and particulate air pollution. In B.C. the Ministry of the Environment is regulating NO<sub>x</sub> emissions by a compulsory annual vehicle inspection program, the first of its kind in Canada.

In addition to the formal workshop sessions, the workshop featured two prominent luncheon speakers: Dr. Art Martel, Regional Director General of Environment Canada, and Mr. Chuck Clarke, Regional Administrator of the U.S. Environmental Protection Agency (Region X).

### **Result of the Workshop**

This discussion among the Commissioners and Board members, and representatives of universities, agencies, and public interest groups served to educate participants about transboundary air quality issues and the regional strategies to control pollutants and their effects. The Commissioners were particularly interested in the activities of the Environmental Cooperation Council, which includes representatives of air quality control agencies in British Columbia and the State of Washington who confer regularly on issues of mutual interest and concern. The Commissioners felt that the Memorandum of Understanding on air quality might serve as a model in other transboundary locations.

Air Board members and Commissioners had limited background on "western issues" coming into this meeting, specifically on issues related to visibility degradation, effects of wood burning, and deposition and ozone effects in montane ecosystems. The policy discussion pointed out the differences between the U.S. and Canada in how federal, state, and local regulatory agencies pursue air quality issues of regional, national, or global importance (e.g. the lack of "context" in Canada for dealing with visibility, and the lack of U.S. focus of greenhouse gases).

As a result of this workshop, the Commission appointed Dr. David Bates of the University of British Columbia as a member of the IAQAB. Dr. Bates brings a "western" geographic perspective and extensive health effects expertise to the Board.

The Board was represented at the workshop by Dr. Kathy Tonnessen, Mr. Rick Artz, Mr. Harold Garabedian, Dr. Jim Young, and Mr. Wayne Draper.

United States Chair Tom Baldini of the Commission, accompanied by Dr. Joel Fisher and Mr. David LaRoche; Canadian Chair Adèle Hurley, Commissioners Frank Murphy and Pierre Béland, Jim Macauley (former Commissioner), accompanied by Edward Bailey and John McDonald of Commission staff all were in attendance at the workshop.

#### **Recommendations:**

**Commission support is requested for the preparation of a more detailed workshop report by the Board to be reviewed by the IJC and several workshop participants and issued by mid-summer, 1996.**

The Commission on the Status of Women was established in 1946 by the United Nations General Assembly. Its mandate was to study the status of women in all countries and to recommend measures for their improvement. The Commission has since held several sessions, with the most recent one in 1981. It has produced a number of reports and recommendations, which have been adopted by the United Nations and other international organizations.

The Commission's work has been particularly significant in the area of women's rights. It has established the principle that women's rights are human rights, and that they should be treated as such. It has also developed a number of key concepts, such as the concept of "gender equality", which has become widely accepted and used in many areas of international law and policy.

The Commission's work has also been instrumental in the development of international instruments for the advancement of women. The most important of these is the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), which was adopted by the United Nations General Assembly in 1979. CEDAW is the only international human rights treaty that specifically deals with the rights of women.

The Commission's work has also been instrumental in the development of national laws and policies for the advancement of women. Many countries have enacted legislation based on the Commission's recommendations, and many have established government departments or commissions for women's affairs. The Commission's work has thus played a crucial role in the advancement of women's rights and the achievement of gender equality.

The Commission's work has also been instrumental in the development of international organizations and networks for women. The most important of these is the International Women's Year (IWI) in 1975, which was a global event that focused attention on the status of women and the need for their advancement. The Commission's work has also led to the establishment of a number of international organizations and networks, such as the International Commission on the Status of Women (ICSW) and the International Commission on the Status of Women (ICSW).

The Commission's work has also been instrumental in the development of international law and policy. The Commission's reports and recommendations have been widely cited in international law and policy, and have played a crucial role in the development of international instruments for the advancement of women. The Commission's work has thus played a crucial role in the advancement of women's rights and the achievement of gender equality.

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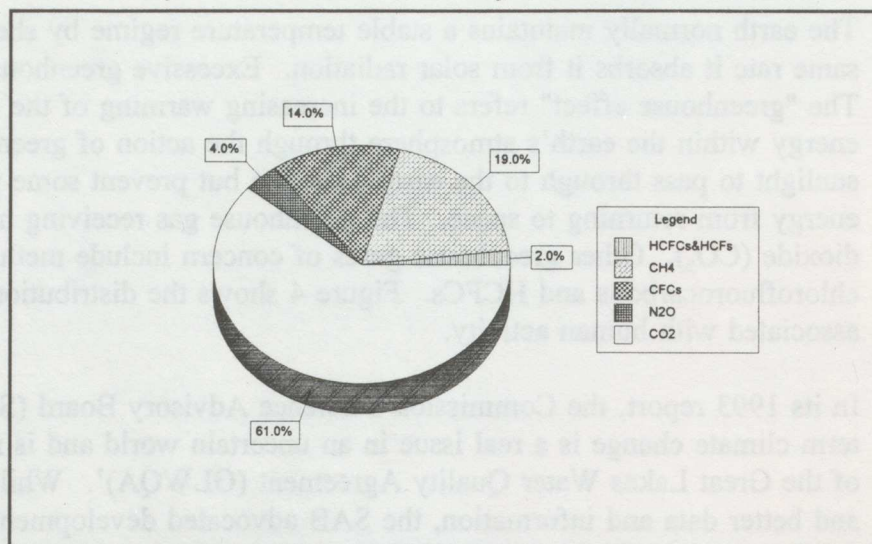
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## Figure 4: Greenhouse Gases from Human Activity

Reference: International Council for Local Environmental Initiatives



scientific theory has not been adequately demonstrated. This debate was particularly strident at the recent meetings of the committees that make up the Inter-governmental Panel on Climate Change (IPCC), a group formed in 1988 to interpret the science and recommend policy options relative to global climate change issues. The IPCC's first report, issued in 1990,

concluded both that human activity does affect climate and that greenhouse gases are building up at a rate likely to cause unprecedented temperature increase, although the Committee noted definable effects would probably not be felt for over a decade.

In its most recent report (to be published in 1996), the IPCC concludes that "the observed increase in temperature over the last century is unlikely to be entirely due to natural causes and that a pattern of climatic response to human activities is identifiable in the climatological record."

IPCC projections of warming by the year 2100 vary from 1.0-3.5 degrees Centigrade. Some of the possible outcomes of significant warming are an increased tendency for both floods and droughts, an increase in the mean sea level of from 10 cm (four inches) to .75 m (2.5 feet) by the year 2100, loss of biodiversity, adverse consequences for food security, serious health effects among poor regions and worsening air quality in cities.

Dr. J. Mahlman of National Oceanic and Atmospheric Agency (NOAA) in testifying before the U.S. Congress on November 16, 1995 presented a personal summary of the scientific communities' opinion about the confidence in various aspects of global warming. His "odds" for various items are presented below; those with only scientific interest have been omitted. A few words have been altered or omitted for clarity and brevity.

In what follows, "virtually certain" means that there is no plausible alternate explanation; "very probable" implies 9 chances out of 10 that the prediction will be true; and "probable" means a plausible prediction that currently lacks appropriate evidence; "uncertain" is uncertain.

1. Greenhouse gases (carbon dioxide, methane, chlorofluorocarbons, etc.) have been increasing over recent (post millennium) pre-industrial levels (virtually certain). The greenhouse gases in the atmosphere are expected to double by the middle of the next century.
2. It will take decades or centuries for the elevated concentrations of greenhouse gases to return to pre-industrial levels (virtually certain).
3. There has been global warming (at ground level) over the past century (virtually certain). The observed warming of about 1 degree Fahrenheit or a half degree Centigrade cannot yet be unambiguously ascribed to greenhouse warming. However, no other hypothesis is nearly as credible.
4. Natural variability adds confusion (virtually certain). Climate varies naturally on time scales from months to centuries and longer. This makes a greenhouse warming interpretation of the climate record much more difficult.
5. The average global surface temperature in the middle of the next century will warm (very probable). Most experts put this warming between 1 to 4 degrees Centigrade or 2 and 6 degrees Fahrenheit.
6. As the global temperature rises so also will the global average precipitation increase (very probable). The change will be variable and some local regions could experience decreasing precipitation.
7. With greenhouse warming, there will be reduction in Northern Sea Ice (very probable).
8. Rise in global average sea level (very probable). A further rise of 3.5-30 cm (4-12 inches) in mean sea level by the year 2050 is estimated and is due only to thermal expansion of warmer surface sea water. Additional rise could occur if the ice caps were to melt.
9. Mid-continental dryness and warming of soils in summertime (probable).
10. Increasing tropical storm intensities (uncertain).
11. Regional and temporal details of climate changes of the next 25 years (uncertain).

The calculated warming and the observed climate changes of the past century have been as small or smaller than the natural variability of the climate system. This natural variability will continue into the future so that detection of the greenhouse warming signals in the near future will be difficult.

Dr. Mahlman's testimony to Congress is reinforced by a recent survey of 16 leading U.S. climate experts. One of those surveyed was a known critic of the reality of greenhouse

warming, but all 16 agreed that if mankind doubles the atmospheric content of carbon dioxide (by the middle of the next century, perhaps), then the global average surface temperature will warm. However, one expert expected the amount of the warming to be negligible while the remaining 15 predicted increases between 1 and 4 degrees Centigrade or Mahlman's 2 to 6 degrees Fahrenheit.

Despite the likelihood of greenhouse warming, from a societal viewpoint, concern about greenhouse warming suffers from a number of factors: there are still uncertainties in the climate predictions (although many climate experts feel these are exaggerated); the consequences of the warming are further in the future compared to a person's lifetime and, if they do occur, they will be gradual; taking steps now to prevent a future problem may be costly and disruptive in the near term; and there is little appreciation of the societal consequences of greenhouse warming, with the possible exception of sea level rise.

### **Control of Greenhouse Gas Emissions**

Reversing the warming trend will require significant reductions in industrial and automotive emissions of greenhouse gases. In considering appropriate responses, the IPCC recommends switching to alternative-fuel or electric-powered vehicles, which could reduce CO<sub>2</sub> emissions by 95%, along with increased use of sustainable energy sources (biomass, solar, wind, geothermal and micro-hydro). They also note that nuclear power (which does not produce CO<sub>2</sub>) could replace baseload fossil-fuel electricity generation.

In 1987, 20.5 billion tonnes of CO<sub>2</sub> were released into the atmosphere. The industrial world, with one third of the population, produced 80% of that amount. Total CO<sub>2</sub> emissions by country are shown in Figure 5; per capita CO<sub>2</sub> emissions are given in Figure 6.

In Canada, the transportation sector accounts for approximately 32% of CO<sub>2</sub> emissions and approximately 26% of the total greenhouse gas emissions - the largest single source. Road transportation is the largest source of CO<sub>2</sub>, accounting for 81% of CO<sub>2</sub> emissions from all transportation sources. The distribution of emissions in the United States is similar.

At this time, there is concern in both the U.S. and Canada that targets agreed to by both countries at the 1992 Earth Summit in Rio De Janiero of reducing CO<sub>2</sub> emissions to 1990 levels by the year 2000 are in jeopardy. Federal funding for the U.S. emission reduction program is threatened. The Organization for Economic Co-operation and Development reports that Canada sustained a 13% increase in CO<sub>2</sub> emissions during 1994, rather than a decrease toward the 1990 level of emissions as targeted.



## Countries Which Produce the Most CO<sub>2</sub> Emissions

Figure 5: Total CO<sub>2</sub> Emissions (millions of tonnes)

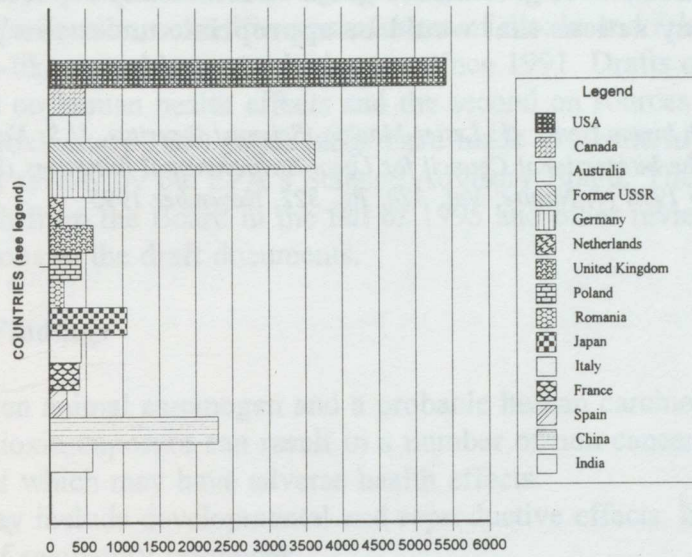
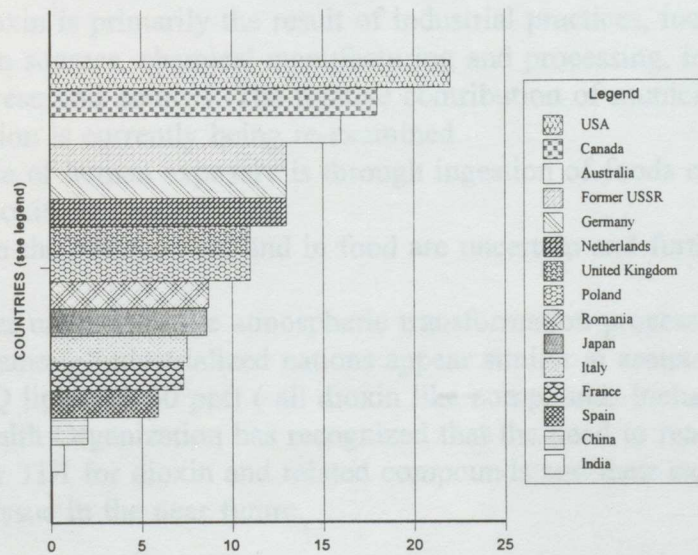


Figure 6: Per Capita CO<sub>2</sub> Emissions (tonnes)



Reference: International council for Local Environmental Initiatives

## Board Proposed Action

The Board will continue to collect and interpret information on the effects of industrial and transportation emissions on global climate and the achievement of international targets for the reduction of greenhouse gases. Periodically reports will be given to the Commission on any actions that would be appropriate under the "alerting function."

### *Reference:*

*Chapter prepared with inputs from: (1) Lester Machta, Scientist Emeritus, U.S. National Atmospheric and Oceanic Agency (2) The International Council for Local Environmental Initiatives (3) 'Some Like it Hot', E Magazine - Jan/Feb 1996 (4) Nature, Vol. 378, Pg. 322, November 1995*

## 6.0 U.S. EPA DIOXIN REASSESSMENT UPDATE

### Background

Scientists from the USEPA, other US Federal agencies and the scientific community have been involved in a comprehensive, scientific reassessment of dioxin and related compounds, including certain dioxin-like polychlorinated biphenyls, since 1991. Drafts of the reassessment documents, one focused on human health effects and the second on sources and levels of exposure, and each approximately 1000 pages long, were made available in September 1994 for public comment and review by the EPA's Science Advisory Board. The extensive comments received, both from the Board in the fall of 1995 and other reviewers, will be the basis for ongoing revisions to the draft documents.

### Preliminary Selected Findings

- Dioxin is a proven animal carcinogen and a probable human carcinogen.
- At some dose, dioxin exposure can result in a number of non-cancer effects in humans; some of which may have adverse health effects.
- These effects may include developmental and reproductive effects, immune suppression and disruption of regulatory hormones.
- Evidence to show that any of these non-cancer effects occur in humans at everyday levels of exposure is very limited.
- However, average everyday exposures are close to exposures known to cause such effects in laboratory animals.
- Presence of dioxin is primarily the result of industrial practices, including combustion, and incineration sources, chemical manufacturing and processing, industrial/municipal processes and reservoir sources. The relative contribution of municipal and hospital waste incineration is currently being re-examined.
- The major route of human exposure is through ingestion of foods containing minute quantities of dioxin-like compounds.
- Actual levels in the environment and in food are uncertain and further data are being collected.
- A need to better understand the atmospheric transformation process was identified.
- Body burdens among industrialized nations appear similar at around 40 to 60 picograms TEQ lipid (40-60 ppt) ( all dioxin like compounds included).
- The World Health Organization has recognized that the need to reassess the 'tolerable daily intake' or TDI for dioxin and related compounds and their expert panel should report on this issue in the near future.

### Next Steps:

The exposure document and the first several chapters are to be revised and updated and subjected to additional internal and limited external peer review. The Dose-Response chapter

is undergoing a major rewrite as recommended by the SAB; the Risk-Assessment portion is receiving similar treatment. Both will be referred back to the SAB.

It is anticipated that the revisions should be complete as of the end of March, with peer panel meetings to be held in early May. Documents will be referred to the SAB in June, and printing of the final publication may occur as soon as August, with release in September, 1996.

### **Board Proposed Activity**

**As it continues to examine the impact of emissions, including dioxins, from municipal waste incinerators, and the global transport of persistent toxic substances, such as dioxins, via the air pathway, the Board will consider what aspects of the outcome of the dioxin reassessment exercise should be emphasized in their work.**

## 7.0 DIMINISHED VIGILANCE: REDUCTIONS IN ENVIRONMENTAL MONITORING AND RESEARCH

### Background

There are currently many examples of reductions in environmental research and monitoring programs at Federal, state, and provincial levels of government in the United States and Canada. If many of the projected cuts in networks and programs are realized, this will significantly impair the ability of the Board and the Commission to track the progress of air pollution control and global change in our two countries. Listed here are some of the real and proposed cuts and operational changes to environmental monitoring and assessment programs that are cause for concern.

### Status of U.S. Programs

#### 1) The Status of Air Quality and Effects Monitoring in the United States

Because possible federal budget cutbacks loom at most agencies involved in environmental research, many have been forced to give serious consideration to potential effects on existing monitoring programs. At the time this note was updated (March 22, 1996) many of the U.S. agencies that support environmental monitoring are still without an FY 96 budget. Based on the limited and incomplete information available, the following difficulties may be encountered within the U.S. Federal monitoring programs:

- a) **National Park Service:** There will be no new NPS funding for monitoring in National Parks. The EPA and U.S. Geological Survey fund many of the existing NPS monitoring programs; the following monitoring stations may be affected by shortfalls in Federal funding:
- IMPROVE (Interagency Monitoring of Protected Visual Environments) sites (visibility)
  - ozone and sulfur dioxide monitoring sites
  - precipitation chemistry at NADP (National Atmospheric Deposition Program) and dry deposition at NDDN (National Dry Deposition Network) monitoring sites in parks.
  - ecosystem monitoring and research was lost in large part from the National Biological Service, which was merged into the U.S. Geological Survey as part of the FY 96 budget negotiation. Programs to monitor environmental status and trends in national parks, wilderness areas and fish and wildlife refuges have been severely compromised as a result of these cuts and reorganizations.

The National Biological Service, Air Quality Effects Research program was eliminated in FY96, and the Watershed Research Program will likely receive substantial cuts in funding this year. Thus, long-term watershed and deposition research sites in the Sierra Nevada of California, Olympics of Washington, Isle Royale in Michigan, Rocky Mountains of Colorado, and Big Bend, Texas will see some loss in ability to monitor environmental change. [It should be noted that Isle Royale National Park in Michigan's Upper Peninsula was the site of important deposition and ecosystem monitoring which aided the Commission in its early understanding of the deposition of toxics to Lake Superior].

- b) **National Oceanic and Atmospheric Administration (NOAA):** The situation at NOAA remains undefined. The agency continues to press for additional funding to adequately understand the sources and causes of rural ozone, and to rapidly detect changes in sulfur and nitrogen deposition resulting from the 1990 Clean Air Act Amendments. However, a number of budget line items have been eliminated with significant ramifications to our monitoring programs, and without additional funding, NOAA will be unable to upgrade aging monitoring programs, or to expand networks to reflect improvements in monitoring science. Direct cuts to the NOAA-supported Lake Champlain air monitoring program are discussed below.
- c) **The Adirondack Long-Term Monitoring Project (LTM):** The LTM, a joint venture between the Adirondack Lakes Survey Corporation, the New York State Department of Environmental Conservation, the Empire State Electric Energy Research Corporation and the U.S. EPA, is being greatly reduced. The purpose of the project was to monitor lake chemistry to evaluate the impact of reduced atmospheric emissions on sensitive Adirondack aquatic ecosystems as required by the 1990 Clean Air Act Amendments.

The Adirondack Region is the area in the U.S. most impacted by acidic deposition. Loss of the monitoring information will result in lack of documentation of the expected improvements in water chemistry and biological communities. The lack of intensive spring sampling will not permit the assessment of the episodic impacts of snowmelt. Presently, this project is considered to be the most significant research in the nation designed to evaluate the effectiveness of source emissions control on the chemistry of lakes and ponds affected by acidic deposition.

- d) **Environmental Protection Agency:** EPA has proposed that its environmental research and monitoring programs be directed to a new interagency effort, known as the "Framework for Monitoring Our Nation's Natural Resources". This "Framework" is based on continuing interagency discussions under the auspices of the Committee on Environment Research.

Due to the delays in the Congressional action on its Fiscal Year 1996 budget, EPA at the end of November 1995 temporarily suspended monitoring at some of the sites in two of its atmospheric monitoring networks. These include 37 contractor-operated sites in EPA's 52-site Clean Air Status and Trends Network (CASTNet). CASTNet monitors "dry" deposition of acidic sulfur and nitrogen gases and particles, which, together with acid in rainfall, are responsible for acidification of lakes and streams in sensitive geological watersheds. Monitoring was also suspended at nine contractor-operated sites in the Eastern Visibility Network, which monitors the clarity of the atmosphere.

For the interim, EPA continues to operate 15 of its contractor-operated CASTNet sites located primarily in areas where natural systems are most sensitive to acid deposition, and continues to collaborate in monitoring dry deposition at 14 sites operated by the National Park Service and at 13 sites operated by the National Oceanographic and Atmospheric Administration. Visibility monitoring at sites operated by the National Park Service (primarily in the Western states) was not affected by this temporary measure.

EPA reaffirmed its commitment to provide the means to collect the needed environmental data and is participating in the development of an integrated environmental monitoring program through the White House Committee for the Environment and Natural Resources. This integrated program would leverage federal resources to coordinate and support a wide range of monitoring functions. The facilities and instrumentation at the suspended sites will be maintained for possible re-use until final from decisions about the White House program are made in mid-1996.

Figure 7: CASTNet Visibility Sites

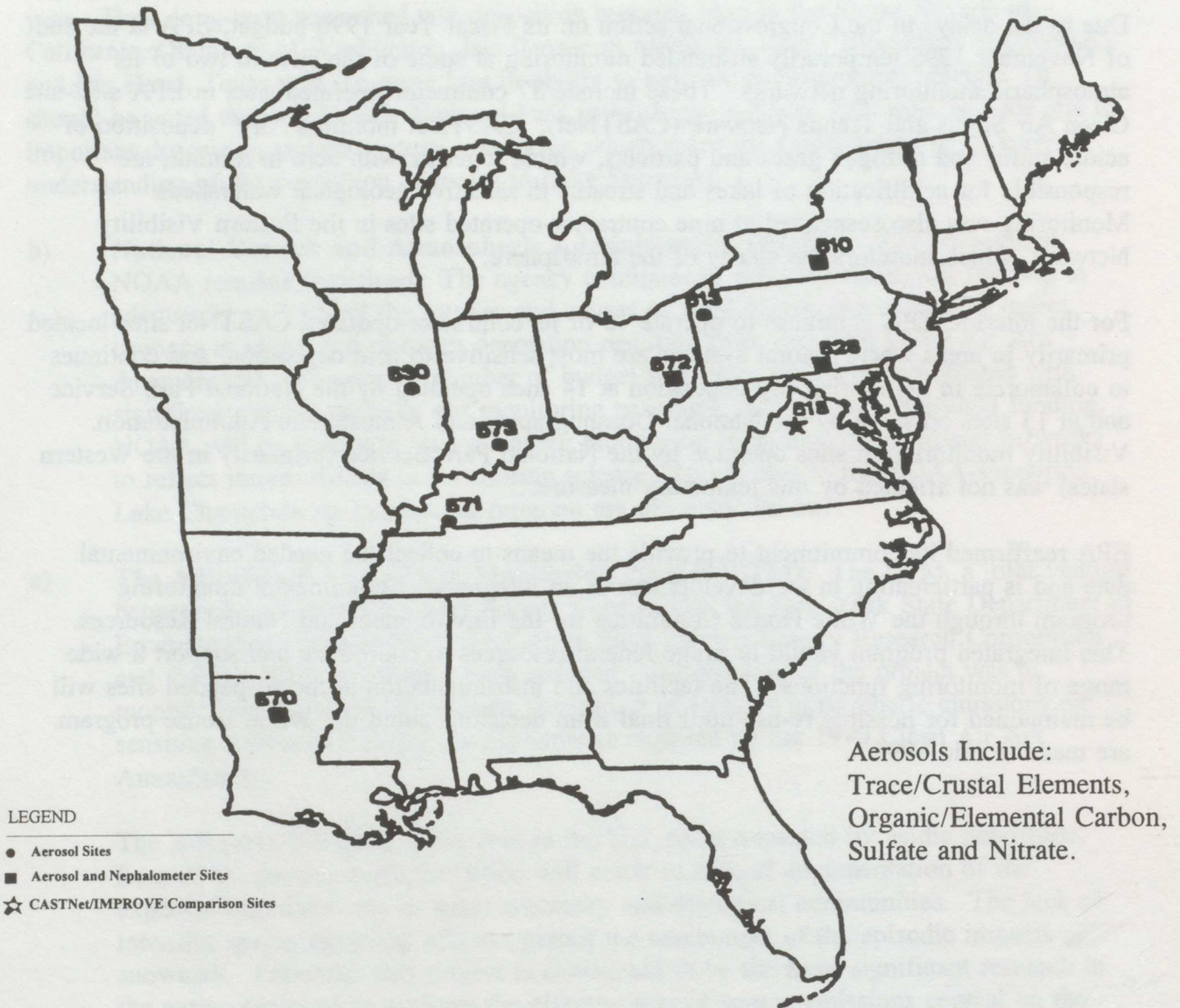




Table 6: Suspended CASTNet Sites

| SUSPENDED CASTNet SITES            |               |                  |
|------------------------------------|---------------|------------------|
| Site Names                         | County        | City             |
| 1. Prince Edward, VA               | Prince Edward | Farmville, VA    |
| 2. Connecticut Hill, NY            | Tompkins      | Ithaca, NY       |
| 3. Speedwell, TN                   | Claiborne     | Knoxville, TN    |
| 4. Kane Experi. Forest, PA         | Warner        | Kane, PA         |
| 5. M.K. Goddard, PA                | Dauplin       | Harrisburg, PA   |
| 6. Deer Creek, OH                  | Pickway       | Columbus, OH     |
| 7. Ann Arbor, MI                   | Washtenaw     | Ann Arbor, MI    |
| 8. Beltsville, MD                  | Prince George | College Park, MD |
| 9. Laurel Hill, PA                 | Somerset      | Johnston, PA     |
| 10. Cedar Creek, WV                | Gilmer        | Glenville, WV    |
| 11. Horton Station, VA             | Montgomery    | Blackburg, VA    |
| 12. Whieface Mtn., NY              | Franklin      | Saranac Lake, NY |
| 13. Lykens, OH                     | Crawford      | Bucyrus, OH      |
| 14. Unionville, MI                 | Huron         | Unionville, MI   |
| 15. Candor, NC                     | Montgomery    | Candor, NC       |
| 16. Cranberry, NC                  | Avery         | Boone, NC        |
| 17. Edgar Evins, TN                | Putman        | Cookesville, TN  |
| 18. Bondville, IL                  | Champaign     | Champaign, IL    |
| 19. Mackville, KY                  | Boyle         | Perryville, KY   |
| 20. Howland, ME                    | Penobscott    | Bangor, ME       |
| 21. Salamonie Lake, IN             | Wabash        | Wabash, IN       |
| 22. Ashland, ME                    | Aroostook     | Pregue Isle, ME  |
| 23. Crockett, KY                   | Martin        | Paintville, KY   |
| 24. Cowesta, NC                    | Macon         | Franklin, NC     |
| 25. Stockton, IL                   | JoDavies      | Stockton, IL     |
| 26. Blackwater, NWR, MD            | Dorchester    | Cambridge, MD    |
| 27. Washington Crossing, NJ        | Mercer        | Trenton, NJ      |
| 28. Lye Brook, VT                  | Bennington    | Bennington, VT   |
| 29. Wellston, MI                   | Missaukee     | Cadillac, MI     |
| 30. Caddo Valley, AR               | Hot Springs   | Hot Springs, AR  |
| 31. Coffeerville, MS               | Grenada       | Grenada, MS      |
| 32. Sand Mountain, AL              | Etowah        | Gadsden, AL      |
| 33. Georgia Station, GA            | Spaulding     | Griffen, GA      |
| 34. Alhambra, IL                   | Madison       | Highland, IL     |
| 35. Pinedale, WY                   | Sublette      | Pinedale, WY     |
| 36. Whitetop Mountain, VA          | Grayson       | Marion, VA       |
| 37. Clingman's Dome, TN            | Sevier        | Gatlinburg, TN   |
| SUSPENDED EASTERN VISIBILITY SITES |               |                  |
| 1. Connecticut Hill, NY            | Tompkins      | Ithaca, NY       |
| 2. Arendtville, PA                 | Adams         | Gettysburg, VA   |
| 3. Quaker City, OH                 | Belmont       | Quaker City, OH  |
| 4. Sikes, LA                       | Winn          | Winnfield, LA    |
| 5. Cadiz, KY                       | Trigo         | Hopkinsville, KY |
| 6. Livonia, IN                     | Washington    | Salem, IN        |
| 7. Goddard SP, PA                  | Dauplin       | Harrisburg, PA   |
| 8. Bondville, IL                   | Champaign     | Champaign, IL    |
| 9. Shenadoah, VA                   | Madison       | Luray, VA        |

# CASTNET, AIRMON, and NPS Air Monitoring Sites

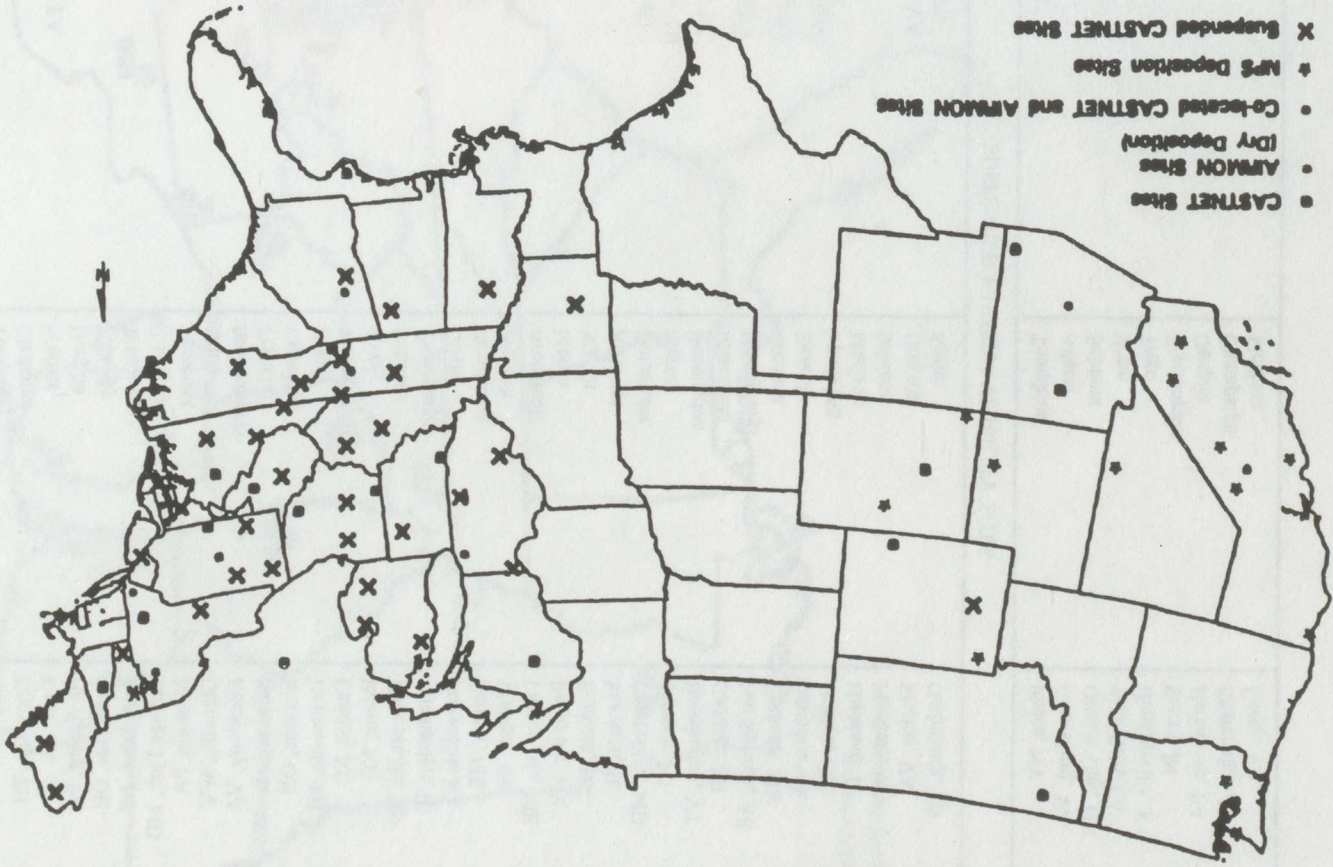


Figure 8:

Figure 7: CASTNET Viewing Sites  
www.epa.gov/castnet/03castnet.htm

- e) The **State of Vermont** Environmental Monitoring: State programs are suffering major reductions in air pollution monitoring and effects programs. At least four programs are facing reduced or no funding:
- A 15-year effort to monitor acidity of precipitation and the effects of acid deposition on sensitive lakes and ponds has been reduced by \$50,000 due to termination of EPA's LTM program funding (see above). It is not yet clear what the effects of the reduction will be on this program.
  - The Forest Health Monitoring program (part of EMAP, see above), established in 1990 between the USDA Forest Service, EPA, and several states, has been terminated. Funds have recently been redirected to western states.
  - The Atmospheric Integrated Research Monitoring Program station in Underhill, Vermont has been terminated due to loss of NOAA funding. Both wet and dry deposition samples were collected under this program for the past four years.
  - Funding for continued measurement of atmospheric mercury deposition in the Lake Champlain Basin has also been terminated by NOAA. This effort was the longest-running mercury monitoring program in the country.
- 2) Potential Effects on U.S. Climatological Records from the Implementation of the NOAA Automated Surface Observing System (ASOS) Program

### **Proposed Changes in Weather Data Collection**

The National Weather Service (NWS) of the National Oceanic and Atmospheric Administration (NOAA), is within the Department of Commerce. Its basic mission is to provide weather and flood warnings, public forecasts, and advisories primarily for the protection of life and property. NWS' operations also support other agencies' missions and the nation's commercial interests. For example, NWS provides specialized forecasts to support (1) aviation safety and (2) the aircraft and marine industrial interests. To carry out its mission, NWS uses a variety of systems and manual processes to collect, process, and disseminate weather data to and among its network of field offices and regional and national centers. Many of these systems and processes are outdated; for example, some radar equipment currently in use dates back to 1957. These radars experience frequent and long-lasting outages, and some replacement parts are no longer available.

During the 1980s, NWS initiated a program to modernize its systems and restructure its field offices to achieve more uniform weather services across the nation, improve forecasts, provide more reliable detection and prediction of severe weather and flooding, permit more cost-effective operations, and achieve higher productivity. The modernization program includes four new major system developments: the NEXt Generation Weather RADar (NEXRAD), the NEXt Generation Geostationary Operational Environmental Satellite (GOES-Next), the Advanced Weather Interactive Processing System (AWIPS), and the Automated Surface

Observing System (ASOS). The total cost of the modernization is estimated to exceed \$4.5 billion.

Because of the importance of timely and accurate weather forecasts and warnings to the nation's commerce and its citizens' safety, the Congress has been keenly interested in the modernization, particularly in preserving the existing quality of weather service. Legislation from 1988 and 1992 states that the Secretary of Commerce shall not close, consolidate, automate, or relocate any field office until the Secretary certifies to the Congress that such action will not result in any degradation of weather reporting to the public.

ASOS is a system of sensors, computers, display units, and communications equipment intended to automate the ground-based observation and dissemination of weather information nationwide, including data on temperature and dew point, visibility, wind speed and direction, pressure, cloud height and amount, and types and amounts of precipitation.

According to NWS, ASOS offers considerable advantages over the current manual surface observation practices, including uniform measurements across all sites and times, continuous observation and reporting, and more observing sites nationwide. ASOS is also intended to eventually replace human observers at weather service offices and at airports. However, ASOS is not designed to detect all weather conditions; it does not observe include thunderstorms, tornadoes, volcanic ash, hail, virga (precipitation that does not reach the ground), snow amount and depth, cloud layers above 12,000 feet, ice pellets, drizzle, blowing snow, blowing dust, and blowing sand. The NWS plans to continue to provide this information to its users through a combination of remote sensing systems (e.g. radar, satellite, and lightning detection system), additional ASOS sensors, and manual observation by non-weather service observers, such as volunteers, on-call cooperators, and/or Federal Aviation Administration (FAA) personnel.

#### Concern for Climate Records

Officials from the National Climate Data Center, the American Association of State Climatologists, and the ASOS Climate Working Group, as well as various prominent climate researchers from industry and academia, stated that climatologists need uninterrupted and accurate measurement of precipitation. However, ASOS does not meet this need. In February 1994, NOAA's Climate Data Continuity Project reported that ASOS' precipitation accumulation sensor generally reports less precipitation than conventional sensors, with the greatest underreporting occurring in summer and winter months. The report explained that ASOS' gauge performed reasonably well in rain events that were of light to moderate intensity but did not perform well in snow or freezing conditions or in heavy rain events that are typical in the summer. The project further reported that, from the summer of 1993 through the spring of 1994, ASOS precipitation observations were 94 and 91 percent of conventional observations in fall and spring, respectively, but fell to 86 percent in summer and only 75 percent in winter.

Climatologists stated that incorrect precipitation observations also affect accurate climatological analysis. Specifically, inaccurate precipitation records could affect

(1) businesses that rely on this information for everyday decisions, (2) climatological analysis of flood and drought frequencies, intensities, and durations, and (3) long-term national climate research on global and regional precipitation, potentially skewing national environmental policy decisions on global change. To address this climatological need, NWS is developing specifications and plans to procure an all-weather precipitation gauge to better report liquid and frozen precipitation amounts.

According to the ASOS program manager, ASOS does not meet all climatology needs because it was not originally intended to do so. Rather, it was intended only to meet forecasting and aviation requirements. The program office, however, is now assessing how best to meet climatologists' requirements including how to supplement ASOS so that needed observations, which are currently provided by the human observers, continue once the human observers are removed.

Because NWS is still assessing many of the problems facing ASOS, it has yet to estimate the cost to resolve them, either via system enhancements or human/system supplementation. Without reliable estimates of what an enhanced or supplemental ASOS that fully meets users' needs will ultimately cost, NWS does not know whether continued investment in ASOS is cost beneficial.

#### Additional Concerns

The above material was taken from a U.S. General Accounting Office Report to Congressional Requesters entitled "Weather Forecasting: Unmet Needs and Unknown Costs Warrant Reassessment of Observing System Plans" released in April of 1995. Additional information has also been received from Dr. Robert Quayle from the NOAA National Climate Data Center in Asheville, North Carolina.

Dr. Quayle's report notes that the maximum error in ASOS temperature measurements is approximately 1.8 degrees F (apparently greater than current manual temperature devices, but still reasonable) and that maximum error in dew point is between 7.9 and 13.9 degrees F, varying slightly with temperature. Because dew point is an extremely important variable in the study of climate change, maximum errors of such magnitude pose a serious threat to the dew point record. Fortunately, it is believed that the sensors may be adjustable and that the problem may eventually be mitigated.

#### Status of Ontario Programs

In the Province of Ontario extensive environmental monitoring programs have been in place to generate information/data used to:

- 1) establish and quantify so called "background" and/or "pristine environment" values,
- 2) detect environmental activity/health trends,
- 3) suggest/imply the need for abatement/corrective initiatives,
- 4) measure the effectiveness and efficiency of abatement actions,

- 5) establish and support standards,
- 6) assist in environmentally responsible and sustainable development and economic growth (e.g. certificates of approval permits to take water).

While difficult to predict with any precision at this time, the current federal/provincial re-engineering efforts potentially will have significant implications. What follows are some apparent examples:

- A 50% downsizing of the federal and/or federal/provincial hydrometric network to take place over the next three years could result in the loss of information necessary for issuing Certificates of Approval, Permits to Take Water, water quality assessments and pollutant loading estimates. Curtailments in sampling frequency could result in a reduction in accuracy in computing estimates, necessitating extrapolation of streamflow data from gauged sites to ungauged sites. The discontinuation of 79 stream gauging stations over three years (7 tributary mouth sites and 9 Great Lakes contributing tributaries, as planned by the federal government for the 2nd and 3rd years) will also affect the accuracy of computed loading estimates. Use of streamflow data extrapolation from gauged to ungauged sites would become necessary rather than collecting on-site streamflow gauged data for this purpose.
- Air quality monitoring networks will continue to be automated and rationalised, resulting in the closure of some stations. The gradual downsizing of the monitoring networks has affected the accuracy of estimates of air pollution "doses" received by the sensitive "receptors" (e.g. humans). Without adequate data it is difficult to prove or disprove hypotheses regarding risk. A smaller monitoring network makes necessary the utilization of very sophisticated analyses with the available data using analytical tools, e.g. models, to derive the required results.
- Table 7 lists the Ontario programs that may be affected by federal and provincial cutbacks, and notes the possible environmental impacts of such reductions.

### **Recommendations**

- 1) **Given the potential for disruption of the information base available to the Board and the Commission, the Commission should advise Governments of their concern regarding reductions in operational support for air and related monitoring programs.**
- 2) **The Commission should request that Governments formally advise them regarding planned or proposed reductions to environmental research and monitoring programs vital to the understanding of transboundary issues.**

Table 7  
Diminished Monitoring Vigilance: Ontario

| NAME OF PROGRAM   | RELATED AGREEMENTS   | CURRENT RESOURCES   | ESTIMATED REDUCTIONS % | POTENTIAL ENVIRONMENTAL IMPACTS OF RESOURCE REDUCTIONS  |
|---|--|---|------------------------|---|
| Air Emission Inventory, inventories of common pollutants, air toxics, greenhouse gases and stratospheric ozone depletion substances in Ontario. Environment Canada-Conservation and Protection, Ottawa and Ontario Region and EMRB-ESSD, MOEE | CCME, NAICC as the driving force on all cooperation, some of the programs have federal-provincial agreements/MOUs.   | \$80-\$120K<br>MOEE attempts to match federal government dollar for dollar. | n/a                    | Any reduction in resources in the compilation of emission inventories could seriously jeopardize the delivery of air pollutant source release information in participating jurisdictions. Many provincial environmental assessment and management programs would not have adequate environmental data to support abatement functions, national and bi-national programs |
| Air Quality Monitoring Network. Environment Canada - Conservation & Protection, Ottawa and EMRB-ESSD and ROD, MOEE.   | Under a federal-provincial arrangement, urban air quality data are provided to Environment Canada for their National Air Pollution Surveillance (NAPS) program. This program has been in effect since 1970 and about 26 sites. VOC canister sampling and analysis on 13 urban sites are implemented by Environment Canada.<br><br>Environment Canada provides monitoring instruments and subsequent replacements for NAPS sites. | \$200K  | n/a                    | Less funds available for equipment replacements. Future reductions could have serious implications on ability to provide adequate assessment of the quality of air in Ontario and the evaluation of local, regional and national trends.  |
| Air Quality Advisory. Environment Canada - Ontario Region and EMRB-ESSD, MOEE   | Environment Canada/Environment Ontario Agreement respecting a smog advisory program in Ontario signed January 1993.  | nil funding:<br><br>some in kind  | n/a                    | Reductions in this joint program could seriously jeopardize related activities such as the operation of the Ministry's weather office, emergency response efforts, and modelling activities. Delivery of the advisory could become less effective.  |

Table 7  
Diminished Monitoring Vigilance: Ontario (continued)

| NAME OF PROGRAM  | RELATED AGREEMENTS   | CURRENT RESOURCES | ESTIMATED REDUCTIONS % | POTENTIAL ENVIRONMENTAL IMPACTS   |
|--|--|-------------------|------------------------|---|
| COA - Toxics   | Canada-Ontario Agreement   | n/a               | n/a                    | Incomplete inventory data for air toxics as well as scientific estimates of environmental sources and fate.   |
| Ontario response to the ground level ozone problem       | CCME Management Plan for NOx and VOCs                                      | \$1,000K          | 25                     | Possible impact on public buy-in, and effectiveness of developed strategy   |
| Pollution Prevention                                     | MOUs: MVMA, APMA, Metal Finishing, P&G, Hamilton-Wentworth                 | \$460K            | n/a                    | n/a   |
| Federal-Provincial Agreement for Water Quality Surveys   | Memorandum of Agreement between Canada and the Province, signed April 1975 | \$1,922K          | 42% over three years   | Loss of valuable hydrometric information necessary for issuing Cs of A, Permits To Take Water, for water quality assessments and pollutant loading estimates.   |
| Provincial Lakewide Management Plans - Lake Ontario LaMP | COA  | \$150K            | n/a                    | The development of load reduction targets and action plan to address beneficial use impairments could be delayed.   |
| Lake Erie LaMP   | COA  | \$450K            | n/a                    | Likely to foresee delays in plan development.   |
| Lake Superior Binational Program                         | COA  | \$650K            | n/a                    | Delays in the development of action plans for Lake Superior unlikely, as federal staff giving Superior high priority - for the time being - exception being loss of 1 PY from communications and secretariat support as well as special designations. |



## 8.0 OTHER EMERGING ISSUES

### a) Fine Particulate Transport and Effects

In view of the accumulating health data which point to fine particles (less than 10 microns) as having a major impact on human health, the long-range transport of such emissions becomes a matter of importance. In this connection, it should be noted that:

- 1) Although fully biological mechanisms underlying the adverse health effects of fine particles are not yet understood, there is scientific evidence that particles less than 2.5 microns in size may be more toxic than larger (10 micron) particles. These small particles often contain acidic and organic species and can remain suspended in air and thus travel for longer distances prior to deposition. Also, with particles of 1 micron and less, the indoor and outdoor concentrations are similar; which means that indoor exposures will be similar to outdoor exposures.
- 2) Emission inventories and source apportionment studies of fine particles at different times of the year and in different locations will become increasingly important in the border regions. It is noted that in Toronto, researchers have shown that hospital admissions in the summer are in synchrony with levels of TSP (total suspended particulate) and PM10 (particles less than 10 microns in size) in air; but NOT with TSP minus PM10 - indicating that the fine particle fraction is what is important when considering increases in hospital admissions for respiratory illness (see Ref. 1).

### b) Economic Valuation of Adverse Health Effects

The publication by EPA (see Ref. 2) of a major study of the economic costs of sulfates in the northeast portion of the continent, including Ontario and Quebec, is an important step forward in our valuation of the costs of air pollution. Other similar studies of the populations living in Los Angeles and San Francisco, and in the Lower Fraser Valley in British Columbia, have highlighted the substantial costs the public is already paying for the existing levels of air pollution.

In the EPA study, the estimated annual monetary health benefits to Ontario and Quebec of the 1990 Clean Air Act Amendments, Title 4 sulfur dioxide reductions in the U.S. are calculated to be \$906 million in 1997. Sensitivity analyses indicate that this is a conservative estimate.

Such studies, if suitably extended and modified, would permit estimates to be made of the existing costs of transboundary air pollutants in Ontario and Quebec (and New Brunswick probably), as well as in the U.S. states impacted by Canadian emissions. Such exercises are likely to have a major impact on policy decisions in the future.

### c) **Impacts of Dioxin and PCBs Long-Range Transport**

We know that polychlorinated biphenyls (PCBs) contamination of the food chain, and the long-range transport of dioxin to areas distant from the emission source are both important issues. It is important that we periodically update our information base concerning the adverse effects of these and other transmissible pollutants on human populations. It will be important to ensure that the IJC considers the effects on human health of these pollutants on a continuing basis. We need to establish a mechanism to regularly evaluate the epidemiological data on health effects of toxic air contaminants, and we should require annual updates of the status of emissions inventories and deposition processes for these compounds.

#### **Board Proposed Action**

**The Board will continue to monitor agency reports, data bases, and the scientific literature on the effects of toxic air contaminants and fine particles on human health. We will regularly report to the IJC on scientific and policy developments in this arena.**

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## CLIPPING SERVICE

### 9.0 CANADA

#### 1) ONTARIO REDUCES CONTRIBUTION TO CCME'S BUDGET

The Canadian Council of Ministers of the Environment (CCME) has been functioning for the past two decades (previously as the Cdn. Council of Resource and Environment Ministers (CCREM)) to coordinate approaches to environmental protection in Canada. The Council brings the environment ministers together from across the country to set policy for environmental cooperation on voluntary programs. As the federal government continues to devolve responsibility for the environment from the nation to the provinces, CCME becomes even more important in assisting provinces on issues such as the transportation and destruction of PCBs, national voluntary recycling, and the National Packaging Protocol (NAPP). The Ontario government has quietly cut its \$500,000 funding to the CCME by almost 50% to about \$270,000. By taking such action, Ontario could encourage other government to make major cuts to their contributions to the work of CCME. The cuts will impair the ability of CCME to carry out its duties which has direct ramifications for the environment and establishment of standardized voluntary programs across the country.

*Environment Intelligence Faxletter, Canadian Environmental Industry Association, February 1996*

#### 2) PROPOSAL TO RENEW THE CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)

The federal government has brought forward proposals to renew and improve the Canadian Environmental Protection Act (CEPA), the government's main environmental legislation, following a statutory five year review. The government's detailed proposals for a renewed act go further to protect the environment and human health. Proposals are based on sustainable development, pollution prevention, the ecosystem approach and biodiversity, and would give a renewed CEPA more effective and innovative tools to respond to environmental concerns. The government will also ensure that a renewed CEPA is consistent with the Toxic Substances Management Policy and Pollution Prevention - A Federal Strategy for Action, announced in June 1995. Canadians will be given a ninety-day period to comment on the proposal. The renewed legislation is planned for introduction in the fall of 1996.

#### 3) RELEASE OF THE SECOND PRIORITY SUBSTANCES LIST UNDER CEPA

The second Priority Substances List of the Canadian Environment Protection Act (CEPA) was published in December 1995. This list identified substances that will be given priority for assessment to determine whether they are "toxic" under Section 11 of the Act. A substance is defined as "toxic" if it enters or may enter the environment in amounts or under conditions that pose or may pose a risk to human health, the environment, or to the

environment that supports human life. This list, recommended by an Expert Advisory Panel drawn from major stakeholder groups, contains 25 substances, including single chemicals as well as mixtures and effluents. When a substance is found toxic under the Act, the Ministers of Environment and Health may recommend that controls be developed to prevent or reduce the potential for harm to the environment or humans.

4) CANADA'S SMOG PROGRAM

In January, 1996, a smog plan approach was tabled with Ministers of Energy and Environment. The program will include a National Smog Management Plan with an "underlay" of preventative measures best taken nationally, such as new vehicle performance standards, and four Regional Smog Management Plans, with remedial measures for the Lower Fraser Valley of British Columbia, the southern parts of Ontario and Quebec and New Brunswick and Nova Scotia. The definition of smog has also been broadened to include other pollutants in addition to ozone, most notably fine particulate matter.

At their November 1995 meeting, the Canadian Council of Ministers of the Environment endorsed a recommendation on a Cleaner Vehicles and Fuels program. It will introduce a new generation of low emission vehicles in the Canadian market and better fuels that result in reduced emissions. This was followed, in December 1995, with enactment of regulations on cleaner vehicles and cleaner gasoline by the Government of British Columbia. The federal government has proposed new regulations for gasoline and diesel fuel, and is in the process of updating national vehicle emission standards.

5) CANADA'S NATIONAL ACTION PROGRAM ON CLIMATE CHANGE (NAPCC) AND CANADA'S FEDERAL ACTION PROGRAM ON CLIMATE CHANGE (FAPCC)

Canada's National Action Program on Climate Change (NAPCC), tabled at the first Conference of the Parties to the United Nations Framework Convention on Climate Change in April 1995, sets the strategic direction Canada will adopt in addressing its national commitment to stabilize emissions at 1990 levels by the year 2000 and sustainable reductions in the post-2000 era. A formal review of Canada's progress towards its national commitment is currently underway and will be tabled with the federal and provincial governments in November 1996.

The Federal Action Program on Climate Change (FAPCC), sets out the agenda and concrete actions that the federal government has adopted in pursuit of its long-term commitment to address climate change under the NAPCC. The FAPCC highlights how federal departments and agencies are working together to develop and provide an effective response to the challenge of climate change science, mitigation and adaptation. The federal government has committed to reduce greenhouse gas emissions from its own operations by more than 20% from 1990 levels by the year 2005.

6) CANADIAN OZONE LAYER PROTECTION PROGRAMS

Major activities related to the control of ozone depleting substances include the following: changes to the Ozone-Depleting Substances Regulations to incorporate HCFC consumption controls were published on December 27, 1995; the Environment Canada Code of Practice for recovery, recycling and reclamation of CFCs was revised to cover HCFCs and HFCs and reflect new practices in the industry; a Code of Practice for halon management was developed in 1995; its publication is expected in spring 1996.

7) CANADA'S GREENING OF GOVERNMENT INITIATIVE

Canada is continuing its work to green the federal government. Initiatives undertaken include: the approval of a Policy on Sustainable Development which sets the direction for sustainable development projects; the requirement that sustainable development strategies be prepared for government departments; the development of a myriad of greening government support tools and workshops; and the creation of a Commissioner of the Environment and Sustainable Development.

2) U.S. REGULATORY NEWS

- Criteria for Solid Waste Disposal: EPA proposed standards for solid waste disposal facilities that would generally exempt small quantity generators. EPA also proposed standards for hazardous waste generated by such facilities. A final rule is expected in 1996.

- Air Emission Standards for VOCs from Gasoline Storage Facilities: EPA issued an order requiring a number of gasoline storage facilities to be upgraded and operated in accordance with new standards. EPA made available information on the new standards and the order. EPA made available information on the new standards and the order. EPA made available information on the new standards and the order.

1) CANADIAN OVERSEAS DEVELOPMENT PROGRAM

The program is a voluntary program for Canadian citizens and permanent residents who wish to contribute to the development of the Third World. It provides financial assistance for travel, living expenses, and health insurance. The program is administered by the Canadian International Development Agency (CIDA).

2)

Canada's environmental protection program is a comprehensive program that covers a wide range of areas, including air quality, water quality, and waste management. The program is administered by the Environment Canada and the Canadian Council of Ministers of the Environment (CCME).

The program is a voluntary program for Canadian citizens and permanent residents who wish to contribute to the development of the Third World. It provides financial assistance for travel, living expenses, and health insurance. The program is administered by the Canadian International Development Agency (CIDA).

3) CANADIAN NATIONAL ACTION PROGRAM ON CLIMATE CHANGE

The program is a voluntary program for Canadian citizens and permanent residents who wish to contribute to the development of the Third World. It provides financial assistance for travel, living expenses, and health insurance. The program is administered by the Canadian International Development Agency (CIDA).

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## 10.0 UNITED STATES

### 1) TRANSBOUNDARY AIR POLLUTION ISSUES REPORTED BY THE EPA REGIONAL OFFICES

- Maine has issued health warnings due to high mercury levels in some fish tissues.
- Concern is rising over SO<sub>2</sub> emissions from a pulp mill in Edmunston, New Brunswick and from a paper mill in Madawaska, Maine. While no violations of the U.S. SO<sub>2</sub> standard have been recorded, proposed revisions to the SO<sub>2</sub> standard could increase the likelihood of violations.
- Monitoring of ozone has commenced on a ferry between Portland, Maine and Yarmouth, Nova Scotia to record violations of the ozone standard over the Gulf of Maine.
- Further west, near Massena, New York, Native Americans are concerned about air toxics emissions from the Superfund site in Massena, New York.
- In the Upper Midwest, concerns have been raised over emissions of ozone precursors and particulate from slash burning from September through November.
- In the Pacific Northwest, there appears to be ozone transport into Washington State from Vancouver, BC. There is also concern about ozone precursor emissions from slash burning, refineries and an aluminum smelter north of Seattle. Note that the Forest Service plans to initiate prescribed burning to reduce fuel available to wild fires.
- Northern Washington State continues to be concerned with SO<sub>2</sub> emissions from a copper smelter in British Columbia. No violations of the standard have been measured, but possible human health impacts in this region of Washington State remains a concern.

### 2) U.S. REGULATORY NEWS

- Criteria for Solid Waste Disposal Facilities: EPA proposed standards for non-municipal solid waste disposal facilities that receive conditionally exempt small quantity generator wastes. EPA also proposed revisions to regulations for hazardous wastes generated by such facilities. A final ruling is due in July 1996.
- Air Emission Standards for VOCs from Tanks and Impoundments at Transfer and Storage Facilities: EPA issued air emission standards for emissions of volatile organics from tanks and impoundments at hazardous waste facilities. Organic emission controls are to be installed and operated on tanks, surface impoundments, containers, and certain miscellaneous units if any hazardous waste having a volatile organic concentration equal to or greater than 500 ppm by weight is placed in the unit. EPA made available additional data being considered by the Agency in revising the air emission standards for hazardous waste treatment, storage, and disposal facilities. EPA postponed until June,

1996 the effective date of the final rule on additional standards for the control of organic air emissions from certain hazardous waste management activities.

- Standards for the Tracking and Management of Medical Waste: EPA published an interim final rule implementing the Medical Waste Tracking Act (MWTa) demonstration program. The program sets requirements for segregation, packaging, labelling, tracking, transportation, and record keeping of medical waste generated in the covered states, and lists the wastes to be covered by the program. States and territories participating in the program include New York, New Jersey, Connecticut, Rhode Island, and Puerto Rico. An interim final rule became effective in June 1989. The date of a final report to Congress is pending due to government shutdown.

- New Source Performance Standards -- Medical Waste Incineration: EPA proposed new source performance standards and emission guidelines for existing medical waste incineration sources to reflect the maximum degree of reductions in emissions that have been demonstrated for new units. A final rule is due in April 1996.

- Modification of the Hazardous Waste Program (Mercury-Containing Lamps): EPA proposed two alternative approaches for the management of mercury-containing lamps under the Resource Conservation and Recovery Act (RCRA): (1) exclude them from regulation as hazardous provided they are disposed of in permitted municipal landfills or managed in permitted mercury reclamation facilities, or (2) add mercury lamps to EPA's universal waste proposal rule. The final rule is on hold; no action is expected before May 1996.

- Spent Solvents Listing Determination and Study: EPA will determine whether to propose to list, or not list, as RCRA hazardous wastes, ten spent solvents from their recovery. The solvents are cumene, phenol, isophorone, acetonitrile, furfural, epichlorohydrin, methyl chloride, ethylene dibromide, benzyl chloride, and p-dichlorobenzene. Any solvents cited will be added to the EPA list of hazardous substances with reportable quantities. A final rule is due in July 1997.

- Expanded Public Participation and Combustion Permitting under Resource Conservation and Recovery Act (RCRA): EPA amended its regulations under RCRA on the permitting of hazardous waste management facilities to allow public participation at an earlier point in the permitting process. The Rule has been split into two parts. The final rule on public participation becomes effective in June 1996. There is no schedule yet for the combustion permitting rule.

- Revised Technical Standards for Hazardous Waste Combustion Facilities: The draft Strategy for Combustion of Hazardous Waste committed EPA to upgrade its technical standards for burning hazardous waste in incinerators, boilers, and industrial furnaces. These standards would be applicable during the construction and operation of these combustion facilities. A final rule is due in December 1999.



- Standards for Management and Use of Slag Residues: EPA proposed allowing residues ("slags") generated from the treatment of pollution control dusts resulting from scrap metal high temperature metal recovery (HTMR) processes to be used as a product in road construction and as an anti-skid/deicing material on road surfaces. A final rule is due in June 1996.
- Sulfur Dioxide Standard Revision: EPA proposed not to revise the current 24-hour and annual primary National Ambient Air Quality Standard (NAAQS) for sulfur dioxide under the Clean Air Act, but also solicited comment on the need to adopt alternative regulatory measures to address short-term peak exposures to SO<sub>2</sub>. A final rule is due in April 1996.
- Short-Term Peak Exposures to Sulfur Dioxide: EPA proposed implementation strategies for reducing short-term, high concentrations of sulfur dioxide emissions in the ambient air. EPA is concerned that a segment of the asthmatic population may be at increased health risk while exercising. The final rule is undetermined; no schedule currently exists.
- Review of National Ambient Air Quality Standards for Ozone: EPA is updating the air quality criteria to take into account new health and welfare effects information. A revised criteria document and staff paper will be reviewed by the Clean Air Scientific Advisory Committee (CASAC), and EPA will determine if revisions to the criteria are necessary. The final rule is due in June 1997.
- Review of National Ambient Air Quality Standards for Particulate Matter: EPA requested information as part of its review of the air quality criteria for particulate matter (PM) under the Clean Air Act. EPA will undertake to update and revise, where appropriate, the air quality criteria for PM. EPA made available an external review draft of "Air Quality Criteria for Particulate Matter" (EPA 600/AP-95/001a-d). A final rule is due in January 1997.
- Acid Rain Opt-In Regulations: Section 410 of the CAA Amendments allows sources not affected by Title IV to "opt-in" to Title IV. This regulation will provide the necessary procedures for sources other than electric utility generators to "opt-in" to the acid rain program. The Notice of Proposed Rule Making is undetermined due to the government shutdown.
- New Source Performance Standards for Nitrogen Oxide Emissions from Electric Utility Steam Generating Units: EPA proposed revising existing new source performance standards (NSPS) for NO<sub>x</sub> emissions from fossil-fuel fired steam generating units, including electric utility units, to reflect improvements in methods for the reduction of NO<sub>x</sub> emissions. The final rule is due in January 1997.
- Nitrogen Oxides Reduction Program: EPA issued nitrogen oxide emission requirements for certain types of boilers in March 1994. Emission limits for a second group of boilers

(Phase II, Group 1), including cyclones and wet bottom wall-fired units, will be promulgated and become effective in 2000. A final rule is due in January 1997.

- National Ambient Air Quality Standards for Nitrogen Dioxide: EPA proposed not to revise the primary and secondary NAAQS for nitrogen dioxide at this time, and made available background documents including "Air Quality Criteria for Oxides of Nitrogen". A final rule is due in October 1996.

- Hazardous Air Pollutants Emissions from Major Sources: EPA proposed procedures and requirements, including maximum achievable control technology (MACT), for constructed, reconstructed, or modified major sources of hazardous air pollutants (HAPs) under Sect. 112(g) of the Clean Air Act. EPA also proposed de minimis emission rates for all of the listed HAPs. Supplemental Notice of Proposed Rule Making is due in Spring 1996.

- Oil and Gas Production: EPA will propose strict standards for hazardous air pollutant emissions from gas/liquid separators, natural gas processing operations, glycol dehydration units and reboilers, crude oil storage tanks, and wastewater treatment facilities. A final rule is due in November 1997.

- Chromium Emissions: EPA proposed amendments to several recently issued NESHAPs, including those to limit the discharge of chromium emissions from chromium electroplating and chromium anodizing tanks. The proposal would amend permit requirements for non-major sources subject to the applicable NESHAPs. A final rule is undetermined.

- Air Quality Planning and Management for Native American Tribes: EPA proposed the Clean Air Act provisions for which it is appropriate to treat Native American Tribes in the same manner as states and the requirements that Native American Tribes must meet under this provision. A final rule is due in March 1996.

- Emissions from Printing and Publishing Industry: EPA proposed standards to reduce emissions of hazardous air pollutants (HAPs) from printing operations that are major sources of HAP emissions. A final rule is due in March 1996.

- Inspection and Maintenance in the Ozone Transport Region: EPA proposed revisions to the motor vehicle inspection/maintenance (I/M) requirements by adding a special low enhanced performance standard for qualified areas in the Northeast Ozone Transport Region. The schedule for the final rule has not been determined.

- Open Market Trading Rule for Ozone Precursors: EPA proposed a model rule for the open market trading of pollutant emissions that cause ground-level ozone. EPA believes the rule would reduce the overall cost of meeting the public health and environment goals of the National Ambient Air Quality Standards for ozone. The final rule is due in June 1996.

- Performance Warranty and Inspection/Maintenance Test Procedures: EPA will establish a new short test procedure for use in I/M programs. Vehicles that are tested and fail using this procedure and that meet eligibility requirements established by the Act would be eligible for free warranty repair from the manufacturers. The schedule for the final ruling is undetermined.

- Leaded Gasoline for Highway Use: After December 31, 1995, it shall be unlawful for any person to sell, offer for sale, supply, offer for supply, dispense, transport, or introduce into commerce for use as fuel in any motor vehicle any gasoline which contains lead or lead additives. A direct final rule went into effect in early 1996.

- Warning Labels for Certain Products Containing HCFCs: EPA has been petitioned by Friends of the Earth to expand the labelling requirements to include products containing or manufactured with HCFCs. If EPA grants the petition, a proposed rule will be the response. If petition is granted, Notice of Proposed Rule Making will be issued by May 1996.

- Lead Hazard Standards: EPA will identify the paint conditions and lead levels in dust and soil that would result in adverse human health effects. The final rule is due in September 1997.

- Multi-Chemical Endpoint Rule: In support of program and activities under the CAA, EPA will propose a multi-chemical endpoint test rule that will require the testing of many chemicals for a specific effect or endpoint. This type of rule is an alternative to single chemical rules which require testing of one chemical for many endpoints. A Notice of Proposed Rule Making was due in February 1996.

### 3) OZONE TRANSPORT ASSESSMENT GROUP ACTIVITIES

The Ozone Transport Assessment Group (OTAG) is a group of 37 States in the Eastern half of the U.S. whose objective is "to identify and recommend a strategy to reduce transported ozone and its precursors which, in combination with other measures, will enable attainment and maintenance of the ozone standard in the OTAG region." OTAG is engaged in an intensive analysis and consultation process to develop the strategy, which includes both federal and state governments as well as non-government stakeholders. This OTAG program could also be important in reducing the transboundary transport of ground-level ozone.

The schedule for OTAG's key emission reduction scenario analyses and decisions is as follows:

|               |   |  |
|---------------|---|--|
| Jan-Feb, 1996 | - | identify broad approaches (done)   |
| Mar-Apr, 1996 | - | prepare initial emission reduction strategies                                  |
| Apr-May, 1996 | - | atmospheric transport modelling  |
|               | - | sensitivity runs to test relative effectiveness of different strategies (Apr.) |

points to a recent EPA acid rain proposal which suggests that huge NO<sub>x</sub> reductions could be gleaned at a fraction of the costs that NMA suggests.

*INSIDE E.P.A. Vol. 17, No. 4-January 26, 1996*

6) PENNSYLVANIA CHARGED WITH PLAYING BRINKMANSHIP WITH CLEAN AIR ACT

Pennsylvania recently announced that it would overhaul its Clean Air Act automotive inspection and maintenance program.

The state will face a daunting task as it seeks to locate the huge volume of emission reductions from other sources that will probably be necessary to offset this move and bring the state into attainment with the act.

On October 18, Pennsylvania announced that it would overhaul its enhanced I/M program in order to make it more consumer-friendly scrapping the existing centralized system in favor of a "enhanced" decentralized program due to take effect in 1999. Centralized programs require vehicles to be tested and repaired in separate locations while decentralized programs allow the process to occur at a single facility. States have generally complained that centralized programs pose a major inconvenience for motorists, but EPA has countered that the centralized approach has proven to be much more successful in achieving emission reductions.

Despite these assertions, EPA announced last December that it would amend its I/M rules in order to be more accommodating to state concerns. Specifically, EPA said that it would not arbitrarily apply an emissions discount to decentralized programs if a state could demonstrate that its program was deserving of additional credit.

Gov. Tom Ridge (R) is calling on the Pennsylvania congressional delegation to pursue several amendments to the Clean Air Act including elimination of the automatic 50 percent penalty for decentralized programs, lowering the amount of repair money that motorists would be required to pay and protection of the state from sanctions for missing some of the act's interim requirements.

Utilities and other industries in the state are also gearing up to oppose the plan, arguing that the emissions being lost from I/M will have to be made up elsewhere. Several industry sources are highly sceptical that offsets from small "area sources" and trading will come close to replacing lost emission reductions and therefore are concerned that heavy industry will be called on to bridge the difference.

Officials from adjacent states are also criticizing the I/M overhaul, charging that it completely undercuts recent moves to address ozone pollution on a regional basis. One or more states may file a petition with EPA seeking to stop the plan from moving forward.

*INSIDE EPA - October 27, 1995*

7) COURT REJECTS AUTOMAKERS ARGUMENT IN FUEL DISPUTE WITH NEW YORK

In a major setback for the automobile industry, a federal appeals court has ruled that states cannot be required to sell "California fuels" as a condition of adopting California's aggressive low-emission vehicle program.

According to some industry sources, the decision ensures that a regional low-emission vehicle (LEV) program in the Northeast will survive if a national LEV program does not come to fruition.

The suit, *Motor Vehicle Manufacturers Association v. New York*, stems from the state's decision in 1992 to adopt California's LEV program. The auto industry opposed New York's decision, charging that the Clean Air Act amendments precluded states from adopting vehicle programs which would have the effect of creating a "third vehicle" which differed from the national or California programs. While not opposing New York's authority to adopt California's LEV program, the auto industry argued that the state had broken the law by not also adopting California's fuel program.

The issue is one of concern to the auto industry since New York permits retailers to sell fuel that has a significantly higher sulfur content than California fuel. Industry claims the sulfur contaminates catalytic converters, thereby decreasing efficiency and increasing emissions. In response, automakers claim they would have to re-engineer their cars in order to ensure compliance with the state's in-use testing program. This is the production of a "third car" which is strictly prohibited by the Act. The court, however, dismissed the auto industry's arguments, holding that "fuel related problems could never, as a matter of law, result in a third vehicle."

While a similar case pending in the first circuit involving Massachusetts and an appeal to the Supreme Court offer some recourse for the industry, one industry source believes that the strength of the latest decision basically exhausts the auto industry's options on this matter.

Although this decision is likely to conclude three years of contentious litigation, some industry sources are quick to note that it will have little practical significance if a rule establishing a 49-state LEV program comes to fruition. That program would supplant the New York program and therefore this decision would become a moot point. However, until that rule is promulgated, industry sources note that this decision will make it virtually impossible for the auto industry to undercut the Northeast's decision to adopt a regional LEV program that is premised on the California program.

*INSIDE EPA, Vol. 17, No. 2, Jan. 12, 1996*

8) COASTAL NITROGEN DEPOSITION BRIEFING TO THE OZONE TRANSPORT COMMISSION

Following a "Shared Resources Workshop" in Warrenton, Virginia in October 1995, recommendations were made for a briefing regarding the importance of atmospheric nutrient deposition to coastal waters of the northeastern United States (up to Gulf of Maine) to be given to the Ozone Transport Commission (OTC). It was recognized by workshop participants that ozone precursors (e.g. NO<sub>x</sub>) are also responsible for major atmospheric impacts to coastal estuaries. Dr. Robert Thomann, Professor of Environmental Engineering at Manhattan College in New York, who briefed the OTC. As a result of this presentation, the OTC agreed to establish an ad hoc workgroup of its members to review this issue. It is believed that this is the first formal linkage of coastal nutrient deposition and tropospheric ozone issues outside the immediate scientific community.

9) ADVISORY MEETING FOR THE GREAT LAKES AGRICULTURAL PROFILE PROJECT

The Advisory Committee for the Great Lakes Agricultural Profile Project met in Ann Arbor, Michigan, on December 7, 1995 to review progress in compiling agricultural profile data bases and set the agenda for a workshop of invited decision-makers in April 1996. The Project is sponsored by the Great Lakes Protection Fund and coordinated by the Great Lakes Commission. The Project is to produce a comprehensive data base and a document describing the effects of agriculture on the environment and recommending needed agricultural practice and/or regulatory changes.

The data base is nearing completion and review of a draft document will be the subject of the April 1996 meeting. Population, agricultural census data, pesticide use information, and water and air quality information have been gathered and will be placed in map and graphical comparison forms by Michigan State University and Agriculture Canada. Climatological and hydrological data are still being processed. The data base will be placed on the World Wide Web, and may eventually be incorporated into the Regional Air Pollution Inventory Data System (RAPIDS) data base.

The Great Lakes Commission and the Advisory Committee are now compiling a list of invitees for the April 1996 meeting. Mr. Bruce Kirschner of the IJC Regional Office staff is on the advisory committee to the project.

10) COMPLIANCE OFFICE TO PUSH FOR CONTINUOUS MONITORING IN FUTURE AIR EMISSIONS REGULATIONS

EPA's Office of Compliance is applauding a waste office decision to incorporate a controversial continuous emissions monitoring requirement in an upcoming combustion emissions rule, and is planning to urge the air office to consider a similar approach in future air toxics rulemakings.

Several industry sources say this is a development of significant concern since the possibility of having to meet continuous emission monitoring (CEM) requirements in upcoming air toxics standards could dramatically expand the regulated community's exposure to enforcement actions.

This decision may require industry to use continuous emissions monitoring (CEM) technology to measure the mass of their particulate matter (PM) emissions.

The first such demonstration has already been approved at a Coors facility in Tennessee which negotiated an alternative monitoring agreement with EPA late last year.

OC staff are adamant in their belief that the adoption of CEM requirements would go a long way toward improving the quality of the Maximum Achievable Control Technology (MACT) program.

*INSIDE E.P.A. Vol. 17, No. 4-January 26, 1996*

#### 11) EPA TO MOVE AHEAD WITH STATE-BASED PLAN TO CONTROL SO<sub>2</sub> EMISSIONS

EPA has reportedly decided to scuttle three proposed options for controlling short-term peak emissions of sulfur dioxide and formally propose a new plan this spring that largely relies on state-based enforcement to address the problem, sources close to the issue say.

In 1994 EPA decided to affirm the current primary national ambient air quality standard for SO<sub>2</sub>. At the time of the affirmation, however, EPA announced that it felt that short-term peak SO<sub>2</sub> emissions were a public health concern and a program to protect sensitive populations should be considered. In 1995, EPA proposed three strategies that could be used to augment the current levels of protection. The options included setting a new short-term standard that would be averaged over five minutes, establishing a state-run enhanced monitoring program that would target potentially high emitters of SO<sub>2</sub>, and promulgating a new federal enforcement program under section 303 of the Clean Air Act. Industry groups have raised concerns with each option and in particular the one calling for a new five-minute standard which it says can not be scientifically justified.

EPA responded last fall by floating a fourth option that would provide states with the authority and flexibility to take action against facilities that are responsible for relatively modest SO<sub>2</sub> releases. This new plan would empower states to take action against industry for emissions that exceed .6 parts per million averaged over five minutes, and establish a 2.0 ppm threshold level that would trigger a federal enforcement response.

In anticipation of receiving a larger role in the enforcement of SO<sub>2</sub>, state regulators say they will be meeting over the next few months in an attempt to craft a set of policy proposals that are intended to address key issues in the proposal before it is finalized.

An EPA source confirms that the agency has decided to move forward with the fourth option and will take action this spring to formally kill the other three proposals.

According to various sources, EPA intends to issue a final rule by the court-ordered deadline of April 15 which outlines the reasons why EPA has declined to finalize any of the three proposed options.

*INSIDE E.P.A., Vol. 17, No. 4-January 26, 1996*

12) EPA BUCKS NEW YORK REQUEST FOR ADDITIONAL AIR DEPOSITION PROTECTIONS

Despite heavy pressure from the New York congressional delegation, EPA says the agency will not take specific regulatory action at this time to protect the Adirondack Park from acid deposition until certain scientific issues are better understood.

On July 18, 32 members of the New York congressional delegation called on EPA Administrator Carol Browner to take action to protect the Adirondack Park from acid deposition. The delegation claimed that sulfur and nitrogen deposition poses a significant risk to over 3,000 lakes and pods in the park. Environmentalists and state regulators have stressed in the past that the bulk of the damaging sulfur and nitrogen pollution comes from utilities that are located in the Ohio Valley.

As a remedy, the congressional delegation urged Browner to set "a specific deposition standard that will be sufficient to abate the continued destruction of the natural resources of the Adirondack Region in New York. We ask that you provide your plans and timetable for expediting reductions necessary to end this destruction." The letter also called on Browner to suggest any statutory changes necessary to ensure additional protection.

In a Sept. 25 response, Browner acknowledges that the Adirondacks are a key area of concern for the agency, but adds that it would be unwise to move forward with a new deposition standard at this time due to scientific uncertainties.

As an alternative to a new standard, Browner writes that "we believe that the most appropriate steps at this point are to reduce the scientific uncertainty regarding regional nitrogen impacts through continued effects research and to continue deposition and effects monitoring. This monitoring data will be critical to measuring the ecological impact and effectiveness of the Clean Air Act, which in turn could help determine the appropriate level of the standard."

*INSIDE EPA - October 6, 1995*

13) U.S. PURSUES NORTH AMERICAN TOXIC EMISSIONS REPORTING AGREEMENT

The United States, Canada and Mexico are pursuing efforts to better coordinate toxic emissions reporting in the three nations.



Sources say that EPA has endorsed the effort and that the agency will participate in discussions geared toward developing a North American agreement on toxic emissions reporting.

The current U.S. toxics release inventory (TRI) program requires facilities with more than ten employees to report certain chemical emissions to EPA.

Sources say that Canada also has a sophisticated emissions reporting system in place, although some say that Canada's list of reporting requirements does not include many toxic chemicals reported in the U.S. In contrast, Mexico does not currently have a TRI program in place but they appear committed to implementing a system in the near future with the help of Canada and the U.S. Momentum is building to begin consideration of a unified North American TRI program and that all three countries have voiced their support for the concept. However, sources acknowledge that reaching agreement on how the program should work and how it should be implemented will be a difficult task.

North American representatives seem to be considering two general options, a single regime or a cooperative regime. The U.S. supports implementing a single regime, which would involve development of a uniform set of rules and requirements. However, this source says that there seems to be some tension between the U.S. and Canada that may make this approach difficult.

A single regime may cause the most difficulty for Mexico, which would likely be asked to adopt a fairly sophisticated reporting system. Under a cooperative regime, the three countries would develop and implement their own independent reporting systems with separate requirements while sharing technical assistance and information. Sources say that this approach may be favored more by Canada and Mexico who may be reluctant to adopt more stringent reporting requirements consistent with U.S. rules.

Although sources acknowledge that a North American toxics emissions reporting agreement may be a long term goal, they point out that there has already been significant international toward improved public access to information in the last two years.

The Organization for Economic Cooperation & Development, an international organization comprised of the world's major industrial nations, has been considering international toxics emissions reporting for the last few years. Sources say that a task force convened under OECD is now set to issue guidance on how policymakers can put a TRI program in place.

*INSIDE EPA - October 27, 1995*

14) EPA ASKED FOR FIVE-MONTH EXTENSION TO FINALIZE AIRBORNE PARTICULATE STANDARD

EPA is asking an environmental group for a five-month extension of the agency's deadline to issue a new national Clean Air Act standard for particulate matter; the additional time is needed to revise two critical supporting documents.

On Dec. 14-15, EPA's Clean Air Science Advisory Committee met to discuss the quality of a criteria document and staff paper that have been developed to support the agency's review of the national ambient air quality standard (NAAQS) for particulate matter (PM). The criteria document analyzes the scientific documentation to be used during the review, while the staff paper describes the air program's position on where a new standard should be established. Under a court-ordered deadline, CASAC was required to complete its review of these two documents by Jan. 5 and EPA must either affirm or revise the current PM-10 standard by January 31, 1997.

At a recent CASAC meeting, however, a number of panelists expressed grave concerns with different aspects of each supporting document and therefore the panel was unable to reach closure on their paper. Despite these objections, several panelists noted that concurrence could possibly be reached if the panel was given an opportunity to examine revised copies of the documents at a later date.

To address the CASAC's concerns, EPA staff approached the American Lung Association shortly after the December meeting to discuss the possibility of making revisions to both the court-ordered interim deadlines and the final 1997 deadline.

A settlement with ALA that will push back the agency's final deadline by five months appears likely. Under this potential agreement, an EPA source says CASAC would have until mid-March to finalize its comments on the criteria document and until mid-May to conclude its work on a revised staff paper.

Comments suggest that the staff paper must be revised and expanded when discussing the issue of premature mortality displacement of individuals who are already seriously ill. The staff paper does not include adequate information on the expected reductions in mortality and morbidity that could be expected under different kinds of standards. To address this issue, CASAC adds that it would be helpful if EPA broke this information "down by geographic region or city since the effect of a PM-2.5 NAAQS would probably be different in different regions or cities."

*INSIDE EPA, Vol. 17, No. 2, Jan. 12, 1996*

15) U.S. TO OPPOSE NEW AIRCRAFT EMISSION RULES, UNDERCUTTING EPA POSITION

The White House recently formally opposed European efforts to impose increasingly stringent air pollution control standards on commercial airlines throughout the world.

For years, the U.S. commercial airline and aerospace industries and the Department of Transportation have steadfastly opposed new airline emission standards out of concern that new standards would be expensive to implement, hinder fuel efficiency and could not yet be justified. The U.S. has been countered by some European countries who have advocated increasing the stringency of NO<sub>x</sub> standards by as much as 20 percent as a way to combat global climate change. Some U.S. industry sources, however, charge that the European position is being pursued in order to provide European carriers with a competitive advantage over foreign competitors.

This fall, however, EPA stated that an incremental reduction in airline NO<sub>x</sub> emissions was warranted. EPA stated that "it appears to be both technically and economically reasonable to reduce NO<sub>x</sub> emissions in this range without significantly affecting the competitiveness of the U.S. aviation industry. Therefore, EPA currently is not able to support the FAA's draft position." EPA added that NO<sub>x</sub> reductions from this industry would assist U.S. efforts to reduce ozone pollution and support the administration's commitment to reducing greenhouse gases that contribute to global warming.

Prior to a International Civil Aviation Organization (ICAO) technical committee meeting in December, the U.S. announced that it would formally oppose European calls for a new standard that would reduce Nox emissions by 16 percent. The U.S. was joined in opposition by representatives from Canada, Russia and Poland. As an alternative, the U.S. said new controls should be postponed until new scientific evidence developed by the National Aeronautics & Space Administration could be generated and analyzed to determine whether additional aircraft controls are warranted.

*INSIDE EPA - January 12, 1996*

16) INDEPENDENT ANALYSIS CONFIRMS EPA COST ESTIMATES OF GREAT LAKES INITIATIVE

A recently released report prepared by a leading technical analysis group predicts that the costs of implementing EPA's Great Lakes Water Quality Guidance (GLI) will be far lower than previous industry estimates and are likely to be commensurate with current EPA projections.

In April of 1993, EPA proposed a major multimedia initiative that sought to control toxic pollution in the Great Lakes. While the proposal was largely geared towards controlling mercury, other loadings of bioaccumulative toxins such as dioxin would also be controlled under the guidance. The proposal was met by complaining that it would force significant economic and employment dislocations throughout the region not commensurate with expected environmental improvements.

DRI-MacGraw Hill did a cost analysis for the Council of Great Lakes Governors which suggested that the direct annual compliance costs of the GLI would range between \$500 million and \$2.3 billion. Furthermore, this 1993 analysis concluded that the GLI could cost the region 33,000 jobs and \$4.7 billion in lost manufacturing output. This report was followed earlier this year with a report that was conducted by the Great Lakes Water

Quality Coalition which found that the proposed GLI could eventually cost the region more than \$5 billion.

In March of this year, EPA promulgated a final GLI plan that made several changes to the "cost drivers" that were criticized in the 1993 proposal. At the time of promulgation, EPA asserted that the costs of implementation would be reduced to annual compliance costs of between \$60 million and \$376 million and reduce industrial output by between \$126 million and \$720 million.

After analyzing the final plan, DRI has concluded that EPA's "estimates are in the correct range, and therefore it would be counterproductive for DRI to generate a separate set of estimates with slightly modified assumptions" that only produce marginally different results. Because EPA's "overall approach to estimating costs was conservative" and represents a plausible attempt to gauge the economic impacts of the initiative, DRI says that the firm's previous "high-cost scenario is no longer a serious concern." DRI cautions, however, that the compliance costs are likely to be on the high end of the range that EPA outlined in the final GLI.

In a letter accompanying the report, the Council of Great Lakes Governors says that it is "pleased that the estimated compliance costs of the final GLI appear to be lower than those predicted in the 1993 draft." However, the group adds that it remains "concerned that the cost of compliance will be much higher than projected."

*INSIDE EPA - December 8, 1995*

