Ted

Minister of Foreign Affairs | Ministre des Affaires étrangères

Ottawa, Canada K1A 0G2

All Canadian Commissioners, All Advisers U.S. section D. McTavish / SLRO Winds

3-2-5-1 (200)

October 21, 1994

Mr. Philip Slyfield
Secretary, Canadian Section
International Joint Commission
100 Metcalfe Street
Ottawa, Ontario
K1P 5M1

Dear Mr. Slyfield:

I am pleased to convey to you Canada's response to the Seventh Biennial Report of the International Joint Commission. This document was prepared in close consultation with the province of Ontario and constitutes the official response of Canada as the Party of the Great Lakes Water Quality Agreement.

I believe that the content of Canada's response provides a clear indication of our commitment to fulfill Canada's obligations to protect the Great Lakes. We continue to value highly the work of the International Joint Commission in monitoring and reporting on the progress of Canada and the United States in restoring the Great Lakes in accordance with the Great Lakes Water Quality Agreement. The Canadian Government looks forward to continuing to work closely with the Commission, both at the Biennial Meetings and through ongoing contacts and exchanges.

Yours sincerely,

André Ouellet

CANADA'S RESPONSE

to the

RECOMMENDATIONS

in the

SEVENTH BIENNIAL REPORT

OF THE

INTERNATIONAL JOINT COMMISSION

OCTOBER 1994

INTRODUCTION

Canada acknowledges the important role that the International Joint Commission has played in helping to shape Great Lakes activities.

Progress is being made on a wide range of issues in the Great Lakes. The Third Report of Canada and the report produced by Ontario entitled "Restoring and Protecting the Great Lakes - Progress Report from 1991", both of which were released during the Commission's Seventh Biennial Meeting in Windsor, documented Canadian achievements over the past two decades with regard to clean-up, pollution prevention and control, and conservation. However, these reports acknowledge, as does the Commission, that much remains to be done.

Several recent domestic initiatives provide continuing evidence of the Canadian commitment to fulfill its obligations under the Canada-U.S. Great Lakes Water Quality Agreement and, in particular, to address the problems of persistent toxic substances and ecosystem health in the Great Lakes Basin.

The federal and Ontario governments signed the new Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA) in July 1994. The COA is innovative. It sets out a strategic framework, complete with schedules and targets, for coordinated and cooperative action on the Great Lakes to the year 2000. Through the COA, the governments have adopted a shared vision of sustainable development for the Basin, incorporated an ecosystem-based approach together with pollution prevention, and endorsed the principles of shared responsibility, openness and public accountability.

In signing the COA, the federal and Ontario governments have established a clear agenda for action to deliver priority results. The COA commits the governments to action in three key areas. First, the governments will continue, accelerate or launch programs to restore water quality and beneficial uses in the Areas of Concern. Secondly, to protect human and ecosystem health, the governments will give special consideration to Lake Superior and the commitments under the Lake Superior Binational Program, and will develop and implement lakewide management plans (including ecosystem indicators and objectives), protect and conserve critical fish and wildlife habitat, control the introduction of exotic species, and protect and promote human health through education, monitoring and stewardship.

Thirdly and very importantly, the COA sets the stage for a clear and comprehensive action plan to virtually eliminate man-made persistent, toxic and bioaccumulative substances from the environment. The Agreement includes specific strategies to eliminate the use, generation or release into the Great Lakes environment of 13 persistent toxic, bioaccumulative chemicals, eleven of which were identified by the Commission and two of which were identified through binational activities. The focus on these substances is consistent with the Commission's suggested approach. The Agreement, a six year plan, recognizes that the virtual elimination of these persistent toxic substances is a longer term goal.

As the Commission has acknowledged, the task of virtual elimination is complex. The COA will bring to bear a wide range of tools to deal with the issue, including regulatory and non-regulatory tools such as voluntary and cooperative initiatives by responsible parties. The approach includes an emphasis on anticipation and prevention of pollution, remediation where feasible, and full life-cycle management of toxic substances of significant environmental concern.

Most importantly the governments, through the COA, have set in place a mechanism for a broadly-ascribed, systematic, and determined effort by all interests to achieve a shared set of results. Such multi-stakeholder collaboration is essential to the successful achievement of virtual elimination of the substances targeted by COA.

In addition to the 13 chemicals targeted for virtual elimination, the COA targets the significant reduction of 26 other toxic substances identified by science-based screening methodologies as demonstrating significant potential to impair the Great Lakes Basin Ecosystem.

While the COA represents an approach specific to the Great Lakes Basin Ecosystem, it is consistent with Canada's proposed national Toxic Substances Management Policy. This major new policy is currently undergoing stakeholder review. The proposed policy would provide a framework that would allow for the effective management of substances that are of concern because they are or may be used and released into the environment or because Canadians are exposed to them through the environment. The proposed policy would have two key objectives:

- to virtually eliminate from the environment substances that are predominantly anthropogenic (resulting from human activity), persistent, bioaccumulative and toxic (Track 1);

- to implement full life-cycle (cradle-to-grave) management of all other substances of concern (Track 2).

The proposed policy would see action at two levels. First, it would help to direct a number of domestic programs by defining their ultimate environmental objectives. Second, it would be a centrepiece of Canada's position on toxic substances in discussions with the world community.

In drafting the Toxic Substances Management Policy, the federal government was mindful of the Commission's recommendations concerning weight of evidence and reverse onus. The proposed Policy would set out criteria for determining which substances would be subject to virtual elimination. Track 1 would allow quick action on these substances. Assessment would be streamlined and a weight of evidence approach adopted. The proposed policy would shift the onus to industry in two ways for Track 1 substances. First, industry would have to satisfy government that a Track 1 toxic substance should not be targeted for virtual

elimination. Second, once a substance is confirmed for virtual elimination, industry would have to show that this substance can be adequately managed with no measurable release. Otherwise no generation or use of the substance would be advocated.

While socio-economic factors would have no bearing on the environmental objective for Track 1 substances -- that is, their virtual elimination from the environment -- such factors would help determine their management strategies and implementation timelines. It is not the intent of the policy to 'chase the last molecule' of a substance. Common sense will apply and progress toward virtual elimination will be monitored. For Track 2 substances socio-economic factors would help to determine both environmental objectives and appropriate management strategies. Examples of socio-economic factors would include: the benefits of a specific substance to human health and the health of the ecosystem; the cost and feasibility of developing and using alternatives; the impact on employment, Canadian competitiveness, trade and regional development; and fairness and equity. Such factors would help to identify the shortest possible time in which environmental objectives may be achieved as well as what impacts those objectives may have on industry and the Canadian public.

In many cases, Track 1 and Track 2 substances may already be subject to federal or provincial or territorial management strategies consistent with the proposed policy. These include measures under the Canadian Environmental Protection Act (CEPA), the Pest Control Products Act, the Food and Drugs Act, etc., as well as various provincial and territorial legislation dealing with the environment and health. Where substances are adequately managed under existing programs, no new action will be initiated. For those substances requiring further management strategies to meet the goal and objectives of the policy, existing legislation will be used to initiate those strategies.

Canada's recently-promulgated New Substances Notification Regulations put the emphasis on prevention. These regulations provide a critical measure of future protection for the Great Lakes by ensuring that no new problem toxic chemicals are introduced to the Canadian marketplace. The regulations require the manufacturer or importer to provide evidence that substances attributed to anthropogenic activity do not represent an unacceptable risk to environmental or human health.

The federal government recognizes the continued concern of the Commission regarding chlorinated toxic chemicals. Canada has reviewed its actions proposed under the COA and within the context of the proposed national Toxics Substances Management Policy in terms of chlorinated substances. Canada notes that nine of the 13 substances targeted for virtual elimination and five of the 26 targeted for significant reduction are toxic organochlorines. In addition to these efforts, the federal government recently released a five part action plan which outlined Canada's approach to chlorinated compounds.

As with all toxic substances, Canada intends to manage chlorinated substances under the framework of the proposed Toxic Substances Management Policy. Chlorinated substances that are persistent, bioaccumulative and toxic will be targeted for virtual elimination.

Chlorinated compounds of environmental concern that do not meet all of the virtual elimination criteria as proposed under the policy, will be managed throughout their full life-cycle based on risk assessment and risk management approaches.

Canada will continue to develop the scientific and the socio-economic underpinnings for our programs related to chlorine, as these are essential prerequisites to sound decision-making. This approach will promote proactive "pruning of the chlorine tree". Chlorinated substances of concern for the environment and human health will be pruned from the tree. Beneficial uses of chlorinated substances will continue. Actions have already been taken in the pulp and paper manufacturing sector. Actions will be taken in other sectors in the future, where required.

Collectively, the COA, the proposed national Toxic Substances Management Policy, the New Substances Notification Regulations, and the Chlorinated Substances Action Plan represent a constructive Canadian response to many of the priority issues identified by the Commission in its recent Biennial Reports.

Finally, this Response reflects the views and input of a wide range of federal and Ontario government agencies - key partners in the Canadian Great Lakes program. In addition, Canada and the United States have been and will continue to work closely on the development of their respective Responses to the Commission's recommendations, particularly where those recommendations relate to areas of binational activity, such as the Lake Superior Program, Great Lakes reporting and a binational toxics strategy. While the release of the Canadian and United States' Responses may not be coincident, the Commission should find that our positions are largely consistent.

RESPONSE TO THE COMMISSION'S RECOMMENDATIONS

1. **The Commission formally emphasizes and confirms the recommendations of its *Fifth* and *Sixth Biennial Reports on Great Lakes Water Quality*, issued in 1990 and 1992, respectively.**

   Canada has responded favourably to virtually all of the five general and thirty-five specific recommendations of the Commission from the Fifth and Sixth Biennial Reports. Activities have been initiated or are ongoing that support the achievement of these recommendations.

2. **The Commission also reiterates its recommendation concerning incinerators in the *Report on Air Quality in the Detroit-Windsor/Port Huron-Sarnia Region*.**

   Recommendation A: Incineration facilities in the region be phased out of use or required to eliminate the production and emission of dioxins, furans, PCBs and inorganic materials, especially mercury and hydrochloric acid.

   Under the auspices of the Canadian Council of Ministers of the Environment, Canada has issued Operating and Emission Guidelines for Municipal Solid Waste Incinerators. These guidelines are based on research conducted as part of the National Incinerator Testing and Evaluation Program (NITEP) which has demonstrated that the combination of good operating conditions and best available control technology can reduce significantly emissions of pollutants such as dioxins, furans, metals, acid gases and toxic organics. The federal government believes that an incineration facility, equipped with best available control technology and operated under the proper operating conditions, can be an integral component of a comprehensive waste management plan, under which prime consideration is first given to recycling, re-use and reduction. While this guideline applies only to federal facilities, it serves as a model for provincial regulators of this issue. In Ontario, provincial facilities are governed by their own guidelines, which also control emissions of pollutants.

   The Ontario Ministry of Environment and Energy has placed a ban on all future municipal waste incinerators in the province, and has issued Certificates of Approval for installation of state-of-the-art emission controls on all existing municipal waste incinerators. Ontario has also negotiated the voluntary shutdown of some existing small municipal waste incinerators.

In March 1992, under the auspices of the Canadian Council of Ministers of the Environment, Canada released National Guidelines for Hazardous Waste Incineration Facilities. The guidelines encompass performance standards for incinerators; process, environmental and emission monitoring requirements; emission standards; ash/residue disposal requirements; wastewater treatment and disposal standards; handling and storage procedures for wastes; spill handling plan; and emergency shut-down procedures. The emission standards cover such compounds as carbon monoxide, particulate matter, dioxins and furans, and hydrogen chloride. Continuous in-stack emission monitoring for opacity, hydrogen chloride, oxygen, carbon monoxide and temperature is also recommended.

Recommendation B: Uniform state and provincial requirements be established for incineration facilities in the Reference region based on the principle of zero discharge of persistent toxic substances.

The difference between Canadian and American regulatory approaches makes it very difficult to attain uniformity between state and provincial requirements. Canada supports the need for comparability in provincial and state requirements for incineration facilities. Canada would prefer that state and provincial authorities exchange scientific and technological information and that requirements be comparable only in terms of environmental objectives established and the results achieved. Canada's preference is in keeping with the practice that much of codified international law operates on the basis that countries agree to objectives or limits. The means of reaching these objectives or limits is determined by the respective domestic policy making process.

In the Reference region, Canada provided technical advice to the U.S. EPA in the development of its Municipal Solid Waste Incinerator Regulation. Canada is confident that this regulation will be considered by Michigan in the development of any regulation for its incinerators. If this is the case, it is expected that state and provincial requirements will be comparable.

Recommendation C: Governments monitor incinerator emissions for phosgene gas when chlorinated organic materials are being incinerated and institute effective controls to prevent the production of this gas.

Canada supports the intention of this recommendation - i.e., prevent the formation and release of phosgene gas - but considers that the control of phosgene gas generation in such a situation is adequately handled through the control of carbon monoxide and hydrogen chloride emissions, and through appropriate operating procedures. Specific monitoring for phosgene gas would therefore be redundant.

3. **Governments adopt a specific, coordinated binational strategy within two years with a common set of objectives and procedures for action to stop the input of persistent toxic substances into the Great Lakes environment, using the framework developed by the Virtual Elimination Task Force.**

Both Canada and the United States are presently reviewing their respective initiatives on virtual elimination with the intention of improving the coordination of their efforts in this area. Canada supports the recommendation to develop a binational strategy with the United States within two years (i.e., by February 1996). Canadian input to this work will be based on the proposed federal Toxic Substances Management Policy.

Canada and the United States believe many of the elements of a binational strategy are in place, although they may not have been expressly identified as such. There is a need to better portray the efforts underway and also to provide a more coordinated and systematic analysis of options for attaining further reductions in the releases of persistent toxic substances.

Canada already has committed to coordinated binational actions to significantly reduce the input of persistent toxic substances through its efforts on the Niagara River and Lake Ontario Toxics Management Plans, as well as the Lake Superior Binational Program and the Connecting Channels Remedial Action Plans. Substances targeted for action vary depending on the plan or program, but all are identified as substances for which action is required under the COA. Key elements which form part of the Canadian approach under the COA include consultation with stakeholders and improving the mechanisms for information exchange and reporting binationally.

4. **Governments adopt a specific timetable for the virtual elimination of persistent toxic substances in the Lake Superior basin as part of their pilot project for zero discharge and virtual elimination, and publish an initial biennial State of the Lake Superior Basin report, including specific indicators of progress on virtual elimination and zero discharge of persistent toxic substances, not later than December 31, 1994.**

Canada has major concerns with the practicality of the implementation of this recommendation, particularly when it comes to the identification of timetables for virtual elimination of persistent toxic substances where sources may not be readily identifiable and directly controllable in Canada and the United States. Canada does, however, support the intent of this recommendation.

Under the Lake Superior Binational Program, Canada and the United States are pursuing an action plan with specific goals and priorities. These goals and priorities are based, to the extent possible, on consensus amongst the stakeholders around the Lake Superior basin. An initial priority was the designation of critical pollutants that are recognized as presently impacting environmental conditions in the lake. The initial analysis identified nine such substances which will form the basis for the development of a Lakewide Management Plan and a goal of zero discharge from all municipal and industrial sources to Lake Superior. Procedures for bringing forward additional substances are being developed based on:

- lakewide impairments of beneficial uses;
- exceedances of chemical yardsticks for water, sediments or biota quality; and
- failure to achieve Great Lakes Water Quality Agreement and other ecosystem objectives.

In lieu of a biennial State of the Lake report, the Parties intend to publish a State of the Lake/Lakewide Management Plan Stage 1 report (as per Annex 2 of the Great Lakes Water Quality Agreement) by February 1995. This report will include indicators of progress towards zero discharge as well as an identification of impaired beneficial uses including critical pollutants and sources/loadings. A draft Stage 2 Lakewide Management Plan identifying loading reduction targets and interim targets for zero discharge will be produced by September 1995.

In the Parties' approach to zero discharge and virtual elimination, consideration is given to processes involving long-range atmospheric transport of persistent toxic substances and recirculation of materials from lake sediments, which will continue to influence lake conditions. Since atmospheric sources are located mainly outside the Basin, and in some cases the presence of atmospheric pollutants is due to past practices, Canada and the United States will continue to review their respective domestic programs and contribute to international agreements as a means of reducing contaminant influences on the Great Lakes from such sources. The Parties will carry this out as a component of the binational toxics strategy.

5. **Governments publish an initial biennial State of the Great Lakes Ecosystem report not later than September 30, 1995. This report should address specific measures of progress towards virtual elimination and zero discharge of all known persistent toxic substances in the Great Lakes basin, and include specific information on sources of pollutants.**

Canada will use the reporting framework developed under the 1994 COA to report on progress toward achieving virtual elimination and zero discharge in support of the IJC's call for such a report. In addition, as an output of the State of the Lakes

Environment Conference (SOLEC), Canada and the United States will publish an initial report on the State of the Great Lakes Ecosystem in 1995. This report will include information on the physical, biological and chemical stressors affecting ecosystem and human health, and their relative importance in influencing lakewide conditions. Summary information on major sources of loadings (e.g., the atmosphere, point sources and non-point sources), including examples of progress in reducing or eliminating sources of persistent toxic substances and the resultant reductions of these compounds found in the ecosystem, will be presented by the Parties.

In addition to SOLEC and its reports, a wide range of mechanisms for reporting Canadian progress towards virtual elimination and zero discharge of persistent toxic substances already exist. These include the reporting requirements which are part of the Remedial Action Planning and Lakewide Management Planning processes, the 1996 Canadian State of the Environment Report which will include a chapter on the Great Lakes, and the biennial reporting of Canada pursuant to the requirements of the Great Lakes Water Quality Agreement. In addition, there are reporting requirements in other programs such as the National Pollutants Release Inventory (NPRI), which will provide information on releases of 178 pollutants from major sources, including some of the substances targeted under the COA.

6. Governments develop and use comprehensive frameworks for reporting on the State of the Great Lakes Ecosystem, including both the natural and human components of the ecosystem and linkages between them.

In recent years a number of binational activities have been initiated that include frameworks to report on environmental conditions and the progress of management activities. Canada therefore supports this recommendation.

The binational initiatives in which Canada has been involved have focused on particular Great Lakes issues including the Niagara River and Lake Ontario Toxics Management Plans, the Lake Superior Binational Program, and the various Lakewide Management Plans that are underway. In general, the reporting frameworks have involved the systematic analysis of environmental conditions, the identification of common statements on goals and objectives, and development of jurisdictional management activities.

In recognition of the need to report more broadly on the state of the Great Lakes, Canada and the United States developed the concept of the State of the Lakes Environment Conference (SOLEC). The SOLEC reports will provide information on human activity and economic conditions as well as a good assessment of our understanding of physical, biological and chemical stressors on the Great Lakes

ecosystem. It will also identify critical gaps in that knowledge in order to point the direction for future work. Canada views SOLEC as a mechanism to promote consensus on a reporting framework that involves measures of ecosystem health, key indicators of human activity, and the representation of management efforts, including measures of progress.

It is the intention of the Parties to review the experience of the 1994 SOLEC, including the feedback received from participants, and identify approaches to improve binational reporting on the Great Lakes. The participation of the IJC in the 1994 SOLEC will contribute to this goal.

Canada has undertaken various initiatives which have contributed to the development of thinking on state of the environment reporting for the Great Lakes. Canada and Ontario, with others, financially supported an independent two-year assessment of Great Lakes environmental conditions and government programs by the Institute for Research on Public Policy in Canada, and The Conservation Foundation in the United States. The result "Great Lakes, Great Legacy?" was published in 1990. In 1991, the federal report "Toxic Chemicals in the Great Lakes and Associated Effects" reviewed contaminant conditions in the lakes. Special attention has been given to reporting on the Great Lakes in Canada's 1986 and 1991 State of the Environment reports. This will continue in the 1996 report which is currently being prepared. The COA establishes specific reporting linkages between environmental priorities and management activities. While these efforts have been undertaken to meet particular needs, collectively they contribute to improvements in Canada's state of the environment reporting for the Great Lakes.

7. **Governments continue to develop and support environmental curricula at all levels of education as a fundamental component in a new way of thinking.**

In Canada, provincial governments have the responsibility for education and curriculum development in primary and secondary schools, except for those operated by the federal government on native reserves. Colleges and universities develop their own curricula. Well developed environmental curricula are in place at all levels. Canada supports this recommendation.

The Ontario Ministry of Education and Training has as one of its thirteen goals of education developing a respect for the environment and a commitment to the wise use of resources. Teachers are expected to introduce concepts of environmental education into the curriculum as appropriate to the class and program.

Ontario curriculum guidelines for high school science and geography programs include units on aquatic systems in Ontario, water quality and ecosystem management.

Ontario is changing the curriculum guidelines for grades one through nine. On February 1, 1993 the Common Curriculum working document was released for comments. The comment period ended May 1, 1994. Ontario established 1996 as the target date for the implementation of the common curriculum. One change to the Common Curriculum will emphasize the teaching of bioregionalism. By the end of grade nine, students will also be expected to develop an understanding and commitment to peace, social justice, and the protection of the environment, and to apply a global perspective in both their attitude and behaviour. Once changes to the Common Curriculum have been implemented, teachers will be required to meet the outcomes of the goals contained in the curriculum. That means they will be required to receive training in environmental issues so they can develop in their students an understanding of the environment.

A week long workshop for teachers on the Great Lakes is offered each summer through the Education Department of Brock University. The workshop provides teachers with insight on how to incorporate knowledge of the Great Lakes into classroom lessons.

Some school boards in Ontario include specific guidelines for instruction about the Great Lakes at various age levels, e.g., Niagara South and Windsor Public School Boards. The Wellington County Board has a river awareness program in nine high schools. In other parts of Ontario, high schools such as West Humber Collegiate in Toronto have environmental themes as a central focus of their learning experience. Some schools in London, Parry Sound and the Region of Halton also have an environmental focus. Science and geography classes in schools from communities along the Grand River, which eventually empties into the Great Lakes, have been participating in a river water quality monitoring program in association with the University of Waterloo. This program is similar to Michigan's Green River Program. A similar program is offered in Peterborough.

Ontario helps fund a wide range of public education programs dealing with the environment and more specifically the Great Lakes. The Ontario Ministry of Environment and Energy provides funds to community groups for education and awareness programs to ensure that environmental information reaches people throughout Ontario. The Environmental Education and Awareness Program (EAPP) provides financial assistance towards a wide range of environmental education projects. These projects may include the production of newsletters, pamphlets, brochures, kits, and other publications on conference, exhibits, and fairs with an environmental focus.

The federal and Ontario governments contributed to development of the "Living Earth Exhibit" at the Ontario Science Centre. The exhibit included a section that dealt specifically with the Great Lakes ecosystem. The Science Centre receives about 1 million visitors a year and plays an important role in providing complex information in an interactive and easy to understand format.

The Ontario Ministry of Natural Resources, in conjunction with the Ministry of Education, developed Fish Ways, a comprehensive education package for elementary and secondary school students, which provides an understanding of the nature and importance of aquatic ecosystems, and uses Great Lakes examples in the lesson plans. Implementation of Fish Ways in class rooms began in September 1992. To date more than 1000 users have received training on the use of the manuals.

The federal government has fostered the creation of a coalition of thirteen national education associations which have undertaken to call upon their own constituencies, governments and the community at large to commit themselves to certain principles of environmental citizenship, to 'green' their own operations, and to offer educational programs to improve awareness, knowledge, attitudes, skills and practices related to sustainable development and the protection of our environment.

- The Yellow Fish Road Program promotes an understanding of water pollution issues in the Great Lakes Basin among school children. The program is delivered through schools and community groups. Children are encouraged to paint symbols of fish beside storm drains as a reminder of the impacts of pollution on fish, wildlife, and human health. The Homes for Fish colouring book helps develop an understanding of fish species and habitats among children. Why Wetlands is a complete educational kit developed in conjunction with the Federation of Ontario Naturalists.

- The recently updated Great Lakes Atlas serves as an excellent technical resource document. Other material, such as A Primer on Fresh Water and a series of Freshwater Fact Sheets, provides a national perspective within which the Great Lakes are a critical component.

- Grade specific tools for teachers, such as Unscramble the Food Chain, the Great Lakes Case Study, Environment and our Health, and A Helping Hand, have been prepared and distributed for use in schools.

- Self-study programs such as that developed for Environmental Farm Plans have been produced.

- Canada also continues to work with the "Task Force on Environmental Health for Health Professionals" to develop specific environmental curricula for continuing education in public health, and to develop and maintain an environmental health information referral service, a database of available resource materials and current curricula.

As well, both the federal and provincial governments have worked with other organizations on several projects aimed at developing an environmentally literate society and promoting changes in attitudes and behaviour.

Recent examples include an interactive exhibit on environmental and health issues being developed for Toronto's CN Tower and TV Ontario's Great Lakes Alive television series. Great Lakes Alive was watched by approximately half a million viewers in Ontario and, as part of an outreach program, flyers and a tabloid-sized newspaper, "The Great Lakes Gazette", were sent to all Ontario schools and community groups. While accessible to the broad public, both projects also include complementary teacher's guides for use in the classroom and with school groups.

A number of Remedial Action Plan Committees have developed education units on specific Areas of Concern (AOCs), most notably the Bay of Quinte RAP. In addition, RAPs several hold community outreach activities each year. These activities include shoreline cleanup days, open houses, walking tours, river and harbour days, and photo contests.

8. **Senior government officials allow Remedial Action Plans to be community led rather than dominated by regulatory agencies. To be successful, RAPs must integrate the efforts of all agencies, stakeholders and concerned community members towards restoration of beneficial uses within a comprehensive ecosystem approach.**

Since it is in line with our approach in the Canadian Remedial Action Plans to date, Canada supports this recommendation. Canada intends to continue to pursue this approach with vigour. The 1994 COA reinforces the importance of public involvement in the development and implementation of RAPs.

Canada and Ontario have created proactive public involvement programs for 16 of the 17 Canadian RAPs through the establishment of RAP Public Advisory Committees (PACs). The seventeenth community, due to the small geographic size of the RAP, chose not to form a PAC. Membership on the PACs represents a broad range of community stakeholder interests and involves approximately 400 individuals.

Members of the PACs, as well as others in the community, are involved in all stages of the RAP process. The results of this high degree of public involvement have been strong community ownership and "buy-in" to the RAP process, and strengthened working relationships among stakeholders. A prime example of the importance of the PACs is that of Collingwood, where the PAC was instrumental in the implementation of remedial measures which have led to its delisting as an Area of Concern.

Two other mechanisms enhance public involvement in the Canadian RAPs, the Ontario Public Advisory Committee Council (OPACC) and the RAP Steering Committee. OPACC, a basin-wide council with representatives from the 16 PACs, promotes appropriate environmental actions across the Great Lakes Basin, provides a forum for sharing information, and advises federal and provincial agency staff. It is represented on the RAP Steering Committee, which coordinates the RAP process for the federal and provincial governments.

9. Governments support incorporation of human health concerns and pollution prevention measures into Remedial Action Plans.

Canada is currently incorporating human health concerns and pollution prevention measures into every RAP. Canada has been a leader in providing information and guidance on the human health considerations of RAPs. Canada supports this recommendation.

Human Health

Canada has been proactive in incorporating human health issues and concerns into RAPs in the following ways:

- developing a RAP health protocol which defines human health and provides a checklist of information to be included in RAP documents, reviewing RAP documents for health content, and responding to RAP Team requests for information and data on specific health concerns identified through the RAP process;

- supporting collaborative studies, initiated by RAP communities, to provide data for use in assessing human exposure to environmental contaminants and potential health risks (for example, PAHs in the St. Mary's River and in both Hamilton and Toronto harbours);

- publishing two handbooks which assist communities in investigating and prioritizing environment/health issues and convening workshops in the Canadian portion of the Basin to raise awareness of this resource material;

- collaborating with RAP Coordinators, the RAP Steering Committee, the OPACC, the IJC and the U.S. Great Lakes Research Consortium to provide workshops and consistent advice on the health theme in RAPs;

- involving representatives of local Boards of Health in many of the 17 Canadian RAPs in defining health problems and providing advice on appropriate solutions; and,

- emphasizing monitoring programs conducted by federal, provincial and municipal agencies that provide information on levels of contaminants in fish, and on drinking water and beach water quality. Information related to disease incidence and exposure estimates are also routinely available.

Pollution Prevention

Canada is broadening its RAP efforts to include multi-media pollution prevention for the municipal and industrial sectors in AOCs. The federal and provincial governments are working closely with RAP communities to develop and implement pollution prevention plans and actions that will reduce/eliminate the discharge of persistent toxic substances in AOCs.

For example, in the Hamilton Harbour RAP, the federal, provincial and municipal governments are working together to develop and implement a comprehensive pollution prevention project that will incorporate pollution prevention into the activities and authority of the Regional Municipality of Hamilton-Wentworth. A Pollution Prevention Framework Study examined ways in which the Region and its municipalities could incorporate pollution prevention principles and actions into their planning processes, bylaws, services and municipal operations. Pesticide use by the Hamilton-Wentworth Region Conservation Authority was significantly reduced through a new policy which allows the use of pesticides only under exceptional circumstances. An erosion control manual has been developed and submitted for approval for use by contractors involved in housing and other new construction.

In Collingwood, the RAP is promoting pollution prevention and the Town is formally embracing pollution prevention as corporate policy. Discussions are underway to follow in the footsteps of the Regional Municipality of Hamilton-Wentworth to develop a comprehensive municipal pollution prevention project for the Town in 1994.

In both of these examples, the projects are designed not only to facilitate the achievement of the goals of the Remedial Action Plan, but also to serve as a template that can be used to promote pollution prevention planning in other communities of similar size.

As part of the Lake Superior Binational Program, and in cooperation with a number of partners such as the City of Thunder Bay, the Great Lakes Pollution Prevention Centre, local RAP/PAC teams, local environmental groups and the Lake Superior Binational Forum, the North Shore Lake Superior RAPs are involved in a number of pollution prevention initiatives, including a pollution prevention and control planning study for the City of Thunder Bay, a water conservation program, sectoral initiatives related to mining, pulp and paper, manufacturing, and small quantity hazardous waste generators.

10. Governments encourage the publication of periodic updates of activities and goals associated with each Remedial Action Plan to allow improved monitoring of implementation progress and to communicate local experiences to other areas and groups.

Under the COA, Canada and Ontario will be reporting publicly on progress toward remediation in all AOCs on a regular basis. Canada supports this recommendation.

Canada has also undertaken a number of initiatives which have improved our public reporting of RAP implementation and progress. In preparation for the IJC's Seventh Biennial Meeting and the associated IJC 1993 RAP Forum, Canada and Ontario published fact sheets highlighting progress toward implementation in each AOC. These fact sheets were distributed widely at the meeting/forum and are used by the RAP communities to communicate their progress and achievements to other areas and groups.

Canada currently publishes quarterly a *RAP Status Update Report* for all Canadian AOCs.

As individual RAPs move into the implementation phase (Stage 3), it is anticipated that regular reports and updates on progress will be produced. The Stage 2 reports for Hamilton Harbour, Severn Sound, Bay of Quinte and Collingwood Harbour have been distributed widely both in the local communities and the Great Lakes community at large.

11. Governments improve the understanding of groundwater pollution and its impact on the Great Lakes, and act to eliminate its causes.

Canada is working to improve the understanding of groundwater pollution and its impact on the Great Lakes. The federal government presently conducts a multidisciplinary research program on the sustainability and remediation of groundwater resources in the Great Lakes Basin. Emphasis is placed on determining

the processes of contaminant transport and transformation in a variety of groundwater environments. New techniques for isolating or restoring existing groundwater contamination are being developed.

Research is also conducted on the role played by groundwater in water budgets within the Great Lakes region. Ongoing research is focused on three particular study topics pertinent to the Great Lakes: clean-up of contaminated sites; sustainable groundwater resources; and pesticides in groundwater.

In 1991 and 1992, Agriculture Canada along with seven other provincial and non-governmental farm organizations undertook the major province-wide "Ontario Groundwater Quality Survey" to determine the effect of agricultural management on the quality of groundwater.

Under the auspices of the Ontario Farm Environmental Coalition, Canada and Ontario are providing support to the activities of a Rural Water Quality Working Group whose purpose is to encourage agricultural practices that will protect or enhance groundwater quality in Ontario.

In the Great Lakes Basin, the federal, provincial and municipal governments are working to address the issue of contamination of groundwater from underground storage tanks.

12. Governments incorporate those radionuclides which meet the definition of persistent toxic substance in their strategy for virtual elimination.

Canada, through the Atomic Energy Control Board, has a comprehensive regulatory process that has been in place for many years to ensure that releases of radionuclides from nuclear facilities to the Great Lakes are strictly controlled.

Regulations and Licence Conditions are set to limit emissions from all nuclear facilities. These limits prohibit the release of toxic amounts of radionuclides. Further, a process is in place to ensure that all emissions are kept as low as reasonably achievable ("ALARA") so that actual emissions from licensed facilities are much less than 1% of the regulatory dose limit.

These limits have been specifically selected to ensure that public health is well protected. It is generally believed that they are sufficiently low to protect the environment at large, as well. However, the Government of Canada endorses further scientific investigation to support this belief.

Canada's approach to radiation protection is in keeping with recommendations developed by the International Commission on Radiological Protection. Adherence to the International Joint Commission's recommendation would lead Canada to decisions that are outside internationally accepted practices.

In addition, a virtual elimination strategy is difficult to apply in the presence of a large natural radioactivity component in the environment. Most of the long-lived radionuclides detected in the Great Lakes Basin occur naturally.

For example, anthropogenic sources of potassium-40 and the uranium and thorium decay chains make an insignificant contribution to the levels already in the environment. Carbon-14 and tritium levels measured in the Great Lakes are due principally to fallout from natural processes in the upper atmosphere, historic nuclear weapons testing or natural ambient levels. Current contributions of CANDU operations to tritium levels in Lake Ontario are estimated to be 1% of present lake tritium levels.

Furthermore, application of a virtual elimination strategy to radionuclides would have serious impacts on major segments of the nuclear fuel cycle, within and outside the Great Lakes Basin, including power reactors used to produce electricity and research reactors that are used in the production of medical isotopes. The use of radionuclides in nuclear medicine for diagnosis and treatment of disease also results directly in savings of human lives and improvements in human health.

Finally, since the toxicology of most of the toxic organic chemicals is not well understood, the use of criteria, such as persistence, bioaccumulation and toxicity endpoints, to identify potential "persistent toxic substances" is warranted. However, these criteria are not needed for radionuclides since, after more than 40 years of study, the effects of radiation on human health are well known. Moreover, in sharp contrast to the situation for toxic chemicals, there is no evidence that current radionuclide levels in the Great Lakes have resulted in detrimental effects to biota.

Most radionuclides do not move up the food chain in the same manner as toxic organic chemicals. Some radionuclides can accumulate in specific biota. However, these are barely detectable - for example, in Great Lakes fish.

As for the effects of radiation, the average radiation exposure to Great Lakes residents from all fuel cycle and other industrial activities is a negligible fraction of natural background exposure and is orders of magnitude below any level where either acute or chronic effects could be observed. There is no evidence of damage to other biological species at radiation levels found in the Great Lakes Basin.

13. **Federal governments provide coordinated national inventories of toxic air emissions to allow better estimates of toxic substance deposition to Lake Superior. A binational group should be established to review, coordinate and propose means to (a) identify data requirements; (b) develop guidelines and timetables; (c) set priorities; and (d) propose and coordinate research.**

The Parties are reviewing data needs within the context of the development of the Lake Superior Binational Program and the implementation of the Integrated Atmospheric Deposition Network (IADN). These efforts include considerations related to toxic air emissions. Canada is prepared to support the establishment of a binational steering group. Canada supports this recommendation.

The National Pollutant Release Inventory (NPRI) in Canada and the Toxics Release Inventory (TRI) in the U.S. are important national inventories of toxic substances. The first round of information collection for the NPRI is in progress. A Canadian Working Group has been established for the purpose of providing coordinated inventories of toxic substances for the Great Lakes. This Working Group has made substantial progress in establishing emissions factors for Canadian sources, in encouraging interagency cooperation in the collection of emissions data and in harmonizing Great Lakes work with the NPRI.

Many of the toxic chemicals of interest to the Great Lakes program are currently not included in the NPRI (e.g., pesticides). Through participation in international programs such as the Global Emissions Inventory Activity, efforts are underway to establish global emissions inventories which are needed to assess the long range transport of air toxics. Both Canada and the United States are participating in this work. The Canadian Global Emissions Inventory Center is being established to participate actively in this type of effort.

Binational cooperation to address the air toxics issues in the Great Lakes Basin is demonstrated through the production of reports such as the "Identification of Sources Contributing to the Contamination of the Great Waters by Toxic Compounds". This report was one of three which formed the basis for the USEPA's First Report to Congress entitled "Deposition of Air Pollutants to the Great Waters".

14. **Federal governments develop, by the end of 1994, a research plan to assist in developing estimates of toxic substance depositions to the Lake Superior basin.**

Canadian research agencies collaborating on the establishment of the Integrated Atmospheric Deposition Network (IADN) have discussed the possibility of collaborating on a study of key aspects of Lake Superior. In fact, a research proposal already exists which would provide data to develop improved estimates of toxic substance deposition to Lake Superior as well as assessing the significance of local

versus long range atmospheric sources. Canada expects that a revised proposal, with U.S. input, will be available by the end of 1994. At that time a determination of what can be done will be made based on resource availability. Canada supports this recommendation.

15. **Federal governments establish and maintain monitoring stations within an Integrated Atmospheric Deposition Network pursuant to Annex 15 of the Great Lakes Water Quality Agreement.**

In response to Annex 15 of the Great Lakes Water Quality Agreement, the USEPA and Environment Canada have established an Integrated Atmospheric Deposition Network (IADN) which now includes five sampling stations, one on each of the Great Lakes. Canada supports this recommendation.

In May 1994, the Parties signed a Binational Quality Assurance Program Plan for the network. There are now five years of data available for selected persistent toxic chemicals for Pt. Petre, the longest running station. This data is being used to study trends. In the case of lead (Pb), it indicates that levels in air and precipitation continue to decline as a result of controls on leaded gasoline.

The next step in the establishment of the IADN includes the initiation of a larger number of satellite stations on each side of the border. On the Canadian side, an extensive program of sampling and laboratory intercomparisons has allowed the federal and provincial governments to compare their sampling and analysis techniques and results. Under the new COA, the federal government will be seeking to include some provincial air toxics monitoring sites as satellite stations for IADN.

The establishment of IADN is a tremendously costly undertaking. While it is essential to maintain measurements in the Great Lakes Basin, results are indicating that there is rather little spatial variability in many of the critical chemical species across the Basin. Both nations are moving towards limiting future expansion of the network in favour of initiating research activities to clarify aspects of the behaviour of toxic chemicals in the atmosphere. Such aspects as air/water and air/soil exchange and the partitioning of toxic chemicals into the vapour and particulate phase require better understanding if we are to move towards improved loadings estimates and better source controls.

16. **Federal governments ensure that the assessment and registration of pesticides and new chemicals in Canada and the United States include specific provision for considering environmental and human health implications including endocrine-mimicking and bioaccumulation potential.**

Canada supports the concept of this recommendation.

Pesticides

Pesticide registration procedures in Canada already consider, among other characteristics, the potential for the active ingredient to bioaccumulate. The incorporation of consideration of the endocrine-mimicking potential of pesticides into assessment and registration procedures is being pursued through international fora that are working towards harmonization of data requirements, such as the Technical Working Group on Pesticides under the Canada-United States Trade Agreement and the OECD Pesticides Forum.

Canada's proposed Toxic Substances Management Policy, whose goal is the virtual elimination from the environment of substances that mainly result from human activity and that are persistent, bioaccumulative and toxic, will be applied to pesticides. New pesticides that meet the criteria for virtual elimination will only be registered under exceptional circumstances, when there is no acceptable alternative to deal with a critical situation. A priority scheme is currently in place to re-evaluate pesticides that are already registered. It takes into account persistence, bioaccumulation and toxicity as well as other factors such as the extent of use, exposure potential, the age of the data base, gaps in the data base and so on. The availability of alternatives will be considered before any regulatory action is taken.

The Province of Ontario also registers pesticides in the Great Lakes Basin. The Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem calls for a coordinated review and evaluation of registered and scheduled pesticides. This initiative will be developed in consultation with interested stakeholders and will draw upon the work of various regulatory and scientific bodies on the environmental and health risks associated with pesticides.

New Substances

The screening procedures for new substances, notified under the requirements of the CEPA New Substances Notification Regulations, will use specific criteria such as persistence, bioaccumulation potential and toxicity in order to prevent potentially problematic new chemicals from being introduced into the Canadian environment. These criteria specifically consider environmental and human health implications. During the assessment, if a substance is found to be persistent, bioaccumulative and "toxic" (as defined under Section 11 of CEPA) then a no measurable release strategy will be applied. If it can be demonstrated that the substance can be adequately

controlled throughout its life cycle (thus preventing release into the environment), manufacture/importation will be allowed under statutory conditions or regulations of no-release. If the substance can not be adequately controlled, the substance will be prohibited from being imported or manufactured. It should be noted that the CEPA definition of "toxic" is broad enough to consider environmental and human health implications of endocrine-mimicking substances, if they may enter the environment in a quantity or concentration or under conditions that may have an immediate or long term harmful effect on the environment, or if they may constitute a danger in Canada to human life or health.

17. **Senior officers of business enterprises in and near the Great Lakes basin conduct environmental audits of their procurement, production and marketing activities in relation to the goals of the Great Lakes Water Quality Agreement; develop and announce corporate environmental stewardship policies which include the concept of sustainable development; and prepare annual reports relating to that policy for public review and regular review by the enterprise's senior management body.**

Recommendation is not directed to government.

18. **Industry and professional associations develop and implement environmental awareness programs and environmental stewardship and/or sustainable development guidelines for their organizations and members. These should include standards on environmental claims in advertising and on identifying and encouraging special labelling for products that do not incorporate persistent toxic substances.**

Recommendation is not directed to government.

19. **Labour unions include in their negotiations the issue of transition to a sustainable economy without persistent toxic substances.**

Recommendation is not directed to government.

20. **Governments, industry and labour begin devising plans to cope with economic and social dislocation that may occur as a result of sunsetting persistent toxic substances.**

Should large scale economic and social dislocation be anticipated as a result of sunsetting persistent toxic substances, Canada would support the multistakeholder approach to plan to deal with such disruptions. In the sustainable development context, any proposed response strategies for the management of toxic substances must take into consideration a broad range of factors. Socio-economic considerations must be factored into our decision-making processes. The Canadian strategy is to involve all key stakeholders in this process. As an example, Canada is advancing a multistakeholder Strategic Options Process to address a number of substances declared toxic under the Canadian Environmental Protection Act, and all key stakeholders are being consulted for their recommendations for action. Canada supports this recommendation.

All regulatory initiatives undertaken by the federal government require socio-economic analyses to determine the potential for dislocation. Thus any strategies developed to address the issue of persistent toxic bioaccumulative substances would take such considerations into account.

21. **The news media give greater priority to investigating, identifying and reporting on the sources and effects of persistent toxic substances, as well as on success stories about reducing ecosystem degradation and achieving its restoration, as critical issues in society.**

Recommendation is not directed to government.

22. **Post-secondary educational institutions encourage the integration of education and research across the physical, biological and social sciences to provide an integrated scientific basis for learning and policy making.**

Recommendation is not directed to government.