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**ANNUAL REVIEW OF THE MEMORANDUM OF
UNDERSTANDING ON CONTROL OF TOXIC SUBSTANCES**

A report to the Governors and Premiers
of the Great Lakes States and Provinces

August 1989

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I. INTRODUCTION

In June of 1988, the premiers of Ontario and Quebec joined the governors of the eight Great Lakes States in signing the Memorandum of Understanding on Control of Toxic Substances in the Great Lakes Environment (hereafter "MOU"). The MOU builds on the commitment the Great Lakes governors made three years ago in their Toxic Substances Control Agreement (TSCA) by extending coordination of toxics reduction policy to all governmental jurisdictions surrounding the Great Lakes. Now, all of these jurisdictions are committed to address the problem of persistent toxic substances which has been recognized as the "foremost environmental issue confronting the Great Lakes".

The Great Lakes State and Provincial Environmental Administrators (hereafter "Administrators") are the lead group responsible for overseeing implementation of the MOU. The state and provincial health agencies have an important implementation role as well. The staff of the Council of Great Lakes Governors coordinate implementation activities on behalf of the governors and premiers.

The Administrators face a special challenge in implementing the MOU in that the states and provinces have different institutional frameworks and regulatory programs. The differing relationships between the states and provinces and their respective federal governments create an additional challenge. Still, the promise of improved toxics management through our new cooperative relationship makes such challenges worthwhile.

This report to the governors and premiers provides the first annual review of the MOU as called for under that document. It is intended that this report fulfill concomitant requirements under the TSCA. Unless otherwise noted, the activities described herein reflect the joint efforts of the state and provincial Administrators.

The report is divided into three sections. The first section outlines discussions by the Administrators regarding integration of state and provincial activities, and provides recommendations in accordance with specific MOU mandates and deadlines. The second section provides an overview of regional activities pursued collectively by the states and provinces (other than those already described in section one), and of ongoing regional activities of the states pursuant to the TSCA. The third section summarizes activities undertaken individually by states and provinces in an effort to integrate the goals of the MOU into jurisdictional management plans.

II. IMPLEMENTATION DISCUSSIONS AND RECOMMENDATIONS

Over the past year, much progress has been made in implementing the MOU. The Administrators met in November 1988 and April 1989 to establish the nature of implementation activities. They determined that activities would be integrated in fifteen issue areas (see Appendix A). In most cases, they agreed that joint state/provincial committees would be created and terms of reference developed. In some cases, provincial representatives would monitor the activities of on-going state committees.

In accordance with MOU requirements, the Administrators have developed reports or recommendations for the governors and premiers in nine issue areas (see Appendix B for complete list of MOU deadlines). Additional information is available for some of these issues in the appendices to this report.

A. Coordinating Control of Toxic Substances Through Permits or Other Legally Enforceable Instruments

Clause 4 of the MOU provides that the signatory parties will:

"develop an agreement by May 31, 1989 for coordinating control of toxic releases and achieving greater uniformity of regulations governing such releases within the Great Lakes Basin based on...(certain)...principles".

During the last year, the Administrators developed the attached "Memorandum on Coordinating Control of Toxic Substances Through Permits or Other Legally Enforceable Instruments" (see Appendix C). This memorandum, hereafter referred to as the Permitting and Enforceable Instruments Memorandum or "PEIM", is an expanded, improved version of a similar document which was ratified by the state administrators in September 1986 (pursuant to the TSCA) entitled "Toxic Substances Management in the Great Lakes Basin Through the Permitting Process". PEIM will be used to coordinate ongoing TSCA activities with new state and provincial efforts to manage toxics.

PEIM takes the first step toward coordinated regional management of discharges, releases and emissions of toxic substances among all of the states and provinces in the Great Lakes-St. Lawrence River Basin. It is important to note, however, that each state and province will continue to operate its own toxic substance management program in accordance with its respective administrative rules and other commitments.

The goal of PEIM is development of compatible approaches to the management of toxic substances. It is intended to create a baseline for toxics control although the states and provinces may impose standards which are more stringent than those agreed to in

PEIM. Some highlights are included below.

- Develop a strategy for compatible surface water permits or other legally enforceable instruments.
- Develop recommendations for adoption of a uniform approach to risk assessment and management as an integral part of the regulation of toxic substances.
- Cooperate with respective federal governments in the remediation of contaminated sediments, and in the development of compatible national criteria for assessing the toxicity of such sediments.
- Dredging planning and program decisions should consider overall ecosystem concerns and alternatives to dredging where practicable.
- Apply Best Available Control Technology (BACT) requirements to new and existing sources of certain toxic air emissions where possible.
- Evaluate strategies for reduction of non-point source pollution to the Great Lakes-St. Lawrence River Basin.
- Ensure that total loadings from discharges of toxic substances to all media do not violate aquatic environmental or health-related standards for specific media.

B. List of Persistent Toxic Substances to be Controlled

Clause 7 (a) of the MOU provides that the signatory parties will develop a list of persistent toxic substances which should be controlled within each jurisdiction. In 1987, the Great Lakes Water Quality Agreement (GLWQA) between the U.S. and Canada was amended to include a listing concept which is virtually identical in function.

The major difference between the MOU and the GLWQA is in the role of the jurisdictions. Most notably, the jurisdictions function in an advisory capacity under the GLWQA, but are in fact the creators of the list under the MOU. Moreover, the MOU list is directly associated with control programs to be developed by the states and provinces. In view of the similarities and in order to avoid any confusion or further complication, the Administrators recommend the following to the governors and premiers:

1. that retroactive to December 31, 1988, toxic substances to be controlled under Clause 7a of the MOU shall comprise the eleven substances identified by the International Joint Commission. These include: total polychlorinated biphenyls

(PCBs); DDT and Metabolites; Dieldrin; Toxaphene; 2,3,7,8-TCDF (Furan); 2,3,7,8-TCDD (Dioxin); Mirex; Mercury; Alkylated Lead; Benzo(a)pyrene; and Hexachlorobenzene;

2. that in future modifications to the MOU list, the Administrators shall consider both waste water effluent and air emission monitoring/controls being implemented or planned by the states and provinces, as well as the proposals for revision of Agreement objectives which may be endorsed by the Parties, state and provincial governments, or recommended by the IJC under the Specific Objectives Review Process of the Water Quality Agreement; and
3. that the Administrators shall annually review and if necessary revise their lists of toxic substances and effluent and air emission monitoring and control programs under Clause 7 and report these to the governments.

In order to ensure full state and provincial participation in the specific objectives review process of the GLWQA, whereby provision is made for regular consultation by the Parties with the state and provincial governments, the Administrators shall seek the development of a procedure for consideration of proposals for revision to the specific objectives of the Water Quality Agreement.

C. Hazardous Waste Management Planning

Clause 14 of the MOU charges the jurisdictions to:

"explore the potential advantages of, and possibilities for, interjurisdictional cooperation in hazardous waste management planning, and to report to the Governors and Premiers on recommendations for cooperative action by May 31, 1989".

The recent controversy over hazardous waste-tainted fuel crossing the U.S./Canadian border for distribution and consumption in both countries reinforces the need to implement Clause 14 of the MOU. The controversy arose when a Toronto newspaper reported that fuel had been adulterated with hazardous waste in the Buffalo area, and distributed for consumption throughout Western New York and Ontario. Related reports indicated that hazardous waste being transported from Ontario to Texas might be destined for illegal disposal.

During the governors' trip to Canada in May, the governors, Prime Minister Mulroney, and Premier Peterson agreed to the need for an investigation of the controversy, and for implementation of appropriate measures to prevent future occurrences. In the broader context, they also indicated an interest in examining the

transport of hazardous substances and oil throughout the Great Lakes-St. Lawrence River Basin, and in determining the state of governmental preparedness for a possible disaster like the Valdez incident in Prince Williams Sound, Alaska.

On July 10, 1989, the Great Lakes State and Provincial Environmental Administrators held a workshop to:

- examine the circumstances behind the tainted fuel shipments;
- determine the extent of the problem;
- recommend possible solutions.

In attendance were representatives from states, provinces, U.S. EPA, Environment Canada, and U.S. and Canadian law enforcement, customs, and transportation agencies.

Workshop participants concluded that the overall scope of the tainted fuel problem is unknown. Some instances of fuel tainting have been documented but most remain unproven or the subject of further investigations. With respect to the Ontario/New York gasoline tainting case, the one raised during the governors' trip to Canada, allegations regarding the illegal disposal of PCBs in transboundary shipments of fuel have not been proven despite the extensive efforts of law enforcement and environmental agencies in the U.S. and Canada.

The participants determined that some action could be taken now to address the problem. Representatives from the states, provinces and both federal governments indicated that activities to detect and otherwise investigate fuel tainting should become a higher priority. To this end, more resources should be focused on testing fuel shipments and increased emphasis should be placed on enforcement programs. It is believed that such actions function as a powerful deterrent to illegal tainting. In addition, Congressional and Parliamentary action is needed to make fuel adulteration (now a misdemeanor) a felony. The meeting participants also identified several other options for solving the problem, but indicated that these options should be studied further before adoption.

The Council is currently preparing an interim report to the governors and premiers on tainted fuel. In this report, the Great Lakes State and Provincial Environmental Administrators, who have assumed the lead in examining this problem, recommend that the Great Lakes states and provinces act immediately to focus resources on the inspection of fuel shipments if they have not already done so. It is clear that this is the most effective action that can be taken in the short-term to prevent fuel tainting.

The Administrators are currently reviewing the feasibility of the workgroup's other recommendations. Recommendations will be made to the governors and premiers as to which additional activities should be undertaken in the short- and long-term. In addition, meetings will be held over the next several months to examine oil/hazardous substances transportation and spill emergency preparedness. Final reports in both areas will be submitted to the governors and premiers by the end of this year.

Some of the recommendations under consideration on this topic also relate to the specific hazardous waste-related mandate contained in the MOU. Nonetheless, the Administrators feel it is appropriate to provide certain recommendations to the governors and premiers at this juncture in accordance with the MOU mandate. The recommendations noted below should be viewed in the context of MOU requirements and not as solutions to the tainted fuel problem.

Exchange Capacity Information - The identification of future hazardous waste treatment and disposal capacity needs is important to the long-term interests of industry located within the basin. Although the jurisdictions will continue to encourage reductions in the generation of hazardous waste, industry must know that capacity will be available when needed.

The Administrators recommend that the jurisdictions exchange information on hazardous waste management capacity. Pursuant to the U.S. Superfund Amendments and Reauthorization Act (SARA), the states are already required to assure U.S. EPA they have 20 years of treatment or disposal capacity within their state borders or available in other states in accordance with interstate or regional agreements. This effort would be facilitated by an exchange of capacity information between the states and provinces. Moreover, such an exchange would facilitate long-term hazardous waste management planning. The availability of such capacity information may also function to attract as well as maintain industry.

Exchange Procedures for Designating "Hazardous Wastes" - A waste which is regulated as a hazardous waste in one jurisdiction may not be considered hazardous in another. This may result from the fact that programs to regulate certain wastes as "hazardous wastes" are not at the same stage of development in different jurisdictions.

The Administrators recommend that the jurisdictions exchange state- and province-specific information on procedures for identifying which wastes are considered hazardous as well as the actual hazardous waste listings. The exchange of state- or province-specific information would facilitate development of more compatible hazardous waste designations. Such an exchange

would also decrease staff time needed to evaluate proposals to regulate certain wastes as "hazardous", and would help ensure that generators that ship hazardous waste out of their jurisdiction understand the implications of different regulatory systems. Procedures for the exchange of this information are being examined.

D. Basin-wide Notice of Discharges

Clause 6 of the MOU provides that:

"each signatory party will develop an initial list of permit, certificate or standard information it is most interested in receiving (from the other jurisdictions) and forward the list to the other signatory parties by December 31, 1988."

The purpose of this provision is to ensure that appropriate information is forwarded to other jurisdictions whenever a state or province considers the issuance of a permit or other legally enforceable instrument to regulate a discharge, or intends to create a new water quality standard, that may significantly affect shared air or water resources.

In February 1988, state representatives met pursuant to similar requirements under the TSCA to determine the type of information to be exchanged. In light of the concerns raised about sharing unnecessary permit information, the workgroup recommended that information exchange be limited to the items listed below. This information should be shared by a jurisdiction prior to the issuance of a new permit or other legally enforceable instrument or a new water quality standard, that may significantly affect the shared water or air resources of other jurisdictions.

- Effect of potential permit or standard in light of degradation, anti-degradation, anti-backsliding and prevention of significant deterioration policies;
- Inherent effects, especially with respect to dioxin permit limits;
- Disposal of treatment residues, including any related interstate transportation; and
- Wasteload allocations.

The state Administrators concurred in these recommendations. In December 1988, the Provincial Administrators agreed to participate in the exchange of information identified above. In addition, the Administrator from Ontario indicated an interest in receiving the information noted on the following page.

- Lists of persistent toxic substances being monitored and for which objectives or guidelines are under development.
- Major waste discharges.
- Recent or proposed changes in water quality standards, objectives or criteria.

The states and provinces will meet in October 1989 to revisit the above-listed information exchange parameters.

E. Health Effects Registries

Clause 24 of the MOU charges the state and provincial health administrators to:

"study and report on the status of health effects registries in the Great Lakes Region and recommend additional initiatives that should be undertaken in this area...(and submit their report)...by May 31, 1989."

On April 26, 1989, the state and provincial Health Effects Task Force met to examine the compatibility of health effects registries in the jurisdictions, and to develop initial recommendations for improving these registries (see Appendix D for detailed recommendations). It was determined that numerous data elements were already common to all state and provincial death, birth and cancer registries (see Appendix E).

The state and provincial health administrators recommend that the following initiatives be undertaken:

- Standardize the collection and management of health data;
- Conduct intra-basin and inter-regional studies to determine the health effects, if any, of Great Lakes-St. Lawrence River Basin water quality;
- Compare trends in water quality with trends in health effects;
- Conduct additional health effects studies when adequate environmental exposure data are available;
- Identify non-state/provincial organizations that develop or assist in the development of regional health advisories (see Appendix F for initial list); and
- Identify roles of specific units within state and provincial governments as related to human health.

F. Regional Specimen Banking Program

Clause 20(a) of the MOU charges the Great Lakes States and Provinces to:

"study tissue specimen banking programs in the Great Lakes Basin and recommend steps that can be taken to improve them...by May 31, 1989. Consideration shall be given to development of a regional program for the banking and preservation of flesh specimens from fish, birds and other wildlife to provide continuity in data comparisons by allowing analysts to compare older samples to newer ones".

A similar mandate contained in the 1978 Great Lakes Water Quality Agreement (Annex 12:5e) requires "maintenance of a biological tissue bank and sediment bank to permit retroactive analysis to establish trends over time". For several years, the International Joint Commission (IJC), which is responsible for overseeing implementation of the Agreement, has acted as the lead regional organization relative to the specimen banking issue.

During February 1988, IJC staff sponsored a workshop on specimen banking. Representatives from some of the Great Lakes States and Provinces participated in this workshop. The purpose of the workshop was to discuss the status of existing specimen banks and the possible establishment of a regional bank.

The workgroup concluded that several excellent specimen banking programs exist in both countries at this time; however, the Great Lakes region currently does not have a comprehensive bi-national facility. It was believed that such a facility is feasible but would require a significant ongoing financial investment. The participants recommended subsidizing existing programs rather than establishing a bi-national regional facility. The participants also made some progress on technical issues concerning specimen banking storage but additional efforts were deemed necessary.

Subsequent to the IJC workshop, staff from the Great Lakes National Program Office (GLNPO) of the U.S. Environmental Protection Agency assumed the lead on specimen banking on behalf of the IJC. GLNPO staff have been pursuing the idea of creating a regional specimen bank, and have recently (April 1989) developed plans to this effect.

GLNPO's plans are currently under review by the Administrators, and a recommendation will be made following the review. In this review, serious consideration will be given to the cost of establishing and maintaining such a regional specimen bank.

G. Exchange of Emergency Response Telephone Numbers

Clause 10 of the MOU provides that:

"each jurisdiction shall forward to the other signatory parties by December 31, 1988 the 24-hour telephone number of the emergency response unit to be contacted...(when)...an accidental discharge occurs."

The purpose of this provision is to ensure the states and provinces have immediate access to emergency response authorities in the event of an accidental discharge which would significantly affect shared air or water resources. The state/provincial emergency response telephone numbers are listed below.

Illinois	217/782-3637
Indiana	317/241-4336
Michigan	517/337-6100
Minnesota	612/296-7282
New York	518/457-7362 (outside state) 800/457-7362 (inside state)
Ohio	614/481-4300
Ontario	800/268-6060
Pennsylvania	717/787-4343 (Harrisburg) 814/724-8557 (Meadville)
Quebec	514/873-3454
Wisconsin	608/266-3232

H. Preliminary Report on the Great Lakes Protection Fund

Clause 25 of the MOU provides that jurisdictions will:

"examine alternative long-term funding sources that will permit continued progress toward a healthier Great Lakes ecosystem. The Center for the Great Lakes has agreed to assist the signatory parties by conducting a feasibility study on the creation of a regional, long-term funding mechanism. The Center will report back to the signatory

parties on the goals and objectives, fundable activities, sources of revenue and management structure necessary for such a fund. A preliminary report will be submitted by December 31, 1988."

Pursuant to a similar requirement under the TSCA, the Center for the Great Lakes in December 1987 presented a feasibility study to the governors on a state Great Lakes Protection Fund. The fund's potential goals and objectives outlined in that feasibility study included:

- o Acceleration of research into the economic and environmental effects of toxic contamination in the Great Lakes;
- o Establishment of additional monitoring mechanisms;
- o Identification of innovative methods for reducing toxic pollution at its source; and
- o Increasing public understanding of the importance of improving Great Lakes water quality.

An agreement was signed by the Great Lakes governors to create the Great Lakes Protection Fund in February 1989.

In June, 1989, the Center assembled a steering committee to guide work on development of provincial companion initiatives to the states' Fund. The Center has begun to research existing public and private funds which may serve as potential models for a provincial funding arrangement comparable to the Great Lakes Protection Fund. In addition, the Center participated in workshops with Great Lakes researchers and industry representatives in order to learn their views on potential roles for a provincial fund.

I. Initial Schedule of Workshops

Clause 21 of the MOU provides for the preparation of an initial list of workshops for information exchange and other purposes by December 31, 1988. This list is provided below.

<u>Issue Area</u>	<u>Schedule</u>
Air Toxics	November 1989
Biomonitoring	June 1989 October 1989
Surface Water Permit Compatibility	June 1989 October 1989
Compliance	January 1990

Control Programs for Persistent Toxics	October 1989
Cross-media Effects	October 1989
Fish Consumption Advisories	July 1989 November 1989
Ground Water Quality	December 1989
Hazardous Waste Management	July 1989
Health Effects Registries	April 1989 November 1989
Monitoring and Surveillance	December 1989
Non-point Source Pollution	November 1989
Risk Assessment/Management	November 1988 December 1989
Specimen Banking	November 1989

III. REGIONAL ACTIVITIES

A. Air Toxics

Clause 16 of the MOU provides that the states and provinces will:

"consider the effects of airborne pollutants on human health and aquatic life when setting air emission standards and granting air permits or other legally enforceable instruments".

The state Administrators' most significant accomplishment this past year was finalization of an agreement requiring application of Best Available Control Technology (BACT) for new and existing sources of certain air toxics (see Appendix G). It is anticipated that this agreement will help control the introduction of air toxics into the Great Lakes-St. Lawrence River Basin through the uniform and consistent issuance of permits requiring BACT. In an effort to ensure uniformity, a workgroup is currently identifying BACT for individual source categories. States which do not currently have legal authority to require the installation of BACT will attempt to obtain such authority.

The state Administrators also agreed to develop a computerized air toxics data base for the purpose of obtaining knowledge about air toxics sources and their migratory nature. Funding for developing this data base is now being sought.

The provincial Administrators are interested in exploring options for extending the air toxics control agreement and data base to Ontario and Quebec.

B. Federal Role

"The Great Lakes States should use their influence through coordinated efforts to help shape federal policies and legislation related to toxic substances...Ontario and Quebec recognize the respective roles of the provincial and federal governments in Canada...and agree to seek to cooperate with each other in accord with the constitutional responsibilities entrusted to each level of government as they pertain to the control of toxic substances."

During the past year the state Administrators took collective action on several U.S. federal issues with Great Lakes regional impacts. Concerned about the potential impacts of air toxics on the region, the state Administrators developed recommendations for U.S. federal legislation which would help protect human health and the Great Lakes aquatic ecosystem.

Although the states are implementing a regional agreement which requires installation of Best Available Control Technology (BACT) on new and existing sources of certain air toxics, control within the region may not be enough because the persistent toxics threatening the Great Lakes are not confined to the region. Their sources and impacts are evident throughout the United States and beyond.

Three air toxics bills have been introduced thus far in the 101st Congress. While these bills would result in important reductions in air toxics, both bills could do more to protect against the persistence and bioaccumulation of toxics in aquatic ecosystems. In particular, state Administrators recommend that risk to aquatic ecosystems should be factored into the development of control standards for point and area sources of air toxics. Also, consideration should be given to aquatic ecosystem impacts in the establishment of threshold regulatory levels for all sources of air toxics.

The state Administrators have also developed recommendations concerning the Clean Water Act, which is scheduled for reauthorization in 1990. The states are particularly concerned about the lack of flexibility in U.S. Environmental Protection Agency's (EPA) regulatory policy relative to Clean Water Act implementation.

Through the Council of Great Lakes Governors, and in cooperation with other regional environmental organizations, the states have urged Congress to continue or increase funding for Great Lakes clean-up, research and resources management activities. This action helped to ensure an increase in congressional appropriations for U.S. EPA's Great Lakes National Program Office (GLNPO) during FY89.

In May 1989, the state Administrators agreed to serve on GLNPO's Great Lakes Water Quality Agreement (GLWQA) Policy Committee. This committee will bring together representatives from state agencies, U.S. federal agencies and regional public interest groups to discuss matters relevant to the semiannual meetings of the Parties to the GLWQA. It will also provide a forum for coordinating GLWQA activities with activities conducted pursuant to the TSCA.

The state Administrators also agreed to work with U.S. EPA regional offices to incorporate provisions of the GLWQA into implementation of the U.S. Clean Water Act. Thus far, three priorities have been identified: establishment of specific water quality objectives; incorporation of the specific objectives in regulatory activities of the Great Lakes states; and public participation in the implementation of the GLWQA.

C. Fish Consumption Advisories

Clauses 22 and 23 of the MOU provide that the signatory parties will:

"seek an interjurisdictional agreement for each of the lakes on common fish advisories...(and)...cooperate in other Basin-wide initiatives, such as...(efforts)...to standardize sampling procedures and fish tumor identification."

For the third consecutive year, most jurisdictions within the Great Lakes Basin will have uniform fish consumption advisories for Lakes Erie, Michigan, and St. Clair. Uniformity in the issuance of such advisories is important because it reduces angler confusion regarding the types and amounts of fish that should be consumed.

Over the past year, the states began a new initiative which will compare the level of contaminants in sport fish and commercially-purchased fish. If funding is obtained, this project will assist anglers in comprehending the degree of added risk they assume by consuming sport fish.

In July 1989, the Fish Consumption Advisory Task Force held a workshop to redefine its goals (in light of the integration of provincial representatives) and to establish deadlines for achieving common fish consumption advisories. The task force will meet again in November.

D. Great Lakes Protection Fund

Clause 25 of the MOU provides that jurisdictions will:

"examine alternative long-term funding sources that will permit continued progress toward a healthier Great Lakes ecosystem".

The need for a stable and predictable source of funding to safeguard past water quality accomplishments and underwrite new initiatives was first identified in the TSCA. Recognizing that public sector funding (both state and federal) is subject to the fluctuations of the political environment, the TSCA envisioned that the creation of a regional environmental endowment would provide a permanent source of revenue for the types of long-term projects needed to address toxic contamination.

This first-of-a-kind endowment will represent an unprecedented regional commitment to protect the Great Lakes for future generations. Creating a permanent funding mechanism helps ensure

continuous development of needed scientific information and new cleanup technologies to safeguard the environmental, human and economic health of the basin. Taking a regional approach to the threat of toxic contamination can provide new direction and leadership, and offer broader insight into shared pollution problems.

On February 26, 1989, the Great Lakes governors signed a unique environmental agreement to create the Great Lakes Protection Fund, a \$100 million endowment that will set a new standard for aggressive and effective regional action to combat toxic pollution in the Great Lakes. This signing culminated a two-year effort to develop the concept of, and governance structure for, the Fund. The states are now involved in securing legislative approval for their individual contributions. Each of the states will contribute to the Fund based on its Great Lakes water usage. The Fund may also seek donations from corporations and individuals, and settlements from environmental litigation.

A gubernatorially-appointed board will oversee the Fund, and award grants that advance the goals of the TSCA and Great Lakes Water Quality Agreement. Once fully operational, it is hoped that \$7-10 million in annual interest earnings will be available for these projects. Two-thirds of the annual earnings will be used for making regional grants while one-third will be returned to the states for use in implementing the TSCA and GLWQA. It is anticipated that grants can be awarded by 1990.

As noted in Section I, the Center for the Great Lakes is currently consulting with provincial representatives to identify options for establishing a parallel fund in Canada which would coordinate its activities with the states' fund.

E. Hazardous Waste Management

Clause 14 of the MOU provides that:

"explore the potential advantages of, and possibilities for, interjurisdictional cooperation in hazardous waste management planning".

During the fall of 1988, the state Administrators were concerned about draft U.S. EPA requirements concerning hazardous waste management capacity. As a result, joint comments were submitted to the National Governors' Association which was responsible for soliciting comments on behalf of U.S. EPA.

The draft requirements, which were designed to implement provisions of the U.S. federal Superfund Amendments and Reauthorization Act of 1986, would have mandated states to demonstrate that adequate hazardous waste management capacity

would be available for the next twenty years. The states' comments noted that the level of effort necessary to fulfill the proposed requirements far exceeded that envisioned by Congress. In addition, the states expressed concern about the proposed definition of a capacity "shortfall".

As noted in Section II of this report, the states and provinces jointly developed recommendations concerning hazardous waste management planning, and are developing additional recommendations with respect to the hazardous waste-tainted fuel problem.

F. Health Effects Registries

Clause 24 of the MOU charges the state and provincial health administrators to:

"study and report on the status of health effects registries in the Great Lakes Region and recommend additional initiatives that should be undertaken in this area".

The Health Effects Task Force, which is responsible for implementing Clause 24 of the MOU, met in October 1988 and April 1989 to continue its efforts regarding development of consistent health effects registries. Provincial representatives participated in the latter meeting. As noted in Section II of this report, the Task Force developed recommendations for improvements in the state and provincial registries, and for the preparation of health-based studies in the region.

The Task Force is also designing a study that would examine health effects within the Great Lakes-St. Lawrence River Basin as compared to health effects in other regions of both countries. Part of this effort entails an examination of researcher access to mortality and morbidity records.

The Task Force will continue to examine the role of public health in environmental control efforts, and to work with other organizations, such as the International Joint Commission's Health Committee, to coordinate activities and avoid program duplication.

G. Land Application of Sewage Treatment Plant Sludge

The Great Lakes states' Toxic Substances Permitting Agreement provides for development of consistent standards and management approaches for the land application of sludge resulting from sewage treatment plants. In 1987, the states determined that land application standards were already consistent and that

development of a consistent basin-wide approach was not needed. In 1988, when U.S. EPA proposed federal land application requirements, a state workgroup developed comments on behalf of the Great Lakes governors. The comments suggested that EPA's role should be that of facilitation, technical and financial assistance, research support and information dissemination. In addition, it was suggested that the proposed requirements would decrease the effectiveness of state programs, and hinder rather than encourage the beneficial use of sewage treatment plant sludge.

H. Monitoring and Surveillance

Clauses 20(a) and (e) of the MOU charge the Great Lakes States and Provinces to:

"study tissue specimen banking programs in the Great Lakes Basin and recommend steps that can be taken to improve them...(and)...support the International Joint Commission's Water Quality Board in the development of a system of waste water discharge quality benchmarks to help facilitate comparisons among the Great Lakes jurisdictions...(of reductions in the)...levels of toxicity from specific point sources".

As noted in Section II of this report, the states and provinces are currently reviewing a draft IJC proposal concerning development of a regional specimen bank. During the spring of 1988, the state Administrators contacted IJC representatives to determine the status of efforts to develop waste water discharge quality benchmarks, and to encourage progress in this area. In response, an IJC representative indicated that such benchmarks, upon initial examination, were found to be difficult to define and were thought to be unworkable. However, it was also suggested that discussions pertaining to such benchmarks may now be in order in light of the recent reaffirmation of the Great Lakes Water Quality Agreement. The states will continue to examine the feasibility of these benchmarks in the coming year.

I. Non-point Source Pollution

The Memorandum for Coordinating Control of Toxic Substances Through Permits or Other Legally Enforceable Instruments which was developed by the Administrators (see Appendix C) provides that the states and provinces will evaluate jurisdictional strategies for the reduction of nonpoint source pollution to the Great Lakes - St. Lawrence Basin. Urban and rural nonpoint sources of contamination can contribute major quantities of water pollutants.

During the spring of 1989, a survey of existing state non-point source control programs was compiled. A meeting will be held in November 1989 to develop recommendations for improving existing programs. The provinces will participate in this meeting as appropriate.

J. Public Involvement

Clause 26 of the MOU provides for citizen involvement in the implementation of the agreement. Similar requirements are contained in the TSCA. During July 1988, the state administrators held their first meeting to solicit public comments on implementation of the TSCA. The accomplishments of the past two years and the planned activities for the next 12-18 months were discussed. Representatives from several environmental groups indicated a desire to receive more information about implementation activities and to have more opportunities for participation in such activities.

K. Risk Assessment/Management

The Memorandum for Coordinating Control of Toxic Substances Through Permits or Other Legally Enforceable Instruments contained in Appendix C of this report provides that the states and provinces will develop recommendations for adoption of a uniform approach to risk assessment and management as an integral part of the regulation of toxic substances. During December of 1988, the states met to survey risk assessment assumptions within the region, and to work toward development of a range of compatible assumptions. Environmental and health agency representatives were in attendance. During the coming year, the survey will be extended to the provinces. In addition, discussions regarding compatible risk assessment/management discussions will continue.

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IV. STATE AND PROVINCIAL ACTIONS



ANNUAL REPORT (88/89)
IMPLEMENTATION OF GREAT LAKES TSCA
ILLINOIS EPA

Federal Role in Regulating Toxic Substances

- National Policy Arena - Illinois continued to be active through participation in the NGA, various executive branch organizations (ASIWPCA, STAPPA, ASTWMO, ASDWA, etc.), and other groups. In particular, extensive effort was focused upon policy guidelines for clean air legislation, hazardous waste management, and federal/state cleanup programs.
- Section 313 of Title-III, SARA - While this community right-to-know information is primarily a federal requirement, legislation was enacted in 1987 in Illinois to also make the submittal of such information a requirement of State law. In addition, the IEPA is mandated to develop and maintain in a computer data base an Illinois Toxic Chemical Inventory. In February, 1989, the IEPA published the "First Annual Toxic Chemical Report." This report summarized the 1987 data from 938 facilities in Illinois. A total of 433,096,467 pounds of toxic chemicals were released from these facilities in 1987. These facilities reported that 152 toxic chemicals and compounds were released. Multiple uses are envisioned for this toxics information. For example, the data for air emissions has been used extensively for development of the air toxics control program in Illinois.

The IEPA has also received a new federal grant (\$45,000) from the USEPA to enhance our Section 313 data management program for the 1988 reporting year. In particular, we hope to improve the quality of the data which is prepared and reported by the facilities.

Clean Water

- Funding Assistance for Wastewater Facilities - The Illinois General Assembly adopted legislation in 1988 which provides \$370 million for wastewater facilities via grants and loans. Of this total funding package, \$300 million is to be used for 70% grants for compliance projects and \$70 million is to be used as match funds to obtain about \$350 million in federal capitalization grants under the Clean Water Act. As part of this legislative initiative, the substantive provisions needed to establish and operate a water pollution control revolving loan fund were also adopted. The IEPA recently finalized the regulations for the new loan program and filed for a capitalization grant with the USEPA.



- New Regulations for Toxics Control - The IEPA has submitted to the Pollution Control Board comprehensive revisions of the water pollution control regulations. These revisions provide for strengthening and modernizing of the regulations and policies by which toxic substances are controlled in surface waters, including both the provisions for numerical and narrative standards. Biomonitoring and toxicity assessment are especially emphasized as part of these revisions. The rulemaking process is well underway and is expected to continue for some time.
- Groundwater Protection - The Groundwater Protection Act of 1987 is being implemented. Highlights of these efforts are as follows:
 1. Coordination - The Interagency Coordinating Committee on Groundwater has continued to meet on a bimonthly basis. In addition, the Groundwater Advisory Council has been very active in reviewing various outputs from the Committee.
 2. Wellhead protection - Minimum setback restrictions (200 or 400 feet) are in place for some 3,390 community water supply wells. Rules are final for obtaining maximum setbacks (up to 1,000 feet) for community wells. Well site surveys have been completed by the IEPA for many community wells.
 3. Technology regulations - Proposed regulations have been filed with the Pollution Control Board. The rulemaking process is underway and should be finished by late in 1989. When adopted, these regulations will provide additional protection by requiring new controls for certain types of activities near wellheads.
 4. Groundwater quality standards - Development of the regulations for such standards has been progressing well. The target for submittal to the Pollution Control Board is July or August, 1989.
 5. Recharge area mapping - Maps have been completed and submitted to the IEPA.

Permitting Process

- Surface Waters - Through the NPDES permit program, the IEPA continued to expand toxics control requirements. In particular, biomonitoring was utilized to detect toxicity in wastewaters. The IEPA continued to operate both central and mobile labs for aquatic bioassay. During 1989, emphasis has been placed upon scale-up of certain genetic toxicity testing.
- Air Quality - The IEPA continued to develop a toxics emissions inventory via a case-by-case review of source permits as each comes due for reissuance. To a more limited extent, additional control requirements have been imposed via the permit reissuance process.



A new air toxics control program is also under development pursuant to legislation which was adopted in 1987. The IEPA is mandated to develop and submit a listing of air toxics to the Pollution Control Board. A special discussion paper has been recently prepared and distributed to present various options for a listing of toxic air pollutants. At a later time, the IEPA is required to submit a proposed control program(s) for the specified listing of air toxics.

- Multimedia Concerns - Facilities that require permits from more than one media program are subject to a process called the "Coordinated Review of Permits (CROPA)." Regularly scheduled meetings among the Agency's permit managers and a scheduling and accountability system help insure consistency among permits prepared by different divisions. The process has proven so effective that it serves as a review panel for "how clean is clean" decisions at cleanup sites. A cleanup objectives team, utilizing expertise from all areas of the Agency, formulates recommendations for CROPA. Their review as permit writers, whose job it is to apply generic standards to specific cases, has again insured a level of consistency in a very difficult and ambiguous area of operation.

Field operations are coordinated for multimedia concerns in several ways. First, regional coordinators are designated for each of the seven major regional offices. The regional coordinators have special assignments to manage multimedia inspections and enforcement cases. Second, the managers at headquarters for field operations meet on a regular basis to coordinate implementation activities.

Enforcement activities are coordinated using a matrix management system for the legal staff at the Agency. A senior manager (lawyer) is in charge of all the legal staff who are, in turn, organized on a media basis. Within each media legal group, the staff report to both the senior legal manager and the respective senior media program manager.

- Office of Chemical Safety(OCS) - Over the past five years, the IEPA has developed a team of toxicologists and industrial hygienists to provide specialized technical assistance for the operating programs. This support has been especially useful in coping with case-specific analysis of the effects of toxic chemicals. The role of the OCS has continued to grow, as well, due to the codification of federal and state requirements for formal safety programs for regulatory staff.

Hazardous Waste Management

- HSWA Authority - The IEPA has applied to the USEPA for the authority to handle the second generation of RCRA requirements. We expect the USEPA to act on this submission before the end of 1989.



- Solid Waste Management - The State is close to filing a legal settlement in the long pending lawsuit over the act adopted in 1986. The adoption of major amendments to the original law helped open the way for final resolution of this case. In the meantime, some progress has been made using a portion of the tipping fees which was not encumbered by the lawsuit. The IEPA has awarded 19 grants to local governments for solid waste planning. The State's funding commitment for these grants exceeds \$2.3 million. More activities are planned for FY 90 when the revenue from the new landfill fees is expected to reach \$16.0 million.
- Waste Collection Programs - During the fall of 1988, the IEPA funded a contractor to do three pilot collection projects for household hazardous waste. A total of 215 drums of waste were collected and disposed at a total cost of about \$133,000. On the average, the direct cost of collection and disposal was \$1.38 per pound of waste. The IEPA has prepared a special report regarding the feasibility of continuing this collection activity. In this report, we conclude that this activity should continue for, at least, another three years at about an annual cost of \$500,000.

Accidental Release of Pollutants

- Emergency Incidents - During 1988, the IEPA received 1761 notifications of emergency releases. This number was the highest incidence rate yet recorded on an annual basis. We attribute this record to the effects of the new Title III, SARA requirements and to the reporting provisions for leaking underground tanks. Some 827 of these incidents took place in the four counties nearest to Lake Michigan. Impacts on the general public included evacuation of 2,388 persons and hospitalization of 866 persons.
- Emergency Planning - The IEPA has continued to implement the provisions of the Illinois Chemical Safety Act. During 1988, eight releases were designated as "significant" which triggered a special review of the contingency plans for each facility. In addition, the IEPA has initiated the use of detailed hazard and operability studies (HAZOPS) as part of the enforcement settlement conditions for facilities with especially poor track records.

Information Exchange

Illinois served as the host state for the second risk assessment workshop which was held on December 7 and 8, 1988. The IEPA also participated in the other workshops sponsored by the Council.



Human Exposure and Health Effects Assessment

The Department of Public Health operates a Health and Hazardous Substances Registry in Illinois. As part of this effort, cancer incidence reporting is underway on a statewide basis. Adverse pregnancy outcomes are also being reported on a limited basis. The registry is also designed to eventually address data for occupational diseases and hazardous substances in Illinois. The data from the Form Rs (Section 313, Title III) may become the principal focus of this later registry.

RAK:lj1/4-14

Annual Report
Indiana Department of Environmental Management
Implementation of the Great Lakes Toxic Substances Control Agreement
May, 1988 to May, 1989

I. Introduction

In 1989, the Indiana Department of Environmental Management (IDEM) continued programs and activities to implement the provisions of the Great Lake Toxic Substances Control Agreement. This report provides a brief summary of those activities and notes actions of the 1989 Indiana General Assembly which address Great Lakes Toxic issues. A major focus is provided by the Northwest Indiana Environmental Action Plan, which provides for a comprehensive review and remedial action in this region, where for a century the environment has felt the effects of heavy industrial activity and past disposal practices. Components of the plan include:

1. A master plan for addressing water-related problems along the Grand Calumet River and Indiana Harbor Ship Canal.
2. A remedial action plan for the Indiana Harbor/Lake Michigan near-shore area.
3. State implementation plans for achievement of Air Quality Standards in Northwest Indiana.

completed; currently the department has 18 closure plans "in-house" under review. The legislature mandated the Indiana Environmental Policy Commission to make a comprehensive study of hazardous waste issues and issue their report in time for legislative activity in the 1990 session.

IV. Atmospheric Deposition

Atmospheric Deposition is now recognized as a major source of pollution within the Great Lakes. IDEM has continued its air monitoring program and is also investigating sources and quantities of air toxics. It is the agency's intention to take a draft rule for the control of certain air toxics to the Indiana Air Pollution Control Board in 1989. The state is participating in U.S. EPA's development of a (court ordered) Federal Implementation Plan for ozone dealing with the entire Chicago metropolitan area. A new control strategy for PM10 is scheduled for consideration by the air pollution control board late in 1989. A preliminary adopted sulfur dioxide rule mentioned in the 1988 report was made final by the Air Board in July of 1988 and received federal approval in December, 1988.

V. Air Toxics

In light of the Great Lakes Governors Toxic Control Agreement and resulting agreements of the Great Lakes and environmental administrators and increasing evidence of a high level of contaminants reaching the Great Lakes via air transport, Indiana has acted to implement the Directives by creating an inventory of air toxics that are of aquatic concern and by establishing permit review procedures that will assess and Mitigate the impact of toxic air

completion expected in 1989, copies of the report, when complete, will be available at Indiana Department of Environmental Management, Office of External Affairs, 105 South Meridian Street, Indianapolis, Indiana 46206.

Groundwater protection in Indiana received a boost when the Indiana Legislature adopted a comprehensive groundwater protection act. The new law mandates well head protection zones for municipal well fields, creates a groundwater contamination registry within the Indiana Department of Environmental Management, provides for the investigation of suspect wells, and mandates the adoption of standards for groundwater quality.

Monitoring and Surveillance:

Sediment sampling, Fish sampling, and Macroinvertebrate sampling programs were carried out in 1988, as were fixed station ambulate monitoring and compliance inspection sampling. In addition, 24-hour composite samples of the water column were taken at ten sites in the Grand Calumet River and the Indiana Harbor Ship Canal. The samples are being analysed for priority pollutants.

III. Hazardous Waste Management

There are nearly one hundred and fifty (150) solid and hazardous waste handlers located in northwest Indiana with a potential for impacting the water quality of Lake Michigan. In 1988 59 inspections of these facilities were carried out resulting in 30 enforcement actions. These enforcement actions are being pursued through consent degrees, agreed orders and referrals to the Federal Environmental Protection Agency. In 1988 6 closure plans were

4. Remedial Investigations/Feasibility Studies (RI/FS) for specific cleanup activities at specified sites.
5. Facility management plans under the Resource, Conservation, and Recovery Act.

Copies of the Northwest Indiana Environmental Action Plan are available from Indiana Department of Environmental Management, Office of External Affairs, 105 South Meridian Street, Indianapolis, Indiana 46206.

II. Water Related Activities

The water quality standards mentioned in the 1988 report as preliminarily adopted have since been withdrawn, modified and re-preliminarily adopted. Water quality standards for Lake Michigan, the Grand Calumet River and Salmonid Streams are all incorporated into the basic water quality standards. Legislative proposals were introduced in the 1989 session which included 1.) Extension of the length of variances to allow for a rule that could be administered more reasonably; 2.) A requirement to evaluate and determine the use designation of all waters of the state. No legislation was passed, however, and since public hearings have been concluded, the water quality standards could be brought back to the board for final adoption in the next several months.

The study being conducted by Indiana University northwest Environmental Research to characterize sediments in the Indiana Harbor Canal continues with

deposition in the Great Lakes. Substances of most concern in the Great Lakes are alkylated lead compounds, benzo-a-pyrene, hexachlorobenzene, mercury, total polychlorinated biphenyl, 2,3,7,8,tetrachlorobenzo-p-dioxin and 2,3,7,8,tetrachlorodibenzofuran.

In addition to those compounds of special concern to the Great Lakes, Indiana has begun to identify and quantify health impacts from a number of other hazardous air pollutants. In addition to pollutants regulated under existing federal law, Indiana is focusing on a list of twenty-nine (29) air toxics. For the twenty-nine (29) compounds we have a data base which includes draft Acceptable Ambient Concentrations (AAC) for each compound. The AAC is based on the short term eight hour Time Weighted Average (TWA) threshold limit value developed by the American Conference of Governmental Industrial Hygienists (with the safety factor) to convert to less healthy populations. The AAC for carcinogens is an annual concentration based on the unit risk factor developed by EPA's Cancer Assessment Group which assumes zero (0) threshold and linear concentration effects. The twenty-nine (29) compounds were selected based on data from a survey performed in 1984, and review of source information existing at that time. The program will be expanded in the future as the data base grows from other available sources of information including data now being collected as a result of the requirements of section 313 of the Superfund Amendments and Reauthorization Act (SARA).

VI. Site Cleanup Activities

Indiana's portion of the Great Lakes drainage basin has been the scene of intensive industrial activity for nearly a century. There are now over 200

facilities on the CERCLA list within the basin. Currently there are seven

Superfund sites, and three "State-initiated" cleanup sites being actively addressed. One site is in remedial design stage, three are in feasibility study, one is in remedial investigations/feasibility study and two are in remedial investigation. There have been several planned removals of hazardous material from sites. Due to the large number of sites, considerable resources and time will be needed to address the problem.

VII. Indiana Legislature

In addition to the groundwater legislation mentioned previously, the legislature took several other actions which will affect toxics in the Great Lakes Drainage Basin. Used oil was banned as a dust suppressant on roads and parking lots. A provision to allow the Indiana Department of Environmental Management to enter into "mixed funding" agreements will expedite some site cleanups, where a reluctant "responsible party" could stall activity. IDEM can now elect to provide this share of funding of this "reluctant party," and recover it's cost later through a separate court action. The legislature also provided an increase in funding of \$6.2 million for the biennium budget for Federal, State and voluntary cleanups. Finally, transfers of commercial property are now subject to disclosure of contamination, if the property is on the CERCLIS list, has/had underground storage tanks, or is/was a SARA Section 313 reporting entity. Additional information on these issues is available from Indiana Department of Environmental Management Office of External Affairs, 105 S. Meridian Street, Indianapolis, IN 46206.

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

Implementation of the Great Lakes Toxic Substances Control Agreement July 1989

Federal Role in Regulating Toxic Substances

The key to effective implementation of the Great Lakes Water Quality Agreement is the development of uniform water quality standards, based on water quality criteria for protecting human health, aquatic life and wildlife. In addition, the following areas need to be addressed: mixing zones/zones of initial dilution, procedures for establishing water quality-based effluent limits in permits, antidegradation, biomonitoring requirements, pollution prevention, use designations and variances from meeting water quality standards.

The water quality criteria will represent means of measuring use attainment in the Great Lakes and assuring that designated uses are fully protected. Achievement of these criteria, however, is only an interim step. Over the long term, U.S. Environmental Protection Agency (U.S. EPA) and the states will seek to minimize loadings of toxic substances, particularly persistent, bioaccumulative pollutants, with the goal of virtual elimination. To accomplish this goal, technology-based requirements and enhanced antidegradation policies will be used to prevent pollution. Specific pollution prevention proposals for reaching this goal will be developed concurrently with developing the other elements of the water quality standards.

Much of the initial development of the guidance will be done by U.S. EPA, using existing federal criteria and state water quality standards as a starting point. U.S. EPA envisions three groups directly involved in this Great Lakes initiative: a steering committee, a technical work group, and a public participation group. The steering committee will make decisions regarding key issues raised by the technical work group and the public participation group. This committee will be comprised of Water Division Directors from Regions II, III, and V; Water Program Directors from the eight Great Lakes states; a representative of the Indian tribes in the Basin; and the Director of the Great Lakes National Program Office (GLNPO).

The technical work group will assist in the development of the specific water quality proposals and will forward technical recommendations to the steering committee. It is anticipated that this work group will be a state/federal committee, comprised of representatives from each of the Great Lakes states, along with representatives from GLNPO, Regions II, III and V, and Headquarters.

The public participation group will interact with both the technical work group and the steering committee. U.S. EPA anticipates that the public participation group will elect (a) chairperson(s) who will solicit comments from members of the public participation group and coordinate interactions with the technical work group and steering committee. The chairperson(s) will be invited to observe decision-making sessions of the steering committee. The views of the public participation group will be incorporated, as appropriate, into the decisions made by the steering committee. U.S. EPA anticipates a broad base of representation on the public participation group, including individuals from environmental groups and associations representing industries and municipalities.

It is expected that U.S. EPA will complete the Great Lakes water quality guidance in time to impact the 1991 to 1993 triennial state water quality standards review process. The specific schedule for developing the guidance will be developed as part of a work plan developed by the technical work group and approved by the steering committee. The Steering committee will consider the feasibility of meeting U.S. EPA's proposed deadline.

A major goal of the Great Lakes Water Quality Agreement (GLWQA) is the virtual elimination and zero discharge of persistent toxic substances. Similar goal statements also appear in the Clean Water Act and the Great Lakes Governors Toxic Substance Control Agreement. "Virtual elimination" of toxic substances is a long-range goal that will require application of waste minimization and recycling, and further optimization of waste treatment technology. Specific pollution prevention proposals on approaches for achieving "virtual elimination" of the discharge of toxic substances need to be developed for the Great Lakes Basin.

To ensure a more consistent approach to meeting the obligations of the United States under the Great Lakes Water Quality Agreement, to ensure appropriate public participation in decision making related to the Great Lakes Water Quality Agreement, and to provide a basis for negotiation of water quality objectives and programs with Canada under the Great Lakes Water Quality Agreement, U.S. EPA and the Great Lakes states will do the following:

1. As a general rule, the United States will presume that the current U.S. EPA water quality criteria are applicable to the Great Lakes. The criteria will be the starting point for negotiations with Canada on specific objectives under the GLWQA. Objectives that are not equivalent to U.S. EPA water quality criteria will not be agreed to by the U.S. without a sound scientific basis that is consistent with U.S. EPA policy.
2. U.S. EPA will develop Section 304(a) guidance specifically designed for the Great Lakes Basin. U.S. EPA's guidance will include recommended water quality criteria, antidegradation

policies and implementation procedures. In accordance with Section 118(c)(1)(E) of the Clean Water Act, U.S. EPA will coordinate the development of the guidance with the states' development of water quality standards to protect the Great Lakes. Extensive public input will be solicited to help the efforts of U.S. EPA and the states.

3. As states review and revise the state water quality standards, antidegradation policies and implementation procedures, they will ensure consistency with the guidance developed by U.S. EPA for the Great Lakes Basin.
4. The guidance for the Great Lakes Basin will be used by the United States in further negotiations with Canada on GLWQA objectives.
5. Pollution prevention guidance will be developed so that over the long term, the U.S. can go beyond the Great Lakes water quality criteria and proceed toward the goal of virtual elimination of the discharge of toxic substances.
6. In the interim period, prior to the completion of the Great Lakes guidance, the Great Lakes states will agree to review water quality program requirements for consistency with the goals of the GLWQA. States will offer the public in the Great Lakes Basin an opportunity to comment on the consistency of its program requirements with the GLWQA.

Air Quality Division staff have proposed draft language for amending the federal Clean Air Act to protect the Great Lakes and other aquatic ecosystems from deposition of air toxic compounds. The proposal focuses on the development of emission standards which reflect maximum achievable controls for air emission sources of persistent pollutants of concern in the Great Lakes Basin. This proposal incorporates special thresholds for minimum source size (emission rate) to address concerns that cumulative loadings to surface waters from sources of relatively small individual emission rates may accumulate to levels of concern for human health and environmental protection.

Michigan staff have led extensive discussions and made revisions to the federal amendment proposal in order to reach regional consensus support on the concepts from the other Great Lakes air directors. The proposal has also been endorsed by the Great Lakes Environmental Administrators for the Council of Great Lakes Governors. Air Quality staff have worked with the Council to develop summary documents highlighting priority issues for Clean Air amendments to inform appropriate legislative offices and interested parties of our Great Lakes concerns and recommendations. Department of Natural Resources top management representatives met with U.S. Representative John Dingell's staff to discuss possible amendments to his HR4 legislative package in order to more fully address Great Lakes concerns.

Staff are analyzing several legislative proposals for amendments to the federal Clean Air Act to address air toxic emissions. Suggested additional language for protection of aquatic ecosystems is being developed for S816, HR2585 and the Bush Administration legislative packages. Efforts will be ongoing to ensure that federal amendments will adequately address aquatic ecosystem concerns.

Permitting

Surface Water Quality Division is preparing a draft set of revised administrative rules to incorporate the anti-backsliding concept into the wastewater discharge permit system. A public advisory committee--formed in 1987--will review the draft rules when completed.

Surface Water Quality Division's "Five-year Basin Strategy" been completely implemented for all major dischargers. This strategy calls for NPDES permit reissuance for all major discharges so that one-fifth of the waterbodies in Michigan are assessed each year on a five-year repeating basis. Thus all discharges of individual toxic pollutants to a given waterbody are considered together to ensure that cumulative impacts will not exceed the receiving water standards.

A permitting workshop for representatives of the Great Lakes states was organized by the Council of Great Lakes Governors and held in Chicago in June 1989. The purposes of the meeting were to:

- a. Develop better understanding of the water quality and permit programs in other Great Lakes states.
- b. Discuss issues of mutual interest.
- c. Identify issues which may cause future conflicts between the states.
- d. Report to the Great Lakes Environmental Administrators on the discussions of the meeting and any recommendations from the work group.

Hazardous Waste Management

Michigan's Environmental Technology Board has developed preliminary recommendations on how waste reduction should be addressed in the state. The Board is recommending the establishment of a "Michigan Industrial Waste Reduction Partnership." The partnership will be composed of industrial, governmental, academic and public representatives. Over the next 12-18 months, it will devise a strategy for promoting waste reduction and increasing awareness in industry of the benefits of waste reduction. The Environmental Technology Board's final

recommendations will be submitted to the Governor by September 1, 1989.

The DNR's Office of Waste Reduction and the Department of Commerce's Waste Reduction Assistance Service have been fully staffed. These offices are moving forward with their joint venture to provide direct waste reduction assistance to selected industries and to identify and remove regulatory impediments to waste reductions.

Waste Management Division distributed grants totalling \$68,000 to six communities under the Clean Michigan Fund to run household hazardous waste collection days. Three household hazardous waste collection centers were also funded under the first round of the Quality of Life Bond program. These grants totalled \$300,000.

A new commercial hazardous waste treatment facility was sited in Michigan during 1988. The facility is designed to treat aqueous inorganic wastes.

New legislation has been enacted which establishes a special regulatory program for ash produced from the incineration of municipal solid waste. The new law exempts ash from regulation as a hazardous waste and provides comprehensive new regulations under the Michigan Solid Waste Management Act.

Michigan amended its hazardous waste rules to facilitate licensing of research and experimental hazardous waste treatment facilities. New rules are under development to facilitate licensing of full scale hazardous waste treatment disposal facilities which utilize innovative, non-standard technologies.

Waste Management Division has completely rewritten all of the state's solid waste administrative rules. The new rules propose substantial increases in landfill license standards. The rules will be released for public comment in September 1989.

This type of meeting is expected to be held annually to improve interstate communication on important water permit issues.

Great Lakes Protection Fund

Voters overwhelmingly approved the \$800 million Quality of Life Bond proposal in November 1988 which included Michigan's contribution of \$25 million to the Great Lakes Protection Fund. Legislation to implement Michigan's participation in the Great Lakes Protection Fund was signed into law by Governor Blanchard July 25. Michigan's \$25 million contribution to the Fund will be made as soon as the 1989 Supplemental Appropriations bill is passed. The legislation establishes an advisory committee to assure broadly based public input to advise the state representatives to the Great Lakes Protection Fund Board of Directors and the state Water Resources Commission, the latter of

which is responsible for making the final determination of grants for state projects under the Great Lakes Protection Fund.

Information Exchange

Air Quality Division staff arranged and facilitated an air toxic workshop for state regulatory staff on July 25 and 26, 1989 to continue work begun at the July 1987 workshop to develop a unified regional Great Lakes air toxics strategy. Representatives from U.S. EPA, Environment Canada and the Center for Clean Air Policy also attended.

Attendees split into two work groups focusing on emission inventory and permitting issues, respectively. Emission inventory work products included an agreement on the general regional inventory structure and proposed schedule for two-phase development of a point, area, and mobile sources database. The permitting work group refined several working documents developed by Michigan staff.

Work products of the permitting work group include a draft permitting agreement, a draft petition for federal amendments to the Clean Air Act for air toxic substances, and a draft resolution for federal assistance to the Great Lakes states' air agencies in Great Lakes protection efforts. This group also discussed a proposal developed by Michigan staff for state legislation to obtain full authority to require Best Available Control Technology on both new and existing air toxic sources.

Fish Consumption Advisory

The 1989 Public Health Fish Consumption Advisory for the Great Lakes provides the same information as the 1988 advisory. The Great Lakes Fish Consumption Advisory Task Force met in Chicago on July 18 and 19, 1989 to discuss the Governors' Toxic Substance Control Agreement's directive to develop common fish consumption advisories for each of the Great Lakes. Based on these discussions, the following timetable was agreed to by the Great Lakes states and Province of Ontario to develop uniform fish consumption advisories.

1. Re-evaluate standardized monitoring and sampling methods at the November 1989 Task Force meeting.
2. Complete literature review on human health effects data needs for the November 1989 Task Force meeting.
3. Evaluate the public's understanding and awareness of current Great Lakes Fish Consumption Advisories for discussion at the November 1989 Task Force meeting.

4. Issue a joint risk communication pamphlet February 1990.
5. Complete a Market Basket Survey comparing concentrations of toxic chemicals in commercially sold fish versus Great Lakes sport caught fish by September 1991.
6. Develop common criteria for issuing Great Lakes Fish Consumption Advisories by January 1992.

Public Involvement

Surface Water Quality Division completed three Remedial Action Plans (RAPs) in 1988 after reviewing public comment on the drafts. Saginaw Bay/River and the Rouge River RAPs were submitted to the International Joint Commission (IJC) in October 1988 and the Clinton River was submitted in November 1988. Comments on these RAPs were received from the International Joint Commission and are currently being addressed by the respective RAP coordinators from Surface Water Quality Division. The Kalamazoo draft RAP was reviewed at a public meeting in 1988. Comments were received and are currently being incorporated into the final draft which will be submitted to the IJC. Stage one RAPs for the Detroit, St. Clair, St. Marys and Menominee Rivers are in various stages of development. Public meetings to review these RAPs will be scheduled in 1990.

Dredging

Following nearly one and a half years of deliberation on the issue of overflow dredging, the Water Resources Commission (WRC) determined at its December 15, 1988 meeting that in general, overflow dredging in areas with contaminated sediments results in unacceptable impacts on designated uses. Further, in areas where dredged sediment is not suitable for open water disposal, these sediments are considered contaminated. Finally, it was determined that pursuant to Rule 92 of the WRC rules, Water Quality Standards apply to overflow dredging in contaminated areas unless the Water Resources Commission determines, upon demonstration made by the person undertaking the activity, that there will be no unacceptable adverse impacts on designated uses.

To implement the Water Resources Commission's determination, Surface Water Quality Division staff have reviewed recent sediment chemistry data from three Corps of Engineers project areas (Saginaw River and Bay, St. Clair River and Detroit River). Based on this data review, the following conclusions were reached:

1. Sediments in two reaches of the Saginaw River are contaminated for purposes of this determination, and pursuant to Rule 92, the water quality standards apply. Therefore, overflow dredging should not be used in the Saginaw River near Crow Island (approximately 2 miles) and from the Middle Grounds to the confined disposal facility in Saginaw Bay (approximately 11.5 miles).

2. Sediments in the St. Clair River are not contaminated for purposes of the determination by the Water Resources Commission. Therefore, overflow dredging is not restricted in the St. Clair River. However, this project will be re-evaluated when new data become available.
3. Sediments in the Detroit River are not contaminated for purposes of the determination by the Water Resources Commission. Therefore, overflow dredging is not restricted in the Detroit River. However, this project will be re-evaluated when new data become available.

Groundwater Quality

Legislation was passed in 1987 to establish an underground storage tank registration program. Legislation was passed in 1988 and amended in 1989 to enable the Department of Natural Resources to take immediate corrective action on leaking underground storage tanks to protect groundwater and to provide access to funding corrective actions by private parties in cases where cost exceed \$10,000 for any single, specific tank system.

Under the leadership of the Groundwater Coordinating Council, made up of the Deputy Directors of the Departments of Natural Resources, Agriculture and Public Health, the Michigan Groundwater Protection Strategy and Implementation Plan has been developed by the Office of Water Resources.

The draft strategy has been reviewed by a broad-based public advisory committee and will be submitted to the federal Environmental Protection Agency by October 1.

Other groundwater protection bills have been introduced to provide well head protection, mandatory well testing, and establish groundwater standards.

Air Quality

Michigan staff are pursuing federal funding to assist in obtaining contractual services for development of the regional air emission inventory. Michigan staff are also initiating efforts to work with Canadian agency representatives to ensure compatibility of computerized air toxic emission databases. Michigan staff are cooperating with the U.S. EPA Transboundary and Lake Michigan projects to compile air toxic source and emissions data for Great Lakes pollutants of concern.

Michigan staff led discussions to refine the Great Lakes Air Permitting Agreement, which is supported by the Council of Great Lakes Governors. Provisions of this agreement specify that state air agencies will require Best Available Control technology for toxics on new and existing air sources of several critical pollutants wherever possible, pursue additional authority if

needed, require source testing as appropriate, enter permit information into national databases, and exchange permit information between the states. Michigan staff have drafted an implementation plan, including procedures for permit evaluation and identification of resource and authority needs for full implementation of the agreement provisions. This draft is undergoing review and will be implemented upon final approval.

The Michigan Air Pollution Control Commission and the Director of the Department established an Air Toxics Policy Committee to develop a new long-range strategy for Michigan including rules for regulating new and existing sources of air toxins. The committee is finalizing draft regulations for new and modified air toxics sources. These regulation proposals have been analyzed by Air Quality Division staff. As currently drafted, these regulations for new sources would be in accordance with the Toxic Substances Control Agreement.

Nonpoint Source Pollution

The statewide nonpoint source assessment and nonpoint source management strategy were submitted to the U.S. Environmental Protection Agency in August 1988 after receiving extensive public comment. An augmented, updated strategy was submitted to the EPA completing the strategy document in the fall of 1988. The statewide nonpoint source assessment was approved by the EPA, but the state is still awaiting the EPA's approval of the strategy itself with approval expected by August 1989.

The strategy outlines federal, state and local programs to control nonpoint source pollution. It establishes procedures to identify priority watersheds, and will utilize interagency (federal, state and local) teams to work with those watersheds to identify water quality problems and the appropriate management practices to correct those water quality problems.

Summary of Minnesota's Strategy for Implementing the Great Lakes Toxic Substances Control Agreement

Introduction

The Toxic Substances Control Agreement signed by the Governors of the eight Great Lakes states in May of 1986 contains a number of principles, commitments and initiatives to achieve mutual goals, and serves a major purpose by providing a focus for the states to collectively work on the difficult task of toxics control.

The Agreement lists several elements to achieve the desired level of management. The following is a summary of activities which Minnesota has undertaken to implement the Toxic Substances Control Agreement.

Federal Role in Regulatory Toxic Substances

Minnesota continues in a number of ways to participate in the management of the Great Lakes. This is done directly through the implementation of its own environmental regulatory programs, as well as through working with other institutions including the International Joint Commission (IJC) Water Quality Board and its Committees and Work Groups, the U.S. Environmental Protection Agency (EPA) through its annual program work plans in water, air and hazardous waste, and the Great Lakes Commission (GLC).

Minnesota has initiated a two-part toxicity testing strategy as part of a larger toxicant control strategy to protect aquatic life from toxicity in Minnesota's surface waters. The initial part of the strategy involved screening and prioritizing all point source dischargers for their potential of having toxic effluents. The second part was the establishment of a routine permit processing phase that accomplishes thorough toxics review.

During the review and prioritization phase four criteria were employed in a matrix to make the assessment: 1) dilution ratios at low flow; 2) previous acute and chronic toxicity testing conducted on effluents; 3) review of chemical specific data from applications, monitoring reports, and other survey data; 4) review of categorical and pretreatment discharges. A substantial part of this review was needed for the Section 304(1) effort required in the 1987 Clean Water Act amendments. Dilution ratios for all dischargers where 7010 low flows were available were calculated. Many dischargers discharge to small receiving waters whose low flow values are unknown. Extensive efforts are being made to obtain the absent data. All previous positive toxicity tests were reviewed. Those with true positives will receive priority status, while those that are questionable or have problems with testing artifacts will be the subject of retesting as part of the Section 304(1) process. Ambient water quality, sediment, and fish tissue data for toxicants have been reviewed. A review of the various forms of effluent monitoring data and categorical/pretreatment dischargers has been integrated with low flow and toxicity testing data and a 304(1) short list was produced. One Great Lakes discharger, Western Lake Superior Sanitary District, was included on the 304(1) short list and a permit was issued with water quality based limits and Schedule of Compliance.

A procedure document for toxicant review in permit processing has been written and is being utilized. It outlines chemical specific and toxicity testing reviews which are to be conducted at the time of permit issuance or as a matter of compliance review.

Permits are being issued which contain three of the four toxicity testing options which are applied to dischargers known or suspected to have toxic effluents. Some initial permits were written with pass/fail requirements to trigger toxicity reduction evaluations (TREs). This is being replaced with a policy that examines toxicity from the standpoint of duration and frequency of toxicity, strength of toxicity, and species sensitivity.

Clean Water

Following the triennial review and revision of Minnesota's Water Quality Standards, the rule (Minn. Rules pt. 7050.0180) became effective on March 7, 1987. Lake Superior is protected by the nondegradation component of the above rule. In addition, the incorporation of specific water quality standards for toxics and a procedure for developing water quality standards for toxics will be added to the rules for adoption in February 1990. By August 1988, the Minnesota Ground Water Protection Strategy had been reviewed and received approval from the Minnesota Pollution Control Agency (MPCA) Citizens Board, the Minnesota Environmental Quality Board (EQB), and Governor Rudy Perpich. The central theme of the strategy is the need for protection of our ground water resource from pollution and misuse and the need for strong efforts toward public information and education on the myriad of ways in which human activities impact ground water. The same team of people who developed the Strategy worked on drafting legislation to implement its key provisions as a Governor's initiative for the 1989 Session.

After extensive hearings, a new bill was assembled and passed as the Ground Water Protection Act of 1989. Most significantly, the Act contains a Degradation Prevention Goal which reads as follows:

It is the goal of the state that ground water be maintained in its natural condition, free from any degradation caused by human activities. It is recognized that for some human activities this degradation prevention goal cannot be practicably achieved. However, where prevention is practicable, it is intended that it be achieved. Where it is not currently practicable, the development of methods and technology that will make prevention practicable is encouraged. (Laws of Minnesota 1989, Chapter 326)

The task at hand is to implement the State's ground water programs with this goal as guidance.

Permitting

Minnesota participated in developing the permitting strategy for the Great Lakes Council of Governors. The strategy was completed in August 1987. A number of areas were highlighted in the Agreement, including the following:

- 1) States are to meet annually to share and discuss problems and solutions related to water quality permitting.
- 2) Minnesota has completed the documentation for a calculating water quality criteria. Procedures for transforming these criteria to effluent limitations are also being documented. As mentioned, the revisions to water quality standards for toxics is proposed for February 1990.

Hazardous Waste Management

Minnesota has final authorization under the Resources Conservation and Recovery Act (RCRA) from the U.S. EPA for implementation of the state hazardous waste program. Minnesota's Hazardous Waste Regulations (Minnesota Rules Chapter 7045) cover generators, transporters, storage facilities, recycling facilities, treatment facilities, and disposal facilities.

Minnesota has expanded its Household Hazardous Waste Program over the last year. During 1988, 15 single event collections were held and 3 permanent sites were developed. Education and information/waste exchange components were enhanced to increase the overall effectiveness of the program. The state's pilot pesticide collection project held five agricultural pesticide collection events throughout Minnesota. This activity has been made into a permanent collection effort to be carried out by the Minnesota Department of Agriculture.

Minnesota's storage tank program requires the owners and operators of tanks with releases of hazardous substances to clean them up. The program provides partial reimbursement to people who clean up leaks through the state petro fund program. Regulatory programs to prevent leaks are being expanded.

In August 1987, the MPCA received authority to issue administrative penalty orders (APO). Since that time the MPCA has issued 25 APO's to various handlers for hazardous waste violations. The APO authority has greatly improved the MPCA's ability to resolve hazardous waste noncompliance in a timely and efficient manner. The state has also stepped up its efforts in the prosecution of environmental crimes. The MPCA has assisted the state Attorney General and county attorneys in the case development and investigation of hazardous waste crimes. In addition, the MPCA and the attorney general's office have provided training to state and local law enforcement officials in an attempt to heighten awareness. It is expected that these efforts will further increase the effectiveness of the state's environmental crimes enforcement program.

An inter-agency and industry work group has met for several years to discuss issues related to the management of used oil. The MPCA expects to adopt rules in January of 1990 that incorporate existing federal regulations, and add a few additional controls. Recent concerns about the export of used oil contaminated with hazardous waste from the United States to Canada has prompted the MPCA to further explore industry practices in Minnesota, although no evidence exists that such exportation is occurring from the state.

Infectious Waste

The result of the Attorney General's study of infectious waste management was preparation and passage of the Infectious Waste Control Act of 1989. An overriding issue with infectious waste is how to manage the materials that are generated. The new law requires that generators prepare management plans for handling, transportation, and proper disposal of infectious waste. Rules are currently being developed to implement the new law. Minnesota, along with the other Great Lake states, opted out of the federal Medical Waste Tracking program.

Ash

The temporary program for storage, sampling, and testing of ash from municipal solid waste incineration was adopted in April 1989 as an interim management program until the final rules can be developed for testing, management and disposal. There are currently 10 facilities operating and 3 in various stages of development in Minnesota which must comply with the temporary program. In related activities, several studies have been funded to try to reduce the toxicity of the ash by removing problem materials from the waste stream before incineration.

The MPCA developed a Memorandum of Agreement (MOA) with the Department of Agriculture to identify activities for pesticide and fertilizer issues. The MOA includes areas of concern such as complaints, release incidents, cleanups of contaminated areas, coordination for inspections, enforcement activities, and sampling, and sets up a formal structure for communication on key issues of mutual concern. An Agency pesticide coordinator was appointed to handle inquiries relating to pesticides and a MOA between the Agency and the Department of Agriculture was negotiated for handling pesticide issues which crossed programmatic responsibilities of the two agencies.

In the past year, the MPCA has provided special hazardous waste training to other state agencies and has developed a contract for hazardous waste disposal by state agencies.

The MPCA was awarded a \$320,000 RITTA grant over a two-year period from the EPA in September 1988 for hazardous waste training and technical assistance. The grant is divided into two parts. The first part, accounting for 80 percent of the grant, is designated toward the development and implementation of an industrial waste minimization pilot project which is now ongoing. A survey of

solvent generators and a variety of educational materials on waste minimization are being developed. Additional factory site-specific waste audits and waste minimization recommendations are also being carried out for ten companies. The remaining 20 percent of the grant is for the development and implementation of a five year hazardous waste state training action plan. The plan is currently in draft form and under review.

Solid Waste Rules and Recycling Legislation

New comprehensive solid waste management rules were formally adopted in November 1988. The rules include requirements for facilities siting, design, operation and performance, including ground water quality standards and financial assurance for closure and post-closure care.

No new waste reduction and recycling legislation has been passed. After failure to pass a bill in the 1988 session, the Governor appointed a Select Committee on Recycling and the Environment (SCORE) to develop consensus on the many waste reduction and recycling issues being discussed. The SCORE report was the basis for a bill which failed to pass in the last hours of the session. It is possible that this bill will be considered in a Special Session in fall of 1989. The bill includes an array of recycling and waste reduction programs to be funded at both the county and state levels. The proposed funding would be generated from a six percent sales tax on garbage collection, although other funding proposals were a variable tax based on the method of garbage disposal, i.e. landfill, incineration, or recycling, and a special tax on problem materials.

Basin Wide Notice of Discharge Permits

Minnesota has continued to participate through the Council offices in receiving and providing notice to other states as requested.

Accidental Discharge of Pollutants

The MPCA continues to maintain a 24-hour, 365-day per year response system for spills. The first response is always to seek adequate cleanup by the responsible party. State Superfund and "Petro Fund" authorities can be used to force parties responsible for contaminated sites to clean-up. If they are unable or unwilling to do so, both funds provide monies for state funded emergency and long-term cleanups. The Regional Response Team has become more active; the MPCA is participating in this Team's planning efforts for response to major incidents.

Atmospheric Deposition

The Agency has advanced in its development of a regulation controlling emissions from municipal waste incinerators. Currently, a draft rule has been written and is undergoing public review and comment. We anticipate promulgation of a final rule in the summer of 1990. In addition, the Agency

has developed a formal policy for addressing air toxic emissions from medical waste incinerators. This policy is expected to be implemented until regulations for medical waste incinerators can be promulgated, a process expected to begin in 1991.

In an effort to assess the environmental impacts of incinerators, the Agency has recently received significant funding from our legislature to investigate this issue. A grant of \$250,000 has been received to evaluate air toxic emissions from medical waste incinerators. Also, a \$300,000 grant has been awarded to the Agency to assess the environmental fate of dioxins and dibenzofurans through an aquatic food chain. In addition to these grants, the Agency routinely requires extensive environmental monitoring of dioxins and dibenzofurans, lead and mercury in permits for municipal waste incinerators. These requirements most often stipulate that pollutant levels be measured in water, sediment and fish both prior to start-up of the facility and on a periodic basis once operation has begun.

In terms of atmospheric deposition of air toxic pollutants from sources other than incinerators, the agency continues to assess and regulate air toxic emissions from numerous source categories through the permitting process. We are also developing a data base of information on the toxicity and environmental fate of persistent pollutants in anticipation of promulgation of an air toxics regulation in 1991.

Our acid deposition program continues to monitor wet and dry deposition and lake and stream chemistry in order to determine compliance with our acid deposition standard and to meet our legislative mandate to re-evaluate the standard in 1991. We have also recently received additional funding for research projects to study other related aspects of acid deposition and its effects on the environment.

Monitoring and Surveillance

The Agency has continued to participate with the IJC and EPA on the monitoring program under the Great Lakes International Surveillance Plan (GLISP), as well as in extensive tributary monitoring as part of the Lake Superior Intensive study by the Upper Lakes Reference Group. The data is computerized so that it is compatible for doing loading calculations for the entire lake.

Minnesota continues to collect water quality parameters requested by the IJC. These include chloride, total lead, calcium, total sodium, total sulfate, and silicate. Data for these parameters are collected at two tributary stations during nine months of the year as part of the Agency's routine monitoring program. The tributary stations are Beaver River and St. Louis Bay.

In St. Louis Bay, the Minnesota Department of Health has continued to issue fish consumption advisories due to PCB and mercury levels. The Agency is continuing with PCB and mercury analyses of fish flesh. Low levels of dioxin have been found in fish tissue. In cooperation with Wisconsin, Minnesota has

initiated the development of a Remedial Action Plan (RAP) for the St. Louis "area of concern." The Agency has also completed extensive fish tissue monitoring for PCBs and mercury in Lake Superior.

Information Exchange

Minnesota is participating through the Council. In addition, Minnesota has participated in Task Force meetings on dredge material and has submitted to the Task Force a report on how Minnesota handles in-place pollutants. Staff also participated in the Dredging Workshop held in September 1987 in Chicago.

A workshop on land application of sewage sludge was held in Chicago, Illinois in March 1987. Representatives from the Council of Great Lakes Governors, EPA Region V, Minnesota, Wisconsin, Indiana, Ohio, Michigan, and Pennsylvania were present. The report on the Workshop with its accompanying recommendations was forwarded to the Council of Great Lakes Governors on August 21, 1987.

Minnesota has participated in a number of additional workshops over the past year, including the September 1987 Biomonitoring Workshop held in Detroit and the Solid Waste Incineration Workshop sponsored by the MPCA also in September 1987.

Fish Consumption Advisories

Over the past year, Minnesota has pursued an interagency approach (involving the Agency, Department of Natural Resources, and Health Department) in continuing to develop and refine compatible fish consumption advisories on Lake Superior. We continue to have compatible advisories among the United States jurisdictions on each lake, however, health advisories between lakes should also be sought.

Human Exposure and Health Effects Assessment

Minnesota continues to participate through the health effects working group through the Minnesota Department of Health and the Council.

In addition, the Agency has developed procedures manuals for making decisions regarding toxics in several areas. The Agency's solid waste program has developed a "Health Risk Assessment Procedures for Superfund Hazardous Waste Sites," completed in draft form on December 1, 1987. Finally, a draft water quality document, "Guidelines for the Development and Application of Water Quality Criteria for Toxic Substances" outlines the Agency's assumptions and procedures for developing aquatic life criteria. The document includes procedures for developing fish consumption numbers based on the human consumption of sport-caught fish, reference classes for noncarcinogens and potency slopes for carcinogens. It provides that a fish consumption advisory will parallel the criteria. The proposed procedures are being reviewed by a Toxics Technical Advisory Committee prior to being finalized.

Public Involvement

The development of the Remedial Action Plan (RAP) in Minnesota will entail considerable involvement by the public during the next two years. A Citizens Advisory Committee has been formed to provide input into the RAP, as well as scientific and technical advisory committees for each of the pollution issues.

The RAP will focus on restoring the adversely impacted beneficial uses of St. Louis Bay. Extensive public involvement in the development of the RAP is essential to obtaining local ownership of the pollution problems and developing a plan that can be effectively implemented.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

IMPLEMENTATION OF THE
MEMORANDUM OF UNDERSTANDING ON CONTROL OF TOXIC SUBSTANCES
IN THE GREAT LAKES ENVIRONMENT

ANNUAL REPORT

New York State continues to be committed to the principles set forth by the Great Lakes Toxic Substances Control Agreement of 1986 and the Memorandum of Understanding on Control of Toxic Substances in the Great Lakes (MOU) which was entered into on June 13, 1988, by the Great Lakes Governors and Premiers. This commitment is demonstrated through implementation of various toxics control programs as well as through participation with other institutions including the International Joint Commission, Great Lakes Commission, the U.S. Environmental Protection Agency and other groups having interests in the management of toxic substances in the Great Lakes. A draft Great Lakes Agenda for New York State has been prepared by an inter-agency steering committee, comprised of 11 State agency members, which describes for each agency existing activities, additional needs, and recommendations for future policy and programs related to Great Lakes issues.

The focal point in New York State for Great Lakes toxics management programs is the Department of Environmental Conservation. In accordance with the 1986 Agreement, the Department prepared a Management Plan that describes on-going programs or policy documents and planned activities that address the commitments of the Agreement. That Management Plan is unchanged and serves as the basis for Great Lakes basin program activities related to toxic substances control. This report summarizes the activities that New York has undertaken during the past year to implement the Agreement and the MOU.

PERMITTING

New York controls toxic discharges from point sources through implementation of the State Pollutant Discharge Elimination System (SPDES). Permit limits are based on protection of human health, protection of aquatic life, and best available technology (BAT) including the State's best professional judgement (BPJ) of BAT in the absence of federal BAT guidelines, whichever is strictest. Under the Lake Ontario Toxics Management Plan, New York has committed to a review of BPJ-based permit limits on a five-year basis to assure they are in conformance with current technologies. Basin-wide allocations are carried out to insure that cumulative effects are accounted for in setting permit limits. The basic approach is chemical-by-chemical limitations, but biomonitoring is incorporated into permits where the use of that approach alone may not be sufficient to protect best uses. The SPDES permit system is used for discharges to both surface water and groundwater.

New York State maintains an active program in the development of new and revised water quality standards. Standards are developed for protection of human health and aquatic life and apply to both surface waters and groundwaters. New or revised standards for eight substances will be in rulemaking later this year.

The State's groundwater protection program is presented in the Long Island Groundwater Management Program (June, 1986) and the Upstate Groundwater Management Program (May, 1987). These documents discuss groundwater problems, existing groundwater management programs, and recommended actions for all levels of government to enhance protection of this important resource.

The current emphasis for New York's groundwater protection program is wellhead protection which is a mandate of the amended federal Safe Drinking Water Act and is a logical evolution of the State's efforts. The Department of Environmental Conservation plans to submit a wellhead protection program to the USEPA in 1989.

BASINWIDE NOTICE OF DISCHARGE PERMITS

New York is prepared to respond to all requests for information on new permits and water quality standards and will consider those factors presented in the MOU in the development of such information for other Great Lakes jurisdictions.

PROGRESSIVE REDUCTION OF LOADING OF PERSISTENT SUBSTANCES

New York considers that all persistent toxic substances are subject to control under its water quality programs. For point sources, the SPDES program is the primary means for regulation of toxic substance discharges to surface water and groundwater. Further reduction of toxics towards zero discharge will occur as a result of improvements in treatment technology reflected through federal BAT and the DEC commitment to review BPJ limits on a five-year cyclic basis. A plan is being prepared for the control of non-point sources of toxic substances and is due to be completed by September 30, 1989.

The Lake Ontario Toxics Management Plan, which was released in February 1989, contains the New York State commitments to activities that will reduce toxic inputs to Lake Ontario. For the Niagara River, New York is committed to a 50 percent reduction of specified toxic substances by 1996 under the Niagara River Toxics Management Plan.

ACCIDENTAL DISCHARGE OF POLLUTANTS

There were no reported spills in New York waters in the past year that could have significantly affected shared resources.

HAZARDOUS WASTE MANAGEMENT

New York has several program areas that encourage source reduction of hazardous wastes. Descriptions of requirements for generators of hazardous waste, fee programs, regulatory programs and landburial restrictions were provided in the May 1988 Great Lakes TSCA Annual Report. Last year the Department of Environmental Conservation began the rule-making process for regulations that will require the submission of a Waste Reduction Impact Statement (WRIS) with each application for a hazardous waste treatment, storage and disposal facility (TSDF). Until these regulations are finalized, WRISs are required as TSDF permit conditions.

The Department of Environmental Conservation co-sponsored with the Business Council of New York State, Inc. the First Annual Hazardous Waste Reduction Conference on June 7 and 8, 1988. That conference was attended by more than 250 individuals from government and industry and played a significant role in shaping the waste reduction policy in New York. A second conference is scheduled for June 13 and 14, 1989, and is expected to continue the dialogue between industry and government and further shape New York's waste reduction programs.

A "Hazardous Waste Reduction Guidance Manual" was prepared under contract with ICF Technology, Inc. to assist industry in reducing waste. A series of six workshops was held across New York State to explain the manual and provide assistance in waste reduction. The Department intends to build on this generic manual by preparing an industry-specific waste-reduction manual in 1989 and 1990 with co-funding from USEPA. New York was awarded a \$300,000 Source Reduction and Recycling Technical Assistance (SORRTA) grant by USEPA to assist in the expansion of the Department's hazardous waste reduction program. The SORRTA grant will expand New York's existing RCRA waste-oriented waste-reduction program to a multi-media effort.

The Northeast Industrial Waste Exchange, located in Syracuse, New York, continues to provide services to waste producers and waste users for the purpose of recycling these materials into manufacturing processes. The "Hazardous Waste Reduction Guidance Manual" includes descriptions of recommended recycling practices and available resources.

The Department of Environmental Conservation continues to impose fees on hazardous waste generators and facilities under the Environmental Regulatory Fee System and State Superfund Fee Program. A description of these programs was presented in the May 1988 Annual Report. The Department has been developing a statewide hazardous waste facilities siting plan based on regional and statewide needs for hazardous waste facilities. The completion of this plan has been delayed due to extensive public review and comments. Once the plan is finalized, the Department must immediately undertake activities to assist interested companies in establishing sites for the needed facilities.

New York State provides an annual appropriation of \$1 million to the New York State Center for Hazardous Waste Management in Buffalo, New York, which was established by the State Legislature in 1987 to contribute a better foundation for improved hazardous waste management practices in New York State. In its first year of operation, the Center established a vigorous research program, contributing \$1.5 million toward a total program cost of \$2.7 million.

Outreach initiatives were also undertaken, including sponsorship of several conferences, preparation of a special hazardous waste information and education needs assessment report for Niagara County, and the development of an industrial affiliates program. In its second year, the Center approved funding commitments for eight new projects at a total cost of at least \$1.3 million.

New York State continues to require and monitor the safe disposal of residual wastes generated by reduction, recycling and reuse activities.

A manual, entitled "How to Apply for a Permit to Construct and Operate a Permanent Household Hazardous Waste Collection Facility", and a series of fact sheets on the proper disposal of household hazardous waste were developed in 1989. These are available to the public and are expected to encourage more responsible disposal methods for household hazardous waste.

ATMOSPHERIC DEPOSITION

The Department of Environmental Conservation requires project sponsors to address impacts on both human health and aquatic life through preparation of an environmental impact statement prior to issuing permits for construction of large air emission sources. The assessment must include the impacts resulting from atmospheric deposition. During this reporting period, eight projects were evaluated specifically for impacts on aquatic life. In addition, the Department requires that impacts on fish and wildlife and on human health be considered in the development of ambient guideline concentrations used for permitting air emission sources.

MONITORING AND SURVEILLANCE

New York continues membership on the IJC Surveillance Work Group and implements the Great Lakes International Surveillance Plan to the degree that priorities and resources allow.

New York collects discharge monitoring data from point sources and tributary loading data and forwards information to IJC as requested. In general, the U.S. Environmental Protection Agency has assumed the responsibility for providing IJC with New York data under the Great Lakes Water Quality Agreement.

New York has committed to a major revision of its tributary loading program on Lake Ontario so that reliable loadings can be provided as called for under the Lake Ontario Toxics Management Plan. New York is participating with USEPA, Environment Canada, and the Ontario Ministry of the Environment on a major river monitoring program, which includes upstream and downstream stations, under the Niagara River Toxics Management Plan.

A pilot monitoring station is being established on the Buffalo River that will automatically adjust its sampling frequency to river flow and take large-volume samples for chemical analysis at low detection limits. This station will serve as a prototype for attempts to estimate nonpoint source toxics loadings to the Niagara River and is an integral part of remedial measures under the Buffalo River Remedial Action Plan.

New York continues to implement a biennial fish sampling and analysis program, which was initiated in 1978 to examine persistent pesticides, PCBs and mercury.

New York analyzed contaminants in waterfowl from the Great Lakes basin in 1983 through 1985. This information has been made available to parties to the Agreement but no specific action has been taken based on those data. In 1985 New York independently implemented a health advisory for human consumers of waterfowl.

FISH CONSUMPTION ADVISORIES

New York has cooperated in interstate/international discussions of fish consumption advisories. The last discussions occurred in 1987 and resulted in the issuance of advisories on the consumption of fish from Lake Erie and Lake Ontario that were compatible with data available at that time. In 1988 New York independently rescinded an advisory on Lake Erie channel catfish and carp when new data showed the previous advisory was unwarranted. All participating states were notified. New data support the current advisories for consumption of fish from Lake Ontario.

GREAT LAKES PROTECTION FUND

Legislation was introduced in the State Senate on April 17, 1989, that would provide for the establishment of New York's \$12 million contribution to the Great Lakes Protection Fund. This money would be generated through a surcharge on users of Great Lakes Basin waters.

PUBLIC INVOLVEMENT

New York State has emphasized the importance of public involvement and awareness in decisions affecting the Great Lakes. The following are some of the activities that have utilized public participation on Great Lakes issues:

- The Great Lakes Advisory Council to advise the Governor on development of Great Lakes policies.
- Citizen committees that work with the Department to prepare Remedial Action Plans for each of the Areas of Concern designated in New York State.
- Citizen members on technical committees established under the Niagara River and Lake Ontario Toxics Management Plan.
- Public representation on Fish and Wildlife Management Boards and on the Great Lakes Fishery Commission's Lakes Committees.

GREAT LAKES TOXIC SUBSTANCE CONTROL AGREEMENT UPDATE

OHIO

Permitting

The Ohio Environmental Protection Agency (Ohio EPA) has increased its emphasis on regulating the discharge of toxic substances to the Great Lakes. All air permits to install incorporate an air toxics review, including modeling if necessary, and formal determination of Best Available Technology for air toxic control. The Ohio EPA utilizes three mechanisms to control the wastewater discharge of toxic substances to the Great Lakes.

The first mechanism is issuing discharge permits to industries and municipalities which discharge directly to surface waters. The Ohio EPA utilizes Water Quality Standards and Best Available Treatment Technology to determine appropriate discharge limits for toxic substances. When information is not available to determine appropriate discharge limits, dischargers are required to collect the necessary information to determine appropriate discharge limits.

The second mechanism utilized is through the pretreatment program. The Ohio EPA requires industries to reduce the discharge of toxic substances to sanitary sewer systems to an acceptable level. The appropriate pretreatment level is determined by Water Quality Standards and other factors. Permits to industry and municipalities are used to enforce and monitor compliance with established pretreatment levels.

The third mechanism is the Management Plan for Land Application of Sewage Sludge. This mechanism is used to ensure, among other things, that sludge land applications will not result in the discharge of toxic substances to the Great Lakes environment.

The Ohio EPA completed its Surface Water Toxics Strategy in 1988. This document outlines the principles applied in establishing water quality based effluent limits for specific toxic chemicals and whole effluent toxicity.

The Ohio EPA has developed the 304(1) short list. The list names industries and municipalities which are creating stream impairment due to their toxic discharge. The list contains 25 entities, and more than half of these entities have discharges which may impact Lake Erie. The Ohio EPA finalized the list and incorporated toxic control requirements in the permits of these 25 entities by issuing Individual Control Strategies, as required by the Water Quality Act of 1987.

The Ohio EPA adopted regulations for issuance of permits to industrial users of POTWs in non-targeted areas under the authority of the pretreatment program, and issued thirty permits. These permits are used to control the discharge of toxics and other incompatible wastes to wastewater treatment plants in communities without pretreatment programs.

Hazardous Waste Management

Ohio has initiated a technical assistance program through the Ohio Technology Transfer Organization to assist businesses in waste minimization efforts. The Ohio EPA received one of ten RCRA Integrated Training and Technology Assistance grants funded by USEPA to provide hazardous waste management training and technical assistance to generators of hazardous waste as well as State employees assigned to hazardous waste management activities. The Ohio EPA also has funded, and expects to continue to fund, participation in the Northeast Industrial Waste Exchange. The Ohio EPA is continuing its waste management alternatives policy, requiring waste minimization plans as a condition for land disposal approval at off-site disposal facilities. The Ohio EPA also continues to conduct and participate in educational seminars on waste minimization.

The RCRA hazardous waste management permits for all land disposal facilities were issued by the federal deadline of November 1988. Land disposal facility permits specify updated operating conditions, including improvements in ground water monitoring. The RCRA permit deadline prompted many facilities to pursue closure of land disposal units (surface impoundments, landfarms, landfills and waste piles).

A comprehensive ground water monitoring evaluation is completed for each land disposal facility at least once every three years. Any violations discovered in these evaluations result in appropriate enforcement action, and may be included in special terms and conditions applied to the facility operating permit.

One of Ohio's more important Superfund sites, Fields Brook, is a tributary to the Ashtabula River, designated an area of concern by the International Joint Commission of the United States and Canada because of toxic sediment. The cleanup of Fields Brook, currently under study by USEPA, will be a significant component of the Ashtabula River Remedial Action Plan. The cleanup of other hazardous sites, either Superfund sites or non-Superfund sites, will contribute to the remediation of Ohio's three other areas of concern, the Black River, the Cuyahoga River and, to a lesser extent, the Maumee River.

Accidental Discharge of Pollutants

In the event that any discharge from Ohio would affect any other jurisdiction significantly, appropriate actions will be taken to notify the other jurisdiction. Ohio has adopted its own contingency plan and is a part of the Regional/National Contingency Plan. As part of these plans, a 24-hour telephone number [614-224-0946 or 1-800-282-9378 (in Ohio only)] of the Ohio EPA Emergency Response Office has been provided to the states adjacent to Ohio.

Atmospheric Deposition

A year long air toxics inventory survey has been completed and is used to guide air pollutant regulation efforts. Ohio also has initiated air point source evaluations to determine the presence of toxics in stack emissions for new sources of air contaminants. Regional air toxics analyses, or "urban soup" studies, also are underway to study air toxic contaminants effects on human health and Lake Erie aquatic life. The toxics issue is an integral part of Ohio's overall effort to evaluate:

- ° air emissions,
- ° precursors to "acid rain,"
- ° nutrient deposition onto Lake Erie, and
- ° human health and plant protection criteria.

In addition, eight existing industrial facilities were recently investigated to determine the presence of toxics so appropriate permit modifications can be taken. Recent actions have been taken to reduce toxic emissions from the incineration of municipal sludges which have been found to contain dioxin, and a new requirement is in place to require air strippers for on-site contaminated water clean-up projects. New rules are being drafted to regulate the incineration of infectious waste. Also, the Region V State air directors have initiated legislative amendments to the Clean Air Act addressing toxic deposition in the Great Lakes.

Monitoring and Surveillance

Monitoring for Lake Erie toxics loadings will continue to be evaluated in SFY 90. Present monitoring programs are being expanded to include specific toxic contaminants, mainly heavy metals and selected chemicals common to presently used pesticides known to be in wide use within the basin. As point source permits are renewed, additional monitoring requirements are being imposed on industrial and municipal dischargers to monitor their discharges for additional appropriate toxic contaminants. Through these efforts, more accurate tributary loads to Lake Erie can be determined. During 1986, Ohio EPA analyzed 35 sediment samples and approximately 40 fish tissue samples for toxic contaminants in the Lake Erie basin.

With respect to ground water monitoring, results from each RCRA hazardous waste land disposal facility are reviewed periodically. Considerable ground water monitoring evaluations (CMEs) were completed in October 1988 for all land disposal facilities. Inadequate monitoring will result in timely, and appropriate enforcement actions.

Information Exchange

The Ohio EPA remains active in the various Lake Erie commissions to assure the rapid and clear exchange of information. Ohio, through its Water Public Advisory Group (WPAG), has kept interested citizens, agencies and organizations informed of progress on toxics issues. This group has provided the Agency valuable information on problem identification. Extensive information has been gathered and distributed to interested parties in implementing "right to know" provisions of national legislation (Ohio has the lead on some of this). Computerized systems presently are being used and improvements are being made to allow rapid manipulation and dissemination of toxic information. With improved data availability, future Agreement implementation steps will be more coordinated and perhaps more productive. During the coming State fiscal year, several workshops and technical transfer meetings concerning toxics are being planned to expand the knowledge of key State employees.

Fish Consumption Advisories

The Ohio Department of Health (ODH) is the State agency having authority to issue fish advisories within Ohio. Such actions have been taken in the past when human health has been threatened. A coordinated effort has been established between ODH, Ohio EPA and the Ohio Department of Natural Resources to share available information and expertise to assure proper actions are taken. This will be helped by an anticipated expansion of fish tissue analysis programs within Ohio. Through the coordinated effort of many agencies, ODH has issued fish advisories on the lower reach of the Ashtabula River and the reach of the Black River within the City of Lorain for all fish species. A fish advisory for two groups of fish, carp and catfish, also has been issued for the entire portion of Lake Erie within Ohio.

Human Exposure and Health Effects Assessment

The Ohio Department of Health, as part of the Great Lakes Governors Health Effects Task Force, is cooperating with the International Joint Commission on human health effects in the Great Lakes. The initial step of this cooperative effort is to determine the availability of human health effects data bases for the Great Lakes basin, and the appropriateness of existing epidemiological studies. The ODH also has lead responsibility for the assessment of toxics exposure and effects on human health within Ohio. An initial step in this assessment is the geographic evaluation of available data. To assist in this aspect of the assessment, ODH and Ohio EPA are examining the potential use of the geographic information system presently being used by Ohio EPA. During SFY 90 this examination will be completed. If the GIS proves to be advantageous, human health data can be incorporated into the system to evaluate geographic influence of human health impairment and with addition of other toxics data bases (e.g., SARA III inventories) and the presence of toxic contaminants. The Ohio EPA already has developed a risk assessment computer model which will help determine health effects from new and existing sources of air pollution.

Great Lakes Water Quality Protection Fund

Ohio, through the Ohio Department of Natural Resources, has allocated some funds to meet its pledge to the Great Lakes Water Quality Protection Fund. Ohio also has participated in organizational meetings for the corporation responsible for investing and allocating the fund.

Public Involvement

The public has been involved with Ohio EPA primarily through the Agency's Public Advisory Groups which work to help formulate policy and program development and implementation, including toxics issues. Recently, a Public Involvement Program Task Force made recommendations to improve public involvement with the Agency. As a result of their recommendations, a new newsletter is being published, a Budget Priorities Task Force was developed to review and recommend priorities during the development of Ohio EPA's most

recent biennium budget, and a Director's Public Involvement Council is being formed. In the past, surface water toxics criteria development guidelines have been reviewed by a Public Advisory Group task force, and such existing task forces as Surface Water, Emergency Response, Hazardous Waste and others routinely offer input on various issues. In addition to the Public Advisory Group Program, Ohio EPA coordinates the State Emergency Response Commission, Solid Waste Advisory Council and the Inter-Agency Ground Water Advisory Council, all of which offer the public a voice in State environmental programs and policy.

Oversight and Implementation

The Ohio EPA through its various program divisions, and in association with other agencies, has developed various toxics strategy components necessary to the development of an overall Ohio Toxics Management Strategy. These components will be evaluated using the principle of the Toxics Agreement and will form the framework for the Ohio Toxics Management Strategy. As additional components of the Agency's strategy are developed, they will be incorporated into this framework.

The Ohio EPA issued the Toxic Substance Control Strategy as required by the Water Quality Act and submitted it to Region V for concurrence on April 1, 1988. The strategy addresses the control of toxic discharges to Lake Erie as well as other surface waters. The Ohio EPA utilized this strategy to determine the appropriate approach to control toxic substance control for a specific entity. The Ohio EPA incorporated toxic substance control requirements in most of the major permits issued in the last two years.

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IV STATE AND PROVINCIAL ACTIONS

ONTARIO

In 1971, the Province of Ontario entered into an Agreement with the Canadian federal government to begin restoration of the quality of the aquatic environment of the Great Lakes Basin. The Agreement was revised in 1976, 1982 and 1986 to address surveillance and phosphorous control needs as well as persistent toxic substances to reflect progressive changes in the international Great Lakes Water Quality Agreement.

Today, under the Canada-Ontario Agreement Respecting Great Lakes Water Quality (COA), federal agencies have joined with the provincial ministries of Environment, Natural Resources, and Agriculture and Food in implementing provisions of the agreement to protect the ecosystem.

The Memorandum of Understanding on Control of Toxic Substances in the Great Lakes Environment (MOU) signed in 1988 complements and builds upon the Revised Great Lakes Water Quality Agreement of 1987. Examples of several provincial programs which contribute to achievement of the goals of the Agreement and the MOU are described in the following.

CONTROL OF THE RELEASE OF TOXIC SUBSTANCES THROUGH MISA

The Municipal-Industrial Strategy for Abatement (MISA) is Ontario's initiative for reducing water pollution from industrial and municipal dischargers. The ultimate goal of MISA is the virtual elimination of persistent toxic contaminants from all discharges into Ontario waterways.

Under MISA monitoring regulations, dischargers must measure the types, concentrations and total amounts of toxic substances present in their effluents. Audits by the ministry will ensure this information is accurate and reflects actual operating conditions in the plant. This information will be used to formulate an effluent limits regulation.

Activities to date under MISA have resulted in promulgation of three monitoring regulations covering the Petroleum Refining, Organic Chemicals Manufacturing, and Iron and Steel sectors.

Monitoring regulations are expected to be promulgated by the end of 1989 for all remaining industrial sectors, which include the Pulp and Paper, Mining, Inorganic Chemicals, Metal Casting, Electric Power Generating and Industrial Minerals sectors. A regulation requiring monitoring of all Municipal Sewage Treatment Plant discharges is expected in early 1990.

The seven companies in the Petroleum Refining sector have completed approximately six months of monitoring, which includes collection and analysis of samples for conventional pollutants and toxic contaminants. Ontario's 19 organic chemicals manufacturing companies, seven iron and steel producers, 27 pulp and paper mills, and 22 inorganic chemicals plants will commence monitoring of direct discharges beginning in late 1989. Monitoring of discharges from companies within the remaining industrial sectors and from municipal sewage treatment plants will begin in 1990. Effluent limit regulations will be developed beginning in 1991 with the Petroleum Refining sector.

A municipal sewer use control program is being developed to regulate industries that discharge into municipal sewer systems. The sewer use control program will limit discharges from 22 industrial sectors that use municipal sewer systems. The ministry is planning to release a position paper on the program in 1990.

Stringent discharge limits have also been set by MISA for Ontario's nine kraft mills, which discharge an estimated 200 tonnes of chlorinated organic compounds daily. New control orders are scheduled to be issued in July 1989 requiring daily and monthly monitoring of kraft mill effluents in an effort to improve effluent quality before the MISA effluent limit regulation for the Pulp and Paper sector becomes law in 1991.

Enforcement activities are being upgraded to ensure compliance with the regulations and the effluent control limits specified.

DEVELOPMENT OF REMEDIAL ACTION PLANS FOR GREAT LAKES AREAS OF CONCERN

Since 1973, the Water Quality Board of the International Joint Commission (IJC), in its assessment of Great Lakes water quality, has compiled and updated a list of "Areas of Concern" where objectives or guidelines established to protect uses have been exceeded and remedial measures are required to restore beneficial uses.

In 1985, a new system was adopted by the IJC for tracking progress in Areas of Concern, representing a logical sequence for problem solving and resolution. "Remedial Action Plans" (RAPs) are to be developed for all 42 areas, of which 17 are located on the Canadian side of the lakes. RAPs are to include: definition of problem and extent of area affected; identification of uses impaired; description of causes of problems and pollution sources; remedial measures proposed; schedule for implementation and completion; identification of agencies responsible for remedial measures and a process for monitoring implementation. A surveillance and monitoring program is also to form part of the Plan,

whereby effectiveness of the remedial program and restoration of uses may be tracked and confirmed.

In Ontario, a major component of the development of the RAPs is the public consultation program. Public consultation serves to inform and stimulate interest in local water quality issues and provides a basis for generating broad community support for RAP implementation and generating the 'political will' necessary to restore uses in the area. Input is obtained from the local organized public advisory councils (municipalities, industries, universities, interest groups, general public) to better define use goals affected by water quality and remedial actions for achieving these goals in each Area of Concern.

Twelve of the 17 Areas of Concern are wholly within the Province of Ontario and five are shared with the United States. The RAPs are being developed under the direction of a RAP Steering Committee and RAP teams for each area include provincial and federal representatives. Provincial ministries have provided annual enhanced funding for RAP development of approximately \$2.3 million per year with a further \$2.3 million per year for RAP-related water quality studies and surveillance. Complementary federal government contributions to RAP projects amount to \$200 thousand per year. The current schedule anticipates completion of the 17 RAPs by the end of 1991.

Implementation of the RAPs will be based on achieving the MISA regulations as a minimum with over-riding water quality considerations directed at restoring impaired uses for recreation, water supply and aquatic life. To date remedial options, economic costs and environmental benefits have been developed for the Bay of Quinte and Hamilton Harbour. In the other Areas of Concern, problems and their causes have been defined and efforts are proceeding to develop remedial options.

Bi-national Remedial Action Plans

The five RAPs which Canada shares with the United States are: the St. Marys River, St. Clair River, Detroit River, Niagara River and St. Lawrence River.

In 1985, Governor Blanchard of Michigan and Premier Peterson of Ontario signed a "Letter of Intent" which committed both parties to develop joint RAPs for the St. Marys, St. Clair and Detroit rivers. For the St. Marys and St. Clair rivers, Ontario is designated the lead agency. Michigan is the lead agency for the development of the joint RAP for the Detroit River. Technical data and groundwork for the three projects will be largely based on the findings of the Upper Great Lakes Connecting Channels Study (UGLCCS) published early in 1989. This is a binational study undertaken to determine the current environmental conditions

of the rivers and it has led to recommended measures for remedial action.

Federal and provincial agencies in Canada have initiated a RAP for the Canadian side of the Niagara River. New York State will pursue a separate RAP for the American side of the river. Consultation between Canada and the United States will occur at various stages of the development of the RAP.

In the case of the St. Lawrence River Area of Concern, Canada and Ontario have agreed with New York State on the preparation of a joint statement of the problem and coordination of preparation of the respective RAPs at various critical stages.

LAKEWIDE MANAGEMENT PLANS

Lake Ontario Toxics Management Plan

Background and Objectives of the Plan

The declaration of Intent, signed in February, 1987 by the United States E.P.A., Environment Canada, Environment Ontario and the New York State Department of Environmental Conservation, committed them to initiate a Lake Ontario Toxics Management Plan (LOTMP). The goal of the LOTMP is a "Lake that provides drinking water and fish that are safe for unlimited human consumption, and that allows natural reproduction, within the ecosystem, of the most sensitive native species, such as bald eagles, ospreys, mink and otters." The objectives of the plan are:

- reduction in toxic inputs driven by existing and developing programs;
- reductions in toxic inputs in geographic areas of concern (i.e., RAPs and Niagara River Toxics Management Plan);
- further reductions in toxic inputs driven by lake-wide analyses of pollutant fate;
- zero discharge (i.e., various activities focusing on reduction at source rather than end-of-pipe controls).

The Plan includes a chemical-by-chemical approach to regulatory control and an ecosystem approach to monitoring the effectiveness of chemical-specific control.

Priority attention is focussed on the eleven chemicals that have been found to exceed standards or criteria: PCBs, dioxin (2,3,7,8-TCDD), chlordane, mirex, mercury, iron, aluminum, DDT and metabolites, octachlorostyrene, hexachlorobenzene and dieldrin.

Current Developments

Formally approved by the four participating agencies at a public meeting in Rochester, N.Y. in February, 1989, current efforts are being directed at development of ecosystem objectives and preliminary load reduction targets.

The state of knowledge regarding toxic substances in Lake Ontario is summarized in the following:

- Certain toxics bioaccumulate in some Lake Ontario sportfish to levels that make them unsuitable for unrestricted consumption by humans.
- For PCBs, Mirex, Chlordane, Dioxin and Mercury the edible portions of fish tissue in the larger specimens of some Lake Ontario sportfish, most frequently salmon and trout, exceed Canadian and/or U.S. standards for these five toxics.
- For Hexachlorobenzene, DDT and Metabolites, and Dieldrin the edible portions of fish tissue in the larger specimens of some Lake Ontario sportfish, most notably salmon and trout, exceed more stringent, but unenforceable E.P.A. guidelines for these three toxics.
- Hexachlorobenzene, DDT Metabolites and Dieldrin are also found in the ambient water column at levels above standards and criteria designed to protect human health.
- No toxics, however, are found in drinking water at levels above standards designed to protect human health. Generally accepted direct indicators of the impact of toxics in Lake Ontario on human health are not presently available.

Status reports on implementation of the plan are to be prepared annually commencing in September, 1989. Public meetings and workshops will be held.

HAZARDOUS WASTE MANAGEMENT - CONTROL OF GENERATION, HANDLING AND DISPOSAL OF WASTE

Ontario's waste management program is regulated under the Environmental Protection Act. The regulation sets out a chain of responsibility from waste generation through transportation and disposal in controlling liquid industrial and hazardous wastes. A generator register and manifest system is used to track wastes from source to proper disposal at a receiving facility. Receiving facilities are operated under Ministry of Environment Certificates of Approval which identify wastes acceptable for disposal at each site. The system is managed by the province, with follow up action, including enforcement for any irregularity.

The storage and movement of PCB wastes as well as the siting, operations and emissions from mobile PCB destruction facilities are regulated. This includes facilities for destruction of PCB contaminated mineral oil.

Comprehensive Funding of Waste Management Facilities

In June, 1987 the Ministry introduced a Comprehensive Funding Program to assist financially in the planning, approval and implementation of waste management facilities. One component of this program provides funding for industry to develop and implement technologies that will reduce the quantities of wastes, including hazardous waste, destined for disposal. This program shares the risk with industry by providing up to 50 percent of the capital cost to promote new and innovative technologies.

Control of Dust Suppressants on Roads

On January 1, 1989 the Ministry introduced amendments to Regulation 309 under the Environmental Protection Act to ban the use of waste oil as a dust suppressant on roads in the Province. This step was taken following extensive review of the environmental impacts associated with waste oil and is consistent with the Ministry's intent to promote waste oil re-refining.

Future Waste Management Strategies

A draft strategy entitled "Hazardous Waste Management Strategy for the 1990's" was considered at a policy forum in March 1989 and involved the public, industry and a number of government agencies. The strategy which is being redrafted for broader public participation proposes additional design and operating standards for hazardous waste management facilities, financial assurance for operators, and steps to ensure that the 4 Rs (waste reduction, reuse, recycling and reclamation) are implemented. The paper also addresses the issue of transboundary waste transactions and steps that the Province can consider to achieve an import/export balance.

Also in March, 1989 the Minister announced a provincial goal to achieve 25 percent diversion of the total waste stream from landfilling and incineration by 1992 and 50 percent by 2000. A wide range of initiatives are now being developed to help industry and municipalities meet these targets. Initiatives include financial incentives, technical assistance, education and new regulations.

Ontario Waste Management Corporation

The Corporation has provided a final assessment of its recommendations for a hazardous waste treatment system to be located in West Lincoln Township. The environmental assessment will be examined by the Province of Ontario as to

its compliance with the Environmental Assessment Act. The provincial review will be provided for public consideration and a public hearing concerning the proposal will be conducted by an independent hearing board.

CLEAN AIR PROGRAM

Regulations are being drafted under the Environmental Protection Act to reduce loadings of atmospheric contaminants by imposing limitations on emission sources based on the toxicity of the substances emitted. A system of scoring toxicity, protective of human health and the ecosystem, will determine the degree of emission control to be applied to produce the lowest level of release of these substances. The program will address, among other considerations, the control of toxic substances which may affect the Great Lakes Ecosystem.

SURVEILLANCE AND MONITORING

Monitoring the overall health of the Great Lakes aquatic ecosystem is a major function of the Canada-Ontario Agreement (COA). Under the surveillance program, areas of water quality degradation are investigated and evaluations conducted on the impact of contaminants of the Great Lakes aquatic ecosystem. The program measures the effectiveness of cleanup efforts, warns of emerging problems and tracks down sources of contamination. The program is responsive to the framework of the Great Lakes International Surveillance Plan (GLISP) developed by the Water Quality Board of the International Joint Commission. Costs of nearshore surveillance, research and other activities are shared equally by Canada and Ontario.

Under COA, "nearshore" surveillance activities, including monitoring discharges from point sources and tributaries, urban and agricultural drainage and impacts of shore-based construction activities are conducted by the Ministry of the Environment. The Ministry of Natural Resources assesses impacts on fish and fish habitat.

Open lake studies, including those related to eutrophication, and fish and wildlife contaminants are the responsibility of Environment Canada and Fisheries and Oceans Canada.

The Canada-Ontario Surveillance Committee, under the direction of the COA Board of Review, is responsible for developing and coordinating the surveillance and monitoring activities carried out under the Agreement. The surveillance requirements of the 17 RAP Plans are coordinated through the Surveillance Committee.

Basin-wide Programs

The province maintains a series of programs designed to monitor metals, industrial organic substances and pesticides in aquatic biota.

The largest undertaking is the Sport Fish Contaminant Testing Program. Since the early 1970's, a wide variety of fish have been collected from over 1500 lakes and rivers, including almost 200 locations along the Ontario shores of the Great Lakes. Fish are tested for a wide variety of organic and inorganic contaminants, residue levels are compared to health protection guidelines and, where warranted, consumption advisories are issued each spring for the information of the angling public.

The juvenile fish testing program is conducted in the Great Lakes and selected inland lakes. Residue levels of metals, industrial organics and pesticides are measured in young-of-the-year spottail shiners in the Great Lakes and young perch from inland locations. This program, used to assess spatial distribution of contaminants, temporal trends and contaminant source identification, has some distinct advantages over adult fish testing programs. The exposure period is precisely known (time of hatch to collection) and the fish do not move very far from their place of birth.

The third biological contaminant monitoring tool is Cladophora. This attached filamentous algae is collected from selected areas of the Great Lakes and is used to assess temporal trends in contaminant levels.

Stratified water quality sampling is conducted regularly on 17 major tributaries to estimate annual nutrient and contaminant loadings. Trend analysis of recent (1985-1987) phosphorus levels against 1975-1977 records shows significant phosphorus declines in Lake Ontario tributaries, but little net change elsewhere. Continuing surveillance is warranted, especially on the lower lakes tributaries as both urban and agricultural land uses continue to intensify while the Great Lakes Phosphorus Reduction Plan is being implemented.

During 1989, a number of long-term sensing sites will be established in critical areas for detailed biomonitoring of the effects of organic contaminants. "Sensing sites" will serve as monitors with which to gauge levels of contamination of the lake ecosystem as a whole and as a testing ground for potentially useful biomonitoring techniques.

Assessment by the Ontario Ministry of Natural Resources (MNR) of the interrelation of fishery data bases with water quality and community structure to measure whole lake responses to pollution and pollution control was extended in 1987, to studies of critical fish habitats and fishery population assessment in Areas of Concern.

FISH CONSUMPTION ADVISORY FOR 1989

In June, 1989, the Ontario government issued the 13th annual updated edition of the publication "Guide to

Eating Ontario Sport Fish." Some 300,000 copies of this 168 page contaminant advisory book are being distributed free of charge to Ontario anglers and visitors to the province.

The revised, bilingual "Guide" advises on the suitability for consumption of fish from over 1,600 locations in the province, including 198 locations in the Canadian portion of the Great Lakes. A total of 44 species of fish have been tested. Contaminants routinely tested for include mercury, copper, nickel, lead, chromium, arsenic, selenium, cadmium, zinc, PCB, mirex, DDT, lindane, chlordane, heptachlor, aldrin, hexachlorobenzene, octachlorostyrene and toxaphene. Limited numbers of samples can be analyzed for various chlorinated benzenes and chlorinated phenols, polynuclear aromatic hydrocarbons (PAH's), and 2,3,7,8 - TCDD and other polychlorinated dioxins and polychlorinated dibenzofurans. Analyses are carried out in Ontario government laboratories.

The data base for contaminants in Ontario sport fish now consists of over 100,000 specimens collected over the 1969-1988 period. Collections are continuing with approximately 7,500 specimens planned for collection in 1989.

In locations where pollution control measures have been implemented, the long term monitoring program indicates significant declining trends in contaminants. Notable declines of mercury levels in important sport fish in Lake Superior, Lake St. Clair and the St. Lawrence River have been observed since waste discharges were controlled in the early 1970's. Declines in PCB, DDT, Chlordane and lindane in fish from all the Great Lakes have resulted from the discontinuance of the use of these compounds. Declines of mirex have also been observed in certain species in parts of Lake Ontario. The decline of tetra-ethyl lead in fish in the St. Lawrence River has also been monitored by the program.

CONTROL OF POLLUTION FROM NON-POINT SOURCES

The programs and measures for control of non-point sources of pollution from land-use activities include efforts to further reduce inputs of phosphorus, sediments, toxic substances and microbiological contaminants contained in drainage from urban and rural land, including waste disposal sites in the Great Lakes System. The preservation of wetlands is an important related program.

RURAL NON-POINT SOURCES

Toxic Substances

For rural areas a key concern is the introduction of pesticides from diffuse sources into surface and groundwater.

Reduction in Pesticides and Integrated Pest Management

A comprehensive and integrated pesticide control program is being implemented to minimize the exposure of humans and the natural environment to pesticides, and to further reduce non-point source inputs to the Great Lakes Ecosystem. Principal controls include regulations under the Pest Control Products Act and the Provincial Pesticides Act. Those pesticides which may be used and the conditions of sale, storage, use and disposal are regulated. The banning of alachlor, in Canada, is an example of the control possible under the legislation.

Supporting these regulations is a licensing and permit system which prevents excessive and indiscriminate pesticide use. It also specifies the type and quantity of pesticide that may be purchased and sets out the conditions of use. Options are being evaluated for the recycling of pesticide containers and the collection of unwanted pesticides.

The Ministry of Agriculture and Food provides cost-shared grants for the construction of facilities such as nurse tanks and back flow prevention devices for chemical sprayers which reduce the risk of accidental discharges of pesticides to surface or groundwater supplies. A 40 percent grant to a maximum of \$7,500.00 is available to farmers under this program.

Food Systems 2002, a program recently introduced by the Ontario Ministry of Agriculture and Food, has the goal of reducing pesticides applied to land by 50 percent over a fifteen year period. In combination with sound land management practices promoted through other programs, it is anticipated that the loading of pesticides to surface run-off will be reduced even further than the 50 percent reduction target.

Integrated pest management uses cultural, physical and biological controls as well as targeted chemical methods to control pests. Programs are directed toward the entire pest complex - insects, weeds and disease. Under Food Systems 2002 the Ontario Pesticide Education Program will expand to include growers and provide \$800,000 annually toward research on pest management alternatives that will reduce dependency on chemicals.

Research

A considerable amount of research is being undertaken by various agencies to examine the fate and pathways of agricultural chemicals in the environment. One area of particular interest is the impact of conservation tillage on the use and fate of chemicals. Since a major push is underway to promote conservation tillage in Southwestern Ontario, and since the associated practices bring about

changes in the amounts and timing of run-off and percolation to groundwater of pesticides, related research is receiving priority attention.

Research being funded by the Ontario Ministry of the Environment is supportive of the goals of Food System 2002. Projects are being conducted to find alternative pesticides for those deemed environmentally hazardous and to determine hazards associated with pesticides in use.

Conventional Pollutants

Pollutant Reduction through Best Management Practices and Soil Conservation

The Soil and Water Environmental Enhancement Program (SWEET) was developed in 1983 as a major component of the Canadian Federal/Provincial Phosphorus Load Reduction Plan. The plan relies on the implementation of agricultural best management practices. The programs are intended to reduce the loss of sediment in run-off and corresponding losses of sediment-associated nutrients, chemicals and bacteria. The Land Stewardship Program, introduced in 1987 originated with a concern by the Ontario Ministry of Agriculture and Food that the soil resource base be managed for sustained production over the long term.

Since 1983 expenditures under the Soil and Water Conservation Grants have amounted to \$16 million by the Ministry of Agriculture and Food, and approximately \$1 million by the Ministry of Environment. These expenditures have been made for environmental protection under the Ontario Soil Conservation and Environmental Protection Assistance Program (OSCEPAP).

In addition, the funds for 200-day manure storage and for milkhouse waste treatment have been effective in mitigating such practices as spreading of manure on frozen ground and reducing run-off losses from feedlots, manure storages and barn drainage.

The utilization of sludge on foodlands and further guidelines for use of non-sludge wastes are receiving close study.

URBAN NON-POINT SOURCES

Toxic Substances and Sewer Use

The updated model sewer use by-law to be introduced under MISA which was issued in September, 1988 will enable municipalities to require local industries to reduce toxic discharges to sewer systems. The by-law sets stringent discharge limits on metals such as Copper, Cadmium, Nickel and Zinc; prohibits the discharge of hazardous substances such as PCB's and toxic pesticides and provides improved

administrative procedures to control sewer use through the application of best available technology.

Under the by-law, significant industrial dischargers will be required to develop best management practices (BMP) plans if their sites generate contaminated surface run-off. The purpose of the plan is to prevent any unnecessary discharges of contaminated stormwater to storm sewers. These plans will address such factors as material storage, housekeeping practices, preventative maintenance procedures, safety programs, and employee training.

The discussion paper Controlling Industrial Discharges to Sewers, released in September, 1988, outlines a program designed to protect water quality by reducing toxic contaminated industrial discharges to the sewer systems. Nearly one-third of the wastewater received by major urban sewage treatment plants is discharged by industry. This industrial effluent contains most of the metal and toxic organic compounds found in sewage. Since municipal sewage treatment plants are not designed to remove toxic pollutants, many of these contaminants pass untreated or partially treated into natural water systems.

Under the proposed program the role of municipalities would be to conduct industrial inventories, listing all industries discharging to sewer systems and noting the volume and content of their discharges. At present, an estimated 18,600 industries discharge to municipal sewer systems in the province. By controlling indirect discharges at the source, combined sewer overflows and by-passing of considerable loadings of toxics to the Great Lakes system will be reduced.

Pollution Control Planning and Infrastructure

A municipality may apply to the Ministry of the Environment for a grant to undertake a study to develop a water pollution control plan. The purpose of a water pollution control plan is to develop:

- an outline of the nature, causes and extent of pollution problems from stormwater discharges, combined sewer overflows and flooding;
- propose alternative remedial measures, and
- recommend an implementation program.

Such studies are presently being carried out in urban centres such as Toronto and St. Catharines.

Under its 'Lifelines' program, the Ministry of the Environment is working with municipalities to undertake studies and capital works to correct infrastructure problems which are associated with older communities where combined sewers carry domestic and industrial wastes and stormwater.

Sewer rehabilitation will minimize the occurrence of toxic contaminated overflows and stormwater by-passing.

WATERSHED STUDIES

Since 1985, considerable effort has been devoted to the study and remediation of rural and urban beach pollution resulting from rural diffuse sources in Ontario. A number of programs are being carried out in cooperation with Conservation Authorities with the goal of locating and remedying bacterial pollution sources impacting on rural beaches. Remedial plans are being developed for priority watersheds over three years. As plans are completed by the Conservation Authorities, additional watershed studies will be implemented under new agreements with other Conservation Authorities.

WETLANDS AND THEIR PRESERVATION

The issue of wetlands preservation has received considerable attention in recent years. In Ontario, south of the Precambrian Shield, it is estimated that 75 percent of the wetlands have been lost. The Province proposes to stem these losses and to take measures to preserve the remaining wetlands on a priority basis. The Ministry of Natural Resources has developed a six point program which includes:

- wetland inventory and evaluation
- land-use planning
- the Conservation Lands Act
- wetland securing effort
- wetland research
- communications strategy.

To date, 1982 individual wetlands have been evaluated using a classification system based on an assessment of biological, social, hydrologic and special features of a wetland. Wetlands are classed on a scale from 1 (highest value) to 7 (lowest value).

The protection of wetlands will be done with the support of a new provincial policy being implemented under the authority of the Planning Act. In October, 1988 a policy document was released for public review to be used as a guide for municipal planning. Municipalities would be required to consider provincial policy in establishing land use designations in their Official Plans. As a result, wetlands of provincial and regional significance will be recognized in official plans.

The Ministry of Natural Resources has agreements with Ducks Unlimited and Wildlife Habitat Canada under which funding is available to enable the acquisition of wetlands, particularly wetlands threatened with imminent conversion to other land uses.

The Conservation Lands Act of 1988 introduced land tax incentives to owners of wetlands and other heritage lands. Up to 100 percent tax rebates will be available to landowners of class 1-3 wetlands.

Research on wetlands is assisting governments in setting wetland management priorities. A note-worthy example is the recent work to analyze the physical and biological attributes of critical Great Lakes coastal wetlands. Attention is focussed on these wetland habitats under a joint Canada-United States initiative to develop a Classification and Inventory of Great Lakes Aquatic Habitats.

GROUNDWATER

Groundwater contamination studies within the Great Lakes Basin have been for the most part very site specific. Interest has been focussed on protection of water supplies, on sources of contamination such as industrial and municipal waste sites and on their compliance with Ministry of the Environment legislation and regulatory requirements. Cumulative effects on regional groundwater quality and the Great Lakes Ecosystem have not been considered.

Currently, groundwater investigations are limited to studies along interconnecting channels such as the St. Clair River at Sarnia and the Niagara River. There is a general lack of understanding with regard to groundwater systems within the basin and the effects of groundwater discharge on stream flow to the Great Lakes.

Under COA, groundwater contamination within the Great Lakes Basin will be addressed. This will include the development of an approach to sampling and analysis of groundwater contamination, continuation of investigation and remedial projects to address sources of groundwater contamination together with programs to monitor regional groundwater quality within the Great Lakes Basin.

CONTAMINATED SEDIMENT AND DREDGING

Under COA, polluted sediments and their effects on the Great Lakes System will be identified and the information evaluated in relation to the effectiveness of remedial measures to alleviate the problem. The following specific objectives will be addressed:

- development of a standardized assessment procedure for contaminated sediment which incorporates the physical and chemical and biological evaluation of sediments together with assessment of the biological implications of the associated contaminants;
- development of guidelines (numerical criteria) for the assessment of sediments, based on concentrations of

metals, organic contaminants and their impact on aquatic macroinvertebrates and fish, and

- evaluation of remedial options for the management and restoration of contaminated sediments including but not limited to source abatement and dredging sediment treatment technologies.

Guidelines under development for the evaluation of sediment must provide the basis for determining when sediments can be considered clean, what levels of contaminants are acceptable in the short term and when contamination is sufficiently severe to warrant significant remedial action. These guidelines will be used in formulating Remedial Action Plans and Lakewide Management Plans.

A policy paper describing options for the placing of fill materials in the nearshore zone of the lakes has been developed for guidance purposes.

POLICY ON PUBLIC CONSULTATION

Protecting the environment is everybody's concern.

Environment Ontario has developed a comprehensive public consultation policy that embodies the government's commitment to involving the public in the environmental planning process. The policy affords new and expanded opportunities for public involvement in the review and development of the ministry's environmental protection programs.

Public consultation is an interactive, or two-way process essential for people to become better informed about, and better able to help resolve environmental issues. Consultation affords people the opportunity to have an influence on the decision-making process.

Environment Ontario consults with the public through:

- local community liaison committees
- public meetings
- discussion papers
- symposia
- informal contacts with ministry staff
- formal public hearings
- advisory committees.

The policy promotes five central principles and emphasizes:

- consensus building;
- an objective, open and fair consultation process be carried out in a responsible manner;

- opportunities will be identified for public participation in the consultation process;
- the results of public consultation will be incorporated in decision-making;
- participants will be informed as to how their involvement affected the ministry's decisions.

Further information on the application of the policy is available from the Ministry of the Environment.

PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL RESOURCES
GREAT LAKES TOXIC SUBSTANCES CONTROL AGREEMENT

INTRODUCTION

The Toxic Substances Control Agreement was signed by the Governors of the eight Great Lakes states in May of 1986, and in June, 1988, by the Premiers of the Provinces of Ontario and Quebec. The Agreement established a framework for coordinating regional action in controlling toxic pollutants entering the Great Lakes System. This spring Governor Robert P. Casey became the first Pennsylvania Chief Executive to join the Council of Great Lakes Governors. Pennsylvania welcomes the opportunity to become a full partner in the implementation of the Agreement and Memorandum of Understanding (MOU) to ensure a cleaner Great Lakes ecosystem.

The Agreement and MOU contain certain principles, commitments, and initiatives that are to be undertaken by the signatory jurisdictions. Our programs strive to uphold the commitments and goals of this agreement through the implementation of strict regulatory programs which emphasize the use of best available technology, human health and aquatic life based standards, and an aggressive enforcement strategy. The following pages summarize activities from the past year.

CLEAN WATER: AN ECONOMIC AND ENVIRONMENTAL RESOURCE

Pennsylvania's water quality standards are codified in Chapter 93 and portions of Chapter 95 of the Department of Environmental Resources Rules and Regulations. They are designed to implement the requirements of Section 5 and 402 of Pennsylvania's Clean Streams Law and Section 303 of the Federal Clean Water Act (33 U.S.C.A. s1313). Furthermore, Section 93.2(b) of the Standards provide that where interstate or international agencies under an interstate compact or international agreement establish more stringent water quality standards regulations applicable to the waters of the Commonwealth than in the regulations, the more stringent standards will apply. Section 303(c)(1) of the Federal Act requires that states periodically, but at least once every three years, review and revise when necessary, their water quality standards.

Pennsylvania completed its most recent triennial water quality standards review with publication of final rulemaking in the Pennsylvania Bulletin of March 11, 1989. These revisions concluded a review of several statewide issues. Of special significance to the Great Lakes Toxics Substances Control Agreement was the adoption of a comprehensive Toxic Substances regulation. The new regulation incorporates by reference the Department's water quality Toxics Management Strategy. The strategy includes water quality criteria for the priority pollutants and detailed guidance on the use of these criteria in the development of wastewater effluent

limitations. The regulation also addresses scientific procedures for criteria development, a risk management level for carcinogens, analytical procedures for criteria implementation, appropriate design conditions for toxics and the use of effluent toxicity testing as a basis for limiting the discharge of toxic substances.

The revisions to the Standards also include a change to the protected use designation for portions of Erie Harbor. The change added water contact sports as a protected use to the entire Erie Harbor and Presque Isle Bay area except the Harbor basin and central channel demarcated by the U.S. Coast Guard with buoys and channel markers.

PERMITTING

A. Point Source Toxics Management Strategy

As briefly discussed under Clean Water..., the Department has incorporated a Toxics Management Strategy into its NPDES permitting program for industrial and municipal point source dischargers.

Water Quality Oriented Approach - Since water quality protection is the primary thrust of this strategy, some discussion on the roles of Pennsylvania's existing water quality criteria and EPA's proposed water quality criteria is warranted. The water quality criteria contained in Chapter 93 of the Department's regulations were developed based on best available scientific data and information relating to human health and aquatic life protection.

EPA has developed proposed instream criteria and threshold levels for the priority pollutants pursuant to guidelines contained in Section 304(a) of the Clean Water Act, using the same basic types of data and rationale. Aquatic life criteria and threshold levels are based on relevant toxicological studies. Human health-related criteria are based on relevant toxicological and epidemiological studies.

Dealing With Known or Suspected Carcinogens and Related Health Impacts - An additional consideration in the development of the Section 304(a) criteria for human health protection involves an incremental cancer risk level (CRL) assessment where a pollutant has been identified as a carcinogen (61 of the priority pollutants have been assigned proposed human health criteria based on incremental cancer risk levels). EPA has established a range of proposed criteria corresponding to incremental cancer risks of 10^{-7}

to 10^{-6} for each carcinogen for the protection of human health. For the purpose of its strategy, the Department specifies a cancer risk level of 10^{-6} (one in one million) in establishing water quality criteria for carcinogens.

As more is learned about the occurrence, health and aquatic life impacts, treatability, and environmental fate of toxic pollutants, this information will be incorporated into the strategy. This approach will allow for the most effective utilization of scientific data and information in dealing with priority pollutants and other toxics.

During 1988-89 the Department began a long-term program to evaluate point source dischargers on a watershed basis, which takes into account the potential interactions of groups of discharges on stream segments and in the watershed as a whole. A comprehensive water quality modeling procedure has been developed to carry out multiple-discharge wasteload allocation (WLA) evaluations. The WLA analysis can be done either in a "screening" mode (to scope out potential groupings of dischargers) or in a "detailed analysis" mode (for developing WLAs and permit limitations).

In addition to the above, revisions have been made to the manner in which EPA's recommended water quality criteria for toxics are converted into permit limitations. These revisions more accurately focus on the short-term (acute) and longer-term (chronic) impacts of toxics in the aquatic environment.

The Department has also begun incorporating the concept of whole-effluent toxicity testing (WETT) and toxicity reduction into its NPDES permitting program. The use of WETT is expected to enhance reduction of toxic impacts to aquatic life.

B. Industrial Waste Pretreatment

As of mid-1989, eighty-five (85) municipal sewage systems (statewide), including the City of Erie, have developed local industrial waste pretreatment programs.

These local programs are intended to reduce or eliminate problems associated with pass-through of toxic pollutants to receiving waters and contamination of sewage sludge.

Pennsylvania has not received formal delegation of pretreatment program responsibility from EPA.

Coordination is occurring with EPA Region III, however, to ensure that municipalities with pretreatment problems are properly regulated.

C. Air Toxics Control

This spring, along with the other Great Lakes States, Pennsylvania signed the Great Lakes States Air Permitting Agreement. The Department currently has a skeleton program in place. Full implementation is dependent upon the availability of additional resources. The Department will continue to develop its program to control air toxics emissions from Pennsylvania sources. A recent regulatory change has clarified the intent to require the reduction of air toxics from new sources to the maximum extent possible. As a result of recently developed Departmental policy, several heavy metals and chlorinated compounds from municipal incinerators and resource recovery facilities must meet stringent ambient requirements thereby potentially reducing their impact on the Great Lakes. Regulations are also contemplated for the control of air emissions, including air toxics, from hospital waste incinerators.

Resource limitations currently prevent dispersion modeling of air toxics from Pennsylvania sources to determine their potential to impact the Great Lakes. Special permit conditions to minimize the potential impacts on the Great Lakes cannot be considered at this time.

ACCIDENTAL DISCHARGE OF POLLUTANTS

Pennsylvania's regulations require that any spill or accidental discharge that enters or threatens to enter surface or underground waters must be reported immediately to the Department of Environmental Resources. The Department maintains 24 hour numbers both centrally and in each Regional Office to receive such notifications.

The Central Office and each Regional Office has an Emergency Response Coordinator and each Region has an Emergency Response Team to respond to such incidents. EPA, the Coast Guard, and other states are notified when appropriate.

PROGRESSIVE REDUCTION OF LOADINGS OF PERSISTANT TOXIC SUBSTANCES

Best Available Technology is employed to reduce all pollutants from new air sources to the maximum extent possible. The Department has worked together with the Great Lakes signatory states to recommend changes to the Federal Clean Air Act. Part of these changes include the identification of those substances which have

persistant adverse aquatic impacts as hazardous air pollutants and controlling the emissions of those substances from existing as well as new sources.

Pennsylvania's point source toxics management strategy is intended to be "technology-forcing" by requiring dischargers to carry out toxics reduction evaluations and to reduce effluent toxicity impacts.

This strategy, in combination with Pennsylvania's toxic and hazardous waste management/cleanup program, should ensure continuing progress in reduction of pollutant loading to both surface and ground water.

The following Table summarizes the levels of pollution control applicable to point source dischargers, under the Federal Clean Water Act and Pennsylvania's Clean Streams Law and Regulations.

Zero Discharge of Pollutants	101(a) (1) CWA
Anti-Degradation (EPA)	40 CFR 131.12
Anti-Degradation (DER)	25 PA Code 95.1 (b)
WQ Based Effluent Limits for Toxics	101(a) (3), 301(b) CWA 25 PA Code 95.1
WQ Based Effluent Limits for Conventional Pollutants	301(b) CWA 25 PA Code 95.1
Best Demonstrated Technology	25 PA Code 95.4
Best Available Combination of Treatment, Land Disposal, Re-Use	25 PA Code 95.1 (d)
Maximum Practical Use of Process Changes, Waste Segregation, Volume Reduction, Re-Use, Good Housekeeping	25 PA Code 97.14
Best Available Technology Economically Achievable (BAT)	301(b) CWA
New Source Performance Standards (NSPS)	301(b) CWA
Best Conventional Technology (BCT)	301(b) CWA
Best Practicable Control Technology Currently Achievable	301(b) CWA

WASTE MANAGEMENT

Within the last year, Pennsylvania has placed into law two major pieces of legislation and initiated regulatory programs there under to strengthen our ability to regulate waste disposal and toxic waste cleanups in Pennsylvania.

Municipal Waste Planning, Recycling, and Waste Reduction Act - (Act-101)

The Municipal Waste Planning, Recycling, and Waste Reduction Act provides for the planning, processing, and disposal of municipal waste. Most importantly, this Act stresses the reduction and reuse of waste materials reducing the potential for groundwater and surface water contamination. The Act also requires the Department of Environmental Resources to develop guidance for Household Hazardous Waste programs.

Hazardous Sites Cleanup Act - (Act 108)

The Hazardous Sites Cleanup Act (Act 108) was enacted by the State in October, 1988. The Act provides for the study and remediation of hazardous waste sites in Pennsylvania.

Under Act 108, the State Hazardous Sites Cleanup Program, in cooperation with the U.S. Environmental Protection Agency (EPA) superfund effort, is in the process of evaluating potential hazardous waste sites to identify those which pose a risk or potential risk to human health and the environment. Those sites posing a risk or potential risk can then be remediated under authority of Act 108, the U.S. Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA" or the Federal "Superfund" Act), or other appropriate State laws. As of May, 1989, the State Hazardous Sites Cleanup Program had identified approximately 2,335 potential hazardous waste sites within Pennsylvania. Of that number, approximately 87 potential sites are located within the Lake Erie watershed. The State is currently involved in the detailed study and remediation at two Federal superfund sites within the Lake Erie watershed. A third superfund site (located less than 100 meters from Lake Erie on Presque Isle peninsula) was remediated in 1985 by the State and removed by EPA from the Federal superfund list in early 1989.

The Hazardous Sites Cleanup Act also gives the State authority to quickly respond to spills and other environmental emergencies, and to take interim action to stabilize sites where releases of hazardous substances are occurring or are imminent.

Act 108 provides additional authority to the state so that the permitting of commercial hazardous waste treatment, storage and disposal facilities can be made more efficient and streamlined.

Municipal Waste Regulation

In April, 1988, the Commonwealth completed a comprehensive revision of its existing municipal waste regulations under the authority of Act 97 - Pennsylvania Solid Waste Management Act. These regulations represent 6 years of Departmental effort and public

participation. By implementing these regulations, the Department has instituted state-of-the-art landfill design and monitoring practices providing for the highest degree of environmental protection possible.

Infectious Waste - (Act 93)

In July of 1988, the Commonwealth of Pennsylvania implemented a licensing program for all infectious waste transporters. The legislation also requires the Department of Environmental Resources to develop a manifest system for the transportation of infectious waste. We are currently developing a regulation package to fully implement this legislation.

Hazardous Waste Management

Pennsylvania has final authorization under the Resource Conservation and Recovery Act (RCRA) from the U.S. EPA for implementation of the state hazardous waste program. Pennsylvania's Hazardous waste program under the Solid Waste Management Act of 1980, Act 97, addresses and permits the treatment, storage, and disposal of hazardous waste. Regulations adopted under Act 97 also cover generators, transporters, and hazardous waste manifest requirements. The Department is currently proposing additional regulations to address recycling facilities.

Waste Management Information System

The Department of Environmental Resources has developed a computerized database management and tracking system to monitor the solid and hazardous waste activities in Pennsylvania. The system consists of eight modules designed to track waste transporting and disposal throughout the Commonwealth.

The groundwater monitoring module of this system enables the Department to automate monitoring data from reports and efficiently track water quality at waste management facilities in Pennsylvania. Data from hundreds of monitoring wells and private supply wells will be routinely inspected with the help of this system. The Department's enforcement efforts will be greatly enhanced by the capabilities provided by this system.

ATMOSPHERIC DEPOSITION

A one time air toxics emissions inventory resulted in the generation of limited data, some of which is useful in the implementation of the Great Lakes Toxics Substance Control Agreement. This data has not been verified. In addition, a preliminary analysis was completed of local ambient impacts for a small number of prioritized facilities. The available emission data for IJC pollutants of concern which are emitted from the Northwest quadrant of Pennsylvania was summarized and transmitted to the Michigan Department of Natural Resources.

The Commonwealth continues to strongly support Acid Rain legislation. Approximately \$80,000 per year is spent for

analytical work to analyze samples collected by agency staff in the Comprehensive Acid Rain Monitoring Network (CARMN). Future benefits in the reduction of Great Lakes air toxics impacts from Pennsylvania sources can be expected by continued efforts to develop an air toxics program for existing sources.

MONITORING AND SURVEILLANCE

The Air Quality program continues to develop the capability to conduct ambient sampling and analysis for specific air toxics pollutants. Staff limitations have prevented significant progress. However, some pollutants of interest to the Great Lakes are routinely analyzed from selected Hi-Vol particulate filters. This data is readily available to be shared with the Great Lakes states.

A limited urban air toxics monitoring project is expected to begin in the near future. The extent and magnitude of the project is uncertain. This project could generate more data on substances which are likely to cause persistent adverse aquatic impacts. Any such pertinent data will be shared with the Great Lakes states.

The Water Quality program conducts routine reconnaissance inspections on all dischargers on the Basin. In addition, each "major" discharger receives an annual Compliance Sampling Inspection or Compliance Evaluation Inspection. Samples are analyzed for all parameters contained in the NPDES permit. Pennsylvania currently operates six (6) routine, ambient surface water quality monitoring stations in the Lake Erie Drainage basin as part of the Water Quality Network (WQN). Two (2) are located in Lake Erie, one (1) is in Presque Isle Bay, and three (3) are located on tributaries (Conneaut Creek, East Branch Conneaut Creek, and Twelvemile Creek). All stations are monitored monthly for pH, temperature, dissolved oxygen (field measurements), and eighteen (18) parameters which include conventional parameters and heavy metals. Lake level or stream flow data are obtained at the time of sample collection. All data is input to the EPA STORET system. Benthic macroinvertebrates (fishfood organisms) are sampled annually at the tributary stations in order to obtain another indicator of water quality conditions. Plankton samples are collected annually at one lake station and from Presque Isle Bay. Sampling for fish tissue contaminants is currently being rotated through the WQN stations, and each station will be sampled about once every five (5) years. Fish Tissue parameters include PCB, chlorinated pesticides and heavy metals.

INFORMATION EXCHANGE

The Air Quality program has entered pertinent data on air toxics inventory and sampling results in the National Air Toxics Information Clearinghouse (NATICH). Pertinent inventory emission data was shared with the Great Lakes signatory states. Also, Air Quality staff have attended standing committee meetings to develop out detailed work strategies to implement the Great Lakes Toxic

Substance Control Agreement. This effort resulted in the signing of an Air Permitting agreement among the states.

See additional information under Fish Consumption Advisories.

FISH CONSUMPTION ADVISORIES

The Commonwealth has been actively participating in the effort to develop not only a common fish consumption advisory for Lake Erie waters but also common sampling protocols and advisory development and issuance methodologies for the Great Lakes basin. To this end, members of Pennsylvania's interagency work group on fish tissue contaminants have been attending meetings of the Great Lakes Fish advisory Task Force committee and has a representative on the toxicology subcommittee.

A major outcome of this process was the issuance of a common fish consumption advisory for Lake Erie. The advisory was initially released by the state of Michigan in January, 1987, and followed-up by a Pennsylvania press release on February 3, 1987.

Our participation in the process is continuing. The most recent direction is consideration of a "market basket" approach in which the risk of consuming Great Lakes sport fish would be compared to that of eating commercially available fish. Funding for determining contaminant levels in commercial fish is currently being sought.

The Commonwealth continues to sample Great Lakes sport fish for fish tissue contaminants. Sampling is conducted as part of our Water Quality Network routine program and the Great Lakes Fish Monitoring Program (GLFMP). Both programs analyze for contaminants in FDA standard fillets in order to protect public health. Both programs sample, to the extent possible, recreationally important species. Coho salmon or rainbow trout (steelhead) are sampled for the GLFMP, while Pennsylvania's program has historically concentrated on yellow perch. Other species may also be sampled as funding allows.

GREAT LAKES PROTECTION FUND

On February 26, 1989, along with other Great Lakes Governors, Governor Casey signed the necessary documents creating the Great Lakes Protection Fund (G.L.P.F.). The G.L.P.F. is a \$100 million endowment dedicated to help eliminate the threat of toxics contaminating the Great Lakes. Pennsylvania's share is \$1.5 million.

This year's budget request includes \$500,000 for the first year's contribution. A similar request will be made for each of the next two years. Proposed legislation was introduced by the Pennsylvania General Assembly in May, 1989, authorizing the Commonwealth to participate in the fund.

PUBLIC INVOLVEMENT

An integral part of the Department's responsibilities rests with DER's public participation opportunities. Following are brief descriptions of five categories of public participation opportunities within the Department.

I -- Complaints and Reporting: Employees of the Department gather information about the projects they work on in a variety of ways. The public participates in these occurrences when they call or write to one of the Department's offices concerning possible violations, spills, or other items. These inquiries are extremely valuable to the Department and DER makes every effort to encourage this type of public contact.

II -- Requests for Information: The Office of Public Liaison, located at DER's headquarters in Harrisburg, is staffed by professionals who are responsible for coordinating departmental response to inquiries involving any public interest. Also, the responsibility for administering environmental protection programs within DER rests primarily within six geographic regions. Each regional office has a Community Relations Coordinator who develops, implements, and evaluates programs designed to promote communication, citizen participation, and understanding.

III -- Right to Public Access of Information: DER has always made public documents available for review. The Department is in the process of formalizing this policy in writing. This policy will outline those documents which the public has a right to access.

IV -- Public Involvement in the Regulation and Permitting Processes: Public participation opportunity in DER is many times required by regulation. Common to each opportunity is the importance of the public to not only be informed of Department decisions but also having the chance to comment on and influence these decisions. Public comment periods are provided throughout various permitting stages. This allows for additional input before permit decisions are made. Public hearings and public meetings also allow the opportunity for DER to gather and respond to additional input concerning permit applications. After a permit decision is made, there is still an opportunity for public input through appeals. The Environmental Hearing Board conducts hearings and issues opinions, orders, and adjudications upon appeals of final actions of the Department.

V -- Advisory Committees and Roundtables: The Department of Environmental Resources also affords the public opportunities to advise the Department by membership on advisory boards and regional roundtables. The Citizens Advisory Council (CAC) reviews all environmental laws of the Commonwealth and makes appropriate suggestions for their revision, modification, and codification. The CAC also advises the Department, as requested, and makes recommendations for the improvement of the work of the Department.

The council is composed of 19 members, 18 of whom are members of the public (the 19th member is the Secretary of Environmental Resources). The Environmental Quality Board formulates, adopts, and promulgates rules and regulations for programs administered by the Department. The board is composed of twenty-one members, including five members of the Citizens Advisory Council. The remainder of the membership consists of representatives of various state agencies and the General Assembly.

On the regional level, each Environmental Protection office coordinates the operation of a citizens roundtable. Roundtable memberships include citizens from various backgrounds, including environmental groups, representatives of public interest groups, the business community, and others. These roundtables provide a forum for ideas, and promote input and response to DER and its programs. These roundtables are also very effective in helping participants understand more fully the activities of the Department.

GROUNDWATER

The Pennsylvania Department of Environmental Resources (DER) has been aggressively involved in ground water quality protection since the early 1960's. Our programs rely heavily on the development and implementation of regulations and permits to prevent and abate pollution from all major sources where disposal, treatment, and storage of waste materials occur. We are also committed to the inclusion of ground water quality considerations in our environmental planning.

The Department has established a Ground Water Quality Task Force which is presently drafting a Ground Water Protection Policy. The Ground Water Protection Policy will serve as an umbrella program for all DER activities involved in the areas of ground water quality protection and management. A Ground Water Quality Monitoring Strategy, which is in final draft form, will integrate the Department's monitoring activities to meet both ambient and compliance monitoring objectives when implemented.

DER is also participating in the Federal Underground Storage Tank Program. Legislation to regulate both underground and above-ground storage tanks is being considered. There is no general ground water quality management legislation being considered in Pennsylvania.

To improve the effectiveness in protecting the state's ground water resource, work has progressed on a comprehensive ground water monitoring and data assessment program. In the early 1980's, the state was divided into 478 ground water basins which were prioritized based on factors such as ground water use, land use, and environmental sensitivity. A typical ground water basin may include 25 monitoring locations. As part of the Fixed Station Monitoring Network (FSN) Program, the top sixteen ground water basins are currently being monitored quarterly for up to 24 various parameters. Another ground water quality monitoring program which

was initiated in 1988 is the Ambient Ground Water Quality Survey Program. This consists of two-time sampling of the lower priority ground water basins which did not qualify for the FSN Program. Ground Water data from these monitoring programs are input to the federal STORET system. This data is used for conducting quality trend analyses, program evaluations, permitting and facility site evaluations, and to fulfill systematic reporting requirements such as Section 305(b) obligations under the Federal Clean Water Act.

QUÉBEC

Québec became party to the Memorandum of Understanding on Control of Toxic Substances in the Great Lakes Environment (M.O.U.) on June 13, 1988, when Premier Robert Bourassa signed the Memorandum in Montréal in both its French and English official versions, together with Premier David Peterson of Ontario.

Québec took a number of steps of regulatory, administrative and legislative nature in order to facilitate its implementation, and achieve domestic environmental objectives in conjunction with the other M.O.U. parties.

Industrial pollution control strategy

Most noteworthy is the development of a new industrial pollution control strategy predicated on a system of mandatory pollution abatement certificates. This strategy is an integrated, multi-media effort designed to clean up 75% of toxic pollution from industrial sources in Québec.

New stringent legislation, bill 99, was enacted for this purpose in December, 1988, after months of consultation with industrial, environmental and municipal representatives. Under this new legislative framework, all designated industrial and municipal facilities will have to obtain a pollution abatement certificate which will compel its holder to meet specific abatement and control standards for discharges in the air, water and soil. Fines of up to 1 million \$/day and prison terms of up to 18 months can apply in case of violations, as provided in the regulations that will be forthcoming. The pollution abatement certificates will be in force for a 5-year period in the case of existing facilities, and a 10-year period in the case of new sources. These certificates will have to be renewed unless the industrial facility installs a zero-discharge technology.

It is the intention of the Ministry of the Environment of Québec to factor in this process, the abatement objectives agreed upon under the M.O.U.

Québec's industrial pollution control strategy has targeted 196 industrial facilities on a priority basis. These priority sources include pulp and paper mills, mining operations, metallurgical works and the chemical industry. The second phase of the strategy will cover 436 facilities in the same industrial sectors plus the petroleum industry and the electro-plating industry. Most of these pollution sources are located along the St. Lawrence River, and its tributaries.

Massena/Cornwall Area of Concern

Québec has, since 1986, expressed concern with respect to the P.C.B. and mercury pollution originating from the Massena, N.Y. and Cornwall, Ontario area. This area of concern is amongst the 42 areas of concern recognized by the International Joint Commission. It is located in the St. Lawrence River, just a few kilometers upstream from the Québec/Ontario/New York State border in the River.

Québec is concerned with this source of pollution because of the very toxic nature of the pollutants involved, because of the fact that the sediments of the St. Lawrence River contain significant quantities of PCBs, and because monitoring data reveals high levels of PCB's and mercury in biota and the ecosystem downstream from the Massena/Cornwall area, within the territory of Québec.

The Government of Québec has raised this issue directly with the U.S. Environmental Protection Agency, and with the environmental authorities of the State of New York and the Province of Ontario. The issue has also been raised at meetings of the Parties under the 1987 Protocol to the 1978 Great Lakes Water Quality Agreement.

A staff person from the Ministry of Environment of Québec has been assigned to this issue on a full-time basis. Québec has also participated at administrative and legislative hearings on this problem, and was involved in the development of the RAPs for the Massena/Cornwall areas of concern. As a result, Lac Saint-François, located within the territory of Québec downstream from Massena and Cornwall, was included in the area to be examined within the framework of the remedial action plan.

Canada/Québec Agreement on the St. Lawrence River

During 1987 and 1988, Québec has sought 100 millions \$ of Federal funding to help with the clean-up of the St. Lawrence River. In June, 1988, the Federal Minister of Environment committed 110 millions \$ of Federal funds over 5 years for that purpose. A Canada/Québec Agreement on the St. Lawrence River was signed on June 8, 1989, in order to coordinate federal and provincial efforts designed to monitor, clean-up and conserve the St. Lawrence River ecosystem. Special emphasis is to be put on the reduction of toxic pollution from the 50 largest polluters of the waters of the River. These abatement objectives will be implemented through Québec's new industrial pollution control strategy outlined above.

St. Lawrence River Conservation and Development project

The conservation and development of the St. Lawrence River was identified as Québec's demonstration project of Economy-Environment integration. This is a multistakeholder effort involving representatives from Government, industry, municipalities, environmental groups and academia, which is expected to deliver a likewise multistakeholder program of action designed to conserve the river's ecosystem and yet, at the same time, enhance its economic and environmental potential within a perspective of sustainable development. The recommendations made by the different multistakeholder taskforces assigned within this process, are presently (summer 1989) being reviewed by the Québec Government.

Air quality

Amendments to Québec's Air quality regulations are presently being developed in order to cover a greater range of air pollutants, including air toxics. The regulations are expected to be proposed in the Official Gazette in early 1990. These amendments will be coordinated with the implementation of the new industrial pollution control strategy.

Clean Technologies

As part of Québec's efforts to foster the concept of sustainable development, the Government is putting great emphasis on the promotion of clean technologies. This refers to the development of non-polluting industrial production techniques instead of the usual reliance on end-of-pipe abatement technologies. A compendium of clean industrial technologies used and developed in Québec, has been prepared. Examples of success stories have been disseminated in order to encourage industries to opt for clean technologies. Québec's Industrial Research Center has also put forward a new program designed to help the development of new, efficient, clean industrial technologies.

Integrated Waste Management

The Government of Québec has made public a new integrated waste management strategy with an objective to reduce 50% of the volume of solid waste generated in Québec by year 2000. This strategy depends heavily on recovery and recycling of household and commercial waste. A 100 millions \$ fund made up entirely of funds contributed by Québec's manufacturing and retail industry, will be used to help local authorities to establish a system of curbside collection.

**SUMMARY OF ACTIVITIES THAT MEET THE REQUIREMENTS OF
THE TOXIC SUBSTANCES CONTROL AGREEMENT AND
THE MEMORANDUM OF UNDERSTANDING ON CONTROL OF TOXIC SUBSTANCES
WITH ONTARIO AND QUEBEC**

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

July 13, 1989

This report summarizes the activities which the Wisconsin Department of Natural Resources has continued or initiated that meet the requirements of the Great Lakes Toxic Substances Control Agreement and the Memorandum of Understanding on Control of Toxic Substances with Ontario and Quebec. Activities are listed under the individual sections of the Toxic Substances Control Agreement and the Memorandum of Understanding. This summary reports recent, ongoing and planned activities. Further details about current activities and future plans are available upon request.

CLEAN WATER

The Wisconsin Department of Natural Resources has revised its Water Quality Antidegradation policy. Rules became effective in March 1989. Revised regulations establish: an antidegradation classification system for all surface waters of Wisconsin, procedures for determining whether or not a proposed new or increased discharge is subject to antidegradation policy, and procedures for determining effluent limits for those discharges that are subject to the policy. The antidegradation rules contain a "Great Lakes Initiative" which protects the Great Lakes and their tributaries from the impacts of persistent, bioaccumulating toxic substances. Effluent limits for dischargers to the Great Lakes will be determined such that any mass increase in a substance with a bioaccumulation factor greater than 250 will be considered a significant lowering of water quality and prohibited unless the lowering of water quality is necessary to accommodate important economic and social development. There are 21 substances that are regulated for bioaccumulation.

PERMITTING

The Department has also developed surface water quality criteria for toxic substances and procedures for calculating effluent limits for toxic substances discharged to surface waters. The Department is currently implementing the rules. One rule establishes numerical standards to protect fish and aquatic life, wildlife and human health from exposure to about 100 toxic substances. The other rule requires point sources to meet effluent limits that insure the water quality standards are met in surface waters. It establishes the procedures for how effluent limits will be determined and provides for biomonitoring and bioassay procedures. DNR is reviewing each permit individually so effluent needs will be tailored for specific dischargers.

HAZARDOUS WASTE MANAGEMENT

Wisconsin is currently completing a Hazardous Waste Capacity Plan to identify how it will meet its hazardous waste management needs. This plan is required of each state by the Superfund law. The governor of each state must submit a plan to EPA certifying that the state has adequate capacity to manage all hazardous wastes that will be produced over the next 20 years. Hazardous waste reduction and recycling will be important as Wisconsin determines how it will handle hazardous waste. The state operated a pilot program from 1986 through 1988 to provide information and education to small quantity hazardous waste generators. The success of that program has encouraged the DNR to conduct a similar program for waste reduction. Wisconsin DNR has received a RCRA Integrated Training and Technical Assistance (RITTA) grant from EPA. This grant will be used to develop a hazardous waste reduction technical assistance pilot project to help industries minimize waste. It will also be used to provide training to DNR personnel on hazardous waste minimization plus extend an outreach effort to generators.

In its 1987-1989 budget bill, the Wisconsin state legislature requested that the Department of Natural Resources and the Department of Development submit a report describing legislative and administrative approaches through which the state could foster a reduction in the use of hazardous and toxic materials. This report was completed and proposed a joint University of Wisconsin Extension and DNR technical assistance and outreach program. The Wisconsin legislature is likely to consider legislation for such a program this fall.

Wisconsin also has an annual Governor's Award which recognizes achievements by Wisconsin industries and institutions to reduce and manage hazardous wastes.

The Wisconsin Department of Natural Resources' hazardous waste management program has responsibility for the administration of a regulatory program equivalent to the federal program under the Resource Conservation and Recovery Act. This program includes standards and requirements applicable to those who produce hazardous waste and to those who manage (treat, store or dispose of) hazardous waste in Wisconsin. Authority for inspection of facilities, enforcement for violations, and a complex facility siting and licensing program are provided.

In addition, the hazardous waste program is responsible for administering responsible party clean up of contamination at regulated hazardous waste facilities. These clean up projects involve cases of both groundwater and soil contamination. In the case of one project, U.S. Wormald, Inc. (Ansul Fire Protection) in Marinette, arsenic contamination of sediments in Green Bay are being investigated. The hazardous waste program has also been given responsibility for the regulation of household hazardous waste, PCBs and waste oil.

ENVIRONMENTAL RESPONSE AND REPAIR

Special state programs exist to manage abandoned containers, leaky underground storage tanks, spills and the investigation and clean up of contamination sites.

The Department participates in federal Superfund projects. Wisconsin has two Superfund sites in the Sheboygan Harbor Area of Concern. At the Sheboygan River and Harbor Superfund site, the Remedial Investigation is nearly complete. A potentially responsible party is examining the treatability of PCBs in sediment. Once this information is known, action will be taken to remedy the PCB problem. A Superfund Remedial Investigation for the Kohler Landfill Site is ongoing in the Sheboygan Area of Concern. More intensive investigation of contamination in soils and groundwater is taking place at the facility. It is anticipated that a Feasibility Study will be produced within the next two years.

The Moss American Superfund Project on the Little Menomonee River is located in the Milwaukee River Watershed, which drains to Lake Michigan. Creosote has been found in the sediments of a five mile segment of the stream. This Superfund site is in the Remedial Investigation phase and a Feasibility Study should be complete next year. The federal Superfund Trust Fund is paying for the Remedial Investigation and Feasibility Study at this site.

Wisconsin DNR also conducts a state version of the federal Superfund program, utilizing the Environmental Repair Fund (ERF). In the Great Lakes basin, the DNR is working with several potentially responsible parties to investigate PCB contamination in Cedar Creek, a river which drains to the Milwaukee River and Lake Michigan.

SOLID WASTE MANAGEMENT

The Department has been partially successful in promulgating administrative rules to address dredging projects where in-place toxic pollutants are found. One rule has been implemented and is being used to coordinate dredge projects. Another rule addressing the disposal of contaminated dredge material and confined disposal facilities has been stalled because of legislative concerns. In addition, a legislative study committee is reviewing a number of issues regarding dredged material disposal policies and cost sharing of the disposal of dredged material.

ATMOSPHERIC DEPOSITION

Regulations to protect Wisconsin residents from hazardous air pollutants became effective October 1, 1988. The rule restricts emissions of substances which are acutely toxic or are carcinogenic. Standards have been developed for existing and new or modified air pollution sources. Air pollution sources constructed prior to the rule's effective date, October 1, 1988, are existing sources. Existing sources will be brought into compliance on staggered schedules, depending upon whether they are a major or minor source of air contaminants over a period of 18 to 42 months.

Approximately 440 hazardous air pollutants have been categorized into 4 tables based upon the pollutants with known human harm. Tables 1, 2 and 4 contain pollutants which have acceptable ambient concentrations. Table 3 contains pollutants without acceptable ambient concentrations. Table 3A contains known human carcinogens and Table 3B contains suspected human carcinogens.

The tables contain de minimus or "trip" levels. If a facility's allowable emissions exceed any table values, the facility must submit a compliance plan. Facilities exceeding Table 1, 2 and/or 4 values must meet acceptable ambient concentrations based upon the American Conference of Governmental Industrial Hygienist's Threshold Limit Values (TLVs). Facilities exceeding Table 3A values must control emissions to the lowest achievable emission

rate (LAER). Best available control technology (BACT) must be used for emissions which exceed Table 3B "trip " or de minimus values.

The rule also contains some items which will apply in the future. Table 4 will become applicable to existing sources (sources existing as of the rule promugation date) on October 1, 1991. In addition, three studies are currently being conducted. Two of the studies include an inventory of sources and the amounts of emissions of chloroform and formaldehyde plus the control technologies to control emissions of chloroform and formaldehyde. The third study will evaluate the types and quantities of hazardous air contaminants emitted from wastewater treatment facilities and determine applicable emission control techniques. Studies will be completed by October 1, 1990.

Presently, the rule is being implemented by department staff. However, the rule is in litigation. A group of 6 Wisconsin buisness or technical associations are the main plaintiffs. These plaintiffs are joined by 18 companies or associations as plaintiff-intervenors. The Natural Resources Board and the department are the defendants. The intervenors are Citizens for a Better Environment; John Muir Chapter - Sierra Club; League of Women Voters, Inc.; and Wisconsin's Environmental Decade, Inc.

The department won the first issues brought to trial in the Dane County Circuit Court, Branch 11. A partial stay of some of the rule's deadline dates was granted to certain affected companies on April 10, 1989.

Both sides involved in this case have asked for an expedited trial in the Appeals Court. The earliest a decision is expected is in August 1989. The decision, however; could be as late as Fall 1989.

MONITORING AND SURVEILLANCE

Wisconsin has continued its monitoring and surveillance efforts over the past year. The Green Bay Mass Balance Study and Fox River Mass Balance Study are underway. An urban nonpoint source monitoring study is beginning in the Milwaukee Harbor Area of Concern to identify the components of urban runoff and their potential impacts on the Milwaukee Harbor and Estuary area.

HUMAN EXPOSURE AND HEALTH EFFECTS ASSESSMENT

The Department of Health and Social Services conducted a study of PCB in people who eat Great Lakes fish. Wisconsin anglers were surveyed for fishing and consumption habits and comprehension and compliance with the Wisconsin fish consumption health advisory. The results of the study identified a positive correlation between total PCB and DDE found in blood samples and total fish consumption of sport-caught fish in 1985. These results demonstrate that anglers may provide a population for assessment of PCBs and DDE associated morbidity and mortality.

PUBLIC INVOLVEMENT

The DNR has published the Green Bay Remedial Action Plan (RAP). Now an implementation committee with six advisory groups is determining how to implement the Green Bay Remedial Action Plan.

A public hearing was held in April 1989 on the draft Sheboygan Remedial Action Plan. The final Sheboygan RAP is being written now and will be completed and released later this summer.

The DNR has formed a Citizens Advisory Committee (CAC) and a Technical Advisory Committee (TAC) for the Marinette Harbor RAP. The planning process is underway in Marinette and a final plan is expected in October 1990. Wisconsin is preparing the plan with assistance from Michigan.

The DNR has formed a TAC for the Milwaukee RAP. A CAC will be formed by the beginning of August 1989. A planner has been hired to work with the CAC and write the plan. Stage I of the process (problem identification and determination of goals and objectives) will be complete by July 1990. The plan is expected to be complete by October 1991.

Wisconsin will be providing advice and assistance to Minnesota as the St. Louis River RAP is prepared. A CAC has been formed. The planning process is scheduled to be complete by June 1990.

OVERSIGHT AND IMPLEMENTATION

This document outlines Wisconsin's activities that address toxic substances in the Great Lakes. In addition, areawide water quality management plan updates contain recommendations to address toxic substances.

Oversight within Wisconsin is being coordinated by the Wisconsin Department of Natural Resources Division for Environmental Quality in conjunction with other Great Lakes programs.

APPENDIX A

STATUS OF COMMITTEE INTEGRATION UNDER MEMORANDUM OF UNDERSTANDING

<u>Committee</u>	<u>Ontario</u>	<u>Quebec</u>
Air Toxics	P	P
Biomonitoring	P	P
Surface Water Permit/Certificate Compatibility	P	P
Compliance	M	M
Cross-media Effects	P	P
Dredging/Contaminated Sediments	P	P
Fish Consumption Advisories	P	P
Ground Water Quality	P	M
Hazardous Waste Management	P	P
Health Effects	P	P
Land Application	M	M
Monitoring and Surveillance	P	P
Non-point Source Pollution	P	P
Risk Assessment/Management	P	P
Specimen Banking	P	M

"P" denotes "participate in joint state/provincial committee"
"M" denotes "monitor activities of state committee"

APPENDIX B
LIST OF DEADLINES UNDER THE
STATE/PROVINCIAL MEMORANDUM OF UNDERSTANDING
(In Chronological Order)

December 31, 1988

- o Each jurisdiction develops an initial list of permit, certificate, or standard information it is interested in receiving from other jurisdictions for the purposes of basinwide notice of discharge permits or other legally enforceable instruments and forward list to other jurisdictions (Clause 6 of MOU).
- o Jurisdictions jointly develop a list of persistent toxic substances which should be controlled (Clause 7a).
- o Emergency response phone number forwarded to other parties (Clause 10).
- o Initial schedule of workshops developed (Clause 21).
- o Preliminary report on Great Lakes Water Quality Fund submitted by Center for the Great Lakes (Clause 25).

May 31, 1989

- o Jurisdictions jointly develop an agreement for coordinating control of toxic releases (Clause 4).
- o Jurisdictions jointly report to governors and premiers on recommendations for interjurisdictional cooperation in hazardous waste management planning (Clause 14).
- o Jurisdictions submit recommendations on steps to improve specimen banking programs (Clause 20a).
- o Jurisdictions jointly report on status of health effects registries and necessary added initiatives (Clause 24).
- o Jurisdictions jointly submit annual report to governors and premiers (Clause 23).

December 31, 1989

- o Jurisdictions jointly report on actions being taken to control toxic substances, the timetable for actions, and further opportunities for reduction (Clause 7b).

May 31, 1990

- o Jurisdictions jointly review plans of actions (to control persistent toxic substances) of other jurisdictions, and report with recommendations (Clause 7c).

APPENDIX C

MEMORANDUM ON COORDINATING CONTROL OF TOXIC SUBSTANCES THROUGH PERMITS OR OTHER LEGALLY ENFORCEABLE INSTRUMENTS

INTRODUCTION

Toxic substances are chemicals which have been shown to present a risk of injury to public health or to the environment. Their release to the environment as a result of a lack of knowledge, accidents, or poor management has caused a long and growing list of human, environmental and economic harm. The Great Lakes Governors and Premiers have called the problem of persistent toxic substances the foremost environmental issue confronting the Great Lakes - St. Lawrence Basin.

On June 13, 1988 the governors and premiers entered into the Memorandum of Understanding on Control of Toxic Substances in the Great Lakes Environment (hereafter "MOU"). That agreement charges the environmental and health agencies to devise integrated and complementary policies on the control of toxic substances. The governors and premiers also agreed that public outreach to ensure citizen involvement is an important component in controlling toxic contaminants in the Great Lakes and St. Lawrence River.

This memorandum, hereafter referred to as the Permitting and Enforceable Instruments Memorandum or "PEIM", is an expanded, improved version of a similar document which was ratified by the state administrators in September 1986 (pursuant to the TSCA) entitled "Toxic Substances Management in the Great Lakes Basin Through the Permitting Process". PEIM will be used to coordinate ongoing TSCA activities with new joint state and provincial efforts to manage toxics.

The Great Lakes State and Provincial Environmental Administrators believe this memorandum takes the first step toward developing a strategy for coordinated regional management of discharges, releases, and emissions of toxic substances in the Great Lakes-St. Lawrence Basin through the use of permits or other legally enforceable instruments. In an effort to ensure that progress in this area will be steady and constant, the Great Lakes State and Provincial Environmental Administrators will function as the primary oversight group for the activities outlined in this memorandum.

Recognizing that each of the Basin states and provinces has different regulatory programs, at varying stages of development, this memorandum provides a challenge to each of the jurisdictions. Each state and province will continue to operate its own toxic substance management program in accordance with its respective administrative rules and other commitments. Also, each retains its prerogative to go beyond the programs agreed to herein, as each may feel appropriate.

This memorandum is fully expected to change the way in which toxic substances are presently managed in the Great Lakes - St. Lawrence Basin. It will result in the states and provinces developing compatible approaches to management of toxic substances.

Regulatory agencies have the responsibility to establish protection standards for the environment and public health and to assure that these standards are met. The best means now available for regulating these discharges is through the issuance of permits or other legally enforceable instruments. To ensure that permits or other legally enforceable instruments protect the Great Lakes and the St. Lawrence River, the governors and premiers agreed in the MOU to the following principles:

- o Known point source discharges or emissions of toxic substances that can negatively affect the Great Lakes - St. Lawrence Basin should be controlled by a regulatory permit or other legally enforceable instrument.
- o The jurisdictions should ensure that water pollution control programs for reduction of toxics do not result in violations of health-related standards or standards established for the protection of other media.
- o Full control of toxic discharges requires that the permitting of toxic substances released to surface water, groundwater and air, be better integrated.
- o Biomonitoring should be an integral part of the permitting process because it allows natural resource managers to measure the total impact of a discharge on the test species, rather than the impact of the sum of individual chemicals.
- o Coordinated ground water management programs will be developed and implemented. This will include initiatives to prevent the occurrence of ground water contamination within sensitive areas adjacent to the Great Lakes, St. Lawrence River and related tributaries. Long-term protection of ground water resources in these areas is important to ensure that migration of polluted ground water to the Great Lakes Basin or across state/provincial boundaries does not occur.
- o The jurisdictions agree to work toward establishing rules or permits or other legally enforceable instruments for existing sources requiring controls. In addition, the jurisdictions agree to carry out the evaluations needed to better understand the impacts of toxic air emissions on the Great Lakes and St. Lawrence River.

PROGRESS/FUTURE DIRECTIONS

Surface Water Permits or Other Legally Enforceable Instruments

Each jurisdiction has specific statutory requirements and administrative rules that describe procedures for management of toxic substances.

In addition, all jurisdictions seek to coordinate their efforts and the development of policies and legislation such that these are compatible with the roles of their respective federal governments while recognizing the constitutional responsibilities entrusted to each level of government as they pertain to the control of toxic substances.

In order to protect the Great Lakes - St. Lawrence Basin, however, it is essential to ensure that ambient and treatment standards and processes for writing permits or other legally enforceable instruments of the jurisdictions are more fully compatible. Nonetheless, the states and provinces may impose standards which are more stringent than those agreed to in this memorandum.

Biological monitoring allows managers to measure the toxicity of effluents directly rather than indirectly through chemical analysis. Properly designed bioconcentration/bioaccumulation studies can be used to directly measure the burden of discharged chemicals on aquatic life. There is a need to ensure that assay techniques are standardized and that results are both meaningful and comparable.

There is also a need to utilize assessment of risk when considering the impact of permitted releases of toxic substances on human health or the environment. Risk assessment considerations permit organization and evaluation of all relevant information on toxic substances, their interactions, and their effects on environmental and human health to determine the magnitude of risk that chemicals pose, given existing and potential exposures. This information is then considered with the social and economic cost of regulation, as well as public perceptions, to reach a risk management decision as to what, if any risk is acceptable.

- o The jurisdictions agree to develop a strategy for compatible permits or other legally enforceable instruments in the Great Lakes - St. Lawrence Basin which would employ consistent environmental and treatment standards. The first meeting to develop the strategy will be held no later than October 1989. A draft strategy will be prepared by July 1990.

- o The jurisdictions agree to meet annually after the draft permit strategy is prepared to share standard and criteria development strategies, risk assessment processes, pretreatment requirements, knowledge of treatment technology, permit limitation procedures and requirements, and other aspects of surface water discharge regulatory processes in order to confirm that permits or other legally enforceable instruments are compatible.
- o The jurisdictions will compare state/provincial practices for using and investigate requiring the use of biomonitoring/bioassay studies within the regulatory process during a workshop to be held in October 1989. By September 1990, state and provincial representatives will agree upon standardized assay techniques and the appropriate circumstances when biomonitoring will be required.
- o Results of biomonitoring studies will be incorporated into the CETIS (Complex Effluents Toxicity Information System) data storage system for access and review by other Basin states and provinces.
- o The jurisdictions agree to review Basin-wide practices and develop recommendations for adoption of a uniform approach to risk assessment/risk management as an integral part of the regulation of toxic substances. Final recommendations will be made by July 1990.

Contaminated Sediments/Dredging

Contaminated sediments in the Great Lakes-St. Lawrence River Basin are problematic because, over time, such sediments release toxics into the aquatic ecosystem which bioaccumulate in living organisms within the food chain. Some persistent toxics remain in the ecosystem indefinitely, continuously endangering the food chain and, through the consumption of contaminated fish, human health. As such, remediation of contaminated sediments is important to the long-term viability Basin ecosystem and to human health within the states and provinces.

Dredging activities in the Basin do not directly add contaminants to the aquatic environment. Dredging can, however, resuspend contaminants by disturbing contaminated sediments. Dredging and other construction activities involving toxics in sediments must not be allowed to cause further degradation of the Great Lakes or St. Lawrence River.

- o The jurisdictions will cooperate with their respective federal governments in the remediation of contaminated sediments, especially "toxic hotspots" within areas of

concern, and in the development of compatible national criteria for assessing the toxicity of contaminated sediments. Such criteria will assist the states, provinces and federal governments to identify and prioritize problem areas and develop associated clean-up strategies.

- o To prevent the spread of contaminated sediments, all dredging must be subject to permits or other legally enforceable instruments. The Remedial Action Plans currently being developed for the Great Lakes and St. Lawrence River may provide guidance in this area.
- o The jurisdictions will seek to cooperate with their respective federal governments in the development of compatible dredging regulations and technical design specifications for the control of dredged spoil materials in CDFs. Alternatives to CDFs such as upland facilities and on-land sites should also be considered.
- o Dredging planning and program decisions should consider overall ecosystem concerns as well as environmental, social and economic costs and benefits. Alternatives to dredging should be considered where practicable.
- o The jurisdictions will urge their respective federal governments to consider expanding the mission of the U.S. Army Corps of Engineers and Public Works Canada to include responsibility for remedial actions, with oversight authority vested in the states, provinces and federal environmental agencies.

Ground Water Quality

There are many areas of the Great Lakes, St. Lawrence River and related tributaries that are highly sensitive to ground water contamination. The hydrologic linkage that exists between ground water and surface water within adjacent or sensitive areas can be a source of pollution to the Great Lakes and St. Lawrence River when ground water is degraded. Long-term protection of ground water resources is important to ensure that degradation will not occur and migrate to the Great Lakes and St. Lawrence River.

- o The jurisdictions agree that adverse impacts resulting from releases of toxic chemicals to ground water must be controlled to adequately protect ground water and prevent contamination of the Great Lakes and the St. Lawrence River. The jurisdictions thus agree to develop ground water management programs as soon as possible and no later than September 1991.

Air Quality

In general, consideration has only recently been given to the secondary impact of air quality on water quality and other components of the environment. Many toxic substances that harm the aquatic ecosystem remain unregulated as air emissions. Reducing toxic air emissions and improving air quality, therefore, will help to improve water quality.

The regulation of air toxics differs throughout the basin. Some jurisdictions require strict controls on new and existing emission sources for all contaminants including nontraditional pollutants such as toxics. This approach is not generally required under existing law and is therefore not uniformly applied throughout the Great Lakes region. Requiring best available control technology (BACT) for both new and existing toxic air emissions wherever possible would help to reduce atmospheric deposition to the Great Lakes - St. Lawrence Basin. Particular attention should be paid to persistent toxics that have long-term impacts on the Great Lakes - St. Lawrence Basin (e.g., PCBs, furans, dioxins, etc.).

- o The jurisdictions agree to hold a workshop in November 1989 to develop a mechanism that will incorporate the effects of toxic air emissions on Great Lakes-St. Lawrence River Basin water quality into air emission permits or other legally enforceable instruments.
- o During the November 1989 workshop the jurisdictions will investigate development of a computerized air toxics data base. The purpose of the data base will be to obtain a better understanding of the nature and sources of toxic air emissions and their migration, dispersion, and resulting impact upon the Great Lake - St. Lawrence Basin.
- o The jurisdictions agree that best available control technology (BACT) should be applied wherever possible to both new and existing sources to control air emissions of persistent toxic substances. Where current authority is inadequate, the jurisdictions will seek to gain new authority, or to revise existing authority, as necessary to address the problem of the emission of persistent air toxics and their effects on the Great Lakes - St. Lawrence Basin.

Nonpoint Source Pollution

Urban and rural nonpoint sources of contamination can contribute major quantities of water pollutants. Urban runoff can include such toxic contaminants as heavy metals and a variety of organic compounds. Where large areas are devoted to agricultural activities, high concentrations of toxic and conventional pollutants can be released to the aquatic environment. Nonpoint sources of toxic substances have been linked with pollution of the Great Lakes and St. Lawrence River. These sources of toxic substances are not generally controlled through permits or other legally enforceable instruments.

- o A meeting will be held in November, 1989, to evaluate jurisdictional strategies for the reduction of nonpoint source pollution to the Great Lakes - St. Lawrence Basin. In some cases, regulation of nonpoint sources may be necessary to fully improve water quality.
- o Of particular concern is the coordination of programs that relate to stormwater. It is important to assure that resources are directed at identifying stormwater problems and that priority concerns are handled effectively. Further development of stormwater programs should be addressed in the meeting described above.

Cross-Media Effects

It is now generally understood that toxic chemicals can enter the Great Lakes - St. Lawrence Basin through discharges to surface water, runoff, ground water transport, and air deposition. Control of toxic chemicals accomplishes little if the contaminant is merely moved from water to air or vice versa. For example, a chemical may be efficiently removed from a surface water discharge and end up in a sludge that is incinerated. If the incineration process is not carefully controlled, the particular chemical may survive intact and enter the air to be subsequently deposited back into the water.

The control of toxic substance releases should be accomplished by integrated programs that account for discharges to surface water, ground water and emissions to air. Significant effort will be required to realign regulatory processes throughout the Basin in order to account for cross-media effects. Accordingly, actions such as biomonitoring should be an integral part of the regulatory process in order to properly quantify the loadings of toxic substances originating from all sources.

- o The jurisdictions should ensure that the total loadings from discharges of toxic substances to all media do not violate

aquatic environmental or health-related standards established for specific media. A workshop will be held in October 1989 to initiate this process by defining common permitting initiatives to effectively control cross-media transfer of toxic chemicals. Recommendations will be developed by May 1991 to assist jurisdictions in evaluating their programs and insure that the cumulative impacts on water quality of the Great Lakes - St. Lawrence Basin from all sources are integrated into the regulatory process.

- o The jurisdictions commit to reviewing their processes for issuance of permits or other legally enforceable instruments to see if they adequately address persistent toxic substances. A workshop to review the programs in each state and province to control persistent toxic substances will be held in October 1989. The goal of this workshop will be to examine the development of programs directed toward progressive reductions of loadings of persistent toxic substances consistent with the MOU, domestic legislation and the Great Lakes Water Quality Agreement.

The signatory parties will identify and report no later than December 31, 1989 the actions being taken by each state and province to achieve control of these substances including a schedule for implementation.

Schedule for PEIM activities

- October 1989:
1. Initial workshop on developing strategy for compatible permits or other legally enforceable instruments
 2. Workshop to compare state/provincial practices for using and investigate requiring the use of biomonitoring/bioassay studies within the regulatory process
 3. Workshop to define common permitting initiatives to effectively control cross-media transfer of toxics
 4. Workshop to review programs in each state/province for controlling persistent toxic substances
- November 1989
1. Workshop to develop a mechanism that will incorporate the effects of toxic air emissions on Basin water quality into permits and other

legally enforceable instruments, and to investigate development of an air toxics data base

2. Workshop to evaluate jurisdictional strategies for reduction of nonpoint source pollution

December 1989 1. Report on actions being taken to achieve control of persistent toxic substances, including a schedule for implementation

July 1990 1. Prepare draft strategy for development of compatible permits or other legally enforceable instruments

2. Submit final recommendations for adoption of a uniform approach to risk assessment/management as an integral part of the regulation of toxic substances

September 1990 1. Reach agreement on standardized assay techniques and the appropriate circumstances when biomonitoring will be used

May 1991 1. Develop recommendations to assist jurisdictions in evaluating their cross-media programs

September 1991 1. Deadline for development of ground water management programs

APPENDIX D

STATE AND PROVINCIAL HEALTH EFFECTS TASK FORCE RECOMMENDATIONS

Standardize the Collection and Management of Health Data

Health agencies in the Great Lakes states and provinces should standardize their health registries wherever possible. An initial examination of registries in the Great Lakes-St. Lawrence River Basin suggests that existing health registries already have certain common data elements (see Appendix E for more detail). Identification of these commonalities will allow registry data to be used to help answer regional research questions developed by the Task Force. Nonetheless, additional recommendations must be developed and submitted to their respective jurisdictions to further increase registry compatibility among the states and provinces.

The Great Lakes state and provincial health agencies should also seek to permit researchers to access registry data. The Task Force will examine state and provincial regulations governing data availability, develop recommendations for increasing compatibility and permitting access, and submit such recommendations to their respective jurisdictions.

Conduct Intra-basin and Inter-regional Studies to Determine the Health Effects, if any, of Great Lakes-St. Lawrence River Basin Water Quality

The quality of Great Lakes water may influence the health of the Basin's citizens. Cooperation among the states, provinces and appropriate U.S. and Canadian federal agencies can facilitate studies of potential health effects. The Task Force members recommend that these groups jointly pursue studies that may determine if Great Lakes water quality or other environmental media affect human health. Two possible studies are:

- A study comparing the health in those communities using Great Lakes water for drinking with the health in those Basin communities not drinking Great Lakes water; and
- A study comparing the health in the Great Lakes region with the health in other regions of either country.

Pursuant to the TSCA, the states have already approached certain U.S. federal agencies to seek data and funding for these studies. While funding was not available at the time, it was suggested that certain U.S. federal agencies might be willing to assist in the development of such studies.

A subcommittee of the state and provincial Task Force will again attempt to obtain federal funding. If federal funding is still unavailable, the Task Force will pursue funding alternatives.

Compare Trends in Great Lakes Water Quality with Trends in Health Effects

Using historical information such as birth and mortality certificates in Basin communities, trends in health effects can be compared with trends in water quality. The results of such studies can aid in the evaluation of water quality improvement programs, particularly with respect to the human health objectives built into water quality standards or other legally enforceable requirements.

The myriad of confounding factors that can invalidate the data used in such studies necessitates review before studies are undertaken. In an attempt to review appropriate data, a subcommittee of the Task Force will approach state, provincial and federal environmental agencies, as appropriate, to seek assistance in gathering and analyzing historical information on water quality. After this review, the Task Force will prepare recommendations for future courses of action.

Conduct Additional Health Effects Studies when Adequate Environmental Exposure Data are Available

One of the most difficult problems researchers face in determining the health effects of a particular contaminant is that of establishing a cause and effect relationship between exposure and a particular health effect. As this continues to hinder health effects studies, the Task Force recommends that studies be undertaken in the Basin based on adequate exposure data.

Identify Organizations that Develop or Assist in the Development of Regional Health Advisories

The jurisdictions can benefit from a knowledge of those organizations operating within the Basin that develop or assist in the development of health advisories on a region-wide basis. A number of such groups have been identified in Appendix F. A subcommittee of the Task Force will conduct a survey of the duties that these organizations perform relative to regional health advisories. The Task Force will recommend measures to improve interaction between the jurisdictions and such groups so as to increase the mutually beneficial exchange of information.

Identify Roles of Specific Units within State and Provincial Governments as Related to Human Health

Many state and provincial agencies and agency sub-units perform duties which impact health in the Great Lakes-St. Lawrence Basin. Inter-agency communications would be improved by a sharing of information within and across jurisdictions as to the health-related duties of agencies and agency sub-units.

The Task Force recommends that their respective Governors' and Premiers' offices assist in an identification of health-related duties within the jurisdictions. It is further recommended that workshops between environmental and health specialists be scheduled, as appropriate, to improve inter-agency communications.

APPENDIX E

COMMON DATA ELEMENTS OF THE GREAT LAKES STATE/PROVINCIAL HEALTH REGISTRIES

BIRTH CERTIFICATES/NOTICES

INFANT

- a. Name - first, middle, last
- b. Sex - male or female
- c. Birth - single, twin, or other specified
- d. Date of Birth - month, day, year
- e. Place of Birth - name of hospital or if not in a hospital, the address
- f. Weight - specification of units varies

MOTHER

- a. Name - first, middle, maiden
- b. Age - in years at time of birth
- c. Mailing Address - street and number, city or village, state or province, zip code
- d. Previous Live Births - number living and dead, date of last live birth
- e. Other Terminations - includes number of spontaneous and induced abortions (all states except New York indicate number of terminations at more or less than 20 or 16 weeks gestation) date of last other termination by month and year

FATHER

- a. Name - first, middle, last
- b. Age - in years at time of birth
- c. Place of Birth - state or country (not Ontario)
- d. Race - white, black, american indian, etc. (specify/ not Ontario)
- e. Education - number of years completed in high school and college specified

MEDICAL

- a. Congenital Malformations - either none or description is entered for all states/provinces except Indiana which only asks yes or no.
- b. Complications of Pregnancy - description (not Ontario)
- c. Complications of Labor and/or Delivery - description (not Ontario)
- d. Concurrent Illness or Conditions Affecting Pregnancy- description (not Ontario)

CERTIFIER/MISCELLANEOUS

- a. Certifier Information - name, title, signature, date signed, mailing address, including zip code or post office
- b. Attendant - name and title if different from certifier; for Ohio and Minnesota the certifier is always the attendant
- c. Registrar - signature and date received or filed

Other Birth Certificate/Notice Data Elements Collected But
Not Common for All States and Provinces

- 1. Social Security Number for mother and father
- 2. Street and number and zip code of mother's residence when different from mailing address
- 3. Most recent and/or usual occupation of mother and father, including type of business and name and address of firm
- 4. If serological test for syphilis was done on mother and when
- 5. If infant received preventive treatment for purulent conjunctivitis
- 6. Date of mother's first live birth
- 7. If infant is living at time of report
- 8. Special procedures performed regarding infant, e.g., amniocentesis, ultrasonography
- 9. Method of delivery

10. Other procedures performed at delivery
11. Radiation exposure during pregnancy
12. Was infant transported to another hospital; if yes,
name and address of hospital
13. Gestation in weeks
14. Birth injuries to child
15. If child is legitimate or was mother married to father
16. Labor induced
17. Other significant
18. Infant admitted to ICU
19. License number of certifier
20. Medical diagnoses for which infant was hospitalized

DEATH CERTIFICATES

DECEDENT

- a. Name - first, middle, last
- b. Sex
- c. Age - in years at time of death; under 1 year - month, days;
under 1 month - hours, minutes
- d. Date of Death - month, day, year
- e. County of Death
- f. Locality of Death - city, town, village
- g. Place of Death - name of hospital or institution; if neither
give address

CAUSE OF DEATH

- a. Immediate - specified, approximate time interval between
onset and death
- b. Conditions Giving Rise to Immediate Cause - specified,
approximate time interval between onset and death - space
allowed for two entries
- c. Significant Conditions - conditions contributing to death
but not related to cause given
- d. Autopsy - yes or no

Injury

- e. Type - accident, homicide, suicide, undetermined, or
pending investigation
- f. Date of Injury - month, day, year
- g. Description of Occurrence
- h. Place of Injury

DISPOSITION (not Ontario)

- a. Type - burial, cremation or other specified
- b. Place - name or cemetery, crematory, or other specified
- c. Location - city or village and state
- d. Funeral Home - name and address
- e. Signature of Funeral Director

CERTIFIER

- a. Signature and Date - physician, medical examiner or coroner
- b. Name of Attending Physician - for Ohio the certifier is always the attending physician; this information is not obtained if the certifier is the medical examiner or coroner
- c. Mailing Address

REGISTRAR

- a. Signature
- b. Date Filed or Received

Other Elements Common For Most States and Provinces

- 1. Status of Decedent in Hospital or Institution inpatient, outpatient, ER, DOA, other specified
- 2. Street and Number of Residence of Decedent
- 3. Date of Disposition - month, day, year
- 4. Registration or License Number of Funeral Director

Other Elements for Ontario

- 1. If deceased was female, did death occur during pregnancy or within 42 hours thereafter?
- 2. Does cause of death listed consider autopsy finding?
- 3. May further information be available later?
- 4. Designation of certifier

CANCER REGISTRIES

(except Ohio)

SUBJECT

- a. Name - first, middle initial, last
- b. Residence - county
- c. Mailing Address or Residence - street number and name; city, town or village; state or province; zip code
- d. Date of Birth - month, day, year
- e. Sex

MEDICAL

- a. Medical Chart Number
- b. Date of Original Diagnosis - month, year
- c. Primary Site
- d. Histological Type
- e. Method of Diagnostic Conformation - histology, cytology, microscopic, direct visual, x-ray, clinical, other, unknown
- f. Hospital - name or identification number

Other Cancer Registry Elements Common for at Least
50 Percent of the States/Provinces

1. Maiden Name
2. Social Security/Identification Number
3. Date of Discharge - month, year
4. Date of Death - month, day, year
5. Name of Physician - first, last
6. State of Disease - in situ, localized, regional, metastatic
7. Diagnosed at Other Hospital - name or identification number

8. Usual Occupation
9. Kind of Business or Industry
10. Date Abstracted
11. Abstractor Identification - name, initials, or code

Other Information in Ontario Cancer Registry

1. Place of Birth
2. Vital Status as of Last Known Date
3. Cause of death from death certificate, if deceased

APPENDIX F

NON-STATE/PROVINCIAL ORGANIZATIONS THAT DEVELOP OR ASSIST IN THE DEVELOPMENT OF REGIONAL HEALTH ADVISORIES

- U.S. Environmental Protection Agency, including the Great Lakes National Program Office
- Environment Canada
- Committee on the Assessment of Human Health Effects of Great Lakes Water Quality, International Joint Commission
- State and Provincial Fish Consumption Advisory Task Force, Council of Great Lakes Governors
- North Central States Epidemiologists
- U.S. Clearinghouse for Hazardous Materials
- U.S. Agency for Toxic Substances and Disease Registry
- Marine Fishery Division, U.S. Department of Interior
- U.S. Federal and State Technical Regulation Committee (FASTRAC)
- U.S. Center for Disease Control, National Institute of Occupational Safety and Health
- American Public Health Association

APPENDIX G

GREAT LAKES STATES AIR PERMITTING AGREEMENT

I. INTRODUCTION

In 1986, the Great Lakes states' environmental administrators entered into an agreement, "Toxic Substances Management in the Great Lakes Basin Through the Permitting Process," requiring that Best Available Control Technology be installed wherever possible on all new and existing sources of persistent air toxic pollutants which impact on the Great Lakes, pursuant to implementing the governors' "Great Lakes Toxic Substances Control Agreement." In 1987, permitting staff representatives from the Great Lakes states attended a workshop in Ann Arbor, Michigan, where the latest research was presented, documenting the need to reduce the air impacts on the Great Lakes. At this workshop, the Great Lakes states' air permitting representatives investigated and made several recommendations on how the governors and environmental administrators directives can best be implemented. One of the recommendations was to have a follow-up meeting of the air permitting staff representatives in July of 1988 to insure consistency in the type of information which will be considered in permit reviews, and in the implementation of Best Available Control Technology, clear communications and informational exchange between Great Lakes states, and clarification of issues which EPA needs to take the lead on in order to assure effective implementation of the air provisions of the governors' and environmental administrators' agreements.

II. PERMITTING INFORMATION

- A. All permit applicants in the state will be required to identify and quantify potential emissions of the pollutants identified in Table A as a part of a routine New Source Review permit application. Table A consists of the seven pollutants identified by the IJC as having adverse impacts on the Great Lakes and which have the potential of being emitted by air pollution point sources. Other pollutants may be added to Table A by unanimous agreement of the environmental administrators of the Great Lakes states.
- B. Each state permitting authority shall conduct its own technical review in order to assure accurate identification and quantification of these pollutants.
- C. Environmental Impact Statements, for potential sources of pollutants in Table A which are required under

current state and federal regulations, should consider potential adverse impacts on the Great Lakes in order to be considered complete.

III. IMPLEMENTATION OF BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

- A. For the pollutants listed on Table A, each permitting authority shall utilize all applicable air pollution regulations to insure that BACT is being installed on any new or modified source which is subject to the state's New Source Review Program, and on existing sources, considering a de minimus cutoff, which are required to obtain an operating permit. States which do not have the current legal authority to assure that BACT is installed on new and existing sources of the pollutants in Table A shall pursue through their appropriate regulatory process authority to implement the governors' and environmental administrators' agreements.
- B. For purposes of this agreement, BACT means emission limits, operating stipulations, and/or technology requirements based on the maximum degree of reduction which each Great Lakes state determines is achievable through application of processes or available methods, systems, and techniques for the control of each of the pollutants listed in Table A, taking into account energy, environmental, and economic impacts, and other costs.
- C. Emission limits, operating stipulations, and/or technology requirements shall be established as permit conditions for each of the pollutants listed in Table A. Whenever warranted, sources will also be required to conduct an emission verification test to assure compliance with the allowed emission limits during the initial verification test as well as during periodic verification tests.

IV. INTERAGENCY COMMUNICATIONS

- A. Subject to restrictions on disclosure of trade secrets under federal and state law, each state shall enter into the BACT/LAER Clearinghouse and the Air Toxic Information Clearinghouse all permitting information relating to sources of the pollutants identified in Table A. This information shall include, as a minimum, the following information: all BACT and/or LAER determinations; all useful air toxics permitting information; and all air toxics emission verification data.

- C. Each state shall participate in a standing technical steering committee to maintain consistency to the extent practicable in state determinations made pursuant to this agreement.

Signed and entered into November 3, 1988.

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