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APPENDIX I
TO
REPORT OF SUB-GROUP A
OF THE
UNITED STATES SENIOR REVIEW GROUP
ON
REVIEW OF THE GREAT LAKES WATER QUALITY AGREEMENT

APRIL 29, 1977

Environmental Protection Agency

Office of International
Activities

APPENDIX I

TO

REPORT OF SUB-GROUP A

IN REVIEW OF

THE GREAT LAKES WATER QUALITY AGREEMENT REVIEW

APRIL 29, 1977

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INTRODUCTION

This Appendix contains the Position Papers listed in the Table of Contents of the Report of Sub-Group A and are reiterated here and appear in the following order in the Appendix:

Water Quality Objectives Work Group

Surveillance Work Group

Phosphorus Work Group

Point Source Discharges Work Group

Non-Point Sources Work Group

Hazardous Substances Work Group

Nuclear Wastes (Radioactivity) Work Group

Research Work Group

These Position Papers form the basis for the Sub-Group A Report. Each of the Papers were prepared independently by the Work Groups listed in the Attachment to the main Report. They are published in this separate document for ease in reference since the main Report makes frequent reference to these Papers.

As stated in the main Report, these Position Papers reflect the separate views of the Work Groups which may not necessarily be the views of Sub-Group A as a whole. In most cases any differing views are discussed in the main Report. However, where written differences of views were expressed within the Work Group, they have been included following each Position Paper.

Minnesota Pollution Control Agency

April 27, 1977

SUBJECT: Position Paper on Water Quality

FROM: Lovell E. Richie, Water Quality
Task Leader Sub-Group A

TO: George R. Alexander, Jr.,
Chairman, Sub-Group A
Great Lakes Water Quality Review

Attached is the final Position Paper on Water Quality. This Paper is the same as the draft discussed at the Sub-Group A meeting on April 15 because no comments have been received.

As I indicated in my memorandum transmitting the draft paper, I also favor the inclusion of the Water Quality Objectives as recommended by the Water Quality Board as was proposed in the draft report of Sub-Group A.

It was a pleasure to participate in this Review.

Sincerely,

Lovell E. Richie

Attachment

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Water Quality

BACKGROUND

The Great Lakes Water Quality Agreement is a recognition and an expression of determination by the Government of the United States and the Government of Canada to restore and enhance the water quality of the Great Lakes System.

The Governments in their wisdom have defined the Great Lakes System to mean "all of the streams, rivers, lakes and other bodies of water that are within the drainage basin of the St. Lawrence River...." Article I (d).

The Governments further expressed their conviction that...."The best means to achieve improved water quality in the Great Lakes System is through a system of common objectives, the development and implementation of cooperation programs and other measures, and the assignments of special responsibilities and functions to the International Joint Commission."

With that purpose and policy in mind, the Governments agreed to undertake a cooperative program.

The Agreement having been in existence now for five years, brings us an opportunity and obligation to review what has been accomplished under the Agreement and to suggest changes that might improve its content and thereby better accomplish its primary goal of restoration and enhancement of water quality.

ACCOMPLISHMENTS AND DEFICIENCIES UNDER THE AGREEMENT

Great success has been achieved institutionally whereby the International Joint Commission (IJC), under Article VI, has performed its role well in reporting to governments on present conditions, status of programs, and has tendered advice to governments.

This has been accomplished by means of annual reports prepared for the IJC by the Great Lakes Water Quality Board and from those reports from IJC has prepared reports to governments. The attention given to the Water Quality Board by federal, state and provincial agencies, and the dedication of various jurisdictions to the work of IJC, the Board and the various work groups and committees is admirable, and the participants are to be commended.

Special reports have been prepared under the auspices of IJC on Lakes Huron and Superior, pollution from land use will be addressed in a report presently in preparation and recommendations have been offered on specific problems noted by the Water Quality Board.

Considerable time has been spent by the Water Quality Board and IJC on refined objectives for water quality as envisaged in the Agreement. The Board has taken the position that water quality objectives should protect the most sensitive use and most such objectives are based on scientific evidence relating to biological effects.

While the need for numerical objectives (or in the U.S., criteria for standards) of water quality has been well established, the purpose for which such numbers are used under the Agreement has

not been of much value.

Considerable time has been devoted to discussion and creation of an array of "pigeon holes" such as mixing zones, zones of influence, source control zones, areas of non-compliance, biological sensitive areas, environmental value mapping, near-shore zones, open-water zones, etc.

Whether intentional or not, this has lead to a diversion from the real issues and the essence of the program in the United States, i.e., the implementation and enforcement of policy. The real issues should be: what requirements are imposed by the parties and jurisdictions to control the [illegible] of [illegible] how are they enforced and how effective have such programs been. The latter question, i.e., how effective have such programs been, should not be a judgement [illegible] jurisdiction, but rather by complete disclosure [illegible], whether [illegible] they have a [illegible] whether [illegible] they have legally enforceable [illegible], whether [illegible] not they have legally enforceable [illegible] to attain compliance; whether they are at present in compliance and if not, when they will be.

In order to make any such comparison meaningful there must be an agreed upon [illegible] requirement [illegible] incorporates an effluent [illegible] of the U.S. [illegible] requirements [illegible]

The U.S. can take very little pride in the delays that have been encountered in several major projects under the U.S. system, but on the other hand, it should be noted that what has been criticized are the time delays and never has it been the quality or requirements of the basic program.

What has been disheartening is that we have allowed a comparison to be made of the relative effectiveness of the U.S. and Canadian programs using general water quality "objectives" of open water and leaving it up to the jurisdictions to decide if their programs will meet such general objectives.

That was about where the U.S. program stood in the period 1965-1972 under the 1965 Federal Water Quality Act, which mandated a national water quality standard program. Public Law 92-500 changed that and the program now relies on effluent standards and best treatment technology. That program is assured under a rigid permitting program shared by the state and federal government.

It is against this program that the U.S. has judged its progress and not against the Water Quality Agreement, since there currently exists very little if any direct evidence that would allow comparison of existing programs against Water Quality Objectives of the Agreement. Even if there were, one could escape the whole issue by classifying such areas as a mixing zone or zone of influence or some other term and such comparisons then become nothing more than a game of semantics.

What is a fair treatment requirement on one side of the lakes should be fair for the other as well, and whether that turns out to be the U.S. minimum treatment requirements (secondary, BPT, BAT) or something different, the important point is that an agreed upon minimum effluent requirement is needed in order to make any meaningful comparison of the effectiveness of control programs which can be the only measure of joint progress under the Agreement.

There is strong disagreement on this question between the U.S. and Canadian members of the Water Quality Board who make up the essence of the control programs from all jurisdictions and it will not be an easy item to negotiate into the Agreement.

If, however, this one change were made to add a minimum effluent requirement into the Agreement, it would accomplish more from the viewpoint of control of pollution than has all other activity to date under the Agreement and allow for meaningful review of progress.

Certainly there has been much accomplished under the Agreement in terms of studies, surveillance, reporting of existing water quality and, for what it's worth under present constraints, remedial programs, but until we are prepared to agree to hard and fast controls in the form of effluent standards, we have not committed anybody to anything other than the business of more study and an exercise of comparing apples and oranges.

One test of the value of the Agreement would be to ask, "what have we done differently because of the Agreement that we would not have done anyway." The answer is clearly that we have conducted several worthwhile studies of the system, we have sharpened our

surveillance, refined our interagency and interjurisdictional communications, proposed refined water quality objectives, based upon joint scientific evidence all of which are valuable accomplishments and perhaps the best we could expect from a first cut at a very complex problem.

The Agreement has not, however, changed in any significant way, the control programs in the U.S. which does not mean that its intent and purposes have been ignored. To the contrary, the U.S. program is now guided by PL 92-500, which became operative after the Agreement was signed and long after it was first envisaged.

PL 92-500 and its attendant requirements in the judgement of the U.S. participants is adequate without exception to meet the terms of the Agreement. If that is not true, we are aware of no instance where Canada has pointed out its inadequacy.

The single area where Canada has been critical of the U.S., and justifiably so, is in the U.S. failure to keep major pollution control works construction on its own self-imposed schedule. It is a legitimate and worthwhile role of the parties to review and criticize each other, but until there is a comparable program of legally enforceable formal minimum treatment in Canada and preferably a joint commitment under the Agreement, such criticism under the Agreement, however, is improper. It then becomes simply a criticism of an internal U.S. program based only on U.S. law and not on any international commitment.

The Agreement can be modified to incorporate provisions for minimum treatment requirement or effluent standards by modifying:

Article III as follows:

SPECIFIC WATER QUALITY OBJECTIVES

1. The specific water quality objectives and minimum treatment requirements for the ~~boundary~~ waters of the Great Lakes System set forth in Annex 1 are adopted.

2. The minimum treatment requirements and specific water quality objectives may be modified and additional specific water quality objectives for the boundary waters of the Great Lakes System or for particular sections thereof may be adopted by the Parties in accordance with the provisions of Articles IX and XII of this Agreement.

3. The minimum treatment requirements and the specific water quality objectives adopted pursuant to this Article represent the minimum effort of treatment and the minimum desired levels of water quality in the ~~boundary~~ waters of the Great Lakes System and are not intended to preclude the establishment of more stringent requirements.

4. Notwithstanding the adoption of minimum treatment requirements and specific water quality objectives, all reasonable and practicable measures shall be taken to maintain the levels of water quality existing at the date of entry into force of this Agreement in those areas of the ~~boundary~~ waters of the Great Lakes System where such water quality is better than that prescribed by the ~~levels exceed the~~ specific water quality objectives.

5. In areas designated by the appropriate jurisdictions as having outstanding natural resource value and which have existing water quality better than that prescribed by the specific water quality objectives that water quality should be maintained or enhanced.

Annex 1 as follows:

SPECIFIC WATER QUALITY OBJECTIVES

1. (a) through (h) remains the same

Add a new paragraph #2 as follows:

2. To accomplish these objectives, the parties shall require municipal sources to provide a minimum level of treatment which shall produce an effluent of no more than

30 mg/l	BOd_5	
30 mg/l	TSS	
200/100 milliliters	fecal coliform (seasonal depending on use)	
1 mg/l	total phos	

Where such treatment is inadequate to protect water quality standards or to meet the objectives of this Agreement additional treatment will be required.

To accomplish these objectives the parties shall require industrial sources to provide a minimum level of treatment that shall produce an effluent consistent with the best practicable technology for that industry.

Where such treatment is inadequate to protect water quality standards or to meet the objectives of this Agreement additional treatment will be required.

Flow augmentation should not be used in lieu of adequate treatment

Article V as follows:

PROGRAMS AND OTHER MEASURES

1. remains the same

(a) first paragraph remains the same

(i) construction and operation in all municipalities having sewer systems of secondary waste treatment facilities providing levels of treatment consistent with ~~the achievement of the water quality objectives, taking into account the effects of waste from other sources;~~ those specified in Annex 1.

(ii) remains the same

(iii) remains the same

(iv) remains the same

(v) remains the same

(b) first paragraph remains the same

(i) establishment of waste treatment or control requirements for all industrial plants discharging waste into the Great Lakes System, to provide levels of treatment that incorporate the best practicable technology. ~~or reduction of inputs of substances and effects consistent with the achievement of the effects of waste from other sources;~~

(ii) remains the same

(iii) remains the same

(iv) remains the same

(v) remains the same

(vi) remains the same

The remainder of Article V is unchanged.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region V

SUBJECT: Review Paper - Surveillance

DATE: April 25, 1977

FROM: Chris Timm
Director, S&A Division

TO: R. J. Schneider
Great Lakes Coordinator

Attached is the review paper for surveillance including proposed language for Article V & X of the Agreement. Please circulate this to all the other work Groups and participants.

Attachment:
As Stated

cc:
G. Alexander
W. Wilford
W. McCracken
R. Crim
T. Saylor

REVIEW PAPER - SURVEILLANCE

I. Introduction

The existing Agreement mandates the following specific surveillance requirements to both Parties.

Article V,1.(a),(v). "monitoring surveillance and enforcement activities necessary to ensure compliance with (control of pollution from municipal sources)."

Article V,(b),(vi). "monitoring, surveillance and enforcement activities necessary to ensure compliance with (control of pollution from industrial source)."

Article V, (c),(v). "...establishment of a coordinated system for surveillance and enforcement of regualtions dealing with the abatement and control of pollution from shipping activities."

Article VI, 1.(a). "collection, analysis and dissemination of data....relating to the quality of the boundary waters."

Annex 1, Item 4. "Sampling Data. The Parties agree that the determination of compliance with specific objectives shall be based on statistically valid sampling data."

Annex 2, Item 10. "Monitoring. The Parties..... shall continue to monitor the extent of eutrophication in the Great Lakes system and the progress made in reducing or preventing it."

Annex 2, Item 11. "Submission of Information. The IJC will be given information at least annually....concerning

a) Total reduction in gross inputs of phosphorus achieved as a result of the programs implemented..."

but does not call for an internationally coordinated program nor is it adequate for assessment of fish stocks or the impacts of atmospheric sources or toxic substances.

The present status of surveillance activities under the Great Lakes Water Quality Agreement (Agreement) are accurately summarized in the August 27, 1976 letter from William Bullard, Secretary, U. S. Section, IJC to Mr. Vine, U.S. Department of State and in the Fourth Annual Report on Great Lakes Water * Quality presented to the U. S. and Canadian governments by the IJC on September 16, 1976. Copies of both are attached.

II Jurisdictional Program Status

a. Canadian Programs

Overall,the Canadians had a larger surveillance program than the U.S. until 1977 in all areas - water quality, fish stock assessment, etc. The 1977 programs are in balance and indications are that the Canadian Government has reduced the FY 1978 level of funding for surveillance, especially for the nearshore programs which are already underfunded on both sides. The Canadian program for evaluation of the effects of toxic substances on fish is larger in that more fish are collected and analyzed, especially on Lake Ontario, but its scientific basis and long term objectives are poorly defined.

b. U. S. Programs

The U.S. EPA programs are judged to be barely adequate with respect to main lake programs, both in terms of field and lab capabilities. Fish stock assessment programs of the States and the U.S.Fish and Wildlife Service (as coordinated by the Great Lakes Fisheries Commission) have grown and improved greatly in the past years; however, stock assessment programs still do not adequately address the major species in all of the Great Lakes. Surveillance of contaminants in fish stocks and evaluations of the potential effects of contaminants and other stresses on fish by the F&WS, EPA and the States, are generally considered inadequate and will remain so without increased Federal funding.

* Fourth Annual Report of the IJC on Great Lakes Water Quality included as Attachment 1 of Sub-Group A Report

The state programs which cover the nearshore areas are all inadequate due to the low priority for state funds and a lack of Federal funds Tributary and point source monitoring are judged to be adequate at present. Since the Federal Water Pollution Control Act, Sec. 106 water pollution control grants do not allocate extra funds or priority for support of the Agreement it is unrealistic to attempt to use normal Sec. 106 funding to improve the Great Lakes surveillance program. The need is for a specific section of the FWPCA that sets forth an annual appropriation to support all activities including surveillance that are necessary for the Great Lakes Water Quality Agreement.

III Great Lakes Water Quality Agreement

Articles V and VI and Annexes 1, 2, 5, and 6 of the Agreement adequately identifies most of the surveillance programs required to assess the state of the Great Lakes except those mentioned in I above. The major weakness is that the present agreement does not contain any requirements for a minimum program level of effort or resources for surveillance. Therefore, it is recommended that articles that endorse the general surveillance plan as outlined in Appendix B to the 1975 WQB report be added to Article V of the Agreement.

It is further recommended that a new section (c) be added to Article X of the revised Agreement to stipulate the minimum level of funding that will be provided annually for surveillance activities. Unless the resource needs for surveillance are specifically addressed in amendments to both the Agreement and the FWPCA, we will continue to suffer from fragmented funding levels that play havoc with long term planning and staffing by both Federal and State agencies.

IV. Recommended Additions

ARTICLE V

1.(j) Surveillance. Notwithstanding the surveillance requirements stated above, a coordinated, bilateral program that will meet the following objectives:

(i) Objective Violations

Surveillance to detect violations of water quality objectives for parameters with numerical limits.

(ii) Trends

Surveillance to determine water quality trends for the purpose

of evaluating compliance with the non-degradation requirement and determining long-term effects of remedial programs.

(iii) Cause and Effect

Surveillance, to describe and quantify cause (loads) and effect (water quality) relationships to understand how the Great Lakes physical, biological and chemical system operates. Together with mathematical modeling, this forms the basis for determining whole lake response to remedial programs, the need for new remedial programs such as the phosphorus control program, altering or establishing new water quality objectives, and a means to detect new and emerging problems.

As a minimum the program will include sufficient sample collection, analysis and evaluation including quality assurance to allow assessments of the following:

(iv) INPUTS including tributaries, points sources, atmosphere, and connecting channels

(v) WHOLE LAKE including nearshore areas such as harbors and embayments, general shoreline, and cladophora growth areas; main lake, fish contaminants, and wildlife contaminants.

(vi) OUTFLOWS including connecting channels, water intakes and outlets.

ARTICLE X

2. The Parties commit themselves to seek:

(c) Appropriation of at least 5 year advance funding of the surveillance program stipulated in Article V 1.(j) above beginning with FY 1978. The minimum funding levels to be requested will be $9,800,000 per annum for the USA and $6,100,000 per annum for Canada. The funding level will be reviewed and adjusted as needed annually.

* * * *

INTERNATIONAL JOINT COMMISSION
United States and Canada
Washington D.C. 20410

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August 27, 1976

Mr. Richard D. Vine
Deputy Assistant Secretary of
State for Canadian Affairs
Department of State
Washington, D. C. 20520

Dear Mr. Vine

The International Joint Commission wishes to bring to the attention of the Governments the urgent need to provide adequate funding for water quality surveillance in the Great Lakes.

Each year since the signing of the Agreement, the Commission, on the advice of the Water Quality Board, has informed the Governments that it could not report adequately on progress, or lack of it, toward achieving the goals of the Agreement since existing surveillance programs were inadequate. The following are some of the reasons:

- the lack of sampling in nearshore areas, particularly problem areas;
- the lack of systematic quality control programs in the eleven jurisdictions concerned in the Great Lakes Basin;
- the non-comparability of data and the absence of sampling data that is statistically valid;
- the lack of adequate staffing at all levels to carry out water quality assessment;
- the lack of specific objectives for many water pollutants; and
- the variable conditions, unpredictable natural processes and vast size of the Great Lakes System.

On July 21, 1976, at its Annual Meeting on Great Lakes Water Quality, the Commission's principal advisor, the Great Lakes Water Quality Board, presented an International Surveillance Program for the Great Lakes

which in the view of the Board and the Commission represents the minimum effort the Parties should consider in fulfilling their most important obligation for surveillance under the 1972 Great Lakes Water Quality Agreement. The following table summarizes the funds required for this program during each of the next ten years.

FUNDING REQUIREMENTS FOR AN ADEQUATE
INTERNATIONAL GREAT LAKES SURVEILLANCE PROGRAM
(Millions of 1975 Dollars per Year)

	Present Expenditures	Additional Requirements	Total Requirements
UNITED STATES	4.2	5.6	9.8
CANADA	4.3	1.9	6.2
TOTAL	8.5	7.5	16.0

The surveillance program described in the enclosed report, Chapter 4 - Appendix B of the Great Lakes Water Quality Board's 1975 Fourth Annual Report, if fully funded and implemented, will provide the data and information needed for the assessment of Great Lakes water quality, progress towards achievement of the objectives of the 1972 Agreement, and the need for new or revised remedial programs to ensure that this valuable resource will be adequately protected for the full use and enjoyment by the citizens of both countries. The costs for the 1975 proposal have increased over those of the 1974 proposal due to (1) a more comprehensive assessment of the ongoing programs and, (2) a more finite estimate of the detailed components of the refined and upgraded 1975 proposal.

In view of the importance of the Great Lakes as an international water resource, comprising about 80% of the North American supply of fresh surface waters, and the fact that over $7 billion are currently being expended to restore and protect the quality of this resource, the importance of an adequate internationally coordinated surveillance program to monitor the quality of the lakes cannot be overstated.

The Commission in its 1974 Third Annual Report to Governments recommended the adoption of an integrated binational basin wide surveillance program and presented preliminary cost estimates which did not include those for the monitoring of persistent toxic contaminants in fish.

The Canadian response to the Commission's recommendation stated that Canada and Ontario will continue to support an IJC coordinated surveillance program and that additionally both governments have instituted a coordinated program of monitoring persistent contaminants in commercial fishery stocks.

*Not attached. Available upon request from the International Joint Commission.

The Commission is gratified by the Canadian response and requests that funds for the ten year detailed surveillance program be made available at the projected level on an ongoing basis.

The Commission has not received a response from the United States to its surveillance recommendations contained in the Third Annual Report. The Commission urges the United States Federal and State Governments to increase the level of present expenditures to meet the coordinated surveillance program requirements and to commit to the ten year program funds to ensure that both levels of government meet the obligations of this activity of the Agreement.

The Commission also urges the Parties to ensure that future fiscal programs provide ongoing funds at the level proposed, for the Agencies of Federal, State and Provincial Governments having responsibility for water quality surveillance and monitoring activities in the Great Lakes. The Commission further believes that the level of expenditures proposed, an increase over the 1974 preliminary estimate, should meet the surveillance program requirements over the next ten years.

A similar letter is being sent to the Secretary of State for External Affairs by the Secretary of the Canadian Section of the Commission.

Sincerely,

William A. Bullard

William A. Bullard
Secretary, U. S. Section

enclosure

cc: D. Chance
Mr. Fitzhugh Green
Mr. Ken Oakley
Mr. G. Alexander

WAB/ds

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE:

SUBJECT: Position Paper on Phosphorus

FROM: Nelson Thomas
Phosphorus Work Group Leader

TO: George R. Alexander, Jr.
Chairman, Sub-Group A

Attached is the subject Review Paper including a proposed revised Annex 2 to the Great Lakes Water Quality Agreement.

Attachment

POSITION PAPER-PHOSPHORUS

REVIEW OF ANNEX II TO "CONTROL OF PHOSPHORUS" GREAT LAKES WATER QUALITY AGREEMENT

Background

The phosphorus control program in the present Agreement for the Great Lakes has four basic objectives:

a. Restoration of year-round aerobic conditions in the bottom waters of the central basin of Lake Erie;

b. Reduction in present levels of algal growth in Lake Erie;

c. Reduction in present levels of algal growth in Lake Ontario, including the International Section of the St. Lawrence River; and

d. Stabilization of Lake Superior and Lake Huron in their present oligotrophic state.

To meet the objectives there are three parts of the phosphorus control program:

a) Construction and operation of municipal waste treatment facilities to achieve 1 mg/l in plants in excess of 1 mg d,

b) Regulation of phosphorus inputs from industrial dischargers to the maximum practical amount, and

c) Control of phosphorus inputs from animal husbandry operations.

In addition, programs could include the elimination of phosphorus from detergents.

A schedule of expected phosphorus reductions was prepared based on the above programs.

Problems

Three problems now exist with the control of phosphorus section of the agreement. These include the inability of the countries to achieve the desired reductions in loading, and the general philosophy under which eutrophication was to be controlled. Loading reductions were projected on what was believed attainable through current phosphorus control technology, rather than what loads are required to meet the objectives. Finally, in the agreement it is not possible to determine how the load reductions were to be achieved on a jurisdictional basis.

Recent studies by the Corp of Engineers indicate that a 1 mg/l effluent requirement on municipal inputs to Lake Erie will not be sufficient to restore desired water quality conditions to Lake Erie. EPA, through one of its grants, has developed a phytoplankton-dissolved oxygen model

of Lake Erie. Currently, this model is being used to estimate the load reduction required to maintain dissolved oxygen in the hypolimnion of Lake Erie. If phosphorus reductions greater than can be obtained from municipal and industrial control are required, then information on control from non-point sources will be required.

The control of eutrophication in the Agreement is based entirely on phosphorus loadings. Experience with the present agreement has indicated a problem with protecting the lakes by relying on loadings alone. Two large problems arise with the approach. The first is the problem of estimating tributary and non-point source inputs. There have been significant errors in estimating these at the present time. The second problem arises from the form of the phosphorus being inputed. Only certain forms are available for phytoplankton growth and these are contained in different proportions in the various inputs. Reduction in one type of input by a specified amount might not have the same effect as reduction in another type of input by the same amount. A combination of loadings, lake phosphorus and chlorophyll content for both present and expected conditions would provide for sounder management of the Great Lakes. The use of three measurements will permit evaluation of compliance to agreed upon water quality improvements.

In all the lakes, except for Lake Michigan, sufficient data exists to permit the inclusion of all three types of data. For Lake Michigan, it will be possible to include values for phosphorus and chlorophyll concentrations, however, phosphorus loading information can only be estimated at this time. The target load provided in Appendix I of the Agreement cannot be evaluated at this time. Studies are now in progress that will provide for this analysis, which should be complete in two to three years.

The use of a detergent phosphorus ban as a means of controlling phosphorus inputs to the Great Lakes should be reevaluated based on two conditions that now exist that did not in 1972.

1. The main reason for not including a virtual phosphorus detergent ban in the U.S. part of the Agreement was the risk to public health. There now exists many phosphate substitutes for both phosphorus and NTA if a determination is made that the latter is still not acceptable.

2. Phosphorus reductions that were thought achievable from municipal waste treatments are not being realized. Many operational problems make it probable that it will be many years before satisfactory phosphorus reduction can be maintained at all waste treatment plants. Removal of phosphorus before they reach the treatment plants would reduce the phosphorus loading from the treatment plants with unsatisfactory removal.

Issues

It now appears that the basic objectives of the phosphorus control program are still valid and are achievable. However, phosphorus control may have to include other types of inputs. The basic objectives still address the key issues of eutrophication and would either restore or protect the

lakes from further degradation.

One of the major problems in preparing eutrophication remedial programs is in estimating the inputs of phosphorus to the Great Lakes. In drawing up the agreement, phosphorus loadings were based on land area. Only direct input measurements were made for Lake Ontario. During the last five years, direct measurements of phosphorus inputs have been made for all of the lakes, except Lake Michigan.

There appears to be substantial variations in the loads presented in the annex, as compared to recently published loads through the International Joint Commission. The Upper Lakes Reference group and Corps of Engineers have prepared detailed phosphorus input data. These data have been used in mathematical simulations and appear to be more reasonable than some of the 1972 estimates. The estimates of tributary inputs appears to have been one of the areas where the largest difference appears.

The reductions called for through the Agreement are not being realized; therefore, the residual loads are much larger than called for through the Agreement. The phosphorus reductions specified in the Agreement are of a larger magnitude than can be obtained with present technology. Many of the larger industrial sources were under control before the 1972 agreement went into effect. The only major reductions that could be achieved were from municipal sources. As indicated in the 1975 Remedial Programs Subcommittee report, many of the major municipalities were not meeting the 1 mg/l total phosphorus (P) effluent requirement. Either the amount of phosphorus reductions was overestimated or the amount of phosphorus being discharged has increased. Even with all the treatment plants that have been completed in the Lake Erie drainage, the quantity of phosphorus in Lake Erie has not decreased and even may be on the increase.

In recent studies on Lake Ontario and Lake Erie, it appears that the target loads are too high to meet objectives a) and c). The 1975 Surveillance Subcommittee report presented an analysis of the phosphorus loadings to Lake Ontario. In addition, the report presented results on recent mathematical modeling of Lake Ontario phytoplankton. Results of these efforts will be used in formulating the total phosphorus (P) loading limit for Lakes Erie and Ontario.

Note: The rest of this Position Paper appears as the proposed revised Annex 2.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: April 19, 1977

SUBJECT: Point Source Discharges Work Group Recommendations

FROM: Dale S. Bryson, Chairman

TO: Point Source Discharges Work Group

I transmitted to you the main [illegible] of our task group report. When we last met, we agreed I would [illegible] some recommendations at the appropriate time.

On April 15, Mr. Alexander held a full Sub-Group A meeting to review the various task group reports and recommendations.

There were no adverse comments to our task group report. For that meeting, I developed attachment 1, which were draft recommendations of specific language changes in the Great Lakes Agreement. There were some minor suggested changes in that draft. I have made those changes already and, therefore, attachment 1 reflects the final document as will be submitted to the full Sub-Group A and negotiating team. The plan now calls for each task group report to be submitted in toto. From there, the negotiating team will fashion their negotiating stance. Therefore, the language and our position can be accepted or reviewed as a final position.

If you have any questions on the above, or violently disagree with any of the recommendations, please let me know immediately.

Dale S. Bryson

Dale S. Bryson

Attachment

cc: R. Schneider

EPA Form 1320 6 (Rev. 3-76)

ATTACHMENT ONE

ARTICLE V

PROGRAMS AND OTHER MEASURES

1. The achievement of the water quality objectives will only be accomplished if appropriate pollution control measures are fully instituted on all point and non-point sources of pollution in the entire Great Lakes Basin. Pollution control programs and measures in both Counties should be fully compatible in all respects including minimum levels of treatment, maximum schedules of compliance, breadth of program implementation and public accountability. These pollution control programs and other measures shall be implemented and completed in the shortest possible time but no later that July 1, 1983. (This date will be negotiated.) The programs and measures shall include the following:

a) Pollution from Municipal Sources. Programs for the abatement and control of discharges of municipal sewage into the Great Lakes System including:

(i) construction and operation in all municipalities having sewer systems of waste treatment facilities providing at least secondary treatment defined numerically elsewhere, including phosphorus removal with additional treatment if water quality standards so requires; (Language from another task group was found to be more acceptable and will be used including the specific definition of seaway treatment.

(ii) provision of financial resources to assist prompt construction of needed facilities;

(iii) establishment of requirements for construction and operating standards for facilities;

(iv) measures to find practical solutions for reducing pollution from overflows of combined storm and sanitary sewers;

(v) requirements for the control of the discharge of toxic pollutants into the Great Lakes Basin through comprehensive programs;

(vi) embodiment of all pollution abatement requirements including schedules, monitoring and effluent restrictions in a single document that is periodically reviewed and placed before the public;

(vii) monitoring and surveillance activities necessary to ensure compliance with the foregoing programs and measures;

(viii) establishment of effective enforcement programs to ensure the above pollution abatement requirements are fully met.

b) Pollution from Industrial Sources. Programs for the abatement and control of pollution from industrial sources, including:

(i) establishment of waste treatment requirements for all industrial plants discharging waste into the waters of the Great Lakes Basin, to provide levels of treatment at least as restrictive as best available control technology economically achievable;

(ii) establishment of pre-treatment requirements for all industrial plants discharging waste into publically owned treatment works;

(iii) requirements for the control of the discharge of toxic pollutants into the Great Lakes Basin through comprehensive programs;

(iv) embodiment of all pollution abatement requirements including schedules, monitoring and effluent restrictions in a single document that is periodically reviewed and placed before the public;

(v) establishment of effective enforcement programs to ensure the above pollution abatement requirements are fully met.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE:

SUBJECT: Position Paper on Non-Point Sources

FROM: Ralph G. Christensen, Leader
Non-Point Sources Work Group Ralph G. Christensen

TO: George R. Alexander, Jr.
Chairman, Sub-Group A

Attached is the subject review paper which includes appropriate review comments and additional review comments which are attached for Senior Review Group consideration. The Department of Commerce, the Non-Point Source Branch of the EPA, and the Pennsylvania Department of Environmental Conservation indicated no comment on the Non-Point Source Work Group Position Paper.

Attachment

League of Women Voters
LAKE ERIE BASIN COMMITTEE

1224 Quilliams Road
Cleveland Heights, OH 44121
April 21, 1977

TO: Ralph G. Christensen, Leader
Non-point Sources Work Group
Office of Great Lakes Coordinator
USEPA Region V
230 S. Dearborn St.
Chicago, Ill. 60604

FROM: League of Women Voters Lake Erie Basin Committee
Janet B. Hutchison for Mary Lewis, Coordinator
Edith Chase, past coordinator

SUBJECT: Review Paper: Non-point Sources

Page 5: Please define 'hydromodification.'

Page 6-9: Shouldn't the Coastal Zone Management Act be included in the listing of U.S. legislation? Implementation and funding of these laws vary; in some states little has been done. What do you see as the role of the IJC?

Page 12: We agree that consideration only of structural solutions to urban drainage problems is inadequate and that management approaches should be emphasized.

Page 13: We support the expansion of Article V (1) (d).

Page 14: A strong education program is essential for public officials and citizens as well as landowners.

The final report of the PLUARG study, due in July 1978, should be valuable. It is important to place greater emphasis on controlling nonpoint source pollution in order to meet water quality objectives. Equity demands that both point sources and nonpoint sources carry their fair share of the burden of cleanup. Funding of nonstructural solutions to stormwater runoff and other nonpoint source problems should be considered.

Thank you for this opportunity to submit comments.

Janet B. Hutchison
Mary Lewis
Edith Chase

cc Alexander
MacDonald - LWVUS
Strang - LMILG
Carlson - LWVO

Stephen M. Yaksich
U.S. Corps of Engineers

REVIEW OF GREAT LAKES WATER QUALITY AGREEMENT,
Article V 1.(d) for Non-Point Sourdes Work Group

The following measures for the abatement and control of pollution from agricultural, forestry and other land use activities, could be included in Article V 1.(d) of the Great Lakes Water Quality Agreement.

1. The appropriate state agency (i.e. Cooperative Extension Service of the State University) shall review soil test results and recommended fertilizer applicationrates to determine if the recommended fertilizer application rates can be decreased. In the 1960's an annual-plus-soil buildup recommendation was made for many soils in the Great Lakes basin. Data now suggests an annual recommendation will suffice on many of these soils.

2. Daily monitoring stations for sediment, chemistry and flow should be established at key agricultural basins. These stations should be maintained a minimum of 20 years.

3. Funding and staffing of these agencies which will be involved in the identification and control of non-point sources of pollution should begin immediately.

4. Land use decisions which will have a large impact on Great Lakes should be reviewed (made) by the International Joint Commission.

5. Deeding of large traits of underwater land for landfill operations should be reviewed (made) by the International Joint Commission.

6. A series of demonstration programs (educational and implementation) should be made in select watersheds in the Great Lakes basins. These sites shall be so situated so visits can be easily made to one of them by everyone in the Great Lakes basin.

DEPARTMENT OF THE ARMY
NORTH CENTRAL DIVISION, CORPS OF ENGINEERS
536 SOUTH CLARK STREET
CHICAGO, ILLINOIS 60605

NCDED-W

6 April 1977

TO: Ralph Christensen, EPA, Chairman, Non-Point Sources Work Group

FROM: Jan Rasgus, Corps of Engineers Jan Rasgus

SUBJECT: Comments on Section V-1-d, Great Lakes Water Quality Agreement

1. It might be more inclusive (but perhaps not specific enough) to change the title of paragraph 5(d) to "Pollution from Non-Point Sources." Reference should also be made in this paragraph to the control of non-point pollution from sources such as road construction, mining and urban development. For example:

(d) Pollution from Non-Point Sources. Measures for the abatement and control of pollution from agriculture, forestry practices, road construction, mining, urban development and other land use activities.

2. Suggest that the following be added to item (iv):

"...forestry and other land use activities including encouragement to appropriate agencies to adopt regulations governing the implementation of Best Management Practices."

3. If this Section (V-1-d) is expanded to address non-point pollution from urban run-off, another item (v) may have to be added. It could be similar to item (iv).

4. Suggest changing the wording in item (i) from "pest control products" to "pesticides."

5. The Corps of Engineers will probably not be directly impacted by most of the proposed measures, but they could indirectly benefit. In particular, water quality could be improved at or near Corps of Engineers' projects.

NON-POINT SOURCE POLLUTION
WORK GROUP
REVIEW PAPER

1. INTRODUCTION

In 1972 the Governments of the United States and Canada entered into an Agreement on the Great Lakes to develop and implement cooperative programs and measures to restore and enhance the water quality of the Great Lakes System. Article IX of the U.S./Canada Water Quality Agreement requires that, "The Parties shall conduct a comprehensive review of the operation and effectiveness of this Agreement during the fifth year after its coming into force".

One of the important pollution impacts on the water quality of the lakes comes from agriculture, forestry, and other land use activities within the Great Lakes Basin. The purpose of this paper is to review the U.S./Canada Water Quality Agreement to see if the goals, objectives, terms, and deadlines of Article V, 1, (d) and the Pollution from Land Use Activities Reference have been met. Measures for the abatement and control of non-point source pollution from agriculture, forestry and other land use activities include animal husbandry operations, construction, disposal of liquid and solid wastes, hazardous materials, nutrients, sediment and in general all rural and urban drainage.

II BACKGROUND

During the preparation of the Water Quality Agreement it was recognized that pollution from non-point sources was a contributing factor to the water quality of the Lakes and its associated tributary streams. In order to better understand the extent of the non-point source pollution problem a text of reference was proposed to the International Joint Commission to study pollution in the Great Lakes System from agriculture, forestry and other land use activities and was then written and incorporated into the U.S./Canada Agreement. This reference was developed as a result of Article VI of the Agreement wherein the two Governments requested the IJC to conduct a study of pollution of the boundary waters of the Great Lakes System from agriculture, forestry, and other land use activities. Article IV of the Boundary Water Treaty of 1909 provides that the boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of health and property on the other side, and is also referenced in the Great Lakes Water Quality Agreement.

The IJC is requested to enquire into and report to the two Governments upon the following questions:

> "(1) Are the boundary waters of the Great Lakes System being polluted by land drainage (including ground and surface runoff and sediments) from agriculture, forestry, urban and industrial land development, recreational and park land development, utility and transportation systems and natural sources?

(2) If the answer to the foregoing question is in the affirmative, to what extent, by what cause, and in what localities is the pollution taking place?

(3) If the Commission should find that pollution of the character just referred to is taking place, what remedial measures would, in its judgment, be most practicable and what would be the probable cost thereof?

The Commission is requested to consider the adequacy of existing programs and control measures, and the need for improvements thereto, relating to:

(a) inputs of nutrients, pest control products, sediment, and other pollutants from the sources referred to above;

(b) land use;

(c) land fills, land dumping, and deep well disposal practices;

(d) confined livestock feeding operations and other animal husbandry operations; and

(e) pollution from other agricultural, forestry and land use sources.

In carrying out its study the Commission should identify deficiencies in technology and recommend actions for their correction.

The Commission should submit its report and recommendations to the two Governments as soon as possible and should submit reports from time to time on the progress of its investigation."

The Pollution from Land Use Activities Reference Group (PLUARG) is the vehicle for the Commission to carry out these studies. PLUARG described four major tasks to accomplish its charge:

"(1) Assess problems, management programs and research and to attempt to set priorities in relation to the best information now available on the effects of land use activities on water quality in boundary waters of the Great Lakes System.

(2) Inventory of land use and land use practices, with emphasis on certain trends and projections to 1980 and, if possible to 2020.

(3) Intensive studies of a small number of representative watersheds, selected and conducted to permit some extrapolation of data to the entire Great Lakes Basin and to relate contamination of water quality, which may be found

at river mouths on the Great Lakes, to specific land uses and practices.

(4) Diagnosis of degree of impairment of water quality in the Great Lakes, including assessment of concentrations of contaminants of concern in sediments, fish and other aquatic resources."

The schedule for the final reporting of the PLUARG studies to the two governments is July 1978. This report will provide the best information that the Federal, Provincial, State and the academic community can provide. Recommendations for control measures and remedial programs will be presented.

III Analysis of Article V 1. (d)

Article V 1. (d) states that the two Governments shall develop and implement programs and other measures directed toward the achievement of the water quality objectives as soon as practicable in accordance with legislation in the two countries.

Following the signing of the U.S./Canada Agreement the U.S. Congress enacted PL 92-500 - the Federal Water Pollution Control Act Amendments of 1972. Major programs under this Act have been utilized as the chief mechanism of meeting the goals of the Agreement. PL 92-500 preserves the constitutional rights of the States, expands the federal role in water pollution control, increased the level and amount of funding for construction of municipal sewage treatment facilities, elevated water quality management planning to a higher level of significance, and opened new means of public participation. The objective of the Act is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters".

The Act provides for achieving its goals and objectives in phases, with accompanying requirements and deadlines. Ultimately, all point source controls are directed toward achieving a national goal of the elimination of the discharge of pollutants by 1985. The Act also requires the development of comprehensive programs for preventing, reducing and eliminating pollution.

Section 208 provides for the development of comprehensive plans by the States and area wide water quality management agencies to control pollution from all point and non-point sources.

1. EPA has issued guidance to these agencies with regard to planning, program development, public participation activities, outputs expected, management agencies, regulatory programs, best management practices for non-point sources such as agriculture, silviculture, mining, urban runoff, and hydromodification. (Hydromodification means any changes in natural water courses or drainage brought about by the activities of people.)

2. Seven Statewide and 25 area wide agencies have assumed water pollution control responsibilities in the Great Lakes Basin.

3. Grant awards to State and local area wide water quality management agencies in the Great Lakes Basin total approximately $30,000,000.

4. Plans are being prepared by all of the agencies to prevent or control the runoff of non-point sources of pollution through the use of best management practices and to name management agencies to implement programs.

5. EPA is conducting National Conferences for 208 agencies to present information on regulatory programs and best management practices for control of non-point sources. In addition to Section 208 of PL 92-500, Sections 104, 105, 106, 108(a), 108(d), 201, 303, 304, and 305 are all supportive to the development of non-point source pollution control guidelines and control measures.

Other U.S. legislation enacted since April of 1972 to support the Agreement water quality objectives and address non-point sources of pollution include:

The Federal Insecticide, Fungicide, and Rodenticide Act - as amended by PL 94-140, November 1975.

Objectives of this Act are to provide for the effective and safe use of pesticides. It:

1. Requires Federal registration of all pesticides sold or distributed interstate as well as intrastate;

2. Prohibits the use of any pesticide in a manner not prescribed on the label;

3. Restricts the use of certain very hazardous pesticides to certified applicators.

Funds totaling $71,468,000 were authorized for carrying out provisions of PL 94-140 up to March 31, 1977.

Safe Drinking Water Act (PL 93-523)

A. This Act became law in December of 1974, it provides for:

1. Establishment of primary regulations for the protection of public health;

2. Establishment of secondary regulations relating to the taste, odor and appearance of drinking water;

3. Measures to protect underground drinking water sources;

4. Research and studies regarding health, economic and technological problems of drinking water supplies. Specifically required are studies of viruses in drinking water and contamination by cancer-causing chemicals;

5. A survey of the quality and availability of rural water supplies; and etc.

B. The Act provides for protection of underground sources of drinking water by means of a regulatory program. Primary responsibility for carrying out these requirements falls to the States. If they fail, EPA will prescribe control programs for them.

C. Proposed regulations have been issued for State underground inspection control programs and for grants to aid programs for underground water source protection at State, Interstate and local level.

D. A manual of water well construction practices to protect ground water resources from pollution has been developed, by contract, and provided to State and local agencies.

Authorization of appropriations totaling $156 million for fiscal years 1975, 1976, and 1977 are associated with the Safe Drinking Water Act.

Toxic Substances Control Act (PL 94-469)

A. This Act became law on October of 1976. It provides for the development of adequate data on the effect of chemical substances and mixtures on health and the environment and the regulation of those substances which prevent an unreasonable risk of injury to the health and environment.

B. A task force has been organized in EPA to develop procedures for implementing the Act.

C. Regulations for the labeling and disposal of Polychlorinated Biphenyls (PCB's) are being prepared.

D. Regulations have been issued regarding:

1. General provisions and inventory reporting requirements for toxic substances.

2. Clarification of basic definitions of toxic substances.

Resources Conservation and Recovery Act of 1976 (PL 94-580)

This Act became law in October, 1976. It was built on the foundation of the Solid Waste Disposal Act of 1965 and the Resource Recovery Act of 1970.

The Act statutorily establishes the Office of Solid Waste within EPA to guide the implementation of the law and establishes a Federal/State/local government partnership to share the implementation. The major thrusts of the efforts that will be required by this partnership are:

1. Land protection through regulation and control of wastes and waste disposal operations.

2. Regulations and control of the hazardous waste stream "cradle to grave."

3. Improvements in all aspects of waste management at the State, regional and local levels.

4. Reduction of the waste stream through increased resources recovery and waste reduction efforts.

5. Broad public education programs with rapid dissemination of all types of solid waste management information materials.

6. Broad public participation in the development and improvement of solid waste management throughout the Nation.

A review of other federal agency non-point source activity shows that several U.S. Department of Agriculture agencies provide educational information, research, technical services and cost-sharing programs for farmers and landowners to control soil erosion. The agencies of USDA are:

(1) Agricultural Research Service (ARS) --Research

(2) Soil Conservation Service (SCS)--Technical assistance

(3) Forest Service (FS) --Forested lands

(4) Agricultural Stabilization and Conservation Service (ASCS)--cost-sharing on practices

(5) Economic Research Service (ERS)--Economic and sociologic costs and benefits associated NPS pollution control.

The U.S. Soil Conservation Service (SCS) gives technical assistance to farmers and other citizens for the application of soil conservation practices. Many of these practices reduce pollution to streams and lakes by preventing the loss of soil, nutrients, and pesticides from farm fields. Assistance is provided through 190 local county soil and water conservation districts in the United States portion of the Great Lakes basin. Progress of the application of pollution reducing soil and water conservation practices may be demonstrated by the following table which shows the current status of these practices:

GREAT LAKES BASIN
UNITED STATES

Practice Item	Unit	Number
Contour Farming	Ac.	706,009
Crop Residue Management	Ac.	5,695,409
Diversion	Ft.	21,718,765
Roads	No.	59,700
Field Windbreak	Ft.	19,245,123
Grade Stabiliz. Structure	No.	8,407
Minimum Tillage	Ac.	3,300,860
Pasture & Hayland Planting	Ac.	2,330,617
Streambank Protection	Ft.	7,058,674
Stripcropping	Ac.	675,766
Terrace, basin	Ft.	900
Terrace, gradient	Ft.	2,942,197
Terrace, level	Ft.	54,986
Terrace, parallel	Ft.	2,085,471
Total terraces	Ft.	5,083,554
Tree Planting	Ac.	1,783,030
Grassed waterway or Outlet	Ac.	109,162
Land Adequately Protected	Ac.	48,522,799
Cropland to Grassland	Ac.	767,463
Cropland to Woodland	Ac.	339,618
Ag. Waste Mgt. System	No.	526

The U.S. Agricultural Stabilization and Conservation Service (ASCS), through the Agricultural Conservation Program, provides cost-sharing assistance to farmers to help offset the application costs of conservation practices, many of which directly benefit water quality. Since the signing of the Great Lakes Water Quality Agreement ASCS has provided $18,000,000 of cost-sharing assistance for these practices, in the Basin.

The Flood Disaster Protection Act of 1973, administered by the Housing and Urban Development Administration (HUD), the Coastal Zone Management Act (PL 92-583), administered by the National Oceanic and Atmospheric Administration (NOAA), and the U.S. Army Corps of Engineers (COE), Lake Erie Wastewater Management Study will all impact on the non-point source pollution control measures.

A summary of legislative authority for Canada dealing with water quality measures and controls is contained in Appendix-C to the 1975 Annual Report on Great Lakes Water Quality. Rather than list Canadian water quality legislation in this review we will reference the 1975 Great Lakes Water Quality Appendix-C Report.

A comparison of non-point sources of controls on agriculture is difficult since Canada does not have an Agency equivalent to the U.S. Soil Conservation Service to manage a sediment control program. Canada has no system for tracking land use practices as does USDA-SCS. Canada does not have the technical assistance program available at the local level of government to work one on one with the farmer or landowner in planning and applying conservation practices.

In Ontario there are Conservancy Districts which have responsibility for flood control programs and provide for some sediment and pollutant reduction.

The general analysis of the U.S. legislation for non-point source pollution control shows that there are sufficient programs and controls when fully implemented to meet the U.S./Canada Water Quality Agreement objectives. Canada does not have comparable programs for implementing non-point source pollution control measures.

IV What Needs to be Done

The Agreement, as related to PLUARG's charges, requires no change. However, for the benefit of future references relating to the Great Lakes, the Agreement should be more specific regarding water quality criteria according to water use. Consideration should be given to continuing the pilot watershed monitoring work after PLUARG has completed its work so that effectiveness of remedial measures may be evaluated and refinements made as required. If there is to be an acceleration of remedial measures applied to land in the Great Lakes Basin to reduce pollution levels in the lakes, the appropriate action agencies will require additional funding and personnel resources.

Legislative changes at the State level and the U.S. will be required. Hopefully Section 208 Planning will provide the impetus for these changes. PLUARG activities and Section 108(a) projects will also provide inputs for guiding these changes.

Rural non-point source pollution control measures might best be implemented by strengthening local area management institutions. These institutions should have the ability to educate the landowner in the use of Best Management Practices, provide technical back-up on practices which will best achieve water quality objectives, provide cost-sharing incentives and have enforcement support to accomplish water quality objectives where education and cost-sharing incentives fail to achieve desired objectives.

Urban drainage contains a variety of wastes. Combined sewer overflows have been addressed to some degree on the U.S. side through the municipal construction grant program where funds have been available for conveyance and treatment approachs. Canada has also provided some support to several municipalities for addressing combined sewer overflows through a conveyance and treatment approach. The U.S. has accepted the premise that an approach to the problem which looks only on the structurally intensive solutions which are inherent in conveyance/treatment systems is inadequate. Application of Best Management Practices (BMP) for both source and conveyance/treatment offer opportunities for ultimate solutions which indicate the following advantages:

(1) Address pollutant reduction at the source

(2) Provide for opportunities to develop maximum cost effectiveness

(3) Introduce opportunities for greater reliability

(4) Involve less intensive allocation of resources

(5) Emphasize optimum use of existing systems

(6) Lead to more facility in solutions

(7) Tend to avoid the development of secondary problems

Information collected from U.S. demonstration projects on combined and storm water overflow control measures strongly suggests that U.S. policy, when fully developed for control of the problem, will include non-point source considerations in combination with point source considerations.

It is suggested that changes be made in Article V 1,(d) of the Water Quality Agreement. The proposed changes are shown in italics as follows:

(d) Pollution from Agricultural, Forestry, and Other Land Use Activities. Measures for the abatement and control of pollution from *agriculture, forestry practices, road construction, mining, urban development, urban drainage,* and other land use activities, including:

(i) Measures for the control of *pesticides* with a view to limiting inputs into the Great Lakes System, including regulations to ensure that pest control products judged to have long term deleterious effects on the quality of water or its biotic components shall be used only as authorized by the responsible regulatory agencies and that pest control products shall not be applied directly to water except in accordance with the requirements of the responsible regulatory agencies;

(ii) Measures for the abatement and control of pollution from animal husbandry operations, including encouragement to appropriate regulatory agencies to adopt regulations governing site selection and disposal of liquid and solid wastes in order to minimize the loss of pollutants to receiving waters;

(iii) Measures governing the disposal of solid wastes and contributing to the achievement of the water quality objectives, including encouragement to appropriate regulatory agencies to ensure proper location of land fill and land dumping sites and regulations governing the disposal on land of hazardous polluting substances.

(iv) Advisory programs and measures that serve to abate and control inputs of nutrients, sediments, *and other pollutants* into receiving waters from *agriculture, forestry practices, road construction, mining, urban development, urban drainage,* and other land use activities *including encouragement to appropriate agencies to adopt and implement Best Management Practices.*

V Summary of Conclusions and Recommended Actions.

To summarize:

(1) PLUARG reference needs no change.

(2) It is suggested that Article V, 1.(d) be changed as proposed in the text of this Position Paper.

(3) Monitoring of PLUARG pilot watersheds should be continued beyond July 1978 to evaluate an up-date recommendations in PLUARG final report and also evaluate the recommended remedial measures.

(4) Consider a strong education and technical assistance program for landowners on non-point source pollution controls and best management practices for preserving water quality in streams and lakes.

(5) Consider a cost-sharing program for best management practices implementation for water quality improvement.

(6) Consider enforcement alternatives should education, technical assistance and cost-sharing programs for implementing best management practices for achieving water quality fail.

(7) Urban stormwater runoff (drainage) needs to be brought into focus as a major source of pollution during wet weather and control measures should be developed for its management.

(8) Non-point source pollution controls should be implemented at the local level of government.

(9) A progress reporting system for tracking implementation of Best Management Practices should be established for both the U.S. and Canada.

(10) A program for long term maintenance of Best Management Practices should be developed whereby changes in landowners will not destroy established control measures.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: April 28, 1977

SUBJECT: Hazardous Substances Work Group Review

FROM: Karl E. Bremer
Toxic Substances Coordinator

TO: Robert Schneider
Great Lakes Coordinator

I have attached the final draft of the Hazardous Substances Work Group paper.

All comments received from my work group have been incorporated.

HAZARDOUS SUBSTANCES WORK GROUP REVIEW PAPER

Introduction

During the past decade more and more emphasis has been placed on the area of hazardous substances. This has been acknowledged by the recent enactment of the Environmental Contaminants Act in Canada and the implementation of the Toxic Substances Control Act in the U.S.

In 1972 a Great Lakes Water Quality Agreement was entered into by Canada and the United States, providing for greater cooperation and teamwork between the two countries in cleaning up and maintaining the Great Lakes Basin.

As a result of the 1972 Agreement, huge sums of money have been granted to control discharges affecting the water quality of the Great Lakes. Both countries have been and currently are directing increasing resources towards surveillance and monitoring activities to determine what impacts and changes result from these remedial programs. The main focus of activity within the framework of the Water Quality Agreement has been one of abatement and now monitoring by both sides, a priority that is as it should be.

The general concept in the Agreement provides for agreement on specific water quality objectives for the boundary waters, with each country committed to developing and implementing the programs.

While the high hopes of 1972 for quick results in cleaning up existing pollution and preventing further deterioration of water quality have not all been realized and there have been public expressions of disappointment, much

has been achieved and the stage is set for continued progress towards the goals of the Agreement. Both countries are committed to, and have major programs underway for, municipal sewage treatment and phosphorus removal facilities. Both short-term and long-term problems lie ahead. For now and the forseeable future, the International Joint Commission (IJC) believes the basis of the Agreement should continue to be the fundamental principles of non-degradation and enhancement of water quality.

The most serious problem we face in terms of the Great Lakes and their use is the accumulation of toxic substances. Heavy metals and persistent organic contaminants may well be the most serious problem governments face in ensuring future beneficial uses of the Great Lakes. They pose serious threats to water quality, the fishery, human health, and the ecosystem in general. Too little is known of the identity of these substances, their sources, amounts present, characteristic forms and behavior, and their effects on human health and the environment. Control and monitoring programs (to establish baseline data) are imperative, but research is urgently required to permit both the early identification of such substances and the establishment of appropriate water quality objectives.

The Commission recommends that the Governments make it a matter of the highest priority to undertake jointly, with the assistance of the Great Lakes Water Quality Board and the Great Lakes Research Advisory Board, a special program to assess the problem of toxic contaminants in the Great Lakes with a view to developing and implementing programs for their control. It is especially urgent that early warning mechanisms be developed to identify new chemical substances that might present risks to health and the environment if discharged into the waters of the Great Lakes Basin.

Statement of Problems

Spills of Hazardous Substances

During 1972-1975 a number of spill contingency plans were developed to deal with spills of major proportions to the Great Lakes. In general, these contingency plans emphasize the administrative structure necessary for the countermeasure response to major spills. They do not include detailed response procedures for dealing effectively with oils and, in particular, hazardous substances. Spill contingency plans rely on the ingenuity and experience of the responding agency for the effective countermeasures to a given disaster. The Joint Canada-United States Marine Pollution Contingency Plan for Spills of Oil and Other Noxious Substances is one contingency plan.

At this time, development of response procedures is needed to deal safely and effectively with spills of chemicals.

Delay in Adoption of Annex 9

Annex 9 was prepared pursuant to Article V (1)(i) of the Agreement, which calls for the development of an Annex that identifies hazardous polluting substances. An introduction to Annex 9 and a part of the Annex are attached. The list in Appendix I of Annex 9 was developed to facilitate the following:

1. Prompt joint spill reporting and response action (Annex 8) and
2. Development of compatible regulations or programs for the prevention of discharges of such substances from vessels (Annex 3), from shipping activities (Annex 5), from dredge spoil disposal (Annex 6), and from onshore-offshore facilities (Annex 7).

Appendix II of Annex 9 was prepared as a guide for indicating other potentially hazardous polluting substances. Provision was made that

substances could be added to this list if such substances were considered a potential hazard (based on data on toxicity, persistence, mutagenicity, etc.)

The final technical draft of Annex 9 has been reviewed by the U.S. and Canada, but has not been adopted. The U.S. cannot take action on this Annex until the proposed regulation on designation of hazardous substances under Section 311 of the Federal Water Pollution Control Act Amendments of 1972 are final.

Toxic Contaminants

During the past five years, the area of toxic contaminants has been approached by a number of sub-groups within the IJC. Contaminants of major concern in the Great Lakes have included organic compounds, specifically polychlorinated biphenyls, dieldrin, Mirex, and toxaphene and other substances such as phthalates, petroleum-related hydrocarbons (polynuclear aromatics), and heavy metals including arsenic, zinc, cadmium, mercury, and lead. Although no major effects on human health have been directly related to any particular contaminantin Great Lakes fish or water, many contaminants have exceeded temporary tolerance levels for human consumption.

The following problems have been associated with toxic contaminants in the Great Lakes:

1. In setting Water Quality Objectives, the IJC has not made adequate use of public health specialists (in particular, those qualified experts in the field of environmental medicine);

2. Laboratories obtaining Great Lakes data on toxic substances have not used adequate standarization and/or quality control among laboratories;

3. The real significance of data obtained on toxic contaminants is often not known (quite often inferences have to be made);

4. Often the sources of toxic contaminants within the Great Lakes are unknown;

5. Data on the partitioning of toxic substances between air, water, sediment, fish, wildlife, and man is incomplete;

6. The prediction of future toxic substances accumulation in the Great Lakes has not been approached by any current IJC programs;

7. Without the addition of Annex 9 to the Agreement, the area of hazardous substances is not adequately addressed in the Agreement, particularly with respect to definition and designation of hazardous substances;

8. Current IJC reports on toxic substances often state the problem but fail to put the data in proper perspective;

9. The ecological implications of exposure to toxic substances, particularly those that are highly persistent or induce pathological and behavior effects in man are not understood.

Recommendations

1. The IJC should consider the participation of environmental health agencies in further deliberations on toxic substances. It has been suggested by the Implementation Committee that environmental health agencies in both countries should consider establishing required action levels for current toxic substances of concern and other toxic substances that may be identified in the future;

2. Further surveillance and monitoring work associated with IJC programs should incorporate improved data quality control programs and, when appropriate, standard methods in quantification and identification of toxic substances;

3. Research should be intensified to determine fate and effects (human and ecological) of toxic substances. Other data from the chemical and medical literature should also be integrated;

4. Using current legislation, including the Environmental Contaminants Act and the Toxic Substances Control Act, a current inventory should be established on the types and amounts of chemicals manufactured, discharged and used in the Great Lakes Basin, their transport, fate, and ultimate disposal;

5. Further research should be conducted on partitioning and exchange of toxic substances between air, water, sediment, fish and wildlife;

6. An "early warning system" should be established to predict future toxic substance problems. The recommendation of the Implementation Committee adopted at the February 1-2, 1977, meeting is a possible approach;

7. Annex 9 of the Agreement should be adopted;

8. The collection, analysis and dissemination of past and current data on sources and environmental distribution of persistent toxic substances should be performed for the Great Lakes Basin. This analysis should be put in perspective, using available health effects data and related toxicology data;

9. A joint program for disposal of hazardous materials should be developed to insure that these materials such as pesticides, contaminated petroleum products, contaminated sludge and dredge spoils are properly transported and disposed.

Note: Annex 9 as recommended for adoption is included in the Sub-Group A Report.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

SUBJECT: Five-Year Review

DATE: APR 27 1977

FROM: William A. Mills, Ph.D. William A. Mills
Director, Criteria & Standards Division (AW-460)

TO: Robert Schneider
Coordinator for Great Lakes

Enclosed is the Five-Year Review Paper on Nuclear Wastes (Radioactivity) prepared primarily by me and Dr. William H. Ellett in the Office of Radiation Programs, EPA. The Work Group Members had only a brief period to review the draft dated April 14, and comments were received primarily by telephone. Also enclosed is a listing of these comments. Written comments by NRC will be forwarded to you later. However, most of these comments were accommodated by telephone communication.

Dr. Ellett and I have incorporated into the final review paper almost all of the comments offered. The comment of ERDA on the inappropriateness of our recommendation on the Refined Objectives in view of the June 1 period for public comment has not been implemented and should be noted. Also to be noted are the comments offered by Minnesota, some of which have not been reflected in the final report.

Dr. Ellett called on April 27, regarding the language in Subgroup B's report. Our only substantive comment is on page 1-9 "Radioactivity," where the Radioactivity Objective is incompletely stated. It should read, "The specific water quality objective for radioactivity in the Great Lakes is that level of radioactivity which results in a whole-body dose commitment not exceeding one millirem due to the ingestion of water in any one year. Source investigation and corrective action if releases are not as low as reasonably achievable are recommended for dose commitments between 1 and 5 millirem. For dose commitments greater than 5 millirem corrective action by the responsible regulatory authorities is recommended."

2 Enclosures

COMMENTS

Enrico Conte, Environmental Surveillance Coordinator, USNRC - Mr. Conte approved the recommendations made in the report and proposed that additional data on strontium-90 concentrations in the Lakes be included. Unfortunately, we did not have enough time to include these data in the final report. Mr. Conte had a number of other suggestions to improve the discussion of NRC authority and programs vis-a-vis EPA. These suggestions were accommodated except for a request that the EPA ERAMS monitoring program be discussed more fully.

Paul Giardina, Radiation Representative, USEPA, Region II - Mr. Giardina suggested that the section on the NSF fuel reprocessing site include a discussion of current problems at the NFS low-level burial area. The final report has been amended to include this information.

Mr. Tom Cashman, Director Bureau of Radiation, New York State Department of Environmental Conservation - Mr. Cashman had several comments concerning the scope of monitoring, NRS, and the quality assurance program. He agreed with the recommendations made in the report.

Peter Tedeschi, Air and Hazardous Materials Division, USEPA, Region V - Mr. Tedeschi had several comments which indicated where the language in the final report could be clarified. All of his helpful comments have been accommodated.

Ms. Sandra Gardebring, Executive Director, Minnesota Pollution Control Agency - Ms. Gardebring commented that she believed from the statement on page 4 of the draft concerning a prohibition of electric power generation on the Great Lakes was too strong and that the Minnesota position did not necessarily require a prohibition but rather more stringent controls on liquid effluent pathways. However, she was unable to ascertain how the aerial deposition of radioactive materials into the Lakes could be prevented. Ms. Gardebring suggested also that the report should mention the burial problems at the NSF facility, (see comments on NFS above by Paul Giardina). She felt the statement that the radiological quality is expected to improve was a misstatement in that it could improve faster if there were no radiation discharges into the Lakes. She also suggested that the first sentence in the discussion on PL 92-500 was misleading in that it did not indicate the narrow scope of EPA permit controls. The sentence has been redrafted.

Ms. Margaret Reilly, Chief, Division of Reactor Review, Harrisburg, Pennsylvania - Ms. Reilly had no suggestions and agreed with the recommendations made in the report.

Mr. Earl Richards, Ohio EPA - Mr. Richards suggested that the words "prevent harmful effects" rather than "minimizing health effects" be used in the discussion of the current objective. The wording has been changed as suggested. He stated that the Ohio EPA approved of the report and its recommendations.

CMDR Corbett, Ninth Coast Guard District, Cleveland, Ohio - had no comments and approved the report.

Mr. Wilczynski, Office of Environmental Affairs, Department of Commerce - They have no comments.

Dr. Nat Barr, U.S. Energy Research and Development Administration - ERDA objected to including as a recommendation the adoption of the refined objectives. They consider this inappropriate in view of the fact that the objectives are now out for public comments. Written comments will be sent as soon as possible. ERDA also objected to the short turnaround time.

See additional comments from Mr. Walter G. Belter, U.S. Energy Research and Development Administration, attached.

UNITED STATES
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
WASHINGTON, D.C. 20545

April 29, 1977

Mr. George R. Alexander
Chairman, Sub-Group A
Great Lakes Water Quality
Agreement Review
U.S. Environmental Protection
Agency (Region V)
230 South Dearborn Street
Chicago, Illinois 60604

Dear George:

Reference is made to your memorandum of April 20 requesting comments from the Federal Advisory Group on the final draft of Sub-Group A Report. As I discussed with you on the phone on April 27, it appears to ERDA staff that continuing, major differences between U.S. and Canadian approaches to water pollution control will provide continuing inequitable effluent requirements, especially for industry in the two countries. In fact, it seems that water quality objectives as adopted under the agreement will have the force and effect in the U.S. of legally enforceable Water Quality Standards (under 92-500), whereas they would be little more than "unenforceable criteria" in one Canadian province (Ontario).

Another shortcoming--when the objectives do become Water Quality Standards under the FWPCA (92-500), then all U.S. tributary streams would have to have the same water quality as the Great Lakes, and all EPA or State permits for discharges to the Great Lakes System would have to contain limitations that assure compliance with the "standards." However, in Canada the "unenforceable criteria" apply only to the Lakes themselves and any "program orders" have been admittedly ineffective with industry. It certainly appears that the objectives could, therefore, result in a substantially greater effluent treatment, control and monitoring (and economic) burden on the U.S. discharges only. The Sub-Group A Report should address this impact.

In view of the above, it seems totally inappropriate for the U.S. to encourage the adoption of objectives without a clear agreement that they will have the same force and effect on both sides of the international boundary. This should not only be stated in an Article of the agreement, but we believe should be supported by enabling Canadian legislation <u>before</u> the agreement becomes binding. While you seemed to have faith in the Canadian governmental system effectively implementing this point after the agreement is renegotiated, it would appear to us that too much is at stake to leave this point to chance.

Another related point is noted on page 8 under the "General Summary and Recommendations." One of the proposed changes to the agreement states that "the principle of unenforceable objectives" must be replaced by a recognition that objectives are, in effect, "standards." If this was accepted, it would reenforce our earlier concern regarding the refined radioactivity objective. In our previous discussions with EPA staff, it was never indicated that this objective might be regarded as a Water Quality Standard, enforceable under 92-500. However, with this possible change in the agreement being considered by the U.S., we believe that it is all the more important to delay adoption of the refined radioactivity objective until technical justification and cost/effectiveness studies are completed.

We also note under Article III, Water Quality Objectives, that certain specific objectives, when compared to the EPA Drinking Water Standards and the Quality Criteria for Water, present some problems. In some cases, the values given are more restrictive than in either of the EPA documents; i.e., lead, mercury, fluoride, and certain pesticides. In other cases, they are higher and in most cases the material presented is different enough to make meaningful comparison or understanding very difficult. Clarification or explanation of these differences should be provided.

I hope that the above comments can be accommodated in the final Sub-Group A Report.

Sincerely,

Walter G. Belter

Walter G. Belter
Assistant Director
for Technology Liaison
Division of Technology Overview

REVIEW PAPER

NUCLEAR WASTES (RADIOACTIVITY) WORK GROUP

April 27, 1977

REVIEW PAPER

NUCLEAR WASTES (RADIOACTIVITY) WORK GROUP

I. INTRODUCTION

A. Agreement

The Agreement between the United States and Canada on Great Lakes Water Quality was signed and entered into force April 15, 1972. This Agreement makes specific reference to radioactivity in the following manner:

Annex 1 - Specific Water Quality Objectives

1. Specific Objectives. The specific water quality objectives for the boundary waters of the Great Lakes System are as follows:

(h) Radioactivity. Radioactivity should be kept at the lowest practicable levels and in any event should be controlled to prevent harmful effects on health.

7. Consultation. The Parties agree to consult within one year from the date of entry into force of the Agreement, for the purpose of considering:

(b) Refined objectives for radioactivity...; for radioactivity the objective shall be considered in the light of the recommendations of the International Commission on Radiation Protection.

Relevant to radioactivity are, also, the following Annex 1 references:

3. Nondegradation. Notwithstanding the adoption of specific water quality objectives, all reasonable and practicable measures shall be taken in accordance with paragraph 4 of Article III of the Agreement to maintain the levels of water quality existing at the date-of-entry into force of the Agreement in those areas of the boundary waters of the Great Lakes System where quantity of the water exceeds specific water quality objectives.

5. Mixing Zones. The responsible regulatory agencies may designate restricted mixing zones in the vicinity of outfalls within which the specific water quality objectives shall not apply. Mixing zones shall not be considered a substitute for adequate treatment or control of discharges at their source.

B. Ad Hoc Radioactivity Advisory Group

In accord with Annex 1 7(h) an ad hoc U.S./Canada Radioactivity Advisory Group was established by the two Parties to consider refined objectives for radioactivity. The initial meeting of this Group was held on April 12, 1973, followed by subsequent meetings and discussions. Dr. Adrian H. Booth (Canada) and Dr. William A. Mills (U.S.) served as Co-Chairmen for the development of the refined objectives. U.S. members of the Advisory Group were from the Nuclear Regulatory Commission (earlier representing AEC), the Environmental Protection Agency, the States of New York and Minnesota, and the Commonwealth of Pennsylvania.

The joint recommendations of the Advisory Group were submitted for consideration by the separate Parties in late 1975. A minority position by Minnesota was included in the submission.

The Minnesota position focused on the Annex 1 requirement "...controlled to prevent harmful effects on health" therefore advocating "...no additional discharge of radioactivity into the Great Lakes." By letter dated March 21, 1977, the Energy Research and Development Administration notified EPA that it does not endorse the refined radioactivity objectives. ERDA's position is to focus solely on the Annex language of "...radioactivity should be kept at the lowest practicable level...."

At present, the U.S. has not taken an official position on the refined radioactivity objectives for the Agreement. On April 5, 1977, the Department of State published (42 F.R. 18171 - copy enclosed) the ad hoc Advisory Group's report, including the Minnesota position, for review and comment. Comments are to be sent to EPA on or before June 1, 1977.

Although no official position by the Canadian Government on the recommendations for the refined objectives has been announced, there appears to be no dissenting opinion. Concerns expressed by some segments of the Canadian Government on the inclusion of existing levels of "fallout," mainly as strontium-90, in the dose limits have been resolved. The amount of strontium-90 in lake waters is decreasing and, with time, this radionuclide will become a smaller contributor to the dose received by users of the Great Lakes System.

In developing the recommendations, the ad hoc Advisory Group considered the relevant statements in the Agreement with respect to keeping the levels as low as practicable, preventing any health impact, the intent of nondegradation, and recommendations of ICRP. Because of the widespread acceptance of the scientific assumption that there is no threshold for radiation damage, the prevention of any harmful effects on health, in an absolute sense, would require zero discharge and no deposition of any radioactivity into the Great Lakes. This could mean the prohibition in the Great Lakes Region of such benefits as the generation of electric power by means of fossil or nuclear fuels and the use of radioactivity in medical treatment and research. For this reason a zero discharge objective was viewed by the majority of the Advisory Group as impractical and therefore a specific dose limit objective was established. This objective calls for control by specified actions at defined dose levels so that radioactivity in the Lakes is as low as reasonably achievable.

The recommended objective for the general water quality in the Great Lakes is that level of radioactivity which results in a whole-body dose commitment not exceeding one millirem from the intake in any year of waters outside the source control zone. Source investigation and corrective action if releases are not as low as reasonably achievable are recommended for dose commitments between 1 and 5 millirem. For dose commitments greater than 5 millirem corrective action by the responsible regulatory authorities is recommended.

C. Water Quality Board Radioactivity Subcommittee

The Water Quality Board established a Radioactivity Work Group in 1973 to review Objectives for Radioactivity in the Great Lakes, to recommend any needed revisions, and to assist in the review and evaluation of radioactivity monitoring data. This working group was expanded in 1975 to include Federal nuclear regulatory and radiological health agencies, as well as Federal, State, and provincial environmental agencies and made a permanent subcommittee to the Implementation Committee of the Great Lakes Water Quality Board (WQB).

Pending acceptance of refined objectives for radioactivity, the subcommittee has concentrated on developing efficient monitoring programs for the Great Lakes. The terms of reference for this subcommittee, approved by the WQB in March 1976 are:

1. Review radioactivity objectives and recommend necessary revisions.

2. Develop a radioactivity surveillance plan for both land based and atmospheric inputs to be incorporated into the overall surveillance planning.

3. Annually assess the surveillance data supplied by the agencies carrying out the surveillance program, indicating the degree of compliance with the radioactivity objective and any local trends developing in radionuclide levels.

4. Advise on potential transboundary environmental effects of the siting of nuclear facilities in the Great Lakes Basin. Nuclear facilities include, but are not limited to nuclear power stations.

5. Comment on public safety and health and the socio-economic impact of nuclear development at the request of the Water Quality Board and the Research Advisory Board.

Current U.S. membership on the subcommittee includes representatives from U.S. EPA, NRC, New York, Minnesota, Illinois, Ohio, and Pennsylvania. Seven representatives, including the Chairman, Dr. R.W. Durham, Environment Canada, are Canadian.

D. Scope of Five-Year Review

The 5-year review was conducted by examining current sources of radioactivity contributing to the Great Lakes System, current levels of radioactivity, projection of future sources and levels, and the impact of existing U.S. standards and regulations. Some discussion is provided relative to defining the responsibilities of the various Federal and State agencies as it pertains to U.S. control of radioactivity in the Great Lakes System. In conducting this review heavy reliance has been placed on information collected and generated by the IJC's Subcommittee on Radioactivity and no attempt has been made to go beyond this source in acquiring information from Canada.

On the basis of this U.S. review, the Work Group has proposed recommendations for consideration by Sub Group A of the Review Committee addressing the Refined Objective, the IJC Radioactivity Subcommittee role, and the extent of radioactivity surveillance programs in implementing the Agreement.

II. RADIOACTIVITY IN THE GREAT LAKES

Present levels of radioactivity in the Great Lakes are due to three kinds of sources: 1. fallout, 2. intentional discharge from nuclear facilities, and 3. naturally-occurring radioactive materials. The current concentrations of man-made radionuclides are almost wholly from weapons testing carried out in the period between 1950 and 1965. However, recent atmospheric weapon tests, in the autumn of 1976, indicate that atmospheric fallout is a continuing potential source of contamination. A smaller and more controllable source of man-made radionuclides is liquid and atmospheric discharges from licensed nuclear facilities. Some of these facilities such as nuclear electric power stations are strictly controlled, in the U.S. by the Nuclear Regulatory Commission (NRC). Others such as hospitals and research laboratories discharge limited amounts of radioactivity via conventional sewage systems. Municipal waste treatment plants are not licensed dischargers of radioactive materials and the impact of their discharges on the radiological quality of lake waters has not been quantified, as yet.

The largest U.S. licensed source of radioactivity discharge into the Lakes has been the Nuclear Fuel Services fuel reprocessing plant on Cattaraugus Creek at West Valley, New York. Discharges from this plant enter Lake Erie 25 miles away. The facility closed in 1972, and its decommission is being planned. However, leakage from the low-level burial area at the site has necessitated the controlled release of tritium into Cattaraugus Creek. Corrective action at the site is being

developed. Provided the wastes stored at this plant are properly contained, it should not be an important source of future contamination.

A third source of radioactivity is not man-made but technical enhanced levels of naturally-occurring radioactive material, such as radium-226. In their natural state, the Great Lakes are almost free of radioactivity because of a favorable geology. In Canada, a few rivers flowing into the Lakes have been identified as containing an enhanced radium content due to waste discharges from uranium mining operations. No U.S. sources of natural radioactivity have been identified as yet.

Eleven U.S. Nuclear Power Plants were discharging effluents into the Great Lakes in 1976. Table I lists the quantity of materials discharged from each site. From Table I it is seen that most of the current U.S. plants are on Lake Michigan and that Lake Ontario is the only other Lake receiving direct discharges. Except for a single plant on Lake Huron, Canadian nuclear power stations are concentrated on Lake Ontario. This pattern is expected to continue until around 1980 when U.S. nuclear power plants sited on Lake Erie become operational.

Table I

Liquid Discharges into the Great Lakes by
U.S. Nuclear Power Plants in 1976

Station	Location	Annual Aqueous Release in Curies	
		Fission & Activation Products	Tritium
Big Rock Point	Charlevoux Co, MI	0.77	2.4
Cook I	Benton Harbor, MI	0.26	190
Palisades	Covert Township, MI	0.005	9.0
Zion I and II	Zion, IL	0.0*	
Kewaunee	Carlton, WI	2.8	210
Point Beach I & II	Monitowoc Co., WI	3.6	690
Fitzpatrick	Oswego, NY	6.0	4.2
Ginna	Ontario, NY	0.69	240
Nine Mile Pt.	Oswego, NY	2.2	2.5

*No liquid waste discharge.

REF: Draft Fifth Annual Report, Great Lakes Water Quality Board Radioactivity Subcommittee, April 1977.

Table II provides a limited assessment of the radioactivity in Lake waters near the discharge streams from nuclear power plants. The data is exceptionally incomplete. However, it is believed that increased monitoring and reporting requirements by the NRC (and Canadian authorities) will increase the amount of data available in the future.

It should be noted that Lake Superior has no nuclear facilities at present, the levels in Table II indicating fallout contamination. Lake Michigan has the most nuclear facilities of any Great Lakes. Only tritium and strontium-90 from fallout have been quantifiable on the basis of their average annual concentration. On a short term basis, cesium-137 and cesium-134 have been identified in the vicinity of nuclear facilities. On an annual basis these radionuclides are not

found at detection levels currently utilized. Canadian nuclear facilities discharge into Lake Huron. No meaningful data on tritium, the major Canadian effluent, is available for this Lake; nor is data in the discharge area available for other radionuclides.

Because the State of New York has an active surveillance program, data for Lake Ontario is more complete. However, these data are not for samples taken within the one kilometer source control zone of the discharging facilities.

Currently, surveillance of the open waters of the Lakes is minimal. While numerous special studies have been performed as part of research projects, periodic monitoring of the open Lake waters as part of a planned surveillance program is not carried out by any governmental agency. Some information on near shore radioactivity is available from the tritium data provided as part of the USEPA Environmental Radiation Ambient Monitoring System (ERAMS). The concentration of tritium in Lakes Michigan, Erie, and Ontario since 1972 is shown in Table III. These measurements were not made using open lake waters but samples were taken at distances greater than 1 kilometer from a discharge point so as to exceed the maximum source control area specified in the draft refined objectives. Comparison with Table II indicates that the Lakes are remarkably uniform in tritium content, an indication that fallout is a chief source of radioactivity.

Current levels of radioactivity in the Lakes are below the 50-year dose commitment level in the draft Radioactivity Objective of 1 mrem,

Table II

Radioactivity Concentrations Near Nuclear Facilities

Location	Average Annual Concentrations (pCi/l) Tritium	Cesium-137	Sr-90
Lake Superior			
1974	---	.076	---
1973	---	---	0.53
Lake Michigan			
1974 Big Rock	350	BDL	NA
1974 Palisades	300	BDL	NA
1974 Cook	300	BDL	NA
1974 Zion	370	BDL	NA
Lake Huron			
1974 Douglas Point	<1700 (BDL)	.059	0.77*
Lake Erie			
1974 near NFS outlet	320	<.07	0.93
Lake Ontario			
1974 Pickering	1500	.07*	.87*
1974 Ginna	460	.06*	1.0*

BDL (Below Detection Limit)
NA (Not Available)

*Drinking water intake near nuclear facility.

Ref: Fourth Annual Report, Appendix D, Great Lakes Water Quality, WQB Radioactivity Subcommittee, June 1976.

Table III

Ambient Tritium Levels in Great Lakes

Location	Average Annual Concentration (pCi/l)[1]				
	1972	1973	1974	1975	1976
Illinois					
Zion	NA	NA	BDL	300	400
Michigan					
Bridgeman	NA	NA	350	350	300
Charlevoix	450	200	300	250	250
Monroe	350	350	300	400	300
South Haven	500	400	BDL	300	300
New York					
Oswego	400	450	500	350	300
Ohio					
Toledo	NA	NA	NA	NA	300
Wisconsin					
Two Creeks	300	300	300	500	300

[1] ± 200 pCi/l

BDL (Below Detection Limit)
NA (Not Available)

REF: 1972-1974 Radiation Data and Reports, Reports of the Tritium Surveillance System, U.S. Environmental Protection Agency, Washington, D.C.

1975-1976 Environmental Radiation Data, Quality Report on the Environmental Radiation Ambient Monitoring System, U.S. EPA, Eastern Environmental Radiation Facility, Montgomery, Alabama.

total body dose.* Strontium-90 from weapons fallout, the only important constituent, is not a source of total body exposure but rather bone marrow dose for which the 50-year (TED-50) dose commitment limit is likely to be between 5-10 millirem depending on final risk limits for bone marrow irradiation now being considered by the ICRP. Lake Ontario has the highest Sr-90 concentration, about 0.9 pCi/l. An annual intake at this concentration would cause a TED-50 of 0.5 mrem. It is expected that Sr-90 in the Lakes will decrease with time as fallout activity is removed from the water column by sedimentation and decay, as well as by fresh water dilution.

In 1976 EPA completed a study of projected radioactivity in Great Lake Waters due to planned nuclear power operations, "Radionuclide Transport in the Great Lakes," EPA 600/9-76-016. According to the results of this study, Lake Ontario will be the most highly contaminated Lake and tritium and strontium-90 will be the major sources of dose, the former predominating. By the year 2050 it is estimated that the annual dose from ingesting tritium in Lake waters will be about 0.2 mrad; from strontium-90, about 0.005 mrem. It is seen that the dose rate due to strontium-90 from nuclear power facilities is much less than that due to fallout and that the radiological quality of Lake waters is expected to improve even though nuclear facilities are located on the Lakes.

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*Permitted levels are in the range of 1 to 5 mrem provided that discharges are as low as practicable.

III. U.S. STANDARDS AND REGULATIONS

Since entering into force in April 1972, several standard and regulatory actions have been taken by the U.S. Government which impact directly on levels of radioactivity in the Great Lakes System. All actions taken have been more restrictive in terms of radioactivity emissions and upper limits on individual and population dose. Thus their impact has been to control radioactivity toward decreasing pollution of the Great Lakes System.

A. EPA

1. 40 CFR 141

Interim Primary Drinking Water Regulations (41 F.R. 28402, July 9, 1976). The Agency promulgated the following maximum contaminant levels:

5 pCi/l	radium-226 plus radium-228.
15 pCi/l	gross alpha particle activity (including radium-226 but excluding radon and uranium).
4 millirem/yr	average annual concentration of beta particle and photon radioactivity from man-made radionuclides. Dose equivalent rate applies to total body or any internal organ and to the sum of radionuclides present in drinking water.

Application of the drinking water limits to the Great Lakes System would meet the Agreement criteria of ICRP dose equivalent limits but would not necessarily result in as low as reasonably achievable doses. The drinking water limits are, however, consistent with the proposed refined objective when a determination has been made that controllable sources discharging into the Great Lakes System have been judged by the regulatory authorities to be as low as reasonably achievable. Only if the food intake (as well as drinking water) were a significant source of radioactivity, would the proposed refined objectives be more restrictive.

2. 40 CFR 190

Environmental Radiation Protection Standards for Nuclear Power Operations (42 F.R. 2858, January 13, 1977). The Agency promulgated these standards for normal operation of the uranium fuel cycle, excluding mining, transportation, and waste disposal activities. For planned releases the standard establishes 75 millirems annual dose equivalent for thyroid, and 25 millirems annual dose equivalent for the whole body and all other organs. The standards also limit the discharge of long-lived materials into the environment based on power generation, including a limit of 0.5 millicuries per gigawatt year combined of plutonium-239 and other alpha-emitting radionuclides with half-lives greater than one year.

These standards are not specified in terms of a single pathway but rather for the total exposures to persons. It is not expected that the proposed refined objectives would be exceeded by the

actions controlled under these standards, since the primary pathway for exposure from the fuel cycle is not by the ingestion of water. Implementation of these standards would be by the U.S. Nuclear Regulatory Commission.

3. FWPCA (PL 92-500, 10/18/72)

Under this legislative authority, EPA can control the discharge of naturally-occurring radioactivity into waters of the Great Lakes System, as well as certain man-made radionuclides. Under PL 92-500 effluent guidelines for the phosphate industry have been proposed to control their discharge of radioactive effluents. This control is obtained by maintaining a near neutral or basic pH for stored liquid wastes so that radium is precipitated before discharge. A decision by the U.S. Supreme Court ruled out materials covered by the Atomic Energy Act as being subject to the FWPCA permit program and EPA has not included radioactivity in its water quality criteria.

4. Ocean Dumping Act (40 F.R. 2462, 1/11/77)

This Act administered by EPA prohibits the dumping of high-level radioactive wastes in "oceans." The Great Lakes System appears to not be included by definition. However, neither the U.S. or Canada dispose of packaged radioactive wastes into the Great Lakes System and a no dumping provision is a part of the Refined Objective for Radioactivity.

B. NRC

NRC in addition to regulating the nuclear industry under EPA's Uranium Fuel Cycle Standards has also promulgated Appendix I (10 CFR 50, 40 F.R. 19439, 5/5/75) which has established design specifications for light-water reactors so that the most likely exposed persons will not receive more than 5-10 mrem annually from a single pathway. This regulation is based on reactors meeting the design criteria of being "as low as reasonably achievable."

NRC also has licensing responsibilities for certain radionuclides covered under the Atomic Energy Act. This includes the licensing of radionuclides for use in hospitals, industry, and educational institutions. Such licensing is regulated to the limits specified in 10 CFR 20 for maximum concentration of radioactivity in discharges. These limits are substantially higher than either the limits in the U.S. Safe Drinking Water Act or the proposed Refined Objectives and therefore would not be considered as the controlling limits for the Great Lakes System.

C. ERDA

ERDA has no regulatory responsibilities in the control of radioactivity in the Great Lakes System. Only in those instances of Federal operations under their administration does ERDA have control over the release of radioactive materials. In those operations, of which none discharge into the Great Lakes System, ERDA utilizes

10 CFR 20 limits which allow a dose limit of 170 mrem/yr to individual members of an exposed population group.

D. States

Some States bordering the Great Lakes have contracts with NRC to perform radiological quality analyses of Lake water in the vicinity of nuclear effluent outfalls. These analyses are for comparison to data reported by NRC contractors. In addition, under their residual authority to protect health and safety, States have an authority and obligation to monitor for environmental pollutants. States provide these data to the Great Lakes Water Quality Board via the Radioactivity Subcommittee discussed above. In addition, all States accepting primary authority for drinking water purity under the Safe Drinking Water Act of 1974, must provide for the surveillance of radioactivity in community water systems at least once every four years. Currently, all Great Lakes States except Pennsylvania and Indiana are expected to accept primacy for implementation of this Act and by 1978 should be reporting on levels of natural and man-made radioactivity in community water systems. Because most of the larger systems utilize Lake waters, these data should provide good coverage of ambient radioactivity levels in near shore waters on a periodic basis.

IV. RECOMMENDATIONS

A. While the requirements of the EPA Drinking Water Regulations will provide near shore data and NRC collects source monitoring data,

responsibility for monitoring the open waters of the Great Lakes System is lacking. Surveillance of Lake Superior is particularly poor. Since this lake can provide valuable base line data not influenced by nuclear plant discharges, its inclusion in a long-term surveillance plan is highly desirable. Arrangements should be made to increase surveillance data on the concentration of radioactivity in the Great Lakes System, including "open waters," and particularly the systematic reporting of such information to the International Joint Commission through the Water Quality Board.

B. Intercomparison of reported data is not very practicable at present, because no common quality assurance program exists for sampling and analysis. A quality assurance program under the direction of IJC should be developed with cooperation from the various institutions of the two Parties in the Agreement.

C. Every effort should be made by the two Parties to encourage adoption of the proposed Refined Objectives for Radioactivity and appropriate language amended to the Agreement to include these objectives.

For the Commission, by the Division of Corporation Finance, pursuant to delegated authority.

GEORGE A. FITZSIMMONS,
Secretary.

[FR Doc.77-10039 Filed 4-4-77;8:45 am]

DEPARTMENT OF STATE

[Public Notice 533]

BUREAU OF OCEANS AND INTERNATIONAL ENVIRONMENTAL AND SCIENTIFIC AFFAIRS

Availability of Report of the International Working Group on Radioactivity Objective for the Great Lakes Water Quality Agreement

The Department of State hereby gives notice that the report of the joint Canada-United States Working Group on Radioactivity Objective for the Great Lakes Water Quality Agreement is available for review and comment. This report, which is presently under review by both governments, was prepared under the terms of the Agreement on Great Lakes Water Quality, signed April 15, 1972.

The next of the report, together with the text of a dissenting opinion on the report's recommendation by the State of Minnesota, follows below.

Interested persons may submit their comments in writing to the Office of International Activities, Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460, on or before June 1, 1977. All comments received will be considered prior to completion of the review by the U.S. Government.

Dated: March 25, 1977.

DONALD R. KING,
Director, Office of Environmental Affairs.

REFINED RADIOACTIVITY OBJECTIVE FOR THE GREAT LAKES WATER QUALITY AGREEMENT

SUMMARY

This document represents the joint recommendations of U.S. and Canadian advisory groups on a radioactivity objective to preserve the water quality of the Great Lakes. The objective is in terms of a dose equivalent to ICRP Reference Man from a standard annual intake of the Great Lakes water. The recommended objective for the general water quality in the Great Lakes is that level of radioactivity which results in a whole body dose equivalent not exceeding one millirem. Release of radioactive materials shall be as low as reasonably achievable and controlled by specified actions at defined levels.

The Canada-United States Great Lakes Water Quality Agreement specified radioactivity as a constituent of water for which there should be an agreed Water Quality Objective. The relevant statements in the Agreement are as follows:

Annex 1, Section 1(h), states, "Radioactivity should be kept to the lowest practicable level. In any event, discharges should be controlled to the extent necessary to prevent harmful effects on health."

Annex 1, Section 7(b) further states: "for radioactivity, the objectives shall be considered in the light of the recommendations of the International Commission on Radiation Protection."

Further, this section requires the parties to consult for the purpose of considering "refined objectives for radioactivity".

Subsequently, advisory groups were formed in Canada and in the United States to consider the technical aspects involved in developing such "refined objectives". The present report was developed following extensive consultation between the two groups.

To restore and enhance water quality in the Great Lakes System, [illegible] for in the Agreement, it is necessary [illegible] quantity of radioactive ma[illegible] to activities of the United States of America and Canada. An acceptable [illegible] water in the system can best be [illegible] by a vigorous application of [illegible] control measures. These controls [illegible] be applied to radioactive effluents from point sources as well as run-off, drainage, and seepage from non-point sources including aerial deposition.

The Radioactivity Objective for the Great Lakes Basin is based principally on three criteria: (1) Introduction of radioactive materials into System Waters should be permitted only when it results from socially beneficial activities.

(2) The concentration of radioactivity in the System Waters and its biota should not constitute an unacceptable health risk on either a long-term or short-term basis.

(3) Since the ingestion of any amount of radioactivity may involve some risk, additional controls should be instituted until their cost is incommensurate [illegible] any further reduction [illegible]

In keeping with the [illegible] recommendations have [illegible] recommendations refer [illegible] Quality Objective, the [illegible] releases a defined hierarchy of [illegible] levels and the surveillance of Lake Waters. None of the proposed levels, including particularly the lowest, should be interpreted as necessarily defining an acceptable dose to the population using System Waters. The acceptability of any dose level depends on whether the three criteria given above are being met in a responsible manner. It is further proposed that these objectives be reviewed at least every five years to consider any necessary changes and to determine if they continue to reflect "as low as reasonably achievable".

AMBIENT WATER QUALITY

It is necessary to specify an ambient water quality level for the Lakes as a whole so that contributions from all sources in which aerial deposition are taken into account. This water quality level is expressed in terms of the total equivalent dose to ICRP Reference Man integrated over 50 years (TEDD$_{50}$). It is proposed that water quality outside of any Source Control Area, as defined herein, shall not result in a TEDD$_{50}$ greater than one millirem to the whole body from daily ingestion of 2.2 liters of Lake water for one year. Therefore, even for lifetime (50 years) ingestion, the annual dose rate will not exceed 1 millirem per year. The total equivalent dose to a single organ or tissue shall be in proportion to the dose limit recommended by the ICRP for that tissue. Because levels in the lakes may fluctuate as a result of uncontrollable releases, such as fallout from weapon testing, it is further recommended that the one millirem value be reviewed at least every five years to ensure that the contribution from these uncontrollable releases does not constitute an unreasonable proportion of the dose.

CONTROL OF RELEASE OF RADIOACTIVE MATERIALS

Dumping of radioactive wastes or other radioactive material into waters of the Great Lakes system is prohibited. Dumping is defined as any deliberate disposal of packaged or unpackaged wastes or other matter from vessels, platforms or other man-made structures into the System Waters, but dumping does not include the release of effluents that are permitted by the responsible regulatory bodies.

Both the concentrations and quantities of radioactive materials released into the Great Lakes System shall be controlled to the extent necessary to protect public health and the environment. Releases of radioactive materials from each operation or type of operation shall not [illegible] in accordance with the ICRP recommendation that "all doses be kept as low as is reasonably achievable, economic and social considerations being taken into account" (ICRP Pub. 22 1972).

Effluents shall be controlled by the regulatory bodies having jurisdiction, taking into account the cost of further reductions, the efficacy of available additional control measures and the significance of the potential reduction in public health risk associated with further discharge limitations.

A graded scale of actions for each identifiable source shall be implemented based on annual average measurements of the TEDD$_{50}$ in water discharged at the primary [illegible] source control area, in accordance with the action conditions given below in Table I.

TABLE I.—[illegible]

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

Action levels are to be [illegible] in accordance with [illegible] the ICRP.

The [illegible] based on the [illegible] measurements in a [illegible] probability [illegible]

[illegible] Condition B, an investigation must be [illegible] to identify the source and the cause of this investigation demonstrates that releases are as low as reasonably achievable, no further action is necessary; otherwise, corrective action shall be taken.

Concentrations of radionuclides in the water corresponding to Condition C probably reflect a failure of effluent controls and are unacceptable on a continuing basis. The responsible regulatory authorities shall determine appropriate corrective actions to minimize the public health risk.

SURVEILLANCE

Adequate periodic monitoring of System Waters, sediment, and the appropriate food organisms contained therein should be provided for those radionuclides likely to be present in measurable concentrations. Such monitoring should be conducted under the direction of the responsible Federal, State, and Provincial jurisdictions and reported to the International Joint Commission. The nuclides and food organisms investigated,

and sampling locations and frequency should take into account the known effluent sources and particular nuclides released.

The monitoring reports should include calculations of the TED_{50} to ICRP Reference Man from standard annual intake of the water since this is the parameter to be used in determining the applicable Action Condition. At present it is not necessary to determine explicitly the dose equivalents due to the intake of food harvested from the Lakes as they are relatively insignificant.

DEFINITIONS

1. *Total Equivalent Dose* (TED_{50}). For the purpose of this report, the total equivalent dose to a particular organ, tissue or the whole body is the cumulated dose equivalent over 50 years resulting from the daily ingestion of 2.2 liters of lake water for one year.

where:

$TED_{50} = \Sigma D_{50} Q_i N_i$ rem.

D_{50} = total absorbed dose integrated over a period of 50 years after intake of the radionuclide "i".

Q_i = quality factor.

N_i = product of all other modifying factors.

ICRP report No. 10 [1] lists the dosimetric data, including the TED_{50}, for a number of radionuclides.

2. *Reference Man:* For the purpose of this report, Reference Man refers to the definitions and parameters for adult males outlined in ICRP Report 23.[2]

3. *Source Control Area:* It is proposed that the "source control area" be defined as follows: "The source control area shall be bounded by a distance of 1 km radius from the point of release or, in those cases where the release point is to a narrow channel or river, the boundary shall be a point 1 km downstream from the source."

It is further proposed that the operator of a facility can request a larger source control area subject to the approval of the regulatory authorities and similarly these authorities may require a more restrictive area from an operator.

4. *Ambient Water:* The water in the Great Lakes System outside the source control areas.

MINNESOTA POSITION AS PRESENTED TO THE AD HOC GROUP IN SEPTEMBER, 1974

An ad hoc Radioactivity Objective Committee has been formed to refine the radioactivity objectives of the Great Lakes Water Quality Agreement pursuant to Annex I, § 7(b).

Annex I to the agreement requires that "Radioactivity should be controlled to the extent necessary to prevent harmful affects on health." It is universally accepted by responsible bodies that radiation damage is a linear effect, that is, that radiation produces detrimental effects down to the lowest levels. The State of Minnesota believes that the linear theory of radiation damage and the Annex I requirement of preventing "harmful effects on health" require that any refinement of objectives for radioactivity in the Great Lakes allow no additional discharge of radioactivity to the Great Lakes.

Annex I, § 7(b) also requires that the refined objective for radioactivity * * * shall be considered in the light of the recommendations of the International Commission on Radiation Protection." The ICRP dose limits are recommended as upper limits. Allowing no additional discharge of radioactive waste to the Great Lakes will meet the ICRP limits. Consequently, our position has properly taken into account the position of the ICRP.

Minnesota further believes that any refinements of the radioactivity objectives should be consistent with the 1972 Federal Water Pollution Control Act Amendments. This would require that existing facilities provide the best practicable treatment by 1977, the best available treatment by 1983, and a goal of zero discharge by 1985.

[FR Doc.77-10075 Filed 4-4-77;8:45 am]

[1] ICRP Pub. 10, 1968 Report of Committee IV, Pergamon Press.

[2] ICRP Pub. 23, 1975 Report of the Task Group on Reference Man, Pergamon Press.

RECEIVED APR 28 1977 GREAT LAKES REGION

Agency for International Development

ADVISORY COMMITTEE ON VOLUNTARY FOREIGN AID

Meeting

Pursuant to Executive Order 11769 and the provisions of section 10(a)(2), Pub. L. 92-463, Federal Advisory Committee Act, notice is hereby given of the meeting of the Advisory Committee on Voluntary Foreign Aid which will be held on April 25, 1977, from 9 a.m. to 5 p.m., in Room 1107, New State Building, 21st and Virginia Avenue NW., Washington, D.C.

The purpose of the meeting is to formulate recommendations for the Administrator concerning (1) the size, composition and membership of the Committee, and (2) to review the status of plans for the expanded registry and to consider such other matters related to the foreign assistance advisory concerns of the Committee as may be appropriate.

The meeting will be open to the public. Any interested person may attend, appear before, or file statements with the Committee in accordance with procedures established by the Committee and to the extent time available for the meeting permits. Written statements may be filed before or after the meeting.

Mr. Allan Furman will be the A.I.D. representative at the meeting. Information concerning the meeting may be obtained from Mr. Robert S. McClusky, Telephone: AC202-632-1892. Persons desiring to attend the meeting should enter the New State Building through the Diplomatic Entrance, 22nd and C Streets.

Dated: March 29, 1977.

ALLEN R. FURMAN,
Acting Assistant Administrator for Population and Humanitarian Assistance.

[FR Doc.77-10038 Filed 4-4-77;8:45 am]

DEPARTMENT OF THE TREASURY

Customs Service

WRENCHES, PLIERS, SCREWDRIVERS, AND METAL-CUTTING SNIPS AND SHEARS FROM JAPAN

Antidumping Duties

AGENCY: United States Custom Service, Treasury.

ACTION: Notice of petition filed by American manufacturer, producer or wholesaler.

SUMMARY: This notice is to advise the public that a petition has been filed by an American manufacturer requesting that antidumping duties be assessed with regard to wrenches, pliers, screwdrivers, and metal-cutting snips and shears from Japan. Interested persons are invited to comment on this action.

EFFECTIVE DATE: This notice is effective on April 5, 1977.

FOR FURTHER INFORMATION CONTACT:

Michael Lublinski, Classification and Valve Division, U.S. Customs Service, 1301 Constitution Avenue NW., Washington, D.C. 20229 (202-566-2938).

On March 15, 1977, a petition was received in proper form, pursuant to section 516(a) of the Tariff Act of 1930, as amended by the Trade Act of 1974 (19 U.S.C. 1516(a)), from counsel acting on behalf of certain American manufacturers and wholesalers of wrenches, pliers, screwdrivers and metal-cutting snips and shears (including bolt cutters), among other things, asserting that a finding of dumping be issued and antidumping duties be assessed on those entries of the above-mentioned hand tools from Japan where it has been determined that sales were being made at prices less than the foreign market (or constructed) value, within the meaning of the Antidumping Act of 1921, as amended (19 U.S.C. 160 et seq.). As a result of a negative determination of injury rendered by the International Trade Commission on October 21, 1974 (39 FR 38133), a finding of dumping was not made in this matter, and therefore merchandise of the class or kind in question was not subject to appraisement under the Antidumping Act.

The petition requested the following relief:

1. The Secretary of the Treasury or his delegate should conclude that the Tariff Commission (now "International Trade Commission," hereinafter "Commission") erred, as a matter of law, when it concluded that an industry in the United States was not being injured or likely to be injured or prevented from being established by reason of imports of wrenches, pliers, screwdrivers and metal-cutting snips and shears from Japan sold at less than fair value ("LTFV");

2. The Secretary of the Treasury or his delegate should publish a finding of dumping with respect to wrenches, pliers, screwdrivers, and metal-cutting snips and shears from Japan forthwith;

3. Appropriate Customs officers should make Antidumping Act appraisements (foreign market (or constructed) value and purchase (or exporter's sales) price) for every entry of wrenches, pliers, screwdrivers, and metal-cutting snips and shears from Japan where it has been determined that the foreign market (or constructed) value exceeds the purchase (or exporter's sales) price.

4. Appropriate Customs officers should assess antidumping duties on those entries of wrenches, pliers, screwdrivers, and metal-cutting snips and shears from Japan where it has been determined that the foreign market (or constructed) value exceeds the purchase (or exporter's sales) price.

In accordance with the provisions of § 175.21(a) of the Customs Regulations

Mr Des Alexander

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

ENVIRONMENTAL RESEARCH LABORATORY - DULUTH
6201 CONGDON BOULEVARD
DULUTH, MINNESOTA 55804

April 22, 1977

To the Research Group Committee for Water Quality Agreement Review:

Subject: Transmittal of Research Work Group Report

Attached you will find the third draft of the Research Group's review of the Water Quality Agreement. I have received comments from three people on the second draft and have tried to include them as much as I can. There was an important point on which two of the three people who commented agreed and where I have not included their suggestion in this third draft, and I want to highlight that point for you. Both of these comments came from Directors of major research laboratories on the Great Lakes and they objected to the report's suggestion that research managers of programs on the Great Lakes be required to adhere to the research needs identified by the International Joint Commission. As a Laboratory Director in EPA, I would not like that, either. However, the fact that all of three of us as Laboratory Directors do not like it simply convinces me that what the report says is right--that this is where one of our major problems lie. We have a situation not unlike the one which the country faces in trying to decide whether to joint the United Nations. If the United Nations is really going to work, the countries have to give up their sovereignty. The same is true of research laboratories on the Great Lakes. If we are going to have a coordinated program and get on with the job, then we've got to cooperate far more than we are presently doing. (I am trying to wear my IJC hat right now and not my Laboratory Director's hat. I don't like it as a Laboratory Director any more than they do.)

Second, I want to point out that while Joe Moylan's comments are thorough and probably correct in many instances, they are ones about which I can't do much as leader of this Work Group. They are more a "baring of his soul" about what is wrong with the Great Lakes and the world than they are specific suggestions for revising the Work Group report, so I have included them for your use as you see fit. Let me restate that the Work Group did not meet and I did not receive comments from everyone on any one of the drafts, but I don't think that there is enough disagreement among the group to make it worth trying to have a meeting at this late date even if time permitted.

Sincerely,

Donald I. Mount, Ph.D.
Director

Enclosure

OPTIONAL FORM NO. 10
JULY 1973 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

TO : Leader, Research Task Group, GLWQA Review **DATE:** April 15, 1977

FROM : J. H. Kutkuhn, Member

SUBJECT: Draft of Task Group Position Paper (4/7/77)

First let me apologize for not having responded more quickly to your earlier communication, the one dated 3/17 enclosing the draft position paper of 3/7. I'd been out of the country for a month and, upon my return in late March, simply wasn't able to review the draft in time to meet your first deadline. Moreover, I hadn't been made aware previously that I was being named a member of your group, and, frankly, am still a little uncertain as to how it happened and why.

Further, it's been difficult for me to grasp the substance of the charge to this task group (#7) as outlined in the Task Description. I feel the (3) interest "areas" listed there are described so simplistically and in such abstract fashion that doing justice to them in the time allotted is impossible. Also, the suggestion that the scientific community has not provided knowledge good enough for "...an accurate assessment and prediction of all water quality conditions..." in the Great Lakes strikes me as being frivolous and platitudinous, if not completely unrealistic. As I try to point out in the comments that follow, the indictment by implication of research as being unresponsive, fragmented, disoriented, and unproductive seems grossly unfair, and masks what many feel is the real issue, viz., our general ineffectiveness to date in mounting and enforcing measures to halt the degradation of Great Lakes water quality by agents we already know are doing significant harm.

I very much appreciate the difficulties you face as leader of this group, and don't wish to add to your misery by appearing to be obstructionist. But I did want to take the opportunity to offer some thoughts of my own about this complicated matter, speaking as a research administrator who agonizes daily over whether or not the costly research we administer is truly relevant. Please understand that I can live with the draft report as it stands, and am not suggesting you subject it at this late hour to the major surgery these comments may otherwise imply is necessary.

1.) <u>P. 1, para. 1</u>: The last sentence is mechanically awkward, unclear as to meaning, and, as a result, ambiguous (or at least misleading). I'm not sure that the "vast and diversified data base...(developed) over the past decade..." has provided (is providing) to any

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significant extent for a well-organized, integrated, and effective--i.e., "successful"--abatement/monitoring strategy. What seems to have evolved instead is a loose, not-too-well-coordinated approach--i.e., a relatively unsuccessful abatement program--resting largely on intuition as derived from qualitative assessment of this fragmented base. [In the second sentence, what is meant by the term "...these remedial programs?" It's antecedent appears to be "...surveillance and monitoring activities...," which by themselves certainly aren't "remedial."]

2.) P. 1, para. 2: Similarly unclear; the first sentence implies effectiveness of controls as mounted from the available data base, the last two decry the inadequacy and outmodedness of the same base. If not contradictory, the argument is confusing.

3.) P. 1, para. 3: The ideas expressed here (first 4 sentences) seem to tumble over one another, without conveying a sense of conviction that they really have merit. [It is difficult to build a case on (or get support for) rationale characterized by conjecture, marginal probability, abstraction, and precognition.]

4.) P. 2, para. 1: I have difficulty with several implications apparent in the last half of the paragraph, where the narrative continues with "It is probable that..." (i) Exclusive concern about toxic pollutants, equivalent attention must be given other factors that also directly or indirectly threaten Great Lakes water quality, such as lack of effective water-level controls/policy, indiscriminant dredging and filling, indeterminate status of radioactive materials, largely uncontrolled influx of suspended solids, siting/operation of power plants, and a multitude of proposed land-use activities in the "coastal zone" specifically as well as in the basin at large. (ii) Unrealistic view that "research" is an absolute prerequisite for solving water-quality problems; there seems to be some uneasiness in the ranks about the real functional utility of vaguely perceived, yet-to-be-attained research findings in setting water-quality standards, planning abatement strategy, and establishing evaluation (monitoring) programs. Some folks are asking: Why can't we exercise simple common sense and collective good judgment in identifying, preventing, or mitigating what we already know is bad, or is very likely to be, and get on with the business of physically doing something about it? Why should the Lakes suffer further degradation while increasingly costly, time-consuming, misdirected, and frequently abstract research is pursued? In other words, why continue to put the burden on, to rhetorically emphasize the need to do more, "research?" Why can't tighter and better-coordinated enforcement of abatement measures be applied now, where we all agree it's needed?

5.) P. 2, para. 2: With reference to the immediately preceding statement (4), I feel the arguments expressed here are largely academic, if not unsupportable and highly conjectural. It's one thing to offer a blanket

criticism of the U.S. research community for failing to match the pace set by someone else, it's another to state clearly and precisely what the research community at large should have been doing to begin with, and whether or to what extent the research performed by anyone to date has been truly effective in facilitating the solution of water-quality problems. I feel we need to have a better understanding of what the term "research" connotes, and not use either its promise or failure as a crutch in excusing the fact that efforts to improve/restore water quality have been no more than marginally effective to date. Could we provide examples of research whose results, by design, were or would be absolutely basic to a well-conceived abatement or monitoring program? [I often have the feeling that much of our research is undertaken more in response to platitudinous, stream-of-consciousness, and abstract expressions of need than in the context of practical, carefully wrought management schemes lacking only in certain information clearly derivable via applied research. This feeling is sustained by the frequent observation that individuals expressing such (research) needs either refuse to consider or simply have no conception of (i) what it would cost in time, labor, and money to address them; (ii) how complicated logistically the work involved will be; and (iii) whether indeed their pursuit will likely produce anything relevant.]

6.) P. 3, para. 1: In the second complete sentence at the top of p. 3, it sounds as though we're second-guessing ourselves--which is the risk one takes when using the "if-then" approach to explaining why something failed, or at least doesn't seem to be working too well.

7.) P. 3, para. 2: Well-stated; relates nicely to what I tried to say in (4) and (5) above about applied research in the water-quality context.

8.) P. 4, para. 2: The problem of the agreement's overstressing the health-hazard aspect of contaminants in the Great Lakes has indeed complicated the RAB's task of offering well-balanced recommendations regarding bonafide "research needs"--when in fact the human-health dimension lacks expert representation on the Board itself. I agree that this deficiency must be eliminated one way or another.

9.) P. 5, para. 2: I question the usefulness of relating the alleged ineffectiveness of the RAB to the character of its composition, i.e., to the dearth of "clout" among its members in influencing the direction, funding, etc. of research programs under their control. I revert again to my observations in (4) and (5) above, wherein I question whether most if not all water-quality "research needs" heretofore identified by the Board have been conceived, in terms of expected results of the work involved, as truly relevant as well as logistically feasible. The opinion that needs enunciated by the RAB have not been addressed with greater vigor may be more an indication of their lack of intrinsic merit than of some research manager's unwillingness to apply the

necessary resources in pursuing them. Regardless of who makes up the RAB, the research it specifies as being necessary must have irrefutable merit.

10.) P. 6 and 7, Recommendations: (1) Returning back to (9), I doubt that this provision would result in the desired effect. (2) OK. (3) OK. (4) Offhand, this sounds naive and unrealistic. (5) OK.

11.) P. 7 and 8, Terms of Reference: Concur.

In summary, I'm not sure the paper adequately addresses the main elements of the charge made to the group at the outset. But, as suggested earlier, I don't think it would have been possible to do more or better in the short time available. Closing points I would like to make, however, relate to what appear to be the three main concerns expressed in the draft document. (i) toxic substances; (ii) composition of the IJC/RAB; and (iii) human health v. resource well-being.

--Toxic substances. The draft dwells too much if not exclusively on this topic. It should strike a better balance by recognizing other, equally important aspects of the total water-quality problem.

--Composition of RAB. I agree that the effectiveness of this body would likely be enhanced by the addition of more "influence." But this kind of restructuring implies also that such representation (mainly of the federal establishment) would fully comprehend--and could be counted on to intelligently assess--all research needs, strategies, and applications as to their relevance. Even if the body did prove to be omniscient, which is highly unlikely, its effectiveness could quickly be impaired if, to "get the job done," it dictated more than it coordinated. I feel the document could benefit from an attempt to better reflect the notion of true coordination throughout the Great Lakes community.

--Human health v. resource well-being. I agree with the need to get better representation in the IJC from the human-health sector of the community. It seems fair to say, however, that the IJC is making good headway in recognizing that many other living resources are at least as sensitive as man to the requirement of good-quality water. To set criteria strictly from the standpoint of human health would appear to be as much a mistake as setting them from that of the biota at large. What I feel we need is a good balance in protecting both, while (and perhaps more importantly) protecting the integrity of the lakes themselves.

Many thanks for the chance to express some thoughts I've harbored for a long time.

J H Kirkbride

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
NATIONAL PROGRAM STAFF
Beltsville, Maryland 20705

April 15, 1977

Subject: Research Work Group Draft Report

To: D. I. Mount
Director, Environmental Research
Laboratory - Duluth
6201 Congdon Boulevard
Duluth, MN 55804

I have read the revised draft report. I believe you have done an excellent job of addressing some of the weak spots in the program. As I indicated in my last memorandum, the introduction is especially well written.

Regarding the problem areas, you mention the need for developing a set of research priorities. They have developed a long list of research needs with some broad indication of degree of urgency, but this needs to be more selective and definitive. There also needs to be some mechanism for directing high priority research to those locations having the best competence. I think that this is what you are trying to say in Recommendation No. 4.

Your statement about the composition of the RAB is good. It is somewhat strong, but apparently valid.

You address the funding of the RAB to the extent that adequate funds be available for administrative functions. Our experience has been that a coordinated program can best be developed if research funds are made available to the administering group. I don't know what funds are available for this purpose, but one recommendation might be that funding sources for the RAB be explored.

I note a strong emphasis on human health. Mention should also be on conservation of natural resources.

In general, I think your report is very good, and there are no major changes I can suggest.

J. Lunin
Staff Scientist
Soil, Water, and Air Sciences

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
ENVIRONMENTAL RESEARCH LABORATORIES

Great Lakes Environmental Research Laboratory
2300 Washtenaw Avenue
Ann Arbor, Michigan 48104

April 18, 1977

TO : Donald I. Mount
Director, Environmental Research Laboratory - Duluth
EPA

FROM : Eugene J. Aubert
Director, GLERL

SUBJECT: Comments on Research Task Group Position Paper, April 7, 1977 Draft

I am pleased to have the opportunity to review and comment on the subject draft paper. In overview, I concur with your recommendation to change the mission/objective (Terms of Reference) of the Research Advisory Board from that of coordinating Great Lakes water quality research in the U.S. and Canada to that of the Commission's principal scientific advisor on all water quality matters. It is undesirable to leave the RAB Terms of Reference unchanged. The RAB accomplishment of the last five years is not commensurate with the effort and yet science should play a larger role in the activities of the Great Lakes Water Quality Agreement.

I do have detailed comments on your paper and suggestions for change which I trust are constructive.

1. Page 1 - Title. Since several agencies have members on the Research Task Group, I suggest that "EPA" be deleted from the title and it should read "Research Task Group Position Paper - Five Year Review of the Great Lakes Water Quality Agreement."

2. Page 2, last paragraph, second sentence. This sentence is confusing to me and I'm not sure what point you are trying to make. If you're talking about the fact that there is no single U.S. research program addressing Great Lakes water quality at the same level of effort as at CCIW, this is true, but so what. The U.S. has a multi-federal agency program which addresses a set of Great Lakes water-related activities. Each activity has its own mission/objective. That's the way the U.S. is organized. I don't believe we should copy the Canadians on this one.

3. Page 3, last paragraph. Under the circumstances, I believe we have as much U.S.-Canadian cooperation in research as could be expected. The RAB has fostered workshops and symposia. U.S.-Canadian joint research program will only be pursued if it is clearly advantageous (cost effective) to do so to both the U.S. and to Canada. The RAB has not identified specific research programs for which international cooperation would be productive.

4. Page 4, second paragraph (fourth problem). The Water Quality Board has been productive due to several reasons: (1) it has a clearly defined and achievable mission and objectives; (2) it is organized to utilize the U.S. and Canadian agency resources to achieve both agency and Water Quality Board objectives. The RAB Terms of Reference are weak and poorly defined objectives. We have certainly coordinated research and while there are many conference proceedings and a Directory of Great Lakes Research, it is not clear that this research advisory role has been productive, except for the WQOS/SBWQC relationship. The problem is that the RAB mission needs to be changed so that we too have a clearly defined and achievable mission and objectives, and a mechanism for tapping agency resources. The RAB Committees and Task Forces rely upon IJC funds. If mutually acceptable research objectives could be developed, a multi-agency (U.S. and Canadian) joint program could be planned to utilize multi-agency resources.

5. Page 5, second paragraph (fifth problem), sixth sentence. I recommend the following rewording: ~~This should be~~ The role of the Research Advisory Board should be that of scientific advice and scientific services, ~~which can be~~ free of such constraints. . . .

6. Page 6, recommendation 2. I don't believe that this sentence as written is feasible. I recommend that the remainder of the sentence starting with ~~and mechanisms within~~. . . be deleted and substitute the following: . . . and to develop proposals and plans for inclusion in the programs and the budget process of the respective agencies, as appropriate.

7. Page 6, recommendation 3. There is an interesting NOAA Technical Memo which points out that bridges between operational and research programs and between research programs cannot be achieved by direction from the top; bridges can be built by $ $ $ $, however. How do you plan to carry out recommendation 3?

8. Page 6, recommendation 5. While the impact of water quality on human health is important, singling out human health seems to give it greater emphasis than the ecosystem. I recommend in first sentence . . . but especially the impact of water quality on human health and the ecosystem and should . . . .

9. Page 7, recommendation 7. I agree.

10. Page 7, Definitions. I recommend a rewording. As used herein, "science" refers to the use of factual data, knowledge and theory to arrive at ~~objective~~ sound advice that is free of political ~~or economic~~ constraints of any jurisdictions or bias from organizational association. Acceptable criteria for water resource planning include economic, environmental, and social considerations.

11. Page 7, 2(b). Suggest insert. . . .research programs and to seek budget initiatives as required to fit . . .

12. Page 7, 3(b). Suggest sentence be deleted and replaced by the following: The Science Advisory Board shall investigate such subjects and questions which require research, shall participate in the development of proposals and plans and shall oversee the conduct of research related to Great Lakes Water Quality as may be referred to it by the IJC under Article VI 1(f) of this Agreement.

13. Page 8, 3(d). Recommend the sentence be modified as follows . . . should be directed and to recommend references, through both IJC and Agency channels, for those critical subjects and questions which can be more cost effectively pursued by joint U.S.-Canadian initiative.

April 22, 1977

RESEARCH TASK GROUP POSITION PAPER--FIVE YEAR REVIEW OF THE WATER QUALITY AGREEMENT

I. Introduction

As a result of the 1972 Water Quality Agreement both the United States and Canada have directed huge sums of money toward the control of discharges affecting the water quality of the Great Lakes. More recently, both countries have been and currently are directing increasing resources towards surveillance and monitoring activities to determine what impacts and changes result from these remedial programs. Clearly the principal focus of activity within the framework of the Water Quality Agreement has been one of abatement and now monitoring by both sides and this priority certainly is proper and in order. To the extent that these programs are successful, is in part a result of relying on a vast and diversified data base that has been generated by many agencies and organizations through their research programs, especially over the past decade.

As the effectiveness of these control programs administered by various agencies within both countries becomes apparent through the monitoring programs initiated within the framework of the Water Quality Agreement, it goes without saying that some problem or geographical areas will be identified which require further remedial programs involving even more expensive control measures and more expensive monitoring programs. It is clearly unwise management from any point of view to continue to rely on an increasingly more outdated data base to devise control programs and monitoring activities for the lakes. Just as we need to refine control programs and monitoring programs, so we need to expand the data base upon which such programs must be developed.

Against this background of activity through the first five years of the Agreement, it seems safe to conclude that the monitoring and remedial programs that will happen in the coming few years are going to be of a

different nature. Perhaps programs will deal with more specific problems as opposed to more general problems such as treatment of municipal wastes. Limitations on industrial effluents will be more specific than the general ones such as BOD and suspended solids now used. If one can accept this conclusion, then it seems equally obvious that the role of research and the Research Advisory Board will take on new dimensions and play a significantly more important role in support of the remedial programs as well as the monitoring activities on the lakes. Up to this point, research has not played a major role in the Water Quality Agreement nor has the Research Advisory Board been serving as a scientific advisor to the Commission and the Water Quality Board in an effective and continuous fashion. It is probable that both remedial programs and monitoring activities will concentrate on more specific pollutants, especially highly toxic ones, and it is here that the expertise and experience of the members of the Research Advisory Board and the research community as a whole should be tapped to provide more effective monitoring programs as well as treatment schemes for removing specific problem materials. Furthermore, having taken a giant step forward in dealing with the more common and recognized problem pollutants in the Great Lakes, greater emphasis should be given to the search for and identification of pollutants before they become problems or emerge into crises. To do so will again involve close and frequent contact with the entire Great Lakes research community in order to profit immediately from new findings that will not appear in the open literature for some months or years. In short, it seems that there must be much closer and more frequent cooperation between the Water Quality Board and the Research Advisory Board as the countries tackle these new and more difficult problems.

II. Problem Areas During the First Five Years

During the first five years of the Water Quality Agreement a number of problem areas have developed or have been identified which deserve special comment. The research program of the U. S. agencies is not located in a single center as is the Canadian one and so is less conspicuous.

Part of this problem may be more real than apparent. If the total resources expended by the U.S. research community including industry, universities and public agencies both federal and state are summed together the collective resources expended are probably far in excess of what has been presently identified as Great Lakes research activity. It is almost certain that, as far as achieving the goals of the Water Quality Agreement are concerned, these resources could have been more effective if they had been directed toward those questions which have arisen as a result of agreement activities.

In reality, each organizational entity has pursued research which seemed to it to be most important, based on the priorities and needs of its funding agency. Since each of the federal agencies have more specific and usually more defined responsibilities than those contained within the Water Quality Agreement, the approach has been less than an efficient one from the standpoint of the agreement needs. The Research Advisory Board--probably the only entity within the agreement, who could have effectively coordinated these activities, has not by-and-large focused its attention on that aspect of the problem and as a result has been ineffectual in bringing about coordination of research within the Great Lakes research community beyond some very specific and relatively small areas. A well defined set of research priorities is yet to be developed by the Research Advisory Board, but lacking the structure with which to influence the direction of the research community toward such as yet unidentified priorities, it is difficult to seriously tackle the problem of setting research priorities with no expectation that they will be followed.

A second problem area is that the Research Advisory Board and other entities within the Water Quality Agreement have not adequately brought about international cooperation between the two countries in the fields of research. To be sure, there have been many cooperative research efforts undertaken. But by-and-large these have been informal arrangements between various organizational entities within the Great Lakes research

community, who initiated cooperation on their own outside the framework of the agreement. Some better mechanism of sharing the research responsibilities on various problems would indeed result in much more efficient use of resources and probably more timely answers to the problems being studied.

A third problem area has been the near absence of activity and concern for matters of public health as they relate to water quality conditions in the Great Lakes. Perhaps this inadequacy stems more from the nature of the problem than from the inactivity of the Research Advisory Board. It is safe to conclude that while one can find experts on water quality objectives for aquatic life for many types of pollutants, it is difficult to find experts in the area of human health who are expert for more than a few types of pollutants. If this assumption is correct, then it would be very difficult if not impossible to select a small committee or task force to provide the advice to the Commission which is needed for health concerns. It would seem that advice will have to be sought from hand picked individuals within the research community after the priority problems have been established. Then and only then can the best experts be identified.

A fourth problem area has developed as a result of the structuring of the Research Advisory Board, the method by which representation on the Board has been established, and the unclear terms of reference. The Water Quality Board has been a much more active organization and has accomplished many tangible results because the membership of the Board is made up of representatives from agencies which have resources that can be expended to accomplish monitoring programs and institute and fund waste treatment facilities. The Water Quality Board has not had a significantly larger budget than the Research Advisory Board, and yet when one looks at the accomplishments of the Water Quality Board, they are gigantic compared to the output of the Research Advisory Board. Furthermore, all those who have functioned within the research community realize that one does not declare himself a coordinator of research

activites and thereby automatically become the coordinator.

There are two ways in which research coordination can be accomplished. One is by such high respect for the work that has been done that various members in the research community look to that organization or body out of respect and therefore accept their guidance. Second an organization or committee can achieve coordination of research because it has sufficient control of research resources so that they are able to influence the direction of research and the selection of projects by the research community. Only the latter is a practical approach for the Research Advisory Board.

Until recently few members of the Research Advisory Board were research managers, within the Great Lakes community, who had substantial resources under their control. During the last year this situation has improved but there still remain a number of research institutions on the Great Lakes which have no representation on the Board. When one looks at the present and past members of the Research Advisory Board, it is also clear that membership has been picked on a basis other than control of research resources, knowledge of the Great Lakes, or affiliation with a major research institution within the Great Lakes research community. Given this situation, it is little wonder that the Research Advisory Board has not exercised research leadership and coordination within the Great Lakes research community.

Equally important is the need for a well defined and important role spelled out in the Board's terms of reference.

A fifth problem area concerns the composition of the Water Quality Board. Since each member in practice speaks for his jurisdiction, he is bound by that jurisdiction's politics, economics and idiosyncrasies. In effect, the Water Quality Board's "maximum" equals, at best, the "minimum" of any of its members. Money, politics, turf and other considerations are bound to influence actions of the Board and well they should. But the Commission, of necessity, must have an objective viewpoint as well, free of these constraints, before it reaches a decision. The role of the Research Advisory Board, should be that of scientific advice and

services free of such constraints and based on objectivity, fact and expert opinion.

Therefore, the Research Advisory Board should be renamed to identify this principle role and should be the scientific adviser to the Commission on all matters where unbiased interpretation of fact or situation is needed.

III. Recommendations

1. The membership of the Research Advisory Board should consist fully of members of the research community who command control of the major research programs of the Great Lakes research community. The only other consideration should be that there be equal membership from each country and that each of the members be a well recognized scientist knowledgeable about Great Lakes problems and the Great Lakes research community.

2. The Research Advisory Board should be charged with the responsibility of identifying the most important problems on which research effort should be directed on an annual basis and mechanisms within both countries should be established to see that the principal research funding agencies have a responsibility to abide by those decisions and orient their programs in the directions indicated by the Board.

3. The Research Advisory Board cochairmen should be given the responsibility to assure that proper international cooperation in the research community is accomplished by giving them the responsibility and the mechanism through which to accomplish that cooperation.

4. The research managers who are members of the Research Advisory Board whould be instructed by their government that their membership on the Board carries with it the responsibility to orient the research programs of their organizations as much as possible to fit the research priority that is identified by the RAB.

5. The Research Advisory Board should be the Commission's principal scientific advisor on all water quality matters but especially the impact of water quality on human health and on the ecosystem, and should be

given sufficient resources for consultants, travel and committee meetings to tap the vast research community that is knowledgeable about the effects of various pollutants on public health. Annually, the RAB should submit to the Commission a briefing document advising them of the most important problem areas including human health.

6. The two co-chairmen of the RAB and the two co-chairmen of the WQB should be instructed to meet formally on a quarterly basis to coordinate activities and resolve differences of the two Boards.

7. The Research Advisory Board should be named the Science Advisory Board and should be the Commission's principal science advisor.

IV. Proposed Terms of Reference for the Research Advisory Board renamed the Science Advisory Board.

1. Definitions: As used herein, "science" refers to the use of factual data knowledge and theory to arrive at sound advice that is free of political constraints of any jurisdictions or bias from organizational association. Acceptable criteria for the water resource planning include economic, environmental and social considerations.

2. Membership: The International Joint Commission shall determine the size and composition of the Science Advisory Board under the following criteria:

(a) The voting membership of the Science Advisory Board will consist of members of the research community who command control of the major research funds being expended on water quality related Great Lakes Research.

(b) The research managers who are members of the Science Advisory Board will have the authority from their respective agency to orient that Agency's water quality related research programs and to seek budget initiatives as required to fit the research priority that is identified by the Science Advisory Board.

3. Functions and Responsibility: The functions and responsibilities of the Science Advisory Board concerning the quality of waters of the Great Lakes System shall be as follows:

(a) The Science Advisory Board as the Commission's principal scientific advisory on all water quality matters, has the responsibility to promptly assess emerging problems and recommend practical solutions.

(b) The Science Advisory Board shall investigate such subjects and questions which require research, shall participate in the development of proposals and plans and shall oversee the conduct of research related to Great Lakes Water Quality as may be referred to it by the IJC under Article VI (f) of this Agreement.

(c) The Science Advisory Board has the responsibility to identify the most critical problems on which research effort should be directed and to recommend references, through both IJC and Agency channels, for those critical subjects and questions which can be more cost-effectively pursued by joint U.S.-Canadian initiative.

4. Authority: The Science Advisory Board on its own authority may seek analyses, assessments and recommendations from other professional academic, governmental or intergovernmental groups about the problems of The Great Lakes water quality, and related research activities, and shall advise the International Joint Commission on the application of their findings to Great Lakes problems.

5. Coordination: The cochairman of the Science Advisory Board and the cochairmen of the Water Quality Board will meet formally on a quarterly basis for the purpose of coordinating the activities of the two Boards.

6. Reporting: Annually, the Science Advisory Board will submit to the Commission a summary report of activities, accomplishments, and an analysis of the critical problem areas (including human health) with recommendations..

DATE

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