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UWindsor Administrator  
University of Windsor, [scholarship@uwindsor.ca](mailto:scholarship@uwindsor.ca)

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# GREAT LAKES FOCUS

## On Water Quality

International Joint Commission — Windsor, Ontario

Editor: Patricia Bonner

VOLUME 4 ISSUE 3

OCTOBER 1978

## INFORMATION MEETINGS TO PRECEDE HEARINGS ON PLUARG FINAL REPORT

In October and November the Pollution from Land Use Activities Reference Group (PLUARG) will sponsor information meetings throughout the Great Lakes Basin. The purposes of the sessions are to present the PLUARG final report, *Environmental Management Strategy for the Great Lakes System*, with its conclusions and recommendations (See PLUARG write-up, page 6), explain the IJC's hearing process, and encourage people to present their views on the report to the Commission at public hearings.

Great Lakes Tomorrow, a non-profit citizens organization, will coordinate the program in the United States. In Canada, similar responsibilities will be undertaken by Sally Leppard and Associates, of Toronto.

In the United States, there will be meetings from October 1 - November 1. For details on specific times and locations contact the local coordinator nearest you, Mimi Becker (P.O. Box 1935, Hiram, OH 44234 (216) 569-7015), or the Great Lakes Regional Office. In most places two sessions will be held, at 1:00 p.m. and 7:30 p.m.

DATE	LOCATION	CONTACT PERSON
October 11	Buffalo, NY	Fran Arcara, League of Women Voters, Erie County, 135 Olean Street, East Aurora, NY 14052 (716) 652-4220
12	Erie, PA	Margaret Nagel, League of Women Voters, Erie County, 13291 Kline Road - RD1 Edinborough, PA 16412 (814) 734-5581
16	Chicago, IL	Gordon Goodman, 5834 Middaugh, Downers Grove, IL 60515 (312) 964-0245
17	Sheboygan, WI	Cora Stencil, 536 La Plant, Green Bay, WI 54302 (414) 432-7189
17	Cleveland, OH	Mike Duermit, Ohio Conservation Foundation, 307 The Old Arcade, Cleveland, OH 44114 (216) 771-4100
18	Marquette, MI	Barbara Clark, 405 Dodge St., Houghton, MI 49931 (800) 447-2778

19	Toledo, OH	Dr. William Peterman, Centre for Environmental Studies, Bowling Green State Univ., Bowling Green, OH 43402 (419) 372-0207
23	Hammond, IN	Elaine Kaplan, CEEP, Coordinator, Purdue-Calumet, Hammond, IN 46323 (219) 844-0520 Ext. 355
26	Duluth, MN	Karen Carlson/John Pegors West Star Route, Larsmont, MN (218) 536-2396/(218) 723-4660
31	Bay City, MI	Nikki Haberland, 5113 S. Maple Grove Ct., Bay City, MI 48706 (517) 684-6572
November 1	Grand Rapids, MI	Helen Willis, 335 Broadleaf Dr., Rochester, MI 48063 (313) 651-3339

The local coordinators will form steering committees to help them contact people in the area, to publicize the meeting, and distribute PLUARG material. Members of the public consultation panels will be participants on these committees as will other volunteers. You could help too. Just contact the local coordinator nearest you.

Sally Leppard will be working with Canadian Panel members in their communities, but could also utilize help. Write to her at Suite 805, 208 Bloor Street W., Toronto M5S 1T8 or telephone her: (416) 964-2672 to volunteer.

In Canada meetings are scheduled in:

DATE	LOCATION
October 3	Welland, ON
5	Thunder Bay, ON
12	Toronto, ON
17	Guelph, ON
17	Barrie, ON
19	Owen Sound, ON
24	Peterborough, ON
26	Kingston, ON
31	Chatham, ON
November 2	London, ON
7	Sudbury, ON
9	Sault Ste. Marie



## WATER QUALITY OBJECTIVES

On July 21, 1978 the IJC held a day-long hearing to learn public reactions to a series of new and revised Great Lakes water quality objectives under the 1972 Great Lakes Water Quality Agreement. The Commission holds such hearings from time to time to insure that government, industry, associations, citizens groups and individuals have an opportunity to present their views for consideration by the Commission before it formulates its recommendations to the Governments of Canada and the United States.

In January, the Great Lakes Water Quality Board recommended twelve new and revised water quality objectives to the Commission. (Group 2 objectives volume is available from the IJC Great Lakes Regional Office.) On June 29, 1978, the Commission was formally advised by the Governments of the United States and Canada that eight of these objectives have been included in the soon to be signed 1978 Great Lakes Water Quality Agreement.

Agreement on specific water quality objectives has been reached for copper, iron, parathion, hydrogen sulfide, nickel, mirex, guthion and ammonia. The proposed objectives which require further consideration are temperature, chlorine, silver and cyanide. Emphasis at the hearing was therefore placed on these four objectives. However, all testimony submitted is being considered and will assist the Commission in developing appropriate recommendations to the two Governments.

Nearly 80 persons attended the hearings and nearly 20 written statements were submitted. Transcripts are being prepared. They will be available for inspection in the Ottawa and Washington IJC headquarters offices and in Windsor.

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Dr. Andrew Robertson responds to a Commissioner's question.



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Presenting Comments:  
a) Arthur Timms,  
Conservation Council of Ontario;  
b) K. C. Lucas, Assistant  
Deputy Minister, Fisheries  
and Oceans-Canada;  
c) John Hosapple,  
New York Power Pool.

tivities relating to United States-Canada international agreements. In that capacity he serves on six IJC advisory boards.

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Dr. Harry Parrot has been appointed to replace George McCague as Ontario's Minister of the Environment. Dr. Parrot was first elected to the Legislative Assembly in October, 1971.

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John McGuire, a lawyer from Illinois, has been sworn in as the new Administrator, Region V, United States Environmental Protection Agency. He served on Governor Daniel Walker's staff dealing with the state's resource management agencies.

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## BOOKSHELF

"Educators' Guide to Great Lakes Materials" provides teachers with a handy reference to Great Lakes-oriented information. Intended primarily for the 6th-9th grade level, the 39-page booklet describes and evaluates 111 items — ranging from novels and nonfiction books to films, maps, charts and softbound publications on Great Lakes topics. For copies or further information, contact the Sea Grant Communications Office, 1800 University Avenue, Madison, Wisconsin 53706.

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## PEOPLE

Thomas C. Jorling, Assistant Administrator, Office of Water and Hazardous Materials, United States Environmental Protection Agency, is the new United States Chairman of the Great Lakes Water Quality Board.

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Major General Richard L. Harris took command of the North Central Division of the U.S. Army Corps of Engineers' (Chicago) in July, succeeding Colonel Andrew C. Remson. Among his activities is supervision of Corps ac-



Statistics Canada has prepared a statistical profile on *Human Activity and the Environment* (190 pages; 35 air photos, maps and charts, 113 tables). The book highlights aspects of man's activities in terms of stresses on the environment. It displays data on 104 Canadian watersheds and provides information about transportation, manufacturing, energy and renewable resources. In Canada the cost is \$2.80; elsewhere \$3.40. Write to: Publications Distribution, Statistics Canada, Ottawa, ON K1A 0T6.

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A booklet entitled "The Hudson River: a reclamation plan" which describes New York State's PCB contamination removal plan, and a scientific report detailing the problem and alternative solutions are available from the Department of Environmental Conservation, 50 Wolf Road, Albany, New York 12233.

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"Health Implications of Contaminants in Fish" is designed to provide technical information to people interested in health impacts of contaminants and Ontario's contaminant monitoring program. Copies of the publication are available for \$5.00 from the Ontario Government Bookstore, 880 Bay Street, Toronto, ON M5S 1Z8. Checks or money orders should be made payable to the Treasurer of Ontario.

\*\*\*\*\*

The first progress report of the Thames River Implementation Committee is available from that group c/o Ministry of Environment, 985 Adelaide Street South, London, ON N6E 1V3. This report presents the kind of planning on a watershed basis which is inherent in PLUARG's recommendations.

\*\*\*\*\*

"Cutting Our Flood Losses" is an illustrated brochure which alerts people to the dangers of unwise development in flood plains and outlines the new national Flood Damage Reduction Program. The Program is designed to identify flood prone areas and to discourage further development there that might be damaged by flood waters. Floods and the rationale for the Program are discussed. A concise description of how the Program works is given, followed by a series of pertinent questions and answers. Also included in the brochure is part of a typical flood risk map. Copies are available (free) from the Publications Office, Inland Waters Directorate, Environment Canada, Ottawa, ON K1A 0E7.

\*\*\*\*\*

"Planning Work near the Water?" is a leaflet available free from the Information Branch, Fisheries and Marine Service, Environment Canada, Ottawa, Ontario K1A 0E6. It describes changes to Fisheries Habitat Protection laws and what they mean to developers.

\*\*\*\*\*

A 5-volume annotated bibliography for Lake Erie is available free from: Librarian, U.S. Corps of Engineers, Buffalo District, 1776 Niagara Street, Buffalo, New York 14207.

\*\*\*\*\*

"Not Ours to Control" is a 6-page booklet about Great Lakes levels and living with fluctuations. It may be ordered

directly from: Publication Services, Royal Ontario Museum, 100 Queen's Park, Toronto, Ontario M5S 2C6 for \$.50 (+ \$.20 postage and handling).

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"Environmental Pathways of Selected Chemicals in Freshwater Systems," (EPA-600/7-77-113 and EPA-600/7-78-074), by Dr. J. H. Smith and seven other researchers at Stanford Research Institute, is a two-part report published recently by the U.S. Environmental Protection Agency's Environmental Research Laboratory, College Station Road, Athens, GA 30605. The ability to predict the movement of pollutants is a key element in preventing extensive environmental damage. The procedures described in these volumes for predicting pathways integrate independent transport and transformation processes with hydrologic parameters in a computer model that provides information on potential environmental exposure in many kinds of aquatic environments.

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"Nitrate and Phosphorus Runoff Losses from Small Watersheds in Great Lakes Basin," by B. G. Ellis, A. E. Erickson, and A. R. Wolcott of Michigan State University, describes loss of plant nutrients from agricultural lands during rains or when snow melts. In addition to robbing the crops of needed nutrients, these runoff events contribute nitrogen and phosphorus loads that pollute nearby streams. The report (EPA-600/3-78-028) is available from the Environmental Research Laboratory, US EPA, College Station Road, Athens, GA 30605.

\*\*\*\*\*

Michigan readers may wish to request that state's 1977-78 House and the 1965-78 Senate sessions Environmental Voting Record as prepared by Environmental Action of Michigan (409 Seymour, Lansing, MI 48933). It is free.

\*\*\*\*\*

The New York State Department of State (162 Washington Avenue, Albany, New York 12231, Att: Dot Fellows) has published a 32-page *Coastal Management Handbook* and a 16-page *Discussion of Alternatives* newspaper. Both are free. Both present the issues and explain what coastal (zone) management and its program requirements are. Readers in New York will find these items particularly useful, but anyone involved in CZM will be interested in these publications.

## RESEARCH ADVISORY BOARD REPORT

Great Lakes Research Advisory Board presentors identified problems with current policies regarding toxic substances, dredged spoils disposal, phosphorus management and ways in which the Great Lakes System is examined to determine trends and progress in clean up efforts. In all instances, the Board submitted alternative proposals or recommended actions to the Commission. (Board's Annual Report available from the Great Lakes Regional Office, Windsor, ON)

In 1977, the Board began a pilot effort to evaluate structure-activity correlations as a predictive technique to



forecast which contaminants might be found in the Great Lakes System. The first steps included compiling an inventory of compounds manufactured, used or discharged to the Great Lakes; obtaining specific physical, chemical and toxicological data on as many of those compounds as possible; evaluating as many compounds as possible for potential to bioaccumulate through the use of structure-activity correlations, and finally, predicting which compounds might be present in the Great Lakes environment.

In performing the pilot effort, the Board prepared an inventory of 2850 compounds. Many other compounds are not included because of confidential information which was not listed in the publicly available documents used as sources for inventory information. The Board noted that such information was not readily available to Government agencies responsible for toxic substance control. This lack of availability led the Board to question whether the responsible regulatory agencies can prevent future manifestation of toxic substances within the Great Lakes.

The Board feels that jurisdictions with responsibilities for toxic substances control must have a continually updated inventory which identifies substances in use, manufactured or imported within a country. Canada's Environmental Contaminants Act does not readily assure such information, even on a confidential basis, to the departments responsible for the Act's enforcement. The Canadian environmental agencies must first identify components of interest in order to request information from manufacturers.

In view of these concerns and because since 1975 (when the Act was passed) only regulations for PCBs, mercury, mirex, PBBs and PCTs have been passed or considered, the Board expressed its concern that the present Canadian Act is not adequate to control and prevent future manifestations of man-made chemicals within Canada and the Great Lakes ecosystem.

The Board further suggested that lists of chemicals in use or produced in the Great Lakes Basin are insufficient. Particularly in certain types of industry, such as chemical manufacturing, side reactions can occur which produce chemicals in addition to those specifically desired. Usually the degree of removal of these by-products within a plant's waste treatment facility is unknown. For persistent chemicals, commonly used measures of waste treatment efficiency (such as BOD, COD, TOC and suspended solid removal) may be inadequate to limit unacceptable quantities of these materials from being discharged. Therefore, studies of effluent components are needed to account for potentially discharged substances.

The Board recommended that the partition coefficient/structure-activity correlation concept be considered as one tool to aid aquatic contaminant control efforts in both countries. Its greatest value is that it can "red-flag" compounds which should be given priority in testing for toxicity.

The Board's committee on Engineering and Technology reviewed current dredged material disposal practices and policies in the Great Lakes Basin. In doing so it found that some dredged spoils are classified as polluted

(and therefore requiring confined disposal) based on "bulk analysis"; that is, the total amount of a compound in a dredged materials sample is measured without regard for the fact that only a part of that compound is in a form available to affect the environment. Studies show that bioassays and elutriate tests are more useful in evaluating the potential effects of dredged materials. Nine of the ten United States Environmental Protection Agency's Regions have adopted or are considering a case-by-case approach using such tests.

The estimated total cost of the confined disposal program on the United States side of the Great Lakes was \$263 million in a period of seven years. Conservatively, the cost is estimated to be 350 per cent greater than if open water disposal were practiced. Because the Corps of Engineers studies so far show "the virtual absence of significant biological short and long term effects of open water dredging" in the Great Lakes and because of the recently recognized environmental impacts of confined disposal sites, the Board asked the Commission to recommend that Governments begin an immediate and careful review of the existing management policies for dredging and dredged material disposal in the Great Lakes Basin. The Board noted that some sediments will probably require confined disposal, and that it was not advocating a specific policy on open water or confined disposal. As Dr. Donald Mount, United States Chairman, stated, "we're simply saying there is a lot that we know now that has to be digested."

The Board's Task Force on the Scientific Basis for Water Quality Criteria prepared draft nutrient objectives for each of the Great Lakes. After deciding upon phosphorus as the primary limiting nutrient, it developed phosphorus concentration objectives. Current objectives under the 1972 and draft 1978 Agreement are in terms of total annual loadings to the lakes (x number of tonnes per year) and in effluent limitations (micrograms per litre measured in the discharge). The Task Force suggests concentration objectives will provide a more convenient and measurable means to gauge progress toward improved environmental conditions in the Great Lakes and will aid in the development of phosphorus management strategies. During the meeting it was reported that the loadings in the draft 1978 Agreement are based on the recommended phosphorus concentrations.

The Task Force recommends that the lakewide mean total phosphorus concentration in the spring should not exceed 5 micrograms per litre in Lake Superior, Lake Huron, Georgian Bay and the North Channel; 15 micrograms per litre in Saginaw Bay and Western Basin of Lake Erie; 10 micrograms per litre in the Central and Eastern basins of Lake Erie and in Lake Ontario; and 7 micrograms in Lake Michigan.

The Board asked the Commission to thoroughly consider adopting the ecosystem approach to Great Lakes management. (see ECOSYSTEM page 7) Planning for the future of such a resource requires more than a knowledge of chemical and physical water quality. It requires an understanding of the total ecosystem and the diverse interactions which take place in and among all its components. Although water quality is part of such an understanding, by



itself it can be misleading and could hinder achievement of the full understanding necessary for effective management of the restoration and enhancement of the Great Lakes.



1977 Great Lakes Research Advisory Board

## CLEAR SIGNS OF RECOVERY REPORTED IN GREAT LAKES

Lake Michigan and Lake Ontario have responded to clean-up efforts. Western Lake Erie shows some indications of improvements in Canadian nearshore areas. Phosphorus concentrations have decreased.

The IJC received this good news when the Great Lakes Water Quality Board presented its annual report in July. The Board, in presenting its assessment of water quality conditions throughout the Great Lakes System, also pointed to the continuing decrease in DDT levels in eastern Lake Michigan fish, declining mercury levels in western Lake Erie and St. Clair fish, definite progress in upgrading municipal sewage treatment plants, improved industrial compliance and wider use of enforcement powers by Great Lakes jurisdictions.

The Board reviewed the pollution abatement progress of three industries: steel, pulp and paper and petroleum refining, over the period 1967-1977. In both countries all three industries have greatly reduced their pollutant loadings. The United States clean-up programs are substantially more effective in the pulp and paper industry and marginally better in the steel industry. In the refining industry performance appears to be essentially equivalent.

These successes, the Board warned, should not promote complacency on the parts of Governments or the public. Much more remains to be done to clean up the Great Lakes. Each year more is known about material entering the lakes. Increasingly sophisticated laboratory techniques enable researchers to identify additional pollutants present in Great Lakes waters. For example, 38 previously undetected contaminants, 9 of them known cancer-causing substances under some circumstances, were found in fish and wildlife taken from Lake Ontario and Lake Erie during 1977.

A new problem area on Lake Erie, Conneaut Creek,

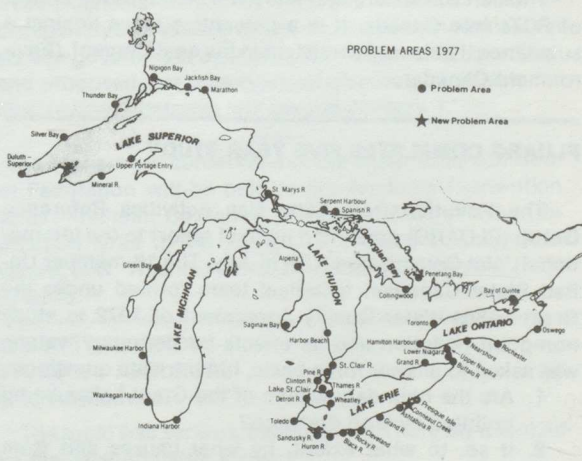
Ohio, was added to the list of areas where Agreement objectives and/or water quality standards are being violated.

Although Detroit has reduced its phosphorus load by 80% in the past eight years, the city's sewage treatment plant is still listed as the major contributor of phosphorus to Lake Erie. However, the Board highlighted the court-imposed strengthened efforts and detailed reporting requirements designed to ensure secondary treatment to all wastewater flow by September 1, 1980, and a maximum phosphorus concentration in the discharge of no more than 1 mg/L by April 1, 1982.

For a copy of the Board's report or the detailed information contained in its appendix volumes on Remedial Programs, Surveillance, Radioactivity, Toxic Substances in the Great Lakes Basin, or Hazardous Waste Disposal, write to the International Joint Commission, Great Lakes Regional Office, 100 Ouellette Avenue, 8th Floor, Windsor, ON N9A 6T3.



George Reed Alexander, Jr., and Dr. Robert Slater, 1977 United States and Canadian chairmen, presented the Board's report.





**LAW AND THE COURTS**

Federal District Judge Earl E. Veron (Louisiana) in August ruled in favor of the Manufacturing Chemists Association and against EPA, declaring its rules on spills of hazardous materials to be "arbitrary, capricious, and contrary to the relevant statutory pronouncements and therefore legally invalid."

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In August, EPA proposed to relax some of the "conventional pollutants" discharge requirements under the Clean Water Act to reduce inflationary pressures. Thirty-six industries will be required to install best conventional technology to control water pollution by 1985 rather than best available technology, perhaps reducing industry expenditures by \$200 million.

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The St. Lawrence Cement Company has agreed to a Ministry of the Environment Control Order requiring further reductions in the emissions of cement dust from its Clarkson plant. The company has spent approximately \$5.5 million on pollution control since 1974 and estimates it will spend an additional \$7 million in complying with the Control Order.

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An Ontario Ministry of the Environment Control Order has been served on the Ontario Minnesota Pulp and Paper Company Limited to reduce air and water discharges from its Kenora Mill, through a phased program that is to be completed by June 30, 1982. Both air and water pollution abatement measures are required.

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Proposed regulations to ban the import and use of toxic polychlorinated terphenyls (PCTs), which accumulate in food chains, have been published in the *Canada Gazette*. The regulations are to take effect October 1, 1978.

In the past, PCTs have been used commercially in adhesives for weatherstrip backing, in paints, and as plasticizers for urethanes. They have never been manufactured in Canada, and have not been used in that country since 1976.

The ban will ensure that there will be no further import of PCTs into Canada. It is a preventive move against a substance that is very persistent in the environment. (Environment Canada)

**PLUARG COMPLETES FIVE YEAR STUDY**

The Pollution from Land Use Activities Reference Group (PLUARG) presented its final report to the International Joint Commission (IJC) in July. The 18-member United States-Canadian technical team formed under the Great Lakes Water Quality Agreement of 1972 to study non-point pollution and its effects on boundary waters, was asked to answer three basic, but intricate questions:

1. Are the boundary waters of the Great Lakes being polluted by land drainage?
2. If so, to what extent, by what causes and from where?

3. Which remedial measures would be most practicable and what would be the cost?

PLUARG has concluded that the Great Lakes are being polluted from land use activities. Phosphorus, sediments, some industrial organic compounds, previously used pesticides and mercury are draining to and polluting the lakes. Lead is also draining into the Great Lakes and was identified as a potential pollutant.

Phosphorus, which causes eutrophication, contributes to both nearshore and whole lake problems. Excluding phosphorus from shoreline erosion, which PLUARG studies have shown to be in chemical forms unavailable for use by algae, non-point sources (land drainage and atmospheric inputs) in the Great Lakes constituted the following percentages of the total phosphorus load: 32% in Lake Ontario, 52% in Lake Erie, 73% in Lake Huron, 56% in Lake Michigan and 90% in Lake Superior. In each lake, phosphorus loads in 1976 exceeded the recommended targets. Lakes Erie and Ontario are in relatively poorer condition than lakes Superior, Michigan and Huron. Intensive agriculture and urban areas are major diffuse source contributors of phosphorus to lakes Erie and Ontario.

PCBs found in the system are contributed in large measure from land runoff and atmospheric deposition. DDT is still entering the waters, although in significantly declining amounts.

Mercury has entered the lakes largely from past industrial point sources. Sediments laden with mercury are still acting as an in-place source. Mercury is still found in municipal and industrial waste water. Lead is building up in the lakes system. It enters the Great Lakes through tributary and atmospheric inputs largely from vehicle emissions. The highest loadings are in Lake Erie and Lake Ontario.

Phosphorus and many other pollutants reach the Great Lakes in association with fine textured soil particles. These suspended sediments are largely derived from erosion on intensively cropped farmland and from large scale land developments. Urban runoff and atmospheric deposition were identified as the major contributors of toxic substances from non-point sources.

The worst problems seem to occur when three factors are found together in the Great Lakes Basin: fine textured clay soil, intensive farming, and addition of materials to soils and crops. Areas of particular concern as non-point pollutant sources in the basin are northwestern Ohio and southwestern Ontario.

In most cases, PLUARG found that only a relatively small area in each lake's drainage basin was causing water quality problems. Therefore, the group felt that these "hydrologically active areas" should be prime candidates for remedial programs.

Control programs for phosphorus, sediment, toxic substances and microorganisms were recommended. In looking at agriculture, PLUARG suggested that governments assist farmers in developing and implementing water quality plans. To control urban runoff, PLUARG recommended proper stormwater management in developing areas, as well as provisions for control of sediment and toxic substances. PLUARG further recommended the pre-



servation of wetlands and important farmlands.

PLUARG concluded that remedies to non-point pollution would be neither simple nor inexpensive. In formulating its final report, *Environmental Management Strategy For the Great Lakes System* (available from IJC-Windsor office), PLUARG recognized that everyone living in the Great Lakes Basin will have a role to play in remedying pollution caused by nonpoint sources. All will need to accept some of the responsibility.

Looking towards the future, PLUARG saw that problems, left unattended, could cause serious degradation of our waters. If voluntary approaches are ineffective, regulatory action may be necessary. PLUARG therefore suggested that an assessment of legislation be undertaken to ensure uniformity and a suitable legal basis for enforcement of non-point source controls should they be needed.



PLUARG public consultation panelists from both countries listen (a) as Edward Pleva (b) presents the Canadian panels' report to IJC.



PLUARG

## EVENTS

Current research in the Great Lakes region will be the focus of IPAHGEIS V, the fifth meeting of the InterProfessional Ad Hoc Group for Environmental Information Sharing. A conference hosted by librarians of the Illinois Natural History, Geological, and Water Surveys will be held Nov. 9-11, 1978, on the University of Illinois campus. The conference program will include sessions by scientists detailing current research projects in the Great Lakes region (eight states and Ontario), tours of local research facilities and projects, sessions on new sources of environmental information, and working groups to continue cooperative projects. The conference is directed to librarians and information users and producers working in environmental fields. The registration fee will be approximately \$15.00. For further information contact: Marcia E. Clark, Illinois State Water Survey, Box 232, Urbana, IL 61801. (217) 333-4956.

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October 12, 1978 is dedication day for the Western Lake Superior Sanitary District's \$108 million co-disposal advanced wastewater treatment facility. The plant will not only treat wastewater, it will use solid waste to incinerate sludge and provide building heat. For a brochure on the

new facility, write to Western Lake Superior Sanitary District, 603 Meierhoff Building, Duluth, Minnesota 55802.

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Great Lakes — 79, the XXII Conference of the International Association for Great Lakes Research will be held in Rochester, New York May 1-3, 1979. For information, write to: Herman S. Forest, Rochester Area Colleges, 50 W. Main Street, Rochester, N.Y. 14614. A feature theme of the multidisciplinary conference will be increased communication between government agencies, law makers and scientists. Send proposed title or suggested discussion subjects for initial review. Abstracts will be due January 1.

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The 51st annual conference of the Water Pollution Control Federation will be held in the Anaheim Convention Center, Anaheim California, October 1-6. For further information write to the Federation at 2626 Pennsylvania Avenue, N.W. Washington, D.C. 20037 or telephone (202) 337-2500.

## ECO-SYSTEM 'SHOW' DRAWS IJC APPLAUSE

By David Quintner

The topic was serious, but for a time Thursday it looked like the Jack and Max show.



It had scientists attending the International Joint Commission (IJC) meetings rolling in the aisles.

Well, almost.

The straightman was Jack Vallentyne, acknowledged to be one of Canada's most brilliant scientists and the man who 10 years ago alerted North America to the phosphorus problem in the Great Lakes.

The funny man, punning like a comic's sidekick at every chance, was Maxwell Cohen, the Canadian chairman of the IJC.

The other normally-serious IJC commissioners looked as if they couldn't believe it.

Afterwards, Cohen said: "We have never had a presentation like it before. It was most effective."

The "show", which drew the applause and laughter of the 150 people present, was Vallentyne's deadpan attempt to show that the Great Lakes can accept only so much abuse before becoming totally polluted — and he used a full whisky bottle and three glasses to demonstrate just how polluted a lake can get.

Vallentyne believes that piecemeal clean-up efforts in the Great Lakes in the past — setting standards for water quality, hunting for toxic substances, checking trans-boundary air pollution and each study being done by separate research bodies — leaves researchers not knowing what each other is doing.

The new investigative methods Vallentyne is promoting must embrace every aspect of the problem, he told the six commissioners.

"We must consider the eco-system approach, establish the lines of communication that make every study a part of the whole; establish the linkage between the various forms of research."

Vallentyne, senior scientist for the Fisheries and Marine Service of the Canada Centre for Inland Waters at Burlington, began his presentation by asking the commissioners to refrain from interrupting while he spoke. Reluctantly, chairman Cohen agreed.

It soon became apparent why Vallentyne had made his request — he was staging a performance.

After pleading for an eco-system approach to the Lakes' problems, he asked various people to stand in the hall of the Cleary Auditorium to represent population growth and warned against untrammelled, accelerating progress.

He then suddenly produced the whisky bottle.

Cohen looked puzzled as Vallentyne poured some of its contents into three glasses.

"I take it that's for real?" Cohen asked.

"You try it," Vallentyne said, pausing after taking a drink.

Then, feigning bemusement, he said "Now, where was I?"

Cohen: "In that case, I won't try it."

As Vallentyne continued his presentation, taking sips from the glasses, Cohen muttered: "I suppose the rest of your presentation is just staggering!"

At the end of the attention-getting address, Cohen thanked him for "an interesting, illuminating and liquid presentation. It's an approach distinctly your own."

Other commissioners, still laughing from Vallentyne's dramatic presentation, congratulated him for the serious content of his talk.

Cohen said in an interview later that Vallentyne's views will form part of the new philosophy the IJC will now carry in its recommendations to government.

Senior commissioner, Charles Ross of the United States said that Vallentyne's presentation "will cause a change in IJC thinking. You probably will be able to say that on this day, a new philosophy was developed."

Vallentyne, chairman of a study group attached to the IJC's Research Advisory Board, has for several years spearheaded a worldwide movement to alert environmentalists and other scientists to the planet-wide approach to pollution problem solving.

Vallentyne used the full whisky bottle to fill a series of glasses, each twice as full as the previous one.

He told the audience, "I am going to drink this whisky the way we say we would like our economy to grow, doubling the dose over constant increments of time..."

Vallentyne then drank one glass after another to show the doubling effect of population and pollution in the Great Lakes during the past 70 years.

Earlier, he was observed in his hotel breakfast room pouring tea into the whisky bottle.

As an example of the way a problem can spread throughout a system, he mentioned road salt, of which "2.5 million tons are spread on our eco-system of the Great Lakes Basin every year, 175 pounds per person, per year, to create June driving conditions in January.

"The cost in terms of your rusted cars, your wife's new leather boots, damaged carpets, salty pantlegs and dead roadside vegetation is \$150 to \$200 per person per year.

The total cost for the 37 million persons living around the Great Lakes is between \$5 billion and \$7 billion a year, he said.

"Yet it has never been proved conclusively that road salt and driving safety are related."

Vallentyne turned to the commission members and asked:

"Are you going to do anything about this? I don't think so, because salt is not that serious a water quality problem in the Great Lakes Basin relative to your other concerns..."

Vallentyne said such costs are hidden in the economy, which under "an eco-system approach are not hidden. The costs have to be tallied as eco-system costs, and taken into consideration. The eco-system approach is anticipatory and preventive."

Another aspect of this approach is to "consider man as being in the system," he said.

This forces people to think of discharging wastes into their own system rather than an external environment.

Commenting on his talk, U.S. commissioner Kenneth Curtis said Vallentyne had pointed out some of the truths that all should be aware of. (Reprinted with permission of the *Windsor Star*)

For a copy of this special report on the eco-system approach, write to Great Lakes Regional Office of the International Joint Commission at 100 Ouellette Avenue, Windsor, On N9A 6T3, or telephone (519) 256-7821 Canada; (313) 963-9041, United States.





Dr. Jack Vallentyne

## OPERATION SKYWATCH

Twenty volunteer pilots have been conducting airborne environmental surveys for the Ministry of the Environment since July 1. The program continues until October 30.

Operation Skywatch is a joint effort between Environment Ontario and the first Canadian chapter of the Ninety-Nines Incorporated, the international organization of women pilots.

The pilots have all had elementary training by the Ministry in recognizing pollution problems, some basic environmental law, and aerial photography. In the first year of operation the pilots will be primarily searching for oil spills during their shoreline patrols. Each flight will also be given a surveillance assignment to photograph areas of special environmental concern to the ministry. Observation activities may expand to include industrial waste, dense smoke, and other environmental situations.

Four flight routes have been charted which will cover the Lake Ontario shoreline from Trenton to Burlington, southern Georgian Bay between Craigeleith and Port Severn, and all of the Lake Simcoe-Lake Couchiching shoreline.

## BRIEFS

Hooker Chemical has offered \$280,000 to help Niagara Falls solve the toxic leachate problems from Hooker's former landfill site near the Love Canal. The other \$560,000 needed are expected to come from public funds. Watch for more details in future issues of **Focus**.

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The Ontario Ministry of the Environment is conducting 52 projects in its Central Region this summer. The projects, funded through the Ontario Youth Secretariat, have a budget of \$122,000. Studies include the feasibility of composting organic waste from the Ontario Food Terminal, completing a harbor bikeway, adopting a stream, and measuring the recreational capacity of Muskoka lakes. One hundred and sixty-two students interested in environmental studies are working on the projects. They are

being supervised by professors and researchers from the various colleges, universities and private organizations that received an Experience '78 grant. As well, each study has a regional co-ordinator from Environment Ontario to oversee its progress.

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After two years of work, the Metropolitan Interstate Committee has adopted the Land Use and Management Plan for the Duluth-Superior Harbor. All state and federal agencies are called upon to fully consider and utilize the document when taking action in the harbor. For further information on the Harbor Plan, contact John Powers at the Arrowhead Regional Development Commission, 200 Arrowhead Place, Duluth, MN 55802.

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The Santa Maria docked at Windsor the week of the International Joint Commission's meeting. The three quarter replica of Columbus's flag ship is 94 feet long, 90 tons and was built completely from Florida and Nova Scotia wood. The ship, advertised as a "floating museum", is touring the Great Lakes this summer.

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The eight countries ringing the Persian Gulf have agreed to two treaties which, when ratified by five of the eight nations, will pledge them to work jointly to "prevent, abate and combat pollution". Spills of oil and hazardous substances as well as uncontrolled discharges to sea or to land are of particular concern.

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Environment Canada has provided 1 million to fund 54 water-related environmental projects at 24 universities across the country. Eight of the universities and 25 projects are in Ontario.

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The New York State Department of Environmental Conservation (DEC) revealed the results of its 20-month Industrial Chemical Survey in August. DEC has identified 85 "high priority" firms, ones which have reported handling one of the more toxic chemicals or one for which a federal "actionable" level has been established. On-site inspections have already begun and corrective measures have been ordered in some cases.

Statewide, over 3 million pounds of PCBs, 675,000 pounds of mirex and 106,000 pounds of DDT were reported to be in use by the 85 firms.

New York is negotiating with EPA for substantial new funds under the 1977 Clean Water Amendments. The funds, once received, would be used to increase the staff so that the inspection program and enforcement actions can be accelerated. (DEC New York State News Release)

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## HAZARDOUS WASTES

A facility to store or dispose of hazardous wastes is unwelcome in most communities, no matter what safety guarantees regulatory agencies may give. But these wastes continue to build up because people demand the goods which produce the wastes as by-products. The



wastes have to go across international boundaries, and are disposed or destroyed, buried across state, provincial and international boundaries. They are burned, buried and stored. Most governmental units have inadequate information about the wastes transported into and out of their jurisdictions and about the ultimate fate of those wastes. The Water Quality Board described this situation to the IJC in July.

Sandra Gardebring, Minnesota's Water Quality Board representative, illustrated the problem when she spoke of that state's difficulty. "Several years ago we received a demonstration grant from the United States Environmental Protection Agency to design, site and operate (with other governmental agencies) a hazardous waste disposal landfill. We calculated it would handle about 10% of the hazardous waste generated in Minnesota, which was about 180,000 tons a year. We spent upwards of half a million dollars during the early stages and we went through two rounds of siting. We identified three or four potential sites in the metropolitan (Minneapolis) area and were met with absolutely — without exception — overwhelming political opposition. It became, I think, politically impossible to site those facilities.

Minnesota, like some other states in the region, has no licensed hazardous waste disposal facilities. We have no place to put hazardous waste. Much of our waste is either disposed of illegally or shipped out of state, much of it to Illinois, and we are about to put into place a comprehensive set of regulations to control hazardous waste from the generator to the transporter, to the disposal. That creates the difficult problem for industry that we're requiring them to dispose of the hazardous waste at licensed sites, yet there are no licensed sites. It's the political and institutional restrictions and our inability to implement that technology that really is the most serious problem.

We have worked, for example, with Wisconsin and talked about the possibility of some joint efforts, where they might construct a high temperature incinerator, we might have a landfill. North Dakota or Iowa or some other state might have another part of the total process for dealing with hazardous waste, but I don't think any of the states in the region have been particularly successful in the area of siting or in the area of having successful operation of facilities. We do have a facility in Minnesota which is now under court order and has been shut down. Stored there are about 30,000 barrels of hazardous waste, many of them leakers. We've been in litigation against that company for about five years and they're moving out about two or three hundred barrels a month. We're very worried about the groundwater in that area to say the least."

George Alexander corroborated. "Even where you have a good site that everybody agrees, technically, is good and will do the job, the political facts of life are that no one wants a waste disposal site next to them. Everyone wants to dispose of it, but in somebody else's back yard."

The Great Lakes Water Quality Board members suggested a series of specific remedies to these problems and urged that all Great Lakes jurisdictions adopt compatible programs for the classification, identification, transportation and safe disposal of hazardous wastes. The control system outlined includes requirements for manifests to accompany wastes from the point of generation, through

and the posting of bonds by generators, carriers and disposers of hazardous wastes. The Board recommended that both countries develop national programs which would permit interjurisdictional movements of hazardous wastes.



1977 Great Lakes Water Quality Board

## CONNECTING CHANNELS AND HARBORS

What is your interest in the Great Lakes? It may be more than you realize. If you live or work in the Great Lakes Basin, you may depend on the lakes for uses ranging from water supply or recreation to bringing goods to your local market or work place. There are many other uses of this water resource.

One of these uses, commercial navigation, projects that its needs will require extensive modification of the Great Lakes system by 1990. Congress has authorized the Corps of Engineers to study the connecting channels and harbors of lakes Superior, Huron, Michigan, St. Clair and Erie, with a view to accommodating larger vessels and expanded navigation capacity. Inevitably, the expansion of one use, particularly if it requires modification of channels, locks and harbors in the system, will affect all other uses.

What are those effects? What are the possible, social, economic or environmental impacts of any of the alternatives proposed? Workshops are being held to identify specific questions, problems and concerns relating to the expansion of commercial navigation capacity for vessels up to 1200 feet long.

Great Lakes Tomorrow (GLT), a non-profit international citizen's organization, is conducting ten workshops under contract with the Detroit District, Corps of Engineers (COE) to obtain information from the public. These 3 1/2 hour workshops present an opportunity for in-depth discussion of concerns among citizens with a variety of interests. The Corps will be there to provide technical information and act as a resource for participants. Local Coordinators representing local educational or civic organizations assist GLT in organizing each workshop.

Most of the workshops will be past when **FOCUS** reaches you, but if the topic is of interest, call the Detroit



workshop coordinator(s) for information: Mimi Becker, P.O. Box 1935, Hiram, Ohio 44234 Phone: 216-569-7015, Arthur Timms, Ontario Conservation Council, Toronto, Ontario Phone: 416-961-6830.

## **LAKE ONTARIO PHOSPHORUS LEVELS DROP 40 PER CENT IN METRO TORONTO AREA**

The Ministry of the Environment reports that since control programs to limit phosphorus loadings to Lake Ontario began in the early 1970's, levels of the nutrient which supports oxygen-robbing vegetation have dropped dramatically. Data for 1977 compiled by Environment Canada in Burlington indicated springtime concentrations dropped an average 12 per cent in off-shore Lake Ontario waters and as much as 40 per cent in the area 20 miles east and west of Metro Toronto compared to pre-program levels.

Present primarily in human waste and household detergents, phosphorus can support excessive aquatic vegetation which depletes oxygen needed by aquatic life, such as fish. Decaying, overabundant plants also cause taste and odour problems in drinking water. Algae and slime detract from recreational use including swimming and boating.

In the late 1960's, environmental experts cited phosphorus as the most serious threat to water quality in the lower Great Lakes. Studies are now reflecting that coordinated Canadian government programs to control and reduce phosphorus levels have been extremely successful.

In 1970, the federal government initiated phased reduction of allowable phosphorus in household detergent. Products now are limited to 2.2 per cent phosphorus by weight. Authorities believe that the action has reduced by up to 50 per cent phosphorus levels in municipal wastes reaching sewage treatment plants.

At the same time, the Ontario Government with accelerated federal funding assistance undertook a major construction program to install phosphorus removal equipment in every major sewage treatment plant in the lower Great Lakes Basin. At present all plants treating more than one million gallons of sewage per day and smaller capacity plants in identified problem areas must limit phosphorus concentrations in treated effluent to one milligram per liter. As a result of the removal program an estimated 7,300 tons of phosphorus are being removed each year from municipal wastes across Ontario.

Discharging into off-shore waters, 20 miles east and west of Metro Toronto where 40 per cent phosphorus reductions were observed, sewage treatment plants serving Peel, Metro Toronto, and Durham regions have removed about 2,600 tons of phosphorus yearly since the implementation of the control program.

The one milligram per liter standard for treated effluent was established under terms of the Canada/Ontario Agreement signed by the two levels of government in 1971 to coordinate their Great Lakes cleanup activities.

## **ASSISTANCE TO MUNICIPAL WATER AND SEWAGE PROJECTS**

A new plan, which is effective immediately, extends provincial grants to assist the construction of municipally-owned water and sewage facilities. Until now, only joint provincial-municipal and provincially owned projects, and certain municipal projects in regional or restructured municipalities, have qualified for such grants.

Environment Ontario's revised formula of grants for these facilities will be calculated as a percentage of net capital cost, after deducting any other applicable grants or subsidies, and will be provided under two general categories:

- (1) Direct grants of 15 per cent for major water and sewage works:
  - (a) in support of urban growth, or
  - (b) to encourage economies of scale for area schemes encompassing more than one municipality.
- (2) Direct grants of up to 75 per cent of the net capital cost will be offered to small municipalities, where the capital costs per lot serviced would exceed \$1,100 and \$1,400 for water and sewage respectively, in an endeavour to hold the municipality's share of the capital costs to the above limits.

Grants will be paid in the form of quarterly advances based on projected expenditures.

The remaining unsubsidized portion of cost, will be financed by municipalities which will be encouraged to develop, own, and operate their own facilities, thereby increasing local responsibility. Provincial loans will still remain available to small municipalities having difficulty financing through the private market.

In evaluating applications by municipalities for these grants, the Ministry of the Environment will apply an established priority rating system which takes into consideration health, environmental, and community growth criteria.

Information on eligibility and on procedures to be followed by municipalities in requesting and obtaining grants is now being sent to all municipalities.

## **ATTENTION RIDEAU-TRENT-SEVERN USERS**

New regulations cracking down on unsafe boaters and water polluters, restricting development of environmentally sensitive areas and guaranteeing public access to shoreline are being proposed for Ontario's 670-kilometre Rideau-Trent-Severn waterways.

The corridor is centred on the Rideau and Trent-Severn canal systems that extend from Ottawa to Kingston and Trenton to Georgian Bay, respectively. The corridor also includes the Bay of Quinte and portions of the north shore of Lake Ontario.

The regulations are among 30 proposals contained in two reports, Interim Land Use Guidelines and Greenpaper,



The proposals are based on scores of public meetings, the involvement of municipalities, Conservation Authorities, cottagers' associations, tourist councils, regional economic development councils, universities and community colleges, historical societies and the submissions of concerned citizen groups and individuals.

Copies of the Interim Land Use Guidelines and Green-paper and other information are available from the CORTS Secretariat, Suite 210, 340 George Street North, Peterborough, Ontario K9H 7E8. Telephone: (705) 743-9311. (Ontario Ministry of Natural Resources.)

#### FOR ADDITIONAL COPIES

Write to Patricia Bonner - Editor, Great Lakes Focus, IJC Regional Office, 100 Ouellette Avenue, Windsor, Ontario, Canada N9A 6T3.

CONT FROM PG. 1

IJC's hearings on the PLUARG report are scheduled to begin November 1 and end December 7. The schedule is tentative and public notice will be given as to actual dates.

DATE	LOCATION
November 1	Buffalo, N.Y.
2	Cleveland, OH
14	Sheboygan, WI
15	Duluth, MN
16	Thunder Bay, ON
28	Toronto, ON
29	Kingston, ON
December 5	Chatham, ON
6	Lansing, MI
7	Sault Ste. Marie, ON

Every library serving more than 10,000 people has been sent the PLUARG report. Please examine the report, attend a meeting and come to the IJC hearing. The Commission wants to know what you think about PLUARG's report.

If you would like to have a personal copy of the full report, its 19-page summary, or an explanation of IJC's hearing procedures, write to the Great Lakes Regional Office, 100 Ouellette Avenue, 8th floor, Windsor, Ontario N9A 6T3 or telephone in Canada: (519) 256-7821; in the United States (313) 963-9041.

# GREAT LAKES FOCUS

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