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## Great Lakes Focus on Water Quality: vol.5 iss.1

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# GREAT LAKES FOCUS

## On Water Quality

International Joint Commission — Windsor, Ontario

Editor: Patricia Bonner

VOLUME 5

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MARCH 1979

## 1978 GREAT LAKES WATER QUALITY AGREEMENT SIGNED NOVEMBER 22

The new Great Lakes Water Quality Agreement reaffirms the determination of the two nations to restore and enhance the water quality in the Great Lakes System. It provides new thrusts, new programs and more stringent goals than did the 1972 accord. Several key changes are described following.

First, the new agreement adopts the concept of a Great Lakes Basin ecosystem. It recognizes that water quality depends on the interplay of air, land, water and the living organisms, including man, within the system. Such an approach should lead to more comprehensive assessments of the Great Lakes cleanup process. Use of the approach may help clarify links between pollutants and human health. The Great Lakes Ecosystem is defined as "the interacting components of air, land, water and living organisms, including man, within the drainage basin of the St. Lawrence River at or upstream from the point at which this river becomes the international boundary between Canada and the United States".

The 1978 Agreement stresses the provisions toward eliminating the discharge of toxic substances into the Great Lakes and establishing warning systems to prevent future substances from causing problems. Persistent toxic substances, those with a half-life of over eight weeks, are the particular target. Programs include development of an inventory of raw materials, processes, products, by-products, waste sources and emissions of persistent toxic substances, quantitative data on substances and recommendations for use, handling and disposal; establishment of air, water and solid waste program coordination to better assess total inputs and define controls; and establishment of joint programs for proper transport and disposal of hazardous materials. Toxics monitoring and research in support of the Great Lakes Surveillance Plan are to be strengthened. Data, information, and research techniques to establish an early warning mechanism are in part specified. The Parties are to establish action levels to protect human health from individual and interactive effects of toxic substances, but no deadline is set. Numerous areas are cited to intensify research to determine pathways, fate and effects of toxic substances on the ecosystem.

New interim phosphorus loading targets are defined for each lake.

Published by Scholarship at UWindsor, 1979

Basin	1976 Phos. Load in Metric Ton. Per Year	Future Phos. Load in Metric Ton. Per Year
	Per Year	Per Year
L. Superior	3600	3400*
L. Michigan	6700	5600*
Main L. Huron	3000	2800*
Georgian Bay	630	600*
N. Channel	550	520*
Saginaw Bay	870	440**
L. Erie	20000	11000**
L. Ontario	11000	7000**

\* These loadings would result if all municipal plants over one million gallons per day achieved an effluent of 1 milligram per litre of phosphorus.

\*\* These loadings are required to meet the restated program goals.

Within 18 months of the signing, the governments are to confirm these provisional targets, and based upon them, establish load allocations and compliance schedules. Maximum practicable diffuse source reductions are called for in lakes Superior, Huron and Michigan and a 30 per cent cutback for those sources in the Lower Lakes. Lakes Superior, Huron and Michigan basin municipal treatment plants discharging more than 1 million gallons per day are to meet effluent concentrations of 1.0 milligram per litre total phosphorus maximum; plants in the Lake Ontario and Lake Erie basins are to meet a 0.5 milligram maximum, where necessary to meet loading allocations (to be determined). A reduction of phosphorus in detergents to 0.5 percent by weight is to occur when necessary to meet loading allocations (to be developed).

Deadlines by which municipal and industrial pollution control programs are to be completed and operating have been set for December 31, 1982 and December 31, 1983 respectively. Specific waste treatment control measures are to be established for all industries.

New and revised specific water quality objectives have been incorporated in the Agreement. The jurisdictions are to identify and report to the IJC areas where, because of natural phenomena, objectives cannot be met. Further, the regulatory agencies on a case-by-case basis are to define



CANADA/ONTARIO GREAT LAKES WATER  
QUALITY AGREEMENT

and describe "limited use zones" (point source discharge areas) and report on progress made by dischargers on an annual basis. The zones will be in the vicinity of present and future municipal, industrial and tributary point source discharges. They are to be as small as possible and cannot cross the international boundary. There is to be continuing review and revision of the zones to reduce their extent and effects as treatment technology improves. Before January of 1980 candidate areas for such designation are to be reported to IJC which has 60 days to comment on the extent of the zone or any other aspect or measure to promote attainment of general or specific objectives.

Since the 1972 accord, much concern has arisen with regard to airborne pollutants such as sulphur dioxide, sulphates, phosphorus, and the toxic heavy metals and organic substances which are carried long distances and deposited into water with the possible threat of entering the food chains of fish, wildlife and man. The new Agreement provides for programs to identify sources for long range pollution and calls for the Parties to consult if significant contributions to Great Lakes pollution from atmospheric sources are found.

Monitoring and surveillance requirements have been revised and improved to better assess the effectiveness of control programs. Unlike the 1972 Agreement, the new accord has a separate annex on surveillance and analysis which, in effect, reinforces the commitments of the governments to carry out the Great Lakes Surveillance Plan.

In addition, there is to be an annual inventory of municipal and industrial pollution abatement requirements, including compliance schedules and status of compliance with restrictions. This review is to be available to IJC and the public.

Another important requirement deals with measures to abate and control pollution from agriculture, forestry and other land use activities. Provisions deal with the control of pest control products, animal husbandry operations, hauling and disposal of liquid and solid wastes, road salt use and storage, soil losses, various education and technical assistance possibilities and consideration of IJC's recommendations on the Pollution from Land Use Activities Reference.

The Commission is given a reference from the Governments to carry out the Agreement, including matters covered in the annexes. Many of the annexes were not under IJC's purview under the 1972 Agreement. To carry out the reference, the IJC is to utilize the services of the Water Quality Board and Science Advisory Board (formerly Research Advisory Board), whose members it appoints after consultation with the appropriate government(s). The Great Lakes Regional Office of the IJC is to provide administrative and technical assistance to the two boards and information services to those boards and the Commission.

This article only scratches the surface, highlighting key provisions of the Agreement. For a full copy of the new Agreement, write to the Editor, Great Lakes Regional Office, 100 Ouellette Avenue, 8th floor, Windsor, Ontario N9A 6T3.

In anticipation of the signing of the Canada-United States Great Lakes Water Quality Agreement in April 1972, a Canada/Ontario Agreement was signed in August 1971 to provide for federal-provincial cooperation with respect to the development and implementation of pollution abatement programs in Great Lakes waters.

This domestic Agreement, which was extended in March 1976 to continue to meet Canada's obligations under the international Agreement, resulted in the following:

- (1) Completion of studies of pollution from combined and storm sewer overflows and the disposal of sewage sludge on land through to the development and implementation of control measures of these problems as stipulated in the international Agreement.
- (2) Incorporation of a coordinated federal-provincial water quality surveillance program for the Upper Lakes and the Lower Lakes.

The Agreement, which is to extend until March 31, 1980, and closely parallels the obligations of the international accord, provides for equal cost sharing of research and surveillance funding, the amounts of which are determined jointly from year to year but are generally in the two million dollar range.

The Canada/Ontario Agreement provides for a Board of Review consisting of three provincial and three federal representatives. Its powers include approval, review and recommendations regarding research and surveillance activities carried out by the federal and provincial governments under the Agreement. (Excerpted from 1978 Agreement press kit materials)

## IPAGHEIS V CONFERENCE

Librarians and information scientists from five states gathered in Urbana, IL, November 9-11 for the fifth meeting of the Inter-Professional Ad Hoc Group for Environmental Information Sharing. The conference was hosted by librarians of the Illinois State Water, Geological, and Natural History surveys. The focus on current research in the Great Lakes Region featured speakers on geology for planning, thermal pollution, pesticides and biological controls, weather modification, and a panel of researchers studying various aspects of Lake Michigan. Dr. F. W. Lancaster of the University of Illinois Graduate School of Library Science gave his view of a coming "paperless society". Discussion of the group's ongoing projects and identification of new resources were the main topics at planning meetings.

Voting a name change, IPAGHEIS is now to be known as GLEIS, Great Lakes Environmental Information Sharing. The group seeks to encourage sharing of resources, provide input and feedback on area environmental information projects and serve as a mechanism for mutual assistance projects. The next meeting will be in Ann Arbor, MI in September 1979. For a synopsis of the meeting or more information about the group, contact Marcia Clark, Illinois State Water Survey, Box 232, Urbana, IL 61801 (217) 333-4956.



## WINTER NAVIGATION

On January 11, 1979 the United States Winter Navigation Board met in Detroit. The board, composed of 13 organizations including federal agencies, decided that it was unable to resolve differences between various interested parties within the time limit set by the U.S. Congress for completion of its demonstration program.

The unresolved issues center on environmental and conservation concerns for winter navigation's impact on the St. Lawrence River. The board concluded that insufficient time was available for gathering environmental data on those concerns.

The board therefore requested the St. Lawrence Seaway Development Corporation to withdraw its permit application. The permit application was for work to install a supplemental ice boom in the river, with the purpose of demonstrating the feasibility of navigation through annually installed ice booms while maintaining the stability of the river's ice cover. A Department of Army permit was required since the work affected navigable waters as defined by law.

## PHOSPHORUS CONCERNS

During its recent hearings on the Pollution from Land Use Activities Reference Group's final report, the International Joint Commission heard many comments and questions from the public about the phosphorus recommendations it contains.

Some of the points summarized by the Chairmen are explained in the paragraphs following.

Comments and questions relating to phosphorus varied among the hearings and were often tied to perceived local or regional impacts of the phosphorus recommendations presented by PLUARG. PLUARG had recommended in the final report to the IJC that the phosphorus loads to the Great Lakes be reduced by implementation of point and nonpoint source controls necessary to achieve the individual lake target loads specified by PLUARG. Further reductions in loads to portions of each of the lakes were recommended for improvement of local nearshore water quality problems. Clarification of these target loads was sought at a number of PLUARG hearings, including Buffalo, Cleveland and Toronto.

It was pointed out that the target loads presented by PLUARG for the Upper Great Lakes (Superior, Michigan and Huron) differ from those developed during renegotiation of, and presented recently in the 1978 Water Quality Agreement. Dr. Murray Johnson (PLUARG Canadian Chairman) explained at the Toronto hearing that the PLUARG target loads for the Upper Lakes were derived on the basis of a 1 mg/L phosphorus effluent limitation in all municipal sewage treatment plants discharging in excess of one million gallons per day. Dr. Johnson noted that this was the same criterion used by the U.S. and Canadian scientists who developed the phosphorus loadings objectives for the Agreement. However, he stated, PLUARG used more accurate tributary and atmospheric loads based on its own studies. The target load differences reflect differ-

ences in these sources.

He added that the Agreement target loads for the Lower Great Lakes (Erie and Ontario) were based on several eutrophication models. These models considered desired dissolved oxygen conditions in Lake Erie's central basin and total phosphorus concentrations in Lake Ontario. Dr. Johnson indicated that PLUARG had concurred in this approach and had accepted the rationale and target loads of the Parties for lakes Erie and Ontario. This accounted for the identical PLUARG/Agreement target loads for the Lower Lakes.

The differences between the 1976 phosphorus load estimates of PLUARG and the Water Quality Board, several observers suggested, pointed to an uncertainty that needs to be resolved prior to initiation of further point source phosphorus effluent controls below 1 mg/L or implementation of nonpoint source controls, both of which would likely be expensive. Dr. Johnson indicated that an attempt to resolve these differences was already underway by PLUARG.

Mr. Norman Berg (PLUARG U.S. Chairman), at the Duluth hearing, indicated that the 1980's must be the "action decade". He suggested that the Great Lakes community should do now what we know how to do, rather than wait for still more planning and research. While noting that further studies of various kinds will always be needed and would serve to refine PLUARG data, Mr. Berg indicated that in the United States many mechanisms were already in place for implementation of PLUARG phosphorus recommendations (e.g., Section 208 and Soil Conservation Districts) and that these should be used to the extent possible.

The cost-effectiveness of achieving the target loads was also questioned. At the Buffalo and Toronto hearings it was suggested that no further reductions in point source effluent limitations below 1 mg/L be enacted until such reductions could be clearly demonstrated as necessary and cost-effective. A municipal representative at the Toronto hearing expressed surprise at the recommended 0.5 mg/L effluent limitations for the Lower Great Lakes in the 1978 Water Quality Agreement and PLUARG final report, noting that the accompanying costs could be substantial and that the necessity for such a limitation should be clarified.

At the Toronto hearing, Dr. Johnson explained the overview modelling process which PLUARG used to derive the costs associated with possible phosphorus control measures for meeting the target loads. The model, he said, provided a broad overview of the combinations of factors shown to most directly affect diffuse tributary loads, and provided a means for determining the most cost-effective phosphorus controls. He indicated that the "minimum costs presented in the PLUARG final report were provided as an example of a combination of control measures to achieve the target loads." He emphasized that the levels of phosphorus treatments used to derive the minimum costs were not intended to represent a rigid scheme or a recommended sequence of controls, but rather were to serve as examples of how the target loads might be achieved.

The issue of the biological availability of phosphorus



was brought up at many hearings. According to Dr. Johnson, the key criterion for reducing phosphorus was probably the cost per ton of phosphorus removed and the percent availability.

Dr. Slater, Canadian Chairman of the Water Quality Board, said in Toronto that lack of knowledge concerning phosphorus availability was reason to delay adding new phosphorus controls until results of past efforts are better assessed. Dr. David Armstrong (University of Wisconsin), referring to the limited number of PLUARG tributary studies in which he was involved, indicated that on a basin-wide average approximately 50 percent or less of the total phosphorus in the study tributaries was biologically available. This figure accounts for phosphorus from all sources in the tributaries, including indirect municipal plants. The available portion was about equally divided between phosphorus associated with sediment, and dissolved phosphorus. He indicated that no more than one third of the particulate phosphorus was available and that phosphorus derived from shoreline erosion was essentially unavailable. He observed at the Chicago hearing that most particulate phosphorus appeared to originate from nonpoint sources.

Dr. Robert Sweeney, of the Great Lakes Laboratory in Buffalo, indicated that he believed that the PLUARG 50 percent availability value was high, citing a 10-20 percent

of agricultural nonpoint sources could be achieved through voluntary soil conservation programs emphasizing best management practices. It was also indicated several times that prime agricultural lands, as well as wetlands, should be preserved since conversion of such lands to urban and other uses usually results in an increase in nonpoint pollution.

The role of voluntary compliance by farmers in agricultural phosphorus control programs was discussed at several hearings. Several individuals expressed a lack of confidence in such an approach, indicating stronger measures might be necessary to assure adequate phosphorus control from agricultural lands. Mr. Floyd Heft (PLUARG member from Ohio), however, indicated that farmers today did not pollute by desire because in doing so they waste valuable resources, including fertilizers and topsoil. However, it also had to be demonstrated to farmers that remedial measures for phosphorus control were economically reasonable. It was also noted that farmers had more direct control over initiation of phosphorus control measures than did urban dwellers, giving them a unique role in solving the problem of Great Lakes pollution from phosphorus.

Many topics in addition to phosphorus were of special interest to hearing participants. Suggestions relating to the information/education recommendations were extensive. Frequently those giving statements expressed willingness to assist in informing people of PLUARG's findings and in local implementation of recommendations, particularly those on phosphorus control and toxic substances.

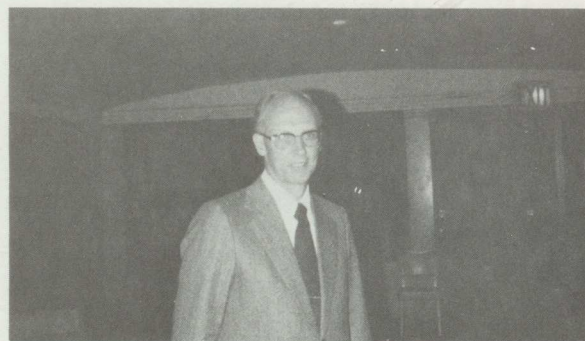


**Marina Herman and Tom Klein of Sigurd Olson Institute at Northland College testified in Duluth.**

value as a more accurate figure for New York streams. It was noted by PLUARG that the fraction of available phosphorus in the Genesee River pilot watershed (New York) was generally lower than in the other pilot watersheds studied by PLUARG.

At the Cleveland hearing a witness said that the whole phosphorus availability question was overemphasized. Control of phosphorus is needed regardless of the availability question, and such control would produce the additional benefit of maintaining good water quality. Several other individuals carried the point further, indicating that PLUARG has placed too much emphasis on phosphorus and not enough emphasis on toxic substances, which they viewed as a more significant long term problem in the Great Lakes Basin.

Several observations were also offered concerning the role of agriculture in phosphorus pollution of the Great Lakes. It was suggested at several hearings that the control



**Lester Milbraith presented testimony in Buffalo.**

## BRIEFS

The United States Environmental Protection Agency has released its strategy document on the Toxic Substance Control Act. Chemicals which can cause chronic health effects will get careful attention. Those which are carcinogenic, mutagenic, teratogenic, or neurotoxic will be given high priority. To assign priorities, EPA will screen chemicals based on structure/activity correlations, biological activity, environmental persistence, and the amount produced, among other criteria. The IJC's Great Lakes Science Advisory Board and its special committees' members have long been advocating the use of structure/activity correlations as a tool for predicting potential toxicity.



The U.S. Army Corps of Engineers Buffalo District has begun a \$1 million study of the feasibility of providing flood and beach erosion protection to the western shoreline of Lake Erie. The study will investigate the Lake Erie shore from Marblehead, Ohio, to the Ohio-Michigan state line and will take about five years to complete.

In the first stage of the study the Corps will produce a Reconnaissance Report. This report will outline the course of the study and establish a study schedule. Public meetings and workshops will be held during this phase to obtain citizen views on what problem areas the study should consider.

The completed study report is scheduled to be submitted to Congress in 1982.

For more information, contact Ron Hoskins at the Corps' District Office 1776 Niagara Street, Buffalo, New York 14207.

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Sea World of Ohio's Education Department is developing a Freshwater Program centering on Lake Erie. It was scheduled to be complete in January 1979. During the off-season Sea World Aquarium has a marine program for Kindergarten thru Grade 8. For information contact: Pat Sears, Sea World of Ohio, Inc., 1100 Sea World Drive, Aurora, Ohio 44202, (216) 562-8101.

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In October Environment Canada cut about 14% from its budget for FY 1979-80, beginning April 1, 1979. Of the \$40.5 million, about \$5 million was cut from the federal-provincial water management programs.

\*\*\*\*\*

The United States Environmental Protection Agency's appropriation for sewage treatment construction grants in USFY 1979 (beginning October 1978) is \$4.2 billion. Funds can be used for facilities construction beyond secondary treatment, if the agency decides that advanced treatment is required and will result in significant public health or water quality improvements and only if the incremental cost is \$1 million or less.

\*\*\*\*\*

Acid rain is a problem in New York's Adirondack mountain lakes and streams. The northwest face of these mountains drains via the Black River into the Great Lakes. The state launched a five-year, \$830,000 program to fight the threat to the New York fishery. For details write to Patrick Festa, New York Department of Environmental Conservation — Bureau of Fisheries, 50 Wolf Road, Albany, N.Y.

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As a result of a much above normal water supply during January, the level of Lake Ontario rose above 17 centimetres during the month. Even so, Environment Canada reports that mid summer levels on Lake Ontario are expected to be near normal.

During January the levels of Lake Superior and Erie declined about 9 and 4 centimetres respectively while the level of Lake Huron remained essentially equal to that recorded at the end of December. Over the next six months, only Lake Huron is expected to experience higher levels than those recorded in the corresponding time one

year earlier.

Extremely wet weather would produce July 1979 levels on all lakes higher than the previous year while extreme dry conditions would result in below normal levels on Lakes Superior and Ontario.

For further information please contact:-

D.F. Witherspoon  
Engineer-in-Charge  
Great Lakes-St. Lawrence Study Office  
Environment Canada  
200 Federal Building  
Cornwall, Ontario  
K6H 5R8

Tel: 613-932-4325

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The Governments of United States and Mexico have signed an agreement pledging mutual cooperation on environmental problems, including air and water pollution control on both sides of the U.S.-Mexican border.

Under the agreement, the U.S. Environmental Protection Agency (EPA) and its Mexican counterpart, the Subsecretariat for Environmental Improvement of Mexico (SMA), will initiate a cooperative effort to resolve environmental problems of mutual concern in border areas, as well as any environmental protection matter, through exchanges of information and personnel, and through the establishment of parallel projects. Senior EPA and SMA officials will meet periodically to discuss mutual problems and policies, as will experts designated by each nation to review technical issues and coordinate projects. (Excerpted from Peter Philipps to *World Environment Report*, August 28, 1978)

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There is a toll free number available nationwide in the United States to report oil spills: (800) 424-8802. Reports are then fed to local emergency numbers. Check with your Region of the U.S. Environmental Protection Agency to learn your local number.

In the Great Lakes Region, there is a Contingency Plan for clean up of oil spills. To report spills in Canada, call the Central Region of the Canadian Coast Guard in Toronto at (416) 369-3058. In the United States call the nearest Coast Guard office or Cleveland's 9th District at (216) 522-3983.

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#### MAYORS GRANTED \$245,000

Four Federal agencies recently awarded a \$245,000 grant to the U.S. Conference of Mayors to organize workshops for elected officials and prepare publications that will help states and localities meet various air pollution control requirements of the 1977 Clean Air Act Amendments.

The Mayors Conference will use the funds - provided by the Environmental Protection Agency and the Departments of Commerce, Housing and Urban Development, and Transportation - to involve local elected officials in carrying out air clean up programs; to spark cooperation among government officials, citizen groups and the business community; and to establish a network for informing



these groups about air quality and economic development issues. (Pennsylvania EcoNotes, November/December 1978)

Editor's note: The same kinds of workshops and publications might be possible on an international scale to discuss water pollution abatement in a region of the Great Lakes. Panelists participating in PLUARG and people attending the pre-hearing workshops suggested that special programs be developed for state, provincial and municipal officials.



PLUARG workshop in Marquette

#### THE LAW AND THE COURTS

On November 24, 1978, the Canadian Environmental Contaminants Act was amended to include Mirex Regulations. For purposes of the Act, "all commercial, manufacturing and processing uses are hereby prescribed, effective December 1, 1978, as uses in respect of which dodecachloropentacyclodecane may not be used."

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The U.S. District Court for the Northern District of California ruled in October that Section 208 funds (under the Clean Water Act) could legally be used on air pollution control and solid waste management planning activities.

☆☆☆☆

In October, Outboard Marine lost in its attempt to have a federal enforcement action against it for alleged illegal PCBs discharges to Waukegan Harbor (Lake Michigan) dismissed. The U.S. District Court for the Northern District of Illinois refused the dismissal.

☆☆☆☆

Wexford County (Michigan) Circuit Court's Judge William Peterson ruled against farmers Roy and Marilyn Tacoma in a \$250,000 PBBs damage suit against the Michigan Chemical Company and the Michigan Farm Bureau. The company acknowledged that there had been a mix-up and PBB had been in with bags of livestock feed. The Farm Bureau distributed the material from its warehouse.

Over \$40 million has already been paid to 670 farmers but 100 claims remain unsettled. (*Environmental Health*, November 1, 1978)

☆☆☆☆

Michigan's bill to control toxic substances died in the legislature in late November 1978.

The United States Occupational Safety and Health Administration released its preliminary list of 269 chemicals considered "confirmed" carcinogens late this summer. That list contains 116 chemicals produced in significant amounts. Those would be regulatory targets. The list resulted from review of about 2,000 chemicals which the National Institute for Occupational Safety and Health identified as having some degree of carcinogenicity or tumorigenicity.

☆☆☆☆

In October the Canadian Environmental Law Association (CELA) submitted a brief to the Joint Senate/House of Commons Committee on the Constitution to provide a right to environmental quality and a right to government information. That latter right, the CELA brief states, should be in the constitution to confirm "pre-eminence of citizens of institutions", one of the major reasons for constitutional reform according to Prime Minister Trudeau.

☆☆☆☆

Before he left his position as Environmental Conservation Commissioner for New York, Peter A.A. Berle announced the formation of an Office of Toxic Substances. The new Director is Thomas E. Quinn. The budget for the toxic substances programs in the state is to be about \$2 million. The new office's functions are to coordinate the various department programs, supply technical information to program divisions, do research in the toxic substances field, and to serve as the focal point for interactions with other governmental agencies.

☆☆☆☆

The U.S. Environmental Protection Agency issued its first ambient air standard since 1971 near the close of 1978. To protect the public health from exposure to airborne lead, the standard is 1.5 micrograms of lead per cubic meter of air. The standard is figured on a three month average. Exposure to lead can be direct through inhalation or indirect by ingestion of lead-contaminated food, water or non-food materials like dust. About 90 percent of lead emissions are said to be from automobile exhaust.

#### THINGS TO SEE

Two New York Sea Grant films may be of interest. They are available from the Film Library, Judd Falls Road, Cornell University, Ithaca, N.Y. 14853. When writing, specify a first and second choice viewing date. Send no money. You will be billed.

"Our Ever-Changing Shoreline", is a color, 16mm. 15-minute film which focuses on the problems of erosion and deposition on New York's Atlantic and Great Lake shores. It explains the natural coastal cycle of destruction and rebuilding and how misunderstanding of this process has led to both financial and aesthetic pain in the past. Protective devices such as seawalls, groins and gabion revetments are discussed as is the role of New York Sea Grant. Rental for the general public is \$8.00 and \$5.00 for Cooperative Extension.

"New York Faces the Sea" is a color, 16 mm., 12.5-minute film which shows some of New York's major



coastal problems and how Sea Grant is helping to solve them. Careless use of marine and Great Lakes resources is shown along with the problems of commercial fishing, recreational uses, power plant development, shipping and manipulation of wetlands. Rental for the general public is \$8.00, and \$5.00 for Cooperative Extension.

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Remember the PLUARG slide/tape show, "For Tomorrow the Great Lakes", is still available for viewing. It is a 10-minute overview on the condition of our lakes and an explanation of the problems of diffuse source pollution.

If you are planning a meeting, seminar or conference, the show or the nonpoint pollution display, "Our Inland Sea" may be useful to your group. Write to the Editor or telephone - (313) 963-9041 (U.S.) and (519) 256-7821 (Canada) for details.

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"Madigan Beach" is a 12-minute, 16 mm. color film illustrating the use of Longard tubes as a shoreland protection device on the Great Lakes. It was filmed on a Red Clay Project site along the Wisconsin Shore of Lake Superior. One copy of the film is available on loan from the Great Lakes Regional Office. Contact the Editor.

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"Runoff - Land Use and Water Quality" is a 21-minute film on nonpoint source pollution. It was produced by the University of Wisconsin under contract to the Washington County Project (under Section 108(a) of the Federal Water Pollution Control Act Amendments of 1972).

The Great Lakes Regional Office has one copy available on loan. Contact the Editor.

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The National Association of Conservation Districts (NACD) produced "Nonpoint 83" under contract to the Red Clay Project (see above). The 25-minute film covers nonpoint source pollution on a nationwide scale and illustrates some best management practices for their control. It shows the relationship of soil erosion to water quality. Prints of the film are available for \$125/copy from NACD, 408 East Main Street, Box 855, League City, Texas 77573.

One copy is available for loan from the Great Lakes Regional Office. Contact the Editor.

## PEOPLE

*Robert F. Flacke*, Chairman-Adirondack Park Agency, has replaced *Peter A. A. Berle* as state environmental conservation commissioner for New York, effective January 2, 1979.

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*Drs. Robert A. Ragotzkie*, University of Wisconsin-Madison, and *John R. Sheaffer*, President of Sheaffer and Roland, Inc. have been appointed to the new Great Lakes Science Advisory Board. They replace *Drs. Joseph Shapiro* and *Archie MacDonell*, members of the Research Advisory Board whose terms as state representatives expired.

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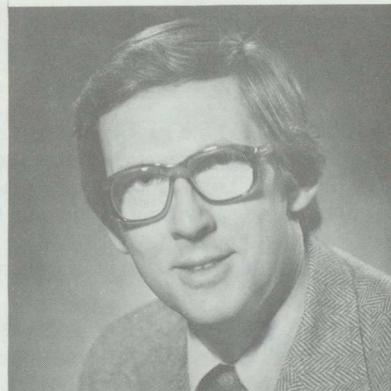
*Dr. G. Keith Rodgers*, the first Director of the National Water Research Institute at Canada Centre for Inland Wat-

ers (CCIW) — Burlington, has been appointed Canadian Chairman of the Great Lakes Science Advisory Board.

Dr. Rodgers began his working career in 1958 as a member of the team on the *Port Dauphine* for that ship's first survey of the Great Lakes. He has been a Great Lakes researcher ever since. He has been deeply involved in Great Lakes Water Quality Agreement work for several years. He is Canadian Chairman of the Upper Lakes Reference Group. He served as the chairman of the Surveillance Subcommittee of the Water Quality Board from 1974-75 and continued on as a member for a year.

Dr. Rodgers, who obtained his BSc in Engineering Physics and PhD in Physics at University of Toronto, also holds a MSc from University of British Columbia Institute of Oceanography. He was the Chief Scientist for Great Lakes programs at University of Toronto from 1968-1973 when he joined the CCIW staff as head of the Lakes Resources Group within the Lakes Research Division. In 1975 he became the Chief of the Applied Research Division at the Centre. He had been Acting Director of CCIW for 15 months prior to his recent appointment.

His research specialties are thermal stratification, thermal bar and Great Lakes circulation.



**Dr. G. Keith Rodgers, new Canadian Chairman, Great Lakes Science Advisory Board**

*James F. McAvoy* is the new Director of Ohio's Environmental Protection Agency, replacing *Ned Williams*. He is a nuclear engineer with an extensive management background. He came to the agency from Ohio's Department of Mental Health and Retardation.



**James F. McAvoy**



## EVENTS

The 11th Annual Cornell University Conference will be held April 17-20, 1979 at the Americana Hotel in Rochester, New York. Phosphorus Management Strategies for the Great Lakes is the theme. Proceedings should be available in the late fall of this year. IJC is co-sponsoring the event which will involve many of the people who had participated in the Water Quality Board, Pollution from Land Use Activities Reference Group, and Phosphorus Management Strategies Task Force of the Science Advisory Board.

Conference deliberations should assist the task force in formulating its recommendations for strategies and in its review of phosphorus loadings data.

The overall objective of this Conference is to assess the alternative strategies that should be considered for phosphorus control in the Great Lakes and the trade-offs involved in such strategies. The expected participants and speakers at the Conference will be state, provincial, regional, and federal regulatory and planning personnel, members of the International Joint Commission and its committees, consulting engineers, individuals from universities and non-profit organizations, and interested citizens.

For more information, write to: Eleventh Cornell University Conference, Riley-Robb Hall, Cornell University, Ithaca, New York 14853 or call 607-256-2008.

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The IJC has decided to hold its Annual Meeting on the Great Lakes Water Quality Agreement during the week of July 9, 1979. The Great Lakes Water Quality Board and Great Lakes Science Advisory Board will make their presentations over two to three days, from the 9th to 11th. It is expected that the events will be held in Detroit, not Windsor.

To learn details of decisions relating to the 1979 Meeting, write to the Editor.

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The Canadian Water Resources Association (CWRA) will hold its 32 Annual Conference in Ottawa from May 30 — June 1, 1979. The conference theme focuses upon the impact of boundaries -- international, interprovincial, provincial, territorial and others -- on the management of Canada's water resources, with consideration of issues, strategies and results. A minicourse on Environmental Studies of Urban Water Resources is also offered, to run concurrently with one of the two days on boundary water sessions. Field trips include a flight to the mammoth James Bay Hydroelectric Development under construction in Quebec and a tour of part of the St. Lawrence Seaway and Montreal municipal water works.

For the first time, CWRA invited papers at large for presentation during the conference. For more information, write to: Frank Quinn, Inland Waters Directorate, Environment Canada, Ottawa, Ontario K1A 0E7. Telephone (613-997-2425).

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The Second Canadian Conference on Public Participation will be held May 2-5, 1979, at the Banff Conference

Centre. The Environmental Council of Alberta and the Banff School of the Environment will co-sponsor the event. The conference will feature a series of plenary and workshop sessions which will focus on practical problems in public participation and issues capable of resolution through applied studies or insights based upon working experience. Write to John R. Amatt, Manager, School of Environment, Banff Centre, Box 1020, Banff, Alberta T0L 0C0.

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The Water Pollution Control Federation (WPCF) is soliciting papers for its 52nd annual conference. The event will be held October 7-12, 1979, in Houston, Texas. For more information write to WPCF, 2626 Pennsylvania Avenue, N.W., Washington, D.C. 20037.

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The 10th International Conference of the International Association on Water Pollution Research (IAWPR) will be held June 23-27, 1980, in Toronto. Dr. P.H. Jones, Conference President, may be contacted for further information, or a copy of the call for papers at (416) 978-3486 or Institute for Environmental Studies, University of Toronto, Toronto, M5S 1A4.

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Great Lakes -79, the XX11 Conference of the International Association for Great Lakes Research (IAGLR), will be held in Rochester, New York, May 1-3, 1979. For more information write to: Herman S. Forest, Rochester Area Colleges, 50 West Main Street, Rochester, New York 14614.

## PUBLIC COMMENTS SOUGHT IN INTERNATIONAL GREAT LAKES STUDY

The International Great Lakes Diversions and Consumptive Uses Study Board is seeking public comments and concerns regarding its study of the effects of diversions and consumptive uses on water levels and flows in the Great Lakes Basin.

Diversions are man-made structures such as canals, dams, etc., which alter the flow of water into, out of, and between lakes in the Great Lakes System.

Diversions which are being studied include the Long Lake/Ogoki diversions located on Lake Superior, which increase the natural supply of water to all the Great Lakes; the lake Michigan Diversion at Chicago, which reduces the supply to all lakes except Lake Superior; and the Welland Canal, which lowers the levels of lakes Erie, Michigan and Huron and raises the level of Lake Ontario.

These diversions and theoretical management alternatives will be evaluated singularly and in combinations. Evaluations will be made utilizing a mathematical model of the Great Lakes System. Each individual or combination alternative will be evaluated using representative indicators to determine when adjustments in flow rates should take place. The indicators being considered are lake levels, water supply to the system, and/or a forecast of extreme water supply conditions.

Consumptive uses refers to the uses of water withdrawn



or withheld from the Great Lakes and not returned. These include agricultural, manufacturing and domestic uses.

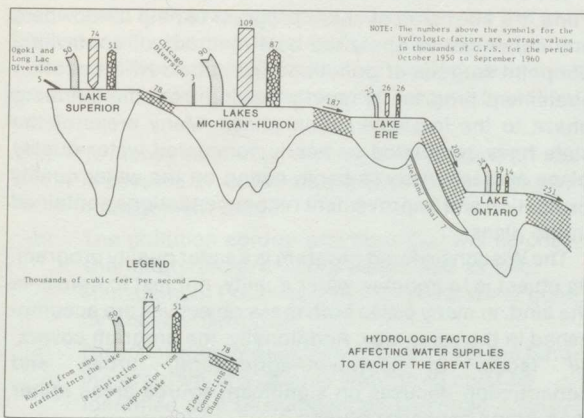
Water consumed in one lake basin causes a reduction in the net water supply to that lake and all downstream lakes.

Previous studies have shown that many users of the Great Lakes System are affected by the variation in lake levels and flows caused by the diversions and consumptive uses, particularly during periods of extremely high or low water supplies.

The board is studying these effects from an economic, hydrologic, and environmental standpoint and is seeking information from interested publics about their particular interests in the study and their concerns about the lake levels and flows.

During the fall of 1979, public workshops will be held on the study results. During the winter there will be public hearings. A Great Lakes Levels Citizens Advisory Group is now being formed by IJC. Should you wish to be informed of its activities, write to the IJC headquarters in Washington, D.C., 1717 H Street, N.W. 20440; in Ottawa, 100 Metcalfe Street, K1P 5M1.

The Diversions and Consumptive Uses Board is publishing a newsletter, *Diversions*. Ask to be on the mailing list. Write to: Study Board c/o Public Affairs Office, U.S. Army Corps of Engineers, Box 1027, Detroit, Michigan 48231, or c/o Department of Environment, Inland Waters Directorate, Ottawa, Ontario, K1A 0E7.



This figure has been taken from the IJC report "Further Regulation of the Great Lakes", 1976.

## RESULTS OF PCBs SURVEY

About a third of 1,038 breast milk samples from nursing American women contained measurable amounts of the toxic compound PCB (polychlorinated biphenyl), according to a national survey completed for the Environmental Protection Agency.

Of the 1,038 samples collected in 1975, 309 contained an average of 0.093 parts per million PCB. Of the 309 positive samples, 70 held levels over 0.10 ppm and 11 over 0.20 ppm.

Women from 45 states volunteered the samples while hospitalized during childbirth. In general, the milk of women from Kansas, Michigan, New York, Texas and Wisconsin contained the highest levels of PCBs; the highest single reading was 0.960 ppm, from an Alabama sample.

All women participating in the study have been notified of the results.

EPA and other health experts are uncertain whether the levels of PCBs found in the women pose health problems. Health officials at the U.S. Department of Health, Education, and Welfare, who were provided with the results, are not advising the mothers to change their breast-feeding habits.

PCBs are an industrial chemical used mainly as insulating fluids in heavy duty electrical equipment. PCBs have caused tumors, birth defects, and adverse liver effects in laboratory animals, at low levels of exposure, and they are a suspect human cancer causing agent. Evidence from studies of occupational exposures and accidental poisonings indicate that PCBs may cause neurotoxic and adverse skin and liver effects in humans as well.

EPA theorized that most of the women were exposed to PCBs through their diet as opposed to an occupational or workplace exposure. Food such as poultry, game and fish may contain very small amounts of PCBs. Investigators at Colorado State University, who performed the study, are planning to interview participants concerning their diet to determine whether the intake of certain foods is responsible for the high levels of PCBs.

Researchers with the National Institute of Environmental Health Sciences and at Colorado State University have initiated studies to determine whether health effects among breast-feeding infants could result from high levels of PCBs in mother's milk.

A similar follow-up study testing 1978 milk samples for PCB residues is currently underway to determine whether significant changes are occurring in PCB levels over time. PCBs are no longer made in the United States; however, 440 million pounds of PCBs are estimated to be in landfills or dispersed throughout the environment.

The milk sampling program, supported by EPA's Office of Toxic Substances, was performed under contract by Colorado State University scientists with assistance from the Medical University of South Carolina, Mississippi State University and the State Health Departments of Michigan and Utah. In addition to PCBs milk samples were analysed for various pesticides. (from a U.S. EPA News Release - Washington, D.C.)

## BOOKSHELF

"Land Application of Wastewater: A Cost Analysis", TB-1594 is available from ESCS Publications, Room 0054-S, United States Department of Agriculture, Washington, D.C. 20250. The report cites the advantages of the technique and makes cost comparisons to conventional treatment.

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Have you seen the August-September 1978 issue of *Natural History*? Nine Articles, 51 pages and all about the Great Lakes. The American Museum of Natural History (Central Park West at 79th Street, New York 10024) is the publisher.

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In the fall issue of *Upwellings*, Michigan Sea Grants' newsletter, is a helpful guide to ways to get information concerning the Great Lakes Basin. Write for a copy or ask to be added to the regular mailing list. (Michigan Sea Grant Program, the University of Michigan, 2200 Bonisteel Boulevard, Ann Arbor, MI 48109). The feature article describes the new information service which Michigan Sea Grant and the Great Lakes Basin Commission opened in June, 1978.

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The November issue of the Michigan *Riparian*, the quarterly newsletter of the Michigan Lake and Stream Association, Inc. carried an article on the Michigan Department of Natural Resource's Inland Lakes Management Unit Self-Help Water Quality Monitoring Program. The program is aimed at lake associations. Such organizations can get more information from Department of Natural Resources, P.O. Box 39928, Lansing, Michigan 48909 or by telephoning (517) 373-8000.

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For \$15 you can purchase "A Directory of Canadian Environmental Experts" from the Information Exchange Center, CISTI, National Research Council of Canada, Ottawa, Ontario, K1A 0S2. In it are an alphabetical list of names, affiliations, and research projects and a subject index.

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"Deep Well Injection of Industrial Wastes - Government Controls and Legal Constraints" is a 176-page clothbound book available for \$8 a copy from Virginia Water Resources Research Center, 225 Norris Hall, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061.

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Teachers in Ontario have an environmental education resource in the Information Services Branch of Ministry of the Environment (135 St. Clair Ave., W., Toronto, M4V 1P5). Write to Jane Watson, Educational Resources Coordinator for fact sheets, short lesson plans, games, slide shows or posters. For a list of what is available, see the December 1978 *Legacy* page 8.

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Volume II of *Lake Superior Soup, A Who's Who for the Minnesota Coast of Lake Superior*, is hot off the press. The 28-page booklet, published by the Minnesota Sea Grant Extension Program gives concise descriptions of private interest groups that have involvement with Lake Superior plus where to contact them for further information. The booklet has two dozen organizations, from environmental action groups to business development organizations.

Volume I, covering public agencies, was published last year. *Lake Superior Soup*, Volumes I and II were developed in response to a need voiced by coastal citizens for better public understanding of the many agencies and organizations that have an influence on the Minnesota coast.

In Volume I, some 20 public agencies that have management, research, planning or advisory roles affecting the shore are explained; who they are, how they are organized and what they do as it relates to Minnesota's portion of Lake Superior.

Both volumes are available free to anyone upon request. Write to: Minnesota Sea Grant Extension Program, 109 Washburn Hall, University of Minnesota-Duluth, Duluth, MN. 55812.

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A Water Quality-Land Use Curricula has been developed by teachers in Wisconsin through the Washington County EPA Project and the Department of Public Instruction. The curricula provides for activities and units to help students understand complex relationships between land management activities and water quality. For copies write to: CESA 16, 227 Maple Avenue, Waukesha, WI 53186. Please specify grade levels 1-6 or 7-12. There is a \$2.25 charge for each publication.

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"Land Application of Treated Sewage Sludge: Guidelines for Communities and Farm Operators" is a 30-page guide available free (single copy) from the Oregon State University Extension Service, 240 Extension Hall, OSU, Corvallis, OR 97331. The publication was designed to serve as a starting point for discussions between local sewerage authorities and farmers.

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#### WISCONSIN MOVES TO IMPLEMENT NONPOINT SOURCES PROGRAM

The nonpoint source (NPS) element of the Wisconsin Fund is a 10-year cost-share program to help landowners and communities apply the best methods of controlling nonpoint sources of pollution. The state's NPS pollution abatement program is rapidly moving from the planning phase to the implementation phase. Many areas of the state have completed or nearly completed water quality plans and are ready to begin acting on the water quality protection and improvement recommendations contained in the plans.

The Wisconsin Fund program is a water quality program. Its object is to improve water quality, not just to conserve the land. In many cases both these objectives are accomplished in the same way. Additionally, the program covers all facets of pollution--agricultural, urban and construction--focuses on significant source areas rather than broad expanses of land.

Through the Wisconsin Fund, the Legislature has appropriated \$7.2 million the first year to help foot the bill for nonpoint source control practices. At least 70 percent of this money must be spent in "priority watersheds" where problems are severe and control feasible. Money will be allocated in the priority watersheds to landowners and communities who agree to install water quality improvement practices. These practices include things like a farmer's manure storage facilities, sediment control at a construction site, terracing steeply sloping land (in town or country), or advanced street sweeping techniques.

To select the priority watersheds, the Department of Natural Resources (DNR) made an initial screening of the state's 168 eligible watersheds (eligible because the area's water quality plan is near completion) and skimmed 44 from the top. Only two or three of these 44 will be selected



as priority watersheds this year. Wisconsin citizens have been asked to trim the list of 44 down to (a maximum of) 24. The top few will be decided on by the DNR and a state advisory committee.

For each priority watershed, a priority watershed plan will be prepared. It will describe in detail the water quality conditions in the watershed and the possibilities for controlling nonpoint sources of pollution.

Landowners and communities (within a priority watershed) that want to receive Wisconsin Fund NPS money will need to sign a cost-sharing agreement committing themselves to establishing and maintaining pollution control measures. Also, within a year's time, 50 percent (75 percent within two years) of all the landowners (or all the land area) in the watershed should be "signed-up" to participate in the program. If not, the watershed might lose its priority status.

This program is designed to be *locally implemented*. Administrative rules call for *local agencies* to carry out many aspects of the program, including helping to prepare the watershed plan, getting the sign-ups and preparing the cost-sharing agreements.

The NPS element of the Wisconsin Fund is very closely tied with long-range areawide planning efforts conducted over the past few years in fulfillment of Federal Water Pollution Control Act Amendments of 1972. The NPS element of the Wisconsin Fund is, in a sense, the funding component of non-point source planning. It provides, at least in part, the money necessary to implement the non-point source portion of the areawide water quality plans.

The tie between the NPS element of the Wisconsin Fund and state water quality planning centers around the following areas:

- (a) No money can be spent in any area unless that area is covered in a *completed* areawide water quality management plan.
- (b) The pollution control practices that will be cost-shared are those practices identified as Best Management Practices in an areawide water quality management plan.
- (c) The local agency designated to carry out the funding program in a priority watershed must be identified as a Designated Management Agency (DMA) in the areawide water quality management plan covering the watershed.

How are Wisconsin citizens making their choice? Regional Policy Advisory Committees, in place since the water quality planning program began a few years ago, convened in January and reviewed the "first cut" watersheds located in their regions. Citizens and representatives of interested groups had opportunities to be involved in this priority watershed selection. Part of the Regional Policy Advisory Committees' decisions were based on their assessment of local enthusiasm and cooperation in water quality related projects and programs as exhibited at a series of workshops which were held in January.

On February 20, 1979, Wisconsin's Nonpoint Source Coordinating Committee recommended five priority watersheds to the Department of Natural Resources: Hay

River in Dunn and Barron counties, Elk Creek in Trempealeau County, Galena River in Lafayette and Grant counties, Lower Manitowoc River in Manitowoc County, and Fox River (Illinois Branch) in Waukesha and Racine counties.

Jim Baumann, DNR, P.O. Box 7921, Madison, Wisconsin 53707, (608) 266-9260, can answer questions about the role of citizens and on the Committees' decisions.

Editor's Note: Those of you who have seen the PLUARG final report, "Environmental Management Strategy for the Great Lakes Basin", will recognize that Wisconsin has begun to implement a program which parallels the recommendations of the reference group.

## NTA DOES NOT CONSTITUTE AN OBVIOUS ENVIRONMENTAL HAZARD

This was the conclusion drawn by a special task force of the International Joint Commission's Great Lakes Science Advisory Board. The task force was formed to investigate the potential ecological effects of alternative builders used to replace phosphates in detergents. NTA was one of the non-phosphate detergent builders which the task force studied.

The task force evaluated the extensive literature and Canadian experience with NTA-built detergents. No "obvious" environmental hazard was evident. Though the task force did not give NTA an unqualified endorsement, it did recommend that NTA "should not be prohibited from use as a detergent builder."

Several environmental questions have not been completely resolved and the task force felt that, as NTA usage continues, more complete answers should be sought. Some of the questions requiring greater resolution include:

1. Why is evidence of anaerobic degradation of NTA inconclusive?  
Although NTA degrades rapidly in most aerobic environments, studies on its ability to degrade during anaerobic waste treatment or under anaerobic environmental conditions are inconclusive. The task force feels the question needs further study.
2. What are the mechanisms of NTA loss during primary treatment?

No investigations have been conducted to determine the concentrations of NTA in anaerobically digested sludges. Canadian studies have shown that about one-third of the NTA appears to be lost from solution during primary treatment. Because it may have settled out in the sludge and because sludge is frequently deposited in the sea and on land, investigation is necessary.

Because anaerobic degradation of NTA remains in question, it cannot be counted on and therefore NTA is likely to show up in sludges where some, but not necessarily all, will be degraded aerobically. The extent to which it thus persists and comes in contact with land plants and aquatic organisms needs study.

Copies of the task force report, "The Ecological Effects



of Non-Phosphate Detergent Builders: Final Report on NTA", are available from the International Joint Commission, Great Lakes Regional Office, 100 Ouellette Avenue, Windsor, Ontario N9A 6T3.

### IJC REVIEW OF LOVE CANAL

The International Joint Commission, in its review of the Love Canal situation, has informed the Governments of the United States and Canada that a potentially dangerous situation still exists whereby hazardous substances contained at the site might reach United States-Canadian boundary waters.

However, based on current information, the Commission has determined that there is "no immediate threat to public health in terms of its impact on boundary waters from surface leaching."

The Commission has stated its awareness of the need for close monitoring of the situation. Commenting on the Commission's letter to the two Governments, U.S. Chairman Robert J. Sugarman said, "By no means does that letter signify the end of the Love Canal issue. First, the potential for ground water contamination is still under

study. Second, we are aware of similar problems in the Great Lakes Basin and we have asked our Great Lakes Water Quality Board to keep us informed."

Maxwell Cohen, Canadian Chairman of the IJC, added, "Naturally, anything which we feel the Governments should act upon we will immediately bring to their attention." Cohen continued, "The Commission took this opportunity to reiterate, as we have since 1973, our major concern about the multiple problems caused by the disposal of toxic wastes in and near the Great Lakes boundary waters. Few environmental problems are as pressing. We have asked our Great Lakes Water Quality Board to make an inventory of all known sites and have urged the Governments to act quickly and forcefully to neutralize potential problems at those sites."

### PLEASE NOTE - NO FOCUS Volume 4, Issue 4

If you saw *Focus*, Volume 4, Issue 3, you know what a busy time the last several months have been. Preparing for and participating in the PLUARG workshops and hearings took up the Editor's time so *Focus* Volume 4, Issue 4 never was written.

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

# GREAT LAKES FOCUS On Water Quality

International Joint Commission - Windsor, Ontario

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