UNITED STATES

ENVIRONMENTAL PROTECTION AGENCY

STATEMENT CONCERNING

LAKE MICHIGAN THERMAL PROBLEM

PUBLIC SESSION OF THE

LAKE MICHIGAN STATES AND THE

ENVIRONMENTAL PROTECTION AGENCY

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The questions raised by the construction of several large power plants on the shores of Lake Michigan have been a matter of urgent concern to and have occupied countless hours of the Lake Michigan Enforcement Conference. In briefest summary I shall attempt to outline the facts underlying the problem. Six nuclear electric generating stations are in various stages of construction in the four Lake Michigan states; several of the plants are scheduled to be in full operation at various dates in 1973.

At the third session of the Lake Michigan Enforcement Conference (March 23-25, 1971) EPA Administrator Ruckelshaus proposed to the state conferees for their adoption a water quality standard whose implementation would require the installation of auxiliary cooling facilities at the nuclear power plants under construction. The essence of Administrator

Ruckelshaus' recommendation was that waste heat discharges located on Lake Michigan in excess of 1/2 billion BTU/hr which had not begun operation as of March 1, 1971 shall have closed cycle cooling facilities associated with their operation.

Under the Federal Water Pollution Control Act as amended through 1970, water quality standards consisted of three elements: criteria, uses, and an implementation plan geared to attain the criteria and uses. The new FWPCA states that best practicable control technology shall be achieved not later than July 1, 1977. However, if the application of best practicable control technology does not attain water quality standards then more stringent limitations will be required. It should be noted that the water quality standards which will be considered by the Environmental Protection Agency for approval or disapproval, will consist only of criteria and use designations. Implementation plans are no longer subject to approval by EPA as part of water quality standards. In place of implementation plans incorporated in the standards, the new Act imposes a continuing planning process requirement on each state which requires the state to have comprehensive control plans including implementation plans for all navigable waters within the state.

At the March 23-25, 1971 session of the Lake Michigan Enforcement Conference, the conferees made certain findings and recommendations. Most of these findings and recommendations were approved by Administrator Ruckelshaus on May 14, 1971 and forwarded to the states for implementation.

Subsequent to the issuance of the approved findings and recommendations, the four Lake Michigan states took certain actions relating to implementing the conference recommendations. Basically these actions were consummated in the adoption by the states of thermal water quality standards. The principal elements of the adopted conference recommendations and those elements considered by the states for adoption as water quality standards were as follows: maximum temperature limits, specific definition of mixing zones, implementation schedules, and guides on restrictions on intake mechanisms, discharge plumes, and monitoring. The conference specifically adopted a recommendation which required closed cycle cooling systems on all new thermal waste dischargers above a certain size.

Recognizing the risk of summarizing what each state adopted, I have attempted to do that. The summary is as follows:

INDIANA: Essentially adopted all of the conference recommendations.

ILLINOIS: Essentially adopted all of the conference recommendations with the exception of the closed cycle cooling requirements on all plants not under construction as of March 1, 1971 and the plan of implementation on bringing older sources into compliance with the general conference recommendations.

MICHIGAN: Essentially adopted all of the conference recommendations with the exception of the closed cycle cooling requirements on new sources and the plan of implementation on bringing older sources into compliance with the general conference recommendations. The state did not adopt the mixing zone definition, leaving that determination to a case-by-case basis.

WISCONSIN: Adopted the monthly maximum criteria exempting certain areas from the requirements. Other requirements, including mixing zone and installation of closed cycle cooling, were not adopted.

Under the new Act the standards submitted to EPA by the four states must be approved or rejected by January 18, 1973. If EPA fails to take action by January 18, 1973, the standards submitted by the states will automatically be approved. It is EPA's intention to review and act on all of the Lake Michigan thermal standards by the required date. At this time it would appear that much of what is in the submitted standards is approvable.

This disposition of the pending thermal water quality standards will not, however, resolve the Lake Michigan thermal problem which faced the Lake Michigan Enforcement Conference in each of its sessions. We know that the thermal question is not readily resolvable not only from our own experience but from a reading of the new Federal Water Pollution Control Amendments of 1972.

Congress considered voluminous testimony in their deliberations on the new bill. On the basis of the evidence they concluded that best practicable control technology would be required for all municipalities and industries by July 1, 1977 and best available technology by July 1, 1983. Congress obviously felt on the basis of the testimony they heard that all of the answers were not in on the question of thermal pollution. While they recognized it as a pollutant and a problem, they saw fit to address the question in a special way in various sections of the Act.

Specifically, Congress provided for the establishment of a program to start to get some asnwers on the thermal problem. The new Act requires the Administrator, in cooperation with State, Federal, and public and private organizations, to conduct comprehensive studies on the effects and methods of controlling thermal discharges. In evaluating alternative methods of control, the studies are required to consider the state of the art, economic feasibility, including cost-effectiveness, and the total impact on the environment. The studies will consider methods of minimizing adverse effects and maximizing beneficial effects of thermal discharges. The results of the studies are to be reported not later than 270 days after October 18, 1972 and will be generally available. The results of the studies will be considered in the permit issuing process set up by the Act in developing thermal water quality standards. [See Sec. 104(t)].

Basically, to control all municipal and industrial discharges, the Act establishes a national permit system superseding the program set up

under the Refuse Act. EPA is to determine what best practicable control technology is for various industries, and is to set effluent limitations within one year. EPA is to administer the permit program until such time as a state satisfies the Administrator that it has the statutory capability to manage the program, at which time the program will be transferred by EPA to the state. [See Sec. 402].

With regard to thermal pollution a special section provides that thermal discharges will be subject to the requirements of best practicable control technology (existing sources and those under construction) and best available control technology (new sources). [See Sec. 301 and 306]. If the thermal discharger can prove at a public hearing to the satisfaction of the Administrator (or a state if the permit authority has been transferred to the state) that the prescribed effluent limitation is not necessary to assure the protection and propagation of a balanced indigenous population of shellfish, fish and wildlife, then the Administrator may impose a less stringent effluent limitation. [See Sec. 316].

A problem of great concern during past Enforcement Conference discussions has been the entrainment and destruction of aquatic biota during cooling water usage. The new statute provides that cooling water intake structures, unlike heated effluents, must immediately reflect the best technology available for minimizing adverse environmental impact. [See Sec. 316(b)].

On the basis of the new Act, the control of thermal discharges will be handled by the permit process. There are presently 27 Lake Michigan power plants in the pre-operational and operational stage. Additionally, there are numerous other lesser thermal discharges to the lake. The Act provides for the issuance of permits in the interim before final effluent limitations are promulgated by EPA, subject to such conditions as the Administrator determines to be necessary to carry out the provisions of the Act. However desirable it may be to make an early interim decision on what the statutory requirement of best practicable control technology is, we must fully appreciate the consequences. As regards significant thermal discharges, determination of best practicable control technology should be one meant to last for a number of years since the undertaking of most thermal control programs are usually long term projects. Construction of facilities and the engineering attendant to such construction is usually extended over years rather than months.

Until the promulgation of effluent limitations required by the statute has been effected, Lake Michigan power plant permit applications will be processed in the following manner:

1. Each permit application will initially be processed on the basis of compliance with Federally approved water quality standards. Under the statute if it is determined that best practicable control technology for thermal discharges requires

more than the achievement of water quality standards such as off stream cooling, the discharger will be required to install such facilities unless the discharger can demonstrate that a less stringent effluent limitation will assure the protection and propagation of a balanced indigenous population of shellfish, fish and wildlife.

2. During the term of the permit a comprehensive monitoring program will be undertaken to evaluate the effects of the thermal discharges upon the environment.
3. The permit will be issued for a relatively short period (not to exceed three years). However, the permit shall be terminated whenever either of the following occurs: (1) a finding that the effluent being discharged does not assure the protection and propagation of a balanced indigenous population of shellfish, fish and wildlife, or (2) the promulgation of final effluent limitations defining best practicable control technology for thermal discharges.

We must proceed to see that other questions related to cooling water usage are addressed promptly. First on this list is the requirement to have cooling water intake facilities reflecting best technology available. To develop the necessary data base on this question, EPA is suggesting the formation of a technical committee to undertake the evaluation of existing data and to make appropriate recommendations to EPA and the Lake Michigan

states. It is our suggestion that the committee should consist of two representatives named by each of the states and two persons named by EPA. It is my suggestion that Dr. Robert J. Zeller, Director, Region V EPA Surveillance and Analysis Division, chair this committee.

On another and more general problem, the EPA and the States have in the past discussed the need for adequate monitoring of programs to assess damage to the aquatic environment attributable to existing and planned cooling water uses. As required under the licensing procedures of the Atomic Energy Commission and under certain state requirements, a number of studies have been conducted to assess damage. As was discussed at the September session, it appears that criteria do not exist to trigger the installation of appropriate corrective measures should damage become evident. A mechanism is also lacking to make an overall assessment of the damage that may occur to the lake's eco-system from waste discharges scattered at various points around the lake. This lack exists because present studies are geared toward a local, or at best regional assessment of a problem and not to the impact on the overall lake. Both monitoring elements, i.e., local and lakewide are important to assess damage to the lake. To address this problem, I suggest the formation of a technical panel to be composed of at least three representatives from each Lake Michigan state and three representatives from the EPA. The state representatives may be other than state

employees and should be members of the academic community, persons employed by utilities, and members of environmental and other citizens' groups. It would be my suggestion to have Dr. Andrew McErlean, Senior Staff Biologist in the Office of Enforcement and General Counsel in Washington, to chair this technical panel. Dr. McErlean is eminently qualified to head this most important group. The charge of this panel would be

> to review background information dealing with past, present and future studies relating to thermal discharges to Lake Michigan;
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> to make assessments as to whether the individual studies concerning thermal discharges will adequately assess damage attributable to that cooling water use;
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> to assess the pertinence of individual localized studies to monitor changes in the overall lake eco-system;
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> and to recommend, as necessary, additional efforts that should be expended to assess environmental effects of the use of Lake Michigan water for cooling.

I am prepared to lend such assistance as I can to fashion the kind of a program which will collect and evaluate the facts and to assure maximum protection to the public resource, as well as fair play for the industry.