May 24, 1989

TO: GREAT LAKES TOXIC CHEMICAL - HUMAN HEALTH RESEARCHERS

FROM: Dr. Warren Flint, Associate Director, Great Lakes Program RWF

Re: Call for Nominations to Attend INTERNATIONAL WORKING CONFERENCE

Presently there is no consensus on how, or if, toxic chemicals in the Great Lakes basin ecosystem are affecting human health. Our goal therefore, is to reduce public and scientific uncertainty, identify specific health impacts, and define future needed research. This goal will be accomplished by developing a comprehensive, cross-disciplinary approach to the assessment and reduction of risk to human health from exposure to toxic chemicals which considers issues of public policy, research and education. The project has been ongoing for a year and we have just completed a very successful Workshop that leads to the next step, an INTERNATIONAL WORKING CONFERENCE. A few Workshop highlights and Conference intent are given in the following pages.

I would like to invite you to submit a nomination letter to attend the INTERNATIONAL WORKING CONFERENCE on EVALUATING RISKS TO HUMAN HEALTH ASSOCIATED WITH EXPOSURE TO TOXIC CHEMICALS IN THE GREAT LAKES BASIN ECOSYSTEM. This Conference will be held at the Hyatt Regency Hotel in Buffalo, New York from October 3-6, 1989.

Sixty-five scientists met at the April 1989 Disciplinary Workshop to develop the background on this issue. Each discipline prepared a clear statement concerning the status of their knowledge. This Briefing Book will provide pre-conference briefing materials to assure each participant's being prepared to discuss, analyze, synthesize, and develop recommendations pertinent to the Conference goal. The INTERNATIONAL WORKING CONFERENCE will feature plenary sessions as well as small working group sessions designed to achieve maximum exchange among disciplines represented.

Participation in the INTERNATIONAL WORKING CONFERENCE will be by delegate selection. Delegates will be chosen from nominations submitted to the Conference Coordinating Committee. Approximately 60 experts representing many biophysical and social science disciplines will be invited. Delegates will represent academia, governmental agencies, special interest groups, and legislators. It is expected that chosen delegates will commit to three days of intensive work at the Conference plus a great deal of pre-conference preparation in reviewing the Briefing Book and collecting information they wish to present as evidence for their views.

The deadline for nomination application is July 31, 1989. Nominations should include a curriculum vitae and a cover letter committing to attend the Conference if selected. Conference sponsors will cover costs of travel and accommodations, if needed. Since representation at the Conference is desired from many disciplines as well governmental agencies, policy makers, and special interest groups, please indicate in your nomination cover letter if your qualifications cover one or more of these groups, besides a scientific discipline.

Send nomination letters and C.V.s to Dr. Warren Flint, Great Lakes Program, 207 Jarvis Hall, SUNY, Buffalo, NY 14260. For further information, call (716)636-2088.

EVALUATING RISKS TO HUMAN HEALTH ASSOCIATED WITH EXPOSURE TO TOXIC CHEMICALS IN THE GREAT LAKES BASIN ECOSYSTEM

There is significant disagreement among scientists and governments regarding actual human health risk associated with exposure to toxic chemicals in the Great Lakes, which translates into public uncertainty. The lack of change and the slowness of response regarding research needs and policy implementation for potential human health risks may be due to the fact that the right questions have not been asked in the right ways. Because there is a great deal of disagreement among the disciplines, and even within a discipline, regarding this issue, a Workshop was conducted in April 1989 to allow each discipline to identify what issues they could agree upon with regards to risks from toxic chemical exposure.

During the April Workshop, wildlife toxicologists concluded that wildlife data are essentially ignored by human health science. This group suggested that the reason for this may be that they are not asking the right questions. Instead of asking questions about birds, fish, turtles and whales, this group felt that maybe they should consider categories of issues that characterize effects across species, including man. Such categories might include reproductive effects, neurobehavioral effects, biochemical indicators, tumors, and/or neoplastic lesion observations. They concluded that if something can act as a teratogen in six or seven different species of animals, is it not short-sighted to say there is no possibility that the suspected substance can act as a teratogen in humans?

Another Workshop discipline group concluded that the major route of human exposure to toxic chemicals in the Great Lakes Basin is through the dietary ingestion of fish, turtles, and birds. The group participants went on to state that given this fact, evidence that must be ignored to accept the conclusion that there are no human health effects due to the consumption of such food are:

1. the findings of lower birth weight and sub-clinical neurobehavioral effects in infants of mothers who consumed Lake Michigan fish;
2. similar neurobehavioral impairments in American infants born of mothers with high background exposures to PCBs;
3. neurobehavioral impairments in Taiwanese infants born to women with high-level exposures to PCBs;
4. similarity of neurobehavioral disfunctions in all these human studies, suggesting that halogenated aromatic hydrocarbon contaminants in Great Lakes fish might be responsible for the neurobehavioral effects; and
5. peri-natal exposure of primates and other animals to halogenated aromatic hydrocarbons has produced neurobehavioral changes, which provides indirect evidence in support of human findings.

This group sugested that with the weight of limited experimental evidence, there is an indication of adverse health effects in children born to women who are heavy consumers of Great Lakes contaminated fish.

In stark contrast, the epidemiologists at the April Workshop indicated that their data is extremely limited and that there are no conclusive results available yet indicating human health risk from Great Lakes toxic chemical exposure. This group believed that their lack of conclusive evidence stems from the lack of knowledge on the specific factors of environmental chemical effects (in contrast to occupational epidemiology), their lack of non-invasive monitoring methodologies, and their inability to adequately identify exposed and non-exposed populations.

As was evident from the April Workshop, not all the disciplines are similarly developed with respect to the issue of toxic chemicals and human health impacts. Therefore, success in achieving the project goal is dependent on focusing upon the differences between disciplines with an end-point of integration to guarantee common understanding among experts. For example, the toxicologist is not just interested in dose-response relationships in animals, but is equally interested in disease outcomes in human populations and how these epidemiology data are used to indicate measures of risk and support the development of policy. Likewise, the epidemiologist needs to accurately define exposed and non-exposed populations and would want to consult an anthropologist to identify what populations are the best targets for collecting information. The next step in this multi-phased project therefore, will be a major INTERNATIONAL WORKING CONFERENCE to be held on October 3-6, 1989. Integration between disciplines will be accomplished by this Conference. The intent will be to determine what information from the individual disciplines means to comprehensive issues of public policy, research, and education.

Based upon the results of the April 1989 Workshop already completed, a list of questions have been developed to focus the attentions of the participants of the International Working Conference, in order to cause reactions and possible answers that would represent a tangible product to governments and the public regarding the topic of toxic chemicals and human health effects. These questions include the following:

1. *Are there threats to human health from toxic chemicals in the Great Lakes Basin Ecosystem, and if so what are they?*
2. *If threats are present, to what extent can they be dealt with now and is the existing policy and governance framework adequate to reduce the threats?*
3. *What additional research is needed?*
4. *What policy and/or research actions are proposed, what are the probable costs of these actions, and what are the costs (consequences) of inaction?*

Although effects of toxic chemicals on human health are a global issue, we are focusing on the Great Lakes because this region represents a "mesocosm" for study of toxic exposure problems that have global significance. The Great Lakes represent a region of the world that incorporates the complexities of international jurisdictional problems in a relatively confined and most easily studied area. By studying the Great Lakes we can develop models of understanding for problems associated with toxic chemical exposure that can then be applied in a similar context elsewhere.

This initiative, by its multidisciplinary and international design, has encouraged collaboration between scientists, institutions, and countries in addressing the collection of data and formulation of policies that are required to comprehensively deal with the topic of human health risk from exposure to environmental toxic contaminants. The April Workshop has provided the stimulus to move forward with this project in a fashion that will achieve the overall project goals in a timely fashion. Ultimately this project will culminate in the dissemination of information regarding the state of our knowledge to governments and the public, as well as the definition of a research strategy.

If this effort develops a consensus on harmful effects from the presence of toxic chemicals in the Great Lakes, the research strategy will target data needs and information synthesis that represent a vision for prevention of disease in human populations. The data analysis and synthesis will also provide guidance to change human behavior and reduce risks to health from exposure to these chemicals. We want to conclude this process with recommendations for a research strategy that are achievable and have practical application.