

A Proposal to the

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TITLE: GREAT LAKES TOXIC CHEMICALS & HUMAN HEALTH RISKS: PUBLIC OUTREACH

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Submitted by:

The University of Buffalo Foundation
SUNY
Buffalo, New York 14260

for and in conjunction with

Great Lakes Program
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GREAT LAKES TOXIC CHEMICALS & HUMAN HEALTH RISKS:
PUBLIC OUTREACH

A FUNDING PROPOSAL FOR A PUBLIC PARTICIPATION CONFERENCE
AND DOCUMENTARY VIDEO TAPE PRODUCTION

INTRODUCTION:

While there is a wealth of information on various health impacts ranging from fish consumption advisories to drinking water alerts, governments have failed to collect and correlate that information so they can provide residents of the Great Lakes basin with a comprehensive, rather than a piecemeal, assessment of health risks from toxic chemical exposure. In order to achieve this comprehensive assessment we need to:

- PROVIDE INTERPRETATION AND ADVICE ON PUBLIC POLICY ISSUES WITH RESPECT TO HUMAN HEALTH PROBLEMS ASSOCIATED WITH ENVIRONMENTAL QUALITY IN THE GREAT LAKES BASIN
- ASSESS THE CURRENT INFORMATION AVAILABLE AND SUGGEST GAPS IN SCIENTIFIC DATA WHERE RESEARCH IS NEEDED LINKING TOXIC CHEMICAL EXPOSURE TO HUMAN HEALTH
- EVALUATE THE RELATIONSHIP BETWEEN EXPOSURE TO POTENTIALLY HAZARDOUS SUBSTANCES AND HUMAN HEALTH
- DEVELOP A SYSTEM FOR IDENTIFYING BIOLOGICAL EVIDENCE THAT WILL PROVIDE EARLY WARNING OF POTENTIAL HEALTH THREATS FROM TOXIC CHEMICAL EXPOSURE
- INFORM THE PUBLIC OF POTENTIAL RISK TO HUMAN HEALTH FROM EXPOSURE TO TOXIC CHEMICALS IN THE GREAT LAKES BASIN ECOSYSTEM

There is significant disagreement among scientists and among governments regarding actual human health risk associated with exposure to toxic chemicals in the Great Lakes. This disagreement leads to uncertainty in the public regarding their risk to living in the Great Lakes Basin. Our need therefore, is to develop a consensus by governments and scientists on the status of our knowledge and to determine whether or not there are toxic chemical effects to human health in the Great Lakes Basin ecosystem. Beyond this basic need, our best understanding on the issues and scientific knowledge pertaining to the issues must be conveyed to the public.

This proposal continues the intent of a project begun in August 1988 that will comprehensively define our state of knowledge regarding toxic chemicals in the Great Lakes and their potential impact on human health. The proposal specifically requests funding to support a PUBLIC PARTICIPATION CONFERENCE and the production of DOCUMENTARY VIDEO TAPES on this topic to clarify for the public, in a comprehensive fashion, present available information on human exposure to toxic chemicals in the Great Lakes Basin. We believe that this Conference will be critical to the overall goal of clarifying effects and implementing new cost-effective strategies. In order to develop this

Conference, considerable planning has already been completed and a Disciplinary Workshop has been held. In addition, a scientific/technical Interdisciplinary Conference is scheduled for October 3-6, 1989 which will provide the necessary scientific integration to serve as input to the Public Participation Conference and dissemination products, for which funds are requested here.

NEED:

Is the correlation of environmental abnormalities in fish and wildlife with the presence of toxic contaminants a signal that the health of the Great Lakes and society are jeopardized? This concerns regulatory agencies that do not want the public exposed to a health hazard but at the same time want to promote the benefits of valuable Great Lakes resources. We require more than just signals, however: we need a better understanding of what the specific issues are. **THE PUBLIC NEEDS RELIABLE INFORMATION TO MAKE JUDGMENTS ABOUT UTILIZING AND CONSUMING RESOURCES FROM THE GREAT LAKES. UNCERTAINTY NEEDS TO BE REDUCED IN ORDER TO IMPROVE THE PUBLIC'S CONFIDENCE IN GOVERNMENTAL POLICY MAKING.** It is both inappropriate and costly to place the burden of proof of harm from conceivably toxic chemicals on the general public, which is the exposed population. The scientific community must provide information and analysis, and then work with government to assure the safety of the public and proceed to remedy the pollution.

A study in 1985 by the Royal Society of Canada and the United States National Research Council found "substantial evidence that the human population living in the Great Lakes basin is exposed to and accumulates appreciably more toxic chemical burden than people in other large regions of North America for which data are available". A pioneering 1984 study by Wayne State University researchers found that infants born to women who ate Lake Michigan fish contaminated with toxic polychlorinated biphenyls (PCBs) had developed mental abnormalities. A similar study by the University of Wisconsin in 1984, in Sheboygan, found that exposure to high PCB levels in the womb produced infants suffering more from colds, earaches and the flu, but indicated no lasting effects. To evaluate toxic chemical sources a market-based study in Toronto found that many fish were tainted with toxic chemicals such as pesticides. This study concluded in 1985 that 86% of the toxic chemicals in consumers bodies came from food.

Obviously, the presence and continued introduction of long-lived toxic chemicals and naturally occurring substances that have been translocated or mobilized in the Great Lakes is an issue that is actively discussed today. Environmental contamination attracts a great deal of attention and raises a number of questions regarding effects to ecosystems and societal health. For example, how does one define contaminated fish and water and do these pose a public health problem? Epidemiological studies of humans have revealed enough information to show that human response to chemical exposure is neither simple nor sufficiently understood, such that uncertainty can be eliminated in the risk assessment process. While there has been some progress made in understanding parts of this issue, more collective thinking is required to change public and government attitudes and behavior.

Obtaining the right information for public dissemination is the key to reducing uncertainty in the Great Lakes basin community on this issue. It is appropriate to consider the "SCARE OF THE WEEK" syndrome here. Like the boy who cried wolf out of Aesop's Fable, we are routinely being subjected to the "scare of the week" from various media accountings. Some of these scares are real, but they are becoming obscured by a significant number of false or exaggerated scares. The public must recognize that a risk-free society is not only impossible, but intolerably expensive. We cannot afford to be complacent about real threats, but we must keep in perspective that to be alive is to be at risk. Therefore, this project will attempt to clarify risks associated with the presence of Great Lakes toxic chemicals in order for the public to be able to make best judgements regarding their risk.

SOLUTION:

Our knowledge on the topic of human health risks associated with exposure to toxic chemicals in the Great Lakes basin is extremely fragmented and incomplete. There are many who now believe it is time to address the breadth of the problem of toxic chemicals in the Great Lakes Basin so that we can certify whether or not there is indeed a public health concern for society. By addressing the entirety of the topic all available knowledge can be assembled and evaluated. Clearly, an interdisciplinary approach is essential to construct a comprehensive definition of the problem in an attempt to reduce public uncertainty.

The Great Lakes Program at the State University of New York (SUNY) at Buffalo, in collaboration with the Baldy Center for Law & Social Policy and the Department of Learning & Instruction, both of SUNY at Buffalo, are conducting a project focused upon the broad topic of Great Lakes toxic contaminants and human health effects. The overall goal of this project is to define whether a problem(s) exists and if so to identify its extent, to inform the public of findings, and to seek practical solutions. This project is being carried out with cooperation from the Behavior & Social Aspects of Health Center and the Toxicology Research Center, both of SUNY at Buffalo, the New York Great Lakes Research Consortium (Syracuse, NY), Health and Welfare Canada (Ottawa, Ontario), Environment Canada (Toronto, Ontario), and the Department of Fisheries and Oceans Canada (Burlington, Ontario).

To address the project goal in a comprehensive fashion, a three-pronged approach has been developed: a disciplinary workshop, which has already been completed; an international working conference to achieve cross-discipline objectives, which will be conducted in October 1989; and a public participation conference that will aid in preparation of educational materials to disseminate to the Great Lakes Basin public on issues of risk related to toxic chemical exposure. FUNDING IS REQUESTED HERE FOR THIS PUBLIC PARTICIPATION PHASE OF THE PROJECT.

The overall objectives of this initiative are the following:

- o To provide a forum for promotion of a more holistic, cross-disciplinary approach to the assessment and reduction of risk to human health from toxic chemicals.

- o To collect all relevant data on this topic and integrate this data into a comprehensive assessment of our present knowledge.
- o To attempt to remove uncertainty and clarify effects based upon our existing knowledge.
- o To identify information gaps.
- o To provide a comprehensive scientific overview of available data to governments so that they can make more informed decisions regarding policy for reduction of risks to human health from exposure to toxic chemicals.
- o To make recommendations on an achievable research strategy that addresses information gaps and seeks practical solutions.
- o To inform the public on whether there are, or are not, human health effects from chemicals in the Great Lakes basin, based upon best available information.

ACCOMPLISHMENTS TO DATE:

Experts in sociology, anthropology, environmental risk assessment, toxicology, physiology, chemistry, environmental science, epidemiology, psychology, medicine, modeling, environmental law, economics, public health, and environmental regulation have been involved in this project since its initiation in August 1988. These experts have been asked to consider the following:

- (1) *Do toxic contaminant levels in the Great Lakes Basin pose a risk to humans?*
- (2) *What are the indicators of risk to human health?*
- (3) *What valid reasons are there for being concerned about this exposure?*

The actual time-line for activities associated with this project are depicted in Table 1.

DISCIPLINARY WORKSHOP

On April 15-18, 1989 a Disciplinary Workshop was held to define the issues surrounding this subject and to create the background material on how each discipline approaches the issues and what they feel they can agree upon as a discipline. Funding for this April Workshop was provided by SUNY at Buffalo, the New York Great Lakes Research Consortium, Health & Welfare Canada, Department of Fisheries & Oceans Canada, the SANDOZ Corporation, and Environment Canada. The intent of the Workshop was to stimulate discussion within disciplines in order to prepare summaries from each of the discipline work groups regarding the state of their knowledge on the subject of human

TABLE 1. Activities for Toxic Chemical-Human Health Effects Project.

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

PROJECT TIME-LINE

AUGUST 1988	PROJECT INITIATION
OCT.- NOV. 1988	STEERING COMMITTEE MEETINGS - identity of project goals, devising strategy, and specific planning for the April Disciplinary Workshop.
APRIL 15-18, 1989	DISCIPLINARY WORKSHOP - eight discipline groups meet to identify issues, gaps, and recommendations and produce discipline summary documents.
MAY 31, 1989	DISCIPLINARY WORKSHOP SUMMARY DOCUMENTS DUE
JUNE 9, 1989	INITIAL PLANNING FOR WORKING CONFERENCE - coordinating committee & discipline group facilitators will identify tasks and define issues for 1989 International Working Conference.
JUNE - AUGUST 1989	COORDINATING COMMITTEE WORK FOR INTERNATIONAL CONFERENCE - integration of materials for pre-conference briefing book, planning of conference, and identification of delegates. (<u>Involvement of special interest groups will occur here to prepare for the public participation component of the project</u>)
SEPTEMBER 1989	PUBLICATION OF BRIEFING BOOK FOR CONFERENCE
OCTOBER 3-6, 1989	INTERNATIONAL WORKING CONFERENCE - to be held in Buffalo, New York.
OCT. - DEC. 1989 ¹	PREPARATION OF PUBLIC PARTICIPATION DOCUMENTS - to disseminate conference conclusions & recommendations to the public.
DECEMBER 1989 ¹	PUBLIC PARTICIPATION CONFERENCE - intended to allow the public to provide input on the progress of the project and conclusions drawn from International Working Conference.
DEC. 1989 - APR. 1990 ¹	FILM EDITING & PREPARATION OF VIDEO TAPE DOCUMENTARIES
APRIL 1990	TELE-CONFERRING OF INTERNATIONAL CONFERENCE RESULTS & CONCLUSIONS TO ENTIRE GREAT LAKES BASIN

¹ Project activities for which funding is requested by this proposal.

health risks from exposure to toxic chemicals. Eight discipline groups were identified for this Workshop. These Discipline Groups and their respective group facilitators are listed below.

TOXICOLOGY/ENVIRONMENTAL CHEMISTRY
 PSYCHOLOGICAL/SOCIAL/ECONOMIC
 PUBLIC HEALTH LAW & POLICY/EDUCATION
 BIOLOGICAL SCIENCE (targeting Ecology and Wildlife Toxicology)
 CLINICAL MEDICINE
 EPIDEMIOLOGY
 RISK/EXPOSURE ASSESSMENT
 NATURE & LOGISTICS OF INTERDISCIPLINARY RESEARCH

Sixty five (65) scientists gathered for the April Workshop and were divided into the eight discipline groups defined above (for group membership lists see APPENDIX A). The general charge to each Discipline Group was:

- o *To collect all relevant data on the topic of toxic chemicals and human health effects for your discipline and integrate this data into a comprehensive assessment of the present state of knowledge for your discipline.*
- o *To attempt to remove uncertainty and clarify effects based upon your present knowledge.*
- o *To identify information gaps.*
- o *To consider achievable research that addresses the discipline's information gaps and seeks practical solutions.*

As a product of the Disciplinary Workshop, each workshop group prepared a clear statement concerning the status of their knowledge on the toxic chemicals/human health issue. These papers are to be used as briefing materials in preparation for the second phase of this project, the International Working Conference, scheduled for October 1989.

There were a number of questions identified from the April Disciplinary Workshop that will be developed into issues for the 1989 International Working Conference and will also provide the stimulus for attracting public input regarding their perspective on this subject. These are listed in Table 2.

INTERNATIONAL WORKING CONFERENCE

Success in obtaining the project goals is dependent upon considerable integration between disciplines. Not all the disciplines are similarly developed with respect to the issue of toxic chemicals and human health impacts. Cross-discipline discussions need to occur to guarantee common understanding between all 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 would want to consult an anthropologist to identify what populations are the best targets for collecting information.

TABLE 2. List of Discipline Group Issues Identified From April 1989 Workshop.

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- * In contrast to other regions, how do the Great Lakes compare regarding toxics in the environment?
 - * What are the fates and persistence of toxic chemicals in the Great Lakes?
 - * What are the existing barriers that have prevented an ecosystem perspective on toxics and their management?
 - * What can we learn from toxic impacts observed in fish & wildlife and can these species be used as "early warning devices"?
 - * What are the general categories of toxics that are of concern in the Great Lakes and what are the relative toxicities of these substances?
 - * Are there differences between what is measured in the environment (e.g. surrogate species, specific time periods) and what humans are exposed to?
 - * How important is it to not consider the reality of multiple exposure risk to target populations, and do we possess the methodologies and data bases to do so?
 - * What effects, if any, result from prolonged ingestion of fish and water containing trace levels of toxic chemicals?
 - * What are the reproductive and developmental toxicities of halogenated aromatic hydrocarbons in mammalian systems?
 - * Are there any examples of known injury to human health from Great Lakes toxic contaminants?
 - * What research methods are available to quantify the different patterns of toxic exposure risk and to "tease out" potential interactive effects from combined chemical insults on human health?
 - * What methodologies are available to establish exposure concentrations of toxic contaminants to humans and to relate these in a cause-effect fashion to disease outcomes in the exposed populations (e.g., what are appropriate end-points)?
 - * What are the demographics of populations consuming fish in the Great Lakes?
 - * How does one identify critical subpopulations subject to effect of toxic exposure under the assumption of no average populations?
 - * What are the sociologies and perceptions of populations consuming fish in the Great Lakes?
 - * At times, people care about the environment per se, yet only concern for human health has regulatory status. Should we be willing to overprotect human health in order to protect the environment?
 - * What are the psychological impacts (e.g. stress & helplessness) on communities exposed to toxic chemicals and how does one compare the level of effect from these impacts to the physical threat from pollution?
 - * How do we convert reactive interest in toxic chemicals (i.e. NIMBY reaction) into proactive efforts?
 - * What are the benefits and costs (including "concealed costs") in ignoring the long-term burdens to society for the sake of short-term gains with respect to economic exploitation of resources that may be harmful to human health?
 - * What are the sacrifices people are willing to make (e.g. willingness to pay) for good environmental quality?
 - * Are present statutory frameworks reasonable and effective in light of the large data requirements and the impossibility of meeting these requirements?
 - * Are existing institutional frameworks adequate for development and appropriate interpretation of toxics data for the Great Lakes and for management of biological, physical, and social dimensions of toxics risks?
 - * Are there differences in interpretation regarding how risk is communicated by regulatory agencies and how risk is perceived by the consumer public?
 - * How can we do a better job of communicating risk, considering the perceptions of the fish and water consumers (e.g., older publics vs. younger publics and differences in their perceptions of good environmental quality, as well as impact from "folk knowledge"), as well as the "mixed messages" that the public gets from inconsistency in guidelines and regulations?
 - * How can we do a better job of lessening risk associated with contaminants in the environment, and for future chemicals of concern, how can preventative strategies be put in place that have as a basis a presumption of harm to the environment and humans?
 - * How can we learn to live with a system in which reduction of risks to even acceptable levels is economically, technically and politically unattainable?
 - * What implications for risk management are there to considering people (especially local populations) as parts of the impacted ecosystem?
 - * Contaminants as a human health problem: what is the role of communities and citizen participation in formulating public policy?
 - * How do we develop a better "layperson" understanding of ecological effects in order to encourage responsible individual behavior and generate political support for legislative action?
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Therefore, on October 3-6, 1989 a major International Working Conference will be held in Buffalo, New York to address the objectives listed above concerning Great Lakes toxic contaminants and human health effects. Integration between disciplines will be accomplished by this International Working Conference. The intent of the Conference will be to determine what information from the individual disciplines means to comprehensive issues of public policy, research, and education. The 1989 International Working Conference will be held at the Hyatt Regency Hotel in downtown Buffalo, New York.

A list of questions that will be posed to the participants of the International Working Conference to focus their discussions and 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 includes the following:

1. *Are there threats to human health from toxic chemicals in the Great Lakes Basin Ecosystem, and if so what are they?*
 - The spectrum of threats are desirable to explore here. Some of them are of a trivial nature while others are of grave concern.
 - Consider the trends of toxic chemical threats; whether things are getting better or worse.
 - Discuss the probabilities for changes to occur based upon the trend information.
 - Examine the magnitude of threats to health from chemicals.

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?*
 - Existing scientific data should be examined.
 - Discussions should consider this question from a social, political, economic, educational, legal, and regulatory framework.

3. *What additional research is needed?*
 - Consider the time horizons for accomplishing (e.g., months, years, decades).
 - Identify the gaps in knowledge that require this research.
 - Detail the priority of research topics.

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?*

A Public Information & Policy Committee has already been formulated to take the results of this International Working Conference and prepare a public participation agenda. This committee will follow through with dissemination of the International Working Conference results and recommendations to the general public and policy makers.

PUBLIC PARTICIPATION: PROPOSED SCOPE OF WORK

The intent of the Public Participation component of this project, for which funding is requested here, is to invite public input regarding their concerns and perspectives on the issues that emerge from scientific discussion as well as bringing forth those issues that may be overlooked during the scientific/technical aspects of the project. The tasks to be completed during this phase of the project are three-fold:

1. to transform the conclusions and recommendations from the scientific activities of this project into materials for public reading,
2. to seek public input on this information through a two-day conference, and
3. to develop documentary video tapes on the highlights of this project for public use which would include materials on risk assessment as well as general findings and conclusions drawn from project activities.

TASK ONE

Several publications are planned from this project on EVALUATING RISKS TO HUMAN HEALTH ASSOCIATED WITH EXPOSURE TO TOXIC CHEMICALS IN THE GREAT LAKES BASIN ECOSYSTEM. The pre-conference Briefing Book for the 1989 International Working Conference, which was developed from the April 1989 Disciplinary Workshop, will be the first document published during the project. The Task Group Reports of the October 1989 International Working Conference which detail the recommendations on needed policy changes, information gaps, and future research strategies will be developed into an Executive Summary of the Conference Proceedings and published immediately following the October Conference. The Executive Summary will be developed primarily to get the summary results and recommendations to governmental agencies and the public in both Canada and the U.S. in a timely fashion.

We will seek input regarding the public's view of important issues on this subject with the aid of public information dissemination groups, such as the Center for the Great Lakes and Great Lakes United. These special interest groups will be consulted during our editing of the Briefing Book and asked to edit the scientific book into a form that is able to be read by the public. We will also ask these special interest groups to do the same task with the products of the 1989 International Working Conference.

TASK TWO

Within two months after the completion of the International Working Conference, in conjunction with the above identified special interest groups, we will plan and host a Two-day Public Participation Conference in order to seek public input to the process of evaluating risks to human health associated with exposure to toxic chemicals in the Great Lakes basin. A preliminary agenda for this two-day conference is listed in Table 3.

TABLE 3. Tentative Agenda for Public Participation Conference.

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

PUBLIC PARTICIPATION CONFERENCE

December 1989
Niagara Falls, New York

DAY ONE

9:00 AM OPENING PLENARY SESSION

- Welcome
- Overview and Orientation of Why the Great Lakes has a Problem. Dr. Jack Vallentyne, co-Chair, IJC
- **KEYNOTE ADDRESSES**
 - Mr. William Reilly, Adm., U.S. EPA (tentative)
 - Mr. Thomas McMillan, Minister of the Environment, Canada (tentative)
- DISCIPLINE GROUP FACILITATOR REPORTS FROM APRIL WORKSHOP

12:00 PM Lunch

1:00 PM PLENARY SESSION Continued

- TASK GROUP FACILITATOR REPORTS FROM OCTOBER INTERNATIONAL WORKING CONFERENCE
- Assignment to Breakout Work Groups and Charge to Groups

3:30 PM PUBLIC WORK GROUPS MEET AND ORGANIZE TASKS AND DISCUSSION SUBJECTS

6:00 PM Dinner

7:30 PM **Work Group Facilitator Meeting**

9:00 PM Social

DAY TWO

9:00 AM PUBLIC WORK GROUPS Reconvene to continue discussions

12:00 PM Lunch

1:00 PM **Work Group Facilitator Meeting**

1:30 PM CLOSING PLENARY SESSION

- .- KEYNOTE ADDRESS
 - Dr. David Suzuki (tentative)
- PUBLIC WORK GROUP FACILITATOR REPORTS
- Participant discussion and questions on reports

6:00 PM Conference Close

Attendance at the Public Participation Conference is expected to exceed 300 citizens in the western New York and southern Ontario region. The Conference will be held in Niagara Falls, New York, which is centrally located to the above geographic area. The Conference will begin with a Plenary Session that will appriase participants of the project on scientific results and conclusions to-date. During this opening plenary session there will also be keynote addresses scheduled on the subject. Tentatively, we are going to invite the administrators of the U.S. EPA and Environment Canada respectively, to give these keynote addresses.

Following the briefing by the facilitators of the various work groups from the April 1989 Disciplinary Workshop and the October 1989 International Working Conference, participants will select breakout groups that are designed to allow individual discussion on various issues related to the project scientific findings. For example, economists must assess impacts of regulations and constraints placed upon populations and cultures. Therefore, one of the work groups will discuss the policies that were recommended from the scientific/technical aspects of the project and evaluate their impact on economic concerns of the participants. Another work group will analyze the status of risk assessment on this subject. This group will consider whether risk assessment information really works and determine how it is interpreted by the public.

Because proof of harm is required to develop the appropriate public policy to protect the public against potential health problems from toxic chemical exposure, there is a need for evidence of harm. Another work group at the Public Participation Conference will consider this dilemma and discuss means of developing better documentation for evidence of harm to the public from exposure to toxic chemicals in the Great Lakes Basin.

Toxic chemical effects on human health are a question of interpretation. Human health is impacted in a number of ways, such as biomedically and psychosocially. There are truly social issues for this topic that go beyond purely scientific or policy issues. Therefore, another work group of the Conference will evaluate society's reaction to toxic chemical problems in terms of how humans are affected (medically or psychologically), which groups are affected differentially, and what the issues of concern are for these different groups. Social scientists at the Conference will work with this group to identify alternative strategies that might be implemented to reduce chemicals in the environment, besides the usual approach of regulation at the source. For example, input from this group might bring a clearer understanding to the project process on why chemicals are produced in the first place and how we can facilitate societal change through creation of social action that will reduce the need for these chemicals.

The Closing Plenary Session of the Public Participation Conference will be the forum to present the highlights of the various work group discussions to all Conference participants. After a keynote address, the facilitators of each breakout work group will report on the discussions and conclusions from their group. Following these reports, there will be a period for discussion and questions on the work group reports by all participants.

TASK THREE

In order to achieve maximum dissemination of the results of this entire project, including the public participation component, we feel that the use of audio-visual technology is a must. Therefore, at least two video tape documentaries are planned to capture the parts of this project that will be of most interest and use to the public in the Great Lakes Basin ecosystem.

One of these video tapes will focus on the overall scope of the project and highlight the process that was used to evaluate risk to human health from toxic chemical exposure in the Great Lakes. In emphasizing this process, the key scientific, governmental, and public conclusions and recommendations will be captured on the tape for effective dissemination of project results to a wide audience.

"NEED INPUT ON SCOPE OF WORK HERE"

A second video tape will be produced to emphasize the actual concept of risk assessment as it was used during the proceedings of this project. This video tape will be produced in a format that is applicable to the school room setting as well as the adult public. The intent of this video tape will be to educate the public on the concept of risk and how it applies in our every-day decision making regarding the issue of human exposure to environmental toxic chemicals.

"NEED INPUT ON SCOPE OF WORK HERE"

Although not a part of the funding requested here, in addition to the above efforts at sharing the outcome of this effort with the public, in the spring of 1990, to achieve a much wider public dissemination of conference findings, we propose the use of audio-visual tele-conferencing as a means of conveying the information to the entire Great Lakes basin public. Through this process we will attempt to capture and integrate the key components of the entire project in an attempt to reduce uncertainty in the public on the subject of human risk and toxic chemical exposure in the Great Lakes basin.

PROJECT SIGNIFICANCE:

The goal of this initiative is to reduce public uncertainty, identify health impacts, if they exist, and define a research agenda. We intend to influence public and private sector policy toward incorporating a more comprehensive, cross-disciplinary approach to the assessment and reduction of risk to human health from exposure to toxic chemicals in the Great Lakes Basin ecosystem. By considering the perspective that the public can bring to issues of toxic chemical effects on human health in light of sustainable development philosophies, we will also develop an understanding of the economic and social values that demand protection of human health, yet impede resolution of exposure to toxic chemicals.

The results of this effort will be the integration of our present knowledge, the identification of key problems and information gaps, and the definition of research that is comprehensive and considers what has to be done to demonstrate effects from toxic chemicals to the ecosystem. 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.

This initiative, by its multidisciplinary and international design, will encourage collaboration between scientists, institutions, and countries in addressing the formulation of policies that are required to comprehensively deal with the topic of toxic contaminants in the Great Lakes Basin. For example, the process described above will provide a forum for the discussion of common policy between various jurisdictions in the countries of Canada and the U.S., regarding conflicting consumption regulations, in light of the need to enhance the public's confidence.

Although effects of toxic chemicals on human health and the environment are a global issue, this project has a Great Lakes focus because this region represents a "mesocosm" for study of toxic exposure problems that have global significance. This is the case because the Great Lakes represents a region of the world that incorporates the complexities of international jurisdictional problems in a relatively confined and most easily studied area. We feel that 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 any place on earth. Therefore, we want to encourage global collaboration on the issue of toxic chemicals and human health. Thus, we are seeking involvement by social, biological, and physical scientists and participation is anticipated from Canada and the U.S. as well as other countries of the world.

BUDGET JUSTIFICATION:

Salaries and Wages requested are the minimum believed necessary to provide all the project coordination and support services required to conduct the proposed Conference. The Project Directors will oversee the various activities, including actual Conference facilitation and follow up on the production of Conference publications. The Project Directors will be assisted by a Project Coordinator who has experience in the conduct and facilitation of large conferences. This person will spend 8 man-months overseeing the day-to-day activities regarding conference logistics and production of documentary video tapes. The secretarial/clerical wages are the minimum felt necessary to provide adequate support services for correspondence, mailing list maintenance, and photocopying.

Funds requested for travel include those monies needed to cover transportation and per diem expenses for the keynote speakers at the Public Participation Conference and the Facilitators from the Scientific/Technical meetings of this project that will make presentations on their work group results and conclusions to the Public Participation Conference attendees.

Funds for ordinary expenses regarding actual conduct of the Public Participation Conference are requested. These costs include professional recording and transcription of the various conference proceedings, the cost of conference facilities (e.g. meeting rooms, audio/visual aids, etc.), temporary secretarial services and anticipated costs for mailing, photocopying and telephone.

The costs of video tape production, which include professional filming, editing, narration, and reproduction are the minimum felt necessary to cover the costs of two productions.

It is planned that there will be several published products that will serve as briefing materials for the public prior to attending the Conference. Funds are requested for the compilation, editing and professional publication of these various documents.

ANTICIPATED BUDGET

	Requested Funds	Matching Funds
Salaries (Project Coordinator, Secretarial)	\$15,000	\$15,000
Fringe Benefits (24% of Salaries & Wages)	3,600	3,600
Travel (Keynote speakers & Group Facilitators for Plenary Session Presentations)	4,000	1,000
Video Tape Preparation & Editing	17,000	5,000
Conference Costs (Temporary Stenography Services, Meeting Room Fees, Telephone, Photocopy, Postage, etc.)	6,000	3,000
Publication Costs	4,400	7,000
	\$50,000	\$34,600
TOTAL DIRECT COSTS		