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Type of Organization: College or University

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Project Title: Impacts of AOC Contaminants on Human Health

Project Category: Emerging Issues

Rank by Organization (if applicable): 0

Total Funding Requested (\$): 64,400 **Project Duration:** 2 Years

Abstract:

In order to quantify the potential risks due to exposure to the contaminants of concern in the Great Lakes Areas of Concern (AOCs), one needs to quantify both multimedia exposure and effects correlated to the contaminants. The International Joint Commission Science Advisory Board has initiated a project intended to quantify and verify these human risks at each of the AOCs. Entitled "Community Health and the Relationship to Pollution," the project's overall goal is to "Investigate the possible links between the incidence of disease and exposure to pollutants" in the AOCs. This project has been divided 3 ways: Canadian AOCs, NY AOCs and the rest of the US AOCs. The division was made based on the information initially available and the extent of analysis already present for the human health data within the AOC. This proposal is to fund the continuation of the 7-state U.S. project. The multistate segment is variable in scope, and will depend on what health databases can be obtained for each state. The specific goals of this project are to: 1) identify the human health databases available in each of the other seven Great Lakes states; 2) identify the means by which these databases can be obtained, who provides access to them, the form they are in, the extent of each database in terms of time, diseases and symptoms covered, and the extent to which each database has undergone a quality assurance/quality control validation; 3) where there are plans for development of statewide databases, describe these plans and their status; 4) where such databases are lacking, identify and describe the institutional barriers to development and use of each database; and 5) for the databases that are available, develop a web-interfaced GIS database for each AOC, integrating the relevant health data (as defined in the Canadian and NY segments) with the specific AOC multimedia contaminant information selected by the IJC-SAB. Direct exposure information will also be used when available.

Geographic Areas Affected by the Project

States:

<input checked="" type="checkbox"/> Illinois	<input type="checkbox"/> New York
<input checked="" type="checkbox"/> Indiana	<input checked="" type="checkbox"/> Pennsylvania
<input checked="" type="checkbox"/> Michigan	<input checked="" type="checkbox"/> Wisconsin
<input checked="" type="checkbox"/> Minnesota	<input checked="" type="checkbox"/> Ohio

Lakes:

<input checked="" type="checkbox"/> Superior	<input checked="" type="checkbox"/> Erie
<input checked="" type="checkbox"/> Huron	<input type="checkbox"/> Ontario
<input checked="" type="checkbox"/> Michigan	<input type="checkbox"/> All Lakes

Geographic Initiatives:

<input checked="" type="checkbox"/> Greater Chicago	<input checked="" type="checkbox"/> NE Ohio	<input checked="" type="checkbox"/> NW Indiana	<input checked="" type="checkbox"/> SE Michigan	<input type="checkbox"/> Lake St. Clair
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Primary Affected Area of Concern: All AOCs

Other Affected Areas of Concern: All AOCs in MN, WI, MI, IL, IN, OH, PA are to be evaluated. The results are applicable to all the AOCs.

For Habitat Projects Only:

Primary Affected Biodiversity Investment Area:

Other Affected Biodiversity Investment Areas:

Problem Statement:

One primary, and three secondary SOLEC indicators are addressed or used in this proposal:

Primary indicator: # 4179 Geographic Patterns and Trends in Disease Incidence

Secondary indicators: # 4088 Chemical Contaminant Intake from Air, Water, Soil and Food

4175 Drinking Water Quali

4176 Air Quali

This project will enable a leap forward in the development of SOLEC Indicator #4179 for the AOCs in the 7 states. The IJC-SAB, among others, has identified that the paucity of human health data is the fundamental reason that the correlation between contaminant exposure and human health effects have not been established. In order to develop such a correlative health effects-exposure database for these AOCs, the health databases must first be identified, obtained, and (possibly for some) digitized. In some states, such as Indiana, there are supposed to be some digitized health databases, yet access to them has remained elusive to date. Lake County has been the subject of a recent ATSDR cancer analysis, which will provide some of the data. In other states, such as IL, some databases (such as cancer) are available on line. Thus the main problem in the development of a solid set of information for SOLEC indicator #4179 includes both identification of the availability of the digital databases and the actual production of the correlative databases. The work being undertaken under contract with the IJC-SAB will in the enable development of all of the correlative databases for the available human health data. Yet the work is only funded through September by the IJC, although the work will clearly take longer than the allotted 9 months to complete for all of the AOCs in this 7 state area.

Proposed Work Outcome:

There are two main phases to this project that must be implemented ultimately on a state-by-state basis. Phase 1 will identify the historical present time health databases available in each state, the form of the database, it's QA/QC status, and (when appropriate) the institutional barriers that exist before the development of health databases can be a reality. Phase 2 involves the quality evaluation of the available databases, the integration of the databases into a web-interfaced GIS database where it will be combined with available area-specific multimedia contaminants data, graphed and statistically analyzed for correlations between contaminant concentrations and relevant effects. The web-interface will be designed to allow lay and scientific analysis, and extraction of parts of the database into forms usable by other computer programs, including spreadsheets, databases and statistical packages.

Outcomes

1. A state-by-state evaluation of the existence of available human health databases that can be used for developing SOLEC Indicator 4179.

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2. For states without any or with unavailable databases, an evaluation of the moves towards and institutional barriers against developing such human health databases.
 3. Development of AOC specific integrated GIS databases that combine the human health information with the relevant and available multimedia contaminant data.
 4. Creation of a citizen- and scientist-friendly web interface for this integrated database.
 5. Creation of graphs and GIS overlays correlating the available human health and contaminant data, and generation of statistical correlation coefficients.
 6. Creation of tables summarizing the human health effects (as information is available) in each AOC in the seven (non-NY) U.S. Great Lakes states.

Project Milestones:	Dates:
Project Start	10/2000
policy evaluation of database barriers	01/2001
second IJC/1st EPA report	02/2001
interim GIS HH evaluation: IL, WI, (IN?)	09/2001
third IJC/2nd EPA report/1st web databa	01/2002
final HH evaluation: OH, MI, MN, PA	09/2002
fourth IJC/3rd EPA report/total web data	09/2002
Project End	09/2002

Project Addresses Environmental Justice

If So, Description of How:

The web-interfaced GIS databases to be produced during this project will enable any community groups or researchers to integrate AOC-specific human health and contaminant data into an EJ evaluation of the AOC. The EJ Action Network of northern Indiana is already looking forward to using this data in their initiated evaluation project. It is not clear how much of the health data will be able to be broken down to block data to enable a direct EJ-economic or demographic evaluation. However, the databases will be amenable to a comparative EJ evaluation of an AOC to an otherwise similar reference area. We will provide such reference information as requested for each AOC. In addition, the databases will be made directly available to all community resource centers in the AOCs studied, and will be available to others through the IJC.

Project Addresses Education/Outreach

If So, Description of How:

Integrated into this project is a direct web-oriented outreach component. The web-based interface that will be built around the AOC human health and contaminant databases will be designed to be both citizen- and scientist-friendly. For the scientist or lay analyst the information in the database will be extractable to any one of a number of different digital formats, including spreadsheets, databases, graphing programs, and statistical programs. The extractor will be able to choose what data is to be extracted and in what format it is to be exported or saved. For the communities, the web-based interface will be designed to be "user-friendly" and enable the user to show and print graphs or overlays or tables. The web interface is planned to allow searching and queries to address community members to ask questions and obtain visual answers. The student developing the interface will be working under Dr. Jon Gant, an Information Technology specialist whose research interests encompass developing such utilitarian, flexible and friendly web interfaces.

Project Budget:

	Federal Share Requested (\$)	Applicant's Share (\$)
Personnel:	34,000	20,000
Fringe:	1,000	2,500
Travel:	1,000	1,000
Equipment:	0	5,000
Supplies:	3,000	2,000
Contracts:	0	0
Construction:	0	0
Other:	5,400	0
Total Direct Costs:	44,400	30,500
Indirect Costs:	20,000	0
Total:	64,400	30,500
Projected Income:	0	0

Funding by Other Organizations (Names, Amounts, Description of Commitments):

The International Joint Commission is funding the start of this project as part of their initiative on Community Health. We will continue to seek funding from additional sources until the project is completed.

Description of Collaboration/Community Based Support:

We are establishing a connection with the Environmental Justice Action Network of Northern Indiana. They have already stated their support for this project, and seem rather excited about its potential. In addition, in order to obtain most of the health information needed for this project, we have had to start developing a network of state health professionals throughout the seven states of this project. We are also using our contacts within the CDC (ATSDR) to help obtain some of the information. In addition, we will be continuing to receive advice and direction from the IJC-SAB and the other scientists working on the other two segments of the overall Community Health project.