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Survey of the attitudes of participants at the International Joint Commission biennial meeting held 28-29 September 1991

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Survey of the Attitudes of Participants at the International Joint Commission Biennial Meeting held 28-29 September 1991

by

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Introduction

The Council of Great Lakes Research Managers (CGLRM) was established in 1984 to provide guidance and advice on Great Lakes research to the International Joint Commission (IJC). The CGLRM is responsible for identifying research needs and assisting in the coordination of research efforts in the Great Lakes basin. The Council chose to survey participants at the IJC Biennial Meeting in Traverse City, Michigan on 28-29 September 1991 to determine their attitudes regarding proposed IJC priorities for the next biennial cycle, with particular emphasis on "virtual elimination" and "human health effects." These results will be of assistance to the IJC and the CGLRM and their efforts to focus Great Lakes research on the most critical problems and issues.

Demographics

The CGLRM developed a questionnaire (Figure 1) during the summer of 1991 for distribution to all participants at the Biennial Meeting. A total of 203 questionnaires were returned: 174 (86%) from United States citizens and 29 (14%) from Canadian citizens. The average age of respondents was 41.3 years with a range of 10-77 years. The gender ratio was equal.

When asked to check the highest degree or diploma received, the group appeared to be well educated--16.3 percent high school, 6.1 percent associate degree, 36.7 percent bachelors degree, 26.0 percent masters degree, 9.2 percent Ph.D., and 5.6 percent other. The audience was dominated by representatives of environmental groups (45.8%), followed by academia (9.5%), state/provincial government (6.5%), federal government (5.5%), industry (5.0%), municipal government (4.0%), consultants (4.0%), and aboriginal groups (1 respondent). A significant number of respondents (19.4%) felt they were not included in any of the above groups. When asked to categorize themselves, 59.3 percent said they were "concerned citizens," 18.1 percent were "scientists," 14.6 percent were "stakeholders," and 8 percent were "policy makers."

When asked which lake they lived closest to, all five Great Lakes and Lake St. Clair were represented, most (36.5%) coming from the Lake Michigan area and the fewest (8.0%) coming from the Lake Superior area. However, when asked what body of water they were most concerned about, 83.8 percent checked the entire Great Lakes basin.

The above information will be very useful in planning agendas for future IJC meetings and conferences. However, we also felt it was important to determine if "education level," "affiliation," and "what a person considers herself/himself to be" (category), significantly affected their answers regarding research priorities for the future.

Future IJC Priorities

A review of the responses regarding the importance of IJC priorities for the next biennial cycle indicates strong agreement with the IJC program areas. When respondents were asked if they agreed that the following issues are important priorities within the Great Lakes region, their responses were as follows:

		Strongly Agree	Agree
a)	Zero discharge/virtual elimination of persistent toxic substances	87.2%	10.8%
b)	Human health	86.1%	12.9%
c)	Remedial action plans	72.7%	22.7%
d)	Integrity/health of the Great Lakes	84.6%	12.8%
e)	Enhancing public education/awareness of Great Lakes issues	72.4%	24.6%

Respondents could also list up to three additional issues or problems to be added to the list of IJC future priorities. Eight issues received more than ten write-in votes. Starting with the issue most often cited, this list includes:

1) nuclear energy,
2) incineration issues,
3) chlorine phaseout,
4 and 5) consumer education received the same number of votes as wetlands,
6) sustainable development,
7) biological pollution, and
8) groundwater contamination.

Zero Discharge/Virtual Elimination

When asked if they believe current effort is adequate to address the problem of zero discharge/virtual elimination, over 90 percent either disagreed (23.6%) or strongly disagreed (68.7%). Education level did not significantly affect the responses but affiliation and "category" did (0.05 level Chi-square). For example, 44.4 percent of those affiliated with industry either agreed (22.2%) or strongly agreed (22.2%) that current effort was adequate, whereas strong disagreement came from those affiliated with environmental groups (85.6%), municipal government (75.0%), industry (33.3%), and federal government (36.4%). Those who categorized themselves as policy makers also strongly disagreed (43.8%) as did stakeholders (75.9%).

When asked if they believe current technology is adequate to address the problem of zero discharge/virtual elimination, the response was very mixed. Strong agreement came from 19.2 percent, while 28.0 percent agreed, 13.5 percent were unsure, 16.6 percent disagreed, and

22.8 percent strongly disagreed. The education level of respondents did not significantly affect these responses but affiliation and "category" did (0.05 level Chi-square). With regard to affiliation, 50 percent of the respondents from municipal governments strongly agree and 25 percent agree, while in state/provincial government only 7.7 percent strongly agree and no one from the federal government strongly agrees. With regard to category, the stakeholders showed the least agreement with this statement (31.0%), while 68.8 percent of the policy makers either agreed or strongly agreed.

When asked whether more of their tax dollars should be used to address the problem of zero discharge/virtual elimination, 50.3 percent strongly agreed, 30.3 percent agreed, 6.7 percent were unsure, 5.1 percent disagreed, and 7.7 percent strongly disagreed. Education level and category of respondents did not significantly affect these responses but affiliation did (0.05 level Chi-square). The range of strong agreement with this statement was from a high of 63.3 percent for environmental group representatives to a low of 9.1 percent for federal government representatives. However, with the exception of industry, over 60 percent of every group either agreed or strongly agreed with this statement. In the case of industrial representatives, 22.2 percent were unsure whether more of their tax money should be used to address this issue, 33.3 percent disagreed, and 11.1 percent strongly disagreed.

When asked whether we should invest in research and better technology to improve our ability to address the issue of zero discharge/virtual elimination, 37.0

percent strongly agreed, 36.5 percent agreed, 9.5 percent were unsure, 6.3 percent disagreed, and 10.6 percent strongly disagreed. These responses were not significantly affected by education level, affiliation, or category of respondents. Therefore, it can be said that 73.5 percent of all respondents agree or strongly agree with this statement.

Human Health Effects

When asked if they believe current effort is adequate to address the problem of human health effects, approximately 90 percent of the respondents either disagreed (23.6%) or strongly disagreed (66.2%). The level of education of the respondents did not significantly affect their response but their affiliation and category did (0.05 level Chi-square). Most of those affiliated with environmental groups (83.1%) strongly disagreed that human heath was adequately addressed, while only a minority (33.3%) of industrial representatives felt the same. The differences among categories were significant but not as dramatic: for concerned citizens, 89.3 percent either disagreed (17.9%) or strongly disagreed (71.4%) with the statement; for stakeholders, 93.1 percent either disagreed (13.8%) or strongly disagreed (79.3%); for scientists, 94.3 percent either disagreed (48.6%) or strongly disagreed (45.7%); and for policy makers, 81.3 percent either disagreed (31.3%) or strongly disagreed (50.0%).

When asked if they believe current technology is adequate to address human health effects, the response was very mixed. Strong agreement came from 16.1 percent

of the respondents, 20.7 percent agreed, 19.2 percent were unsure, 21.2 percent disagreed, and 22.8 percent strongly disagreed. Neither the education level of respondents nor their affiliation significantly affected their responses but their category did (0.05 level Chi-square). An affirmative response to this question ranged from a high of 50.1 percent of the policy makers to a low of 24.1 percent of the stakeholders. Negative responses were most prevalent from stakeholders (62.0%) and least common from policy makers (25.0%).

When asked if more of their tax dollars should be used to address human health effects, 82.1 percent either agreed (30.6%) or strongly agreed (51.5%). Responses to this question were not significantly affected by a respondent's education level or category, but were significantly affected by their affiliation (0.05 level Chi-square). Based on affiliation, affirmative responses to this question were most frequent from representatives of the federal government (90.9%--although only 18.2% strongly agreed, which was the lowest number in strong agreement) and least frequent from industry (55.5%).

When asked if we should invest in research (better technology) to improve our ability to address the problem of human health effects, 77.5 percent of the respondents either agreed (38.2%) or strongly agreed (39.3%). These responses

were not significantly affected by education level, affiliation, or the category into which the respondents placed themselves.

Research Priorities for Virtual Elimination of Contaminants

For the issue of "Virtual Elimination of Contaminants," respondents were asked to rank the following six research activities for Great Lakes programs: (a) polluting substances, (b) primary sources, (c) toxic substances, (d) exposure, (e) effects, and (f) remediation (Figure 1). "Primary sources" was considered to be the most important topic by the largest number of respondents (29.5%), while "exposure" was considered to be most important by only 1.7 percent of the respondents (Table 1). In general, over 50 percent of the respondents ranked primary sources (66.6%), polluting substances (60.9%), and toxic substances (57.5%) in the top three research priorities. Exposure and effects were considered the lowest priorities. The response on remediation was very mixed: 26.1 percent considered it the highest priority and 30.1 percent considered it the lowest priority. Education level, affiliation, and category did not significantly affect what respondents listed in priorities one to five. However, affiliation and category did significantly (0.05 level Chi-square) affect what respondents considered to be the lowest priority research topic.

Table 1. Percentage of Respondents with Priority Ranking of Research Topics to Address the Issue of Virtual Elimination of Contaminants

Research Topics	Priority*					
	1	2	3	4	5	6
Polluting Substances	20.5	20.6	19.8	18.1	10.8	10.9
Primary Sources	29.5	22.9	14.2	9.4	9.5	12.2
Toxic Substances	13.6	22.9	21.0	21.2	10.8	9.0
Exposure	1.7	10.0	21.6	26.2	25.3	14.1
Effects	8.5	11.2	14.2	8.1	33.5	23.7
Remediation	26.1	12.4	9.3	16.9	10.1	30.1
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

* Highest priority topics are assigned a "1," lowest priority topics are assigned a "6."

Table 2. Percentage of Respondents with Priority Ranking of Research Topics to Address the Issue of Human Health

Research Topics	Priority*					
	1	2	3	4	5	6
Polluting Substances	8.7	11.3	20.6	17.2	21.8	19.1
Primary Sources	12.8	17.3	16.2	19.1	16.7	19.7
Toxic Substances	7.6	10.7	20.6	22.9	23.7	13.8
Exposure	23.3	27.4	18.8	14.0	7.1	7.2
Effects	26.7	25.0	14.4	8.3	16.7	8.6
Remediation	20.9	8.3	9.4	18.5	14.1	31.6
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

* Highest priority topics are assigned a "1," lowest priority topics are assigned a "6."

Research Priorities for Human Health

For the issue of "Human Health," respondents were asked to again rank the six research activities for Great Lakes programs (Figure 1). Exposure and effects were considered to be the most important research topics with 69.5 percent and 66.1 percent, respectively, ranking these items within the top three priorities (Table 2). The other four research topics were relatively evenly ranked. Affiliation of respondents did not significantly affect these rankings. Education level and category of respondents had a significant impact (0.05 level Chi-square) only on priorities two, four, and five.

Timeframe to Address Issues

When asked for their opinion of a reasonable timeframe to solve these

problems, 60.4 percent responded five years, 24.5 percent said 10 years, 13.5 percent said 20 years, and 0.5 percent said 50 years, 100 years, and seven generations. Responses to this question were not significantly affected by education level or category of respondents, but were significantly (0.05 level Chi-square) affected by affiliation. For example, 75.3 percent of the representatives of environmental groups feel five years is reasonable (the majority of representatives from municipal government, aboriginal groups, federal government, and consultants agree), while only 20.0 percent of the industrial representatives agreed. The majority of the representatives from academia (57.9%) selected ten years, while the majority from state/provincial governments (46.2%) and industry (60.0%) selected 20 years.

Summary and Limitations

This paper summarizes opinions of a small cross-section of attendees at the IJC Biennial Meeting in Traverse City, Michigan in September 1991. While the sample size was not large enough for the results to be considered truly representative of all groups, several points are very clear: the vast majority of attendees are concerned for the entire Great Lakes ecosystem; there is strong support for the major IJC proposed priorities; current effort to address the issues is inadequate; spending more tax money on these issues are desired; investments in more research and better technology to address the issues is desired; and the vast majority feel that 5-10 years is a reasonable timeframe to address these issues. For future surveys, it should be noted that the affiliation, category, and, to a small degree, the education level of respondents, can significantly affect their responses.

FIGURE 1

CGLRM QUESTIONNAIRE

The Council of Great Lakes Research Managers (CGLRM) was established in 1984 by the Science Advisory Board, to provide guidance and advice on Great Lakes research to the International Joint Commission (IJC). The CGLRM is responsible for identifying research needs and assisting in the coordination of research efforts in the Great Lakes basin. The purpose of this questionnaire is to obtain information from the Biennial participants with a focus on research strategies, emphasizing virtual elimination and human health effects.

1) **Country of Citizenship** ☐ U.S. ☐ Canada ☐ Other

2) **Age** _____ 3) ☐ Male ☐ Female

4) **Education level** (Check highest diploma/degree)
   ☐ High School ☐ Associate ☐ B.S. ☐ M.S. ☐ Ph.D ☐ Other

5) **Affiliation** (Check one)
   ☐ Municipal Government ☐ State/Prov. Government ☐ Federal Government
   ☐ Academia ☐ Industry ☐ Consultant
   ☐ Environmental Group ☐ Aboriginal Group ☐ Other

6) **I consider myself to be** (Check one)
   ☐ Concerned citizen ☐ Stakeholder ☐ Scientist ☐ Policy maker

7) **Which lake do you live closest to?** (Check one)
   ☐ Ontario ☐ Erie ☐ St. Clair ☐ Huron ☐ Michigan ☐ Superior

8) **I am most concerned about**
   ☐ A particular watershed (Which one?) _____
   ☐ A Great Lake (Which one?) _____
   ☐ The Great Lakes basin as a whole

The following programs are proposed priorities of the IJC for the next Biennial cycle. Do you agree that these are important priorities within the Great Lakes region?

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
A) Zero discharge/virtual elimination of persistent toxic substances	☐	☐	☐	☐	☐
B) Human health	☐	☐	☐	☐	☐
C) Remedial Action Plans	☐	☐	☐	☐	☐
D) Integrity/health of the Great Lakes	☐	☐	☐	☐	☐
E) Enhancing public education/ awareness of Great Lakes issues	☐	☐	☐	☐	☐

Other priorities (List up to three)

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
F) _____	☐	☐	☐	☐	☐
G) _____	☐	☐	☐	☐	☐
H) _____	☐	☐	☐	☐	☐

FIGURE 1 (continued)

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	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
ZERO DISCHARGE/VIRTUAL ELIMINATION: *I believe:*					
1) current effort is adequate to address this problem	☐	☐	☐	☐	☐
2) current technology is adequate to address this problem	☐	☐	☐	☐	☐
.3) more of my tax dollars should be used to address this problem	☐	☐	☐	☐	☐
4) we should invest in research to improve our ability to address this problem (better technology)	☐	☐	☐	☐	☐
HUMAN HEALTH EFFECTS: *I believe:*					
1) current effort is adequate to address this problem	☐	☐	☐	☐	☐
2) current technology is adequate to address this problem	☐	☐	☐	☐	☐
3) more of my tax dollars should be used to address this problem	☐	☐	☐	☐	☐
4) we should invest in research to improve our ability to address this problem (better technology)	☐	☐	☐	☐	☐

The following six topics are considered important research activities in the Great Lakes programs dealing with: a) *virtual elimination of contaminants;* and b) *human health.*

a) Polluting Substances - physico-chemical properties, persistence/degradation
b) Primary Sources - investigation of point and non-point sources
c) Toxic Substances - in environmental media-concentration, transport processes
d) Exposure - pathways by which the ecosystem (including humans) are impacted
e) Effects - biological/physiological impacts, epidemiology, indicators
f) Remediation - technological processes to remove/minimize impacts of toxic substances

Please prioritize the above six topic areas according to where resources should be invested for both *virtual elimination* and *human health* by placing the letter of the topic area you believe to be most important after number 1 and the area you believe to be least important after number 6, and so on.

VIRTUAL ELIMINATION   HUMAN HEALTH
1) ___ 2) ___ 3) ___ 4) ___ 5) ___ 6) ___   1) ___ 2) ___ 3) ___ 4) ___ 5) ___ 6) ___

Given the development of a *virtual elimination strategy* and a *human health program,* in my opinion, a reasonable timeframe to address these issues (solve the problems) is:

☐ 5 years   ☐ 10 years   ☐ 20 years   ☐ 50 years   ☐ 100 years   ☐ 7 generations

Thank you for your participation. You may deposit this questionnaire in depository, either at IJC registration table or the Council of Great Lakes Research Managers panel display, mail as under noted or FAX (519) 256-7791.

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