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Lake Champlain Water Quality: A Study of Public Awareness, Perceptions, and Behavior

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Lake Champlain serves as a major source of drinking water and a prime recreational area in Vermont. The Vermont Department of Health actively monitors Lake Champlain water quality, generates informational resources, and issues restrictions and advisories as necessary. Key water quality issues include: blue-green algae blooms (BGAB), combined sewer overflow (CSO), mercury-based fish consumption advisories, and suitability for recreational use. Determining public awareness of Lake Champlain water quality, and how perceptions of Lake Champlain water quality influence behavior, are essential to improving communication with at-risk and underinformed populations.

### Methods

- Conducted a literature review
- Developed and administered a survey to 288 adults at 8 locations in Chittenden County
- Analyzed data in Excel and SPSS with a p value cut-off of p = 0.05
- Conducted a literature review

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### Results

#### Perception of Lake Champlain Water Quality

**Level of Concern About Specific Lake Champlain Water Quality Issues**

- **Underinformed Populations**: Compared to respondents age 36 and older, 18-35 year olds were:
  - Less likely to be concerned about BGAB, CSO, fecal contamination, agricultural runoff, and fish consumption
  - Less likely to have seen the CSO reports or information about pesticide application for lamprey control (p=0.001, p=0.012)
  - More likely to favor receiving information via family/friends, social media, or a mobile application (p=0.048, p=0.001, and p=0.036)

- **At Risk Populations**: Women of reproductive age were less likely to be aware of fish consumption advisories than other demographics (p=0.007)
  - Respondents with young children in the household showed no difference in levels of concern about lake water quality issues, informational resources seen or used, and perception of water quality (p=0.050)

- **Underutilized Information**: Respondents residing in towns with blue green algae blooms were no more likely to have seen either the BGAB weekly report, beach website updates, and, in general, more resources than those who did not report staying away (p=0.001, p=0.001, and p<0.001)

- **Staying Away from Lake Champlain**: Respondents residing in towns with blue green algae blooms were no more likely to have seen either the BGAB weekly report, beach website updates, and, in general, more resources than those who did not report staying away (p=0.001, p=0.001, and p<0.001)

### Discussion

Overall, respondents reported concerns across a wide range of water quality issues, yet had a low level of awareness of existing educational resources.

- 18-35 year olds reported less concern and awareness regarding Lake Champlain water quality than older respondents. Increased awareness within this age range could increase protection of vulnerable subpopulations such as young children and women of childbearing age.
- Residents in towns permitted for CSO outlets and towns where blue green algae blooms occur were no more aware of the reports relevant to them than others.
- Despite over two decades of intensive interagency outreach efforts, women of childbearing age were less likely to be aware of mercury-based fish consumption advice than others.
- Respondents in general reported a high level of concern regarding suitability for recreational use but low awareness of Beach Closure information.

### Recommendations

- Use of a Mobile App and outreach via social media targeting the underinformed subpopulations should be introduced as these modes were found to be the preferred method of communication. This is consistent with a 2014 report by the EPA highlighting the need for digital resources due to increasingly technology-savvy populations, citing a testing service developed by the New York City Department of Health and a “BeachCast” mobile application used by the Great Lake States as examples.
- At present, Beach Closure information is scattered across various State and Local Agency webpages. A central repository as well as improved on-site Beach Closure postings could improve public awareness.

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**References**