Harmful Algal Blooms in Wisconsin: Results of a Statewide Public Health Surveillance Program

American Water Resources Association
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Wisconsin Department of Health Services
Presentation Overview

• Describe Wisconsin’s Harmful Algal Blooms (HAB) program

• Discuss routes of exposure and typical symptoms

• Provide a summary of 2009-2013 health and environment data

• Opportunity for questions
The HAB Program at DHS

• Identify, evaluate and report cases of human and animal health events related to cyanobacteria in Wisconsin

• Develop outreach capacity to support case reporting and increase awareness of the health issues related to cyanobacteria

• Coordinate water sampling with regional DNR staff and analysis with the State Laboratory of Hygiene

• This project was supported by a cooperative agreement with the Centers for Disease Control and Prevention
How Does DHS Learn About Illnesses?

- Direct contact with Division of Public Health (DPH) staff via email or phone

- *Report a Case* through DPH website [dhs.wisconsin.gov/eh/bluegreenalgae](dhs.wisconsin.gov/eh/bluegreenalgae)

- Wisconsin Poison Center (WPC) automated email case notification

- Department of Natural Resources (DNR), local public health or lake association referral
Blue-Green Algae

Wisconsin’s Harmful Algal Blooms Program

Wisconsin’s Harmful Algal Blooms program collects information about human and animal illness and death resulting from exposure to blue-green algae. Tracking illness information will help the Wisconsin Division of Public Health measure the problem of blue-green algae in our lakes and rivers.

If you get sick after swimming in a Wisconsin lake or river, please report possible algae-related illness. This program does not provide medical treatment, so if you are experiencing severe symptoms seek medical attention immediately.

When in doubt, best keep out!

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Last revised: March 03, 2011
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Partnership with the WI Poison Center

1. WPC Receives a HAB-related call
2. Email generated to DPH staff with case description
3. Case report is faxed to DPH
4. DPH contacts caller for full case description
5. WPC sends monthly summary of cases
Response Timeline

- DHS receives an illness complaint
- DHS and DNR decide jointly whether an H₂O sample in warranted
- H₂O sample is analyzed by WI State Lab of Hygiene
- DNR provides local public health with H₂O results
- DHS contacts local and state DNR staff
- H₂O sample is collected by regional DNR lakes staff
- State Lab reports H₂O sampling results back to state-level DNR
- Local public health issues health advisories

Pre-beach season: H₂O sampling kits are “staged” at regional DNR offices throughout the state
Outreach and Education

• Presentations at local, state and national public health events, local lakes associations, DNR lakes meetings

• Educational materials distributed at local and statewide events

• YouTube Video, Live Chat with the Experts

• Targeted trainings for local health departments, lake managers, etc.
1. Skin Contact:
   - Rash, hives and skin blisters (especially in areas under swimsuits)

2. Ingestion:
   - Abdominal pain
   - Diarrhea
   - Vomiting
   - Nausea
   - Numb lips, tingling fingers and toes or dizziness

3. Inhalation:
   - Flu-like illness
   - Respiratory irritation (runny eyes, nose, a sore throat)
   - Asthma-like symptoms
## Health Complaint Results

### Health Complaints Overview 2009-2013

<table>
<thead>
<tr>
<th>Year</th>
<th># of Health Complaints</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>37</td>
</tr>
<tr>
<td>2010</td>
<td>27</td>
</tr>
<tr>
<td>2011</td>
<td>36</td>
</tr>
<tr>
<td>2012</td>
<td>33</td>
</tr>
<tr>
<td>2013</td>
<td>13</td>
</tr>
</tbody>
</table>

### Symptoms Across All Years**

<table>
<thead>
<tr>
<th>Symptoms</th>
<th># of Reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermal Rash</td>
<td>31</td>
</tr>
<tr>
<td>Respiratory Irritation</td>
<td>24</td>
</tr>
<tr>
<td>Gastrointestinal Distress</td>
<td>56</td>
</tr>
<tr>
<td>Cold/Flu-like Illness</td>
<td>37</td>
</tr>
</tbody>
</table>

**Many cases included multiple symptoms, so the total number of symptoms exceeds the total number of reports.
**Water Sampling Results**

<table>
<thead>
<tr>
<th>Year</th>
<th># of Samples Taken</th>
<th>High Risk Cell Counts &gt; 100,000/ml</th>
<th>Moderate Risk Cell Counts 20,000-100,000/ml</th>
<th>Toxins Detected</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>13</td>
<td>6</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>2010</td>
<td>6 (1 non-standard)</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2011</td>
<td>11 (*2 non-standard)</td>
<td>6</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>2012</td>
<td>13 (*2 non-standard)</td>
<td>6</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>2013</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

- DNR staff use standardized HAB sampling kits to collect water samples, which are then shipped overnight to the State Lab of Hygiene.

- Non-standard samples have been received from DNR wardens and from veterinarians.
Geographic Distribution of HAB Water Sampling

Graphic courtesy of Wisconsin Department of Natural Resources.

<table>
<thead>
<tr>
<th>Probability of Adverse Health Effect</th>
<th>Cell Density (cells/ml)</th>
<th>Microcystin-LR (ug/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>&lt; 20,000</td>
<td>&lt; 10</td>
</tr>
<tr>
<td>Moderate</td>
<td>20,000-100,000</td>
<td>10 – 20</td>
</tr>
<tr>
<td>High</td>
<td>100,000-1,000,000</td>
<td>20 – 2,000</td>
</tr>
<tr>
<td>Very High</td>
<td>&gt; 10,000,000</td>
<td>&gt; 2,000</td>
</tr>
</tbody>
</table>


*may not be accurate – flagged at lab

Graphic courtesy of Wisconsin Department of Natural Resources.
Overarching Guidance

• Don’t swim where water is discolored or where you see foam, scum or algal mats

• Shower and wash hands after swimming in lakes, rivers and ponds

• Clean fish thoroughly and discard the viscera and guts

• Keep pets out of soupy, green water or where you see foam, scum or mats of algae

• Rinse dogs off immediately – do not let them lick algae off their fur

• Respect water-body closures and health advisories
When in Doubt, Stay Out!

CAUTION
WATER QUALITY ADVISORY
This water may contain blue-green algae capable of producing toxins that can be dangerous to humans and pets.

FOR YOUR SAFETY
• If water is cloudy, looks like green paint or pea soup, or has a floating scum layer or floating clumps
  - Do not swim or swallow water
  - Do not allow pets to swim or drink
  - Do not allow children to play in scum layer from shoreline
• Rinse off after swimming

For more information please contact the LOCAL HEALTH DEPARTMENT at (___) ___-_____

Questions?
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