Harmful Algal Blooms
Blue-Green Algae
Cyanobacteria

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EAO Division

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When in doubt, stay out!

Animal Safety Alert
CYANOBACTERIA BLOOMS
When in doubt, it’s best to keep out!

Harmful Algae Blooms: WHEN IN DOUBT, STAY OUT!
WHAT CAUSES CYANOBACTERIA BLOOMS?

- Sunlight
- Excessive phosphorus + nitrogen from runoff
- Warm, calm surface water
- Rivers carry sediment and nutrients
- Decaying cyanobacteria
- Grazers
- Hypoxic zone
- Rainfall
- Agricultural runoff
- Urban runoff
- Forest runoff
- Residential runoff
- Wastewater treatment plants
Microcystin - Hepatotoxin

Other Cyanotoxins:
- Neurotoxin
- Cytotoxins
- Dermatoxins
Reported dog deaths since 2004
Confirmed child illness 2015
Numerous reported HABs
<table>
<thead>
<tr>
<th>Ingestion</th>
<th>Inhalation</th>
<th>Skin Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swimming</td>
<td>Water skiing</td>
<td>Swimming</td>
</tr>
<tr>
<td>Water skiing</td>
<td>Tubing</td>
<td>Wading</td>
</tr>
<tr>
<td>Tubing</td>
<td>Boating</td>
<td>Water skiing</td>
</tr>
<tr>
<td>Drinking**</td>
<td>Irrigation</td>
<td>Tubing</td>
</tr>
<tr>
<td>Fish (?)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Common Symptoms

<table>
<thead>
<tr>
<th><strong>Humans</strong></th>
<th><strong>Animals</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Vomiting</td>
<td>Vomiting</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>Diarrhea</td>
</tr>
<tr>
<td>Rash</td>
<td>Weakness</td>
</tr>
<tr>
<td>Eye irritation</td>
<td>Difficulty breathing</td>
</tr>
<tr>
<td>Cough</td>
<td>Convulsions</td>
</tr>
<tr>
<td>Sore throat</td>
<td></td>
</tr>
<tr>
<td>Headache</td>
<td></td>
</tr>
<tr>
<td>Symptoms may appear within hours to 2 days.</td>
<td>Symptoms may appear within minutes to hours.</td>
</tr>
</tbody>
</table>
Veterinary Case Reporting

- Illness history
- Test results, treatment, outcome
- Ambient water exposures
- Water quality observations
- Other human or animal exposures
Human Case Reporting

- Illness history
- Exposure location, date, time
- Water activities
- Water quality observations
- Other human and animal exposures
### Interpretation Table

<table>
<thead>
<tr>
<th>Control Line Present</th>
<th>Test Line Present</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Control Line</td>
<td>No Test Line</td>
<td>Invalid Result</td>
</tr>
<tr>
<td>Control Line</td>
<td>No Test Line</td>
<td>&gt;10 ppb</td>
</tr>
<tr>
<td>Control Line</td>
<td>Moderate Intensity Test Line Present</td>
<td>Between 0 and 10 ppb</td>
</tr>
</tbody>
</table>
WATER ADVISORY

This water may contain blue-green algae that can be harmful to humans and pets.

To reduce the risk of illness:
- Do not swim, water ski, or tube if the water looks like spilled green paint or pea soup.
- Avoid swallowing water and watch small children and pets who may ingest water.
- Rinse off with clean water after swimming.
- Stay away from areas of scum when boating.

Contact your health department or Lake County if you get sick from water associated illness.

For more information call 320-759-3631.
Millions of copies of a particular gene (DNA section) helps identify strain in just hours.
Anabaena bloom with mycrosystins detected at 360ppb
Individual cyanotoxin testing via ELISA technology.

Most common toxins:
- Microcystin
- Anatoxin
- Saxitoxins
- Cylindrospermopsin
Blue-green algae and harmful algal blooms
https://www.pca.state.mn.us/water/blue-green-algae-and-harmful-algal-blooms
Summertime in Minnesota: When in doubt, best keep out!

When temperatures climb and the summer sun beats down, conditions are ripe for Minnesota lakes to produce harmful algae blooms, some of which can be harmful to pets and humans.

Who should I call?
If you think you or your pets are experiencing adverse health effects due to contact with, or ingestion of, lake water/algae, seek medical attention immediately.

In addition, report human health effects to the Minnesota Department of Health (MDH) Foodborne and Waterborne Illness Hotline at 1-877-366-3455. For health questions, citizens can contact MDH’s Waterborne Diseases Unit at 651-201-5414 or visit the MDH’s Harmful Algal Bloom web page.

MPCA lake monitoring staff track reports of potential harmful algae blooms. For more information on harmful algal blooms, please call 651-757-2822, or toll-free from Greater Minnesota at 1-800-657-3864.
Supplement Facts

Serving Size: 3 organic capsules (1.5 g)
Servings per Container: 30

<table>
<thead>
<tr>
<th>Amount per Serving</th>
<th>% Daily Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories</td>
<td>5</td>
</tr>
<tr>
<td>Protein</td>
<td>1 g</td>
</tr>
<tr>
<td>Vitamin A (100% as beta-carotene)</td>
<td>500 IU</td>
</tr>
<tr>
<td>Iron</td>
<td>560 mcg</td>
</tr>
</tbody>
</table>

** Percent Daily Values based on a 2,000-calorie diet

Ingredients: Certified organic blue-green algae (Aphanizomenon flos-aquae); certified organic vegetarian (pullulan) capsule
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