Blue Green Algae on the Wisconsin River

What are blue-green algae?

- Cyanobacteria that can photosynthesize
- Need nutrients (P and N)
- Naturally-occurring in lakes and ponds
- Been on the Earth for millions of years
- Can form obnoxious mats and/or scum
- Some can release toxic substances

Why on the Wisconsin River?

Huge drainage area – 20% of the state!

Natural nutrient rich water

Increased nutrients with settlement

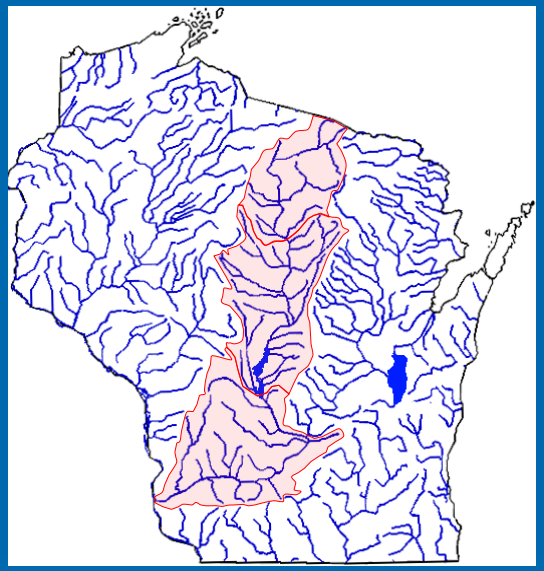
Creation of the reservoir systems

Developed shorelines

More recreational contacts

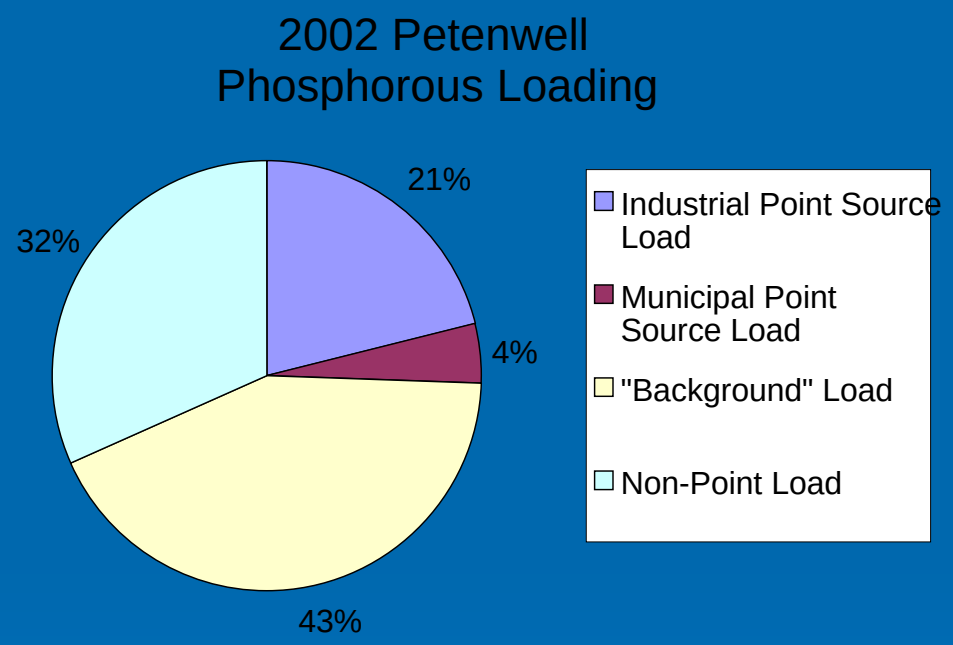
Emerging health implications

Socio-economic impacts



Nutrients are the driving force

- Huge watershed and nutrient load
- Point sources 25%, NPS 32% the balance is from the watershed and lake
- Just to reduce the number of blooms, P imports would have to be cut by half



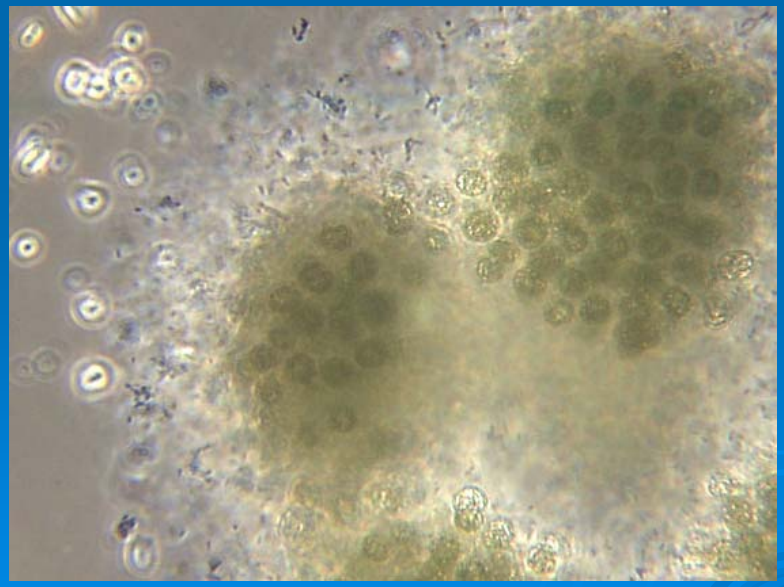
Not a new problem

- Sever pollution indicated shortly after construction of reservoirs.
- Threinen, C.W. (1964)"…lack of algae blooms except on very calm days…are evidence of substantially reduced productivity."
- By the 1980's algal blooms were common
- By 2000's illnesses reported

When do blooms occur?

Glad you asked!

- Virtually everywhere and opportunistic
- Responds to positively to sunlight, temp, nutrients (P & N), quiescent waters



And…

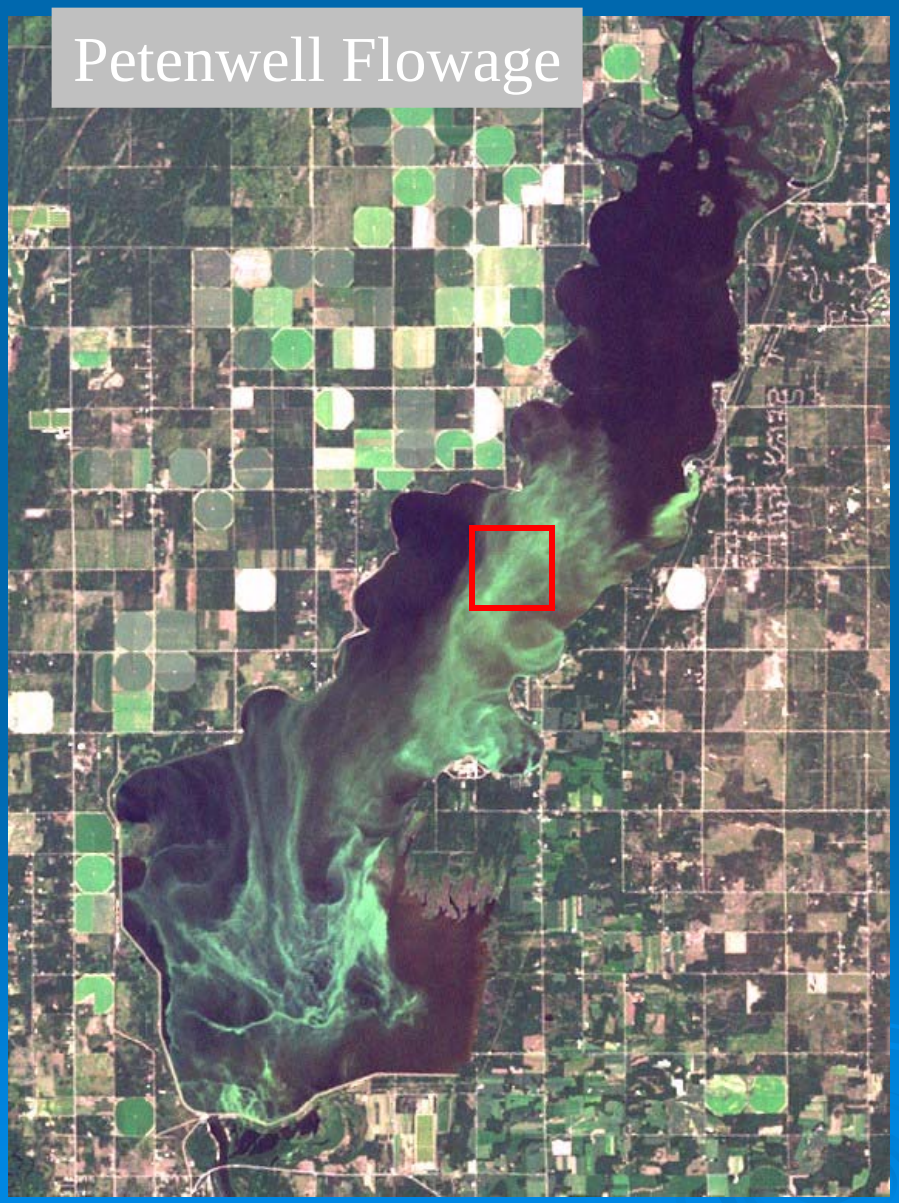
- Usually mid June through early September
- Usually a lack of plants, but not always

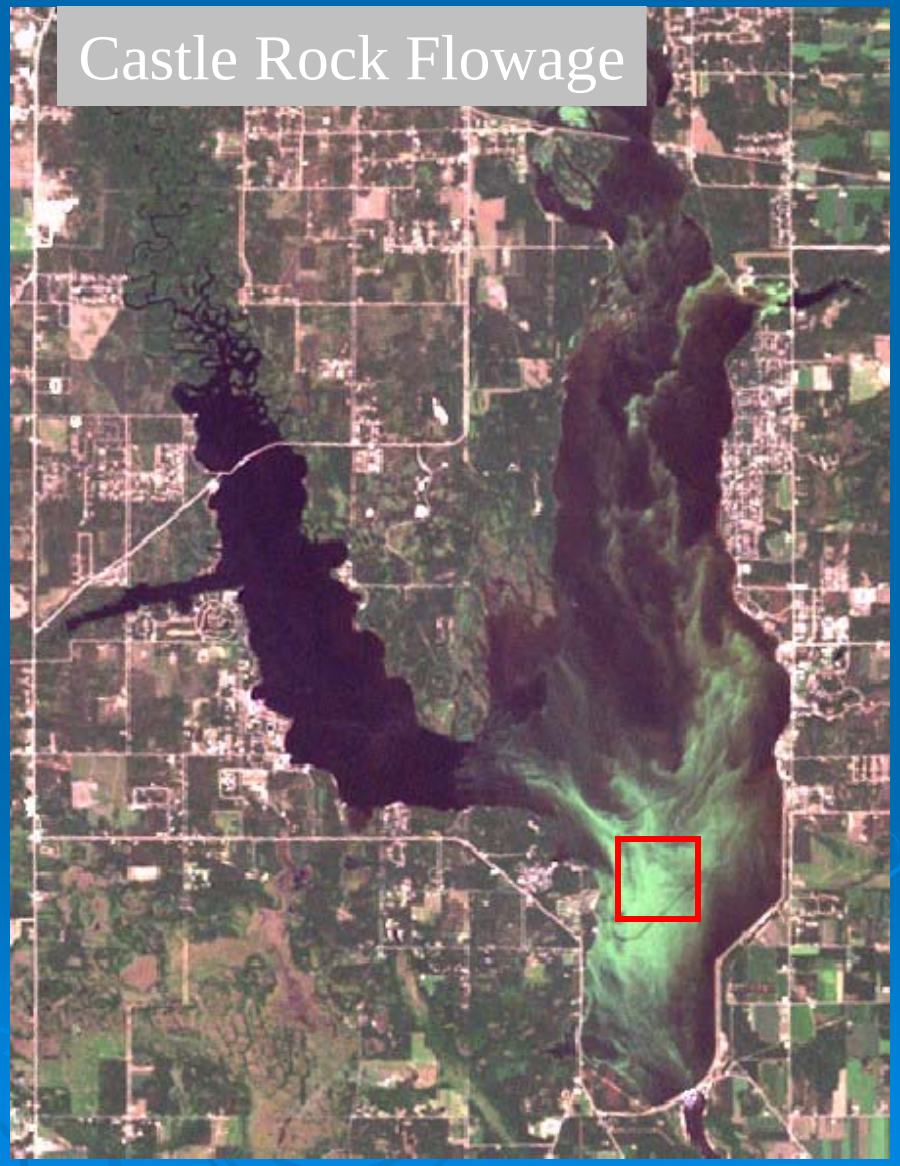
Where does BGA occur?

- Wind can easily concentrate it on downwind shores.
- Can be very dense at shore

(coincidently where kids and dogs usually play)

BGA Blooms can also be massive





Besides being stinky and disgusting, what else?

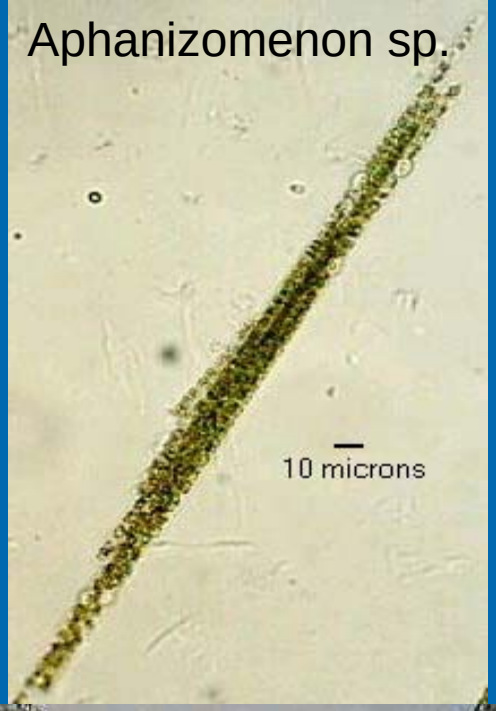
Quote: ***"What are you going to do about this algae? I bought a piece of property on a lake to enjoy it, but I have to got to the dump to get a breath of fresh air!"***

- Angry Adams County Resident 2008

The common BGA that can be harmful…

The “Big Three”, or AKA, Annie, Fannie and Mike.

But there are others!



Some types of toxins produced by bluegreen algae

Type of Toxin	Species	Toxins Produced	Symptoms
Neurotoxins (affect nervous system)	Anabaena Oscillatoria	Anatoxin-a Saxitoxin	Muscle cramps, twitching, paralysis, respiratory failure
Hepatotoxins (affect the liver)	Microcystis Cylindrosperm opsis	Microcystin Cylindrosperm opsin	Nausea, vomiting, acute liver failure

Unfortunately there are more than the listed

Blue-Green Algae

Dept. of Health Services (DHS)
•Respiratory ailments, watery eyes and rashes.

World Health Organization (WHO)
•**High Health Risk** = 100,000 c/ml

Monitoring
•**Petenwell** (2009) = 3,249,700 c/ml
•**Klein Creek** (2010) = 440,795 c/ml

WDNR is monitoring BGA to assist DHS and medical care facilities.

Numerous dog illnesses

- Under reported?
- Veterinarian confirmed cases in Juneau Co.
- Dog deaths elsewhere in the state
- Infection possible into the fall
- Dogs habits increase chances of infection
  - Licking
  - Drinking
  - Use of shallow water

Solution is not as easy as monitoring Its complicated…

- Not always reliable due to life cycles of BGA
- Algae can be present, but not toxin
- Toxin can be present, but low algae cell counts
- Bacteria can be present, but not algae
- Algae can be present, but no bacteria
- Monitoring for closures almost impossible

Example from DNR study:

2004 45/187 (24%) BGA samples had toxins

2005 34/194 (18%) BGA sample had toxins

[Chl-a] not corr to [BGA] however [Chl-a] corr to [mycrocystin]

Response monitoring and who's in involved

- Department of Health
- Center for Disease and Control
- Wisconsin DNR

The best option to protect human health

- I and E
- For now, if it looks bad then don't enter
- Continue with response monitoring
- Encourage public to report symptoms

What to do!

Report cases to DOH immediately

608.266.1120 or in case of emergency call the Wisconsin Poison Center at:

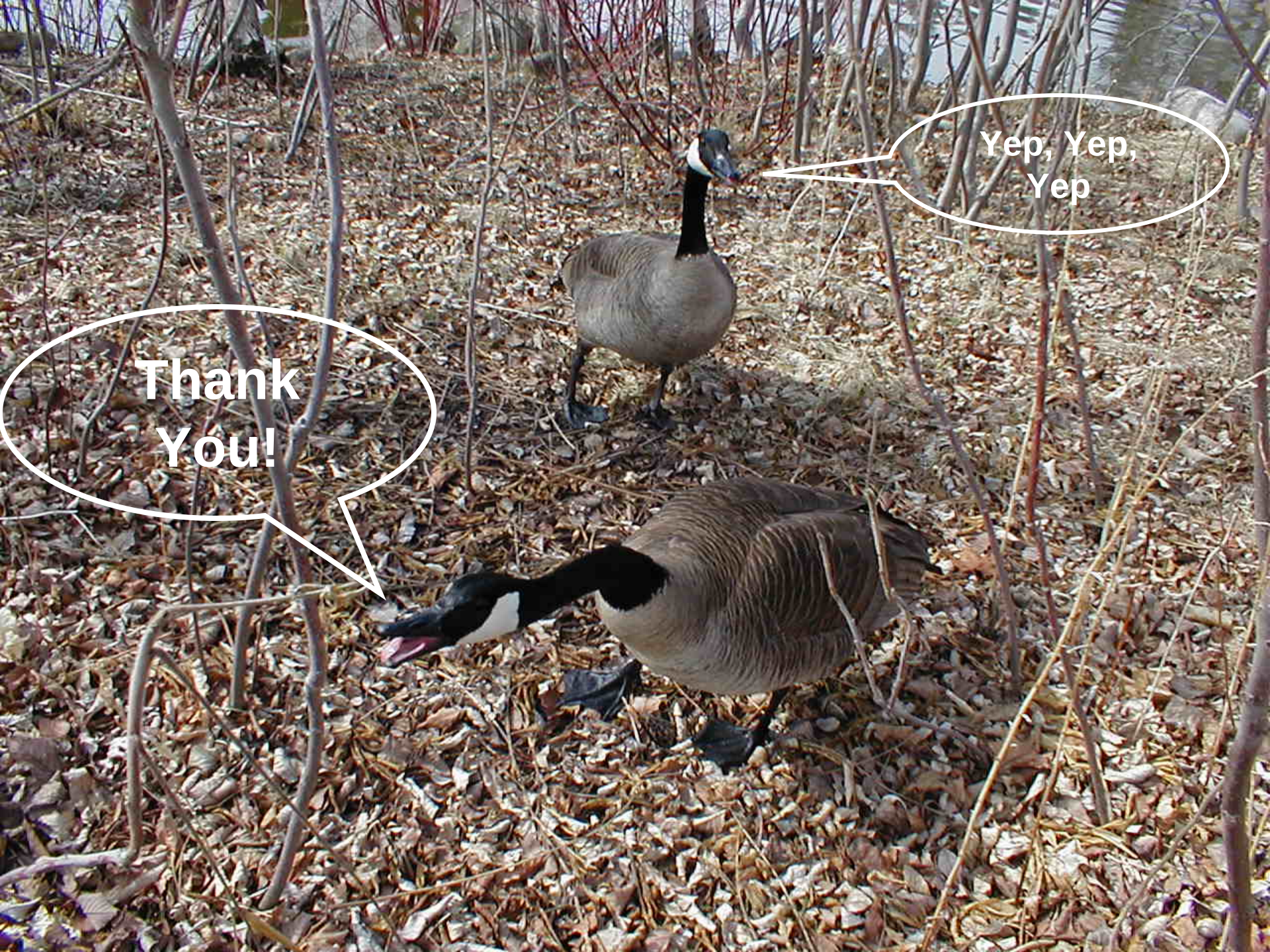
1.800.222.1222

Report also to DOH website:

www.dhs.wi.gov\eh\bluegreenalgae

Long Term Solutions Decrease Nutrient Loads

- Identify sources
- Use multi-agency approach
- Need a paradigm shift
- Increase habitat (aquatic plants)


Yep, Yep, Yep
Thank You!

CONTACTS

DOH: 608.266.1120

Wisconsin Poison Center: 1.800.222.1222

DOH website:

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