What the Heck is a HAB?
What should I do about them?

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What is “blue-green algae”?

• Bacteria not algae!
• They are a type of bacteria
  • Cyanobacteria
    • Cyano- = blue or dark blue (Greek origin)
    • Bacteria = bakterion = staff or cane
      • First ones discovered were rod shaped
Cyanobacteria have been around a very, very long time!
Cyanobacteria are Vital for Human Life

• Without them, we probably wouldn’t be here
• Very important
  • Important element in forming earth’s oxygen rich atmosphere
  • Oil deposits attributed to cyanobacteria activity
  • “Fix” nitrogen
    • Like beans, peas, and other legumes
• Plants originated from cyanobacteria
  • chloroplasts
Where are they found?
Aquatic Cyanobacteria Can Become Abundant

- Aquatic cyanobacteria
  - Known for highly visible and extensive “blooms”
    - Happens when conditions are favorable
      - Lots of food
      - Good temperature
      - Calm water
  - Blooms can look “blue-green” hence the misnomer “blue-green algae”
HABs and NABs

• NAB – Nuisance algae bloom
  • Just like it sounds – it’s annoying
  • No health impacts
  • May actually be algae
• HAB – Harmful algae bloom
  • Can be comprised of cyanobacteria
  • Toxin production
  • Negative health impacts
    • Humans (children especially)
    • Pets (dogs that swim in water)
Why do we care?

- Toxins can be extremely potent
  - Worldwide, 60% contain toxins
- Skin
  - Dermal toxicity
    - Lyngbyatoxins
Why do we care?

- Nervous system
  - Neurotoxins
    - Saxitoxins
      - Paralytic Shellfish Poisoning
        - Also associated with “red tides”
    - BMAA (long chemical name that even scientists don’t remember)
Why do we care?

- Liver function
  - Hepatotoxins
    - Microcystins
    - Cylindrospermopsins
    - Nodularins
Why do we care?

- Toxins can be extremely potent
  - Toxicity has been shown to be cumulative
  - Tumor promoting
  - Effects variable based on exposure
  - Drinking water taste and odor
Harmful Algal Blooms - Impacts

Some are extremely fast acting – animal death in less than 1 hour.

No visual way to determine if a bloom is toxic
  Mild blooms can produce high levels of toxin
  Dense blooms can produce no toxin
Detecting HABs is Tricky

- Some blooms are not cyanobacteria
- Some cyanobacteria do not produce toxins
- Just because a cyanobacteria CAN produce toxin, does not mean it WILL
  - Scientists are working to discover what triggers toxin production
- Toxin can remain in the water, even after the bloom is over
So, what am I supposed to do about it?
Harmful Algal Blooms – What to do about it?

- First step – figure out if what you are seeing is blue-green algae
  - Check online resources
  - Submit photos to MPCA (Bloomwatch)

Duck Weed

Filamentous green algae

Cladophora and Bryozoa
BloomWatch app

• Free to download
  • Android
  • iOS
• Walks you through the steps of how to take a photo
Harmful Algal Blooms – What to do about it?

• First step – figure out if what you are seeing is blue-green algae
  • Jar Test
  • Stick Test
Harmful Algal Blooms – What to do about it?

• Minimize Risk
  • When in doubt, keep out!
    • Minimize ingestion
    • Rinse off animal coats when they leave the water
    • MDH/MPCA fact sheets

• Test options – note – each bloom can be different!
  • Test strips
  • Lab analysis
Harmful Algal Blooms – What to do about it?

• Short term Fixes
  • Scum on the shore?
    • Keep pets away! You can rake up the scum and take it to a local compost facility.
  • Algae at your beach?
    • Blooms often are localized – there may still be opportunities to recreate at a different beach or in open water.
Harmful Algal Blooms – What to do about it?

• Most blooms are reported on lakes with known nutrient issues
  • There is no quick fix
  • Reducing inputs of phosphorus are very important
    • This includes near shore (septic, shoreline vegetation) and contributing watershed
      (overland runoff, discharges from facilities and feedlots)
• While there are products that will kill algae...if the cells contain toxins, killing
  them will release the toxins
Thank you!

Questions?
Survey time

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What Causes Harmful Algal Blooms (HABs)?