BUT WHY

A Lesson Plan Grade 3-5

But Why is led by you, kids! Kids all over the world send us questions, and we find the answers. We've created these learning units to be used in a classroom setting or at home. Watch the video first and then use this guide to deepen your understanding of what you've learned. Find more episodes at butwhykids.org.

But Why: Adventures! Northeast Nature | JULY: CYANOBACTERIA

DRIVING QUESTION:

What habitat or environmental conditions allow cyanobacteria to thrive at a safe or unsafe level?

Objectives: Students will

- Be able to explain the positive and negative impact of cyanobacteria.
- Know how to identify and stay safe around cyanobacteria.

Activities:

1. Fill out KWL in a science notebook.
2. Watch the video and have students reflect in their science notebooks.
3. Take students on a nature walk to a pond or lake in Vermont to collect water samples in a jar. Do not choose a body of water with an active bloom to keep your students safe.
4. Be a citizen scientist and interact with information about cyanobacteria tracked in Vermont.

Vermont Early Learning Standards (PreK-Grade 3) Learning About the World: Science: Element 2 Life Sciences. Social Studies Element 1 Inquiry and Element 3 Physical & Cultural Geography (conservation).

K-LSI-1, LS4-3, PSI-1, ESS3-1

Vermont Public

Learning Targets: NGSS K-LS1-1, 3-LS4-3, 3-LS4-4, 5-PS1-1, 5-ESS3-1

Feelings & Vocabulary

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TEACHER TIPS:

Science vocabulary to know:

Cyanobacteria
Bloom
Photosynthetic
Bacteria
Blue-green algae
Eukaryotic algae
Organism
Cells
Fossil, fossil record
Adverse conditions
Extreme environments
Lake sediments
Oxygenation
Atmosphere

SEL CONNECTION

Teachers please read this article: Like humans, the living organism, cyanobacteria, has been observed working together.

SAFETY ALERT: Do not choose a body of water with an active bloom to keep your students safe.

Vermont Public

Learning Targets: NGSS K-LS1-1, 3-LS4-3, 3-LS4-4, 5-PS1-1, 5-ESS3-1

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Watch & Connect

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WATCH & CONNECT:

Draw or write in the boxes.

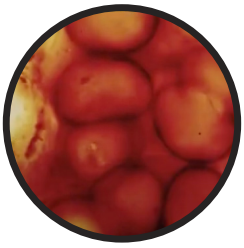
K (Know). What do you know about cyanobacteria blooms?

W (Want to know). What do you want to know about cyanobacteria blooms?

L (Learn). What did you learn about cyanobacteria blooms?

After collecting a pond sample, return to the classroom and look at it under a microscope or pause the video to look closely at the microscopic slide images. Science departments or local libraries in your district may loan you a microscope. There are also cellphone and USB-connected digital microscopes available online for less than $30.

Do you see any moving creatures? Do they look like anything you saw in the video?



Vermont Public

Learning Targets: NGSS K-LS1-1, 3-LS4-3, 3-LS4-4, 5-PS1-1, 5-ESS3-1

Watch & Doodle

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WATCH & DOODLE:

What patterns or shapes can you see in the microscope images or in your water sample?
Draw what you see.

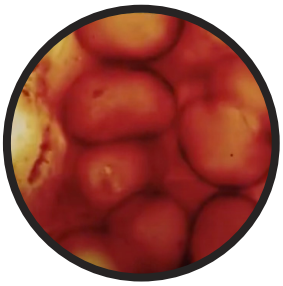
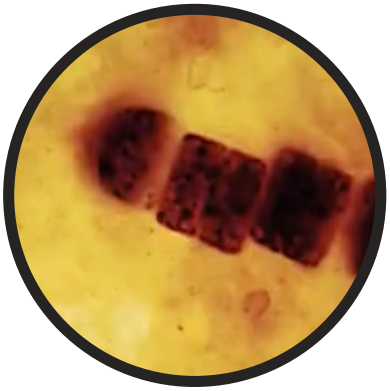


Photo source: Board of Regents of the University of Wisconsin system





FOSSIL RECORD (3.5 BILLLION YEARS OLD)

Vermont Public

Learning Targets: NGSS K-LS1-1, 3-LS4-3, 3-LS4-4, 5-PS1-1, 5-ESS3-1

Citizen Scientist Connection

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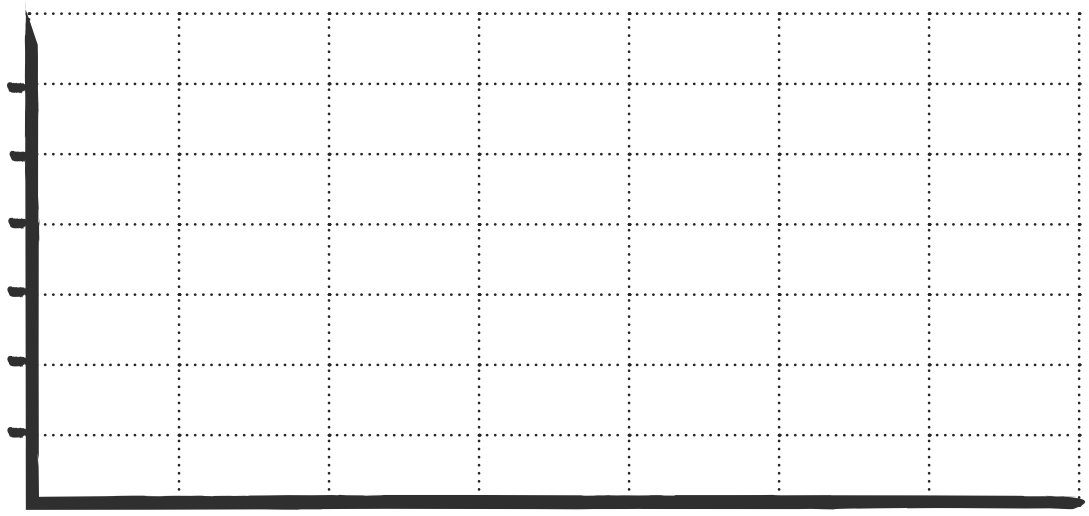
BE A CITIZEN SCIENTIST:

Go to: https://www.healthvermont.gov/environment/tracking/cyanobacteria-blue-green-algae-tracker

Use the Vermont Cyanobacteria tracker to look for previous or current blooms in Vermont. The live tracker map will be online starting in late June when the blue-green algae monitoring season begins.

Click the link in the map to view all reports and sort by waterbody to see results near you.

CHALLENGE: If you look at the information closely, you might see a pattern that can be graphed below.



Vermont Public

Learning Targets: NGSS K-LS1-1, 3-LS4-3, 3-LS4-4, 5-PS1-1, 5-ESS3-1

Cyanobacteria

[sigh-ANN-oh-bak-TEER-ee-uh] • *noun*

Naturally occurring bacteria that live in water and can produce their own food

Photosynthesis

[foh-toh-SIN-thuh-siss] • *noun*

The process of using sunlight to transform water and carbon dioxide into food

Organism

[OR-gan-izz-mm] • *noun*

A living thing, such as an animal, plant, bacterium, or fungus

Oxygen

[OX-uh-jen] • *noun*

A colorless, odorless gas needed for plant and animal life

What new words did you learn? Make your own vocabulary cards.