The Green Lake Mystery

A Story About Algae and Algal Blooms



Maya and her cousin Ethan were spending the weekend with Grandma near Bluebird Lake.
Every summer, they loved feeding ducks, watching turtles, and skipping stones across the water.
But this year, something looked different.
The sparkling blue lake had turned bright green.
"It looks like someone spilled green paint!" Ethan said.
Grandma frowned.
"The lake wasn't like this last week."
Maya looked closely.
"What made it change?"
"Let's go find out," Grandma said.

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2. Tiny Plant-Like Helpers



Grandma scooped a jar of lake water.

"See those tiny green specks?" she asked.

"They're called algae."

"Algae are tiny photosynthetic organisms that grow in water."

'They use sunlight, water, and carbon dioxide to make their own food.

"They also release oxygen into the water."

"So algae are actually helpful?" Maya asked.

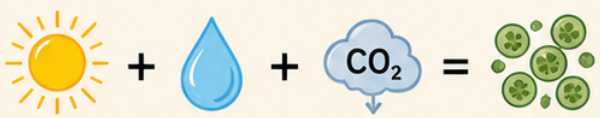
"Most of the time, yes," Grandma smiled.

"But sometimes they grow much too fast."

WHAT IS ALGAE?

Algae are photosynthetic organisms that grow in water.

They need:



Sunlight | Water | Carbon dioxide | Food for algae

They also release:



Healthy algae:

- ✓ Produce oxygen
- ✓ Support aquatic life
- ✓ Are an important part of the food chain

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3. Too Much of a Good Thing



The children walked farther along the shore.
Now the water looked thick and green.
Some fish floated near the surface.

"The algae have formed an algal bloom," Grandma explained.

"When algae grow too quickly, they cover the surface of the water.

They block sunlight from reaching plants below.
When the algae die, bacteria break them down.

The bacteria use up much of the oxygen in the water.
Without enough oxygen, fish and other animals can struggle to survive.

"Oh no," Ethan whispered.
"So too much algae can hurt the lake."

WHAT IS AN ALGAL BLOOM?

An **algal bloom** happens when algae grow much faster than normal.



Blocks sunlight from reaching plants below.



Reduces oxygen in the water.



Harms fish and other aquatic animals.



Some algal blooms can produce toxins that are harmful to people, pets, and wildlife.

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4. Where Do the Extra Nutrients Come From?



Grandma pointed toward the neighborhood near the lake.

"Algae need nutrients to grow."

"One important nutrient is **phosphate**," she explained.

"Phosphate is found in many lawn and garden fertilizers."

"When it rains, some fertilizer washes into streams and lakes."

"The extra phosphate acts like plant food for algae."

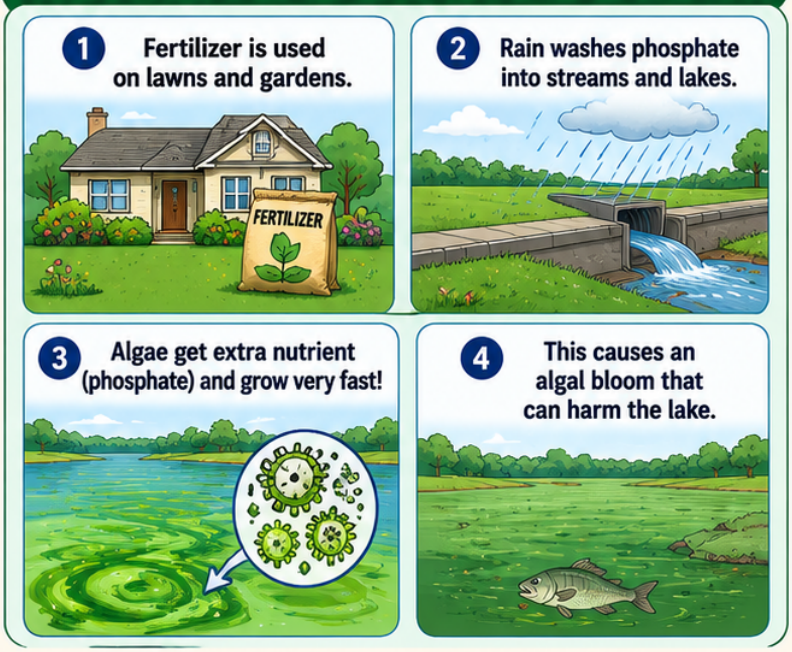
"The algae grow faster and faster.

"So people can accidentally feed the algae?" Maya asked.

"Exactly," Grandma said.

"If we reduce the phosphate that goes into the water, we can help stop algal blooms."

HOW FERTILIZER CAN CAUSE ALGAL BLOOMS



KEY IDEA: Using less phosphate in fertilizers and keeping it out of rivers and lakes can help reduce algal blooms!

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5. Helping the Lake



The next weekend, the community held a lake cleanup.
People planted flowers and grasses along the shoreline.
Gardeners used fertilizers with less phosphate.
Some families used only the amount their gardens actually needed.
Slowly, over the next few months, the lake became clearer.
Fish swam happily again.
"The best way to stop algal blooms, Grandma smiled,
"is to keep extra phosphate out of our lakes."
Maya grinned.
"Small choices can help protect big lakes!"

HOW WE CAN HELP



Use fertilizers with less phosphate when possible.



Only use the amount of fertilizer that plants need.



Keep fertilizer away from rivers, ponds, and storm drains.



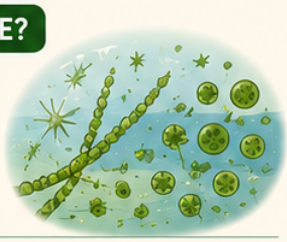
Plant grasses and flowers near waterways to help absorb runoff.

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SCIENCE ELEMENT

WHAT IS ALGAE?

Algae are tiny, mostly plant-like organisms that live in water. They are **photosynthetic**, which means they use sunlight to make their own food.



Algae use:

Sunlight + Water + CO_2 (Carbon dioxide) = Food and Oxygen (O_2)

WHY IS ALGAE HELPFUL?

When algae grow in normal amounts, they help our lakes and rivers.

- O_2 — They produce **oxygen** for fish and other living things.
- They are an important part of the **aquatic food chain.**
- They help keep the water **healthy** and balanced.

WHAT IS AN ALGAL BLOOM?

An algal bloom happens when algae **grow much faster than normal.** The water can turn green, thick, and sometimes smelly.



Too many algae can:

- Block sunlight from reaching plants below the surface.
- O_2↓ Use up oxygen when they die and break down, making it hard for fish and other animals to survive.
- Harm fish and other aquatic animals.
- Some algal blooms produce toxins that can be harmful to people, pets, and wildlife.

Not all algae blooms produce toxins, but all blooms can upset the balance of the ecosystem.

WHAT CAUSES ALGAL BLOOMS?

Algae grow quickly when there are too many nutrients in the water, especially **phosphate.**

Extra phosphate often comes from:



Lawn fertilizers


Garden fertilizers


Rain washing fertilizer into storm drains


Runoff carrying phosphate into streams and lakes

HOW CAN WE HELP?



Use fertilizers with less phosphate whenever possible.


Only use the amount of fertilizer that plants actually need.


Keep fertilizer away from rivers, ponds, and storm drains.


Plant grasses, flowers, and native plants near waterways to help absorb runoff.



REMEMBER!


Algae are helpful photosynthetic organisms when they grow normally.


Too much algae creates an algal bloom that can harm lakes and living things.


Reducing phosphate runoff helps keep our water clean, healthy, and safe!

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