

Reading 12.3 – Return of the green goo

Getting Ready

Have you ever gone to a beach on a hot summer day and seen a “No Swimming” sign? People who like to swim in the Great Lakes see this every summer. Sometimes people are not allowed to swim because the beach is covered with green goo. The following article tells about the problem of green slime and what scientists think might be causing it.

Before you read, decide whether you think these claims are true or false.

T / F Biotic factors cause the problem.

T / F Abiotic factors cause the problem.

T / F Humans cause the problem.

T / F The green goo is disgusting, but it does not hurt people.

T / F The green goo hurts fish.

T / F The green goo hurts the environment.

Slime Alert

Imagine perfect weather, and packing up everything you need for a day at the beach. You are all excited, until you get there and see a beach covered with green slime. It looks bad, and it smells worse. A “No Swimming” sign tells you that you are not allowed to swim. But, you would not want to be on a green, slimy beach anyway.

In some of the Great Lakes that surround Michigan, green goo is a problem. Tiny water plants called algae cause green goo. When everything is in balance, the amount of algae that grows is the right amount for the organisms that eat it. But, when something in the ecosystem is out of balance, so is the amount of algae.

What Is Affecting the Ecosystem?

One essential nutrient for plants to grow is phosphorus. When too much phosphorus is in the water, algae grow out of control. Phosphorus is found in detergents used to wash clothes. Once scientists made the connection between laundry detergent and the algae, the government in Michigan banned phosphates in detergent. Other states that border the Great Lakes also banned or limited phosphorus. This helped the problem.

However, phosphorus also enters the lakes from other sources. Fertilizers used on farms and lawns contain phosphorus. The groundwater the crops and grass grow in contains phosphorus, too. Homes with leaky sewage systems leak phosphorus from soaps into the groundwater. Waste from pets and farm animals contain phosphorus. Plus, one more source of phosphorus was not banned: dishwasher detergent. People with dishwashers may use detergent

Highlight the answer in the text :

Where is phosphorus found?

Hint: there are many answers!

with phosphorus in it. Every time they wash dishes, phosphorus enters the groundwater. Phosphorus in the groundwater can eventually make it into lakes. These factors combine to create a major problem for the ecosystem.

It Looks Bad, but Is It Dangerous?

Of the five Great Lakes, the conditions in Lake Erie are best for algae to grow. It is shallower and warmer than the other Great Lakes. Lake Superior has some of the coldest water. It is not a good environment for the slimy algae to grow in and reproduce. So, the algae are a greater problem in some lakes than in others.

A beach covered in green slime looks bad and smells terrible. But those two things are not dangerous. Other aspects of the algae growing out of control are dangerous. People or animals can get sick if they drink the water. Because the plants can reduce the amount of oxygen in the water, some fish die. The plants can also clog pipes, and affect the amount of water flowing into the lakes.

Why Did Banning Phosphorus Not End the Problem?

Banning phosphorus was an important step in controlling the algae population. But, it has not solved the problem. As scientists continued to investigate, they found another source of the green goo problem: mussels. Ten years after phosphorus laundry soap was banned, two invasive species of mussels arrived in the Great Lakes. One is the zebra mussel; another is the quagga mussel. The mussels filter the water by eating other tiny organisms. By doing this, they make the water clearer. This might seem like a good thing for swimmers. But, clearer water means that sunlight can reach deeper into the lakes. The sunlight can now reach deeper plants. It may be that the algae thrive because more sunlight enables them to grow and reproduce even more. Also, one of the waste products of the mussels is nutrients that might feed the algae population. The invasive mussels have changed the ecosystem in new ways.

Scientists have two ideas about what causes the algae to grow out of control in the Great Lakes. One is abiotic factors (phosphates in the water) and one is biotic factors (zebra mussels). What do you think is causing the increase in algae? In your answer, include the evidence that you used to make your claim.

*Highlight the answer in the text:
Is the green goo dangerous?*