Lake Algae And Lou Gehrig's

By Amy Quinton - June 29, 2009

There's a kind of blue and green scum that can bloom in lakes and ponds across the nation. This scum is called cyanobacteria. For years, scientists have known that this stuff can produce dangerous toxins. Amy Quinton reports now researchers are studying whether there's a link between cyanobacteria and Lou Gehrig's disease:

Jody Conner reaches into his refrigerator in his lab. "This is the cyanobacteria that we've collected. This one comes from Harvey Lake. See how green that sample is?" He's the Director of New Hampshire's Limnology Center. Conner has been collecting samples of cyanobacteria from lakes across New Hampshire. It looks like green scummy algae on the surface of the water that can be several inches thick. But it's actually bacteria. Conner says cyanobacteria feed on nutrients like phosphorus and nitrogen that can come from runoff of lawn fertilizers or sewage. "They need sunlight, phosphorus, and they seem to like the warmer waters. So, they really grow in mass numbers when they have all three of those."

Jim Haney is a professor of biological sciences at the University of New Hampshire. He says, in high enough concentrations, some cyanobacteria blooms can produce more than 70 different kind of liver toxins called microcystins. "That scum can be toxic enough that it's been estimated that only about 17 milliliters is enough to kill a small child. 17 milliliters is just a couple of teaspoons." Cyanobacteria blooms can also produce neurotoxins. Haney, and other researchers, have embarked on research to find out if there's a connection between cyanobacteria and patient's with Lou Gehrig's disease - also known as ALS.

The research began when Doctor Elijah Stommel began mapping hundreds of ALS patients across New Hampshire. Stommel is a neurologist at Dartmouth Hitchcock Medical Center. He noticed the incidence of ALS was 2.5 times greater than the national rate around lakes known to have had significant cyanobacteria blooms. Stommel says he found a particularly high cluster of patients on one lake in the western part of the state. "We were able to establish that there appeared to be about a 25 fold increase in what one would expect to see for the ALS incidence." But he's not sure if cyanobacteria are the culprit.

A few scientific studies have shown a particular type of neurotoxin found in cyanobacteria is also found in patients with ALS. The neurotoxin is known as BMAA. But it's not known whether BMAA can trigger ALS. Jim Haney says more research is needed. "We know that, in the laboratory, a wide range of different types of cyanobacteria are able to produce BMAA. So, one of our goals this summer is to determine whether there are BMAA molecules in our lakes." So far, researchers haven't found BMAA, and there are still a lot of unknowns about how people could be exposed.

Do you have to drink it or can you breathe it in the air? How long do you need to be exposed to it before it causes damage? Again, Doctor Elijah Stommel. "If there is a link between cyanobacteria blooms and the toxins they make, and a neurodegenerative disease like ALS, then I think we should pursue that with as much vigor as we can. And I think the neurology literature would suggest there is an environmental trigger for ALS." But, scientists have not yet found that link. If they do, Stommel says that link might help find ways to prevent the dangerous toxins, or block their effects.

For The Environment Report, I'm Amy Quinton.