

<https://www.scientificamerican.com/article/are-algae-blooms-linked-to-lou-gehrig-s-disease/>

## Are Algae Blooms Linked to Lou Gehrig's Disease?

Medical researchers are now uncovering clues that appear to link some cases of ALS to people's proximity to lakes and coastal waters

By Lindsey Konkel, Environmental Health News on December 11, 2014

### New England's ALS hot spots

In New Hampshire, Dartmouth neurologist Elijah Stommel noticed that several ALS patients came from the small town of Enfield in the central part of the state. When he mapped their addresses, he saw that nine of them lived near Lake Mascoma.

Around the lake, the incidence of sporadic ALS—cases for which genetics are not a likely cause—is approximately 10 to 25 times the expected rate for a town of that size.

“We had no idea why there appeared to be a cluster around the lake,” Stommel said.

Based on the link between ALS and the neurotoxin in other parts of the world, Stommel and his colleagues hypothesize that the lake's cyanobacteria blooms could be a factor.

### Testing the air for a neurotoxin

Last August, at Lake Attitash, Jim Haney, a University of New Hampshire biologist, waded knee-deep into swirling green water. Cyanobacteria were blooming at the small lake in the northeastern corner of Massachusetts. Haney had rigged up three vacuum-like devices with pipes, plastic funnels and paper to suck up and filter air near the lake's surface.

He took the filter papers back to his laboratory and measured the cyanobacteria cells, BMAA and other toxins stuck to them.

“We want to know what level lake residents may be exposed to through airborne particles,” said Haney, who is sampling the air at Massachusetts and New Hampshire lakes in collaboration with the Dartmouth team.

Stommel said, “it's very compelling to look at the filter paper and see it just coated with cyanobacteria.”

At this point, Haney and graduate students are trying to understand under what conditions the toxins might be coming out of the lake and whether the airborne particles are an important route of exposure.

Preliminary findings suggest that BMAA and other cyanobacteria cells are being aerolized. “There is potentially a large quantity of cyanobacteria that could be inhaled,” Haney said. He noted, however, that the measurements were taken about eight inches above the water's surface, making it likely that concentrations would be much lower farther away.

While the toxins are likely to be most abundant in the air around lakes, they exist all over the planet, even in deserts.

In 2009, BMAA was even detected in the sands of Qatar. Crusts containing cyanobacteria may lie dormant in the soil for most of the year, but get kicked up during spring rainstorms. Cox and colleagues hypothesized that breathing in toxins from dust might be a trigger for a doubling of ALS incidence in military personnel after Operation Desert Storm.

Near Haney's workstation at Lake Attitash, a child splashed in the shallow water off a dock. Haney scooped up a cupful of water. He peered at the tiny green particles in the cup that reflect the sunlight, making the mixture resemble a murky pea soup.

Researchers have evidence that people living close to lakes with blooms may be at increased risk for ALS. They've even found BMAA in the diseased brain tissue of people who have died of neurodegenerative diseases. Nevertheless, "proximity does not equal causality," said Deborah Mash, a neuroscientist at the University of Miami in Florida

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Blue-green algae, or cyanobacteria, blooms on a northeastern lake.  
(Photo courtesy The Mitchell Center)

### **Åpne bekker gir økt biologisk mangfold, men fare for flere tilfeller av ALS i befolkningen**

Gjenåpning av bekker vil føre til økt biologisk mangfold, bedring av lokalklima, bedre vekstvilkår for vegetasjon, bedre kvalitet på overvann samt grønne rekreasjonsområder, giftige grønnalger med cyanobakterier og fare for flere tilfeller av ALS i befolkningen.





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