



## Frequently Asked Questions: *Cyanobacteria/Blue-Green Algae*

### **What are cyanobacteria/blue-green algae?**

Blue-green algae are a group of organisms that can live in freshwater, salt-water or in mixed "brackish" water. Most of us know them as "pond scum." They also have been found to share some characteristics with bacteria, which has led to them being referred to as "cyanobacteria."

### **What is a cyanobacterial bloom and how do they form?**

Cyanobacterial blooms occur when the algae that are normally present grow in numbers more than normal. Within a few days, a bloom can cause clear water to become cloudy. Winds tend to push some floating blooms to the shore where they are very noticeable. Cyanobacterial blooms can form in warm, slow-moving waters that are rich in nutrients. Blooms can occur at any time, but most often occur in late summer or early fall. They can occur in marine, estuarine and fresh waters, but blooms of greatest concern are those that occur in fresh water, such as drinking water reservoirs or recreational waters.

### **What do cyanobacterial blooms look like?**

Some cyanobacterial blooms can look like foam, scum, or mats on the surface of fresh water lakes and ponds. The blooms can be blue, bright green, brown, or red and may look like paint floating on the water. Some blooms may not affect the appearance of the water. As algae in a cyanobacterial bloom die, the water may smell bad.

### **What are some tips for avoiding cyanobacteria/blue-green algae?**

It is important that adults, children and pets avoid swimming in or drinking water containing blue-green algae. It is best not to come in to contact with water in areas where you see foam, scum, or mats of algae on the water.

### **What should I do if I come in contact with cyanobacteria/blue-green algae?**

Blue-green algae toxins can affect the liver, nervous system and skin. Abdominal cramps, nausea, diarrhea, and vomiting may occur if untreated water is swallowed. Some people who are sensitive to the algae may develop a rash or respiratory irritation.

If you come into contact with an algae bloom, wash with soap and water right away. If you experience an illness, please contact your healthcare provider immediately.

### **What agency should I contact to report fish kills or illness associated with blue-green algae?**

- Fish Kill Hotline (Florida Fish & Wildlife Conservation Commission) 1-800-636-0511
- Human Illness (Florida Poison Control Center) 1-800-222-1222

### **Can I eat fish harvested from areas near or in algae blooms?**

No. Do not eat fish that are harvested from areas near or in blooms.

### **Is it ok to use algae water for showering or irrigation?**

Untreated water from the bloom area should not be used for irrigation when people could come into contact with the spray. Do not use untreated water from the area with the bloom for showering or bathing.

### **Does blue-green algae cause ALS or Alzheimer's?**

Beta-N-Methylamino-L-alanine (BMAA) is non-protein amino acid. Some researchers have reported that BMAA can be produced by most cyanobacteria (blue-green algae). However, some concerns have been raised regarding the specificity of the earlier analytical methods and whether BMAA was the only substance quantified.

Little evidence to show how the type of brain changes seen in people with ALS could be induced by BMAA. No animal model has demonstrated that BMAA exposure results in ALS-like neuropathy. Also,

no large scale epidemiological studies have been performed that can definitively link BMAA levels as the cause of ALS.

Proximity and spatial association to a water body with cyanobacteria does not prove causality. The BMAA hypothesis is still a hypothesis. No proven connection has been found between cyanobacteria and ALS.

BMAA is one of the many possible environmental triggers to neurological disease that is being investigated by researchers in Florida and elsewhere. There are millions of potential environmental exposures. BMAA is just one of those potential triggers.

There has been little evidence of BMAA being linked to neurodegenerative disease in the general public. BMAA has been reported to be associated with the neurological disease, amyotrophic lateral sclerosis-Parkinson dementia complex (ALS-PDC), in a local population in Guam. This relationship was first noted over 40 years ago. The source of exposure for this population was cycad plant seeds, used for making flour, and fruit bats that feed on cycad fruit; the amount of BMAA exposure was very high. This is an unusual and very limited population.

In laboratory tests on cells and in animals, BMAA has been shown to be a potent neurotoxin, especially when given through injection or other non-food exposures. There is a lack of toxicological information based on standard tests using the oral route of exposure upon which to base a health-based value for use in a risk assessment.

There are the studies of Canadian and U.S. ALS patients that had higher BMAA concentrations in their brain tissue than Huntington disease patients or non-neurologically affected patient. However, this finding may be coincidental. Various chemicals exist in our bodies as part of living in an industrialized society but are at levels that do not necessarily affect our overall health.

Recent research has identified levels of BMAA, on par with levels observed in Guam fruit bats, in shrimp, crabs, bottom fish, and shark fins from South Florida marine ecosystems; however there are no known cases of human neurological diseases related to ingesting animals from these waters.