Bullets for Interagency BMAA Fact Sheet

Public Health Bullets:

- 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.