Freshwater harmful algal bloom exposure – an emerging health risk for recreational water users

Elizabeth D. Hilborn[1], Virginia A. Roberts[2], Lorraine C. Backer[3], Jonathan S. Yoder[2], Timothy J. Wade[1], Michele C. Hlavsa[2]

[1]Environmental Public Health Division, Office of Research and Development, US Environmental Protection Agency, [2]Division of Foodborne, Waterborne, and Environmental Diseases, National Center for Emerging and Zoonotic Infectious Diseases, Centers for Disease Control and Prevention, [3]Division of Environmental Hazards and Health Effects, National Center for Environmental Health, Centers for Disease Control and Prevention

Introduction: Harmful algal blooms (HABs) are increasingly reported among fresh water bodies used for recreation. These blooms, primarily composed of cyanobacteria, are more likely to occur during warm weather and have the potential to produce multiple toxins that adversely impact human and animal health.

Methods: We characterized outbreaks associated with HABs during 2009 – 2010 that were voluntarily reported to the Centers for Disease Control and Prevention by states via the national Waterborne Disease and Outbreak Surveillance System (WBDOSS). Outbreaks consisted of two or more cases of human illness epidemiologically linked to a common HAB exposure in a recreational water setting.

Results: Three states reported 11 outbreaks of human illness associated with freshwater HABs that occurred during summer months of 2009 – 2010. Two of these states had been participating in enhanced HAB surveillance. At least 61 people became ill, 58 sought health care and 2 were hospitalized. No deaths were reported. Among 58 individuals with data to characterize sex or age, 34 were female and 38 were $\leq$ 19 years of age. Gastrointestinal, respiratory, dermal, eye, ear, general (e.g., fever, headache) and neurologic signs and symptoms were reported. Eight outbreaks included water testing for cyanobacteria toxins; microcystin (n=8), anatoxin-a (n=3), saxitoxin (n=2), and cylindrospermopsin (n=2) were detected within 1 day of the outbreak exposure period. Two outbreaks involved potentially-associated animal illness or death. A review of WBDOSS data yielded three previous freshwater outbreaks associated with HABs; one occurred in 2001, and two occurred in 2004.

Summary: Eleven freshwater HAB-associated outbreaks were reported to WBDOSS for 2009-2010; over 60% (n=34) of ill persons were 19 years of age or younger. This increased number of reports from three states still likely underrepresents the actual public health impact of HAB events nationally. This abstract does not represent EPA policy.