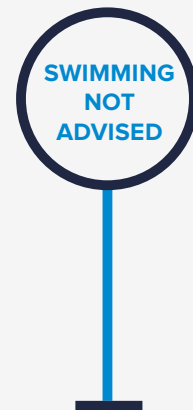
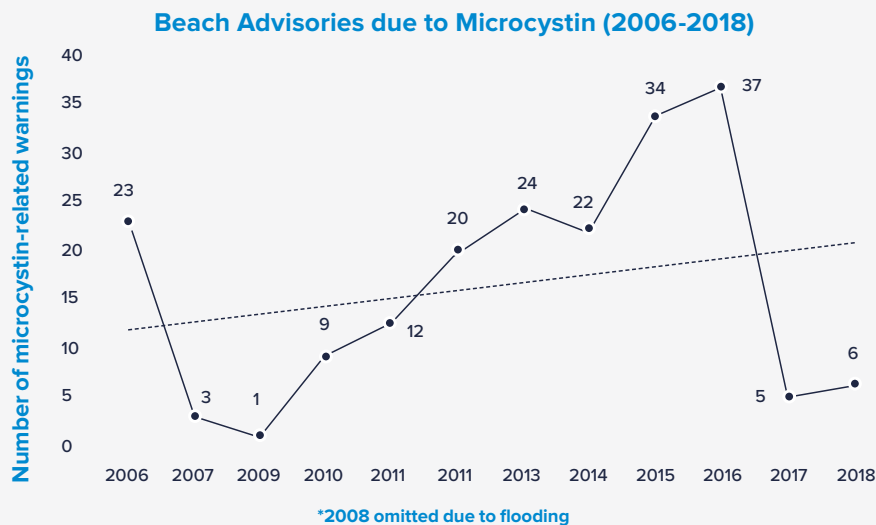


NUTRIENT POLLUTION IN IOWA'S RECREATIONAL WATERS

Nitrogen and phosphorus are essential nutrients for plant growth. Farmers supplement these naturally occurring nutrients in their soils with both chemical and animal fertilizer to increase crop production. When these nutrient levels exceed plant needs, water carries the nitrogen (as nitrate) and phosphorus away, leading to water pollution.



MICROCYSTIN-RELATED WARNINGS IN IOWA: 196 WARNINGS AT 39 DNR-MONITORED BEACHES²



HEALTH EFFECTS

Nutrient pollution can lead to harmful algal blooms that release microcystin toxin.

Skin contact, ingestion, and inhalation of microcystin can cause:¹

- Breathing problems
- Stomach pain, nausea, vomiting, diarrhea
- Headaches, fever, runny eyes and nose, cough, sore throat, chest pain
- Rash, hives, blisters
- Liver damage

AFFECTS PETS, LIVESTOCK, AND WILD ANIMALS TOO.



37 RECREATIONAL LAKES ALSO SERVE AS A DRINKING WATER SOURCE

- Only 15 of those lakes are monitored by the DNR for microcystin
- 11 of the 15 monitored lakes had a total of **103 microcystin warnings** from 2006-2018²
- This constitutes **53% of all warnings for microcystin** in recreational lakes in Iowa from 2006-2018



ECONOMIC IMPACT^{3,4}

- Total direct spending on lake visits annually in Iowa = **\$1 billion**
- Average direct spending per lake = **\$7 million**
- Even small lakes can generate **\$2-3 million** for rural Iowa communities
- Iowa lakes support over **12,000 Iowa jobs**
- **Water quality is the #1 factor** considered when choosing a lake for recreation
- Estimated increase in recreational spending with improved water quality in Iowa = **\$30 million**



NUTRIENT POLLUTION IN IOWA'S RECREATIONAL WATERS

SOURCES

¹Iowa Department of Public Health. *Frequently Asked Questions: Blue Green Algae (Cyanobacterial) and Microcystin Toxin*. Accessed Jan. 11, 2019: https://www.idph.iowa.gov/Portals/1/Files/EHS/algae_faq.pdf

²Iowa Department of Natural Resources. State Park Beach Monitoring data. <https://www.iowadnr.gov/Environmental-Protection/Water-Quality/Water-Monitoring/Beaches>

³Jeon, Hocheol, et al. *A Report to the Iowa Department of Natural Resources – The Iowa Lakes Valuation Project 2014: Summary and Findings*. Center for Agricultural and Rural Development, Iowa State University. February 2016.

⁴Tang, Chuan, et al. *Economic Benefits of Nitrogen Reductions in Iowa*. Center for Agricultural and Rural Development, Iowa State University. February 2018.