



Indiana Department of Environmental Management

Protecting Hoosiers and Our Environment Since 1986



Indiana's Cyanobacteria Monitoring Program



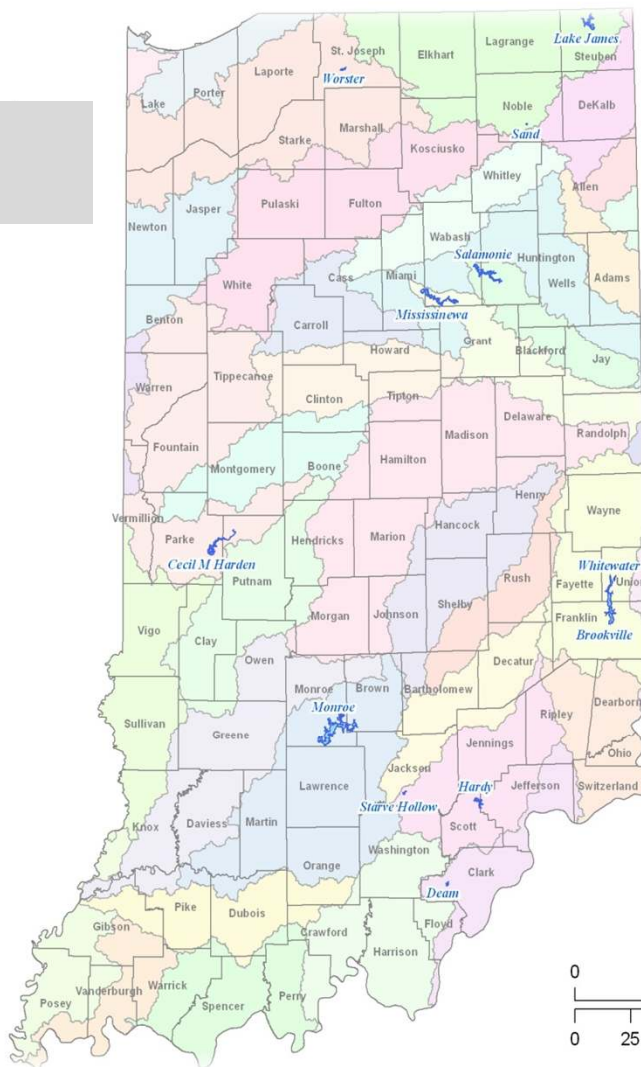
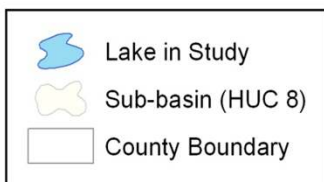
Cyndi Wagner, Chief
Targeted Monitoring Section
Watershed Assessment and Planning Branch
Office of Water Quality
Indiana Department of Environmental Management



IDEM's Pilot Cyanobacteria Monitoring Program 2010-2011

- Funded by a Supplemental 106 Grant
- Two-year funding cycle
- June through late August
 - Five lakes in 2010
 - Eleven in 2011
- Partnered with Center for Earth and Environmental Science (CEES)

Cyanobacteria Lake Sampling



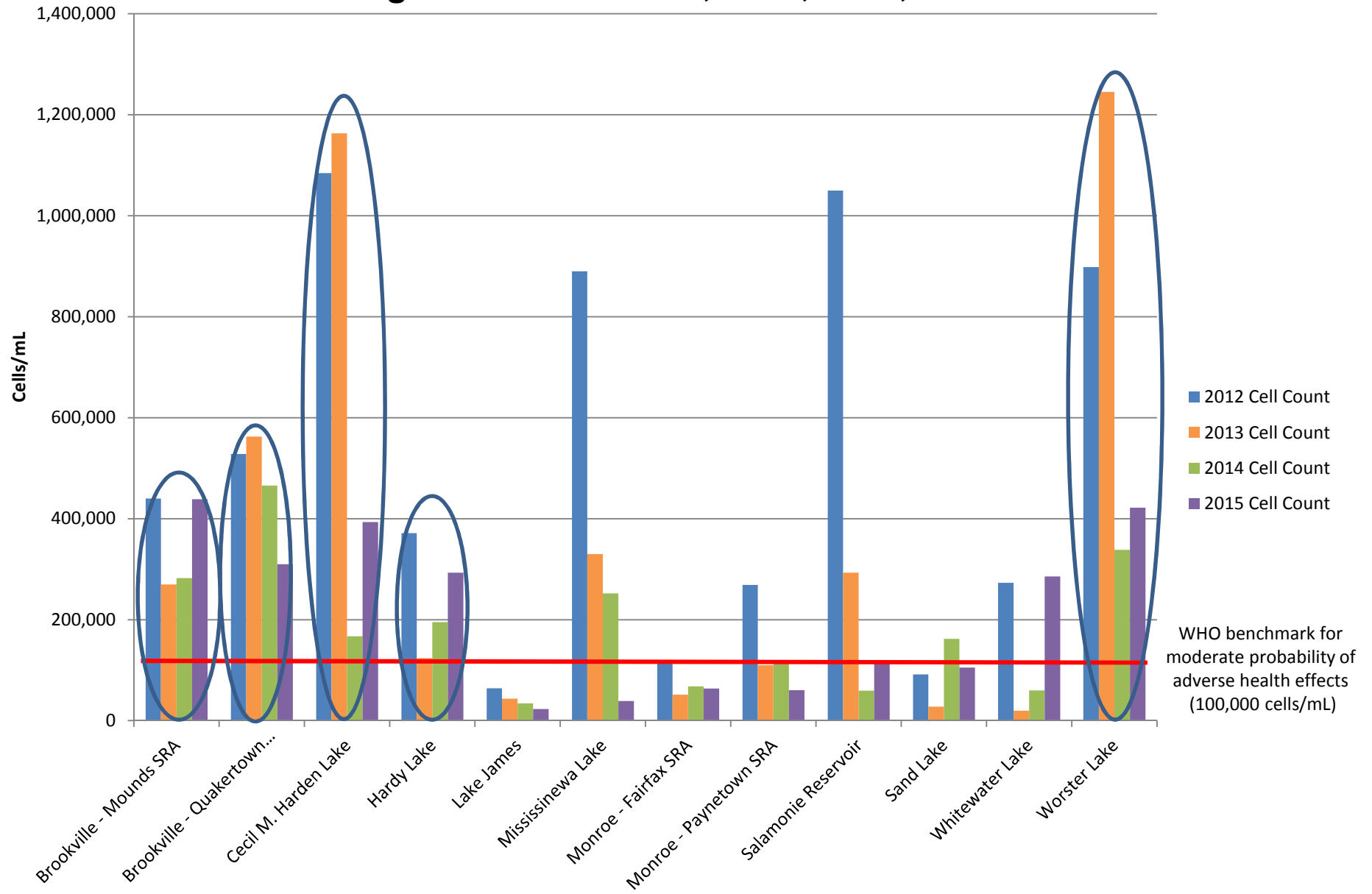
Department of Natural Resources Properties State Parks (SP) and Recreation Areas (RA)

- Potato Creek SP – Worster Lake
- Pokagon SP – Lake James
- Chain O'Lakes SP – Sand Lake
- Salamonie Lake – Lost Bridge West RA
- Mississinewa Lake – Miami RA
- Cecil Harden (Raccoon Lake) – Raccoon RA
- Lake Monroe – Fairfax and Paynetown RAs
- Hardy Lake RA – Hardy Lake
- Whitewater Memorial SP – Whitewater Lake
- Brookville Lake – Quakertown and Mounds RAs
- Deam Lake RA – Deam Lake
- Starve Hollow RA – Starve Hollow Lake
- Lincoln SP – Lincoln Lake
- Ferdinand State Forest – Ferdinand Lake

Cyanobacteria Collection and Analysis Process



Average Cell Count 2012, 2013, 2014, 2015





Cell Count Summary

Recreation Advisory Issued at 100,000 Cells

Year Sampled	2015	2014	2013	2012*	2011	2010
# Lakes	14	14	12	10	10	5
# Samples	86	81	63	70	58	18
Highest Cell Count	810,000	935,000	3.3 million	1.8 million	798,000	260,000
% Over 100,000	52.3	37.5	57	76	48	28
% Over 1 million	0	0	11	16	0	0

*Drought



Microcystin Toxin Summary

Sensitive Population Warning Level 6 ppb

Beach closure at 20 ppb

Year Sampled	2015	2014	2013	2012*
% Detections	37	33	30	44
Highest Concentration (ppb)**	7.83	1.8	2.8	4.3
Average Concentration (ppb)	0.51	0.24	0.23	0.49

*Drought

** 0.150 Detection Limit ELISA (Abraxis)



Communicating to the Public

- www.algae.IN.gov
 - Weekly lake sampling results
 - Precautionary advisories
 - Risks associated with toxins
 - Precautions you can take
 - Links to other websites
- www.in.gov/dnr/parklake/7881.htm
- www.in.gov/dnr/parklake/8473.htm
 - Advisory information posted on the property link
- www.in.gov/boah/2617.htm
 - Information for pets and livestock owners
- www.state.in.us/isdh/25974.htm
 - Information for the general public

Addressing Concerns About Blue-Green Algae



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[About Blue-Green Algae](#)

[Newsroom](#)

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[Test Results](#)

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- [Publication Catalog](#)
- [Wastewater Certification Renewal](#)
- [Acronyms List](#)
- [Online Air Permit Search](#)
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Welcome

The Indiana Department of Environmental Management (IDEM), the Indiana Department of Natural Resources (DNR), the Indiana State Department of Health (ISDH), and the Board of Animal Health (BOAH) are working to provide information about blue-green algae, also known as cyanobacteria, in our lakes.

Algae are commonly found in Indiana lakes and streams without concern, however the concentrated presence of blue-green algae can be linked to some adverse health effects. Factors promoting algal growth include sunlight, warm weather, low turbulence, and nutrient sources, such as phosphorus and nitrogen. Phosphorous is particularly important in fueling cyanobacteria growth. Often nutrient inputs come from nonpoint source pollution, but fortunately, there are many ways to reduce or stop nonpoint source pollution, many of which are simple things we can do right in our own backyards.

This website will be updated weekly during the sampling season to provide information about blue-green algae levels at the DNR lakes that IDEM samples and the Citizen Energy reservoirs in central Indiana. The IDEM video, Sampling Blue-green Algae, explains how IDEM staff samples the DNR swimming beaches.

Top FAQs I Want To...

1. [How do I file an IDEM complaint?](#)
2. [I'm interested in internship/employment opportunities working with environmental issues. How do I apply and what jobs are available?](#)
3. [How do I get rid of electronic waste?](#)
4. [What should I do with my old computers and electronics?](#)
5. [Where can I find information about available IDEM grants, loans, or funds?](#)
6. [What is "household hazardous waste"?](#)

Indiana Reservoir and Lake Update

July 24, 2014

IDEM began blue-green algae sampling the week of May 12th and will end the week of August 29th. IDEM samples for blue-green algae and analyzes those samples for the type and quantity of blue-green algae present and for the following toxins which may be produced by certain types of blue-green algae: microcystin, cylindrospermopsin (only done if species that produce it are present) and anatoxin-a. For protection of human health from exposure to the algae and any of the toxins, Indiana will use the World Health Organization (WHO) guideline level of 100,000 cells/ml or a microcystin toxin level of 6 parts per billion (ppb) for a Recreation Advisory. Beaches will be closed if microcystin toxin reaches 20 ppb. The WHO has not set guideline values for cylindrospermopsin or anatoxin-a. Indiana will use 5 ppb of cylindrospermopsin and 80 ppb of anatoxin-a for a Recreation Advisory, consistent with the state of Ohio recommendations. Toxin results will be posted if they meet those threshold numbers. Exact cell counts and toxin levels can be found in the Test Results section of the web site. Swimming areas will stay on the High Cell Count Alert until the cell counts fall below 100,000.

The following swimming beaches will be sampled monthly unless cell counts are at 100,000 or greater, at which point sampling will be done biweekly until counts fall below 100,000.

IDEM Sampling Results - High Cell Count Recreation Alert

- Brookville Lake - Mounds State Recreation Area
- Brookville Lake - Quakertown State Recreation Area
- Chain O'Lakes State Park - Sand Lake
- Hardy Lake - Hardy Lake State Recreation Area
- Potato Creek State Park - Worster Lake
- Salamonie Lake - Lost Bridge West State Recreation Area

IDEM Sampling Schedule

July 7th, 2014

- Monroe Lake - Fairfax State Recreation Area
- Monroe Lake - Paynetown State Recreation Area

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STATE PARKS

About Us

Contact Us

Events

Inns

Maps

Parks & Lakes

Rates & Fees

Rules & Regulations

Publications

STEWARDSHIP LINKS

Interpretation

Programs

Interpretive Centers

Science and Natural Resources

Brochures

Cultural Resources & History

How You Can Help

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State Parks > Publications > Blue Green Algae Blooms

BLUE GREEN ALGAE BLOOMS

Levels of blue-green algae may be high during summer in some local lakes and reservoirs. Avoid coming into direct contact with the algae or swallowing lake water. Keep a close eye on pets or small children, who may ingest water containing toxins produced by these algae.

Exposure to blue-green algae during swimming, wading, and water-skiing can lead to rashes, skin, eye irritation, and effects such as nausea, stomach aches, and tingling in fingers and toes. After you swim, wade or ski, be sure to shower with warm soapy water.

RESOURCES

- Visit www.algae.IN.gov for latest results.
- [Cylindrospermopsis facts from Division of Fish & Wildlife.](#)
- [Blue-green algae information in PDF format](#) 

Current alerts

Updated Sept. 21, 2015. Call property for latest conditions.

- No alerts at this time.

What Alerts Mean

Low Risk: Don't drink the water. Shower After you swim. Indicated with blue diamond on sign.

Advisory: Swimming and boating permitted. Avoid contact with algae. Avoid swallowing water while swimming. Take a bath or shower with warm soapy water after coming in contact with lake water. Do no use lake water for cooking or bathing. Do not allow your pets to swim or drink water where algae are present. Indicated with yellow diamond on sign.

Caution: Follow all advisory level precautions. Children and those with compromised immune systems should not swim. Indicated with orange diamond on sign.

Closed: Algae and toxin levels make beach currently unsafe for swimming. Indicated with red diamond on sign.

Common questions about blue-green algae

WHAT ARE BLUE-GREEN ALGAE?

Blue-green algae are a group of photosynthetic bacteria. They are most often blue-green in color, but can also be blue, green, reddish-purple or brown. When environmental conditions are just right, they can multiply quickly. Most species rise to the surface where they form floating mats but some stay suspended under the water's surface.

WHAT CAUSES BLUE-GREEN ALGAE?

The nutrients that cause an algae "bloom" come from excess or misapplied lawn and agricultural fertilizers, runoff from pastures, feedlots, lawns and golf courses, discharges from non-regulated (residential) sewage treatment systems and many other sources of

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- Buy Gifts from State Parks
- Reserve A Campsite
- Buy A State Park Permit
- Reserve Room at State Park Inn
- Buy a Horse Permit
- Buy a Boating Permit

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Top FAQs I Want To...

1. Find Out the Cost to Visit a State Park
2. Find a Map for a State Park
3. View Upcoming Nature Programs
4. Place a Geocache
5. Sponsor Registration for Fishing Tournaments



DNR HOME

STATE PARKS

About Us

Contact Us

Events

Inns

Maps

Parks & Lakes

Rates & Fees

Rules & Regulations

Publications

STEWARDSHIP LINKS

Interpretation

Programs

Interpretive Centers

Science and Natural Resources

Brochures

Cultural Resources & History

How You Can Help

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[State Parks](#) > [Parks & Lakes](#) > Special notices for Indiana State Parks

SPECIAL NOTICES FOR INDIANA STATE PARKS

The following may include road construction advisories, blue-green algae alerts, park and trail closures, and other notices. Check with the property office for the latest updates.

Blue-green algae is found in our lakes year-round. Under certain conditions, cells can reproduce in large numbers, and can result in a harmful algal bloom (HAB). We test many of our beaches where people use the water in the summer, but HABs may occur in other seasons, too. Watch for algae accumulation, avoid drinking or cooking with lake water, and do not allow children or pets to swim where algae accumulation is present. For more information, visit algae.IN.gov or the DNR's web page on [blue-green algae](#).

[Brookville Lake](#)[Brown County](#)[Cagles Mill Lake \(Lieber SRA\)](#)[Cecil M. Harden Lake \(Raccoon SRA\)](#)[Chain O' Lakes](#)[Charlestown](#)[Clifty Falls](#)[Falls of the Ohio](#)[Fort Harrison](#)[Hardy Lake](#)[Harmonie](#)[Indiana Dunes](#)[J.E. Roush Lake](#)[Lincoln](#)[McCormick's Creek](#)[Mississinewa Lake](#)[Monroe Lake](#)[Mounds \(Anderson\)](#)[O'Bannon Woods](#)[Ouabache](#)

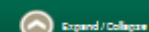
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3. View Upcoming Nature Programs
4. Place a Geocache
5. Sponsor Registration for Fishing Tournaments

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About Us

Contact Us

Events

Inns

Maps

Parks & Reservoirs

Rates & Fees

Rules & Regulations

Publications

STEWARDSHIP LINKS

Interpretation

Programs

Interpretive Centers

Science and Natural Resources

Brochures

Cultural Resources & History

How You Can Help

Just For Kids

Indiana State Parks Centennial
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State Parks & Reservoirs > Parks & Reservoirs > Potato Creek State Park

POTATO CREEK STATE PARK

Mailing Address:

P.O. Box 908

North Liberty, IN 46554

(574) 656-8186

Mapping Address:

25601 State Road 4

North Liberty, IN 46554

North Liberty, IN

82 °F / 28 °C

Clear

at 11:58 AM

[Click for Forecast](#)

- [Property Advisories](#)

- Blue-Green Algae ADVISORY** at Potato Creek State Park: Swimming and boating is permitted.* Avoid direct contact with algae. Don't drink the water. Shower after you swim. Keep pets out of the water or, at minimum, bathe them after swimming, and prevent them from licking algae/water from fur. For more information, visit <http://www.algae.in.gov/> or read our [FAQ sheet](#). This notice will be removed when blue-green algae levels drop.
- THE DOG BEACH AT POTATO CREEK IS CURRENTLY CLOSED.

Online Services

- Reserve A Campsite
- Buy A State Park Permit
- Reserve Room at State Park Inn
- Buy a Horse Permit
- Buy a Boating Permit

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- View Upcoming Nature Programs
- Place a Geocache
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Epidemiology / Entomology



Harmful Algal Blooms

Online Services

- Indiana Death Registration System (IDRS)
- Indiana Immunization Registry
- Food Protection Complaint Form
- MyVaxIndiana
- Nurse Aide Registry
- Radiography License Renewal
- Forms.IN.gov

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General Information

- Harmful Algal Blooms Quick Fact
- FADs on Harmful Algal Blooms - Indiana Department of Natural Resources
- Blue-Green Algae - Indiana Department of Environmental Management
- Blue-Green Algae - Indiana Board of Animal Health

Report a Bloom or Associated Illness

- Report a bloom (PDF)
- Report a human illness (PDF)
- Report an animal illness (PDF)

Algal Bloom Testing Sites

Indiana Department of Environmental Management conducts weekly sampling at various sites. Results are categorized as:

Low, Advisory, Caution, and Beach Closed

Hover over or click icons on map for more information.



Other Resources

- Blue-Green Algae - Wisconsin Department of Natural Resources
- Blue-Green Algae and Harmful Algal Blooms - Minnesota Pollution Control Agency
- Harmful Algal Blooms - Kansas Department of Health and Environment
- Harmful Algal Blooms - Ohio Environmental Protection Agency
- Harmful Algal Blooms - U.S. Environmental Protection Agency

Top FAQs I Want To...

- Apply for a Birth/Death Certificate
- Register for the IDRS
- Quit smoking
- Find information on recent food recalls
- Get a Flu Shot



Does the Beach Have Blue-green Algae?

Blue-green algae can be found in many of Indiana's lakes and reservoirs. Swimmers, boaters and pet owners can enjoy water based recreation, but should be on the lookout for evidence of harmful algal blooms (HABs).

Blue-Green Algae

Algae of many species occur naturally in Indiana's lakes and reservoirs. Blue-green algae is common and not a problem unless levels are high. When levels are high, toxins may be produced as algae cells grow and die.

How Can Exposure to High Levels of Blue-Green Algae Affect People, Pets and Fish?



Swimmers and boaters

Precautions:
Avoid contact with algae.

Avoid swallowing water while swimming.

Take a bath or shower with warm, soapy water after coming in contact with lake water.

Do not use lake water for cooking or bathing.



Pet Owners

Pets can be poisoned by the toxins produced by some algae.

Precautions:
Do not allow your pets to swim in or drink water where algae is present.

Rinse pets with soap and water if they swim in murky water.

Do not let your pet lick algae off their fur.



Fishing

Some toxins may accumulate in the tissues of fish.

Precautions:
Do not cut into organs when filleting your fish.

Rinse the fillets with clean water before freezing or cooking.

Avoid consuming the guts, where toxin accumulation is greatest.

Eat in moderation.

What Does Blue-Green Algae Look Like?

When conditions are right, HABs may occur. An HAB occurs when algae reproduce quickly, creating mats of algae or discoloration of the water because of the large quantity of algae cells present. High nutrient levels from lawn and agricultural fertilizers, sunlight and warm, shallow water all contribute to HABs.

Colors may vary from green, blue-green, brown, black, white, purple, red or black.

Algae may look like a film, crust, puff balls, grass clippings, dots, spilled paint, pea soup, foam, wool, streaks or cottage cheese curds.

Watch for signs that might indicate a blue-green algae bloom in this lake or reservoir and report your sighting to the property office.



Photos courtesy of the Indiana Department of Environmental Management.

Blue-green algae and toxin levels are tested in this body of water. Alert levels vary with testing results:



LOW RISK
Don't drink the water
Shower after you swim



ADVISORY
Swimming and boating permitted.

Avoid contact with algae.

Avoid swallowing water while swimming.

Take a bath or shower with warm soapy water after coming in contact with lake water.

Do not use lake water for cooking or bathing.

Do not allow your pets to swim in or drink water where algae are present.



CAUTION
All Recreation Advisory precautions, plus . . .
Children and those with compromised immune systems should not swim.



BEACH CLOSED
Algae and toxin levels make this beach currently unsafe for swimming.

Today's Alert Level



Indiana's lakes and reservoirs provide great recreational opportunities. Learn to recognize blue-green algae, be alert, take precautions and have fun on the water!



Photos courtesy of IDEM and DNR



06/01/2015

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- [Toxic algae found in five Indiana lakes](#)

Top Stories



Crash on I-469 kills one, hurts three
One man died and a woman and two children were hurt in a ...

[Forum discusses how to prevent violence](#)

Dogs die after swimming in Salamonie Reservoir

Updated: Friday, 20 Jul 2012, 12:04 PM EDT

Published : Wednesday, 18 Jul 2012, 7:13 PM EDT

[Adam Widener](#)

ANDREWS, Ind. (WANE)—What began as playtime with the pets turned fatal at the Salamonie Reservoir Sunday. A couple from Wabash was playing fetch with four dogs in the water. 24-hours later, two of those animals were dead. The couple is blaming high levels of blue-green algae.

Salamonie Reservoir is a place Larry and Marge Young frequently play with their dogs. But Sunday's good time suddenly took a turn for the worse for their three dogs and their daughter's Labrador.

"Within two hours one of them was deathly ill and was dead within 12 or 14 hours," Larry Young said. "The second died within 24 hours."

Friday Update: As of Friday morning, Marge Young said the two other dogs seemed to be doing better and acting as though back to normal. She thinks they may have liver damage but believes they will make a full recovery.

The reason wasn't clear to the Youngs at the time, but they think the killer was a toxic blue-green algae hiding in the water. The Youngs said their vet told them blue-green

Dogs and Cyanobacteria

- Dogs prefer cyanobacteria-laden water to clean water
- **Up to 90% of a lethal dose of microcystin toxin may elicit no clinical signs**
- Symptoms present within minutes to hours
- Death can occur within hours
- No reliable antidotes
- Seek veterinary care **IMMEDIATELY**
 - Tell the vet you suspect blue-green algae



Courtesy USEPA



Indiana State Board of Animal Health

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[What's New](#)

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[Forms](#)

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[Species Information](#)

[Rabies Information](#)

[Interstate Shipping Requirements](#)

FOOD SAFETY & INSPECTION

[Consumer Information](#)

[Dairy & Milk](#)

[Meat & Poultry Inspection](#)

DISASTER PREPAREDNESS

[Disaster Preparedness Overview](#)

[Animal Health Emergencies](#)

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BLUE-GREEN ALGAE

With summer approaching, BOAH veterinarians advise animal owners to learn more about blue-green algae, often called "pond scum." The algae is a health concern for both people and animals. The algae grows best on hot, dry, calm days, just like our summers here in Indiana.

Veterinarians are asked to report incidents of blue-green algae exposure in animals. [Form 55580](#) should be submitted to BOAH as part of a statewide blue-green algae surveillance program.

WHAT IS BLUE-GREEN ALGAE?

Blue-green algae, also known as cyanobacteria, is a microscopic bacteria found in freshwater lakes, streams and ponds where water is warm and stagnant. Most people refer to the algae as "pond scum."

WHAT'S SO BAD ABOUT BLUE-GREEN ALGAE?

It's poisonous. While some types of algae are harmless, the blue-green type produces a natural powerful toxin. Some form toxins that affect the nervous system and others produce toxins that affect the liver.

Livestock, pets and wild animals can be poisoned by the toxins produced by some algal blooms. Lighter weight animals can ingest a toxic dose quickly. Dogs are particularly susceptible to blue-green algae poisoning because the scum can attach to their coats and be swallowed during self-cleaning.

WHAT DOES THE ALGAE LOOK LIKE?

Blooms look like green paint floating on water, foam or scum, or mats on the surface of freshwater lakes and ponds. The blooms can be blue, bright green, brown or red. Some

Online Services

- [New BOAH Rules](#)
- [Online Permit Request](#)
- [Scrapie Ear Tag Order Form](#)
- [Forms.IN.gov](#)

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Top FAQs I Want To...

- Where can I find a list of Indiana state animal-related laws?
- What are the requirements for moving animals in and out of Indiana?
- What do I need to do to bring my pet to Indiana?
- How do I report animal abuse or neglect?
- How do obtain scrapie tags?

[More FAQs»](#)



TOXIC Blue-Green Algae



If you see a bloom, do not let your pet in the water.

- Toxic algal blooms can poison animals, wildlife, and people.
- Toxic blooms can be different colors: green, blue, red, or brown.
- Blooms appear as foam, scum, or streaks on the surface of water.
- Look for blooms in lakes, ponds, and rivers.



- Do not let them lick their fur.
- Rinse them with clean water.
- Rinse your hands and any exposed skin.

Look for these signs:

- Low energy
- Not eating
- Vomiting
- Stumbling
- Seizures
- Weakness
- Drooling
- Diarrhea
- Paralysis
- Tremors

If your pet becomes ill - Call your veterinarian immediately.

www.algae.IN.gov



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Journal of Management Inquiry 20(4)

Posters Distributed to Veterinarians



Indiana Department of Environmental Management

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Contact

Cyndi Wagner

cwagner@idem.IN.gov

(317) 308-3381