Harmful Algal Blooms in Our Recreational Waters

Presented by KDHE and KDWPT

May 10, 2012

Public Health Risk with Harmful Algal Blooms

Presented by

Tom Langer - Director
KDHE Bureau of Environmental Health

What is a HAB?

- A “Harmful Algal Bloom” (HAB) occurs when Blue Green Algae (BGA) has or is likely to produce toxins in amounts that could cause people or animals harm.

- When algae reproduce profusely, this is called a “bloom.”

- Some BGA produce toxins can harm humans and animals.

- BGA is present in most KS lakes, streams and ponds.

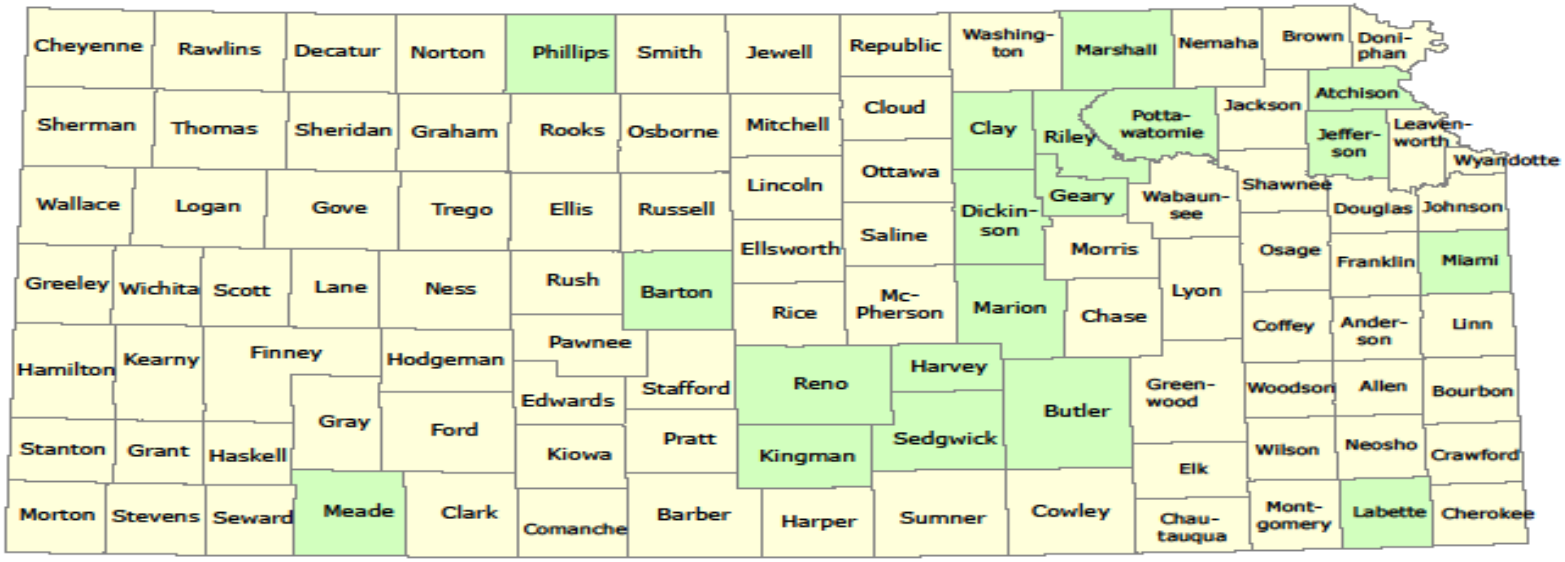
2011 HAB Season

- In 2011, there were 38 water bodies with confirmed HAB
- Each lake/bloom was unique
- Blue Green Algae Cell concentrations & Microcystin toxin levels related but not linear
- Elevated levels of HABs can be a threat to animal/human health
- Partnerships were critical in responding

Counties with HAB lakes in 2011

Kansas Counties with Public Lakes Confirmed with Harmful Blue-Green Algal Blooms (HAB) in 2011

2011 Counties with HAB Confirmed



Kansas Department of Health and Environment

Kansas lakes are NOT annually tested for HABs. This map only represents past reports of HABs that have been confirmed by KDHE. This map is to be used for historical data and does not indicate current health of the lake.

Source: KDHE, Bureau of Environmental Health, & Bureau of Environmental Field Services

Data current as of December 31, 2011

Lake with HAB	First HAB Confirmed	HAB Lifted
Atchison County		
LAKE WARNOCK	8/4/11	11/2/11
Barton County		
MEMORIAL PARK LAKE	1/27/11	na
Butler County		
AUGUSTA CITY LAKE	8/2/11	10/26/11
AUGUSTA SANTA FE LAKE	7/19/11	10/26/11
Clay County		
MILFORD LAKE	7/18/11	10/13/11
Dickinson County		
HERINGTON CITY LAKE	6/24/11	7/28/11
MILFORD LAKE	7/18/11	10/13/11
Geary County		
MILFORD LAKE	7/18/11	10/13/11

Lake with HAB	First HAB Confirmed	HAB Lifted
Harvey County		
HARVEY CO. EAST LAKE	8/8/11	10/28/11
HARVEY CO. WEST PARK LAKE	8/29/11	10/28/11
HARVEY COUNTY CAMP HAWK LAKE	8/25/11	10/13/11
Jefferson County		
PERRY LAKE	7/11/11	7/28/11
Kingman County		
CHENEY LAKE	7/29/11	9/1/11
Labette County		
BIG HILL LAKE	7/12/11	8/25/11
Marion County		
MARION CO. STATE FISHING LAKE	8/24/11	9/29/11
MARION LAKE	8/23/11	7/28/11
Marshall County		
FELDHAUSEN, JOHNSON & MITCHELL POND	7/22/11	10/20/11

Lake with HAB	First HAB Confirmed	HAB Lifted
Meade County		
LAKE MEADE STATE PARK	6/16/11	8/11/11
Miami County		
HILLSDALE LAKE STATION 1	7/29/11	8/25/11
Phillips County		
LOGAN CITY LAKE	8/21/11	11/9/11
Pottawatomie County		
RIVER PARK POND	8/30/11	9/22/11
Reno County		
CHENEY LAKE	7/29/11	9/1/11
DILLON PARK LAKE #1	8/24/11	10/13/11
Riley County		
RIVER PARK POND	8/30/11	9/22/11
Sedgwick County		
CHENEY LAKE	7/29/11	9/1/11
RIGGS PARK LAKE	7/18/11	10/6/11

HAB Summary 2011

From March 18 to October 31, 2011	
Total number of requests for testing	**42**
Total number of bodies of water tested	**38**
Number of counties where lakes were tested	**39**
Number of lakes placed under a warning status	**16**
Number of lakes placed under an advisory status but never on warning status	**4**
Number of lakes tested but not found at or above an advisory level	**18**
Number of lakes still active (05/10/12)	**1**

Lakes with Extended Advisories/Warnings - 2011

Lake	# Day Adv	# Days Warn	# Day Total
Cheney	21	11	32
Big Hill	35	0	35
Marion CL	63	28	91
Perry	20	7	27
Milford	28	63	91
Logan CL	62	49	111

Milford Lake

Milford Lake - Summer 2011

Milford Lake 2011

KDHE Roles & Responsibilities

- Responds to HAB complaints in public waters (KSU works with owners of private ponds)

- Performs sample collection and analysis

- Provides public health messaging based upon the conditions tested

Partners' Roles & Responsibilities

- Lake managers (KDWPT, USACE, etc) work with KDHE to learn of the health risks associated with HAB levels to make decisions regarding access to lakes

- Signs are posted by lake managers

- Flood control operations (i.e. releasing the water to control levels) belong to lake managers.

Public Health Messages

Designed to educate public so they can make informed decisions

Public Health Advisory

Public Health Warning

Public Health Advisory

- Issued when BGA cell counts exceed 20,000 but is less than 100,000 cells per milliliter of water <u>or</u> Microcystin concentrations are greater than 4 but less than 20 micrograms per liter of water

- Lake managers post signs
- Discourage direct contact with water
- Local Health Depts, health care providers and veterinarians are notified
- Public Water Supplier notified if needed
- News Release issued

Kansas

Public Health Warning

•Issued when BGA cell counts exceed 100,000 cells per milliliter of water or Microcystin concentrations are greater than 20 micrograms per liter of water

- Signs are posted
- Recommendation – Prohibit direct contact with water
- Notify local health departments, health care providers and veterinarians
- Notify public water suppliers if needed
- Issue media release

Partnerships

Not just KDHE…

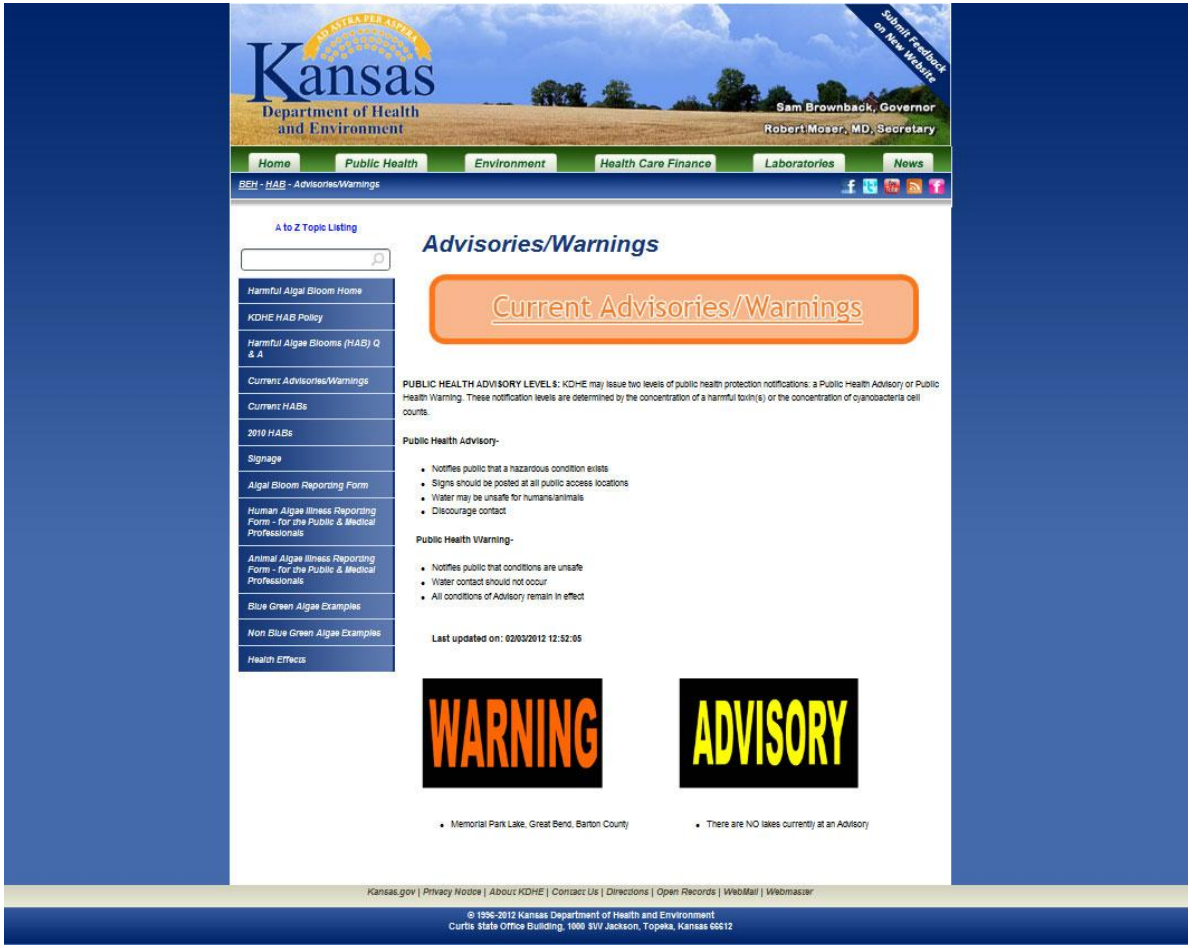
Kansas Department of Wildlife Parks & Tourism
US Army Corps of Engineers
Bureau of Land Reclamation
Kansas Water Office
Kansas Department of Agriculture
K-State Research and Extension
KSU Veterinary Medicine
US Geological Survey
Public health departments
Local parks and recreation departments

Partnerships

AND……

The News Media!

BGA in Kansas Website



Kansas

Wildlife, Parks &Tourism

Presented by

Steve Adams,

Natural Resources Coordinator

About KDWPT

- 22 of 26 state parks are adjacent to federal and state reservoirs

- In 2011, these 22 parks hosted an estimated 6.1 million visits

- Also manages 43 state fishing lakes

About KDWPT

- Enforces state fish, wildlife, boating and natural resource laws and regulations

- Stresses the importance of safe behavior when the public participates in outdoor activities

About KDWPT

- Cooperates with KDHE, USACE, BOR, Kansas Water Office and other agencies as necessary to prepare for and respond to HAB events

- Staff report potential HAB events to KDHE and help collect water samples, as needed, for KDHE to analyze

About KDWPT

When KDHE confirms a HAB event and issues an advisory or warning, KDWPT responds to help mitigate public health risks…

About KDWPT

- Posts signs at key locations around state properties
- Cooperates with KDHE and federal agencies to issue news releases
- Posts the information on the KDWPT website
- Reminds patrons of the potential risk to human and animal health if patron behavior appears contrary to caution or warning signs
- Closes state park beaches or water body access as appropriate, depending on the scope of the HAB
- Provides background information on-site as needed
- Fields inquiries from the news media and the public about HAB events

Blue Green Algae Testing, Water Supplies, and Control

Presented by

Mike Tate, PE

Director, KDHE Bureau of Water

BGA Testing

- Sample Collection
- Transportation
- Analysis
  - Chemical analysis for toxin
  - Cell count and identification for BG species
- Reporting
  - Evaluate analytical data
  - Determine waterbody status
- Timing – 5-6 days from collection to reporting

Drinking Water Suppliers

- KDHE coordinates with affected public water suppliers
  - Evaluate current operations
  - Suggest modified or enhanced operational controls
    - Recommended operational controls
      - Removal of BGA through settling processes (Killing BGA cause release of toxins)
      - Addition of activated carbon to remove soluble toxin
      - Disinfection at the end of treatment to further reduce toxin
  - Studies indicate that following the recommended operational controls will remove toxins

What is the Drinking Water Standard?

- EPA has considered establishing standards for BGA toxins but has yet to do so
- World Health Organization (WHO)
  - Guidance level of 1 ppb for long term ingestion
    - A 130 lb person consuming about a half gallon a day for 70 years
  - No “acute,” or single event, value established
- Drinking water plants can treat to below the 1 (ppb) WHO guideline

What is Being Done to Reduce BG?

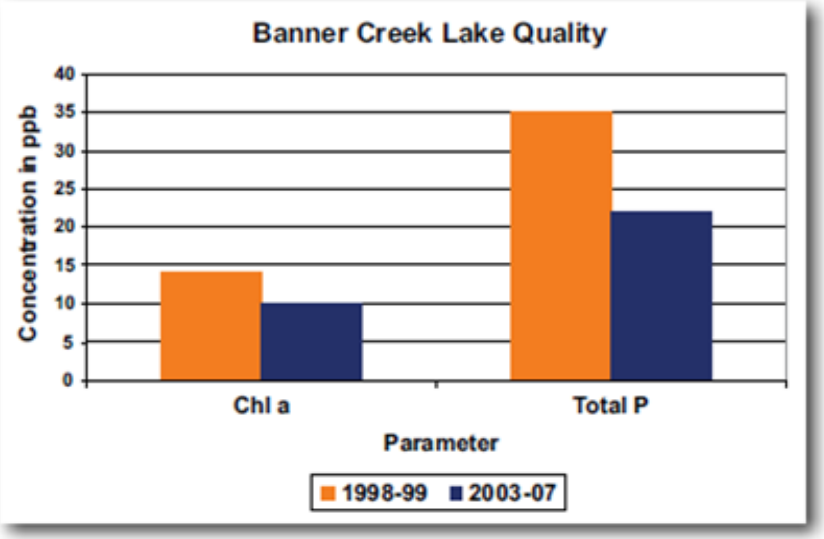
- BGA are natural
  - It's been around for billions of years
- Won't be eliminated, but try to lessen severity
- Lessen severity by reducing nutrients in water
  - Primarily phosphorus and nitrogen
- Nutrient concentrations in lakes are reflective of activities in their watershed
  - Both urban and rural

What is Being Done to Reduce BGA?

- Kansas' Nutrient Reduction Plan
  - Adopted in the State Water Plan in 2005
  - Focuses on
    - Largest wastewater treaters
      - Approximately 50% have reduced nitrogen and phosphorus discharge by two-thirds
    - Nonpoint sources
      - Addressed through Watershed Restoration and Protection Strategies (WRAPS) to Leverage State and Federal funds to maximize effectiveness of agriculture cost share programs

What is Being Done to Reduce BG?

- Nutrient reduction will require:
  - A sustained, multi-year effort
  - Participation by many rural and urban partners
- There has been success
  - Banner Cr Lake WRAPS
    - Nonpoint source controls have reduced phosphorus to acceptable levels
    - Recognized as a national success story by EPA



http://water.epa.gov/polwaste/nps/success319/upload/ks_bannercreek.pdf

What is the Forecast for 2012?

- No one can really predict HABs
- Dependent on weather & watershed conditions
  - Factors that increase chances of blooms
    - Significant storm runoff in the spring
    - Hot, dry conditions
    - Calm winds
    - Minimal water releases from reservoirs
- If blooms do occur, we can predict
  - A coordinated state agency response
  - Widespread communication with the media and citizens

Thank you!

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TOLL FREE Number – Listen for Recording of Lake Advisories and Warnings

1-855-HAB-LAKE (1-855-422-5253)