

HAB RISK AND RESPONSE: DEQ'S ROLE

Jay Wright

ODEQ - SELSD



O K L A H O M A
DEPARTMENT OF ENVIRONMENTAL QUALITY

Why should Oklahoma care about Blue-Green Algae?

DRINKING WATER SUPPLIES

- Oklahoma has ~ 215 surface PWSs
- Ingesting algal toxins can make you sick

RECREATIONAL RISK

- Recreational exposure can result in mild to serious adverse health effects
- Pets and livestock have a high risk of suffering effects

Grand Lake

6-28-2011



Public Health Guidelines

Public Water Supplies

- Microcystin is on EPA's Contaminant Candidate List for regulation
- WHO suggests a 1 ug/l (ppb) level for microcystin
- MN – 0.04 ug/l to protect for a short-term exposure for a bottle fed infant
- DEQ Goal – no algal toxins in water served to the public

Recreation

- WHO

Relative Probability of Health Effects	Cyanobacteria (cells/milliliter (mL))	Microcystin-LR (micrograms(ug)/L)
Low	<20,000	<10
Moderate	20,000-100,000	10-20
High	100,000-10,000,000	20-2,000
Very High	>10,000,000	>2,000

- Oklahoma SB259

> 100,000 cells/ml and > 20 ug/l microcystin

Recreational Response

SB259

- Goal: balance tourism and public health
- Applies to all state and municipally managed lakes
- Lake managers responsible for advisories
- ODTR responsible for maintaining informational website
- No advisory unless cell counts $> 100,000$ cells/ml and microcystin > 20 ug/l

HAB Response

What's our Universe?

- **Public Water Supplies**
 - 215 Surface Water PWSs
 - 110 Lakes, 17 Rivers
 - 23 covered by existing program (USACE, GRDA, OKC, Tulsa)
 - Lake manager does initial investigation
 - DEQ responds to protect and sample PWSs
 - Non-program lakes - DEQ provides primary response
 - DEQ does initial investigation
 - DEQ responds to protect and sample PWSs

HAB Response

What's our Universe?

- **Recreational**
 - 142 publicly owned lakes
 - Response is up to lake managers
 - 42 are routinely monitored (COE, GRDA, OKC, Tulsa)
 - DEQ does not respond unless there is a pet death or human illness
- **Private Lakes and Ponds**
 - Limited Response

PWS HAB Response

- **Report**
 - DEQ Complaints Hotline
 - Internal notification to ECLS, WQD, ASD, SEL
 - External notification to OSDH, Lake Manager
- **Investigate**
 - WQD DE will advise PWSs on operational procedures to reduce the likelihood of toxins in finished water
 - ECLS local personnel and/or SELS investigate
 - HAB Event Database
- **Sample**
 - Algal ID&E and Toxins from the most intense portion of the bloom (these numbers usually come from COE, OKC, Tulsa, etc...)
 - PWS Intake – Algal ID&E if possible at intake structure
 - PWS Plant – Toxins from raw and finished water

PWS HAB Response

- **Evaluate the Results**
 - Goal of no detectable algal toxins in finished water
- **Advise**
 - Inform Lake Manager and PWSs of results
 - External notification to Tourism, OSEE, OSDH, OWRB, OCC
- **Monitor**
 - Resample bloom monthly or as conditions change
 - Resample PWSs at least monthly depending on the presence and/or intensity of the bloom

PWS Toxin Results 2011-13

Microcystin

Raw – reportable levels in 23 of 71 samples (2.41 ug/l)

Finished – reportable levels in 0 of 73 samples

Cylindrospermopsin

Raw - reportable levels in 1 of 117 samples (0.07 ug/l)

Finished – reportable levels in 5 of 117 samples (0.08 ug/l)

Saxitoxin

Raw – reportable levels in 3 of 48 samples (0.04 ug/l)

Finished – reportable levels in 0 of 48 samples

Anatoxin

Raw – reportable levels in 0 of 16 samples

Finished – Reportable levels in 0 of 16 samples

Recreational HAB Response

- **Report**
 - DEQ Complaints Hotline
 - Internal notification to ECLS, WQD, ASD, SELS
 - External notification to ODTR, OSE, OSDH, OWRB, OCC
- **Investigate**
 - Notify Lake Manager
 - ECLS local personnel and/or SELS may answer questions
 - HAB Event Database
- **Sample**
 - ECLS local personnel and/or SELS may provide instructions or answer questions
 - Sample for ID&E and microcystin (\$325 dependent on lab capacity)
 - Analysis and cost the responsibility of lake manager

Recreational HAB Response

- Evaluate the Results
 - If they use the SEL, results will be provided to the lake manager
- Advise
 - Responsibility of Lake Manager
 - checkmyoklake.com is the central point for tracking advisories
- Monitor
 - Responsibility of Lake Manager

Private Lake HAB Response

- **Report**
 - DEQ Complaints Hotline
- **Investigate**
 - ECLS local personnel and/or SELS may consult
- **Sample**
 - ECLS local personnel and/or SELS may consult
 - Sample for ID&E only
 - Analysis and cost the responsibility of owner (\$165 dependent on lab capacity)

Private Lake HAB Response

- **Evaluate the Results**
 - If they use the SEL, results will be provided to the owner
 - Owner will be informed of the WHO guidelines and state law
- **Advise**
 - Responsibility of owner
- **Monitor**
 - Responsibility of owner