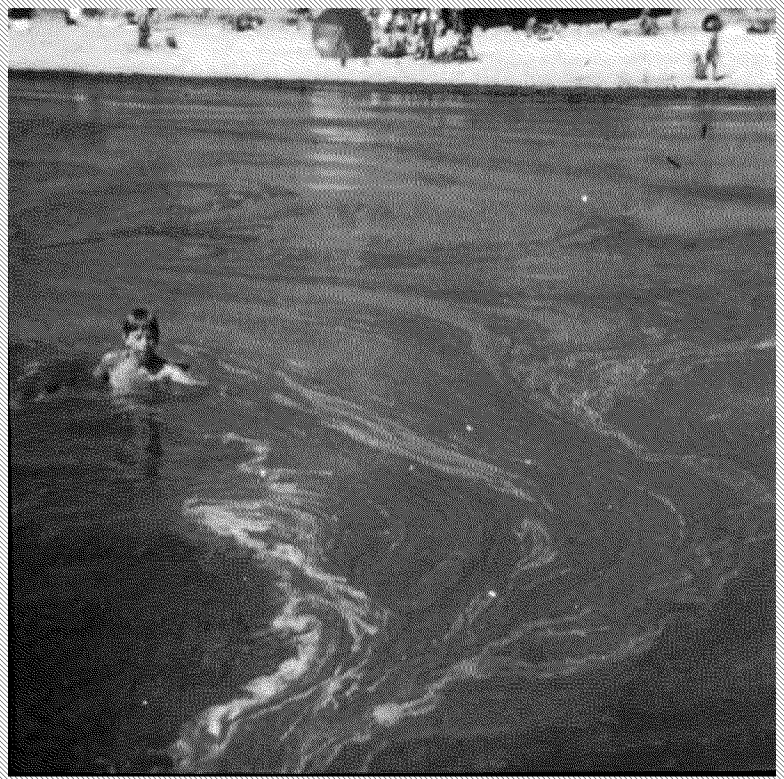
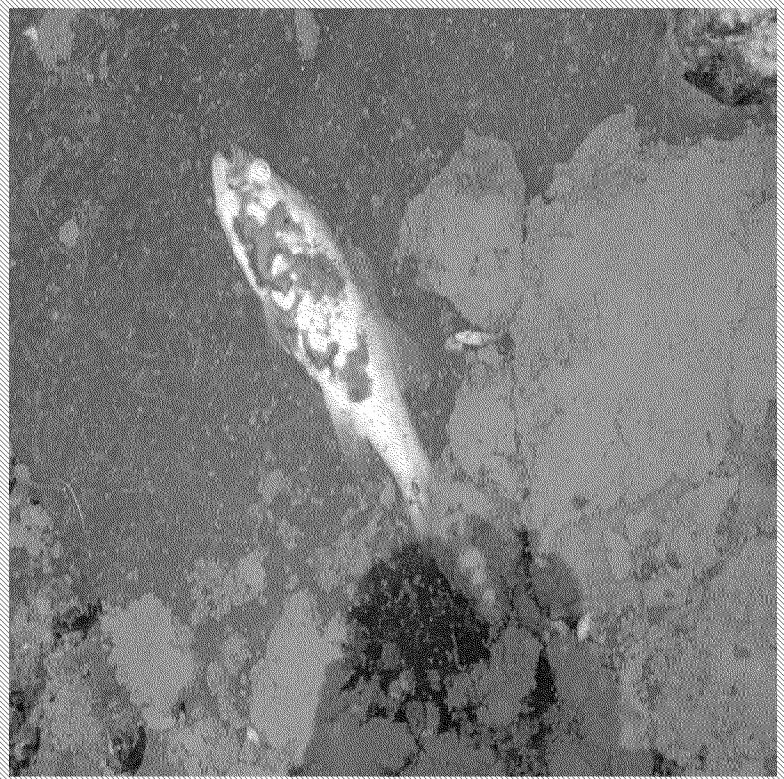
HABs, USACE, and the UMR



Written, Produced, Directed, Edited, and Presented by: Leo Keller

First things first…

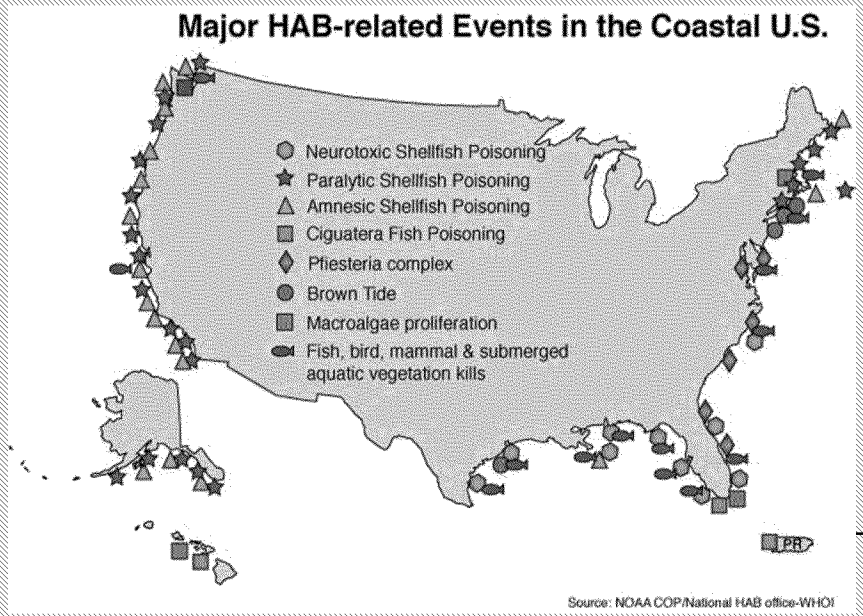
- What is a HAB?
- What makes them “harmful”?
- Common Causes

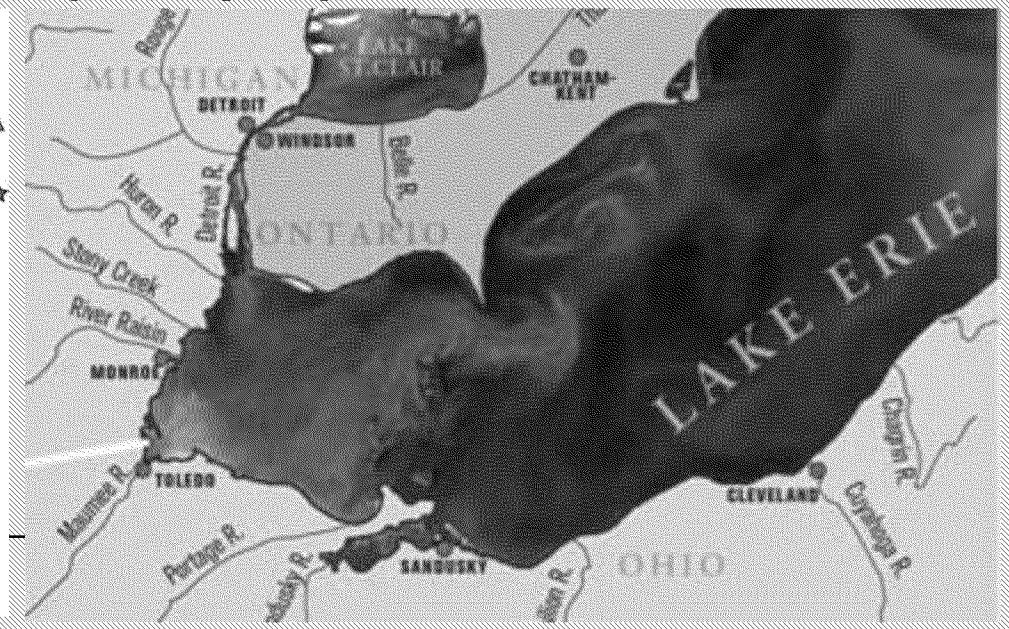


Magnitude of the Issue

Impacts world-wide

Coastal and inland





Why does the Corps' Care?

- 420 lakes in 43 states
  - hosting 33% of all fresh water fishing
  - 4,628 recreation areas
    - 80% within 50 miles of a large U.S. city
- 7,829,605 acres of land and 5,630,584 acres of water under USACE management (~ 2% of all federal lands)
  - Hosting 20% of visits on federal lands
  - 56,000 miles of shoreline; 90,773 campsites; 2,022 playground sites; 959 designated swimming areas; 9,504 miles of hiking trail; 3,671 boat ramps; 110,735 marina slips
- 335,293,332 total visits (person-trips) in FY 2012
- 9,779,584 acre-feet of water supply
  - 9,359,419 currently under contract (95.7%)
  - 7,907.53 mgd yield currently under contract

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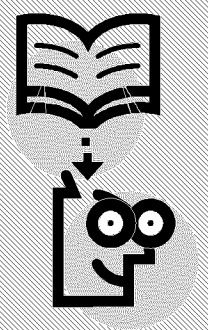
So what is the Corps Doing about HABs at HQ…

- All USACE projects across the contiguous US are impacted by HABs to one degree or another.
  - Most in the UMR are cyanobacterial HABs (blue-green algae)
  - A few costal Districts are also dealing with red tides (mult sps dinoflagellate).
  - Interior Districts have also had to deal with golden algae related HABs and associated fish kills (Virginia, Oklahoma, Texas).

- USACE does not have a corps-wide/corporate policy on HAB response.

- HAB impacts (i.e., toxin production) can vary temporally and spatially



Local History of Cyanobacteria Observations

- Cyanobacteria or blue-green algae were noted through reservoir WQ monitoring:
  - Saylorville - 1996, 1997, 2001, 2002, 2004, 2009, 2010, 2012, 2015
  - Red Rock - 1992, 1994, 1996, 1997, 1999, 2001, 2002, 2004, 2008, 2009, 2010, 2014
  - Coralville – 2011, 2012, 2014

Commencing HAB Monitoring in MVR

High nutrient loading in the

Des Moines River and reservoirs

+

Reduced river flows

=

Green river and reservoirs

MVR's Current Monitoring Program

- 3 reservoirs in Iowa
- Weekly June to Aug
- microcystin-LR
- Beaches & reservoir

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Houston, we have a problem…

Jul 2nd 2009 – widespread blue-green algae bloom at Sandpiper Beach, Saylorville

- microcystin-LR surface scum = 2,500 ppb
- microcystin-LR composite = 6 ppb

Jul 9th 2009 – all of Saylorville reservoir affected

- microcystin-LR basin scum = 300 ppb, 4 ppb
- microcystin-LR Sandpiper Beach = 40 ppb, 3 ppb
- microcystin-LR Oak Grove Beach = 600 ppb, 8 ppb

Health advisories were posted and public notice sent

Tricky, tricky

Jul-Aug 2014 mats of algae at Red Rock

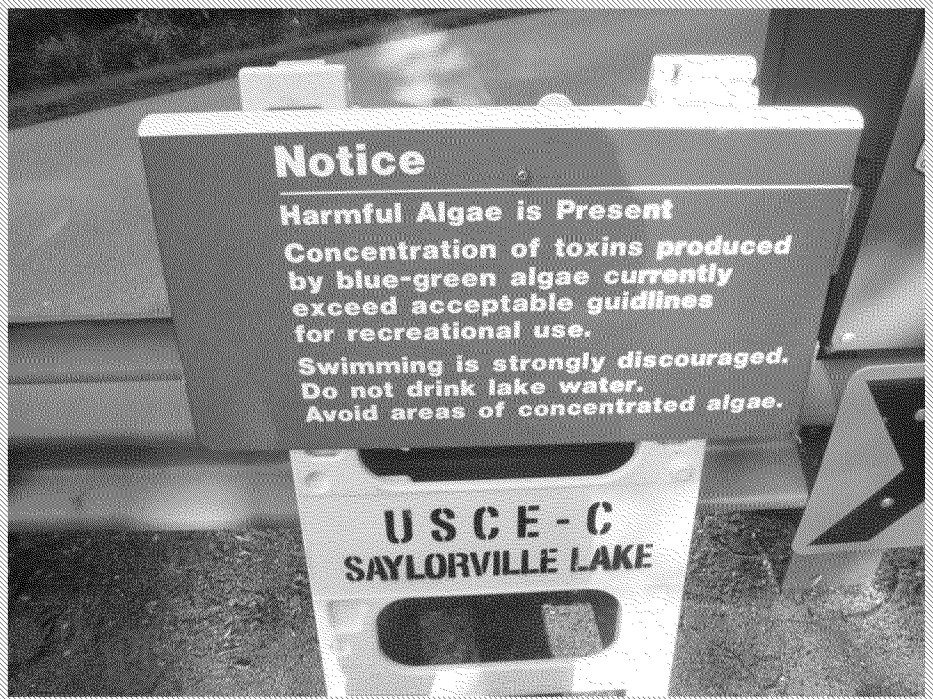
Multiple tests done

Surprising results

Here we go again

Jul-Aug 2015 Saylorville

Largest HAB impacts to date for MVR

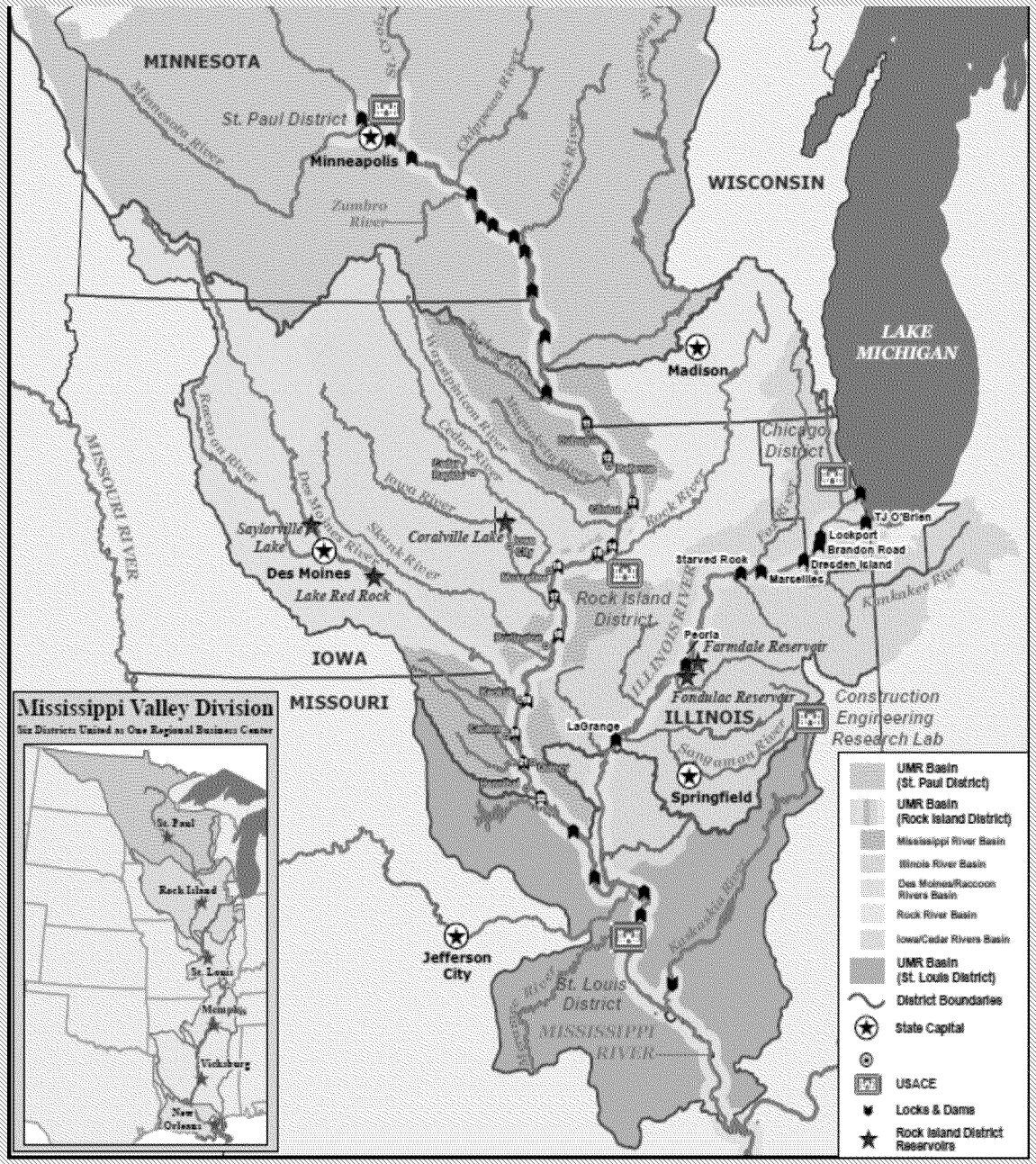


Now What???

Each District currently on their own

WHO and EPA are recognized agencies

Recommend collaboration with states (IL, IA, MO, MN, WI)



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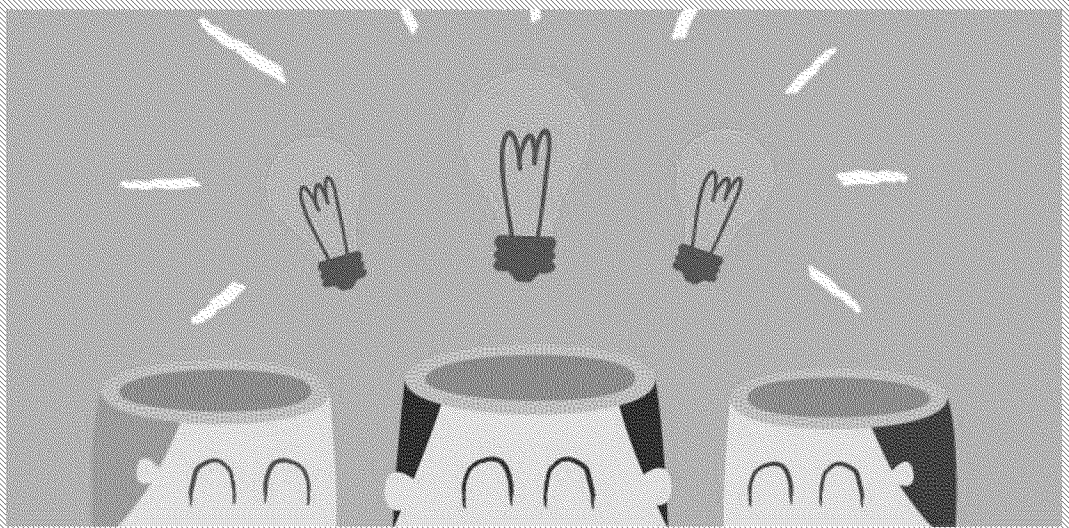
Current state HAB Guidelines:

Illinois	microcystin-LR > or = 10 µg/L	Report to a state response team
Iowa	microcystin-LR > or = 20 µg/L	Caution (bloom, no toxin info), Warning (toxins above threshold)
Wisc	> 100,000 cells/mL or scum layer and 20 µg/L	Issue advisory
Min	microcystin-LR > or = 20 µg/L	Couldn't find response
Missouri	Couldn't locate guidelines	

Options for MVR Plan

- Follow threshold/response for each state that the HAB occurs
- Follow the most restrictive of the states
- Hybrid
- Others????