DETECTION & MONITORING

HABSOS 2019 Review

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WHAT WE THINK WE KNOW

- **Sample collection, preparation, and analysis methods have significant effects on the levels of cyanotoxins reported.**
- **Cyanobacteria blooms are not always reported and sampled.**
- **In addition to posted signage, the public must use visual observation and historic bloom information to inform their decision about whether to recreate in a waterbody due to rapidly changing bloom conditions.**
- **Cyanotoxin concentrations are likely underestimated due to our limited ability to quantify the hundreds of toxins that could potentially be present.**

RESEARCH PRIORITIES - CYANOHABS

1. Enhance blue-green algae monitoring, including time series (longitudinal) as another data point
   - Improve blue-green algae field identification
2. Determine if and what role environmental conditions have on cyanotoxin levels
3. Develop a standard method for measuring *Microcystis* (cells through molecular) (Look at other state regulations for improvements or change)

4a. Evaluate if and what relationship exists between biomass and toxin levels
4b. Implement vertical profiles to get an accurate assessment of biomass

5. Evaluate the correlations between hypoxia and nutrient fluxes
6. Develop sampling plans that meet existing recommendations and use (e.g., WHO, EPA)
7. Understand sensor limitations
8. Detect and treat taste and odor compounds

RESEARCH PRIORITIES –HABS IN GENERAL

1. Conduct more comprehensive and consistent monitoring (biology, chemistry, and physics) including:
   - High resolution, *in situ* monitoring of bloom dynamics
2. Form partnerships (government, academia, and industry) to develop monitoring programs that will be comprehensive and non-overlapping. All types of HABs could be monitored during well-designed monitoring programs

3a. Develop affordable/effective field tests that are able to measure cells and toxins simultaneously
3b. Understand the fate and effects of HAB toxins

4. Plan for comprehensive statewide monitoring and mitigation response
5. Invest in updated and cost-effective monitoring technology
6. Determine the fate of the bloom organic matter
7. Increase the rate of taxonomic identifications