California Cyanobacteria Harmful Algal Bloom Network Agenda

Thursday, December 19, 2019
9:00 am – 3:00 pm
California Environmental Protection Agency
1001 I Street, Sacramento, CA 95814
3rd Floor, Room 350

An escort will need to take you to the room so please check in at the Visitors Office
Meeting Access → Join Skype Meeting
Phone Access → 916-574-1755

9:00 am Welcome, Introductions, Announcements, etc. (15)

Review of October meeting notes & agenda

- Notes Approved
- Amended agenda to include a short description of the Internet of Water

Announcements

- U.S. Environmental Protection Agency submitted Notice of Intent to develop a policy on the Determination of Harmful Algal Bloom (HAB) and Hypoxia as an Event of National Significance in Freshwater Systems for public comment.
- An email request for co-chair nominations will go out on the Lyris list soon. The co-chair term is 2 years.

Update to Water Quality Monitoring Council

- Identified top needs:
  - Additional administrative and IT support
  - Direct access to communication tools
  - Better system for uploading and sharing HAB monitoring data
  - Coordination with Water Board FHAB program and FHAB monitoring strategy development
  - CEDEN data collection and input needs to be standardized to ensure consistency. Sharing data to a centralized location is first priority. Water quality monitoring is being submitted to WQX (national) and CEDEN (California)

CCHAB web accessibility update

- Presentations will not be posted on the web. We will ask presenters for their permission to post their contact information on the web and refer those who wish to access the presentation to them directly.

Webpage membership & logos update

- No submissions for a logo have been provided. Still seeking.

9:15 am Update on SWRCB/SCCWRP FHAB Monitoring Strategy project (Jayme Smith) (20)

- The FHAB Monitoring Strategy has multiple components 1) incident response, 2) state monitoring program, 3) satellite/remote tools, and 4) voluntary programs. This update is regarding voluntary programs. The goal of the program is to have a monitoring program to cover the entire state of California at statewide, regional, and single waterbody scales. There are two main components: 1) state implemented framework that coincides with a 2) voluntary framework. There have been webinars and in-person meetings – the last one being on December 5, of which findings are still being framed. There has been a wide variety of representation from the academic, tribal, NGO, and governmental sectors. Management questions asked were 1) what is the extent and magnitude of FHABs within my waterbody? and 2) How do those HABs change over time in my waterbody? Questions were focused on REC1 at Shorelines. The voluntary program should include trained staff or citizens. Identified indicators, program design, data communication, agency actions, and entity responsibilities. Indicators were then placed on a spectrum from low to high resource availability. Some indicators are more expensive, others less. Core indicators were identified, which are expected to be measured on an agreed upon frequency. Optional indicators were identified to be collected at the volunteers' discretion. Indicators to be measured given high resource availability were identified in the same manner. Recommendations for when and how to measure indicators in specific waterbody types were made. SCCWRP is putting together a work product for implementation.

9:35 am Invited guest speaker: Karen McLaughlin and Jayme Smith, Southern California Coastal Water Research Project, Benthic/Shellfish Cyanotoxins Research (45)

- The Southern California Bight is highly subject to anthropogenic inputs, as 700 million gallons of effluent is discharged per day with a high nitrogen concentration. Regional monitoring investigates human impacts on coastal habitats to answer basic questions about status and trends along the coastline. The Regional Monitoring Program started out on the continental shelf, monitoring water columns, kelp beds, reefs, marine protected areas, wetlands, and streams. There are two key regional programs: 1) Bight Regional Marine Monitoring, and 2) Stormwater Monitoring Coalition (SMC) Stream Monitoring Program. Older Bight programs were based in NPDES monitoring, however, the monitoring data was too fragmented. Permits were rewritten to include regional monitoring. The specific foci of the Bight Program changes over time. This iteration of the Bight Program consists of 100 participating agencies, integrating collaborative monitoring answering current management questions about human impact on coastal habitats. The program is not just a regulatory mandate. Regional monitoring explores new problems and documents success of management actions. The program is providing a consensus assessment that no single agency can attain alone. Solo assessment does not allow for broad picture

interpretation. The program focuses on current management needs and documents success of management actions. It is opportunity to try new things outside of permit requirements (examine extent and magnitude of new stressors, develop and test new assessment tools, explore new habitats).

- HABs are now being incorporated into the Bight program and the contribution of anthropogenic nutrients in coastal waters. Bight '08 demonstrated that anthropogenic nutrients have doubled nitrogen loads to coastal waters along urbanized regions of the coast.
- Domoic acid in the water column has increased throughout the years. Blooms come and go; however, the impacts can remain long after (e.g. the Dungeness crabs). Findings from recent studies show domoic acid accumulation in the benthos as an emerging issues. For Bight, there are two main questions: 1.) What is the extent of detectable domoic acid in the benthic environment and how much does it vary over time? and, 2.) To what extent does domoic acid occur in benthic infauna? Findings show that water column processes strongly affect benthic toxin concentrations. In summer, there is larger inter-annual variability in sediment domoic acid concentrations. Near shore observations of water column toxins generally correspond with sediment concentrations. Temporally persistent concentrations of domoic acid occur in infauna tissues with distinct patterns related to feeding strategies, with sediment feeders, mostly worms, having the highest concentrations. This finding is consistent with the pattern of highest concentrations reported in innkeeper worms by Kvitek et al. (2008). Our ability to detect domoic acid in the water column does not correspond well to the domoic acid concentrations observed in infauna tissues.
- Bight 2018 includes pilot studies with caged mussels deployed for 4 months (Sept.-Dec.) with tissue analyses for microcystins by ELISA and LCMS. Further work is needed to validate extraction and analytical methods before expanding study for 2023 Bight. The goal for Bight 2023 is to establish a comprehensive regional monitoring program for HABs at the land sea interface and they are looking for partners.
- The Bight program is adaptive to emerging management and needs to examine the extent and magnitude of new stressors, develop new assessment tools and standardize methods, and explore new habits.

Added Item – Internet of Water, Greg Gearhardt, SWRCB

- The Internet of Water and WB have been partnering for years – goal is to centralize water data at local, regional, and national scales. The project touches many parts of water data community. In California, there is additional funding to work with communities and community science. The group selected a HAB project for external risk communication. A prototype that runs parallel to the case management system is currently functioning. A more detailed conference call for interested parties before the next CCHAB meeting (February) is desired.

10:20 am Break (10)

10:30 am Regional Coordinators HAB Year End Reports (90)

Overall

- Total reports of HABs increased by 51 between year 2018 to 2019
- Postings increased by 19; 240 reports resulted in 164 postings
- 74% of counties experienced HABs
- Between 2016-2019, 100% of counties were affected by HABs

Region 1 Update:

- Benthic cyanobacteria with anatoxin detects in Region 1 rivers; microcystin detects in other waterbodies. Caution through danger signage
- Klamath was currently de-posting for the whole waterbody but had warning through danger signage and blooms through October

Region 2 Update:

- Identifying waterbodies with HAB issues during 2019
    - This is readily available on the HABs map – 6 waterbodies in 2019 – since we get few reports in SF Bay Region we focus on mitigation (Carrie Austin is chair of the Mitigation Subcommittee of CCHAB Network)
- Identifying actions taken – signage, monitoring, toxin levels
    - East Bay Parks readily shares their work with public agencies, regularly monitors their swim beaches and accessible open waters to protect human and canine park users, and posts signage and updates their website regularly; little is known about other recreational waters in the SF Bay Region
- Quantifying illnesses
    - dog deaths - none reported in 2019
- Mitigation measures/programs
    - East Bay Parks worked two lakes with swim beaches. East Bay Parks continued their mitigation actions in Lake Temescal this year and is planning actions for next year in Lake Anza.
- Several drinking water agencies are in the process of installing new or expanding existing oxygenation systems to resolve algae/cyanobacteria taste and odor issues and manganese taste and water treatment problems. These drinking water agencies are not involved in CCHAB Network.

Region 5 Update:

- 19 counties with blooms identified with toxins and advisory signage
- Lake Oroville had caution signs posted due to secondary triggers. A swim beach had low detections of anatoxin-a, from a suspected benthic mat
- Black Butte Lake – Lakewide bloom occurred, no toxin present. Caution sign posted
- Lassen County – Caution signs posted
- Lower Roberts Reservoir – cyanobacteria detected
- Lake Berryessa – Cylindrospermopsin identified & benthic mats. Low detects of cylindrospermopsin routinely.
- Capell Creek which flows to Lake Berryessa – Dog death occurred, investigation occurred, no toxins detected

- Willow Lake – Bloom present, saxitoxin detected
- Rat Farm Boat Ramp – Detection of microcystin and cylindrospermopsin
- Lake Britton – No toxin detects, visible bloom present
- Whiskey Town Lake – Grizzly Gulch, bloom detected, no testing because no public access due to recent fire
- Private Pond in Tehama County – Dead goat and horse found, too much time elapsed from incidence, no testing took place.
- New Hogan Reservoir – Assessment ensured, detected microcystin, mat samples and water column samples collected
- Forest Meadows - wastewater pond used to water golf course and housing landscaping had a bad bloom which involved enforcement.
- San Joaquin County, San Joaquin River – danger level for microcystin during a heavy bloom.
- Oakwood Lake – Sewage incident occurred, creating a bloom, signs posted; danger levels of microcystin
- Stone Lakes National Wildlife Refuge – Microcystin and saxitoxin detected
- Camden Lake – Visible bloom, no toxin testing took place, but caution sign posted, did cyanobacteria cell counts
- American River – 2 dog deaths, 1 above Folsom Lake in Oregon Bar, 1 Rossmore Bar; benthic Phormidium and anatoxin-a detected
- Tuolumne – bloom visible in New Melones Reservoir and Stanislaus River near log jam; microcystin low detection but caution signage installed.

<u>Clear Lake Update:</u>

- Big Valley and Elem Tribes continued the Cyanotoxin Monitoring Program throughout the year at 34 locations.
- Danger microcystin levels were detected in some sampling events in the late summer, however, most sites were low detects.
- Dominant cyanobacteria genus: Dolichospermum, followed by Microcystis, Limnothrix, Gloeotrichia and Planktothrix. Benthic Phormidium was detected as well.
- Anatoxin was detected in 5 locations on Clear Lake and in Blue Lakes in the fall, at low levels below warning trigger level.

<u>Region 6 Update:</u>

- Increase of 5 events in 2019, they responded to 17 total events – 9 resulted in caution signage, 2 in warning signage, 3 in danger signage, 3 no advisory needed.
- Six events in San Bernardino Country
- Danger Advisories were associated with Dolichospermum; microcystin (as high as 57 µg/L at Red Lake).
- 3 reported dog deaths in El Dorado, Placer, and Alpine counties. Had signage posted while deaths were investigated. All three cases there were no quantifiable toxins. 2 of the deaths were report in Lake Tahoe proper.

Region 7 Update:

- Salton Sea Monitoring, caution signs

Southern California (Regions 8 & 9) Update:

- 24 HAB reports including Big Bear Lake, San Jacinto, Lake Elsinore
- Big Bear Lake had highest microcystin concentration of 127 µg/L, also found saxitoxin and anatoxin in August
- HAB events in places that have been experiencing them for years
- Lake Hodges (public utilities lake) oxygenation treatment – would be a great presentation at CCHAB.
- Lake Elsinore had high concentrations of toxins throughout the summer. Big fish die off in late 2018/2019.
- A Region 9 private lake that only received recycled water from a treatment plant had a visible bloom that had high microcystin levels. Plant now has more stringent requirements.

Pre-Holiday Assessment Planning:

- Comments and concerns regarding pre-holiday assessments and lag time between sample collection and analysis results; the results are not applicable to the actual population coming into contact with the water. If funding becomes available from the assembly bill, we can get more participation from partners if we provide some support.

EPA Update:

- EPA released this week the Draft Technical Support Document: Implementing the 2019 Recommended Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin, for public comment. This document supports state and tribal adoption of the new human health recreational criteria and implementation of the criteria in waterbody assessment and listing programs; and also addresses how information in the criteria document may be applied to swimming advisory programs. The deadline for comments is February 14th and comments can be emailed to wqs-implementation@epa.gov or to John Healey (healey.john@epa.gov).
- The **UNESCO published a report** titled Solutions for managing cyanobacterial blooms, A scientific summary for policy makers, developed by academics from various universities and regions to provide an overview of the physical, chemical and biological products available for control of cyanoHABs, and some detail on their benefits and relative costs. The report also lists other publications with more detailed information.
- **NOAA's Socioeconomics Workshop**: Purpose is to determine how to measure the cost of HABs and their impacts in the US. The planning team is a mix of economists, risk communicators, and HAB folks. The workshop will take place June 3-5, 2020 in Woods Hole, and the topics to cover include: effective approaches for HAB economic research; developing partnerships; attracting resource economists to HAB research; expand into human dimension; and

distributional effects of HABs (freshwater and marine). NOAA expect to produce a workshop report on the recommended approaches and priorities.

- **Hypoxia and Harmful Algal Bloom Events of National Significance (HHENS) update** – EPA and NOAA issued separate Federal Register Notices (FRNs) for comments on freshwater and marine events, respectively.
    - NOAA: Received 16 comments from NHC, tribes, states, and academics. NOAA developed a preliminary draft policy and is entering interagency review, then OMB review. NOAA expects to release a policy in January 2020 (depending on review time). No funding attached to this policy. All determinations are subject to appropriation from Congress.
    - EPA: Comment period for the FRN closed October 31st. The EPA received 206 comments from the public, mostly from concerned citizens from Florida and the Great Lakes Area, States and Local governments (public health and environmental quality agencies), industry, environmental organizations and other NGOs, and from a Federal Agency. All the commenters highlighted the importance of addressing HABs in freshwater systems and the public health impacts to our nation's communities, waterbodies, wildlife, and local economies. EPA will develop a draft policy based on the input provided and in coordination with NOAA's policy to make sure we have appropriately considered common HABs problems in both freshwater and marine waters. The draft policy will go for internal and OMB review and then be published in the FRN for formal public comment sometime in 2020/2021.
- **EPA's National Workshop on Recreational Water Quality**
  EPA with the Conservation Technology Information Center, under a cooperative agreement with EPA, is working on a national workshop on recreational waters that will take place in the fourth week of April 2020. EPA's goal for this workshop is to aid recreational water managers and stakeholders in protecting and restoring the recreational use of waters. This workshop will focus on two common contaminants: harmful algal blooms and fecal contamination. The workshop will provide information on tools, training and an opportunity to discuss strategies for managing and monitoring HABS and fecal contamination in recreational waters. The workshop will provide opportunities for sharing across programs on management of these issues.
- **EPA Multi-Region HABs Symposium**
  February 4-6, 2020; Hosted by EPA Region 5,7, 8, OW, and ORD. Located in Kansas City at KU Edwards Campus (4th and 5th) and EPA Region 7 (Feb 6th). State of the Science: Best Management Practices, source water protection related to HABs, Case studies: Examples of successful partnerships and best practices in the Great Plains and Midwest addressing nutrient management and HABs, Break outs: Special topics around HABs including federal, state, and tribal partners. Focus on Policy and Research solutions to address the management of HABs. Identify research gaps and discuss how to overcome.

- **Doing fish tissue analysis?** Please let Sue Keydel/EPA know; EPA scientists are gathering fish tissue analysis and information.

12:00 pm LUNCH BREAK (75)

1:15 pm Subcommittee Year End Reports (45)

Illness Workgroup

- Workgroup takes in reports of HAB related illnesses, consolidates, and responds
- Water Board is key in piecing it all together
- Standardized interview questions are asked (given from CDPH)
- Animal cases – depending on the circumstances, specimens may be submitted. Some funding may be available to assist.
- Review data on water samples, illness report, and biospecimens against OHHABS reporting criteria
- Take in state records, and report to OHHABS
- Provide outreach – direct letters, articles in related venues, presentations, support local health department to get info out to public
- Interagency Reporting
    - Illness report to HABs Portal bloom report form, Water Board staff coordinates and assists with response and data collection. For domestic animal and humans, OEHHA and CDPH assess and responds, for wildlife CDFW also responds.
    - Timing of water samples is important to represent exposure times
    - Improve communication between local and regional governments
    - Finding a lab to analyze human biospecimen samples
- Consider webinar hosted by CCHAB for veterinarians. Possible speaker Florida vet with dog cyanotoxin illnesses.
- Possible funding for permanent signs for interested regions that want to post signs.

Mitigation Subcommittee 2019 Year-End Report

- Outreach – conference: Successfully recruited about half of the speakers on algae & cyano mitigation at annual California Lake Management Society. Presentations are posted to: https://www.california-lakes.org/previous-conferences
- Outreach – Website: We first came up with a flowchart that might help lake managers through the morass of possible mitigation approaches that are out there, we provided some suggestions of how to narrow down the best possibilities for a particular lakes (via flowchart), and we listed some of their 'plus's and 'minus's. We are always looking to improve – your feedback most welcome. At the July CCHAB Network meeting we received approval to continue work on "Preliminary Lake Evaluation" and "Strikeforce." Retired limnologist Bill Taylor has been leading these efforts. The "Preliminary Lake Evaluation" is designed for situation of a newly recognized bloom in a lake/waterbody with little previous data – to help water manager select appropriate and cost-effective monitoring towards mitigation. The "Strikeforce" is concept of quick response by

field crew to collect water quality data—during a bloom—to help water manager identify HAB and provide baseline data for future mitigation.

- Next steps – How can this subcommittee help lake managers get to the point where (1) they know they have a problem, and (2) what they can do to mitigate it? CCHAB Network chairs have already approved continuing to develop ideas for "Preliminary Lake Evaluation" and "Strikeforce." Currently, we are running these two ideas by FHAB, because these initiatives are close enough to some of the FHAB goals and objectives that we probably need to make sure that we are not working at cross-purposes with FHAB. This conversation is ongoing. The subsequent step is to bring these two initiatives to WQMC for input and approval.
- The members who participate

Chair: Carrie Austin	SF Bay Water Board
Dave Caron	University of Southern California
Beckye Stanton	Cal/EPA OEHHA
Bill Taylor	Retired from MWD SoCal, Limnologist/Team Manager
Keith Bouma-Gregson	State Water Board, OIMA
Stephen Burkholder	Blankinship & Associates
Ellen Preece	California Lake Management Society
Daniel Daft	City of San Diego
Hugh Dalton	Water Quality Laboratory, Water Quality Manager, City of Santa Cruz
Mary Wagner	Lahontan Water Board
Tom Gillogly	Carollo
Christine Joab	Central Valley Water Board
Hal MacLean	East Bay Regional Park District
Jackie McCloud	City of Watsonville (Pinto Lake), Co-Chair of Mitigation Subcommittee
Terry McNabb	AquaTechNex
Thomas Moorhouse	Clean Lakes, Inc.
Sarah Ryan	Big Valley Band of Pomo Indians

<u>Guidance Subcommittee 2019 Year End Report</u>

- Guidance subcommittee was formed in 2006 to develop the guidance for HAB response. Document was updated in 2010 and then 2016 to integrate trigger levels, decision tree and recommended signage.
- Currently, the subcommittee is limited to state agency staff only, and has 4 members at its core. It is considering the newly adopted USEPA microcystin recreational criteria.

2:00 pm Benthic HABs Update (15)

- Benthic cyanobacteria communication (Keith Bouma-Gregson)
  - New subcommittee objectives with Keith Bouma-Gregson as lead.
  - Create 1-2 page fact sheet and visual guide about benthic cyanobacteria
  - Would like 3-5 core working group members

    - Potential timeline: Dec 2019 establish working and review groups, Feb 2020 share draft with review group, March 2020 review comments, April 2020 approval from CCHAB, May 2020 products posted on HABS portal.
- Benthic HAB group relaunch (Christine Joab)
    - https://www.epa.gov/cyanohabs/epa-newsletter-and-collaboration-and-outreach-habs#benthic .
    - This discussion group is good to develop ideas for monitoring and messaging. If interested send Christine and email and request.

2:15 pm National HAB Committee Update (Holly Bowers) (10)

Synopsis of 10th HAB Symposium

- Hollie Bowers – just had 10th US HABs symposium in Alabama. Over 400 people attended. Next meeting will be Oct/November 2021. International HAB meeting is taking place in La Paz, Mexico in October 2020. Big focus was how to communicate HAB science to the public.

NHC Issues Summary

- NHC – updating document. Not full document but more of an addendum. Several focus areas such as event response, prevention control and mitigation program under NOAA, also unrepresented areas such as socioeconomic development and the connection between freshwater and marine environments related to HABs. Meeting taking place in January to discuss addendum so any interested parties can discuss and people will be selected to participate on working on the addendum. Look out for an email invite. Federal Register notices – collective NHC voice was put in. For EPA federal notice, Heather Raymon led the initiative; a 7-page comment document was developed.

2:25 pm Discussion – 2020 schedule, topics, meeting locations (20)

- Do not want to schedule beyond the first meeting of year, as there will be new co-chairs. Are there any date/weeks to avoid? March 16 is spring break. Avoid last two weeks in April. The new co-chairs will determine rest of the dates.
- Any topics people would like to have discussed? Mary requests new technologies that have been tested out in the past year.
- Call for speakers for next meeting/next year. Please let the co-chairs know.
- Meeting Locations – R5 offered hosting, so long as there is enough notice.

2:45 pm Wrap up (15)

3:00 pm Adjourn