



Public Water System Harmful Algal Bloom Impact Survey 2020

Instructions: This survey is for public water systems (PWS) in Ohio that use surface water sources and that monitor for harmful algal blooms (HAB). The survey is comprehensive, and questions include source water management, monitoring activities, in-plant treatment, and financial costs. Please take time to prepare responses. We recommend downloading the survey questions located [here](#) and compiling your answers prior to entering them into the survey online. Submit only one survey per PWS or specific facility by 8/1/2020. If you have any questions regarding this survey, please email HABmailbox@epa.ohio.gov.

Technical notes: Questions with an asterisk (*) require a response before moving to the next page or submitting the survey. SurveyMonkey supports common web browsers (e.g., Internet Explorer, Safari, Firefox, Chrome, and Microsoft Edge) and recommends using the newest version available. If you experience technical difficulties during the survey, we recommend using the previous or next button in the survey, or the refresh button on the browser to attempt to remediate the issue and continue the survey. If issues persist, consider using an alternative internet browser.

Contact Information

*** 1. PWS name and/or OH identification number and/or facility number.**

*** 2. Does your PWS have multiple facilities that are surface water systems?**

- No, only one survey is needed
- Yes, one survey represents impacts to all facilities
- Yes, separate surveys for each facility (please include specific facility names and identification numbers)

*** 3. Person completing survey.**

Contact phone number

Contact email

Algal bloom and cyanotoxin occurrence, monitoring, and source water management

*** 4. Have you experienced any source water quality or treatment impacts due to algae within the last five years (check all that apply)?**

- No source water quality or treatment impacts
- Taste and odor compounds
- Elevated total organic carbon (TOC)
- Cyanotoxins (microcystins, cylindrospermopsin, saxitoxins, or anatoxin-a)
- Filter clogging or reduction in filter run times
- Increased chemical demand
- Increased disinfection byproduct production
- TTHM or HAA5 MCL violation

Other (please specify)

*** 5. How often do you experience algal blooms on your source water?(Algal blooms include any cyanobacteria, green algae, diatom, euglena, or other phytoplankton blooms that negatively impact the water system. If you have multiple source waters, please respond based on the source with the most persistent blooms.)**

- Majority of year (>6 months)
- 4-6 months/year
- 1-3 months/year
- At least one short-term event (<1 month duration) per year
- Not every year but one or more events within last 5 years
- No algal blooms detected in source waters

Other (please specify)

*** 6. Does your PWS have detailed plan for HAB sampling, response, and treatment optimization? (check all that apply)**

- HAB Treatment Optimization Plan
- HAB General Plan
- HAB sampling in source water
- Source Water Protection Planning

Other (please specify)

7. If you checked *HAB Treatment Optimization Plan (TOP)* on Q6, please provide this additional information.

Date of current HAB TOP

List all cyanotoxins (e.g., microcystins, saxitoxins, cylindrospermopsin) addressed in HAB TOP

*** 8. What source water surveillance and monitoring for algal blooms and cyanotoxins does your PWS use? (check all that apply)**

- Compliance monitoring at raw water for total microcystins and cyanobacteria screening (qPCR)
- Source water sampling for cyanotoxins (in addition to compliance monitoring)
- Source water sampling for phytoplankton/cyanobacteria identification and enumeration
- Source water monitoring with water quality sensors (e.g., data sonde)
- Remote sensing or satellite imagery product for cyanobacteria (e.g., USEPA CyAN mobile app, NOAA Lake Erie HAB Bulletin or tracker)

Other (please specify)

*** 9. How does your water system monitor for cyanotoxins and harmful algal blooms (check all that apply)?**

- Follow sampling schedule per HAB rule (i.e., weekly raw and finished for total microcystins, and biweekly cyanobacteria screening)
- Follow reduced monitoring schedule during HAB season (May - October), when available
- Follow reduced monitoring schedule during off-season (November - April), when available
- Collect source water samples (e.g., river, multiple reservoirs) that are in addition to compliance sampling
- Collect treatment train samples (e.g., post-sedimentation) that are in addition to compliance sampling

Other (please specify)

*** 10. How likely is your PWS to collect source water HAB samples after a raw water cyanotoxin detection from compliance monitoring?**

Not at all likely 5 Extremely likely

*** 11. How likely is your PWS to use HAB compliance monitoring to inform source water management actions (e.g., algaecide application, avoidance strategies, etc)?**

Not at all likely 5 Extremely likely

*** 12. How likely is your PWS to collect in-plant treatment process sampling (e.g., post-sedimentation, filter effluent) after a raw water cyanotoxin detection from compliance monitoring?**

Not at all likely 5 Extremely likely

*** 13. Do you use algae avoidance strategies (*check all that apply*)?**

- Selective pumping from stream source to minimize nutrients
- Avoid use (isolate) reservoir during HAB event
- Blend with another surface water source during bloom (e.g., river or other reservoir(s))
- Blend with a ground water source during bloom
- Draw from a different intake depth during bloom
- Avoidance strategies are not possible or are not used

Other (please specify)

*** 14. Do you use any algae control strategies or treatments on the lake/reservoir(s) or raw water before it reaches the plant (*check all that apply*)?**

- Algaecide application
- Other chemical treatment (KMnO4 or other oxidant)
- Alum or other phosphorus binding treatment
- Reservoir circulation/aeration
- Ultrasonic treatment
- Physical removal (e.g., skimming/pumping surface scum)
- No source water algae/cyanobacteria control strategies or treatment

Other (please specify)

15. Please provide any additional comments on HAB or cyanotoxin occurrence, monitoring, and source water management.

In-plant Treatment Processes

*** 16. Do you pre-oxidize (add oxidant prior to filtration)?**

- No
- Yes, intermittently
- Yes, year-round

17. If "yes" on Q16, what oxidant do you use (check all that apply)?

- Chlorine
- Chloramine or chlorine dioxide
- Permanganate (KMnO₄, NaMnO₄)
- Ozone
- Oxidant use varies, based on source water quality

Other (please specify)

*** 18. Do you add powdered activated carbon (PAC)?**

- No
- Yes, intermittently
- Yes, year-round

19. If “yes” on Q18 to PAC, what type of PAC do you use (check all that apply)?

- Wood-based
- Charcoal-based
- Coconut-based
- PAC type with blend of carbon sources

Other (please specify)

20. If “yes” to PAC on Q18, what is the location of PAC feed point(s) in treatment (check all that apply)?

- Raw water
- After pre-oxidant, prior to coagulant
- With coagulant
- Post coagulant
- Post settling basin

Other (please specify)

21. If “yes” on Q18 to PAC, please describe typical PAC feeding rate and maximum (ppm or mg/L)

*** 22. What primary coagulant do you use?**

- Aluminum sulfate (Alum)
- Polyaluminum chloride (ACH)
- Ferrous sulfate
- Ferric sulfate
- Ferric chloride
- Cationic polymer
- Alum/polymer blend
- Not applicable (no coagulant added)

Other (please specify)

*** 23. Do you have granular activated carbon (GAC) contactors (not filter caps)?**

- No
- Yes

24. If yes to GAC on Q23, how frequently is carbon regenerated/replaced?

- More than once per year
- Every year
- Every two years
- Has been over two years since last regeneration
- Other (please specify)

25. If yes to GAC on Q23, what percentage of water goes through GAC filters?

- 100%
- 76-99%
- 51-75%
- 25-50%
- <25%
- GAC contactors are used intermittently
- Other schedule or frequency (please specify)

*** 26. Do you use any advanced treatment technologies (check all that apply)?**

- No advanced treatment technology
- Granulated activated carbon
- Ozonation
- Ultraviolet disinfection
- Microfiltration
- Ultrafiltration/nanofiltration/reverse osmosis

Other (please specify)

27. If your water system uses advanced filtration (microfiltration, ultrafiltration, nanofiltration, or reverse osmosis), what percentage of water is treated in that manner?

*** 28. Have treatment processes been added or substantially changed since 2014?**

- No
- Yes, due to HABs (please describe in Comment Field)
- Yes, not related to HABs (please describe in Comment Field)

If Yes, please describe

*** 38. In the past five years, has the PWS added or reallocated staff time to specifically respond to HABs or manage source waters? If 'Yes', please estimate change in annual expenses.**

Yes

No

If yes, please estimate change in annual expenses.

39. Did you receive HAB grant funding from Ohio EPA for monitoring equipment and/or training (*check all that apply*)?

Cyanotoxin testing equipment (ELISA)

Water quality monitoring equipment (e.g., data sonde)

Microscope

Staff training

Other (please specify)

40. Please provide any additional comments on financial costs.

Please ensure all answers are complete and accurate prior to completing the survey. You *will not* be able to revisit the survey once you press "Done". If you have any questions, please email HABmailbox@epa.ohio.gov.