



Meeting Your Environmental Health Training Needs

A Local Public Health Department Environmental Health Assessment

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Executive summary

The Wisconsin Department of Health Services' (DHS) Bureau of Environmental and Occupational Health (BEOH) recognizes the Wisconsin environmental public health workforce has undergone many changes in the last five years. To understand the needs of the current environmental health workforce, we developed and conducted an environmental health, topic-specific, training needs assessment. We aimed to achieve three main goals with this assessment:

- Identify how often local and Tribal environmental health staff work on BEOH programmatic areas.
- Determine local and Tribal environmental health staff's confidence and ability to conduct work in these topic areas.
- Identify training, resource or support needs that the BEOH should prioritize and provide in coming years.

In October 2022, we conducted a quantitative assessment of local and Tribal environmental public health staff (LTHD) from across the state. Questions centered on the frequency that respondents work on certain topics, their self-reported knowledge and confidence in their abilities to work in these areas, as well as any resource or support needs to help improve these abilities. In May 2023, we also held qualitative structured discussions to learn more about specific resources LTHD staff are using and what they see as priority environmental health resource needs in the coming years.

Key findings from our results:

- We received 142 responses from 55 counties and one Tribal nation.
- Respondents had an even distribution of years of experience, as well as staff versus managerial roles.
- Most respondents work on food and regulatory inspections daily.
- Most of the BEOH programmatic topic areas are addressed monthly to yearly.
- Knowledge trended with the frequency: the more often a topic was addressed, the more respondents felt a lot of or full knowledge about that topic.
- Respondents asked for the same top three resources across topic areas:
 - Response protocols

- Subject matter training
- Information to share during outreach and education
- LTHD staff currently use nine main types of resources staff in their work, ranging from BEOH staff providing technical assistance to staff using professional organizations' resources.
- When asked about additional resources they want more of, they listed the following eight types:
 - Topic-specific resources.
 - Prepared outreach materials.
 - Meetings with BEOH staff.
 - Routine newsletters or emails sharing BEOH updates.
 - Centralized resource library.
 - Trainings, including health officer onboarding and how to work with other agencies.
 - A human health hazard checklist.
 - Emerging contaminants resources.

We recommend BEOH implement the following four actions to meet the local environmental public health workforce's needs:

1. **Establish regular bureau-wide communications with LTHDs.**
2. **Prioritize creating ready-to-use materials in plain language for LTHDs to share with the general public.**
3. **Promote, share, or develop subject matter trainings in workshop or virtual forum formats.**
4. **Collaborate with LTHDs on a centralized resource library that could include locally developed resources.**

Background

Environmental health professionals employed at local health departments are a critical component of the public health workforce, leading prevention and response efforts in topics ranging from food safety, to natural disaster response, to indoor air quality. Prior to the COVID-19 pandemic, about one quarter of the national environmental health workforce planned to retire within the next five years¹, indicating high turnover has been a long-term concern for the workforce.

The Wisconsin Department of Health Services' Bureau of Environmental and Occupational Health (BEOH) recognizes that many current environmental health (EH) workers are new to the field and aims to prioritize workforce development to improve retention of environmental health professionals. To better understand the needs of the current EH workforce, we developed and conducted an environmental health topic-specific training needs assessment.

The assessment aimed to achieve three main goals:

- Identify how often local and Tribal environmental health (LTDH) staff work on BEOH programmatic areas.
- Determine local and Tribal environmental health staff's confidence and ability to conduct work in these topic areas.
- Identify training, resource or support needs that the BEOH should prioritize and provide in coming years.

¹ Gerding JA, Landeen E, Kelly KR, Whitehead S, Dyjack DT, Sarisky J, Brooks BW. Uncovering Environmental Health: An Initial Assessment of the Profession's Health Department Workforce and Practice. J Environ Health. 2019 Jun;81(10):24-33. PMID: 31911703; PMCID: PMC6945822.

BEOH programs

The Wisconsin Department of Health Services' Bureau of Environmental and Occupational Health has programs spanning a wide variety of environmental health topics, including:

- Lead and asbestos
- Groundwater, drinking water and recreational water quality
- Asthma concerns and triggers
- Radiation and nuclear disasters
- Chemical spills and exposures
- Climate change impacts

Methodology

We determined which methods to use based on the following considerations. To meet the diverse needs of LTHDs across Wisconsin, we considered the best ways to capture feedback from as many individual staff and as many health departments as possible. The methods used needed to be able to reach staff throughout the state. Additionally, it was not enough to utilize existing data on public health competencies. The public health competencies focus on skills such as critical thinking, communication strategies, and program planning.

However, understanding the subject matter is crucial for decision-making in environmental health. We decided gathering data on EH topics was the best way to achieve the assessment's goals. As there are many topics addressed in BEOH, we anticipated having a fair number of questions for LTHD staff.

Quantitative assessment

We decided on developing a quantitative online survey to ensure LTHD EH staff across the state could access and complete it. This format would also allow us to ask questions about a variety of different topic areas in a more efficient manner for participants.

With feedback from BEOH programmatic leadership as well as a select number of local environmental health directors, we developed an online assessment that sought to answer:

- How often staff work on specific environmental topics.

- The extent of staff knowledge, confidence and ability to conduct work in those areas.
- What the resource and support needs are related to each area.

The final assessment contained 52 questions. Many questions were validation-based and were shown to participants based on responses to prior questions. The assessment took an average of 10 minutes to complete.

To advertise this opportunity to staff across the state, we sent out multiple emails as well as presented the opportunity during a Wisconsin Environmental Health Association conference. Health officers and local public health staff were encouraged to share and refer the assessment to all staff who address environmental health issues in their jurisdiction.

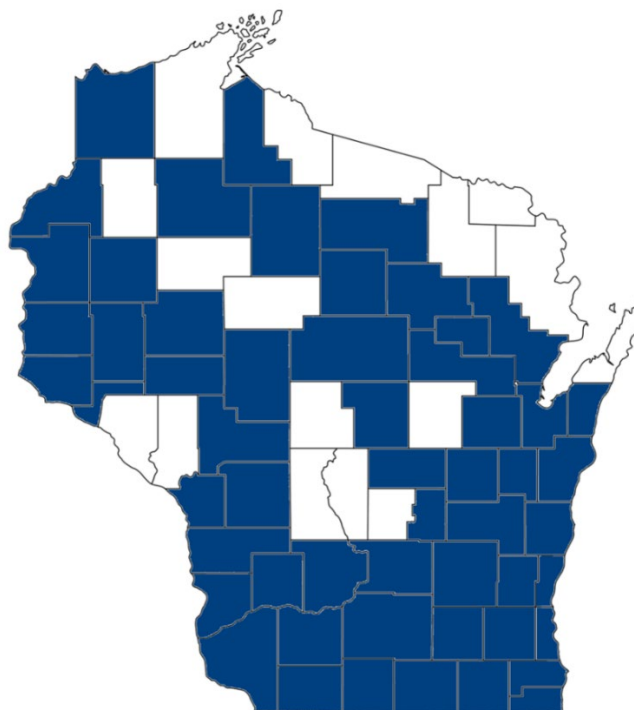
Structured discussions

After closing the assessment in October 2022, it became clear there was a need for additional information around the resources and supports desired by local EH staff. We decided to hold a series of structured discussions with staff who completed the assessment to determine what current resources are helpful and what types of new resources are most needed. We offered all assessment participants the opportunity to take part in the structured discussions. Ultimately, we held four discussions with about five participants each in May 2023.

Key findings

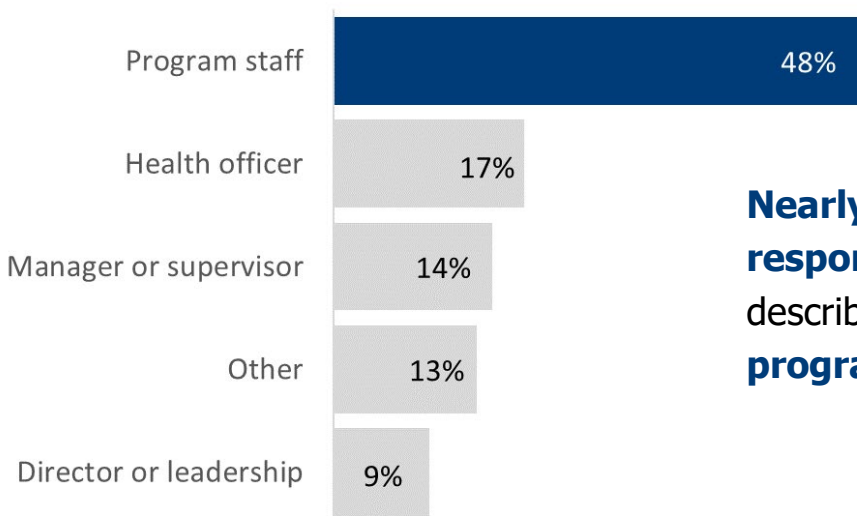
Demographics

To characterize who participated in the assessment, we asked four questions about the respondent's role, and their experiences in the environmental health field and their health department.



We received **142 total responses** from staff at **69 local and Tribal health departments**. These represent **55 counties and one Tribal nation**.

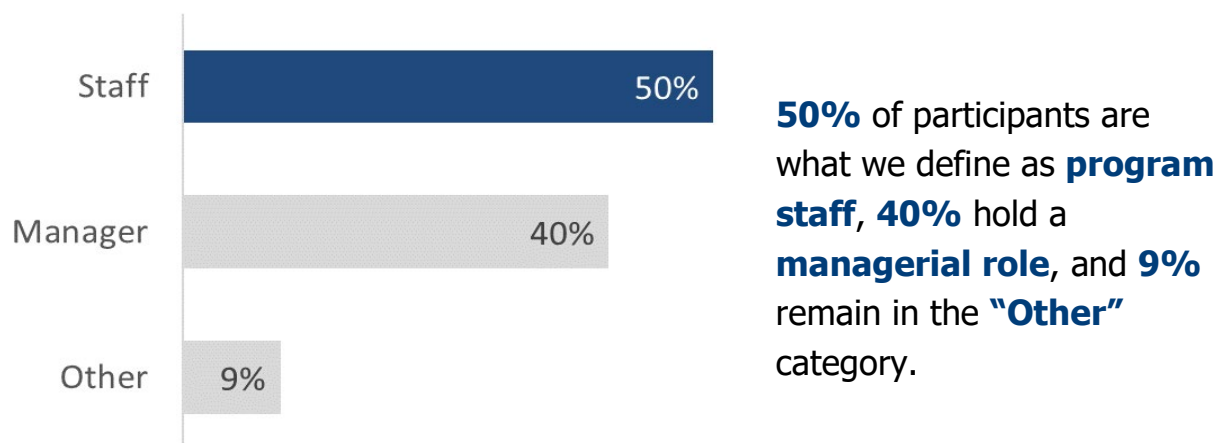
Question: Which of the following best describes your role's level of responsibility? (n= 141)



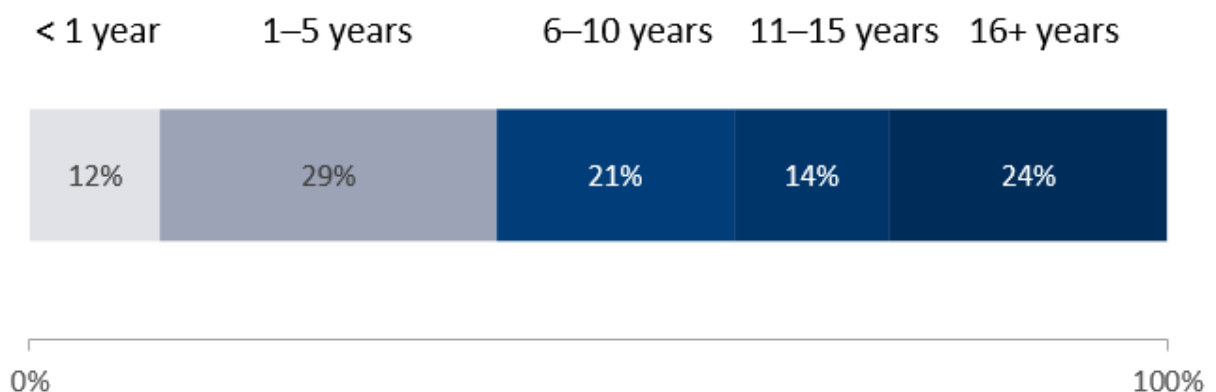
Nearly half of respondents (48%) describe their role as program staff.

When we analyzed the “Other” category, one-third of those respondents were public health nursing staff and one-half held a specialty role serving a public health program, such as a program coordinator or health educator.

Typically, BEOH would consider public health educators and program coordinators to be programmatic staff, so we decided to re-categorize those participants into program staff. We also grouped the health officer, manager or supervisor, and director or leadership groups into one managerial role. With fewer categories, it is easier to distinguish between those with managerial and supervisory positions and programmatic staff, while allowing public health nurses and other unique roles to remain separate.



Question: How many total years have you worked in the field of environmental health?

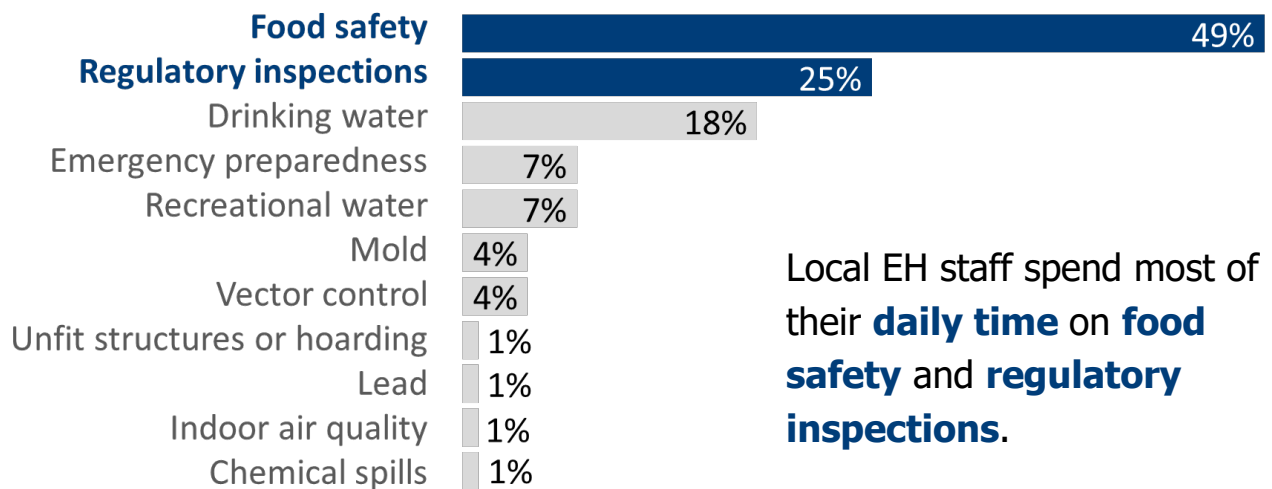


There was an even distribution of experience in environmental health among participants.

Question: How many environmental health staff work in your department?

Agencies represented in this assessment have a wide-ranging number of dedicated environmental health staff, from about 45 people down to 1. The median number of staff reported was 3.

Question: How often do you conduct work in the following topic areas? (Daily frequency data only shown; see [Appendix A](#) for all frequency data)



Respondents reported never working daily on the following topics:

- Asthma
- Asbestos
- Extreme heat and/or cold
- Manure spills
- Flood mitigation

Key demographic findings

Our participants represented local public health staff:

- With varying levels of environmental health experience.
- From locations throughout the state.
- From both large and small agencies.
- In all types of roles (programmatic, staff, nursing, and managerial).

Most respondents work on food safety and other regulatory inspection work that does not fall under any BEOH programmatic areas.

Indoor air quality

We considered the following topics to belong to indoor air quality: mold, asthma concerns, radon, vapor intrusion, and carbon monoxide. As there are specific BEOH programs focusing on some of these topics, we separated them into the following categories: general indoor air quality (including radon), mold, and asthma concerns. To understand participants' knowledge of and confidence with working on indoor air concerns, the assessment included questions about their:

- Frequency or how often they work in that topic area.
- Knowledge in the topic.
- Resource needs if there was low knowledge.
- Their confidence responding to an example indoor air quality scenario.

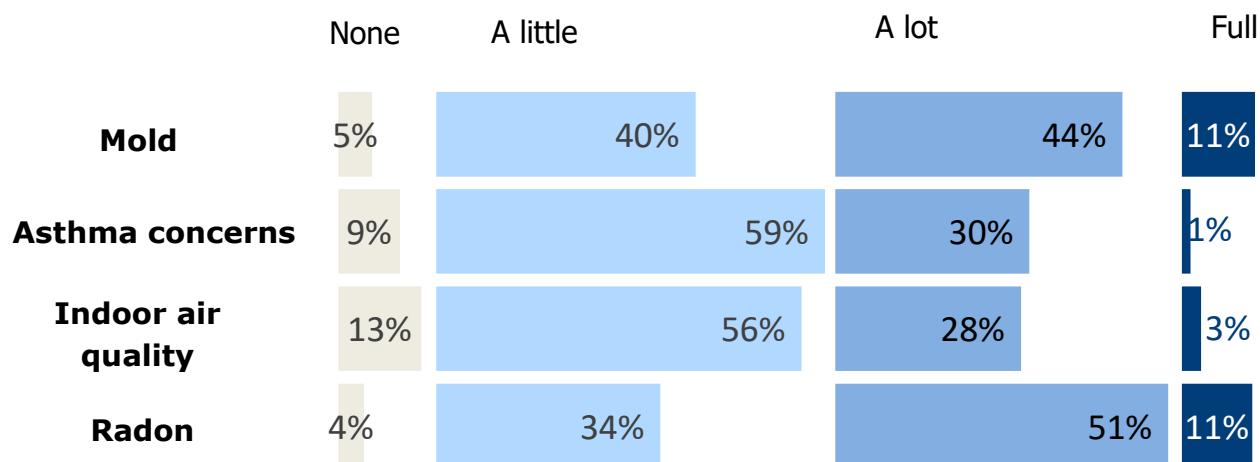
Question: How often do you conduct work in the following topic areas? ([Appendix A](#))

Mold concerns are commonly addressed at least once a week (20%) and at least once a month (36%).

General indoor air (including radon) is addressed at least once a month (40%) and at least once a year (28%).

Asthma concerns come up less often, with most people saying at least once a year (24%) to every few years (17%). Nearly half (47%) never work on asthma concerns.

Question: What is your current level of knowledge or skill with mold, asthma, general indoor air quality, and radon?



Category definitions:

None = No knowledge/skill; full development needed

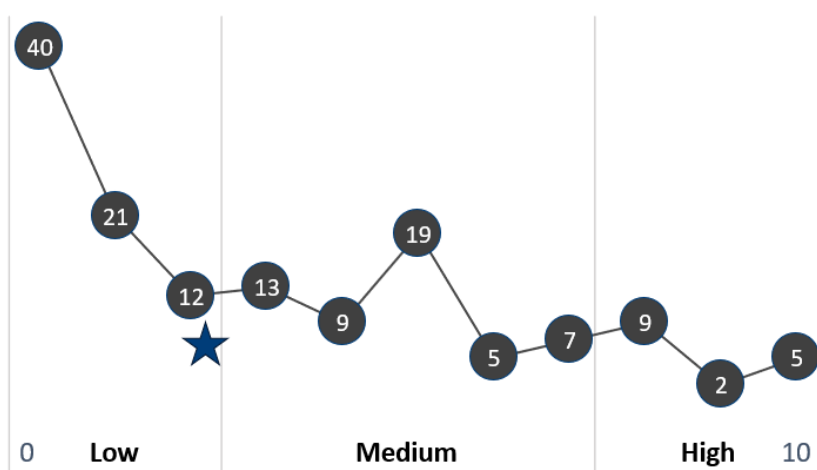
Little = A little knowledge/skill; considerable development needed

A lot = a lot of knowledge/skill; little development needed

Full = fully knowledgeable/skilled; no development needed

Most participants felt a lot or fully knowledgeable on mold (55%) and radon (62%). Over half of respondents felt only a little or less knowledgeable on other indoor air quality and asthma concerns.

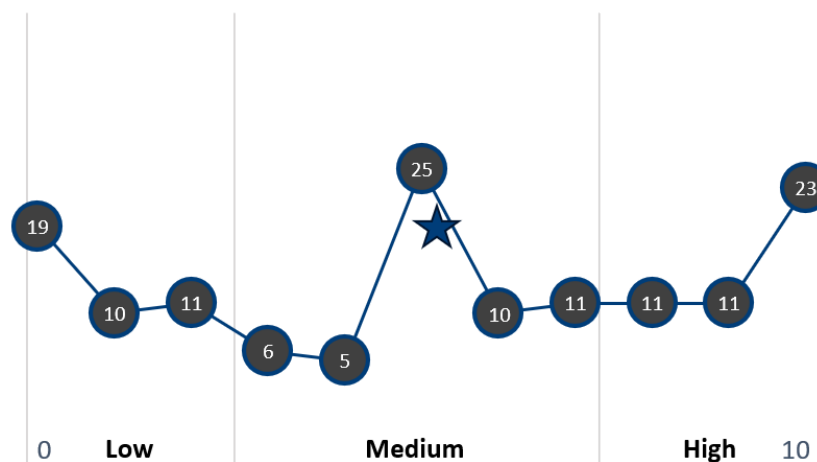
Question: How confident are you in your ability to assess in-home asthma triggers?



Only **16%** of participants have **high confidence** they could assess in-home **asthma** triggers, with a ranking of 7 or higher.

The average score of all respondents was 3.1, indicating overall “low” confidence in addressing asthma triggers (shown by the star).

Question: How confident are you in your ability to respond to a mold complaint?



39% of participants have **high confidence** they could respond to a **mold complaint**.

When asked about ability to respond to a mold complaint, the average score (indicated by the star) was a 5.3, meaning most people feel about a medium level of confidence addressing mold concerns.

Key indoor air findings

- Most respondents work on indoor air quality issues weekly to yearly.
- Asthma concerns are only addressed yearly to every few years, with nearly half of participants never working on them.
- Knowledge followed the frequency: topics addressed weekly or monthly reported a lot of knowledge, and those addressed yearly only had a little or less knowledge on the topic.
- Overall, participants felt low confidence in addressing asthma concerns, and a medium amount of confidence with addressing mold issues.

Water

We asked participants about their work pertaining to drinking water quality; recreational water quality; and their response to manure spills and chemical spills. We consider each of these areas to be water-related concerns and have grouped all relevant data under this category.

To understand participants' knowledge and confidence with addressing water quality, we asked questions about:

- Frequency or how often they work in that topic area.
- Knowledge in the topic.
- Resource needs if there was low knowledge.
- Their confidence responding to private well drinking water quality concerns.

Question: How often do you conduct work in the following topic areas? ([Appendix A](#))

Drinking water quality and recreational water quality are worked on most frequently.

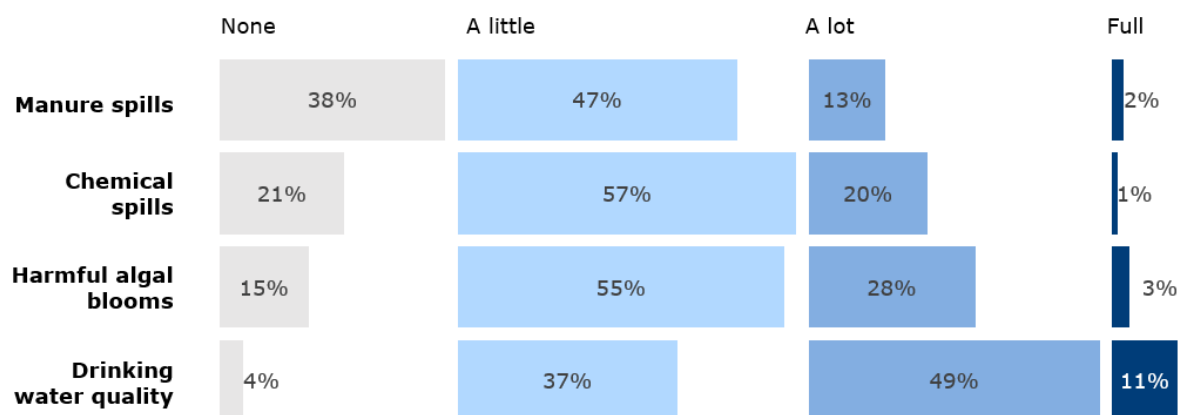
Drinking water quality is addressed daily to monthly for 68% of respondents.

Recreational water quality is addressed by 41% of respondents at least once a month.

Chemical spills are much less frequent, with most happening between once a year to a every few years (57%).

For most respondents (60%), manure spills never come up in work.

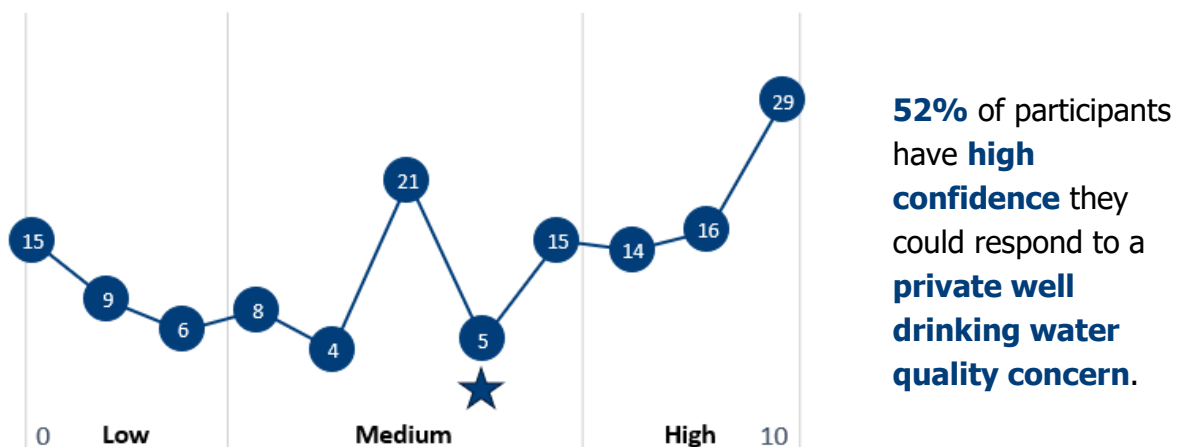
Question. What is your current level of knowledge or skill with drinking water quality, chemical spills, harmful algal blooms, and manure spills?



When asked to rank the level of knowledge on these topics, the same pattern emerges. Drinking water quality and recreational water quality (including harmful algal blooms) are addressed more frequently and had more participants feeling a lot or fully knowledgeable on that topic.

Manure spills had the lowest reported knowledge, with 38% saying they had none.

Question: How confident are you in your ability to respond to private well drinking water quality concerns?



The average score of all respondents was 6, indicating overall medium to high confidence with addressing private well drinking water concerns (shown with the star).

Key water quality findings

- Drinking water quality and recreational water quality are monthly to daily work topics for respondents.
- Drinking water quality had the highest level of knowledge, with most having a lot or full knowledge on that topic.
- Harmful algal blooms and chemical spills both had most in the little to no knowledge categories.
- Over half of participants have high confidence in addressing scenarios around drinking water quality concerns.

Lead and Asbestos

We asked participants about their work pertaining to lead exposures or concerns and asbestos exposures or concerns.

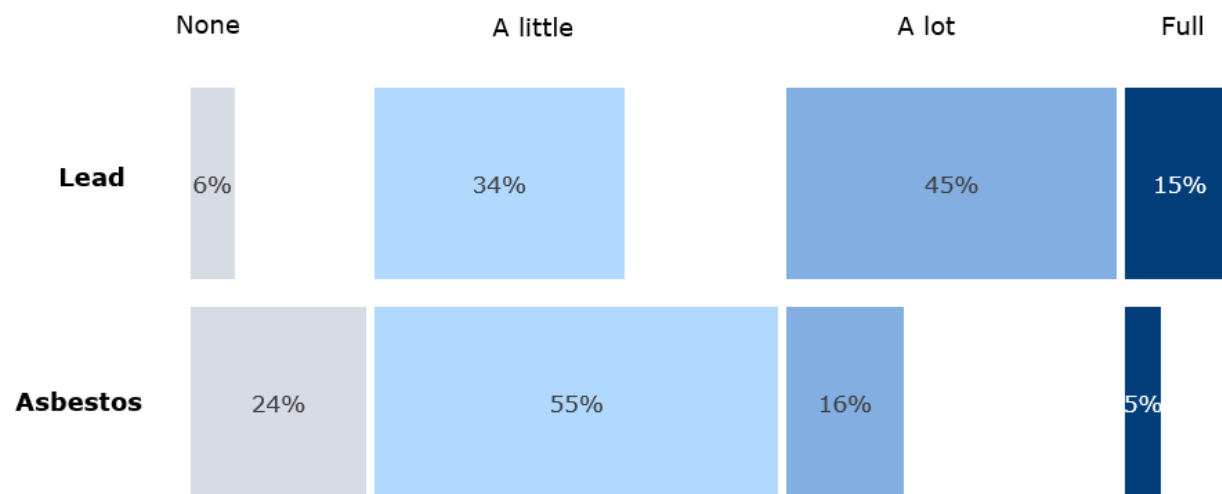
To understand participants' knowledge and confidence around lead and asbestos, we asked questions about their:

- Frequency or how often they work in that topic area.
- Knowledge in the topic.
- Resource needs if there was low knowledge.
- Confidence responding to a child with an elevated blood lead level.

Question: How often do you conduct work in the following topic areas? ([Appendix A](#))

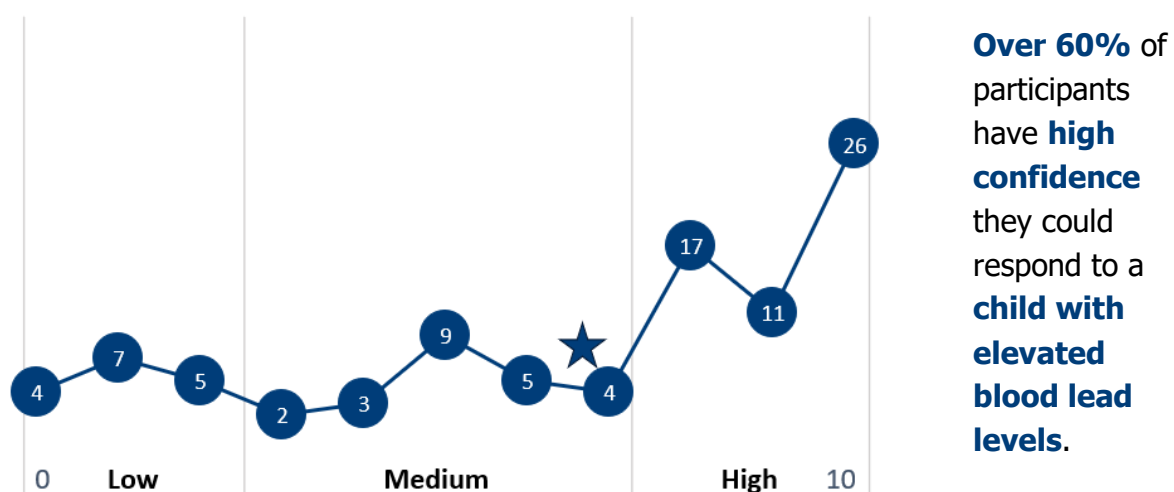
Nearly half of participants (46%) responded they address lead exposures and concerns at least once a month. Meanwhile, half of respondents work on asbestos concerns and exposures once a year or every few years.

Question: What is your current level of knowledge or skill with lead concerns and exposures, and asbestos concerns and exposures?



60% of participants felt a lot or fully knowledgeable on lead. In contrast, most respondents felt a little knowledgeable on asbestos (55%) and almost one-quarter had no knowledge.

Question: How confident are you in responding to a child with elevated blood lead levels?



The average response was 6.8, meaning overall high confidence in dealing with a child with elevated blood lead levels (indicated by the star).

Unlike previous scenario-based questions, we included a “not applicable” option for individuals who are not certified in lead response work. About 35% of the assessment respondents chose this option.

Key lead and asbestos findings

- Lead concerns are more frequent and addressed monthly, while asbestos concerns are addressed yearly.
- Respondents felt more knowledgeable in addressing lead than asbestos concerns.
- Participants reported the highest confidence in dealing with a child with elevated blood lead levels, with over 60% having high confidence.

Note: Public health staff must be certified in lead response work, so we provided a “not applicable” option for those not certified.

Climate and health

We asked participants about their work pertaining to climate and health. We included flood mitigation, extreme heat and cold, and emergency preparedness as climate and health-related topics.

We asked questions on their:

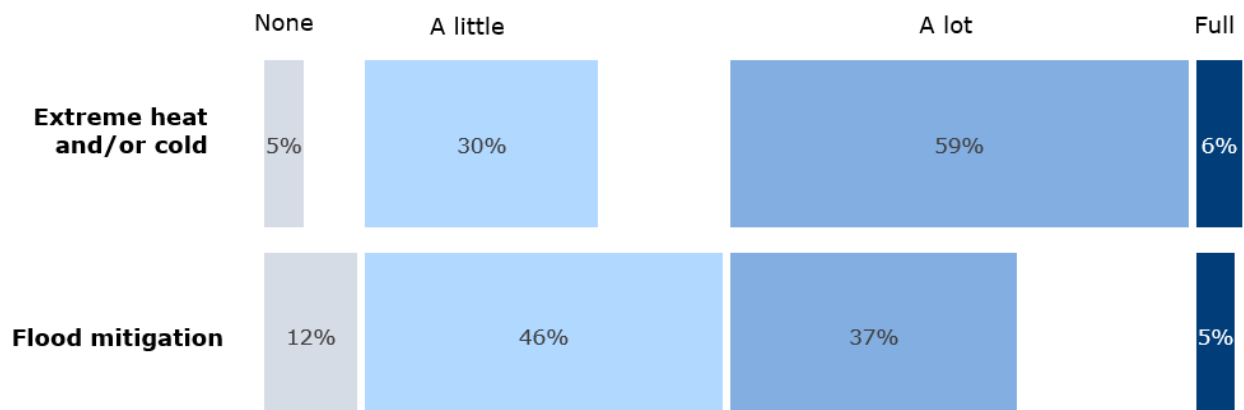
- Frequency or how often they work in that topic area.
- Knowledge in the topic.
- Resource needs if there was low knowledge for that topic.

Question: How often do you conduct work in the following topic areas? ([Appendix A](#))

Climate and health-related topics such as flood mitigation, extreme heat and cold, and emergency preparedness are typically addressed on a year-to-year basis:

- Flood mitigation is mainly every few years (37%) to never (42%).
- Most address extreme heat and cold at least once a year (37%) to every few years (18%).
- Emergency preparedness was most frequent, with one quarter addressing every month and 33% every year.

Question: What is your current level of knowledge or skill with flood mitigation, and extreme heat and/or cold?



65% of respondents have a lot or full knowledge on extreme heat and/or cold, compared to only 42% in flood mitigation.

Key climate and health findings

Despite climate and health concerns mostly being addressed on a year-to-year basis, participants had high levels of knowledge in both extreme heat and/or cold, as well as flood mitigation.

Other environmental health work

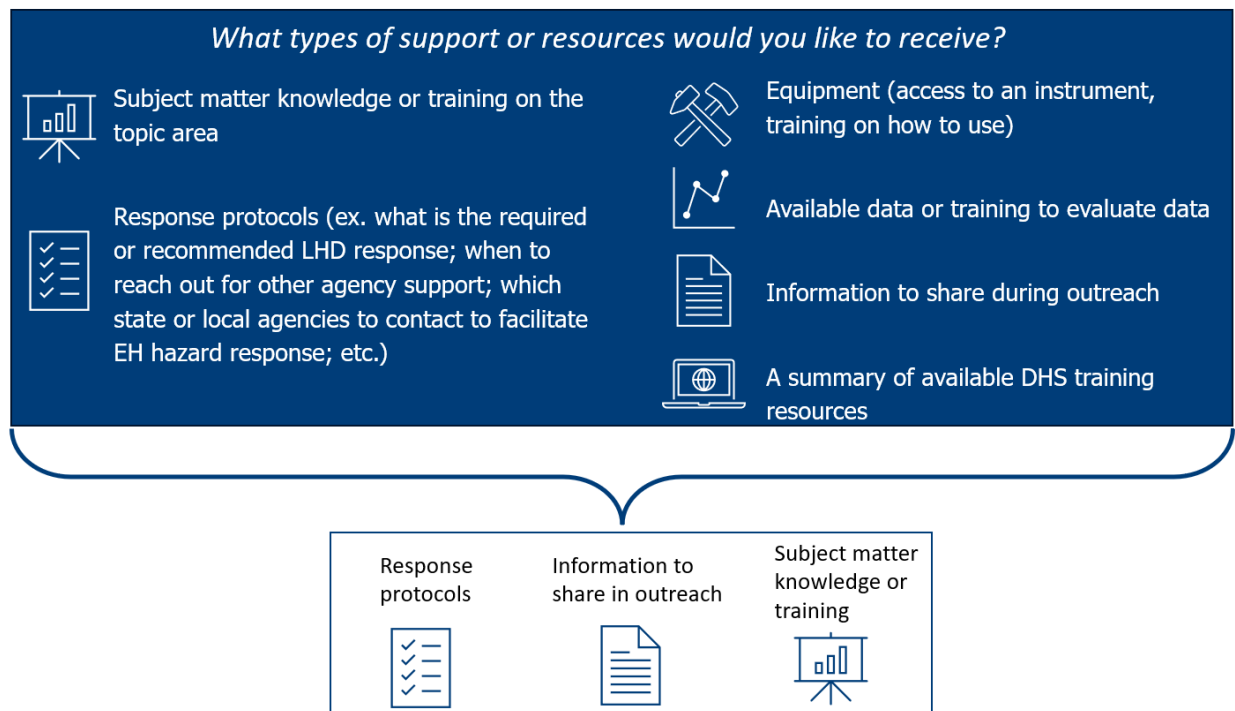
Lastly, we asked about the frequency with which respondents work on these other topics. These are known to be responsibilities of local environmental health staff. However, the BEOH does not provide direct support or resources related to these topic areas.

As mentioned earlier, staff spend almost **three-quarters** of their **daily time** working on **food** (49%) and other **regulatory inspections** (25%). ([Appendix A](#))

Hoarding and **unfit structures**, and **vector control** are dealt with **monthly to yearly**, with around 30% of respondents for each of those categories.

Resource and support needs

For every topic area, respondents were asked if they needed additional knowledge, tools, skills, or resources to support that work. If they responded “Yes,” they were asked to select which types of resources or support they would like. Additionally, if they were not fully confident in their ability to complete a certain scenario, they were asked about what resources they would need to become more confident.



No matter the topic area, three resources consistently came out as the top three:

- Response protocols
- Information to share during outreach and education
- Subject matter knowledge or training

For those who chose training, workshops and virtual forums were the preferred learning methods.

Structured discussions

Upon analyzing this resource and support data, we identified a need for further discussion with local environmental health staff about what exactly we can offer that will best support their work.

To start, we asked participants to describe what types of resources they use to help them do their job. We identified nine key themes, which all had at least five participants mention that theme in their response. We also asked where they find these resources.



In addition, we asked participants directly about a resource called the **Partner Communications and Alerting (PCA) Portal**. This is a document-sharing platform where BEOH staff share a small number of EH resources, and we noticed it was not mentioned in these discussions.

Overall, participants face challenges using the PCA portal for environmental health resources. Participants find it challenging to navigate, while others did not know any environmental health resources are stored there.

For those who do use the PCA portal, the main resource accessed is the BEOH contacts list. One individual liked how alerts can be set up for the portal to notify when a new document is added.

Question: What are some examples of DHS response protocols you have used before?

Participants listed the following examples:

- Mold toolkit (DHS)
- Drug clean-up toolkit (DHS)
- Hoarding checklist (non-DHS)
- Human hazard coalition and collaborations
- Local health department's own checklist
- Updated and simplified fact sheets or other communications
- Animal bite and rabies protocol (DHS)
- Pre-made signs (ex. For beach closings) (DHS)
- Lead response protocols (DHS)
- Brown water event protocol
- BEOH staff and support for events

Question: What parts of that resource or tool worked well, or are most useful?

Key aspects of those resources included:

- Links to additional resources included in toolkits.
- Point(s) of contact listed for certain situations.
- Use of plain language.

There were also broad ideas about the whole resource, such as:

- Standardization of resources and communications across health departments.
- Decision-tree or checklists outlining what actions to take and when.
- Prepared outreach information available in multiple languages.
- Response-letter templates.

Question: If you could have one tool or resource provided in the next 12 to 18 months, what would it be?



Trainings, including health officer onboarding and working with other agencies



Toolkits, with topic specific resources



Prepared outreach materials



Human health hazard checklist



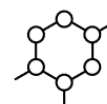
Meetings with BEOH staff



Centralized resource library, including local health department-developed resources



Routine emails or newsletters sharing BEOH updates



Emerging contaminants resources

In addition to many insightful responses to our questions, there were also many ideas and suggestions for what individuals wanted that are not currently available.

They offered the following suggestions for our consideration:

- Transparency:
 - Regularly updated BEOH contact lists
 - Routine communications (newsletters, webinars) regarding BEOH news: new resources, trainings, staff changes, etc.
- Trainings:
 - Continuing education credits for trainings
 - Human health-hazards trainings
 - Routine subject-matter webinars
- Resources:
 - Short videos geared towards the general public
 - Visual educational materials
 - Public-facing resources
 - Agency referrals
 - Hoarding protocols or assessment tools

Key qualitative findings

- Respondents asked for the same top three resources across topic areas: response protocols, subject matter training, and information to share during outreach and education.
- LTHD staff currently use nine main types of resources staff in their work, ranging from BEOH staff providing technical assistance to professional organizations' resources.
- When asked about resources they want more of in the coming year, they listed the following:
 - Connections to BEOH staff.
 - A centralized resource library.
 - Trainings, including health officer onboarding and how to work with other agencies.
 - Human health hazard resources.
 - Emerging contaminants resources

Recommendations

Based on these findings, we are providing recommendations covering four different areas to meet the demands of Wisconsin's local environmental public health workforce.

1. The relationship between BEOH and LTHDs:

We repeatedly heard for more transparency between the BEOH and LTHD staff, with particular interest in staffing updates. Respondents also asked for several resources in the structured discussions that currently exist and are offered by BEOH.

Increasing awareness of existing resources will be crucial for building up the relationship between BEOH and LTHDs.

We recommend establishing regular bureau-wide communications with LTHDs. This will provide a designated space for updates on staffing as well as resources that are in development and will increase awareness of existing resources or training available to LTHDs.

2. Ready-to-use materials:

Local health department staff appreciate and desire pre-prepared materials for supporting their education and outreach work.

We recommend BEOH programs prioritize creating ready-to-use materials in plain language for LTHDs to share with the general public. This can include and is not limited to social media posts, fact sheets, brochures, checklists, and toolkits. These materials will enable LTHDs to provide consistent risk information and messaging with no requirement of extensive subject matter knowledge. Many BEOH programs provide these types of materials. We recommend continual review of these existing materials, as well as prioritizing these formats when developing new materials.

3. Subject matter training:

Based on what respondents asked for as well as the self-reported subject matter

knowledge in this assessment, we see a large need for continued subject matter training opportunities in environmental health topics. We also heard that offering options for continuing education credits can be very helpful for local environmental public health staff.

We recommend promoting, sharing, or developing subject matter trainings in workshop or virtual-forum formats. We encourage specific consideration for continuing education credits when selecting, promoting, or developing subject matter trainings. It is also recommended to ensure we reach local public health nurses as well as environmental health sanitarians for these trainings.

4. Resource library

We recognize that local environmental public health staff spend much of their time addressing topic areas that do not fall under the direct purview of BEOH. The BEOH does have an opportunity to facilitate connections and learning between LTHDs.

We recommend the BEOH collaborate with LTHDs on a centralized resource library that could include locally developed resources. This will accomplish meeting two needs. Providing one location for resources will first improve awareness of existing resources as well as offer consistency for where to go for new materials, and secondly it will dedicate space for LTHDs to share resources on non-BEOH programmatic areas.

Implementing these recommendations will ensure that Wisconsin's current and future environmental public health workforce is equipped to address environmental health needs and prevent environmental health hazards throughout the state.

Appendix A. Topic Area Frequency Data Table

Question: How often do you conduct work in the following topic areas? Please consider your overall yearly workload when choosing a frequency:

Topic area	Daily	≥ 1x/week	≥ 1x/month	≥ 1x/year	Every few years	Never
Food safety	49%	15%	7%	11%	4%	15%
Other regulatory inspections	25%	15%	18%	14%	1%	25%
Drinking water quality	18%	27%	23%	15%	5%	12%
Emergency preparedness	7%	12%	25%	33%	8%	15%
Recreational water quality	7%	9%	25%	30%	13%	15%
Mold	4%	19%	36%	20%	5%	17%
Vector control	4%	10%	31%	32%	7%	16%
Unfit structures or hoarding	1%	16%	32%	28%	6%	17%
Lead	1%	12%	33%	21%	9%	23%
Indoor air quality	1%	9%	30%	28%	4%	28%
Chemical spills	1%	1%	5%	27%	30%	36%
Asbestos	0%	4%	6%	30%	20%	39%
Asthma concerns	0%	1%	11%	24%	17%	47%
Extreme heat and/or cold	0%	1%	6%	37%	18%	38%
Flood mitigation	0%	0%	1%	20%	37%	42%
Manure spills	0%	0%	1%	12%	27%	60%