

**Attachment 12: Water system risk management and remediation staff interview guide**

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**Introduction [4 minutes]**

Hi, my name is \_\_\_\_\_. I am an independent contractor with the Hannon Group hired to conduct these interviews. I'll be spending the next 60 minutes talking with you about legionellosis — a respiratory disease that can be caused by breathing in *Legionella* bacteria that are found in water – known as either Legionnaires' disease or Pontiac fever. The purpose of our discussion is to assist the Centers for Disease Control and Prevention, also known as CDC, better understand your current *Legionella* risk management and remediation practices. This study is exploratory in nature and we've invited you to participate in this interview because we're interested in the thoughts and views of people who influence how different water systems are maintained.

- I want to **thank you** for your participation.
- This interview is entirely **voluntary**. You can decline to answer any question and "I don't know" is an acceptable response to any question.
- The information you provide will be kept **private and secure to the extent permitted by law**. The responses of everyone I speak with will be compiled and reported in aggregate. Any direct quotes used for illustrative purposes will not be associated with your name or your hospital.
- With your permission, I would like to **record** our conversation so I can use the transcripts to make sure the analysis is accurate. Is that all right?
  - Yes [**START RECORDING**]
  - No [**NOTES ONLY**]
- Before we get started, do you have any questions?

Public reporting burden of this collection of information is estimated to average 60 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to CDC/ATSDR Reports Clearance Officer; 1600 Clifton Road NE, MS D74, Atlanta, Georgia 30333; ATTN: PRA (0920-0800)

## **Topic A: Background [5 minutes]**

1. Please tell me a little bit about you and your company. I'd like to understand the types of services you provide [Icebreaker/warm up question]

### **Probes:**

- How many years have you been working in the field?
- What is your background (e.g., engineer, industrial hygienist, laboratory)?
- What professional organizations, if any, are you a member of?

### **Listen for the following. Probe if not mentioned:**

- ASHRAE (formerly known as the American Society of Heating, Refrigerating, and Air Conditioning Engineers)
- Cooling Technology Institute (CTI) International Facility Management Association (IFMA)
- American Water College
- American Society of Sanitary Engineering (ASSE)
- National Association of Stationary Operating Engineers (NASOE)
- American Water Works Association (AWWA)
- OTHER
- Types of buildings you work with [hotel, hospital, conference center, etc.]
- Types of water systems you work with [pools, spas, potable water, cooling towers, etc.]
- What types of *Legionella* services do you provide (i.e., risk management, remediation/disinfection only, full service consultation, lab services, training/webinars, prevention plan writing/implementation, installation of long-term disinfectant systems)?
- Do you work with an ELITE certified lab? If not, what labs do you work with?
- What non-*Legionella* related services do you personally provide? Your company? Please describe.
- Who do you see as an industry leader in addressing *Legionella*? Why are they a leader? What federal agencies, if any are included?

2. What is your experience with *Legionella*?

### **Probes:**

- How many buildings, on average, do you work with each year that have been associated with a legionellosis case, cluster, or outbreak? That is, Legionnaires' disease or Pontiac fever.
- What percentage of your business comes from buildings that are having had a legionellosis case or outbreak (vs. what percent have never had a known case of legionellosis)?
- What percentage of your business comes from buildings that find *Legionella* during routine testing without an associated case of Legionnaires' disease or Pontiac fever?
- **[Must probe on this]** What are the biggest challenges building or water system managers have with preventing *Legionella* growth?

3. What type of training, if any, have you received specific to *Legionella* risk management?

### **Probes:**

- Who provides the tools, trainings and technical assistance that you find most helpful?
- Thinking about the training(s) that you have attended, what topics were covered?
- How helpful was the training?
- What was missing from training?

- What wasn't useful?
- How are you applying what you learned in the training?

**Topic B: Legionella Knowledge, Attitudes, & Beliefs [5 minutes]**

1. In your experience, what conditions are most favorable for *Legionella* growth?
2. Which types of water systems are most prone to problems with *Legionella*? Which types of facilities?
3. What common themes have you seen in these buildings regarding *Legionella* amplification? Are there common mistakes or environmental factors?

**Probes:**

- What failures do you come across most often that increase the risk for *Legionella* growth? For example, biocide delivery systems not working correctly or people not performing preventive maintenance.
  - What external influences do you come across most often that increase the risk for *Legionella* growth? For example, construction, water main breaks, broken devices, like a chlorine pump.
  - Does new construction pose a risk or do you feel issues with *Legionella* mainly arise due to work on older systems?
4. What do you think could be done to help prevent these problems from happening again in these buildings or others nationwide?
  5. What disinfectants are generally used in *Legionella* remediation, meaning when you respond to positive cultures of *Legionella* or known or suspected cases of Legionnaires' disease are associated with a building?

**Probes:**

- What disinfectants are the most effective in remediation for the various potable water systems?
  - What remediation strategies (superheating, hyper chlorination, flushing) are the most effective for various potable water systems?
6. When thinking about cooling towers, what do you recommend as the optimal disinfection system?
 

**Probes:**

    - Are certain biocide delivery systems in cooling towers problematic or increase the risk for *Legionella* amplification?
    - What do you recommend as the optimal disinfection system in a cooling tower?
    - Do cooling tower disinfectants generally only get injected if the tower is currently running? Do you recommend a timer system?

7. Do you think that routine environmental testing for *Legionella* should be done?

**Probes:**

- If so, why should testing be done?
  - At what types of facilities and how often?
  - Who should make the sampling plan and collect the samples?

- If not, what type of testing do you recommend to your clients?

### **Topic C: Legionella Risk Management Programs [15 minutes]**

1. About what percentage of the buildings you work with have water management programs for *Legionella* prevention?

**Probes:**

- Are the water management programs based on any particular guidelines (e.g., ASHRAE)?
- What types of buildings (i.e., hotels, hospitals) tend to have water management programs? What types of buildings tend not to have these programs?

2. We're interested in learning about what a typical remediation engagement looks like. Please walk me through what happens when you're called in to help with *Legionella* remediation.

**Probes:**

- What are the procedures once you arrive on site?
- Who do you talk to? Who are your primary contacts?
- What materials, if any, do you use?
- What steps, if any, do you take to prevent future outbreaks?

3. After remediation, what do you recommend to your clients to prevent *Legionella* from reoccurring?

**Probes:**

- Does your company recommend that buildings regularly test for *Legionella* in water samples after you have helped with remediation?
- What types of buildings do you recommend this for and why?
  - Please tell me more about your recommendations for how often water samples are collected, where they are collected from, how and where the testing is being done, and, how long you recommend regular testing following remediation.
  - What is your recommendation if *Legionella* is found in the water?

4. What, if any, is your involvement in helping buildings develop water management procedures for *Legionella* prevention?

**Probes:**

- When does your involvement typically occur? Is it after an event or as part of a risk-management process?
- Is there a standard water management program template you suggest? If so, who developed it?
- How do you involve building management in the tailoring of this template? What other resources are involved?
- How often is this building-specific set of procedures updated?
- Who is responsible for keeping this set of procedures up to date?
- What resources are used to inform what updates should be made?
- How, if at all, do you train building maintenance workers on how to correctly implement your recommendations? What is included in this training?
- What, if anything, do you recommend that the building monitor? (i.e., residual disinfectant, temperature, pH, incoming water parameters, standing water parameter)?

5. Who do you see as the person ultimately responsible for preventing the growth of *Legionella* in building water systems? And why?

**Topic D: Barriers to *Legionella* Risk Management [10 minutes]**

1. What guidelines are you aware of that can be followed to help prevent *Legionella* growth in building water systems?

**Probes:**

- Have you heard of ASHRAE guidelines or standards for preventing *Legionella*? Which ones?
- Do you have access to ASHRAE guidelines and standards?
- Do you recommend building owners adhere to ASHRAE guidelines and standards?
- How familiar are you with ASHRAE Standard 188, which establishes minimum legionellosis risk management requirements for building water systems?
- How do the ASHRAE guidelines differ from your practice recommendations, if at all?
- **[If only ASHRAE is discussed]** What guidelines besides ASHRAE's are you aware of and when do you refer to them?

[Questions 2 & 3 only for participants who are aware of ASHRAE standards]

2. What, if any, are the challenges most of your clients have to implementing ASHRAE guidelines or standards?

**Probes:**

- What parts of the guidelines or standards are not clear?
- What are the cost considerations to implementing the guidelines or standards, if any?
- What are additional issues that you would have liked covered in those guidelines that are not included?

3. What kinds of materials or tools would make it easier to implement ASHRAE guidelines or standards?

**Probes:**

- Would you be interested in an app or digital materials? If so, what should these tools focus on?
- Would you use materials if they are developed? How and when?
- Which group or organization do you think should be responsible for developing those materials?
- If print materials are developed, what size should they be? For example, should they fit in a binder, be a poster for the wall, or maybe even a wallet sized card?
- What existing materials or tools are you aware of that you think are helpful?
- Would CDC branding, or any other branded materials, be helpful for adoption and adherence to these guidelines?
- Are there groups that you work with where you lack materials? What groups are these and what materials could you use?
- In your work, what are credible agencies that you trust? Is CDC one of these agencies?

## **Topic E: Materials Testing [15 minutes]**

When we emailed you confirmation of this interview, you should have also received several documents that I would like to discuss now. These materials were developed by CDC to raise awareness about preventing legionellosis.

**[FROM TOOLKIT, ONE AT A TIME, DISCUSS EACH MATERIAL; RANDOMIZE ORDER]**

**[ASK QUESTIONS E1-3 AFTER EACH MATERIAL]**

1. What did you think of this?

**Probes:**

- In your opinion, what is the main message?
- In your opinion, what, if anything, do you think it is asking you to do?
- Is there any information here that is new to you?
- In your opinion, is it missing any needed information?

2. Who, in your opinion, do you think this material was designed for?

**Probes:**

- Is the reading level appropriate?
- Share with me your thoughts on the technical level of this document. [Is it technical enough? Or too much jargon?]

3. What about this, if anything, was confusing or hard to understand?

**Probe:**

- How would you change it to make it better?

4. What did you like best about this design? What did you like least about it?

**Probes:**

- What did you think of the design/layout/colors/images?
- What did you think of the wording?
- What would you change about the design or wording?

5. How would this tool help implement ASHRAE 188?

**Probe:**

- What is missing that would be helpful in implementing that standard?

## **Topic F: Information Sources and Sharing [5 minutes]**

1. What type of training do the water maintenance staff at the buildings you work with receive regarding *Legionella* risk management?

**Probes:**

- Who provides that training? If you, can you tell me a bit about the training you provide?
- How does the training take place? How often does it happen? Is it one-on one or in a group?
- Do you think your role is to provide that type of training?
- Are there barriers to those staff receiving training?
- How is information from trainings disseminated to other building staff who need this information?
- How and what kind of tools, if any, do you use for the training? What tools would be helpful to have that are not currently available?

2. What additional training related to *Legionella* would you like to have?

**Probes:**

- What is the best way to get you training? In-person? Self-study webinar?
- Would having continuing education credits available for a training make you more likely to complete it?

3. How do you get information on current guidelines for *Legionella* risk management?

**Probes:**

- Where do you go for the latest information?
- Who at your company is responsible for staying up to date on the latest information?
- How does your company ensure those who need to be informed have the latest information?

4. What types of guidance or procedural documents, like guidelines for routine testing, for *Legionella* risk management would be helpful to you?

**Probes:**

- Who would you like to see develop these documents?
- What role, if any, should CDC play in the development of these documents?

5. How do you receive information about *Legionella* risk management and remediation?

**Probes:**

- Of the sources you get information from, which do you trust the most?
- Are there other sources or channels you would like to receive information from?

6. How do you share information with other risk management and remediation personnel?

**Probe:**

- At your company? In your professional community?

7. What is the best way for professionals in your field to share their lessons learned with CDC?

**Probes:**

- Should CDC host a one-day meeting?
- What professional meetings exist where discussions on this topic could be held?
- Do you publish your lessons learned? If so, where?
- Are you aware of other published lessons learned on this topic in your field?
- Are there organizations in this field you would look to on *Legionella* remediation and risk management? Who?

8. What kind of professional relationships from a *Legionella* perspective exist between equipment manufacturers, risk management and remediation staff, water system maintenance staff, and public health professionals?

**Probes:**

- How are lessons learned from remediation/risk-management plan implementation transferred to public health, building officials, infection control staff and maintenance staff?
- How can public health professionals coordinate more with risk management and remediation staff and equipment manufactures to transfer lessons learned to prevention guidance or improved equipment design? If so, what are the potential benefits and or cons?
- What might this partnership look like?
- Is a partnership like this something your organization would like to be a part of? For example, if a cooling tower biocide delivery deficiency was identified during an outbreak by public health professionals or remediation contractors, what communication occurs with cooling tower manufactures to improve cooling tower design so such a deficiency doesn't reoccur? Should one be created if it does not currently exist?
  - What agencies exist that can work with the facilities where the problem was identified to help prevent future outbreaks due to the same deficiency?

9. What opportunities do you see to incorporate *Legionella*-related work or education into the other work your company does?

**Probe:**

- How can CDC help you to more broadly include *Legionella* related work or education?

**Closing [1 minute]**

Those are all of the questions I have for you today. Thank you so much for taking time to share your thoughts. Is there anything you wanted to share with me on this topic before we close?