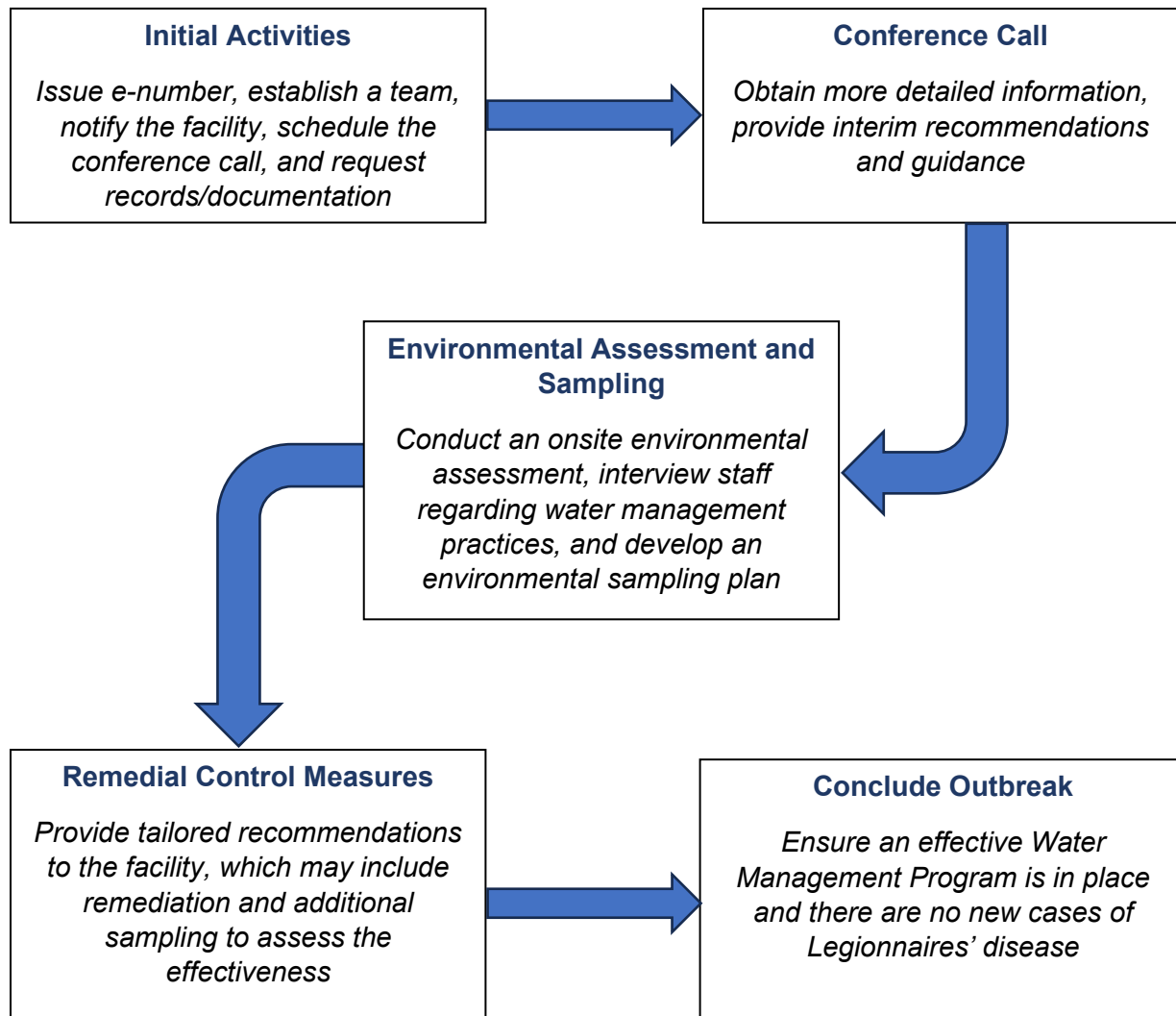


Standard Operating Procedure for Local Health Departments: Legionnaires' Disease Outbreak Investigations for Individual Facilities

Once public health officials decide to conduct a **full investigation** into a facility, several steps should be followed. This guidance serves as a general roadmap for Local Health Departments (LHDs) to navigate an outbreak investigation, though it is considered high-level and not meant to be exhaustive. The tables below outline the investigation protocol, including a narrative of the steps involved. Additionally, the supplemental LHD checklist provides actionable items for Local Health Department to complete.

Note: The terms "outbreak investigation" and "full investigation" are used interchangeably.



Outbreak Investigation Protocol: *Initial Outbreak Investigation Activities*

- 1. E-number:** When a case of legionellosis is reported and meets the criteria for an outbreak investigation, **NJDOH** will generate a unique outbreak identification number, known as an e-number, using the Outbreak Module within the Communicable Disease Reporting and Surveillance System (CDRSS).
- 2. Establish Team:** Once the e-number is assigned, the **LHD with jurisdiction over the affected facility** will establish a *Legionella* Investigation Team, which may include the Health Officer, Disease Investigator, Public Health Nurse, and/or Registered Environmental Health Specialist. The Health Officer should designate a primary LHD Team Lead. NJDOH staff will be part of the team to provide technical support and guidance.
- 3. Facility Notification:** After the team is established, the **LHD** will formally notify the facility's manager or owner in writing as soon as possible. This notification is crucial for informing them about the public health investigation and outlining the necessary next steps. Template letters for this communication can be found via the links provided below.
- 4. Scheduling Conference Call:** The **LHD** will schedule a 1-hour conference call with the **facility and NJDOH** which should take place within 5 business days from the initial facility notification. This call should include the facility owner or manager and a knowledgeable representative familiar with the building's water systems. For healthcare facilities, it's important to have the administrator, director of nursing, or infection preventionist on the call as well.

LHD Checklist

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| <ul style="list-style-type: none"><input type="checkbox"/> Link the outbreak identification number (e-number or i-number) to associated CDRSS case(s)<input type="checkbox"/> Assign LHD staff member(s) to be part of the <i>Legionella</i> Investigation Team<input type="checkbox"/> Send written notification to the facility manager or owner<input type="checkbox"/> Schedule a conference call with the facility to take place within 5 business days after facility notification | <ul style="list-style-type: none"><input type="checkbox"/> Create a meeting invitation via Zoom, Microsoft Team, or conference line and send the meeting invite by email to all parties (note: can request NJDOH to do this on behalf of LHD)<input type="checkbox"/> Request the following records from the facility to be provided ≥ 24 hours prior to the initial conference call:<ul style="list-style-type: none">- Facility Background Assessment Tool (required)- Water Management Program (if available)- Environmental <i>Legionella</i> test results from 12 months before patient's illness onset to the current date (if available) |
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Resources

- [Template Letter to Notify Healthcare Facility of One Presumptive HAI LD Case](#)
- [Template Letter to Notify Healthcare Facility of Two Possible HAI LD Cases in 12 Months](#)
- [Template Letter to Notify Non-Healthcare Facility of Two LD Cases in 12 Months](#)
- Facility Background Assessment Tool (*available upon request*)

Outbreak Investigation Protocol: *Conference Call and Interim Recommendations*

1. **Public Health Pre-Call:** The LHD and NJDOH will have a 15-minute pre-conference call to review the epidemiological investigation and prepare for the upcoming meeting with the facility. If LHD has limited recent experience, then allocate 30 minutes for this preparatory call. Please note that the conference call with the facility should not be delayed to facilitate the pre-call.

2. **Conference Call with Facility:** Next, the LHD/NJDOH will host the conference call between **the facility and Legionella Investigation Team**, following this format:
 - **Introductions:** LHD will lead introductions including names, titles, and organizations. [LHD]
 - **Disease Background:** Provide a brief overview of *Legionella* and Legionnaires' disease. [LHD or NJDOH]
 - **Clinical Details (Healthcare Facilities Only):** Verify and confirm any outstanding clinical details related to the case-patient as part of the epidemiological investigation. [LHD]
 - **Facility Background Request Form Review:** Review completed Facility Background Request Form to understand the building's water system configuration. [NJDOH]
 - **Interim Recommendations:** Based on the epidemiological data and the building's water system configuration, verbally provide standardized recommendations including implementation of immediate control measures (as needed based on setting), hiring a third-party environmental consultant, scheduling an onsite environmental assessment, and conducting environmental sampling for *Legionella* testing. [NJDOH]
 - **Questions and Answers:** Allow time for participants to ask questions and discuss any concerns.
 - **Next Steps:** Conclude the meeting by discussing the next steps, including providing written recommendations to the facility and scheduling an onsite visit for further investigation. [LHD/NJDOH]

3. **Post-call:** After the conference call, NJDOH will send standardized draft recommendations to the LHD. These recommendations are meant for the facility to follow. The LHD will then need to review, edit, and finalize these recommendations before sharing them with the facility within 2 business days.

LHD Checklist

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| <ul style="list-style-type: none"> <input type="checkbox"/> Schedule a pre-conference call with NJDOH and review conference call script and agenda
 <input type="checkbox"/> Prepare a summary of the LD case(s) for the conference call (healthcare facilities only)
 <input type="checkbox"/> Conduct the conference call with the facility: <ul style="list-style-type: none"> - Lead introductions - Provide disease background - Review clinical details and case investigation findings (healthcare facilities only) - Conclude the meeting with next steps | <ul style="list-style-type: none"> <input type="checkbox"/> Receive draft written interim recommendations from NJDOH (typically within 2 business days)
 <input type="checkbox"/> Prepare and format interim recommendations: <ul style="list-style-type: none"> - Use LHD letterhead or LHD logo - Add the date, LHD contact information, and any missing details
 <input type="checkbox"/> Send finalized recommendations to the facility within 2 business days after receipt of draft from NJDOH |
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Resources

- Conference Call Script (*available upon request*)
- Conference Call Agenda (*available upon request*)
- Providing Recommendations During a LD Outbreak Investigation Guidance (*refer to [Disease Chapter](#)*)

Outbreak Investigation Protocol: *Environmental Assessment and Sampling*

1. **Scheduling the Assessment:** After the facility has engaged a consultant, the **LHD** will coordinate with the *Legionella* Investigation Team (LHD and NJDOH), the facility's staff, and the consultant to schedule the onsite environmental assessment, typically within 5-20 business days after the call.
2. **Self-Assessment:** The **LHD** will send the *Legionella* Environmental Assessment Form (LEAF) to the facility for completion before the onsite assessment, with assistance from the consultant. The LEAF should be returned ≥ 24 hours prior to the site visit.
3. **Onsite Environmental Assessment:** The ***Legionella* Investigation Team** will conduct an onsite assessment of the facility's water systems and devices. Since each building's water system is unique, the team will collaborate with the facility's engineering personnel who are familiar with the premise plumbing system. As a resource to the LHD, the NJDOH can lead the onsite environmental assessment while providing real-time training to the LHD team members. The assessment typically includes an evaluation of the building's water systems and its operations, including how potable water is received, treated, conditioned, heated, distributed, and comes into contact with building occupants. Facility staff will be interviewed about water management practices such as flushing, cleaning, disinfection, and maintenance. At the conclusion of the site visit, there will be an exit meeting where the team provides immediate feedback regarding water management practices.
4. **Environmental Sampling:** After the site visit, **NJDOH** will provide the **LHD** with an Environmental Sampling Plan detailing the recommended number and locations of samples. Sampling is typically conducted by a third-party consultant, with the facility responsible for all associated costs. The facility/consultant must follow NJDOH's Environmental *Legionella* Testing Guidance; otherwise, NJDOH may advise the LHD to reject the results. The facility should conduct sampling within 5 business days of receiving the environmental sampling plan and provide the LHD with the completed Environmental *Legionella* Sampling Data Sheet, original laboratory results, and the chain of custody within 24 hours or receipt. Results are usually available within 7-15 days.

LHD Checklist

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| <ul style="list-style-type: none"> <input type="checkbox"/> Send a reminder to the facility 1-2 days before the site visit to confirm parking details and meeting location (e.g., lobby) <input type="checkbox"/> Conduct the environmental assessment <input type="checkbox"/> Obtain any outstanding information or records that were not readily available during the site visit <input type="checkbox"/> Receive the draft environmental sampling plan from NJDOH, typically within 5 business days, though delays may occur if the facility has not provided all requested records | <ul style="list-style-type: none"> <input type="checkbox"/> Prepare and format environmental sampling plan <ul style="list-style-type: none"> - Use LHD letterhead or LHD logo - Add the date, LHD contact information, and any missing details <input type="checkbox"/> Send the finalized environmental sampling plan to the facility within 2 business days of receiving the draft from NJDOH <input type="checkbox"/> Determine the tentative date that the facility plans to conduct environmental sampling <input type="checkbox"/> Follow up with the facility to obtain the results and chain of custody if they are not received within 15 days of the sampling date |
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Resources

- [Legionella Environmental Assessment Form](#)
- [Environmental Sampling and Testing Guidance](#)
- [Environmental Legionella Sampling Data Sheet](#)
- Site Visit Agenda and Sign-in Sheet (*available upon request*)

Outbreak Investigation Protocol: *Hazard Assessment and Remedial Control Measures*

1. **Site Visit Recommendations:** When sharing the environmental sampling plan with the LHD, NJDOH will provide recommendations based on the findings from the site visit. This will detail the assessment findings, highlight issues in water management practices, and offer recommendations for improvements. **At this time, or after receiving the environmental sampling results, NJDOH may recommend additional remedial actions based on available epidemiological, environmental, and microbiological data.**

2. **Chemical Shock Remediation:** NJDOH will recommend a chemical shock treatment for the potable hot and/or cold water system under the following circumstances:
 - A presumptive healthcare-associated case among a resident who spent their entire incubation period in the facility, and potable water is suspected to be the source of infection,
 - *Legionella* is detected in the potable hot and/or cold water system, **OR**
 - A presumptive healthcare-associated case among a resident who briefly left the facility during the day. Determinations will be made on a case-by-case basis by SMEs based on environmental assessments, water quality parameters, recent *Legionella* detections prior to the outbreak, and the facility's history of Legionnaires' disease cases.

Chemical shock remediations involve using high concentrations of chemical disinfectants for a short period to reduce the burden of *Legionella* in a potable water system. The facility is responsible for all associated costs. While NJDOH does not approve remediation plans, it is essential for consultants to provide a detailed remediation plan to ensure the procedure's effectiveness. For more information, refer to NJDOH's *Chemical Shock Remediation Guidance*.

3. **Post-Remediation Sampling:** Facilities must verify the effectiveness of the remediation by conducting environmental sampling for *Legionella* testing 3 to 7 days later (no sooner than 48 hours after returning to normal operating conditions). Facilities should review these results, investigate any *Legionella* detections, and adjust water management practices as needed before resampling, which should occur every 2 to 3 weeks. No more than 14 days should pass between receiving the results and conducting the next sampling event. Once there are three consecutive sampling events with no detectable levels of *Legionella*, the facility can transition to monthly sampling after consulting with the LHD. If monthly sampling shows no detectable levels of *Legionella* for three consecutive months, the facility can discontinue investigative sampling. For more information regarding corrective actions, refer to NJDOH's *Responding to Post-Remediation Environmental Legionella Detections Guidance*.

LHD Checklist

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| <ul style="list-style-type: none"> <input type="checkbox"/> Review, edit, and finalize site visit recommendation report(s) and share with the facility <input type="checkbox"/> Request a copy of the remediation plan and ensure all site visit recommendations have been implemented prior to implementation (e.g., removal of dead legs, repairing failing equipment) <input type="checkbox"/> Meet with the facility/consultant to discuss any concerns related to the remediation plan, as needed | <ul style="list-style-type: none"> <input type="checkbox"/> Obtain a copy of the remediation report <input type="checkbox"/> Verify that post-remediation sampling will not occur any sooner than 48 hours after the system returns to normal operating conditions <input type="checkbox"/> Routinely follow-up with the facility to ensure environmental sampling is occurring and results are being shared (at minimum, follow-up every 21 days) |
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Resources

- Chemical Shock Remediation Guidance (*refer to [Disease Chapter](#)*)
- Responding to Post-Remediation Environmental *Legionella* Detections Guidance (*refer to [Disease Chapter](#)*)

Outbreak Investigation Protocol: *Concluding an Outbreak Investigation*

1. **Criteria:** Public health officials will determine when an outbreak is considered concluded on a case-by-case basis. Considerations for determining an outbreak is concluded include:
 - a. Whether an effective Water Management Program has been implemented to prevent ongoing transmission of *Legionella*.
 - b. If there have been any additional cases of Legionnaires' disease after implemented of short-term and long-term Legionella control strategies as part of a [Water Management Program](#)
 - c. If there have been any *Legionella* detections during post-remediation environmental sampling and if implemented corrective actions were successful.

2. **Close-Out Letter:** The LHD will issue a written notification to the facility when the outbreak investigation is considered concluded.

3. **Considerations:** Public health officials may recommend increasing the frequency or extending the timeframe for testing if there are concerns regarding ongoing risk of *Legionella* transmission. Examples of concern include continued *Legionella* detections, unstable water quality monitoring data, new cases of Legionnaires' disease, or suboptimal performance of the Water Management Program.

LHD Checklist

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| <ul style="list-style-type: none"> <input type="checkbox"/> Ensure an updated Water Management Program is received <input type="checkbox"/> Verify with NJDOH that the investigation meets the criteria to be concluded <input type="checkbox"/> After verification, formally conclude the outbreak investigation and issue a Close Out Letter to the facility <input type="checkbox"/> If building occupants were notified of the outbreak investigation, they should also be notified of the conclusion of the investigation | <ul style="list-style-type: none"> <input type="checkbox"/> Write a brief outbreak investigation summary and ensure that pertinent information in the CDRSS Outbreak Module is completed within 30 days of completing the investigation <input type="checkbox"/> Conduct an after-action debriefing or "hotwash" to discuss lessons learned and to identify areas for improvement and training needs <input type="checkbox"/> Maintain outbreak investigation records |
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Resources

- Close Out Investigation Template Letter (*available upon request*)
- [Water Management Program Template](#)
- [Water Management Program Evaluation Tool](#)
- [Evaluating When an Outbreak is Over](#)