

Investigating Water Contamination – Lead – Facilitator Guide

Time requirement: 1-2 hours, depending on exercises selected

Number of facilitators: 1 or more, per ratio found in Minimum Criteria

Materials

- Whiteboard or equivalent; markers
- Participant Guide - includes lead and PFAS
- Filters or pictures of water filters
- Handout - Clean an aerator
- Tools and supplies for clean an aerator exercise
- Pencils and notepaper for trainees
- Internet access and devices for activities

Objectives

When completed, participants will be better able to:

- Identify information resources
- Identify testing resources
- Describe actions to reduce exposures

Teaching Methods

- Presentation/discussion
- Small group activities

Suggested Facilitator Preparation

Recent attention to water quality in the region includes the water crisis in Flint, Michigan (<https://www.nrdc.org/stories/flint-water-crisis-everything-you-need-know>) and other examples across the MWC. Be aware of local concerns such as Tennessee (<https://www.newschannel5.com/news/newschannel-5-investigates/lead-in-school-water/some-mnps-students-still-drinking-lead-contaminated-water>), and Indiana (<https://bit.ly/2X26luw>) This exercise covers initial approaches to investigate water contamination related to lead. It is suggested that you provide the entire Participant Guide, as it may be useful to attendees as other concerns arise in the community or at work.

- See this document regarding water quality of the Great Lakes. https://s3.amazonaws.com/american-rivers-website/wp-content/uploads/2019/06/11101113/GL_DrinkingWaterReport2019_FNL.pdf
- Review Participant Guide
- Review content of websites provided. Test web links prior to the session and if any are inoperative please notify your Program Director
- Assemble collection of filters or photos
- Copy illustrated aerator cleaning guidance (Factsheet in Participant Guide)
- Practice cleaning an aerator (if exercise to be done)
- Prepare an outline for notes to be included in the program file

Minimum Content Requirements

- Health effects
- Exposure levels and regulations
- Evaluation of level of contamination
- Actions to reduce exposure
- Exercise(s)

Questions You May Be Asked

1. How does lead get in the drinking water?

The most common way that lead enters drinking water is through the corrosion of lead or galvanized iron plumbing. This can be from plumbing inside or outside the building. Solder at joints may also leach into water.

2. Do I need to test my water if I have all new pipes? Do I still need to test my water if I am in a new building? (Good question to put in the parking lot).

Maybe, depending on several factors to be covered lead can still be present even if you have new pipes or live in a new building.

3. Does it make a difference if my water comes from a public utility or if it comes from a well?

Lead contamination most often comes from the service pipes or building plumbing components, not from the water. However, a well can become contaminated if lead-containing compounds have been buried or dumped in the area.

4. Are there other sources of lead exposure?

Be prepared to discuss lead paint that can contaminate the area around buildings (depending on age of building and prior use) and may contaminate soil if a building on the property was painted with paint containing lead. This could be a concern if starting a community garden in urban or rural location.

5. Doesn't OSHA regulate lead?

This is an opportunity to contrast OSHA and EPA jurisdictions—often explained broadly as in-plant air and work practices compared with emissions and dispersions beyond the

fence line. The OSHA lead standard is for workers, and addresses exposure to lead in air, not water.

Presentation of the Exercise

This exercise can be presented as follows:

Review the learning objectives.

Introduction

Present the issue, using a local example or one shown above under ‘preparation’.

Health effects

Ask: Who is most vulnerable to the health effects of lead?

Discuss the health effects and most vulnerable population (children).

Access the CDC webpage or refer to the Participant Guide where it is noted that there has not been a safe level of exposure identified for children.

Levels of exposure (concentration) in drinking water

Ask: Does anyone know if there is an allowable level of lead in drinking water? Discuss concentrations. Refer to the figure in the Participant Guide for context.

Review the proposed updates to EPA regulations, found in the Participant Guide.

Ask: How can the concentration of lead at the source of the water be found?

Direct participants to where values from required monitoring are found:

<https://www.epa.gov/ccr>

Ask: What can be learned from the history of a building?

Ask: What can be looked for in a building?

Discuss the clues that can be located, referring to those noted in the Participant Guide.

Exercise – Is there a risk of lead contamination?

Number of Facilitators Required: 1

Time Requirement: 20 minutes (15 to for the exercise and 5 minutes for report back)

Materials: CCR report for a supplier

Procedure: Participants will work in groups to:

- Locate the CCR report for a supplier and report the lead result
- Describe how you would learn or evaluate several factors related to potential lead sources
- List questions to help identify sources of lead contamination at an industrial facility

Each group will report back on the result of the discussion.

Evaluation of level of contamination

Ask: How can you determine the lead levels in your drinking water?

See Participant Guide for suggested resources regarding water testing. The local water district or health department may provide test supplies. Other resources are shown for each MWC state.

Emphasize the need to follow directions closely. The Participant Guide also shows a helpful video regarding sample collection.

Discuss initial guidelines for actions based on the lab result received.

Actions to reduce exposure

Ask: What can be done to reduce exposure?

Post feedback where everyone can see. Then discuss options provided by participants and those shown in the Participant Guide.

Exercise – Is the filter unit NSF-certified?

Number of Facilitators Required: 1

Time Requirement: 15 minutes (10 to complete the exercise and 5 minutes for report back)

Materials: two or more filters or pictures of filters for each small group

Procedure: Distribute two or more filters or pictures of filters to each small group. Ask for feedback on NSF certification.

Continue the filter discussion by reviewing the need to observe the indicator of service life and note that routine maintenance is required according to instructions provided with the filter. Review the generic ‘change a filter’ guidance.

Ask: why should you have an extra filter for use when needed?

Ask: Does anyone here have one of these filter units? How often do you have to change the filter?

Ask: Does anyone have an aerator as part of the faucet where you draw water for cooking or personal care?

Review the potential for particles to be caught in the screen of the aerator.

Exercise – Clean a Faucet Aerator

Part 1 – Review guidance found in Participant Guide

Number of Facilitators Required: 1

Time Requirement: 25 minutes (15 to read and discuss in small groups and 10 minutes for report back)

Materials: Provide guidance as a handout or ask participants to access it electronically

Procedure: Give participants time to read the content and identify questions in each small group. Discuss the questions to resolve confusion.

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If doing a performance-based activity, have each participant practice donning/doffing gloves and one person in each group should clean the aerator in an available faucet.

Ask: Why is disposal of debris important?

Ask: Why is it important to keep contamination from the surfaces near the sink?

Ask: If there are not lead sources, is all this necessary?

Facilitate a discussion regarding the Guidance, performance-based activity and the three questions above, as appropriate.

Part 2 – Clean an aerator

Number of Facilitators Required: 1

Time Requirement: 35 minutes (30 to clean the aerator and 5 minutes for report back)

Materials:

- Guidance found in Participant Guide
- Faucet with aerator
- Gloves (optional)
- Paper towels
- Pliers
- Water
- Disposable container

Procedure: Provide each small group a faucet with aerator and other materials listed above. Direct each group to use the guidance to clean the aerator. Facilitate a report back.

Additional Resources

Overall guidance, CDC. <https://www.cdc.gov/nceh/lead/prevention/default.htm>

Overall guidance, EPA. <https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water#reducehome>.

Overall guidance, NIEHS.
<https://www.niehs.nih.gov/health/topics/agents/lead/index.cfm>

Schools and daycare centers. <https://www.epa.gov/dwreginfo/lead-drinking-water-schools-and-childcare-facilities>

Summary

Review the learning objectives.

Ask: Based on this exercise, what takeaways do you have?

List them on a writing surface viewable by all

Answer any remaining questions.

Follow up

Make this exercise better:

Forward suggestions to your Program Director.

Are there other 'Questions you may be asked' that should be included?

Organize the listing of 'takeaways' and forward to your program director. These are very important impacts to report to NIEHS.