

Appendix 3

Noise Level Area and/or Equipment Mapping

Definition

Noise level mapping is the first step in identifying potentially hazardous levels of noise in a workplace. The best practice method for conducting noise level mapping tests includes the following steps.

- Working off a list of suspected areas or equipment with hazardous levels of noise
- Use of a sound level meter (hand-held)
- Work off an existing floor plan, or ...
- Draw up a rough sketch of the work area
- Measure the sound levels at different areas in proximity to the noise source
- Record readings
- Document the location, indoors or outdoors, the date, the time of testing and the brand and model number of the sound level meter
- Transfer the results to a Visio drawing or other like document

List of suspected areas or equipment

- Reference the Bureau's documented claims, safety concerns and complaints.
- Verify location with the Bureau contact.
- Have an escort as needed (Note: There may be a request for observation of the testing process by employees. This is entirely acceptable, encourage and should be accommodated.)

Preparation

- Sound level meter
 - ✓ Check the battery. If it is at $\frac{3}{4}$ battery life, replace it with a fresh battery.
 - ✓ Calibrate the sound level meter to manufacturer's recommendations.
 - ✓ Test before traveling to the work site.
- Tools
 - ✓ Clipboard
 - ✓ Pens
 - ✓ Extra batteries for meter
 - ✓ PPE

- Floor plan or area map
 - ✓ Arrange for a copy before arriving at the Bureau site.
 - ✓ If a floor plan is not available, draw up a rough sketch when you arrive at the test site. Include equipment locations and names.
 - ✓ Document the location, indoors or outdoors, the date, the time, the name of the person conducting the tests, names of any observers and the brand and model number of the sound level meter.
 - ✓ For areas without maps, such as an outdoor construction site, draw a rough sketch as mentioned in the 2nd bullet above. Include all involved vehicles and pieces of equipment, i.e. backhoes, sump pumps, use of power tools.

Conducting the test

- Let employees and others in the area know what you are doing; the intent, the methods and when and how you will get them results
- Turn on the sound level meter
- Select the 'A' weighting scale and Slow response.
- Start where ever you want, but be sure to write any results on the map.
- Standing a safe distance from the noise source, hold the meter at a height equal to where your ears are and take a reading.
- Adjust the range as needed. For example, if the meter is not showing a reading, the range is set too low and needs to be adjusted. Most meters will let you know if out of range, low or high.
- **NOTE:** There are meters that do not have a manual range adjustment and will adjust automatically.
- Observe the reading on the meter. It may fluctuate up and down by a decibel. Observe for about 10 seconds and estimate the average.
- Write down the reading and move to the next measurement spot. This will vary depending on the size of the room or area. For example, in a pump station, you might want to advance 10 – 15 feet at a time. In a warehouse or larger room or gallery, you can move further. Make sure you document the distance between readings.
- Continue through the facility while documenting all readings.
- For larger areas and facilities, you may want to repeat the process while standing closer or further away. Document these readings separately and indicating the distance from the noise source.
- If you are measuring for a particular piece of equipment, you will want to take measurements from all around the equipment. Again, use the drawings.
- If there are multiple pieces of equipment in the area, note which ones are operating at the time of the test. You may want to test each of those pieces of equipment as well.
- If there are other operations in the area, i.e. forklift operation, make sure that is noted on the map. Try and catch readings when the operation is away from your testing area, if possible.

- If outdoors, note any environmental conditions, i.e. traffic, wind or other noise producing operations, such as adjacent construction activity.
- When all measurements are concluded, gather all your tools and materials and prepare to depart the area. If there is anyone from the Bureau present, make sure you thank them for their help and participation. Also let them know you will get the formal results to them within a defined time frame.

Data and Results

- Transfer the readings and maps to an electronic resource, such as Visio. Word and Excel also have drawing functions that could serve as well as Visio. Visio has many templates for equipment, vehicles and room particulars, i.e. doors, windows, etc.
- Include all equipment, readings, and other information mentioned previously.
- Save the maps and data to a specific Bureau file.
- Forward copies to Risk Management.

Targeting for personal dosimetry

- For those areas, tasks or operations that are exceeding 85dBA, make a list of job positions that work or could be working in that area.
- Working with the Bureau, arrange for personal dosimetry testing.
- For positions with like tasks, equipment or operations in other Bureaus, arrange to conduct representative samples for a few of the like tasks, equipment, operations or positions in the other Bureaus.

SAMPLING PROTOCOL

Anyone evaluating employee exposures to workplace noise should:

1. **Inform** the monitored employee that the dosimeter will not interfere with his/her normal duties, and emphasize that the employee should continue to work in a routine manner.
2. **Explain** to each employee being sampled the purpose of the dosimeter, and emphasize that the dosimeter is not a speech recording device.
3. **Instruct** the employee being sampled not to remove the dosimeter unless absolutely necessary and not to cover the microphone with a coat or outer garment. Inform the employee when and where the dosimeter will be removed. When the dosimeter is positioned (generally in the shirt pocket or at the waist), clip the microphone to the employee's shirt collar at the shoulder, close to the employee's ear. Care should be taken to ensure that the microphone is in the vertical position. Clips should be placed in accordance with the manufacturer's instructions.
4. **Position** and secure any excess microphone cable to avoid snagging or inconveniencing the employee.
5. **Check** the dosimeter periodically to ensure that the microphone is oriented properly.

6. **Obtain** and note sound level meter readings during different phases of the work performed by the employee during the shift. Take enough readings to identify work cycles. For statistical reasons, more readings should be taken when noise levels fluctuate widely.
7. **Record** the information required on the OSHA-92. Some dosimeters indicate when a 115 dBA sound level has been exceeded. This indication is not to be used for compliance determinations.

