Site Noise Surveys

Role in OSHA Noise Compliance

Introduction

Ken Cox

- Larson Davis Product Manager
- 35+ years experience
- Member IEC-TC29 for 13 years

Larson Davis

- Experts in noise for 40 years
- A2LA accredited ISO 17025 calibration facility
- Total Customer Satisfaction pledge

Agenda

- NIHL explained
- OSHA Requirements
- Risk assessment
  - Site noise survey
- Determining compliance

Reasons for Hearing Loss

- Age related hearing loss
  - Presbycusis
- Noise-Induced Hearing Loss (NIHL)
  - Immediate or long term exposure
  - Preventable

OSHA

Occupational Safety and Health Administration

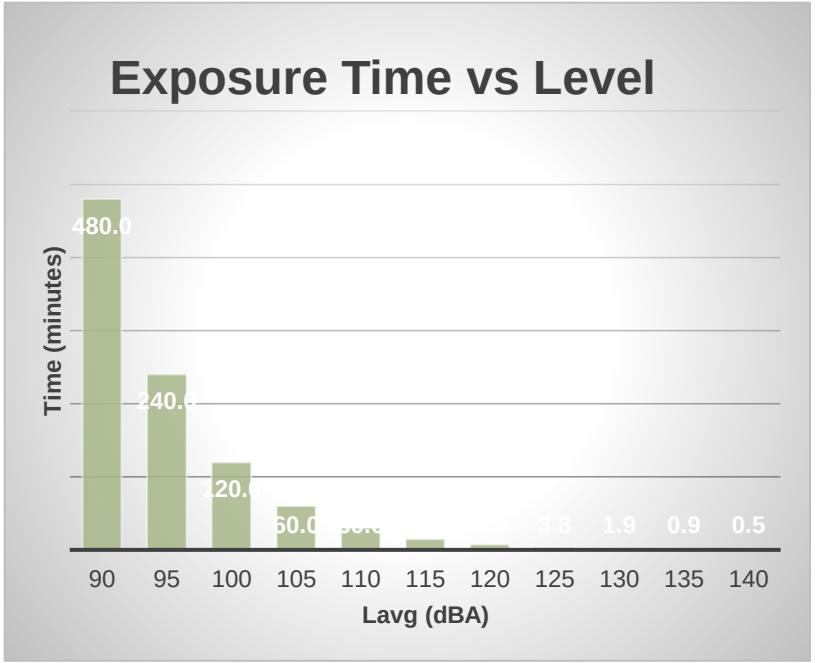
- Enforcement of workplace safety regulations
- Noise Regulation – 29 CFR 1910.95
  - PEL: TWA = 90 dBA or 100% dose
  - Action Level: TWA = 85 dBA or 50% dose

https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.95

What is 100% Dose?

Noise energy equivalent to 90 dBA for 8 hours

- What contributes?
  - Exposure time
  - dB Level



Risk Assessment

- People raise their voice to talk
- At the end of work, people talk louder (TTS)
- Workers complain about noise levels
- Similar industries experience excessive noise
- Walk-through or site survey

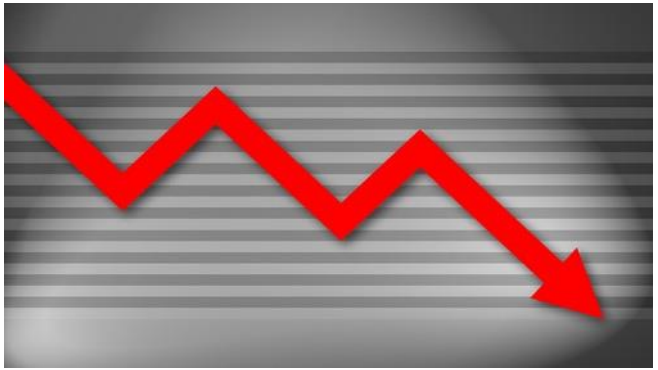
Site Noise Survey

1. Gather information
2. Make measurements
3. Note levels on a map
4. Report and analyze

Gather Information: Noise Sources

Avoiding and reducing exposure

- Determine loud sources
- Methods
  - Interview workers
  - Previous complaints
  - Measure



Gather Information: Interviews

PROS

- Simple
- Can provide insight

CONS

- Subjective
- Incomplete information
- Time consuming
- Worker availability

Gather Information: What is Typical

Consider

- Seasonal changes (fans, doors, etc.)
- Are noisy machines operating?
- Physical changes to worksite
- Are workers stationary or mobile?
- Capture uncommon & variable noises

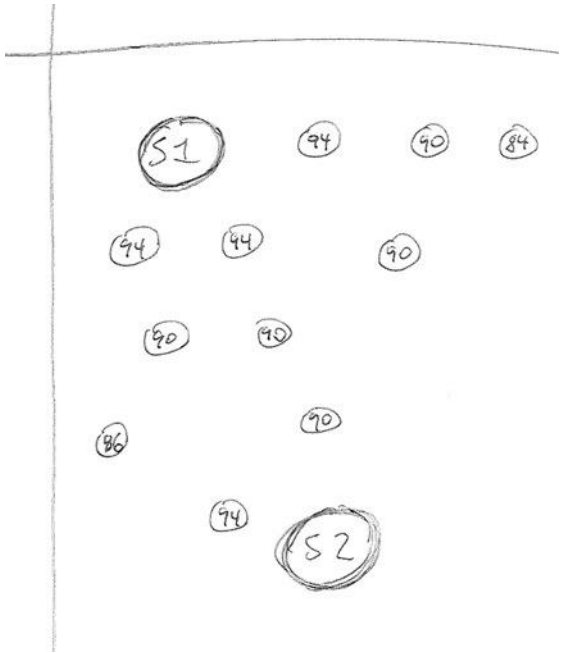
Gather Information: Worker Mobility

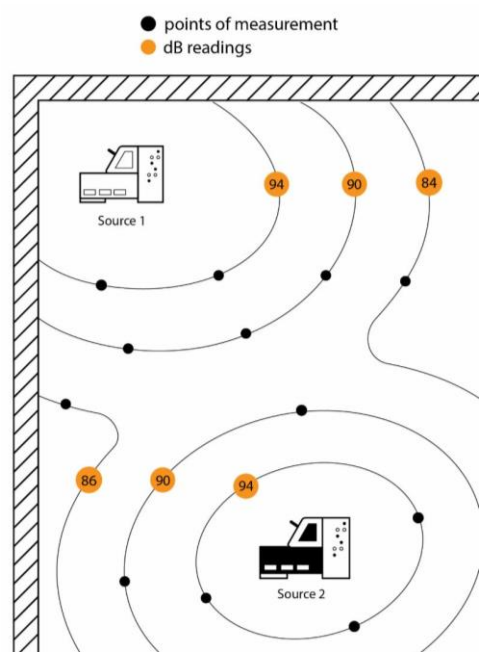
- Determine time at each noise measurement location
- For mobile workers, consider worst case

Make Measurement

- Calibrate before & after
- Measure at worker locations
  - Within 2 feet of head
- Measure typical & unusual situations

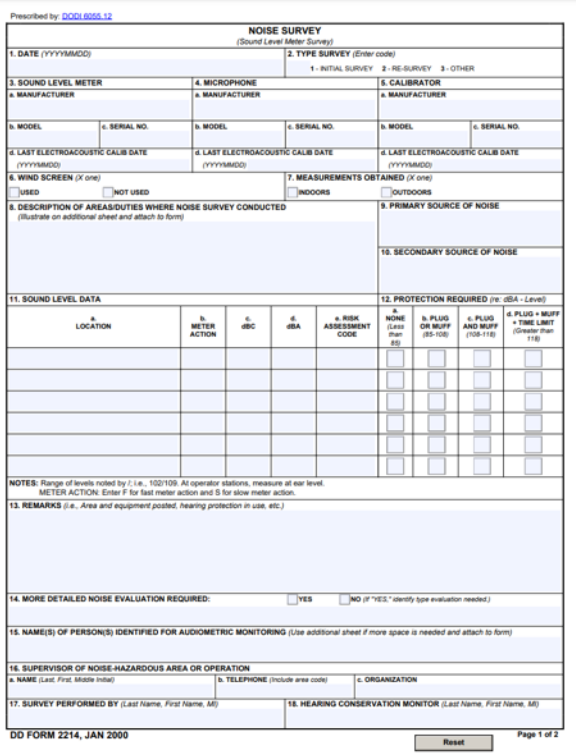
Note Levels: Sample Noise Map





Note Levels: Sample Report (DoD)

https://www.esd.whs.mil/Portals/54/Documents/DD/forms/dd/dd2214.pdf



Prescribed by: DODI 6055.12

NOISE SURVEY
(Sound Level Meter Survey)

1. DATE (YYYYMMDD)
2. TYPE SURVEY (Enter code) — 1 - INITIAL SURVEY 2 - RE-SURVEY 3 - OTHER
3. SOUND LEVEL METER — a. MANUFACTURER; b. MODEL; c. SERIAL NO.; d. LAST ELECTROACOUSTIC CALIB DATE (YYYYMMDD)
4. MICROPHONE — a. MANUFACTURER; b. MODEL; c. SERIAL NO.; d. LAST ELECTROACOUSTIC CALIB DATE (YYYYMMDD)
5. CALIBRATOR — a. MANUFACTURER; b. MODEL; c. SERIAL NO.; d. LAST ELECTROACOUSTIC CALIB DATE (YYYYMMDD)
6. WIND SCREEN (X one) — USED / NOT USED
7. MEASUREMENTS OBTAINED (X one) — INDOORS / OUTDOORS
8. DESCRIPTION OF AREAS/DUTIES WHERE NOISE SURVEY CONDUCTED (Illustrate on additional sheet and attach to form)
9. PRIMARY SOURCE OF NOISE
10. SECONDARY SOURCE OF NOISE
11. SOUND LEVEL DATA
12. PROTECTION REQUIRED (re: dBA - Level)

a. LOCATION	b. METER ACTION	c. dBC	d. dBA	e. RISK ASSESSMENT CODE	a. NONE (Less than 85)	b. PLUG OR MUFF (85-108)	c. PLUG AND MUFF (108-118)	d. PLUG + MUFF + TIME LIMIT (Greater than 118)

NOTES: Range of levels noted by /; i.e., 102/109. At operator stations, measure at ear level.
METER ACTION: Enter F for fast meter action and S for slow meter action.

13. REMARKS (i.e., Area and equipment posted, hearing protection in use, etc.)
14. MORE DETAILED NOISE EVALUATION REQUIRED: YES / NO (If "YES," identify type evaluation needed.)
15. NAME(S) OF PERSON(S) IDENTIFIED FOR AUDIOMETRIC MONITORING (Use additional sheet if more space is needed and attach to form)
16. SUPERVISOR OF NOISE-HAZARDOUS AREA OR OPERATION — a. NAME (Last, First, Middle Initial); b. TELEPHONE (Include area code); c. ORGANIZATION
17. SURVEY PERFORMED BY (Last Name, First Name, MI)
18. HEARING CONSERVATION MONITOR (Last Name, First Name, MI)

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Analyze Results: Next Steps

- Guidelines for formal measurement
  - If any location > 85 dBA
  - If average noise > 80 dBA
  - Consider worker time at each location

Next Steps: Measurement Tools

- Noise Dosimeter
  - Worn by worker (Dosimetry)
  - Compliant with ANSI S1.25
- Sound Level Meter
  - Handheld (ISO 9612)
  - Compliant with ANSI S1.4

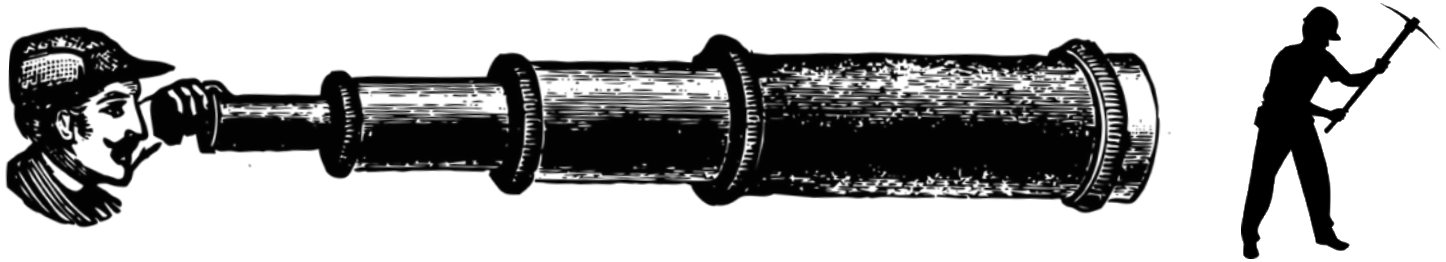
Next Steps: Noise Measurement Methods

- Job-based measurement
  - Worker wears noise dosimeter for shift
- Task-based measurement (ISO 9612)
  - Measure noise of task
  - Measure time at task
  - Compute noise dose

Next Steps: Worker Compliance

How to ensure a dosimeter is worn for the entire work shift?

Compliance: Observe the Measurement



PROS

- Objective
- Observe worker
- Detect tampering

CONS

- Time consuming
- May not be present

Compliance: Record Audio

PROS

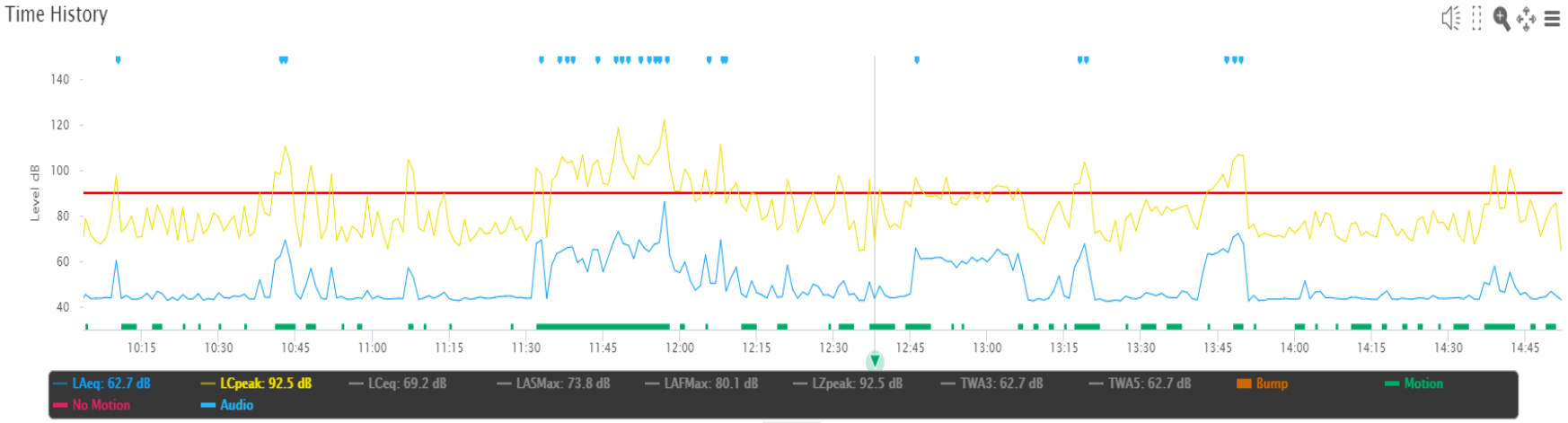
- Minimal time
- Source ID
- Detect tampering
- Objective

CONS

- Difficulty identifying sound
- Privacy concerns

Compliance: Measure Motion

- Report overall motion percent
- Report when in motion and not in motion



Additional Resources

- OSHA Technical Manual
  - Noise – Section III: Chapter 5
  - https://www.osha.gov/otm/section-3-health-hazards/chapter-5