Hearing Conservation Program Administration

Part 1: Exposure Monitoring

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Elements of the HCP
- Noise Exposure Monitoring
- Noise Control
- Hearing Protection
- Training and Motivation
- Audiometric Testing
- Recordkeeping
- Program Evaluation

Noise Exposure Monitoring
- Why is monitoring needed
- How to accomplish monitoring
- When should monitoring be done
- Where should measurements be taken
- Which workers to monitor
- What records should be kept

Why monitor noise exposure?
- Determine need for HCP inclusion
- Determine degree of protection needed
- Limit legal liability for unfounded hearing loss claims
- Comply with OSHA regulations

Choice of monitoring method
- Personal monitoring
  - Dosimeter usually used
  - Mobile workers
  - Variable exposures
- Area monitoring
  - Dosimeter or sound level meter
  - Distant noise source(s)
Frequency of monitoring

- No standard interval
  - Annual – high variability in workplace
  - Biennial - low variability
- Depends on job specifics
  - Repetitive job - assembly line
  - Variable job - maintenance
- Depends on results
  - Low variability, fewer samples
  - High variability, more samples

Choosing monitoring locations

- Homogenous exposure groups
  - Similar work, similar exposure
  - May be any size
- Other approaches
  - Task
  - Location
  - Time

Choosing workers to monitor

- Worst-case selection
  - Conservative choice
- Random selection
  - Best way to find average, distribution
  - Needs multiple samples
- Stratified random choice
  - Practical alternative
  - Fewer samples needed

Monitoring records

- Posting results for employee information
- Assignment of exposure category
  - Every employee must be assessed
- Keeping with audiometric records
  - Results for monitored employees
  - Extrapolated results for non-monitored
- Availability for employee access

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Part 2: Hearing Protection

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Hearing Protection

- Who needs to wear HPDs
- Motivating workers to wear HPDs
- Who pays for HPDs
- How many HPD choices to offer
- Which HPDs to use
- Hearing impaired workers

HPD use requirements

- OSHA
  - Exposure > 90 dBA TWA
  - Exposure > 85 dBA TWA + STS
  - Exposure > 115 dBA at any time
- Others
  - Exposure > 85 dBA TWA
  - Administrative convenience
    - All people in high noise area (> 85 dBA)

Motivating workers to wear HPDs

- Why is it difficult?
- Motivating schemes
  - Education
  - Incentives
  - Enforcement
- Removing barriers to HPD use

Why is HPD use difficult?

- Comfort issues
- Hearing issues
  - Voices, machinery noise, warnings
    - Normal hearing users
    - Impaired hearing users
- Habits
  - Hearing loss prevention isn’t “urgent”
  - Sometimes many years without use

Motivating through education

- Annual audiometric results
- Examples of hearing loss
  - Personal testimony
  - Examples of recorded sound
  - Reminding of older relatives and friends
  - Limitations of hearing aids
- Demonstrate actual HPD effectiveness
Motivating through incentives

- Positive verbal reinforcement
- Examples set by others
  - Management
  - Key workers
- Prizes, cash, etc
  - Focus on process, not outcome
  - Individual workers – supervisors

Motivating through enforcement

- How does HPD use differ?
  - Normal disciplinary procedures
    - Verbal warning
    - Written warning
    - Suspension
    - Termination
  - Negotiated work rule procedure

Removing barriers to HPD use

- Convenience - make readily available
  - Employer pays
    - First HPDs, disposable HPDs
    - Replacement for lost HPDs
- Comfort – provide a choice of HPD types
  - Multiple types – earmuffs, earplugs
  - Multiple styles and sizes

Assignment of HPDs

- Full evaluation difficult
- Noise Reduction Rating
  - Don’t pay much attention
  - Acceptability and fit more important
- Allow choice where possible
  - Several earplug types
  - At least one earmuff type

HPD protection aspects

- Low noise exposure (<90 dBA)
  - Any will do
- Moderate noise exposure (90-98 dBA)
  - Good fit needed for earplugs
  - Earmuffs normally reliable
- High noise exposure (>98 dBA)
  - Very good fit - foam earplugs or earmuffs
  - Consider plugs and muffs
Hearing impaired workers

- Is protection needed?
  - Yes, if in high noise area
  - No, if only for employer convenience
- Adding to hearing loss
  - Use minimal protection
  - Consider job re-assignment
- Hearing aids as HPDs?
- Hearing aids under earmuffs?

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Part 3: Audiometric Testing

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Audiometric Testing

- Why is testing needed?
- Who will do the testing?
- Which employees should be tested?
- Hearing history forms
- Scheduling
- Quality control

Audiometric test purpose

- Detect early, excessive hearing loss and take steps to avoid more loss
- Procedure:
  - Baseline before noise exposure
  - Annual tests while noise exposure ongoing
  - Compare annual to baseline audiograms
    - At most sensitive sound frequencies
    - Correct for normal aging loss
  - Standard Threshold Shift determination

Standard Threshold Shift actions

- Notify worker in writing within 21 days
- Re-train and re-fit hearing protectors
- Change to new baseline if STS persistent
- Possibly record as occupational illness or injury
- Possible action:
  - Refer for medical evaluation if ear infection caused/aggravated by HPD

http://www.fcc.gov/cgb/dro/ada.html

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Audiometric testing choices

- Mobile testing
  - Full service, may be experts
  - Fast
  - Inflexible
- In-house testing
  - Flexible and reliable
  - Requires equipment and training
- Local clinic
  - Readily available
  - May have good credibility
  - Transportation time loss

Who should be tested

- OSHA rules
  - 85 dBA TWA or greater
  - Once per week or greater?
- Beyond OSHA
  - ACGIH rules
  - More inclusive policy

Hearing history

- Why is it needed?
  - Medical determination of hearing loss cause
  - Liability avoidance
- Form to be completed at each test
  - Current hearing problems
  - Use of hearing protectors
  - Non-work noise exposures
  - Others – family history, military exposure

Scheduling

- Baseline audiogram
  - Minimize possibility of temporary hearing loss (TTS)
  - 14 hours away from workplace noise
- Annual audiogram
  - Any time is ok
  - Inclusion of possible TTS is conservative

Quality Control in Audiometry

- Consistent procedures
- Instructions
- Headphone placement
- Employee cooperation
- Calibrated equipment
  - Daily and annual checking
  - Avoidance of unnecessary changes
- Quiet test environment
Audiometric Recordkeeping

- Duration
  - OSHA - duration of employment
  - Realistic - employment plus several years
- Format - any
- Accessibility - employees, former employees
- Privacy

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Part 4: Training & Evaluation

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Hearing conservation training

- Purposes
  - Encourage cooperation with program
  - Motivation for proper HPD use
- Frequency
  - Before assignment to high noise area
  - Annual repetition

Training content

- Effects of noise
  - Hearing loss acceleration
  - How hearing loss affects life
- Hearing protection
  - What it does
  - How to use it
- Audiometric testing
  - The process of testing
  - What the results mean

Training formats

- One-on-one
  - With medical professional
    - At time of hearing test
- Small groups
  - With medical or safety professional
  - Regular safety meetings
- Others
  - Computerized instruction
  - Pamphlets, other written material
Training suggestions

- Simple - focus on one or two ideas
- Short - don’t try to be comprehensive
- Interesting - keep their attention
- Meaningful - focus on what is important
- Motivating - give them a reason to care

Program audits

- Checklist of elements completed
- Quality evaluation of elements
  - Monitoring completeness
  - Noise control implementation
  - HPD utilization
  - Audiometric efficiency
    - On-time audiograms
    - Re-tests completed
    - Notifications delivered on time
  - Training completed and effective

Program efficiency measures (1)

- Standard Threshold Shift (STS) rates
  - Typically less than 2.5%
  - Population factors: age, motivation, etc.
  - Program factors: calibration, processes
  - Noise factors: HPD utilization, noise level

Program efficiency measures (2)

- Detailed statistical analysis
- Audiometric database analysis (ADBA)
- Multiyear tracking
  - Threshold trend comparing test population to control group
  - Variability analysis (% > 15 dB change at any test frequency)
- Hearing loss - temporary or permanent
- Test quality