

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



<http://office.microsoft.com/clipart>

- 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 →

	X	X	
- Random selection
 - Best way to find average, distribution →

		X	
X			
X	X		
 - Needs multiple samples
- Stratified random choice
 - Practical alternative →

		X	
			X
X			
			X
 - 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

Hearing Conservation Program Administration

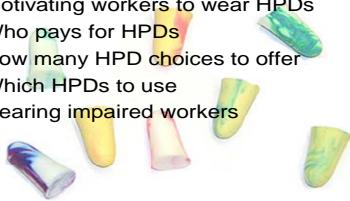
Part 2: Hearing Protection

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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



http://www.moonvalley.com/art

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?



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

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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

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



Photo used with permission of Audiometrics, Inc

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



<http://office.microsoft.com/cspart>

Quality Control in Audiometry

- Consistent procedures
 - Instructions
 - Headphone placement
 - Employee cooperation
- Calibrated equipment
 - Daily and annual checking
 - Avoidance of un-necessary 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



<http://office.microsoft.com/clpart>

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



<http://office.microsoft.com/clpart>

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