

Reclamation Safety and Health Standards—2024 Edition

Chapter 2: Occupational Health | Section 2.07 Hearing Loss Prevention Program

Applicability: Reclamation Employees, Facilities, and Operations. This section does not apply to Contractors.

Section 2.07 Hearing Loss Prevention Program

1. Scope

This section establishes minimum requirements for a Reclamation Hearing Loss Prevention Program (HLPP) to ensure safety and occupational health hazards related to hearing are appropriately addressed. The HLPP applies to all employees working at or visiting facilities who are exposed to noise at or above 85 decibels, A scale (dBA), for an 8-hour time-weighted average (TWA) using a 3-dBA exchange rate.

2. General Requirements

a. 3dB Exchange Rate

Reclamation shall use the more protective American Conference of Governmental Industrial Hygienist (ACGIH) Threshold Limit Value (TLV) exchange rate of 3 dB to be proactive in reducing noise-induced hearing loss (NIHL) as shown in Table 2.07-1.

TABLE 2.07-1 ACGIH 3dB Exchange Rate

Time to Reach 100% Noise Dose	ACGIH 3dB Exchange Rate Exposure Level
10 hours	84
8 hours	85
4 hours	88
2 hours	91
1 hour	94
30 minutes	97
15 minutes	100

b. Controls

As feasible, engineering and administrative controls shall be implemented as the first line of defense when employees are exposed to sound levels greater than an 8-hour TWA of 85 dBA. Hearing protection devices (HPDs) shall be used when engineering and/or administrative controls fail to reduce the sound levels below the 8-hour TWA of 85 dBA.

c. Exposure Limit

An exposure of 85 dBA, based on an 8-hour TWA, shall be used when determining if personal dosimetry results have been exceeded.

d. Noise Measurements

All continuous, intermittent, and impulsive sound levels ranging from 80 dB to 140 dB shall be integrated when conducting noise measurements.

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e. Equipment Purchases

Those who are responsible for purchasing tools/equipment shall review the Buy Quiet requirements outlined in paragraph 2.07.7.b to help reduce employee noise exposure.

3. Responsibilities

a. Reclamation Safety and Occupational Health Office

- Shall provide technical support to assist Regional Safety Managers and Program Coordinators (PC) with implementing the HLPP.

b. Area Office Managers

- Shall provide necessary resources to implement and maintain the procedures in the HLPP.
- Shall select an Area Office Program Coordinator, if a Regional Program Coordinator (RPC) has not been designated or in addition to, and provide them with the authority to implement the HLPP.

c. Regional/Area Office Program Coordinators

- Shall evaluate, review, and approve HPDs used at their facilities and provided for all affected employees.
- Shall coordinate with the Regional Industrial Hygienist (IH) to conduct noise monitoring to determine if noise levels are at or above the exposure limit for an 8-hour TWA.
- Shall provide employees written notification of results for all personal noise dosimetry conducted, and ensure it's placed in the employees' permanent medical file within the Human Resources Office. This documents the results and indicates if they have been exposed to noise at or more the exposure limit for an 8-hour TWA.
- In coordination with the First-Line Supervisor, shall ensure that annual audiometric testing is conducted for all employees in the HLPP for their responsible area(s), and that quiet period requirements are followed according to 2.07.5.f.
- In coordination with the First-Line Supervisor, shall ensure that areas where noise levels are greater than 85 dBA have been marked with either Caution or Danger signs per paragraph 2.07.8.
- In coordination with the First-Line Supervisor, ensure that employees that have experienced a standard threshold shift (STS), compared to their baseline audiogram, are informed of this fact in writing within 21 days of the determination.
- In coordination with the First-Line Supervisor, determine whether to retest within
- 30 days of the initial test date for employees where the audiogram indicates an STS or recordable hearing loss.
- Shall maintain a list of all employees who are required to participate in the HLPP.
- In coordination with the First-Line Supervisor, refer employees identified with medical pathology that is thought to be caused or aggravated by using hearing protectors to an

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audiologist, otolaryngologist, or physician that will review the audiogram and determine whether there is a need for further evaluation.

- Shall ensure any hearing tests reveal that an employee has experienced a work-related STS in one or both ears and that the employee's total hearing level is 25 dB or more above audiometric zero (averaged at frequencies 2000, 3000, and 4000 Hz) in the same ear(s) as the STS, that the tests are recorded in the Safety Management Information System (SMIS) as a hearing loss within 7 days of receiving the results.

d. First-Line Supervisors

- Shall ensure that employees under their supervision receive annual HLPP training and audiometric testing as required by this section.
- Shall ensure that documentation of training and testing required by the HLPP are retained in the Department of the Interior (DOI) learning management system.
- Shall ensure that HPDs are available and worn by their affected employees or visitors in their area(s) of responsibility as required by this section.
- Shall ensure that personnel under their supervision have been trained in the proper use, selection, maintenance, and storage of HPDs.
- In coordination with the Area Office PC and/or RPC, shall participate in a review of annual audiogram results for their employees that have shown an STS or OSHA-recordable hearing loss to ensure that they are refitted and retrained in the use of HPDs.

e. Employees

- Shall use HPDs when noise levels are above 85 dBA or above 82 dBA when working more than an 8-hour shift.
- Shall use, care, maintain, and store HPDs according to manufacturers' instructions.
- Shall ensure that HPDs are replaced when they show wear and tear from overuse or when they are defective and do not provide the level of protection for which they were designed.
- Shall report any noise exposure concerns to their First-Line Supervisor and/or PC.
- Shall participate in annual HLPP training and audiometric testing.

f. Regional Safety Managers

- Shall appoint an RPC as deemed necessary for their region.
- Shall promote the development and implementation of an HLPP within their region and provide support as needed.
- In cooperation with the RPC and/or Area Office PC, shall perform program implementation checks to ensure compliance with this section.

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g. Industrial Hygienists

- Shall provide technical support for their region, such as assisting in implementing the HLPP, providing dosimetry to determine employee exposure, coordinating sound level surveys, and conducting periodic reviews for compliance with the HLPP.
- Shall review employee audiogram results that an audiologist, otolaryngologist, or physician has identified as work-related STS or OSHA-recordable hearing loss to determine if further investigation, in coordination with the Area Office Program Coordinator, is necessary.

h. Project Managers/Acquisitions

- Shall coordinate the purchase of new equipment that meets the Buy Quiet requirements outlined in paragraph 2.07.7.b to reduce employee noise exposure.
- Shall include noise levels and technical performance criteria in specifications when purchasing or designing new equipment that is expected to produce levels of 80 dBA or higher.

i. Human Resources Office

- Shall ensure that pre-employment physicals include baseline audiometric evaluations when required by specific physical job requirements.
- Shall maintain all audiometric test results in an employee's medical folder and shall provide Regional Industrial Hygienists, the RPC and/or area office PC access to preplacement and annual audiograms to facilitate the Industrial Hygienist's assessment of work-related STS and/or OSHA-recordable results.

4. Training Requirements

a. Initial

All employees exposed to noise at or above an 8-hour TWA of 85 dBA must participate in the HLPP and receive training. Training shall include, but not necessarily be limited to the following subjects:

- the effects of noise on hearing, including a detailed explanation of the impact of hearing loss and the ease of protection and prevention,
- the purpose of HPDs; the advantages, disadvantages, and attenuation of various types of HPDs; and instructions on selection, fitting, use, and care of HPDs,
- how to evaluate the effectiveness and test the fit of HPDs, including pre-fit, fit, and post-fit evaluation procedures,
- the purpose of audiometric testing and an explanation of test procedures,
- how to understand audiogram results, and
- how an STS and OSHA-recordable result are determined.

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b. Refresher Training

All employees in the HLPP must attend training annually.

c. Lack of Proficiency

Employees observed to be incorrectly wearing their HPDs for job tasks that require them shall be retrained by their supervisor on proper fit and must demonstrate how to wear them correctly immediately or when it's safe to do so, but at least by the end of their shift.

d. Recordkeeping

- **Training Records.** Maintain training records for at least 2 years in the Department of the Interior (DOI) learning management system. The employer must provide these records to the Deputy Commissioner of Labor for Occupational Safety and Health (or their designee) upon request.
- **Noise Measurements.** All personal dosimetry records must be kept in the employee's medical file for the duration of their employment.
- **Medical, Exposure, and Monitoring Records.** Maintain employee medical, exposure, monitoring, and training records per 29 CFR 1910.1020, the Privacy Act of 1974 (P.L. 93-579), and 5 CFR 293. See also "Recordkeeping Requirements" in RSHS Section 2.06.

5. Hazard Identification, Assessment, and Safety Measures

a. Health Hazard Assessments

Health hazard assessments shall be conducted according to RSHS Section 2.06.2, which requires an exposure assessment and monitoring when evaluating new processes, establishing baselines, and evaluating engineering controls for noise exposure.

b. Noise Control Plan

As required by RSHS Section 2.06.8.b, a noise control plan shall be developed and implemented when either stationary or portable sources expose employees to noise levels of 85 dBA or greater.

c. Job Hazard Analysis (JHA)

A JHA must be completed for each job task that identifies specific sources of noise, the appropriate control measures, and/or personal protective equipment (PPE).

d. Monitoring Requirements

A monitoring program must be implemented when an employee's exposure equals or exceeds an 8-hour TWA of 85 dBA to identify employees that need to be included in the HLPP and determine the appropriate HPDs.

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- Initial Determination. Sound level measurements may be used to screen the work environment to determine if dosimetry is required.
- Personal Dosimetry. Representative personal dosimetry shall be conducted for high worker mobility, when a worker experiences significant variations in sound level, or when there is a significant component of impulse noise.
- Reassessment. Monitoring shall be repeated whenever a change in operations or equipment increases noise exposure such that additional employees may be exposed at or above the exposure level, and/or HPDs are inadequate to reduce levels to 85 dBA or less for employee protection.

e. Audiometric Testing Program

Audiometric testing shall be performed by a licensed or certified audiologist, otolaryngologist, or another physician, or by a technician who is responsible to an audiologist, otolaryngologist, or physician.

- Required Credentials for Technicians. Technicians must either be certified by the Council of Accreditation in Occupational Hearing Conservation or have satisfactorily demonstrated competence in administering audiometric examinations, obtaining valid audiograms, and properly using, maintaining, and checking calibration and proper functioning of the audiometers being used. A technician who operates microprocessor audiometers does not need to be certified.
- Parameters of Audiometric Tests. All audiometric tests must be conducted in accordance with American National Standards Institute (ANSI) S3.21-2004 and Acoustical Society of American (ASA) that includes audiometric test frequencies of 500, 1000, 2000, 3000, 4000, 6000, and 8000 Hz for each ear.

f. Baseline and Annual Audiometric Testing

- Testing Requirements. Audiometric testing shall be conducted on all employees whose exposure levels equal or exceeds the exposure limit. The conditions of and the equipment used for the testing must comply with the requirements stated in 29 CFR 1910.95.
- Pre-test Quiet Period. Audiograms must be preceded by at least 14 hours without employee exposure to workplace noise. Employees should also avoid exposure to high levels of non-occupational noise during the 14 hours preceding the test.
- Baseline Audiograms
 - Baseline Testing. If a mobile test van is not used, then an employee shall receive baseline audiometric testing within 6 months of their first exposure at or above the exposure limit. Subsequent audiograms will be compared to this baseline.
 - Quiet Period Requirements. Quiet period requirements for baseline audiograms may be met by the employee(s) wearing hearing protection that reduces their exposure to a noise level of 85 dBA or lower; however, a true quiet period that prevents

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- employee exposure to workplace noise and limits employee exposure to non-occupational noise is preferred.
- Interim Protection. Employees must be trained on the use of HPDs and required to wear them until they receive their baseline audiogram.
 - Mobile Test Vans. If mobile test vans are used to meet the baseline audiometric testing requirement, then the employer has up to 1 year from the employee's first exposure that meets or exceeds the exposure limit to get a valid baseline audiogram. During testing, mobile test vans shall be in an area away from activities generating noise to ensure accurate results.
- Annual Audiograms
 - Audiogram Frequency. At least annually, after the baseline audiogram, the employee shall receive a new audiogram to determine by comparison if an STS has occurred.
 - Quiet Period Requirements. Quiet period requirements for annual audiograms may be met by the employee(s) wearing hearing protection that reduces their exposure to a noise level of 85 dBA or lower; however, a true quiet period that prevents employee exposure to workplace noise and limits employee exposure to non-occupational noise is preferred.
 - Audiogram Results. Written audiogram results shall be provided to the employee immediately following the test.
- g. STS Determinations**
- Age Correction Requirements. For determining whether an STS has occurred, age correction is acceptable for assessing a change in hearing level. 29 CFR 1910.95 Appendix F, Calculations and application of age corrections to audiograms, may be used as a resource.
 - Audiogram Retesting. If the annual audiogram results show that an STS has possibly occurred, then the employee may be retested within 30 days of the initial test date. For this retest/confirmation audiogram, earmuffs or earplugs should not be used to achieve the required 14-hour pre-test quiet period.
 - STS Procedures. If it is determined that an STS is work-related or aggravated by work-related noise, then implement the following procedures:
 - Employees not wearing hearing protection must be fitted with HPDs, trained in their care and use, and required to use them.
 - Employees already using HPDs must be refitted and retrained in their care and use. Hearing protection offering greater attenuation may be selected and issued.
 - STS Notification. An employee shall be notified in writing within 21 days of the determination that an STS has occurred.

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h. Confirmed OSHA-Recordable Audiogram

All annual audiograms that indicate an OSHA-recordable result must be confirmed by a second audiogram within 30 days of the test results. The results of the retest shall be considered the annual audiogram and shall be recorded in SMIS as outlined in paragraph 2.07.3.c.(10). For more information, review 29 CFR 1904.10, Recording Criteria for Cases Involving Occupational Hearing Loss.

i. Non-Persistent Threshold Shift

If subsequent audiograms indicate that a previously determined threshold shift is not persistent, then the employee must be informed of the new audiometric interpretation.

j. Revised Baseline Audiograms

Annual audiograms may be substituted for the baseline audiogram when in the judgment of the professional evaluating the audiogram determines the STS shown in the annual audiogram is persistent or the hearing threshold in the annual audiogram shows significant improvement over the baseline audiogram.

k. Clinical Referral

Employees identified with medical pathology that is thought to be caused or aggravated by using hearing protectors shall be referred to an audiologist, otolaryngologist, or physician, who shall review the problem audiogram and determine whether there is a need for further evaluation.

6. Personal Protective Equipment (PPE)

a. Hearing Protection Devices

HPDs shall be made available at no cost to all employees exposed to noise at or above the exposure limit. Employees who have experienced an STS and/or who are exposed to noise above the exposure limit are required to wear hearing protection.

- HPD Evaluation. HPDs must be evaluated and approved for use by the RPC and/or Area Office PC per 29 CFR 1910.95 Appendix B, “Methods for Estimating the Adequacy of Hearing Protection Attenuation.”
 - HPD Attenuation Hearing protection must attenuate employee noise exposure to equal or less than the exposure limit.
 - Re-evaluation. The competency of HPDs shall be reevaluated whenever employee noise exposure increases to the extent that the HPDs provided may no longer provide adequate attenuation.

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b. Double Hearing Protection

Employees shall be provided double hearing protection when noise levels are greater than or equal to 100 dBA. Doubling-up on hearing protection (e.g., earplugs and muffs) will increase the attenuation decibel by only 5 dB, as explained in the next paragraph.

- Attenuation Calculation for Double Hearing Protection. to calculate the attenuation offered by double hearing protection:
 - Calculate the field-adjusted noise reduction rating (NRR) for the better protector using the standard formula $(NRR - 7) \times 0.5$.
 - Add 5 dB to this field-adjusted NRR to determine total attenuation. Subtract the total attenuation from the employee's 8-hour TWA exposure to determine attenuated exposure.
 - For example, an employee with a TWA exposure of 100 dBA is using earplugs with an NRR of 29 and ear muffs with an NRR of 25. The field-adjusted NRR of the earplugs (the better protector) is $(29 - 7) \times 0.5$, or 11 dB. The total attenuation with both earplugs and ear muffs is 11 dB + 5 dB, or 16 dB. The employee's attenuated exposure is 100 dB – 16 dB, or 84 dB.

7. Safe Practices

a. Required Safe Work Practices

Employees in the HLPP shall follow these safe work practices:

- always wear hearing protection in environments where noise levels are at or above the exposure limit,
- ensure that hearing protection fits properly,
- replace hearing protection if damaged or if it has lost its resiliency,
- discard disposable hearing protection at the end of the work shift, and
- attend annual training to understand what audiogram results mean.

b. Buy Quiet Program

Project Managers, acquisitions staff, and other appropriate staff shall implement a Buy Quiet procedure that includes the following elements:

- purchase replacement equipment/machinery that ideally produces noise emission levels less than 85 dBA or at least lower noise levels than the previous machinery/equipment,
- use educational materials to promote Buy Quiet to employees, and
- use cost-benefit analysis, as needed, to determine the return on investment to show the true cost of purchasing one piece of equipment over another.

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8. Communication Requirements

a. Noise Exposure Signs

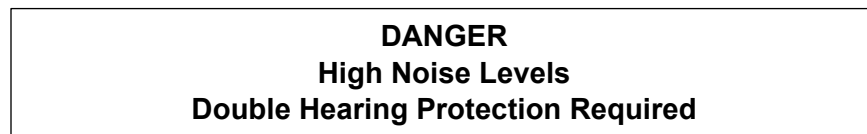
- Caution Noise Levels. Post signs for all areas and/or label equipment that has noise levels between 85 and 100 dBA using the OSHA or ANSI format and the following wording:

FIGURE 2.07-1: Noise Level Caution Signs



- Danger Noise Levels. Post signs for all areas and/or label equipment that has noise levels greater than or equal to 100 dBA using the OSHA or ANSI format and the following wording:

FIGURE 2.07-2: Noise Level Danger Signs



▲ RSHS Appendix A: Definitions

RSHS Appendix A ([Definitions](https://www.usbr.gov/safety/rshs/index.html)) is available to print at: <https://www.usbr.gov/safety/rshs/index.html>.

▲ RSHS Appendix B: Additional References and Citations

RSHS Appendix B ([Additional References and Citations](https://www.usbr.gov/safety/rshs/index.html)) is available to print at: <https://www.usbr.gov/safety/rshs/index.html>.