

HANFORD MISSION SUPPORT CONTRACT

Hearing Protection

MSC-PRAC-30504

Revision 0

Effective Date: January 15, 2010

Topic: Safety and Health

Hearing Protection

PURPOSE

This practice identifies a key aspect of the Mission Support Alliance (MSA) Safety and Health (S&H) industrial hygiene (IH) program, and establishes the requirements to anticipate, identify, evaluate, and control noise hazards; to achieve regulatory compliance; and to prevent hearing loss caused by occupational noise.

SCOPE

This practice includes the following major sections:

- General Requirements
- Exposure Control
- Medical Surveillance
- Training

The requirements of this practice are consistent with the requirements published in the Hanford Mission Support Contract (MSC) Safety and Health virtual manual.

APPLICATION

This practice applies to MSA Construction employees.

GENERAL REQUIREMENTS

Records generated during the performance of this activity are to be included in the Construction Work Package and will be managed in accordance with [MSC-PRAC-30374](#), *Construction Work Package* and [MSC-PRAC-30376](#), *Construction Document Control*.

**Managers/
Construction Supervisors/
Superintendents**

Managers and Construction Supervisors/Superintendents perform the following:

- Identify noise sources (portable and stationary) or work activities that could expose employees to the threshold limit value (TLV) of 85 dBA TWA or equivalent noise dose. Use the job safety analysis (JSA) as required in [MSC-PRAC-30462](#), *Prejob Safety Planning* or other appropriate hazard identification processes such as qualitative exposure assessments.
- Request assistance from Safety and Health in conducting a noise exposure assessment and quantifying noise exposures when historical monitoring data, type of operation, or duration of work in a noisy area indicates employee exposures are equal to or greater than 85 dBA TWA or equivalent noise dose. The data

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in Table 1 should be used in determining acceptable exposure levels.

Table 1. Exposure Limits for Noise^a

Hours Per Day	Sound Level dBA	Minutes Per Day	Sound Level dBA	Seconds Per Day ^b	Sound Level dBA
24	80	30	97	28.12	115
16	82	15	100	14.06	118
8	85	7.50 ^b	103	7.03	121
4	88	3.75 ^b	106	3.52	124
2	91	1.88 ^b	109	1.76	127
1	94	0.94 ^b	112	0.88	130
--	--	--	--	0.44	133
--	--	--	--	0.22	136
--	--	--	--	0.11	139

^aNo exposure to continuous, intermittent, impulse, or impact noise in excess of a peak C-weighted level of 140 dB.

^bLimited by duration of the noise source, not by administrative control. (Administrative control is not effective for these exposures because of the difficulty in limiting short stay times.)

Combining periods of exposure at different sound levels:

If the daily noise exposure is composed of 2 or more periods of noise exposure of different sound pressure levels, combine the periods in the following equation:

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$$\left(\frac{C^1}{T^1} + \frac{C^2}{T^2} + \frac{C^3}{T^3} + \dots + \frac{C^n}{T^n} \right) \times 100 = \text{percent of allowable dose}$$

Where:

- C** = total duration (hours, minutes, or seconds) of exposure at a specific sound pressure level
- T** = allowable exposure duration (hours, minutes, or seconds) from Table 1.

If the sum of these fractions is greater than 1 (such as unity), the combined exposure exceeds the exposure dose limit of 85 dBA TWA. Multiplying the sum of fractions by 100 will convert the answer to percent of the allowable dose.

Request that Safety and Health repeat the noise survey whenever a change in production, processes, equipment, or controls may affect exposures, cause additional employees to be exposed at or above the TLV, or require upgrading the hearing protection. Notify Safety and Health of any subsequent change in process, equipment or controls resulting in a decrease in ambient noise levels so that the area may be resurveyed as necessary.

Ensure each employee who is exposed at or above 85 dBA TWA is notified of the monitoring results in a timely manner, in writing, and provide the following information to affected employees:

- Actual monitoring results
- Requirements for including employees in the hearing protection and conservation program
- Explanation of engineering controls or administrative controls, if any, that are planned to reduce noise levels or exposure to noise
- Explanation of the types of hearing protectors available and the enforcement policy for wearing them when required by the hearing protection and conservation program

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NOTE: *It is recommended that all monitoring results, including those below the allowable, be reported to all employees involved.*

Safety and Health

Safety and Health performs the following:

- Assists line management in completing JSAs or other hazard identification processes to identify operations that may potentially expose employees to 85 dBA TWA or more or an equivalent noise dose.
- Conducts noise surveys and exposure monitoring.
- Conducts walk-through surveys to determine changes in work activities or equipment that could affect noise exposure; documents qualitative assessments of noise hazards in accordance with company-approved procedures.
- Assists line management in reporting exposure monitoring results and other information to affected employees.

EXPOSURE CONTROL

**Managers/
Construction
Supervisors/Superintendent
s**

If the noise source/work activity results in exposures to 85 dBA TWA or equivalent noise dose, line management performs the following:

- Provides and implements engineering and administrative controls to reduce noise levels when possible and practical.

NOTE: *Engineering controls such as source enclosure, vibration isolation, or exhaust muffling reduce noise levels. Administrative controls reduce the time that personnel work in high noise areas.*

- Requires and ensures the use of hearing protection to further reduce exposure when engineering and administrative controls are not adequate to control exposure to 85 dBA TWA.

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NOTE: *It is recommended that personnel wear hearing protection where noise levels are 85 dBA or greater.*

- Ensures that hearing protectors are evaluated for the specific noise environments in which they are used and obtains assistance from Safety and Health to determine if the hearing protectors will provide adequate noise attenuation.
- Provides a selection of suitable hearing protectors to allow employees to select the most comfortable ones that also provide the required protection.

NOTE: *Signs are posted at the entrances or boundaries of areas where the noise levels equal or exceed 85 dBA TWA.*

Safety and Health

Safety and Health performs the following:

- Assists with evaluation of noise hazards.
- Recommends engineering and administrative controls and evaluates their effectiveness.
- Recommends appropriate types of hearing protection and evaluates their effectiveness in controlling exposure.
- Reviews and approves purchase requests for hearing protectors.

MEDICAL SURVEILLANCE

Managers/ Construction Supervisors/Superintendents

Managers and Construction Supervisors/Superintendents perform the following:

- Schedule a baseline audiogram for employees identified as having noise exposure equal to or exceeding 85 dBA TWA (regardless of the use of any hearing protection). This will place the employee in the medical surveillance program for hearing protection and conservation provided by the occupational medical service provider (OMSP).
 - Obtain the baseline audiogram within 6 months of the employee's first exposure to noise at or above

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the allowable exposure of 85 dBA TWA. This applies to new employees and employees reassigned from jobs without hazardous noise exposure to jobs where their new exposure level equals or exceeds the TLV.

- Ensure the employee's baseline audiogram is preceded by at least 14 hours without exposure to workplace noise at or above the exposure limit (85 dBA TWA). Properly selected and correctly worn hearing protectors may be used to achieve this requirement. Advise employees to avoid exposure to high levels of nonoccupational noise (or noise from other employment) for 14 hours before each audiogram.
- Obtain a new audiogram annually for each employee enrolled in the medical surveillance program.
- When an employee in the hearing conservation program is no longer exposed to noise at 85 dBA TWA or above, discontinue the employee's participation in the hearing protection and conservation program and document the basis for discontinuance. Examples include: Appropriate noise survey data, recommendations by Safety and Health, and job changes.
- Schedule the employee for a close-out audiogram when employment is terminated, the employee is transferred to another contractor, or the employee is transferred to a position where exposure is less than the allowable limits.

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- If the OMSP determines from the annual audiogram that a standard threshold shift (STS) has occurred, schedule a repeat audiogram within 30 days of the original to determine if the STS is persistent.
- Notify Safety and Health that an STS has occurred so that the employee's exposure, use, and adequacy of controls, including hearing protection, may be reevaluated.
- If the repeat audiogram shows that the STS is persistent, notify the affected employee in writing within 15 working days of receipt of the OMSP audiogram results.
- When an STS is persistent, ensure:
 - The employee is retrained by Safety and Health in the proper use of hearing protection, unless a physician determines that the STS is not related to or aggravated by occupational noise exposure.
 - If not already wearing hearing protectors, the employee is trained in the proper use and care of hearing protection. Require employees to wear hearing protectors until engineering or administrative controls are implemented to reduce noise exposure to 85 dBA or less.
- Refer employees to the OMSP for evaluation if problems caused by wearing hearing protectors (such as headaches, ear pain, irritation, or inability to hear signals) are reported or suspected.
- Request assistance from Safety and Health or the OMSP as needed in interpreting medical opinions and recommendations.

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Safety and Health

Safety and Health performs the following:

- Based on noise survey, noise dosimetry data, or noise assessment results, notifies line management of employees who need to be enrolled in the hearing protection and conservation program as well as those who no longer meet the exposure criteria for continued enrollment.
- Evaluates the adequacy of hearing protectors according to company-approved practices.
- Ensures that medical monitoring is conducted in accordance with [29 CFR 1910.95](#).
- Reviews results of medical monitoring.
- Upon notification that an STS has occurred, reevaluates employee exposures and noise controls in use, and retrains employees on proper use of hearing protection.
- As requested, assists line management in interpreting the Safety and Health aspects of medical opinions and recommendations, and interfaces with the OMSP.
- Provides exposure data to the OMSP when requested.

TRAINING

Content

Training addresses the following subjects:

- Effects of noise on hearing
- Purpose of hearing protection
- Advantages and disadvantages of various types of protection
- Instructions on selection, fit, use, and care of protective devices
- Purpose of audiometric testing and an explanation of the test procedure
- Rights of workers to access records and federal hearing information releases
- Where to obtain copies of this program and the Occupational Safety and Health Administration standard

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**Managers/
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Managers and Construction Supervisors/Superintendents perform the following:

- After medical evaluation, conduct hearing conservation awareness training for each newly enrolled employee.
- Upon continued exposure to 85 dBA TWA or greater, schedule annual refresher training on the above subjects (on the Hanford Site, given in conjunction with Hanford General Employee Training).

Safety and Health

Safety and Health participates, as requested, in prejob and daily worker briefings on task-specific noise hazards, controls, and work practices, especially when changes are made to controls.

FORMS

None

**RECORDS
IDENTIFICATION**

Records Capture Table

Name of Document	Submittal Responsibility	Retention Responsibility
Construction Work Package	Construction Supervisor/Superintendent	Project Document Control

REFERENCES

[29 CFR 1910.95](#), *Occupational Noise Exposure*

[MSC-PRAC-30374](#), *Construction Work Package*

[MSC-PRAC-30376](#), *Construction Document Control*

[MSC-PRAC-30462](#), *Prejob Safety Planning*