

SECTION 6: NOISE AND HEARING CONSERVATION PROGRAM / REPORTS

Employee's exposure to excessively high sound pressure levels or high intensity noise can cause irreversible hearing loss. If noise levels cannot be reduced to within acceptable levels by technically and economically feasible controls, then employees must be protected by adequate personal protective equipment.

Hearing Conservation Program Elements:

I. Evaluation of Noise Exposure

Exposure measurements shall accurately reflect employee exposures. This is done with area sound level surveys and personal dosimetry. Area noise monitoring shall be used to determine noise levels in a given plant, specific area location, or while performing a particular job task. Sound level meters shall be set to the A scale, slow response for measurement of continuous noise. Impulse noise peaks shall be measured with a sound level meter with a peak hold capacity. Noise dosimeters used to evaluate employee exposures shall conform to the appropriate governing standard for personal dosimeters such as specified in ANSI:S1.25-1978. The microphone of the dosimeter shall be placed outside the employee's clothing on his shoulder. According to 29 CFR 1910.195, monitors shall use the following settings: 80 dBA threshold, 90 dBA criterion level and use a 5 dBA doubling rate. These instruments are to integrate all continuous, intermittent, and impulsive sound levels from 80 to 130 dBA. The personal dosimeters in Louisiana Division (i.e. Dupont MK2, Quest 14,15, or 27) meet these ANSI standards. To ensure accuracy all sound level meters and personal dosimeters are to be calibrated according to manufacturer's instructions before and after each use. Additional monitoring may be required in some areas. Monitoring shall be repeated in a timely manner, whenever a change occurs in production, process, equipment, or controls could result in new or additional exposures leading to greater than 50% daily dose, or may result in exposure exceeding 90 dBA.

II. Hearing Protection

When excessive noise exposures cannot be reduced by feasible administrative or engineering controls, employees shall be provided with suitable hearing protectors to ensure proper fit and comfort. Hearing protectors must be worn if 1) an employee's noise exposure exceeds 85 dBA as an 8-hr. TWA or 2) an employee is working in an area with sound pressure levels are above 90 dBA or performing a task which generates greater than 90 dBA. All hearing protection shall be chosen which can attenuate below 90 dBA for the noise source and can ensure that the 8 hr. time weighted average will not exceed 85 dBA. The equation used for calculating the attenuation of a hearing protector is an OSHA Method which subtracts seven from the product Noise Reduction Rating (NRR). The corrected NRR of the hearing protector is then subtracted from the average sound level in dBA, to obtain the attenuated sound level in dBA. Note: an additional 5 dB is added to the corrected NRR when using dual

Hearing Conservation Program Elements:

II. Hearing Protection (continued)

hearing protection (both plugs and muffs). See Appendix B, page 14 of the Corporate Program Requirements for Hearing Conservation for examples. Hearing Signs: "CAUTION" signs shall be posted in work areas in which the sound pressure level may exceed 90 dBA, alerting the employee that hearing protection is required. Where sound pressure levels exceed 105 dBA, "DANGER" signs shall be posted to alert employees that a combination of plugs and muffs may be required.

III. Training and Education of Personnel

All employees whose noise exposure equals or exceeds an 85 dBA 8-hr. TWA or exceeds a 90 dBA Ceiling, must participate in an annual training program. The training shall consist of 1) the contents of the hearing conservation program, 2) results of area sound level surveys and personal dosimetry, 3) the effects of noise on hearing, 4) the type and purpose of hearing protectors; and instructions on selection, fitting, use, and care for them, and 5) the purpose of audiometric testing and an explanation of the test procedures and results. This training shall be documented, kept in the plant for the current year, and transferred to the Industrial Hygiene Department for the remainder of the 75 year retention period.

IV. Audiometric Testing Program

A baseline audiogram is given to all employees upon initial employment. As a minimum, all employees receive an annual audiogram when their noise exposure may exceed an 85 dBA 8-hr. TWA. The audiometric testing is performed in accordance with OSHA standard 29 CFR 1910.95 and the results are reviewed with the employees at the time of testing.

V. Control of Noise

The preferred method for noise reduction is feasible engineering controls. Any new equipment or process changes will be evaluated for the potential impact of noise in the area and when feasible will be engineered to keep noise levels below 85 dBA.

Attachment 1

Noise Levels for Common Jobs and Portable Equipment

The following levels were obtained under normal operating conditions and should be used as a guide. This list is not all inclusive. Sound levels for equipment not on this list may be extrapolated using this list as a guide if actual measurements are unavailable. However, if possible, actual readings should be obtained.

Operation of multiple noise sources in the same area or operation of any noise source in a reverberant environment (such as within a confined space), will result in higher noise levels. In such cases, measurements must be taken to determine actual sound levels.

Activity/Equipment	Sound Level		Activity/Equipment	Sound Level	
	Idle	Max		Idle	Max
Aerial Lift		< 85	Fork Truck (4000 lb)	82	90 - 94
Air Compressor (185 psi)	80	90	Fork Truck (6000 lb)	82	100 - 104
Air Compressor (w/o muffler)		130	Fork Truck (8000 lb)	83	90 - 100
Air Hose (90 psi)		100 - 104	Grinder (bench)		90 - 95
Air Impact Wrench (1/2")		105 - 109	Grinder (pneumatic)		100 - 104
Back Hoe	83	95 to 99	Jack Hammer		> 115
Ball Mill		110	Needle Gunning		115
Blower (electric)		< 90	Pile Driving		125 - 127
Bull Dozer	84	100 - 104	Road Grader	80	< 90
Cherry Picker (8 or 15 ton)	85	100 - 104	Sandblasting		125 - 130
Chipping Hammer		120 - 124	Scaling Gun		105 - 109
Crane (hydraulic, 45 ton)	82	100 - 104	Welding Machine (200 amp)	85	> 90
Cut Off Saw		90 - 94	Welding Machine (400 amp)	85	95 - 99
Drill (electric, 3/8")		95 - 99			

Attachment 2

Hearing Protection Distance Requirements

Appropriate hearing protection shall be worn by both the operator and anyone within the distances specified below for sound levels within the specified ranges.

Sound Level Range	Protection Required at Specified Distances	
	Double	Single
125 - 130	0 - 50 ft	50 - 300 ft
120 - 124	0 - 30 ft	30 - 150 ft
115 - 119	0 - 15 ft	15 - 90 ft
110 - 114	0 - 10 ft	10 - 50 ft
105 - 109	0 - 5 ft	5 - 30 ft
100 - 104	---	0 - 15 ft
95 - 99	---	0 - 10 ft
90 - 94	---	0 - 5 ft

This section contains the following documents:

1. **The Plant/Department-Specific Written Hearing Conservation Program**
Each plant/department is required to have a written hearing conservation program detailing the minimum requirements for an acceptable program within their area
2. **Current Noise Monitoring Reports for Specific Area**
A copy of the most recent noise monitoring report should be kept in the manual. Historical data has been included in the annual Industrial Hygiene Report located in Section 2 of the manual.
3. **Industrial Hygiene Guide Documentation for Noise**
This document explains the activities of the Corporate Task Force on Hearing Conservation and how DOW has implemented its Hearing Conservation Program.
4. **DOW Corporate Guidelines for a Hearing Conservation Program**
5. **Warning Sign Information**
Color pictures of the signs and their corresponding MSMS code numbers are provided for ordering the necessary signs for your area.
6. **List of Hearing Protection**
This provides a list of available approved hearing protection devices including MSMS code numbers. The manufacturer's NRR is included for each device.
7. **LAD Personal Noise Monitoring Record Form**

**Louisiana Division
Hearing Conservation Program**

Plant/Department: _____ Written Program

OSHA 29 CFR 1910.95 Occupational Noise Exposure and Dow Program Requirements for Hearing Conservation (August 1990) require that any individual with a dose exceeding or equal to 50% of their allowable daily dose must participate in a hearing conservation program. The _____ Plant/Department's hearing conservation program fulfills all of the OSHA and Dow requirements. The Hearing Conservation Program includes:

- 1) Evaluation of Noise Exposure
- 2) A baseline and annual audiogram
- 3) Annual training covering the following topics:
 - the effects of noise on hearing,
 - hearing protection (proper selection, fit, use and care),
 - the purpose of the audiogram (testing procedures and results).
- 4) Personal Hearing Protection
- 5) Engineering and Administrative Controls for Noise
- 6) Record keeping and Audits

Evaluation of Noise

The date of the last comprehensive area noise survey was ____/____/____. Personal job exposure evaluations were performed on ____/____/____.

Personal noise exposures doses were determined using _____(type) audio-dosimeter(s). Noise exposure monitoring results were based on OSHA settings (80 dBA threshold, 90 dBA criterion level, 5 dBA doubling rate). The instruments shall be checked for were calibrated before and after each use.

Personal noise monitoring results for each job assignment are given below. The results are given as a percent (%) of allowable daily dose with correction for full shift.

$\frac{\text{Actual shift (hrs.)}}{\text{Monitored shift (hrs.)}} \times \text{Actual dose} = \text{Adjusted dose}$

<u>Job Classification</u>	<u>% dose</u>	
	<u>12 Hr. Shift</u>	<u>8 Hr. Shift</u>
• _____	_____	_____
• _____	_____	_____
• _____	_____	_____
• _____	_____	_____
• _____	_____	_____
• _____	_____	_____
• _____	_____	_____
• _____	_____	_____

Evaluation of Noise (continued)

Area sound pressure level measurements were taken using a _____ (type) sound level meter with A-weighted scale and slow meter response. The instruments were calibrated before and after each use.

Area sound pressure level measurements ranged from _____ to _____ dBA. The following areas are designated as mandatory hearing protection areas since they are at or above 90 dBA. These areas are posted with signs requiring hearing protection.

Area	Sound Level (dBA)
• _____	_____
• _____	_____
• _____	_____
• _____	_____

The following areas are designated with "DANGER" signs as hearing protection areas requiring the use of both plugs and muffs since they are 105 dBA or greater.

Area	Sound Level (dBA)
• _____	_____
• _____	_____
• _____	_____
• _____	_____

Temporary jobs that have equipment with noise levels at or above 90 dBA require temporary signs and mandatory use of hearing protection anytime the equipment is in operation. This includes such areas as sandblasting, hydroblasting, use of portable air compressors and certain hand tools. Examples of **temporary** maintenance jobs performed in our block include:

Audiometric Testing

Baseline audiograms have been determined on all employees working in the _____ Plant/Department. Audiograms will be repeated annually on each employee as required by the OSHA Hearing Conservation Program, and follow-up will be conducted when medically appropriate.

Training

A review of the area sound level surveys and personal dosimetry was presented to employees as part of the annual training program. The presentation includes:

- the effects of noise on hearing,
- hearing protectors- their selection, proper fit, use, and care
- audiometric testing program- test procedures and results

Original training documentation will be sent to the Industrial Hygiene Department for placement in the 75 year record retention file.

As a tool for hazard communication, continuing education, and standard compliance, a copy of the noise standard (29CFR 1910.95) is posted in the plant.

Personal Hearing Protectors

Hearing protectors must be worn if 1) an employee's noise exposure exceeds 85 dBA as an 8-hr. TWA or 2) an employee is working in an area with sound pressure levels are above 90 dBA or performing a task which generates greater than 90 dBA. All hearing protection shall be chosen which can attenuate below 90 dBA for the noise source and can ensure that the 8 hr. time weighted average will not exceed 85 dBA. A combination of plugs and muffs may be needed to achieve this level of attenuation. An additional 5 dB of attenuation is allowed when using dual hearing protection (plugs + muffs).

The method for determining the attenuation of hearing protectors is described in the OSHA Hearing Conservation Amendment, Appendix B, Corporate Guidelines for a Hearing Conservation Program, Appendix B, and is included in Section 6 of the Industrial Hygiene Manual.

Hearing protectors approved for use in this plant and that will attenuate the noise below 90 dBA include the following:

<u>Device</u>	<u>Noise Reduction Rating (NRR)</u>
_____	_____
_____	_____
_____	_____
_____	_____

Other devices are available through plant supervision or the Industrial Hygiene Department.

Noise Abatement Plans

Any new equipment or changes to the process will be evaluated for noise and when feasible, engineered to keep noise levels below 85 dBA.

Engineering controls for Noise Abatement in this plant are as follows:

<u>Area</u>	<u>Method of Engineering Control</u>
• _____	_____
• _____	_____
• _____	_____
• _____	_____

Date Created: __/__/__

Date for Next Review/Revision: __/__/__

Approved By: _____
I H. Contact

Plant Superintendent/
Department Head