Hearing Conservation Program

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ATTACHMENTS

1. PURPOSE

The objective of this procedure is to:

- Prevent occupational noise-induced hearing loss among Mosaic employees and supervised contractors at all Phosphate locations.
- Identify the key elements and responsibilities for Mosaic's Hearing Conservation Program (HCP).

2. SCOPE

A collaboration of Human Resource, Occupational Health and Safety representatives are responsible for developing, implementing, and administering the Mosaic HCP. This document describes the key components of the Mosaic HCP. These components consist of:

- Noise Survey
- Acoustical Engineering Controls
- Audiometric Examinations
- Hearing Protection
- Employee Education
- Recordkeeping
- Program Evaluation

3. NOISE SURVEY

3.1 An occupational noise survey will be accomplished when an employee's exposure is suspected to meet or exceed the Action Level specified by federal noise standards of 85 dB(A) TWA 8 hrs or 120 dB peak sound pressure level. Hazardous noise levels can be suspected, as a general rule, when noise levels exceed routine conversational speech (approximately 60 dB).

3.2 A noise exposure assessment strategy will be followed utilizing the guidelines specified in the American Industrial Hygiene Association (AIHA) publication: A Strategy for Occupational Exposure Assessment.

3.3 A worker's adjusted noise exposure (with hearing protection) should not exceed 85 dB for a time equivalent eight-hour workday.

3.4 All suspected hazardous noise exposures will be evaluated per the Employee Exposure Assessment Plan. Data obtained from the noise evaluation will be used to identify which employees are to be enrolled in the HCP and aid in the selection of proper hearing protection devices.

3.5 A noise survey shall be conducted when there are changes in production, processes, and procedures.

3.6 The Safety Department will be responsible to schedule all noise surveys.

3.7 A record of all noise surveys will be maintained indefinitely.

3.8 Only an annually calibrated Type I or Type II precision sound level meter will be utilized.

3.9 Calibrated octave band analysis and personal dosimeter measurements will be taken to determine Time Weighted Average exposure.

3.10 All measurement data will be collected utilizing the "A" weighting scale on the "slow" response setting on the noise measurement equipment.

3.11 All types of noise (continuous, impact, impulse, intermittent, etc) above 80 dB (continuous, intermittent and impulsive) shall be evaluated to determine the Time Weighted Average (TWA). As the noise intensity increases, the length of time a worker may be exposed to this noise must be decreased.

3.12 Employee noise exposure records may be made available upon written request from the affected employee or a designated representative.

The following guideline should be used.

Duration per 8-hour day (hr)	Allowable Noise Level (dB)
12 or greater	82
10	83
8	85
4	90
2	95
1	100
.50 (30 minutes)	105
.25 (15 minutes)	110

4. POST & LABEL EQUIPMENT AND WORK AREAS

4.1 Cautionary or warning signs such as “Caution: Ear Protection Required In This Area” will be posted in areas or on equipment that have shown to exceed 85 dB(A) TWA 8 hrs/82 dB-A TWA 12 hrs. Signage with the wording, “Notice: Hearing Protection Is Required Beyond This Point” will be posted at the entrances to all noise hazardous areas. Some plant locations will require hearing protection to be worn at all times within the plant limits.

5. EMPLOYEE NOTIFICATIONS

5.1 The following two occasions where an employee will, in writing, be formally notified of a specific finding.

5.1.1 First, each employee who has been found to have a noise exposure that exceeds OSHA’s Action Level (85 dB-A TWA 8 hrs/82 dB-A TWA 12 hrs) shall be notified of the findings of the noise survey. This OSHA notification shall occur within 21 calendar days after receiving the findings of the noise survey. The MSHA notification shall occur with 15 calendar days.

5.1.2 Secondly, any employee who displays a Standard Threshold Shift (STS), in either ear, will be notified of this finding within 21 calendar days (OSHA) or 10 calendar days (MSHA).

6. CONTROLS

6.1 The use of feasible engineering or administrative controls will be considered first when routine noise exposure levels exceed 85 dB(A).

6.1.1 Administrative controls should be undertaken only when engineering controls are not feasible. (such as, rotating shifts to decrease the duration of exposures for a particular individual or group of employees)

6.1.2 If engineering or administrative controls are determined not to be feasible to reduce noise levels, the reasons should be documented including the options considered and why each was not feasible or cost effective.

6.1.3 Hierarchy of Controls is the descending order of effectiveness of different methods of controlling and preventing hazards. The hierarchy includes elimination, substitution, engineering control,administrative control and PPE. The general principle is that control measures which are designed into a process and which require no actions or conscious effort on the part of workers are the most effective.

6.2 A strategy of evaluating the source, pathway, and receiver (employee) of the noise shall be used to eliminate the hazard whenever possible.

6.3 Techniques such as replacement of noisy equipment, mufflers, acoustic barriers, separating the workers from the noise hazard, enclosures, damping, and absorption materials shall be considered.

6.4 New or modified facilities or equipment shall be designed to achieve compliance with the intent of this HCP.

6.5 Hearing protection shall be used only where adequate engineering and administrative controls are infeasible. To ensure proper use of hearing protection Safety will ensure

6.5.1 annual training on proper wear and fit of hearing protection,

6.5.2 audits (observations) include proper wear of hearing protection,

6.5.3 that the Noise Reduction Rating (NRR) of selected hearing protection is sufficient to lower noise exposure below 85 dB(A). (Example: Noise Level of 94 dB(A) requires a NRR of at least 25 to reduce noise exposure to 85 dB(A).

$$85 = 94 - (25-7)/2$$

7. PROGRAM MANAGEMENT

7.1 Scope of Practice: The Professional Supervisors

7.1.1 Lawrence Goren M.D., Pivot Onsite Innovations 125 Gaither Dr., Mount Laurel, NJ 08054: office (856) 581-6004; Kampsen Hearing - 310 S MacDill Ave #202, Tampa, FL 33609 Phone**:** (813) 876-8374 will assume responsibility for clinical assessments after confirmed hearing shifts.

a. Supervision of the Audiometric Testing Program.
b. Review of Audiograms.
c. Audiological and medical opinion of work-relatedness based on review of written documentation tests, and clinical assessment.
d. Management of the audiometric data.

7.2 HCP Program Management

7.2.1 The Program Managers (Safety & Occupational Health representatives) have the shared responsibility for the successful implementation and management of Mosaic's HCP. The Program Managers will also have the responsibility for periodically reviewing, updating, and obtaining approval of this document.

7.3 Audiometric Data Base Ownership and Management

7.3.1 In Florida: The on-line audiometric database utilizing OHM software will be located and supported by Pivot Onsite Innovations, 125 Gaither Dr., Mount Laurel, NJ 08054: office (856) 581-6004. Tech Support: TechSupport@OHMSoftware.com. OHM will have full authorized access to all audiometric records for uploading and modifications as required. It is imperative that each facility maintain the same OHM software version and updates.

7.3.2 In Louisana: Audiometric data and clinical evaluations will be filed in the employee's medical record.

7.3.3 Mosaic shall maintain ownership of all audiometric and testing data, to include:

a. All audiometric results.
b. All baseline designations and revisions of baseline designation.
c. All determinations of STS.
d. All determinations of recordability and reportability.
e. Reports, examinations, comments, audiological and medical determinations.

8. AUDIOMETRIC CASE HISTORY AND OTOSCOPIC EXAMINATION

8.1 An audiometric case history shall be completed prior to all hearing tests (Baseline, Annual, Retest, and Exit). Particular attention will be made for employees who report:

8.1.1 Being exposed to hazardous levels of noise prior to the examination.

8.1.2 Consumption of ototoxic medications.

8.1.3 Routine exposures to organic solvents.

8.1.4 Prior ear surgery or other non-work related ear disorder.

8.2 An otoscopic examination shall be performed before each hearing test . If excessive ceramen (earwax) is present, the nurse will advise the employee on how to remove it. The removal of excessive cerumen will occur prior to revising an audiometric baseline or recording a decrease in hearing sensitivity with OSHA or MSHA. Employees will sign and date the Audiometric Case History. The audiometric examination results with their interpretations and recommendations will be maintained.

9. HEARING TESTING

9.1 General

9.1.1 All employees who exceed the Action Level shall be administered a hearing test once a year.

9.1.2 The hearing test will only be administered by medical personnel as required by OSHA or MSHA. This includes a board certified audiologist, a nurse or medical assistant who shall be certified by the Council for Accreditation in Occupational Hearing Conservation (CAOHC), 555 East Wells St, Suite 1100, Milwaukee, WI 53202-3823. Office: 414-279-5338. Fax: 414-276-2146, or an appropriately trained nurse or medical assistant if a microprocessor audiometer is utilized. Email: http://www.caohc.org.

9.1.3 Immediately following each examination, employees will be counseled about their hearing test results. At a minimum, at the conclusion of each hearing test, the employee will be reminded continue to wearing hearing protection whenever exposed to hazardous levels of noise at home or on the job; return for another hearing test the following year; and attend the mandatory training class.

9.1.4 Only an audiologist or physician shall provide final regulatory interpretation of hearing tests results. Results must be interpreted within one week of administering the test to allow for follow-up retest or clinical examination within 30 days.

9.1.5 The hearing test will be administered utilizing the recommended standardized procedure (Modified Hughson-Westlake Technique) whereby audiometric thresholds (where the employee hears the sounds 50% of the time) will be obtained at the frequencies 500, 1000, 2000, 3000, 4000, 6000, and 8000 Hz for each ear.

9.1.6 Any items that may interfere with the hearing test will be removed (ear rings, glasses, chewing gum, cell phones, beepers, etc).

9.1.7 At no time will headphones be placed over a hearing-aid while it is being worn. Hearing-aids will be removed after providing test instructions. Employee's utilizing a surgically implanted hearing device (cochlear implant) shall be referred to a board certified audiologist for examination.

9.1.8 If necessary, care will be taken to place the employee's hair behind the ear prior to putting the headphone on the employee.

9.1.9 All hearing tests performed under the Hearing Conservation Program should be forwarded to the Professional Supervisor as soon as possible after the completion of the hearing exam.

9.2 Baseline

9.2.1 It is required that a baseline hearing test be administered no longer than six months from the date of initial exposure to hazardous levels of noise. It is recommended that each employee be removed from hazardous noise exposure for no less than 14 hours prior to the baseline hearing test. Hearing protection may be substituted during this noise-free period. Failure to meet the scheduled appointment may result in disciplinary action. Each employee will immediately receive the results of their hearing test after each hearing exam. After being evaluated by the Professional Supervisor, each employee shall receive the consultant report indicating the findings and

recommendations. A copy of these hearing tests will be maintained in the patient's medical record and OHM (where available).

9.3 Annual

9.3.1 Each covered employee will be administered a hearing test on an annual basis. It is recommended that each employee be removed from hazardous noise exposure for no less than 14 hours prior to the baseline hearing test. Hearing protection may be substituted during this noise-free period. Each employee will immediately receive results verbally of their hearing test after each hearing exam. After being evaluated by the Professional Supervisor, each Florida employee shall receive the consultant report indicating the findings and recommendations. A copy of these hearing tests will be maintained in the patient's medical record and OHM. Mosaic will provide required training and medical and/or audiological evaluations when recommended by the Professional Supervisor and/or the Mosaic physician following the observation of a Standard Threshold Shift (STS).

9.4 Retest

9.4.1 Following a Standard Threshold Shift, inconsistent audiometric findings, or upon recommendation of Professional Supervisor a retest examination shall be obtained within 30 days from the date of the last test. To rule-out temporary threshold shift (TTS), a 14 hour noise-free period must exist prior to the repeat hearing test. Hearing protection may be substituted during this noise-free period. Care should be taken to remove excessive earwax (cerumen) prior to the retest examination. A copy of these hearing tests will be maintained in the patient's medical record and OHM.

9.5 Exit

9.5.1 Within 30 days of the end of employment, if possible, an exit audiogram will be obtained. This hearing test will be given to each covered employee who has not obtained a hearing test within six months of the last exposure. It is recommended that each employee be removed from hazardous noise exposure for no less than 14 hours prior to the hearing test. Hearing protection may be substituted during this noise-free period. A file of these hearing tests will be maintained in the patient's medical record and OHM.

9.6 Revised Baseline

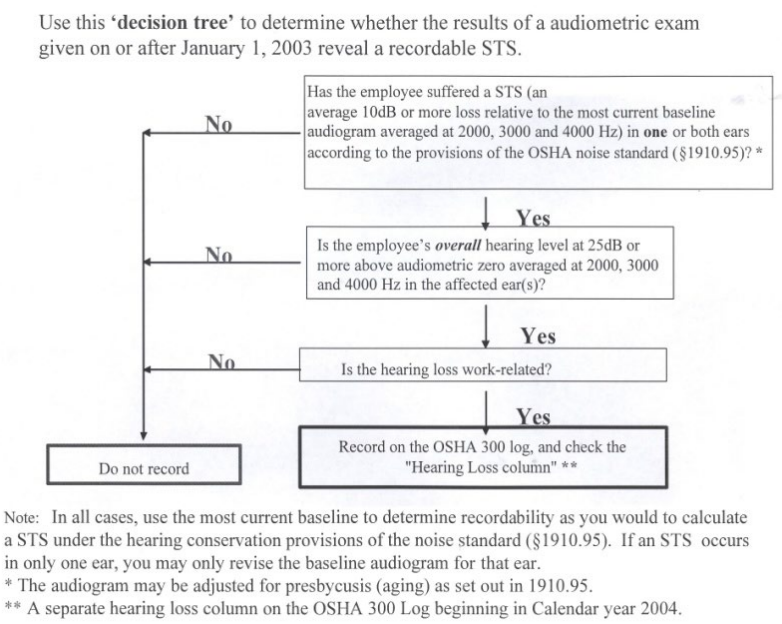
9.6.1 OSHA: If the Standard Threshold Shift (STS) is confirmed by the Professional Supervisor following an optional 30-day retest, the baseline may be revised. The employee shall be refit with hearing protection; trained on the dangers of hazardous levels of noise; and be given written notice of the loss of hearing sensitivity within 21 calendar days (OSHA). The presence of a Recordable Threshold Shift is found by the comparison of the findings on the annual hearing test when compared to the baseline hearing test results and audiometric zero. The Professional Supervisor will make this determination according to federal guidelines. Age adjustment of audiometric thresholds will be utilized. Retraining will be conducted per OSHA requirements.

9.6.2 MSHA: If a Reportable Threshold Shift is confirmed by the Professional Supervisor following an optional retest, the baseline may be revised. The employee shall be refit with hearing protection; trained on the dangers of hazardous levels of noise; and be given written notice of the loss of hearing sensitivity within 10 calendar days (MSHA). The presence of a Reportable Threshold Shift is found by the comparison of the findings on the annual hearing test when compared to the baseline hearing test results. The Professional Supervisor will make this determination according to federal guidelines. Age adjustment of audiometric thresholds will be utilized. Retraining will be conducted per MSHA requirements.

10. OSHA RECORDABLE AND MSHA REPORTABLE HEARING LOSS

10.1 OSHA

10.1.1 When upon follow-up examination a recordable hearing loss has occurred, this injury will be recorded on the OSHA 300 Log within seven days. Only a “work-related” hearing loss will be recorded. Age adjustment of audiometric thresholds will be utilized. A 10 dB or more average change, when compared to the baseline, is considered to be a Standard Threshold Shift (STS). This STS is reportable when the current hearing test is not within the normal range of hearing sensitivity. The “normal range” of hearing sensitivity is considered to be when audiometric thresholds are reported within audiometric zero (0 dB) and 25 dB. The following OSHA guideline should be used:



Note: In all cases, use the most current baseline to determine recordability as you would to calculate a STS under the hearing conservation provisions of the noise standard (§1910.95). If an STS occurs in only one ear, you may only revise the baseline audiogram for that ear.
* The audiogram may be adjusted for presbycusis (aging) as set out in 1910.95.
** A separate hearing loss column on the OSHA 300 Log beginning in Calendar year 2004.

10.2 MSHA

10.2.1 When upon follow-up examination a reportable hearing loss has been determined to have occurred, this injury will be reported to MSHA within 10 calendar days of clinical examination or retest (whichever was the determining assessment). Only “work-related” hearing losses will be reported. Age adjustment of audiometric thresholds will be utilized. A 25 dB or more average decrease in hearing sensitivity, when compared to the latest established original baseline, is considered to be a reportable Standard Threshold Shift (STS).

11. MEDICAL REFERRALS

11.1 Audiologist

11.1.1 Only a qualified, board certified audiologist or knowledgeable physician will evaluate all audiograms. Therefore, following a hearing test the clinical findings, such as Standard Threshold Shift (STS), may indicate a need for referral to a qualified audiologist for more detailed audiological evaluation. An ENT physician and/or audiologist referrals will be managed on a “case-by-case” basis. Therefore, the Professional Supervisor will be provided copies of the referral findings and should be contacted if there are questions about employee referral for clinical evaluation. Indications for a referral may consist of, but not limited to, the following conditions:

Hearing Conservation Program
Clinical Referral Guidelines

Standard Threshold Shift (STS)	Foreign Objects in the Ear
Ear Pain	Uncooperative Behavior
Discharge from the Ears	Inconsistent Hearing Test Results
Dizziness	Rapid Hearing Loss
Severe Tinnitus	Sudden Hearing Loss
Feelings of “Fullness” in the Ears	Unilateral (one-side) Hearing Loss
Cerumen (ear wax) Impaction	Low Frequency Hearing Loss

11.2 Ear, Noise and Throat (ENT) Physician

11.2.1 Only a qualified ENT physician or knowledgeable physician shall evaluate referred employees. Following a hearing test, Professional Supervisor may recommend that the employee be referred to a qualified ENT physician for more detailed evaluation and/or treatment. If required, after a medical treatment, a repeat hearing test may be recommended. Professional Supervisor makes referrals to an ENT physician for conditions other than a sensorineural, noise-induced hearing loss (such as for a suspected eardrum perforation or middle ear infection). Referrals should be managed on a “case-by-case” basis. Therefore, the Professional Supervisor should be contacted if there are questions about employee referral for clinical evaluation.

12. EQUIPMENT CALIBRATION, CERTIFICATION, AND REGISTRATION

12.1 The audiometer used to evaluate employee’s hearing sensitivity, will be functionally calibrated each day before use and an exhaustively calibrated every year. Each morning when hearing testing is scheduled, a visual, listening and electro-acoustic biologic calibration (“Oscar” check) will be undertaken. Any deviation of plus or minus 5 dB or more at any test frequency will necessitate the scheduling of an exhaustive calibration. Records of calibrations will be maintained in the clinic.

13. EMPLOYEE EDUCATION PROGRAM

13.1 All employees, who exceed the Action Level (85 dB-A TWA 8 hrs/82 dB-A TWA 12 hrs), shall be scheduled for annual training once a year. The HCP educational program shall be updated periodically and shall include:

13.1.1 The effects of noise on hearing;

13.1.2 The purpose and value of wearing hearing protectors;

13.1.3 The advantages and disadvantages of the hearing protectors to be offered;

13.1.4 The various types of hearing protectors offered and the care, proper fitting, and use of each type;

13.1.5 Hierarchy of controls;

13.1.6 The mine operator's and miner's respective tasks in maintaining mine noise controls for MSHA locations; and

13.1.7 The purpose and value of audiometric testing and a summary of the procedures.

14. HEARING PROTECTION DEVICES

14.1 General

14.1.1 Employees exposed to noise levels above the Action Level (85 dB-A TWA 8 hrs/82 dB-A TWA 12 hrs) shall be required to wear hearing protection devices (HPD). A variety of HPD shall be provided. Each HPD must, according to the Noise Reduction Rating (NRR), be adequate for each employee's particular noise exposure. The use of any HPD will be re-evaluated if noise intensities or duration of exposures change. HPD shall be required for visitors whenever they are even temporarily exposed above the Action Level. Dual HPD (earplugs and earmuffs or noise canceling earmuffs) shall be made available when deemed to be appropriate (exposures at or above 105 dBA). It is required that training on the proper use and care of HPD's be provided at the initial fitting and during subsequent required annual employee training.

14.2 Supply

14.2.1 Hearing protection devices (HPD) shall be fit and initially issued by the Medical/Safety/HR offices and then subsequently by the supervisor's office. Each employee shall be provided the opportunity to select appropriate HPD from a selection of no less than four different types of earmuffs and earplugs (disposable or premolded). It is imperative that the NRR for each device offered to a worker be adequate for the intensity and duration of that particular workers exposure. Adjusted NRR should reduce the employee's exposure to no greater than 85 dB(A) for a time weighted eight-hour period.

15. RECORDKEEPING

15.1 Copies of the OSHA Noise Standards shall be made available to all exposed employees or their representatives upon written request. The employee, former employees, their representatives, or federal agencies (OSHA or MSHA), shall have access to appropriate records. All examination results and consultant interpretations and recommendations will be filed in an appropriate location to comply with all privacy act and patient confidentially requirements. The results of hearing tests, noise surveys, audiometer calibration, hearing protection compliance, records of mandatory training, and test environment certification will be maintained for no less than 30 years following the completion of worker's employment. As a minimum, the following records, unless otherwise specified, shall be kept and maintained in the Occupational Health Services and/or Safety/Training Departments.

1	OSHA Federal Noise Standard	11	CAOHC Certification
2	Corporate Policy Statement	12	Audiometer Calibration
3	Standard Operating Procedure	13	Sound Booth Certification
4	Noise Survey	14	Medical and Audiological Referrals
5	Engineering Control Information	15	HPD Compliance Inspections Results
6	Employee Exposure Notifications	16	Training Sign-in Rosters
7	Audiograms	17	Workers' Compensation Information
8	Case History and Otoscopic Exam	18	Program Status Reports
9	Interpretations & Recommendations	19	Correspondence
10	Employee STS Notifications	20	Memo for Records

16. FITNESS FOR DUTY

16.1 The fitness for duty will be conducted for all workers who have reported a "profound" hearing loss in one or both ears at the discretion of the company.

17. TEMPORARY EMPLOYEES

17.1 Temporary workers, employed longer than six months, shall meet all the requirements set forth in the HCP. All employees, regardless of the duration of employment, shall utilize hearing protection whenever exposed to hazardous levels of noise.

18. ANNUAL STATUS REPORT

18.1 By the end of May of each year, a Hearing Conservation Program Status Report will be provided to the Mosaic Program Manager. This report should summarize the program progress for the previous year. Copies of this report will be provided to the all support organizations. A file of these reports will be maintained in the Safety Department/Medical Department. As a minimum, data addressing the number of audiometric examinations administered, the rate of STS and the number of OSHA and MSHA recordable hearing losses will be provided.

19. REVISION LOG

Revision Log				
Rev. No.	Requested By	Approved By	Revised By	Rev. Date
0	Initial issue as a stand alone program.	P. Holewski	Dr. J. Elmore	10/14/2008
0	Reformat for ISO		D. Allen	9/28/2011
1		Mike Neal	K. Charisse-Piercy	5/24/2012
2	Annual Review	EHSS PMO	D. Hart	09/01/2021
3	Annual Review	EHSS PMO	D. Hart	05/31/2022
4	Annual Review	EHSS PMO	D. Hart	09/20/2023
5	Annual Review	EHS PMO	D. Hart	9/30/2024
6	Annual Review; updated contact information in 7.1.1	EHS PMO	D. Hart	11/17/2025

Contact the Subject Matter Expert for additional information on this program.

Employee Exposure Notification Letter

Aug 24,2007

Riverview
Material Handling
Mosaic Co. of Florida

Subject: Exposure Assessment Result Notification

Thank you for your recent participation in the Mosaic Employee Exposure Assessment Program. The following information is provided to notify you of your personal sampling/monitoring results and is provided to fulfill Occupational Safety and Health Administration (OSHA) requirements.

Survey Date 8/2/2007

Start Time: 7:05:00 AM

Sample Number 080207NLJ003

Substance	Time Weighted Average Result	OSHA Standard
Noise-8hr-TWA	77 dB-A	90 dB-A

Your results do not exceed OSHA standards. If you have questions about the sampling/monitoring or the enclosed results, feel free to call your safety representative. The employee exposure assessment was conducted by SCS Engineers under contract to the Mosaic Safety Organization.

cc:Occupational Medicine Department

Mailed/Provided to Employee
Initials/Signature:
Date: 1/10/08

Employee Notification of Potentially Hazardous Noise Exposure

Employee: _____
SSN or EID: _____ Date: _____

In keeping with our goal to provide a safe and productive work environment for all employees, we have recently completed a noise survey. The purpose of this survey was to determine the possible existence and location of potentially hazardous levels of noise.

This letter is to inform you that your work area has been identified as exceeding acceptable noise levels specified by the U.S. Federal Noise Standard (OSHA).

Therefore, as a result of these findings, you are hereby required to:

a. Properly and routinely use hearing protection when exposed to high intensity noise,
b. Attend an annual training class on the subject of hazardous noise exposure, and
c. Obtain hearing tests each year to monitor your hearing sensitivity.

At no cost to you, a variety of appropriate hearing protective devices (earplugs or earmuffs) will be made available. Adequate training on their use and proper hygiene will be provided.

Once a year you will be scheduled for a hearing test and training. You will be notified of the location, date and time of your required appointment and class attendance.

Failure to wear required hearing protection, or obtain yearly hearing tests and training, may result in administrative action. You signature on this letter acknowledges receipt of this notification.

Should you have any questions, please contact _____ at extension _____.

_____ _____
Employer Employee

Employee Notification of Hearing Test Results

Employee: _____
SSN or EID: _____ Date: _____

In keeping with our goal to provide a safe work environment, each year we conduct hearing tests to monitor our employee's auditory sensitivity. These annual results are then compared to the baseline hearing test that was administered when you first began working in potentially hazardous levels of noise.

Therefore, it is the purpose of this letter is to inform you that a decrease in your hearing sensitivity has been observed on your last hearing test.

As a result of these findings, you are required to:

a. Sign and return a copy of this notification.
b. Properly use hearing protection devices when exposed to noise levels at 85 dB or above.
c. Schedule an appointment with_____
d. Bring your current hearing protection devices to this appointment for evaluation.

Again, once a year you will be scheduled for a mandatory hearing test and training. However, in the future we will compare you test results to your most recent findings. Should your hearing sensitivity continue to decrease, consideration will be given to placing you in a quiet job.

Furthermore, failure to wear required hearing protection, or obtain yearly hearing tests and training, may result in administrative action. Should you have any questions, please contact _____ at extension _____.

_____ _____
Employer Employee

OSHA, MSHA and NIOSH
Comparison of Regulations, Interpretations and Recommendations

The following table is provided to permit a quick comparison of the hearing conservation requirements of U.S. general industry (OSHA, 1983a), mining (MSHA, 1999), and recommendations of the NIOSH (1998 - Criteria for a Recommended Standard: Occupational Noise Exposure). Updated OSHA information is available at http://www.osha.gov; MSHA at http://www.msha.gov; and NIOSH at http://www.cdc.gov/niosh.

Issue	Description & Definition	OSHA 29 CFR 1910.95	MSHA 30 CFR Part 62	NIOSH Pub. No. 98-126
Action Level (AL)	The time-weighted average (TWA) exposure, which requires program inclusion, hearing tests, training, and optional hearing protection.	AL = 85 dBA TWA. AL is exceeded when TWA ≥ 85 dBA, integrating all sounds from 80 – 130 dBA.	Similar to OSHA, except integration is for all sounds from 80 *to at least* 130 dBA.	Does not have AL; rather has a single Recommended Exposure Limit (REL, see next row) for hearing loss prevention, noise controls and HPDs.
Permissible Exposure Limit (PEL)	The TWA, which when exceeded, requires feasible engineering and (MSHA)/or (OSHA) administrative controls, and mandatory hearing protection.	PEL = 90 dBA TWA. PEL is exceeded when TWA > 90 dBA, integrating all sounds from 90 – 140 dBA, as inferred from Table G – 16 of 1910.95(b).	Similar to OSHA, except integration range is explicit in the reg. (62.101, Definitions), and is for all sounds from 90 *to at least* 140 dBA	REL = 85 dBA TWA. REL is exceeded when TWA ≥ 85 dBA, integrating all sounds from 80 – 140 dBA.
Exchange Rate	The rate at which exposure accumulates; the change in dB TWA for halving/doubling of allowable exposure time.	5 dB	Same as OSHA.	3 dB.
Ceiling Level	The limiting sound level above which employees cannot be exposed.	No exposures > 115 dBA; there is evidence that this ceiling level is not being enforced.	"P" code violation issued for any protected or unprotected exposures > 115 dBA.	No protected or unprotected exposure to continuous, varying, intermittent, or impulsive noise > 140 dBA.
Impulse Noise	Noise with sharp rise and rapid decay in level, ≤ 1 sec. In duration, and if repeated, occurring at intervals > 1 sec.	To be integrated with measurements of all other noise, but *should* not exceed 140 – dB peak SPL.	To be integrated with measurements of all other noise.	To be integrated with measurements of all other noise, but not to exceed 140 dBA.
Monitoring	Assessment of noise exposure.	Once to determine risk and HCP inclusion; from there as conditions change resulting in potential for more exposure.	Mine operator must establish system to evaluate each miner's exposure sufficiently to determine continuing compliance with rule.	Every 2 years if any exposure ≥ 83 dBA TWA.
Noise Control	Investigation and implementation of feasible engineering and administrative control measures.	Feasible controls required where TWA > 90 dBA; subsequent compliance policy (which may be changed/revoked by OSHA at any time) permits proven effective HCP in lieu of engineering where TWA < 100 dBA.	Feasible engineering and administrative controls required for TWA > 90 dBA; even if controls do not reduce exposure to the PEL, they are required if feasible (i.e., ≥ 3 – dBA reduction). Administrative controls must be provided to the miner in writing and posted.	Feasible controls to 85 dBA TWA. Administrative controls must not expose more workers to noise.

Hearing Protection	Exposure requirements and conditions for use of hearing protection devices (HPDs).	Optional for ≥ dBA TWA; mandatory for > 90 dBA TWA, and for ≥ 85 dBA TWA for workers with STS. Protect to 90 or to 85 with STS. Choices must include a "variety" which is interpreted as at least 1 type of plug and 1 type of muff.	Use requirements same as OSHA, but amount of protection not specified, and choices must include 2 plugs and 2 muffs. Double hearing protection (muff plus plug) required at exposures > 105 dBA TWA.	Mandatory for ≥ 85 dBA TWA; must protect to 85. Double hearing protection (muff plus plug) recommended at exposures > 100 dBA TWA.
Evaluation of hearing Protector Effectiveness	Method of assessing adequacy of HPDs.	Use manufacturer's labeled NRRs to assess adequacy, but subsequent compliance policy stipulates 50 % derating of NRRs to compare relative effectiveness of HPDs and engineering controls.	No method included in standard. Preamble to regulation indicates that compliance guide will follow with suggested procedures.	Labeled NRRs must be derated by 25% for muffs, 50% for foam plugs, and 70% for other earplugs unless data available from ANSI S12.6 – 1997 Method B.
Supervisor of Audiometric Testing	The person who conducts or who is responsible for the conduct of audiometric testing and review.	Licensed or certified audiologist, Otolaryngologist, or other physician.	Licensed or certified audiologist, or physician.	Audiologist or physician.
Audiometric Technician	The person who conducts audiometric testing and routine review under guidance of a professional supervisor.	Must be responsible to supervisor (see above). CAOHC certified, or has demonstrated competence to supervisor. When microprocessor audiometers used, certification not required.	Must be under direction of supervisor (see above). Must be certified by CAOHC or equivalent certification organization.	Must be under direction of supervisor (see above). Must be certified by CAOHC or equivalent certification organization.
Audiometry	Initial and ongoing hearing tests used to assess the efficacy of hearing conservation measures.	Required annually for all workers exposed ≥ 85 dBA TWA. Baseline test within 6 months of exposure; 12 months if using mobile testing service, with HPDs in the interim.	Same as OSHA, but choice of whether or not to take an audiogram is at miner's discretion.	Required for all worker's exposed ≥ 85 dBA TWA. Baseline test preplacement or within 30 days of exposure. Best practice is to test workers exposed > 100 dBA TWA twice per year.
Quiet Period Prior to Baseline Audiogram	Period of nonexposure to workplace noise required prior to baseline audiogram.	14 hrs.; use of HPDs acceptable as alternative	Same as OSHA	No exposure to noise ≥ 85 dBA for 12 hrs.; HPDs can not be used as alternative.
Background Noise	Permissible noise in audiometric test chamber during testing.	Levels specified as 40 dB @ 500 and 1000 Hz, 47 dB @ 2000 Hz, 57 dB @ 4000 Hz, and 62 dB @ 8000 Hz.	According to scientifically validated procedures.	Per ANSI S3.1-1999 or latest revision; 19 dB more stringent than OSHA at 500 Hz, and 13 to 25 dB more stringent at other frequencies.
Audiogram Review and Employee Notification	Required actions following audiograms.	Not specified unless STS is detected; see STS follow-up.	Audiograms must be reviewed within 30 days and feedback provided in writing to each miner within 30 days thereafter.	Not specified unless STS is detected; see STS follow-up.
STS (OSHA/MSHA-Standard Threshold Shift; NIOSH-Significant Threshold Shift)	A change in hearing compared to an earlier (baseline) hearing test that requires follow-up action.	≥ 10-dB average shift from baseline hearing levels at 2000, 3000, and 4000 Hz in either ear.	Same as OSHA.	≥ 15-dB shift for the worse from baseline at any test frequency, in either ear, confirmed with follow-up test for same ear/frequency.

STS Retests	Follow-up audiogram that is permitted or required when initial STS is detected.	May obtain retest within 30 days and substitute for annual audiogram.	Same as OSHA.	Must provide confirmation audiogram within 30 days.
STS Follow-up	Required actions when an STS is detected.	Notify worker within 21 days; unless STS is not work-related, must fit or re-fit employee with HPDs and select higher attenuation if necessary, refer for audio/otological exam if more testing needed or problem due to HPDs, and inform employee of need for exam if problem unrelated to HPD usage is suspected.	Notify worker within 10 days; unless STS is not work related, must retrain the miner, provide the miner an HPD or different HPD, and review effectiveness of any engineering and administrative controls to correct deficiencies.	Notify worker within 30 days; must take action such as explain effects of noise, reinstruct and refit with HPDs provide additional training in hearing loss prevention, or reassign to quieter area.
Baseline Revision	Procedures for revising the baseline audiogram to reflect changes in hearing	Annual audio substituted for baseline when STS is persistent or thresholds show significant improvement.	Annual audio substituted for baseline when STS is permanent or thresholds show significant improvement.	Annual audio substituted for baseline when confirming audiogram validates an STS.
Presbycusis or Age Correction	Adjustments for hearing levels for anticipated effects of age.	Allowed.	Same as OSHA.	Not Allowed.
Recordable or Reportable Hearing Loss	Amount of hearing loss triggering reporting requirements on workplace injury/illness logs.	≥ 10-dB average shift from baseline at 2000, 3000, and 4000 Hz, in either ear, w/age correction; and loss of hearing sensitivity (≥ 25 dB loss from audiometric zero).	≥ 25-dB average shift from baseline, or revised baseline, at 2000, 3000, and 4000 Hz in either ear.	Not indicated.
Training and Education	Description of the annual training and educational component of the hearing conservation program.	Annual for all employees exposed ≥ 85 dB TWA; include effects of noise, HPDs, and purpose and explanation of audiometry.	Same as OSHA, except must begin with 30 days of enrollment in HCP, and include description of mine operator and miner's responsibilities for maintaining noise controls.	Same as OSHA, but must also include psychological effects of noise, and roles and responsibilities of both employers and workers in program.
Warning Signs and Postings	Requirements to post signs for noisy areas or to post regulations.	Hearing conservation amendment shall be posted in workplace.	No requirements for posting reg., but when administrative controls are utilized the procedures must be posted.	Signs must be posted at entrance to areas with TWAs routinely ≥ 85 dBA.
Record Retention	Specification or retention of data, and transfer requirements if employer goes out of business.	Noise surveys for at least 2 yrs., hearing tests for duration of employment, with requirement to transfer records to successor if employer goes out of business.	Employee noise exposure notices and training records for duration of enrollment in HCP + 6 months, and hearing tests for duration of employment + 6 months, with requirement to transfer records to successor mine operator.	Noise surveys for 30 yrs., hearing tests for duration of employment + 30 yrs., calibration records for 5 yrs., with record transfer per 29CFR1910.20(h).