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Subject

Handbook Number

Release Number

**Coal Mine Health Inspection Procedures Handbook, Chapter 3, Noise**

**PH89-V-1 (15) (September 2008)**

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1. Explanation of Material Transmitted

Reissuing PIB 04-18 as PIB 08-12 requires changing references on three pages of Chapter 3 of the *Health Inspection Procedures Handbook*. These pages are 3-11, 3-16, and 3-17. These edits are strictly reference changes and make no change to inspection procedures or reporting.

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2. Action Required

Replace your current Chapter 3 with the revised Chapter 3 of the *Health Inspection Procedures Handbook* (attached).

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3. Audience

All Coal Mine Safety and Health enforcement personnel.

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*Kevin Stricklin*

*08/25/08*

Approval Authority

Date

Authority

Date

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## Chapter 3 - NOISE

### I. Purpose

The purpose of this chapter is to establish procedures and guidelines for conducting noise sampling, evaluating sample results and verifying that the operator is in compliance with the noise standard. The chapter also implements the P-code policy for Coal and Metal and Nonmetal Mines and discusses technologically achievable engineering and administrative controls. **This supersedes the previously issued noise health inspection procedures.**

### II. Introduction

Many miners are exposed to loud and sustained noise levels. The Mine Safety and Health Administration (MSHA) has determined that approximately 13.4% of miners will suffer material hearing impairment during their working lifetime unless preventive measures are taken to reduce overexposures. Noise sampling is an essential component in identifying miners whose exposures must be reduced to protect them from the risk of occupational noise-induced hearing loss.

### III. Inspections

#### A. Noise Sampling Equipment

Full-shift noise samples must be taken using a personal noise dosimeter placed on the miner.

The Quest Q-200, Q-300, and Noise Pro DL personal noise dosimeters have multiple internal dosimeters.

1. Dosimeter I must be set for evaluating noise related to the 85 dBA action level. It must operate with the A-weighted network, slow response, 80 dBA threshold, 90 dBA criterion level, and 5 dBA exchange rate.
2. Dosimeter II must be set for evaluating noise related to the 90 dBA permissible exposure level (PEL). It must be set to operate with the A-weighted network, slow response, 90 dBA threshold, 90 dBA criterion level, and 5 dBA exchange rate.
3. Dosimeter III, if applicable, must be set at the same parameters as Dosimeter II. [not used for enforcement purposes].

All Quest personal dosimeters must be set to the parameters listed in Table 1. Technical Support personnel will confirm the settings for Quest dosimeters during the annual calibration and lock the parameters in place. This will prohibit the settings from inadvertently being changed in the field.

**Table 1****Quest Parameter Settings**

<b><u>Measurement Parameter</u></b>	<b><u>Value</u></b>		
	<b><u>Dosimeter I</u></b> (Action Level)	<b><u>Dosimeter II</u></b> (PEL)	<b><u>Dosimeter III</u></b> (PEL)
Calibration (QC-10)	114	114	114
Range	HI	HI	HI
UL (Upper Limit Level)	117	117	117
CL (Criterion Level)	90	90	90
ER (Exchange Rate)	5	5	5
TL (Lower Threshold Level)	80	90	90
Fast/Slow (Response Time)	Slow	Slow	Slow
A/C (Frequency Weighting)	A	A	A

The **Ametek MK-2 and MK-3** personal noise dosimeters have multiple internal dosimeters. The low threshold dose reading must be set for evaluating noise related to the 85 dBA action level. It must be set to operate with the A-weighted network, slow response, 80 dBA threshold, 90 dBA criterion level, and 5 dBA exchange rate.

1. The low threshold dose reading shows on the display screen as a **solid** “DOSE %”. The high threshold dose reading must be set for evaluating noise related to the 90 dBA permissible exposure level (PEL). It must be set to operate with the A-weighted network, slow response, 90 dBA threshold, 90 dBA criterion level, and 5 dBA exchange rate.
2. The high threshold dose reading shows on the display screen as a **flashing** “DOSE %”. Enter these readings as they are shown on the dosimeter display; do not round them off.

All Ametek personal noise dosimeters must be set to the parameters listed in Table 2. After the initial setup, Technical Support personnel will set the option switch settings during the annual calibration and the settings must not be changed.

Table 2**Ametek MK-2 and MK-3  
Option Switch Settings**

The option switch settings on the Ametek MK-2 and MK-3 personal noise dosimeters must be set as follows:

SWITCH NO. 1	ON	SLOW RESPONSE
SWITCH NO. 2	OFF	80 dBA THRESHOLD
SWITCH NO. 3	OFF	80 dBA THRESHOLD
SWITCH NO. 4	OFF	90 dBA CRITERION LEVEL
SWITCH NO. 5	OFF	90 dBA CRITERION LEVEL
SWITCH NO. 6	OFF	5 dBA DOUBLING RATE
SWITCH NO. 7	OFF	5 dBA DOUBLING RATE
SWITCH NO. 8	OFF	2 SEC >115 dBA TIME DELAY
SWITCH NO. 9	OFF	A WEIGHTING

**Note:** Use MSHA-approved permissible personal noise dosimeters and sound level meters in metal and nonmetal gassy mines and in underground coal mines, where required.

**B. Frequency of Noise Sampling Equipment Calibration**

Personal noise dosimeters and acoustical calibrators are required to be calibrated annually. A calibration schedule for all dosimeters and calibrators has been established for each district. The schedule must be strictly adhered to by each district to assure that all dosimeters and calibrators are properly calibrated. The calibration schedule established for M/NM districts is provided in Appendix 7. Dosimeter calibration schedules for Coal are in the District offices. The address for shipping dosimeters and calibrators is as follows:

Mine Safety and Health Administration  
Chief, Physical and Toxic Agents Division  
Pittsburgh Safety and Health Technology Center  
626 Cochran Mill Road, Building 38  
Pittsburgh, PA 15236  
(412) 386-6565 (Acoustical Calibration Lab)

**C. Noise Sampling Strategy****1. Identify Miners to be Sampled**

Observations and/or measurements using a sound level meter (SLM) or a personal noise dosimeter may be used to identify miners exposed to sound levels equal to or greater than 80 dBA. Miners exposed to sound levels equal to or greater than 80 dBA should be considered as candidates for a full shift, personal noise sampling. If a miner needs to shout to be heard a few feet away, the miner may be overexposed to noise.

Determine miners exposed to sound levels equal to or greater than 80 dBA by considering:

- high risk occupations;
- exposure conditions at the time of inspection;
- prior sampling history at the mine;
- reading of sound level meter or personal noise dosimeters; and
- any other information such as the mine's sampling records.

Typical mining occupations exposed to high sound levels include, but are not limited to, roof bolters, shuttle car operators, mobile bridge conveyor operators, shear operators, continuous miner operators, drillers, stone cutters, mobile equipment operators (truck, bulldozer, front-end loader, scraper, etc.), mechanics, laborers, and operators of crushers, mills, and screens.

Samples should be collected on the normal work shift and on off-shifts and week-ends where noise activities are present. At a minimum, miners who have the greatest risk of overexposure to noise should be identified and sampled.

When sampling at Metal / Nonmetal mines, enforcement personnel should include a representative number of miners from each of the high risk occupations at each mine. However, when previous sampling has demonstrated that adequate engineering and administrative controls are in place to ensure compliance, and there is no history or little likelihood of overexposure for that occupation at that mine, then sampling may not be necessary as deemed by the District Office. If sampling is not performed, enforcement personnel must document in the inspection notes the controls being used and the reason they believe miners are not at risk of overexposure to noise.

When sampling at Coal mines, the sampling strategy requirements for Coal should be followed. These requirements are provided in Section C.3.

When a sample based on the 90 dBA PEL produces a dosimeter reading greater than 100 percent but less than 132 percent, a follow-up noise sample is recommended within the next 6 months. All previously sampled miners or occupations must be re-sampled, if available. If all or some are not available, other available miners must be substituted.

## **2. Determine a Miner's Full-Shift Noise Exposure**

A personal noise dosimeter must be used to determine a miner's full work shift noise exposure. Only full-shift samples are used to determine compliance with MSHA's noise standard. Because compliance with the permissible exposure level (PEL) and action level (AL) is determined using different thresholds (90 dBA and 80 dBA, respectively), MSHA's personal noise dosimeters are capable of simultaneously recording data for both thresholds.

### **3. Sampling Strategy - Coal Only**

Enforcement personnel must remain in the work area/section where sampling is being conducted to ensure the sample(s) are representative of the normal activities for the entire sampling shift. Normally, when sampling areas outside the production section, the enforcement personnel should not remain with the miners for the entire sampling shift because of their logistics. Instead, the inspector must spend sufficient time to observe and record the operating conditions and work activities in the area, the noise controls in use, a general description of the conditions of the controls, and potential sources of noise exposure.

#### **a. Mechanized Mining Units (MMUs)**

A full-shift sample must be conducted on at least five (5) miners performing different occupations, if available, on each MMU. These must include the miner operator(s), roof bolters, shuttle cars and any mobile bridge conveyor operators. All MMUs will be sampled on an annual basis. The minimum number of noise samples expected to be completed each year, on MMUs at underground mines, will be based on the number of producing MMUs as of the first of each month averaged over the fiscal year. A representative number of samples will be collected on off-shifts and weekends where such activities are present.

#### **b. Outby Areas Underground (Areas outside of production)**

A full-shift sample must be collected from a representative number of outby miners where high levels of noise may exist. These should include, but not be limited to, motormen and belt cleaners. A representative number of outby miners must be sampled on an annual basis at each underground mine.

#### **c. Surface Areas of Underground Mines**

A full-shift sample must be conducted on at least five (5) miners, if available, on the surface area of an underground mine where high levels of noise may exist. All surface areas of underground mines are to be sampled on an annual basis.

#### **d. Surface Mines and Surface Facilities**

A full-shift sample must be conducted on at least five (5) miners, if available, at each surface mine. These must include bulldozer operators and other heavy equipment operators. All surface mines and surface facilities are to be sampled on an annual basis. The number of noise samples expected to be completed will be based on the number of the above listed producing mine areas as of the first of each month averaged over the fiscal year. A representative number of samples will be collected on off-shifts and weekends where such activities are present.



**e. Follow-up Samples**

When a sample based on the 90 dBA PEL produces a dosimeter reading greater than 100 percent but less than 132 percent, a follow-up noise sample is recommended within the next 6 months. All previously sampled miners or occupations must be re-sampled, if available. If all or some are not available, other available miners must be substituted.

The inspector **must** conduct a follow-up full-shift noise exposure sample upon expiration of the abatement time as originally set or extended **if** feasible noise controls have been implemented which may achieve compliance. All previously sampled miners or occupations must be re-sampled, if available. If all or some are not available, other available miners must be substituted.

**D. Pre-Inspection and Post-Inspection Procedures**

MSHA records, such as previous inspection reports, previous Noise Technical Investigation results, listing of assigned P-codes (see Section J for description of P-codes) and the Uniform Mine File (Mine File), must be reviewed prior to beginning the inspection at the mine.

Before taking each sample, the calibration label on the dosimeter and calibrator must be checked to ensure that the instruments have been calibrated within the past 12 months. A field calibration check must be conducted before and after each sampling shift. If the check indicates that the dosimeter is more than +/- 1.0 dBA of the calibrator, with either calibration check, the instrument or sampling results must not be used. The pre-calibration and post-calibration checks must be conducted with the same calibrator and never interchange the microphone unless it has been recalibrated. Procedural instructions for checking the calibration of the instruments are contained in Appendix 1.

For Coal mines, the record documenting pre- and post-shift calibration checks must be on Form 2000-84 as required by Section F. Include the serial number or MSHA Property Number of the dosimeter and field calibrator. A sample Form 2000-84 is provided in Appendix 4.

For Metal/Nonmetal mines, the record documenting pre- and post-shift calibration checks must be included in the Health Field Notes as required by Section G. Include the serial number or MSHA Property Number of the dosimeter and field calibrator.

After arriving at the mine, the mine inspector must review all the posted administrative controls and during the inspection, determine if they are being followed. All engineering controls must also be checked to determine if they are being maintained. Document this information in the notes.

## E. Sampling Inspection Procedures

### 1. Instructions to the Miner

- a. Explain to the miner what you are doing, what the sampling device does, and the reason for the sampling (i.e., the hazard). Emphasize that the personal noise dosimeter or sound level meter is not a tape recording device.
- b. Instruct the miner not to remove a personal noise dosimeter or microphone at any time and not to cover the microphone with a coat or other garment. If the miner must leave the mine property during the shift, the inspector should remove the personal noise dosimeter and place it in the “pause” or “standby” mode. Sampling should resume once the miner returns.
- c. Instruct the miner not to bump, drop, damage, or tamper with the personal noise dosimeter or microphone. Discourage whistling into, shouting into, or tapping on the microphone.
- d. Emphasize the need for the miner to continue to work in a routine manner and report to you any unusual occurrences during the sampling period.
- e. Inform the miner when and where the personal noise dosimeter will be removed, and that you will check the equipment and may take sound level meter readings periodically.
- f. If a miner objects to wearing the personal noise dosimeter, determine the reasons for the objection. Explain the need for the sampling. If you cannot obtain the cooperation of the miner and another miner performing the same job at the same location is available and cooperative, sample the cooperative miner. If the refusal is an attempt to impede or prevent an inspection, the inspector should attempt to complete any parts of the inspection that do not involve sampling. Afterwards, the inspector’s supervisor should be contacted. In such cases, the supervisor is responsible for collecting all the facts, reducing them to writing, and contacting the District or Assistant District Manager. Consult the Program Policy Manual, Volume I, I.103-1, Assaulting, Intimidating or Impeding Inspectors, for current policy on actions to be taken in such circumstances.

### 2. Dosimeters

Noise exposure measurements must be made in accordance with the instrument manufacturer’s recommendations. This requires the dosimeter microphone to be located at the top of the shoulder midway between the neck and end of the shoulder, with the microphone diaphragm pointing in a vertical upward direction. The microphone must be

located on the shoulder that is normally between the principal noise source and the miner's ear (see Figure 1). To the extent practical, the dosimeter instrument and microphone cable must be positioned underneath exterior clothing to minimize potential safety problems and damage to the instrument. The microphone must not be covered by clothing. At the start of each sample a wind screen must be attached to the dosimeter microphone in accordance with the instrument's manufacturer's instruction. If the wind screen is lost during sampling, samples requiring enforcement action must be VOIDED. Re-sampling must be conducted as soon as possible.

**Figure 1. Placement of the dosimeter microphone.**



The personal noise dosimeter must be worn by the miner whose noise exposure is being measured for an entire normal work shift, even if the normal work shift is in excess of 8 hours. Conduct sampling, both initial and follow-up, only when conditions are judged to be normal and representative. If unusual conditions arise during the sampling period then the sample may have to be voided. Re-sampling must be conducted as soon as possible.

#### **Determination of a “Normal” Workshift**

- a. The following are examples of the types of information that can be used to determine if activities are characteristic of a “normal” representative workshift: the number of truckloads of material processed by a crusher operator; the number of holes or vertical feet drilled by a drill operator; the number of trucks loaded by a shovel operator; the type of product and number of bags produced by a bagging operator; and any indication of operation modifications.
- b. A “normal” workshift at many operations may exhibit wide variations in working conditions and activities. Ask the miner if these are “usual” or “unusual” work conditions. Sample results are valid when collected on shifts that lie within the range of normal variations. All corrective actions taken to abate a citation / order must be documented in the body of the termination notice and field notes.

During each full-shift sample, the inspector must observe the miner being sampled as frequently as is necessary to determine that a representative sample is being conducted of the normal activities.

The inspector must observe enough of the work activity to ensure that:

- (1) Dosimeters remain in the environment being sampled;
- (2) Dosimeters are properly positioned or placed on the miner for sampling;
- (3) Dosimeters are not damaged;
- (4) Normal mining activities are taking place;
- (5) A determination of production is made; and
- (6) Noise controls (including administrative controls) are documented, etc.

This requirement does not necessarily preclude the inspector from doing other inspection work while conducting the noise sample. Normally, the inspector will accompany the miners out of the mine.

During sampling it is essential that the sources of the noise exposure be determined. One way this can be accomplished is using a SLM or the dosimeter in the SLM mode. When the source(s) of the exposure cannot be readily identified, make a sketch of the work area including location of the miner(s), noise source(s) and mark on the sketch where the noise readings were taken.

### **3. Sound Level Meters - Dosimeters in Sound Level Meter Mode**

MSHA noise dosimeters can be used in the sound level meter (SLM) mode to check sound levels a miner may be exposed to in their work area. The following method can be used to check work area sound levels using a dosimeter in the SLM mode:

- a. Calibration checks required in Section D must be followed.
- b. The dosimeter microphone must be held at arm's length within one or two feet of the miner's ear in a normal work area, with the microphone pointed upward.
- c. Compliance determinations must be based on a full-shift personal noise dosimeter sample.
- d. Inspectors should not take noise measurements with sound level meters on moving equipment, such as shuttle cars and bulldozers, unless safe seating arrangements are provided.

#### 4. Sound Level Meters (Non-Enforcement – Metal / Nonmetal)

Sound level meters can be used to check the sound levels in a work area, evaluate sources of noise and determine which miners to select for sampling.

- a. Set the sound level meter (SLM) on the “A-weighting” scale and “slow” meter response for all measurements.
- b. Check the accuracy of the SLM by performing a pre-sample check with an acoustical calibrator. The instrument must be within +/-1.0 dBA of the calibrator’s stated output. Make sure the reading has stabilized and record it in the Health Field Notes. **Note: Do not use the instrument if it is outside the +/- 1.0 dBA tolerance.**
- c. In general, hold the SLM at arm's length, keeping your body out of the path of the noise. Hold the microphone within one foot (hearing zone) of the miner's most exposed ear whenever possible. As specified by the manufacturer, hold the microphone either perpendicular (90-degree angle) toward the noise source, pointed at a 70-degree angle toward the source, or pointed directly at the source.
- d. Because the needle or digital display on the SLM may fluctuate, observe the readings for of at least 30 consecutive seconds. Ignore any momentary high or low levels.
- e. Take several readings for each activity the miner performs during the work shift.
- f. Record the sound level reading or range of sound levels on the back side of the Health Field Notes. Also, record the time, location, specific activity of the miner, ID number of any equipment the miner is operating, and any other pertinent information. A sketch may be helpful in showing where the various readings were taken.
- g. After sampling, check the accuracy of the instrument with an acoustical calibrator. If the difference between the pre- and post-sampling readings is more than +/- 1.0 dBA from the value of the calibrator, void the data obtained with the instrument.
- h. Do not report SLM results to the computer database system. Record them in field notes.

**F. Inspection Documentation – Coal**

1. The following is a list of observations that **MUST** be described in the field notes:
  - a. Administrative noise controls posted on the mine bulletin board. Detail whether they were followed during the sampling shift and if a copy was provided to affected miner(s).
  - b. A miner refusing to wear a dosimeter.
  - c. Interruptions in the sampling requiring the dosimeter to be placed in the “PAUSE MODE” (i.e., miner leaving mine property).
  - d. Factors requiring a sample to be voided. (Includes information from the miners being sampled.)
  - e. The sources of noise for the miner(s) being sampled.
  - f. Engineering noise controls being utilized that could affect the dose of the miners being sampled; their condition and state of maintenance.
  - g. If a citation is being issued, list feasible noise controls not being used to reduce the affected miner(s) dose or any other action or inaction causing the citation to be issued. (Refer to PIB 08-12.)
  - h. Follow-up on an existing citation is required, detail the noise controls implemented during the abatement period.
2. An MSHA Form 7000-10P, June 93 (Revised), Noise note page must be completed during an inspection when sampling.
3. Complete the latest MSHA Form 2000-84 for each inspection where noise samples are conducted and review the information for clarity, legibility, and accuracy.
  - a. **Mine ID/Contractor ID Number** - Enter the seven digit mine identification number assigned by MSHA and if appropriate, the three- or four-digit contractor ID.
  - b. **Event Number** - Enter the event number for the inspection or investigation during which the noise samples were taken.
  - c. **AR/RE Number** - Enter the five-digit identification number from the AR/RE card of authorization.

- d. **Field Office No.** - Enter the five-digit number assigned to the MSHA CMS&H office under which the coal mine is inspected.
- e. **Sampling Date** - Enter date of sample(s) in two-digit month-day-year format. This date must be the same for all noise samples documented on the same Form 2000-84. (Please note that when entering this data in the noise sample database, a four-digit year must be used.)
- f. **Activity Code** - Enter the activity code for the type of event during which the noise samples were conducted.
- g. **Mine Name** - Enter the mine name as it appears on the Legal ID.
- h. **Company Name** - Enter the company name as it appears on the Legal ID.
- i. **Sample Number** - The sample number is designated on the form for up to six samples per form.
- j. **Sample Type** - Check the box that applies, indicating whether the noise sample is an initial sample or a follow-up sample.
- k. **P-code** – Note whether there is a current P-code.
- l. **MMU/Pit/Area Sampled** - Enter the MMU/DA/DWP identification number assigned to the section, entity or surface area(s) where the sample was conducted.
- m. **Instrument Property Number** - Enter the number from the MSHA property ticket affixed to the instrument or the instrument's serial number.
- n. **Calibrator Property Number** - Enter the number from the MSHA property ticket affixed to the calibrator or the instrument's serial number.
- o. **Miner's Last Name & First Initial** - Enter the last name and first initial for each miner for which a noise sample was conducted.
- p. **Occupation Code** - Enter the MSHA three-digit code that best describes the duties performed during the sample period.
- q. **Machine Code** - Enter the appropriate two-digit machine code from the list on the reverse side of MSHA Form 2000-84.
- r. **Manufacturer's Code** - Enter the appropriate three-digit manufacturer's code from the list on the reverse side of MSHA Form 2000-84.

- s. **Time Start** - Enter the 24-hour clock time when each sample was begun.
- t. **Total Sampling Time** - Enter the total sample time in **minutes** for each sample conducted.
- u. **Production This Shift** - Enter raw production in tons for the sample period (underground MMUs only).
- v. **85 Action Level Dose (Dosimeter I)** - Enter the dose percent value as a truncated whole number (no decimals) for the noise exposure at the 85 dBA action level from Dosimeter I.
- w. **90 PEL Dose (Dosimeter II)** - Enter the dose percent value as a truncated whole number (no decimals) for the noise exposure at the 90 dBA permissible exposure level from Dosimeter II.
- x. **90 PEL Max** - Enter the maximum dBA level as a truncated whole number (no decimals) indicated for the noise exposure at the 90 dBA permissible exposure level from Dosimeter II.
- y. **Upper Control Limit Time** - Enter the duration of exposure in **whole minutes** for noise above 117 dBA.
- z. **Calibration Check** - Note the appropriate calibration checks made before and after each noise sample. Check the boxes that apply.
- aa. **Type of Hearing Protective Device(s)** - Check the box(es) for all type(s) of HPDs worn by each miner sampled.
- ab. **Enrolled in HCP** - Check this box if the miner sampled is enrolled in a Hearing Conservation Program regardless of his or her noise exposure.
- ac. **Citation Number** - Enter the citation number **only** if a citation is written for overexposure to noise under 30 CFR Part 62.
- ad. **Citation Abatement** - Enter the abatement code from the list on the reverse side of MSHA Form 2000-84 **only** if abatement actions were taken.
- ae. **Comments** - Self-explanatory. The date(s) of the annual calibration checks of the dosimeters and/or calibrator may be entered here. Narrative information on the personal protective equipment used and abatement information should be provided here.

NOTE: **VOID** must be entered over the sample column which is not valid due to sampling equipment failure or activities or workshifts which are documented as abnormal. (See page 3-8, Determination of a “Normal” workshift.)



4. A completed **copy** of the most recent MSHA Form 2000-84 must be sent to the appropriate office within each District so the information can be entered into the noise database.

**G. Inspection Documentation - Metal/Nonmetal**

1. Document the following in the Health Field Notes (refer to Chapter 21, Section V):
  - a. Clock time the personal noise dosimeter was started.
  - b. Identification numbers of sampling equipment.
  - c. Miner's name, job title code, and work location(s).
  - d. Shift hours per day and days per week worked.
  - e. Any hearing protection worn including brand, model, type, and noise reduction rating (NRR).
  - f. Whether a hearing conservation program exists and whether the miner sampled has received audiometric tests and how often.
  - g. Record what tasks the miner has performed in the time between checks, so that the completed Health Field Notes will describe the miner's full work shift, activity/exposure.
  - h. Clock times that the personal noise dosimeter and microphone were checked and condition of sampling equipment (if the sample was paused or restarted for any reason, record the times involved) and explain.
  - i. The activity of the miner, equipment operating in the area, and approximate time spent at each activity/task.
  - j. General description of noise controls in use.
  - k. Potential sources of exposure, a concise description of these sources, number of miners affected, and possible additional control measures.
  - l. Environmental conditions (such as wind conditions, temperature, and humidity).
  - m. At the end of the sample, record the clock time.
  - n. Record the run time (displayed in hours and minutes).

- o. Record the dose percentage for the 85 dBA action level (80 dBA threshold) and associated time-weighted average (TWA<sub>8</sub>) in dBA.
- p. Record the dose percentage for the 90 dBA Permissible Exposure Level (90 dBA threshold) and associated time-weighted average (TWA<sub>8</sub>) in dBA.
- q. Record the pre - and post - calibration data.
- r. Any SLM readings collected.

Whenever possible, perform tasks o, p, and q above in the presence of the miner, a representative of the mine operator, and the miner’s representative (if applicable).

**H. Decision Table**

Provision	Condition	Action required by the mine operator
§ 62.120 ....	Miner’s noise exposure is less than the action level.	None.
§ 62.120 ....	Miner’s exposure equals or exceeds the action level, but does not exceed the permissible exposure level (PEL).	Operator enrolls the miner in hearing conservation program (HCP) which includes (1) a system of monitoring, (2) voluntary, with two exceptions, use of operator-provided hearing protectors, (3) voluntary audiometric testing, (4) training, and (5) record keeping.
§ 62.130 ....	Miner’s exposure exceeds the PEL	Operator uses/continues to use all feasible engineering and administrative controls to reduce exposure to PEL; enrolls the miner in a HCP including ensured use of operator-provided hearing protectors; posts administrative controls and provides copy to affected miner; must never permit a miner to be exposed to sound levels exceeding 115 dBA.
§ 62.140 ....	Miner’s exposure exceeds the dual hearing protection level.	Operator enrolls the miner in a HCP, continues to meet all the requirements of § 62.130, ensures concurrent use of earplug and earmuff.

**I. Reporting of Sampling Results - Coal**

Within 30 calendar days from completion of the sample, the data on the Form 2000-84 must be entered into the Coal Noise Sampling Database at either the field office or the district office.

**J. Reporting of Sampling Results - Metal/Nonmetal**

1. Inspection reports must include a copy of the Health Field Notes, the completed Personal Exposure Data Summary (PEDS), citations/orders, photos, and any other supplemental information collected during the inspection.

2. When completing the PEDS (refer to Chapter 21, Section VIII), be sure that the percent dose and exposure level units of measurement match the contaminant code (refer to Chapter 21). Sound level meter readings used for screening purposes **are not** reported on the PEDS, Area Sample Data Summary (ASDS), or the Inspection and Investigation (I&I) Data Summary. Record the SLM screen readings in the health field notes.

### **K. Determination of the Feasibility of Noise Controls**

For a noise overexposure greater than or equal to 132% of the permissible dose a feasibility determination must be made **prior** to issuing a citation for lack of controls.

***Feasibility = Technological and/or Administrative Achievability + Economic Achievability***

Using PIB 08-12 (see Appendix 5), determine whether there are technologically or administratively achievable engineering and/or administrative noise controls, which when used either singly or in combination with other controls would lower the noise exposure by at least 3 dBA<sup>1</sup>; and, whether the cost of the controls would be wholly out of proportion to the reduction in noise exposure expected by their implementation. This 3 dBA equivalent reduction is in a miner's noise exposure, not in noise levels. Exposure (% dose) and sound level (Sound Pressure Level, dBA) are not synonymous terms because an exposure includes a time factor. In addition to providing at least a significant noise exposure reduction (3 dBA), the specific application of the noise control(s) must be technologically (or administratively) achievable and economically achievable for the unique conditions at the mine.

In most instances, this determination process is transparent and quite straightforward, i.e., technologically or administratively achievable controls exist, are at a reasonable cost in light of the expected noise exposure reduction, and therefore must be implemented. For example, the PIB 08-12 states that mufflers are technologically achievable controls for hand-held percussive tools. A reasonable estimate of the cost of the muffler is less than \$500, a sum that is economically achievable for most, if not all, situations. In 1991, the Federal Mine Safety and Health Review Commission determined that it was feasible to retrofit a bulldozer worth approximately \$20,000 with an air-conditioned cab estimated to cost \$10,000 at a small sand and gravel operation with 3 employees. It was feasible since it was technologically and economically achievable.

In some cases, it will be necessary to seek supervisory guidance when making the decision whether to require a control. Consultation is strongly encouraged. Follow the district procedures for consulting with the field office supervisor, district staff, Division of Health or Technical Support staff for advice.

Part 62 considers administrative controls to be equivalent to engineering controls, however, both must be found feasible before they can be required to be implemented.

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<sup>1</sup> A 3 dBA equivalent reduction in terms of an initial and final dose is equivalent to a 34% reduction in the initial dose. (If the final dose is 0.66% of the initial dose, or less, then a 3 dBA equivalent reduction has been achieved, i.e.,  $D_{\text{final}} = D_{\text{initial}} * 0.66$ .)

### The Process

1. Determine a miner's noise exposure using full-shift dosimetry. If the dose equals or exceeds 132%, an overexposure condition exists. *Note: Do not issue a citation for lack of controls until a determination of feasibility is made.*
2. Record source(s) of noise overexposure in the notes and briefly describe the noise controls that have been installed or implemented and whether the controls are properly maintained.
3. Refer to PIB 08-12 (see Appendix 5) for a list of controls. Determine which, if any, of the controls are technologically achievable or administratively achievable in this particular situation. Technologically achievable controls denoted as "conditional" should be reviewed and take into consideration the conditions that exist at the mine that could affect their effectiveness or create additional health or safety hazards.
4. If all technologically achievable engineering and administratively achievable administrative controls are determined to be properly selected, installed, used, and maintained, or there are none, do not issue a citation for lack of controls, rather, initiate the P-Code process. (See Appendix 6, PIB 04-5, "Basis for Assigning a P-Code for Noise Overexposure.")
5. When there are technologically or administratively achievable controls which have not been implemented, determine whether the controls are economically achievable in this particular situation.
  - a. A reasoned estimate of the cost of the control under consideration.
  - b. The nature and extent of the noise exposure.
  - c. A comparison of cost estimates for original equipment, replacement, retrofit, and/or repairs.
  - d. Estimated costs of abatement would be reasonable to achieve benefits (i.e., reduction in a miner's noise exposure).

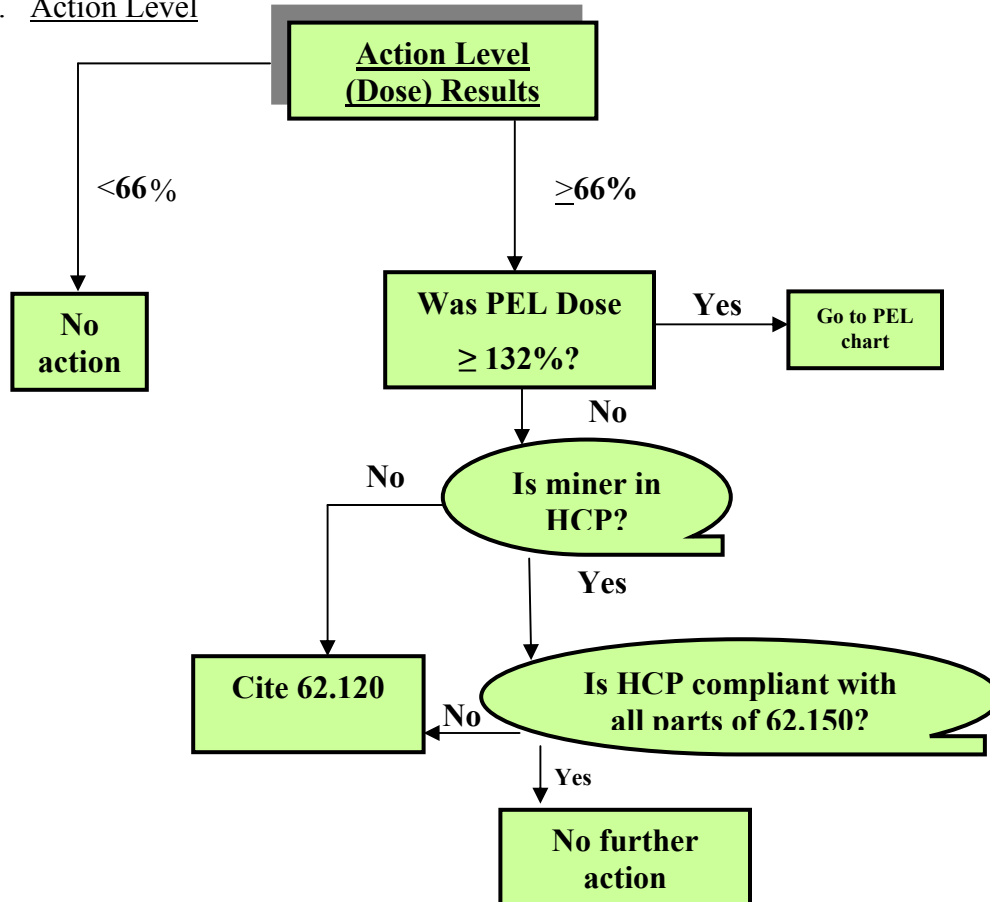
NOTE: Assistance in estimating costs will be available on MSHA's website.

6. If a technologically achievable or administratively achievable control is extremely costly for the operator but the expected reduction in noise exposure is minimal, it may be determined that it is not economically achievable for the operator to install the control.
7. If a control is both technologically achievable or administratively achievable and economically achievable then it is feasible for implementation by the mine operator.
8. Once feasibility (economic and technological or administrative achievable) is established for controls not in place, then issue the citation for the overexposure and set an abatement period.

9. Once all feasible controls are implemented and sampling indicates continued overexposure, proceed to a P-Code. (See Appendix 6, PIB 04-5, “Basis for Assigning a P-Code for Noise Overexposure.”)

**L. Compliance Determination**

1. Action Level



When a miner's exposure equals or exceeds the Action Level as defined in 30 CFR 62.101, but the miner's exposure does not exceed the PEL, a citation under 30 CFR 62.120 must be issued to the operator/contractor **IF** the results of a noise sample show that:

- a. The full shift noise exposure of any miner is 66 percent or greater; **AND**
- b. The affected miner(s) is/are not enrolled in a Hearing Conservation Program that complies with all elements of 30 CFR 62.150.

For an exposure equal to or exceeding the Action Level (TWA<sub>8</sub> of 85 dBA) up to the Permissible Exposure Level (TWA<sub>8</sub> of 90 dBA), hearing protection must be provided to the affected miner. However, for such exposures, the noise rule does not require miners to wear hearing protectors unless one of the following conditions exists:

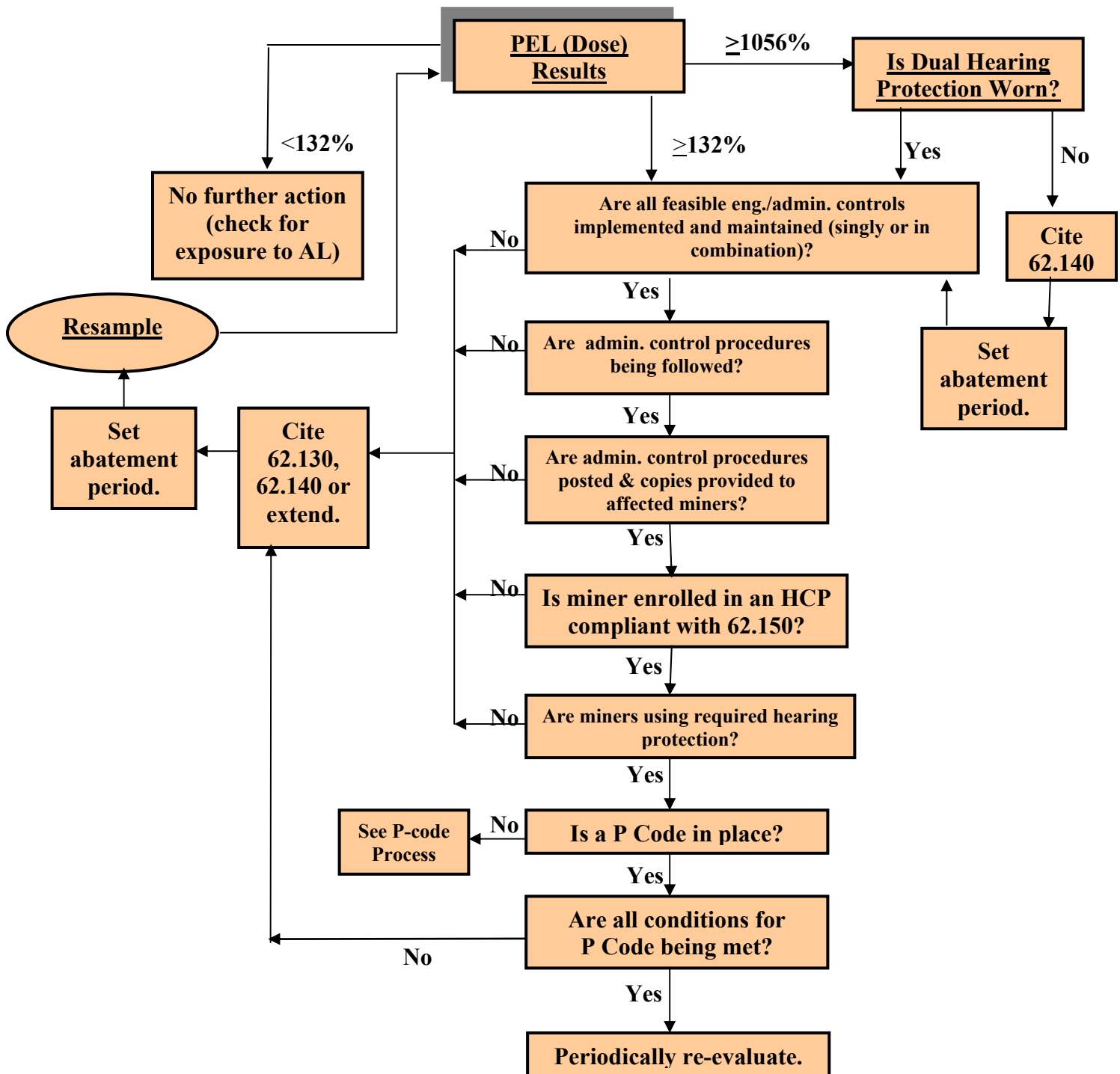
30 CFR 62.160(c) (1) – the miner has incurred a Standard Threshold Shift (STS); or

30 CFR 62.160(c) (2) – more than 6 months will elapse before a baseline audiogram is conducted.

Note: The citable level of 66 percent is based on the action level of 50 percent dose (TWA<sub>8</sub> of 85 dBA) plus an error factor of 2.0 dBA.

Note: 30 CFR 62.170 (2) – The mine operator MAY substitute the use of hearing protectors for the 14 hour quiet period before conducting audiometric testing. MSHA recommends that you strive to keep miner's noise exposures to below the Action Level of 85 dBA during the quiet period.

2. Permissible Exposure Level and Dual Hearing Protection Level, and Maximum Level (Refer to PEL chart shown below)



Determining whether a citation is warranted under 62.130 for exceeding the PEL, or whether a citation is warranted under 62.140 for exceeding the Dual Hearing Protection Level (DHPL), is a two-step process. The two steps are:

1. finding that a miner's full-shift noise exposure is 132% (or 1056% for DHPL) or greater. A dosimeter must be used for this finding; **AND**
2. finding that any one of the provisions of 62.130 or 62.140 have not been complied with (e.g., feasible engineering and administrative controls have not been installed or maintained; miners are not enrolled in a HCP; operator provided hearing protectors are not being worn; administrative controls are not posted on the mine bulletin board, copies have not been provided to affected miners or are not being followed; or any other element of the HCP is not followed).

When the permissible exposure level (PEL), dual hearing protection level, (DHPL) or maximum level as defined in 30 CFR 62.101 has been exceeded, do not issue a citation under 30 CFR 62.130 or 62.140 unless the full-shift noise exposure of any miner is 132 percent or greater: (1056% or greater for DHPL) **AND**

any one of the following conditions exists:

1. MSHA determines that all feasible engineering and administrative controls have **not** been implemented or maintained; or
2. administrative control procedures are **not** being followed; or
3. administrative control procedures have **not** been posted on the mine bulletin board and a copy provided to affected miners; or
4. the miner has **not** been enrolled in a hearing conservation program that complies with all elements of 62.150; or
5. miners are **not** wearing operator-provided personal protective equipment.

Miners **MUST WEAR** hearing protectors when their exposure exceeds the PEL **despite** the use of all feasible engineering and administrative controls. A citation issued for any of the criteria listed above must not identify the miner by Social Security number or the last 4 identifying digits of the miner's Social Security number. Identification should be made by section identification number, occupation code, or other data such as "right side roof bolter." A statement must also be included that personal hearing protection must be worn until the exposures are reduced to or below the PEL and/or dual personal hearing protection must be worn until the miner's exposure is reduced to or below the dual hearing protection level (DHPL). Where the action level has been met or exceeded, a statement indicating the elements of the Hearing Conservation Program that have not been implemented must be included in the body of the citation.



### **3. Citations and Orders**

The operator will be cited separately for each overexposed miner. For example, at mills and preparation plants, where there are multiple noise sources, such as chutes, crushers, and screens, separate citations will be issued for each miner found to be overexposed. Likewise, at surface and underground mines where there are multiple noise sources such as bulldozers, loaders, haul trucks, etc., separate citations will be issued for each miner found to be overexposed.

However, if there is a single noise source causing an overexposure to numerous miners and its control would bring all exposed miners into compliance, then only one citation will be issued, provided all of the other requirements of the standard are met. The total number of miners overexposed will be indicated on a single citation. For example, one citation will be issued if an air track drill exposes both the driller and the drill helper to similar noise exposures above the PEL with the number of affected miners indicated on the citation.

For each miner found overexposed, a single citation of either 62.120, 62.130, or 62.140 will be issued with all other Part 62 provisions violated grouped as part of the citation. For example, if a miner's exposure exceeds the PEL and the operator failed to provide training and offer audiometric testing, a single citation of 62.130 will be issued and provisions of 30 CFR 62.150 that were violated will be stated in the body of the citation. Where a citation is pending abatement by either retiring or replacing a piece of equipment that is the source of noise, failure to maintain any controls implemented or to comply with requirements of 30 CFR 62.150 will result in a 104(b) order or a 104(a) citation. Where a mine has been assigned a "P"-code, failure to comply with any of the conditions of the "P"-code, including provisions of 30 CFR 62.150, will result in a separate citation for each miner affected. For example, if three miners exposed to the noise generated from a single piece of equipment that is covered by a "P"-code are observed not wearing hearing protection, three separate citations will be issued.

### **4. Noise Citation Examples**

The following are examples that should be used as guidance when issuing citations:

- a. Based on the results of an MSHA full shift noise sample taken on September 13, 2001, the continuous mining machine operator (036 occupation) working on the 2 South Section received a permissible exposure level dose of 170%. This exceeds the permissible exposure level of 100% plus error factor (or 132%).

The machine was a Joy 12CM-1 model, S/N 563852.

The operator was not wearing a hearing protector. A hearing protector must be provided and worn by the miner operating the continuous mining machine until the exposure is reduced to or below the permissible exposure level.

Section: 62.130(a)  
Gravity: Reasonably Likely  
Permanently Disabling  
S&S

If the miner was wearing a hearing protector, cite:

Section: 62.130(a)  
Gravity: Unlikely  
Permanently Disabling  
Non-S&S

b. Based on the results of an MSHA full shift noise sample taken on September 13, 2002, the laborer (XXX occupation) working in the XYZ Plant received a permissible exposure level dose of 1263%. This exceeds the dual hearing protection level of 800% plus error factor (or 1056%).

The miner was not wearing dual hearing protectors. Dual hearing protectors must be provided by the mine operator and its concurrent use ensured until the noise exposure is reduced to or below the dual hearing protection level. The initial abatement period is to allow time for the mine operator to provide and ensure the concurrent use of dual hearing protectors. After the dual hearing protection requirement is met, actions specified in 62.130 apply, for exposures that exceed the permissible exposure level.

Section: 62.140  
Gravity: Highly Likely  
Permanently Disabling  
S&S

If the miner was wearing dual hearing protectors, cite:

Section: 62.140  
Gravity: Unlikely  
Permanently Disabling  
Non-S&S

c. Based on the results of an MSHA full shift noise sample taken on September 13, 2003, the bulldozer operator (XXX occupation) working in the 001 pit received a noise dose of 84%. This exceeds the Action Level dose of 50% plus error factor (or 66%).

The bulldozer is a Caterpillar D-9 model, S/N 85Q65P2. The miner was enrolled into a hearing conservation program which does not comply with all provisions of 30 CFR 62.150. The provisions not complied include: (1) 62.170 Audiometric Testing and (2) 62.180 Training

The miner was not wearing a hearing protector.

Section:	62.120
Gravity:	Unlikely Permanently Disabling Non S&S

Adequate justification needs to be documented before any subsequent action is issued.

The latest version of the MSHA Citation and Order Writing Handbook contains additional examples of citations, extensions, and terminations for violations of the noise rule.

### M. Violation Abatement Procedures

#### 1. Upon issuance of a citation for a violation of 62.120, Action Level, the following abatement procedures must be followed:

- a. The citation can be terminated when it is determined that the mine operator has enrolled the affected miner(s) in a Hearing Conservation Program that fully complies with all elements of section 62.150.

However, with respect to the audiometric testing provision, the citation can be terminated if the operator has conducted or **scheduled** a reasonable date for implementing audiometric testing, and all other elements of 62.150 are being complied with. This information must be included in the justification for action, when the citation is terminated.

If the operator then fails to **provide** the audiometric testing as scheduled, a full-shift noise sample must be conducted to ensure that the miner(s) is still exposed at or above the action level. If the miner(s) is still exposed at or above the action level, issue a citation under 62.120, stating in the body of the citation that audiometric testing was not provided. If circumstances warrant, this citation should reflect a higher degree of negligence and/or gravity and allow a reasonable abatement period.

If the mine operator fails to abate the citation within the abatement period, re-sample and if a citable action level exposure is found, issue a 104(b) order.

If a 104(b) order is issued, the affected miner(s) must be withdrawn from the “affected area” and the “affected area” portion of the order must list the miner’s

location and occupation. The order cannot be lifted until compliance with all five elements of 62.150 has been achieved. Documentation outlining what actions were taken to terminate the citation is required.

b. A miner may be removed from the HCP when the miner's noise exposure has been reduced below the action level. If an operator is in the process of establishing an HCP but reduces miners' exposures below the action level prior to fully establishing and implementing the HCP, the operator is not required to complete the establishment and implementation of the HCP. However, if miners' exposures equal or exceed the action level at any time, the operator must establish an HCP and enroll affected miners.

### **Seasonal Operations Section**

a. This paragraph applies to terminating citations for violations of the **action level (AL) at seasonal operations only**. When a citation is outstanding at a seasonal operation for equaling or exceeding the action level and it is infeasible for the operator to obtain an audiogram or complete training for affected miners before the mine shuts down, citations will be terminated when the mine operator has implemented all other aspects of the HCP and the operator provides a reasonable date for implementing the remaining elements of the HCP. The information must be included in the justification for action, when the citation is terminated. When the mine reopens, the operator must implement the remaining elements of the HCP, unless the operator has reduced the affected miners' exposures to below the AL.

b. If the operator has not implemented the remaining elements of the HCP, re-sample the affected miner. If the exposure still equals or exceeds the AL, issue appropriate citation (under 62.120), allowing a reasonable abatement period. If the mine operator fails to abate the citation within the abatement period and a full shift dosimeter sample indicates continuing non-compliance with the action level issue a 104(b) order.

### **Portable Operations Section**

NOTE: When the operation or occupation under citation moves to a new location away from the initial mine site, follow procedure in the Citation and Order Writing Handbook [Ch.7, XI (B) (2)].

## **2. Upon issuance of a citation for a violation of 62.130, Permissible Exposure Level, the following abatement procedures must be followed:**

a. The inspector **must** conduct a follow-up full-shift noise exposure sample upon expiration of the abatement time as originally set or extended if feasible noise controls have been implemented which may achieve compliance.

b. If the sample shows compliance:

- (1) The citation must be terminated; and
  - (2) Documentation outlining what actions were taken to terminate the citation is required.
- c. If compliance is not achieved and MSHA determines that additional feasible controls exist:
- (1) Additional engineering and/or administrative controls are required to be installed or implemented to lower the miner's noise exposures further.
- d. If compliance is not achieved and MSHA determines that all feasible engineering and administrative controls have been installed or implemented, and all other requirements of 62.130 have been met (e.g., feasible engineering controls are being maintained, miners are enrolled in an HCP that complies with all parts of 62.150, operator-provided hearing protection is being worn, and administrative control procedures are being followed, have been posted on the mine bulletin board and copies provided to affected miners):
- (1). A P-code will be assigned for MSHA recordkeeping purposes;
  - (2) The citation will be terminated; and
  - (3) The termination language will reference the P-code minimum acceptable engineering and administrative controls and conditions in detail.

For violations of the permissible exposure level, a citation will not be terminated until the operator has complied with each of the following requirements:

- (1). All feasible engineering and administrative controls have been implemented and maintained; and
  - (2). Administrative control procedures have been posted on the mine bulletin board, copies have been provided to affected miners, and the procedures are being followed; and
  - (3). Affected miners have been enrolled in an HCP that complies with **ALL** of section 62.150; and
- e. If the mine operator fails to abate the citation within the abatement period, and an extension of the abatement period is not warranted:
- (1) You must re-sample;
  - (2) If the overexposure is on-going, issue a 104(b) order; and

(3) If a 104(b) order is issued, the affected miner(s) must be withdrawn from the “affected area” and the “affected area” portion of the order must list the miner’s location and occupation. Documentation outlining what actions were taken to terminate the citation is required.

**3. Upon issuance of a citation for a violation of 62.140, Dual Hearing Protection Level, the following abatement procedures must be followed:**

- a. If the operator does not provide the miner with dual hearing protection within the **short** abatement period, and an extension is not warranted, issue a 104(b) order. If a 104(b) order is issued, the affected miner(s) must be withdrawn from the “affected area” and the “affected area” portion of the order must list the miner’s location and occupation. Upon the abatement of the conditions or practices cited in the original citation the order can be terminated. Documentation outlining what actions were taken to terminate the citation is required.
- b. After the miner is provided with dual hearing protection, the mine operator must continue actions to lower miners’ exposures to the PEL, using the 90 dBA PEL dose. The citation should be extended to allow the mine operator time to comply with the requirements of 62.130.
- c. The inspector **must** conduct a follow-up full-shift noise exposure sample upon expiration of the abatement time as originally set or extended if feasible noise controls have been implemented which may achieve compliance.
- d. If it is found that the noise exposure has been reduced to or below the DHPL, but still exceeds the PEL, compliance with 62.130 must still be achieved before the citation can be terminated. (See PEL abatement procedure Section M.2.)

**N. P-codes**

**1. Definition and Use**

MSHA uses the letter “P” as an action code in its database to designate that an overexposure condition remains even though all feasible engineering and administrative controls are in place. Thus, a “P-code” is an administrative device that allows MSHA to track these special overexposure situations. There are two scenarios involving a miner’s overexposure to noise where the use of a P-code would be appropriate:

**a. No Citation Issued**

MSHA determines that a miner’s exposure exceeds the PEL.

1. All feasible engineering and administrative controls have already been put in place and are maintained **and**,

2. All affected miners are enrolled in a Hearing Conservation Program that complies with all elements of 62.150 **and**,
3. Hearing protection is being provided and worn **and**,
4. The mine operator has posted and provided affected miners with copies of any procedures for administrative controls being used.

No citation will be issued and the P-code review process will be initiated. (Appendices 2, 3 and 6).

**b. Citation Issued**

MSHA determines that a miner's exposure exceeds the PEL, **and**

1. All feasible engineering and administrative controls have not been implemented, or are implemented but not maintained; or
2. All affected miners are not enrolled in a Hearing Conservation Program that complies with all elements of 62.150; or
3. Hearing protection has not been provided or is not being worn; or
4. The mine operator has not posted or provided affected miners with copies of administrative controls being used.

A citation will be issued if the miner's exposure still exceeds the PEL. After the mine operator has complied with Part 62, the P-code review process will be initiated (Appendices 2, 3, and 6).

If either scenario exists, P-code documentation must be developed in accordance with the P-code Documentation Checklist (See Appendix 3). Documentation will be coordinated with the field office, district office, technical support and headquarters. Information will be obtained from the operator if it is needed.

This information will then be referred to the District Manager (DM) for a recommendation. If the DM believes a P-code is warranted, the DM reviews the situation in consultation with field enforcement staff, headquarters' officials, and MSHA technical experts. This review includes an evaluation of the circumstances surrounding the overexposure, with particular emphasis on assessing the feasibility and effectiveness of control options. (See Appendix 5.)

## 2. Assignment of a P-code

If MSHA determines that a P-code is warranted, it will be assigned to the miner's occupation. **P-codes ARE NOT ASSIGNED TO SPECIFIC PIECES OF MINING EQUIPMENT OR AREAS OF THE MINE.** The assigned P-code will be transmitted to the mine operator through the District Manager. All P-codes will be identified by a tracking number.

If a P-code is assigned, the mine operator must continue to abide by the requirements in 62.130 and the minimum acceptable engineering and administrative controls and conditions specified in the P-code assignment or citation termination documentation.

District offices will assure that periodic review of the P-code determines that the minimum acceptable engineering and administrative controls and conditions specified are being followed. P-codes can be rescinded if a full shift sample has been taken and,

- a. the operator fails to comply with the specified minimum acceptable engineering and administrative controls and conditions; or
- b. the sample demonstrates that the operator has reduced miners' exposures to or below the PEL; or
- c. new feasible technology becomes available and the mine operator refuses to implement the technology; or
- d. any of the requirements of 62.130 are not complied with.



## APPENDIX 1

## QUEST Q-200/300 OPERATING PROCEDURES

**A. BATTERY CHECK**

1. Turn the dosimeter on by pressing the **MENU/ON/OFF** key. After counting down, the display will read “**ON**” and “**PAUSE**”.
2. Assure that the “**LOBAT**” indicator is not visible in the display. If it appears, you have less than 8 hours of battery life and it should be replaced. **MAXIMUM** – Two Samples per Battery.

**\*\*NOTE\*\*RESET INSTRUMENT TWICE AFTER INSTALLING NEW BATTERY.  
(Failure to do this may result in lost samples.)**

- a. The instrument will turn on automatically when a new battery is inserted.
- b. Reset the instrument following Section B1-B3 below.
- c. Turn the dosimeter off by pressing and holding the **MENU/ON/OFF** key until the screen clears.
- d. Turn the dosimeter back on and follow Section B1-B3 below.

**B. RESETTING THE INSTRUMENT – CLEARING STORED DATA**

**\*\*NOTE\*\*THIS MUST BE DONE PRIOR TO EVERY SAMPLE AND WILL ERASE ALL PREVIOUSLY STORED DATA IN THE UNIT**

1. With the unit on, press and release the **MENU ON/OFF** key until “**rES5**” is displayed.
2. Press and hold the **ENTER** key for 5 seconds as “**rES5**” counts down to “**rES1**”. Release the button when the display shows “----“and the display will show “**ON**” and “**PAUSE**”.
3. The data in memory will be cleared.
4. The unit is ready for calibration or to be turned off for later use.

**C. PRE-SAMPLING CALIBRATION**

1. Turn the dosimeter on, if not already on, by pressing the **MENU ON/OFF** key.
2. To calibrate, with the unit in “**ON**” and “**PAUSE**” mode, press and release the **ARROW UP ▲** key. The display will show “**114.0 CAL**”.
3. Turn on the calibrator and carefully place the microphone into the adapter ring.
4. Press **RUN/PAUSE** key. The display will show “**CAL**” then “**PASS**” then “**114.0 CAL**” when complete. If calibration fails, “**FAIL**” will appear in the display. The unit must be turned in for repair.
5. Press the **MENU ON/OFF** key to exit calibration mode. The unit is now ready for a noise sample or to be turned off for later use. Record the “**PASS**” in your notes.

**\*\*NOTE\*\*The windscreen should be used to conduct a VALID noise sample.**

**D. CONDUCTING A NOISE SAMPLE**

1. Turn dosimeter on, if not already on, by pressing the **MENU ON/OFF** key. The display will read “**ON**” and “**PAUSE**”.
2. Press the **RUN/PAUSE** key to begin the sample. The display reads “**ON**” and “**RUN**”.
3. Replace the cover and put the dosimeter on the miner.
4. Press the **RUN/PAUSE** key to end the sample. The display reads “**ON**” and “**PAUSE**”.
5. Data Retrieval.
  - (a) If results will be retrieved when you return to the office, the instrument may be turned off. The data will be stored in memory until cleared using **Section B. GO TO Section E1.**
  - (b) It is preferable for results to be retrieved at mine site, **GO TO Section E2.**

**E. OBTAINING THE SAMPLE RESULTS**

“**I**” = **DOSIMETER I** = 85dBA ACTION LEVEL

“**II**” = **DOSIMETER II** = 90dBA PERMISSIBLE EXPOSURE LEVEL (PEL) AND 90 PEL MAX

1. Turn on the instrument, if not already on, by pressing the **MENU ON/OFF** key. The display will read “**ON**” and “**PAUSE**”.
2. The **Total Sample Time** is obtained by pressing the **TIMES** key.
3. Press **ARROW UP ▲** or **ARROW DOWN ▼** key until “**RT**” (**Run Time**) is displayed.

**Ensure the readings obtained in the following step are NOT “PT”(Pause Time) or “UL” (Upper Limit Time). Use either Dosimeter I or II. The time will be the same.**

4. The number of hours is displayed as “**XX:hr**”. Press **ARROW UP ▲** or **ARROW DOWN ▼** key until the number of minutes and seconds is displayed as “**XX:XX**”. Record Total Sample Time in notes/form.
5. Press the **DOSE** key until **Dosimeter “I**” is displayed. Record the **85 Action Level Dose** in notes/form.
6. Press the **DOSE** key until **Dosimeter “II**” is displayed. Record the **90 PEL Dose** in notes/form.

Note: Dosimeter I Dose will always be greater than Dosimeter II Dose.

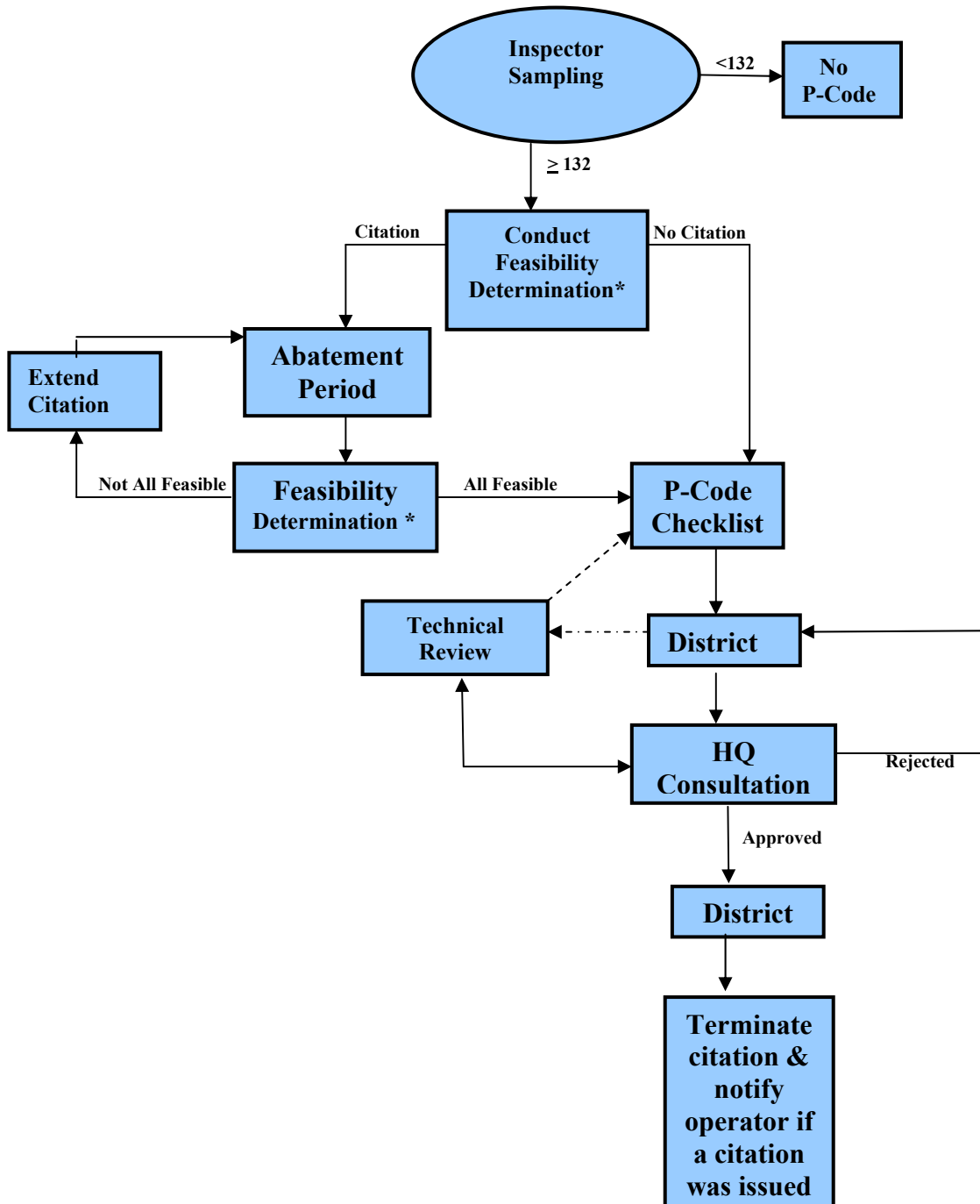
7. **For Coal**, Press the “**LEVELS**” key then press the **ARROW UP ▲** or **ARROW DOWN ▼** until “**MAX**” is displayed. Record the **90 PEL Max** under item “**X**” on 2000-84. (use no decimals ex 123.9 = 123 dBA).
8. **For Coal**, Press the “**TIMES**” key then press the **ARROW UP ▲** or **ARROW DOWN ▼** key until “**UL**” is displayed. Follow STEP 4 above and record the **UCL (Upper Control Limit) Time** in minutes under item “**Y**” on Form 2000-84.
9. Press the **AVG** key until Roman numeral “**I**” is displayed. Press **ARROW UP ▲** key until “**TWA**” is displayed on the left. Write the number in the Health Field Notes. Press **AVG** key once and record **TWA** reading for Roman Numeral “**II**” in Health Field Notes. (The TWA dBA value is the same as Table 62-2 and must be included in the body of the citation if there is an overexposure.)

**F. POST SAMPLING CALIBRATION CHECK****Use same calibrator for pre and post checks**

1. Press the **MENU ON/OFF** key to exit Section E instructions or to turn unit on, if not already on.
2. Turn on the calibrator and carefully place the microphone in the adapter ring.
3. Press the **LEVELS** key until **Dosimeter “I” or “II”** Is displayed.
4. Press the **ARROW UP ▲** or **ARROW DOWN ▼** key until **“SPL” (Sound Pressure Level)** is displayed.
5. The display should read **“114.0”** within +/- 1.0 dBA. If not, the sample results are not valid. Document the validated 114 dBA SPL value.

**Remove battery between sampling.**

P-Code Process



\* Determine that all other parts of 62.130 have been met.

APPENDIX 3

P-Code Documentation Checklist

P-code Number \_\_\_\_\_  
 Date \_\_\_\_\_  
 District & Field Office \_\_\_\_\_  
 District Contact \_\_\_\_\_  
 Operator/Contractor Name and I.D. No. \_\_\_\_\_

ITEM	a	b	DOCUMENTATION
A.			<p><b>What is the origin of the P-code request?</b></p> <p>a) Mine inspector request based on a citation                      b) Mine inspector request without a citation</p>
ITEM	YES	NO	<p><b>Information for Items B - I to be provided</b></p>
B.			<p><b>Is a brief narrative describing the operation and working conditions that resulted in an overexposure included?</b> If so, please attach.</p>
C.			<p><b>Are there occupational / tasks details such as:</b></p> <p>What is the occupation(s)?                      What is the job / occupation code(s)?                      What is the occupation description?                      Please provide a full description of tasks involved with the miner's work.</p>
D.			<p><b>Is the noise overexposure linked to a discrete piece or pieces of equipment?</b></p> <p>If yes, is the following information listed for each piece of equipment?</p> <p>a) Manufacturer's name                      b) Manufacturer's address                      c) Manufacturer's telephone number                      d) Type and model of machine                      e) Year Manufactured                      f) Serial Number</p> <p>Is the noise overexposure linked to a specific area(s) of the mine? If so, list the area(s) and note why there is a concern.</p>

E.		<p><b>Is a description and effectiveness of the engineering controls currently being used included?</b></p>
F.		<p><b>Is a description of engineering controls considered, but not used, included?</b></p> <p>Are reasons included why the engineering controls were not used and /or considered infeasible?</p>
G.		<p><b>Is a description and effectiveness of the administrative controls currently being used included?</b></p>
H.		<p><b>Is a description of administrative controls considered, but not used, included?</b></p> <p>Are reasons included why the administrative controls were not used and /or considered infeasible?</p>
I.		<p><b>Are any consultant’s reports included with operator documentation?</b></p> <p>If yes, are the following included?</p> <ul style="list-style-type: none"> <li>a) Test data and results</li> <li>b) Recommendations and conclusions</li> </ul>
<p><b>Information for Items J - O to be provided by MSHA District</b></p>		
J.		<p><b>Has a citation been issued?</b></p> <p>If yes, has the following information been provided and/ or conditions met?</p> <ul style="list-style-type: none"> <li>a) Citation</li> <li>b) Citation Extensions</li> <li>c) Inspectors field notes</li> <li>d) Compliance has not been achieved</li> </ul> <p>Is the citation based on:</p> <ul style="list-style-type: none"> <li>a) All feasible engineering and administrative are not in place</li> <li>b) Operator-provided hearing protection is not being worn by miners</li> <li>c) Affected miners are not enrolled in a HCP</li> <li>d) Administrative control procedures are not posted on the mine bulletin board or affected miners have not been provided a copy of administrative control procedures</li> </ul> <p><b>If no citation has been issued, then have the following conditions been met?</b></p> <ul style="list-style-type: none"> <li>a) Noise sampling indicating exposure &gt; PEL</li> <li>b) All feasible engineering and administrative controls in place/maintained</li> <li>c) Copy of administrative control procedures posted and provided to all affected miners</li> <li>d) All affected miners enrolled in a compliant Hearing Conservation Program that meets all the aspects of 62.150</li> <li>e) Operator-provided hearing protection has been provided and is being worn by miners.</li> </ul>

K.		<p><b>Has Technical Support been involved?</b></p> <p>If yes, is the report/ recommendations attached?</p> <p>If no, are there Technical Support reports available on this class of equipment?</p> <p>Has Technical Support provided consultants' reports obtained from other sources?</p>
L.		<p><b>Has the MSHA Noise Source Identification Team been involved?</b></p> <p>If yes, are the report / recommendations attached?</p>
M.		<p><b>If engineering/ administrative control options were provided by the inspector or specialist and not implemented, were reasons provided why not and what were they?</b></p>
N.		<p><b><u>Noise Data</u></b></p> <p>Has a Q-300 noise dosimeter sampling <b>and time motion study</b> been conducted and attached?</p> <p>Have sound level readings been taken and included?</p> <p>If yes, what format?    Table ___        Sketch ___        Other ___</p> <p>What was the overexposure reading determined by MSHA sampling?</p>
O.		<p><b>District Approval</b></p> <p>Has a cover memo been included from the District Manager requesting a P-code?</p>
		<p><b>Item P for Headquarters use</b></p>
P.		<p><b>Does the report provide the needed information to evaluate the P-Code request?</b></p> <p>If no, list the deficiencies.</p> <p>If yes, what is the final determination and conditions for the P-code?</p>
Q.		<p><b>Administrator's Action</b></p> <p>Has the Administrator sent a memo to the District advising of the P-code determination, conditions and number?</p> <p>If no, why not?</p>