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Coal Mine Health Inspection Procedures

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CHAPTER 1 - RESPIRABLE DUST

COAL MINE HEALTH INSPECTION PROCEDURES HANDBOOK

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Chapter 1

RESPIRABLE DUST

I. Purpose

The purpose of this chapter is to establish procedures and guidelines for conducting respirable dust sampling inspections, evaluating sampling results, establishing and removing sampling entities, establishing reduced dust standards due to quartz, and monitoring the operators' respirable dust control and sampling programs. This document supersedes the previously issued Chapter 1.

II. Authority

Section 103(a) of the Federal Mine Safety and Health Act of 1977 (Mine Act) requires authorized representatives of the Secretary to make frequent inspections for the purpose of "determining whether there is compliance with the mandatory health or safety standards..." Parts 70, 71, and 90, Title 30 of the Code of Federal Regulations, require mine operators to maintain dust concentrations at or below the applicable standard in the mine atmosphere where miners work or travel. Sections 72.620 and 72.630 require mine operators to use effective drill dust controls; and Section 75.362(a)(2) requires mine operators to conduct on-shift examinations to ensure compliance with the dust control parameters stipulated in the approved mine ventilation plan. Under the Mine Act, MSHA has responsibility for determining whether an operator is complying with these standards.

III. Application of Respirable Dust Standards on Mechanized Mining Units (MMUs)

A reduced respirable dust standard associated with an MMU identification number will be continued on a new (or different) MMU if the continuous mining machine or other equipment is replaced and meets the guidelines in Volume V § 70.207(f)(1) of the Program Policy Manual for a different MMU identification number. Reduced respirable dust standards based on quartz may only be eliminated based on: 1) MSHA respirable dust samples indicating quartz levels have been reduced to 5% or below or 2) the MMU is permanently removed from the mine (abandoned) and no MMU is placed in producing status to replace the abandoned MMU or maintain the number of active MMUs. If an MMU identification number is changed due to replaced equipment, the applicable reduced standard shall be input into the computer record and continued for the new (or different) MMU since production is still occurring in the coal mining environment where excessive quartz was previously measured.

IV. Sampling Inspections

Respirable dust sampling inspections will be conducted in accordance with the procedures that follow.

The objective of sampling inspections is to determine:

The dust levels in the work environment to which miners are exposed.

- Whether the operator is complying with the on-shift examination provisions of 75.362(a)2).
- Whether the operator is complying with either the dust control provisions of the approved mine ventilation plan for underground mines, or with the respirable dust control plan at surface mines, or for a Part 90 miner.
- Whether the dust control measures stipulated in the approved mine ventilation plan or in the respirable dust control plan maintain dust levels at or below the applicable standard.
- If the dust control measures actually in use differ from those stipulated in the approved plan.
- If conditions and activities within the work environment on the day of sampling are compatible to those experienced by miners during non-sampling periods.
- Whether the proper occupation has been assigned as the designated occupation (DO) for operator sampling.
- If miners are being exposed to excessive levels of respirable crystalline silica (quartz).
- If other areas/work positions need to be monitored by the operator on a bimonthly basis.
- Whether the operator is complying with the drill dust control standards (§72.620 and §72.630).

A. Types of Entities Sampled

1. Mechanized Mining Units (MMUs)

A full-shift sample will be collected from the environment of at least five (5) occupations, if available, on each MMU. These will include the designated

occupation (DO) and any roof bolter occupations on the MMU being surveyed that have not been established as designated areas (DAs).

When sampling the DO, the sampler unit device will remain in the **environment of the DO** during the entire sampling shift (whenever the mining equipment is in operation) rather than with the individual miner, even when miners change positions or alternate duties during the shift.

A full-shift intake air dust sample will also be collected for each MMU. Since these are intake air samples, the sampler unit will remain in the intake airway within 200 feet of the working face(s). The 1.0-mg/m³ dust standard will apply to these samples.

2. **Designated Areas (DAs)**

A full-shift sample will be collected from each DA. Since these are area samples, the sampler unit will remain at the designated location specified, or to be specified in the operator's approved ventilation plan, or as specified in 75.350(b)(3), or stipulated in the petition for modification (two-entry mining systems) allowing the use of belt air. The 1.0-mg/m³ dust standard will apply to intake air DAs.

3. **Part 90 Miners**

A full-shift sample will be collected from the environment of each Part 90 miner, except during the 20-day "grace" period following the operator's receipt of notification that a miner has elected to exercise the option. The sampler unit will remain in the **environment of the person** being sampled by placing the sampling device either (a) on the Part 90 miner; or (b) on the equipment that the Part 90 miner operates within 36 inches of the normal working position; or (c) at another location that represents the maximum concentration of dust to which the Part 90 miner is exposed.

4. **Designated Work Position (DWP)**

A full-shift sample will be collected from the working environment of each DWP. The sampler unit will normally remain in the **environment of the work position (occupation) being sampled** rather than with the individual miner, even when miners change positions or alternate duties during the shift. However, if the DWP involves the performance of multiple tasks during the shift (e.g., operating a highwall drill, dozer, and truck for part of the shift), none of which are assumed by another miner, the sampler unit will remain with the miner.

5. **Nondesignated Entities (NDEs)**

A full-shift sample will be collected from the environment of at least three occupations (if available) other than the DWP (non-DWP or NDWP), or, if available, from other active work positions that are currently in "D" status ("bimonthly sampling not required") where the potential for high levels of coal mine respirable or quartz dust may exist (specifically, Occ. 307 - blaster/shooter/shotfirer; Occ. 368 - bulldozer operator; Occ. 382 - high lift operator/front end loader; Occ. 383 - highwall drill helper; Occ. 384 - highwall drill operator; and Occ. 386 - refuse truck driver/backfill truck driver), at each surface mine, surface facility, and surface area of an underground mine. Contract workers exposed to coal mine dust while on mine property also will be sampled. (Refer to Appendix A of this chapter, formerly *Procedure Instruction Letter (PIL) I99-V-7*, for additional guidelines regarding the sampling of contract employees and construction sites at coal mines.) The sampling device will remain with the occupation, or with the individual miner as described under DWP, or at the location in the nondesignated area (NDA) selected by the inspector.

B. Frequency of Sampling

1. Underground Mines

All entity types will be sampled quarterly or as stipulated below. The number of sampling inspections to be completed during a quarterly period will be based on the average number of MMUs in producing status on the 1st of each month of the applicable quarter.

- a. MMUs - Inspectors will sample approximately 25 percent of MMUs during off-shift (i.e., other than day shift) and/or weekends at mines that produce material during off-shifts and/or on weekends. For tracking purposes, the minimum number required to be sampled will be based on the average number of MMUs in producing status on the 1st of each month of the affected quarter that work multiple shifts or weekends.
- b. DAs inby the section dump point and other DAs that can be sampled concurrently with MMUs. All outby DAs will be sampled once each year.
- c. Intake air (NDAs).
- d. Part 90 miners.

- e. NDEs (NDAs) that can be sampled concurrently with outby DAs (includes active DAs in "D" status or "sampling not required") will be sampled at the same frequency as stipulated in B.1.b. above.

2. **Surface Mines, Surface Facilities, and Surface Areas of Underground Mines – Normal Sampling**

Surface mines, surface facilities, and surface areas of underground mines in producing status will be sampled the equivalent of once every 6 months. For tracking purposes, the minimum number required to be sampled will be based on the average number of surface mines, surface facilities, and underground mines in producing status on the 1st of each month during the applicable 6-month period. Inspectors will sample approximately 25 percent of surface mines, surface facilities, and surface areas of underground mines during off-shifts and/or weekends if production or normal work activity occurs during off-shift and/or weekends.

NOTE: Sampling at surface mines should be conducted during dry periods in order to accurately determine the dust concentrations to which miners are normally exposed. If any significant rainfall occurs during any sampling inspection, the sample(s) are to be voided by the inspector.

The following entity types will be sampled the equivalent of once every 6 months, unless noted otherwise:

- a. DWPs (includes DWPs in "D" status or "sampling not required").
- b. Part 90 Miners.
- c. NDEs (NDWPs). This does not apply to NDEs at surface facilities (excluding preparation plants) or surface areas of underground mines with fewer than 20 employees and no active DWPs or history of respirable dust problems; these facilities and surface areas will be sampled at least once annually.

C. Monitoring of Operator-Collected Samples

Inspection personnel will monitor at least one of the required 5 compliance samples collected to abate at least 10% of the excessive dust citations. This monitoring will cover the entire sampling shift and include the preparation of the sampler at the start of the shift, the completion of the dust data card, and capping or securing of the cassette at the end of the shift. The inspector will also determine if the sampling pumps utilized at the mine are being properly calibrated, cleaned, and inspected as required by 30 CFR §70.204, 71.204 and/or 90.204. When monitoring operator sampling, the inspector will

measure the parameters specified in the approved ventilation plan and record the findings on MSHA Form 2000-86.

If the operator utilizes a contract sampler, the sampling equipment must still be checked by the inspector prior to the start of sampling to determine if the unit(s) meet the requirements of 30 CFR §70.204, 71.204 and/or 90.204. MSHA has previously notified the mining industry that the requirement for performing these checks "...immediately before each sampling shift..." to be no more than 3 hours before the sampling shift.

- a. DWPs (includes DWPs in "D" status or "sampling not required").
- b. Part 90 Miners.
- c. NDEs (NDWPs). This does not apply to NDEs at surface facilities (excluding preparation plants) or surface areas of underground mines with fewer than 20 employees and no active DWPs or history of respirable dust problems; these facilities and surface areas will be sampled at least once annually.

The following information will be documented in the inspector's notes while conducting the monitoring of an operator collected sample:

- All data from the Dust Data card for the sample being monitored.
- Citation number that the sample is being credited toward.
- Note observation of the Certified Person performing pre-sampling shift checks of the sampling equipment:
 - ✓ Certified Person number performing checks
 - ✓ Did check interior of cyclone, vortex finder, grit pot and o-rings?
 - ✓ Did check pump condition for cracks and fully legible approval labels?
 - ✓ Check battery voltage under load?
 - ✓ Check the tubing – clean and free of leaks?
 - ✓ Check clamping and alignment of cassette and cyclone assembly?
- Note the time sampling unit started.
- Note time sampling unit entered underground mine or located on DWP.
- Note miner's name wearing sampling unit if applicable.
- Note if a Certified Person turned the pump on and placed pump at the sampling location.

- Note if a Certified Person performed the shift checks of flow rate.
- Note how the sampling unit was transported from the sampling location at the end of the 8-hour maximum sampling time.
- Note if Certified Person turned the sampling unit off.
- Note observation of Certified Person completing the Dust Data Card and packaging the sample for transmittal to MSHA.

The District will assemble a package that includes: a copy of the completed 2000-86s, a legible copy of the inspector's notes, a copy of the citation, a copy of the computer report with all 5 samples collected for this citation, a copy of any extension, abatement or order issued as a result of these samples. This package will be provided to the Chief, Division of Health within 15 days of the end of the calendar quarter in which all data is available. This package can be mailed hard copies or submitted as an e-mail with electronic copies of all data.

D. Pre-Inspection Reviews

MSHA records (e.g., Respirable Dust Emphasis Program, operator sampling program monitoring results, weekly listing of inspector and operator samples containing more than 100 $\mu\text{g}/\text{m}^3$ (0.100 mg/m^3) of quartz, (refer to Appendix B of this chapter, formerly *Procedure Instruction Letter* (PIL) I99-V-5), listing of entities on a reduced standard, etc.) and the Uniform Mine File notebook shall be reviewed prior to beginning the inspection at the mine.

E. Sampling Inspection Procedures

The following procedures will be followed during respirable dust sampling inspections:

1. Prior to the mine visit, check the battery voltage (minimum of 4.8 volts) and flow rate (2.0 liters per minute) of the MSA Model Escort ELF® sampling pump under load. The test results will be documented in the inspector's notes or in a notebook maintained in the field office.
2. Use properly maintained and calibrated sampler units (i.e., in accordance with IR 1240 [1996] at intervals not to exceed 200 hours of use) that have been cleaned and examined prior to use, and assembled correctly according to 30 CFR Parts 70, 71, and 90. The units will be secured in accordance with established procedures to minimize tampering.
3. Use only filter cassettes that are preweighed to the nearest 0.001 mg. The dust data card accompanying the filter cassette will be "blue" and be stamped with the Field Office number in the lower, right-hand portion of the data card.

4. Secure one **control** filter cassette for **each** respirable dust sampling inspection and note the cassette number in the inspector's notes. The control filter will be used to adjust the resulting weight gain obtained on each exposed filter capsule. That is, any change in weight of the control filter capsule will be subtracted from the change in weight of the exposed filter capsule. Therefore, the control filter cassette must have the same **preweight date** (noted on the front of the dust data card) as all the other cassettes to be used for sampling on the same inspection.
 - a. **Do not** remove the plugs from the control filter cassette. Mark the dust data card with a large capital "C" for '**CONTROL**' in the middle of the card and enter a "9" in the 'Type of Sample' box. Also complete Items 2 (Mine ID), 6 (Date Sampled), and 13 (Certified Person) and stamp the Field Office number in the lower right-hand portion of the data card.
 - b. **Carry the control filter cassette in a shirt or coverall pocket during the sampling inspection;** keep the control filter cassette together with the exposed cassettes after sampling; and treat the control filter cassette the same as the exposed cassettes after returning to the office or laboratory.

NOTE: If the above procedures are not followed, the sampling results cannot be used for enforcement purposes. However, if all sample results are less than the applicable standard and the control filter is invalid, then the survey may be considered complete.

5. Upon arrival at the mine, the inspector will discuss with mine management and representatives of the miners the purpose of the inspection activity, stressing the need to have dust controls in place, examined in accordance with § 75.362(a)(2), and functioning properly on every production shift, and to have dust samples that reflect dust concentrations in the work environment to which miners are typically exposed. During this time, the inspector will confer with miners and mine management to discuss the results of any previous MSHA dust inspections and, if currently on a reduced standard, explain its significance. The inspector will also determine the length of the shift and solicit cooperation from the miner in wearing the sampler unit. The shift length will be noted in the comments section of the 2000-86 completed during this inspection. If a miner objects to wearing the sampler unit, determine the reasons for the objection. Explain the objectives of sampling inspections (refer to page 1.1). If the cooperation of the miner cannot be obtained, the sampler will be carried to the miner's work site and placed within 36 inches in by the miner's normal work position or at a location that will measure the maximum dust concentration to which the miner is exposed.

In addition, the inspector will take the following actions:

- a. Explain to the miners that when either the DO (in particular at longwall MMUs) or DWP is being sampled, the sampler unit must always remain in the environment of the DO or DWP rather than with any single individual miner, even when miners change positions or alternate duties during the shift. However, if the DWP involves the performance of different tasks during the shift (operating a highwall drill, dozer, and truck for part of the shift), none of which are assumed by another miner, the affected miner will wear the sampler the entire shift.
 - b. Make certain that when attaching the sampling head assembly to the miner's clothing, the inlet of the cyclone is facing away from the body of the worker. Instruct the miner not to cover the sampling head (cyclone inlet) with a coat or other garment. Care must be exercised to prevent the sampling unit from presenting a safety hazard. Attach the unit so that the sample tubing will not catch on equipment or other objects.
 - c. Emphasize the need for the miners whose occupations will be sampled to continue to work in a routine manner and to report any unusual occurrences during the sampling period that may affect the validity of the sample.
 - d. Inform the miners of when and where the sampler unit will be removed.
 - e. Distribute health hazard information cards or other educational material. Talk to miners about black lung and silicosis, and the importance of complying with approved dust control parameters on every production shift. Encourage miners to participate in the NIOSH administered x-ray program and discuss the operator's responsibilities under this program. Also, share with the mine operator information on dust controls and provide whatever assistance is requested to enable the mine operator to maintain compliance with applicable standards on a continuous basis.
 - f. Determine if the following items are posted on the mine bulletin board:
 - 1) latest results of operator bimonthly sampling (excluding Part 90);
 - 2) current ventilation plan and/or respirable dust control plan; and
 - 3) the approved x-ray plan or NIOSH notice for medical examinations (underground mines only).
6. Record in the inspector's notes the cassette number, the time the sampler unit was started, and location of the sampler by sample type and occupation code for each sample collected.

7. Check the pump flow rate when first turned "ON" and before turning it "OFF" at the end of the shift. On-shift checks of the sampler units will be made as frequently as necessary (no less than beginning, middle, and end of shift) to ensure that:
 - a. The pump is operating properly and at the correct flow rate;
 - b. The pump has remained in the same environment as recorded earlier;
 - c. The pump has not been tampered with;
 - d. The sample tubing is not being pinched and connections are not leaking; and
 - e. The sampling head (cyclone inlet) is not covered with a coat or other garment.

If the pump is not operating properly when first turned "ON" (after allowing the pump to reach the set point value), it shall be adjusted using the flow rate control (↑ and ↓) switch buttons. If the proper flow rate was not being maintained during the final check, the sample should be voided by entering the code "MFP" in the "Void Code" box located in the lower right-hand portion of the dust data card. Improper flow rate is indicated if the actual flow rate displayed in the readout window is either less than 1.9 LPM or greater than 2.1 LPM or if the Flow Fault LED is "ON." The inspector's notes will show the MSHA pump property number, the time of the examination, and whether the flow rate readout is within the acceptable range or the Flow Fault LED is "ON."

8. Accompany the miners to the work area and remain on the section or with the Part 90 miner to assess the following:
 - a. To ensure that the sampler units are located in the correct environments.
 - b. To observe working conditions and activities, and to document any changes that occur during the sampling shift which may affect the level of respirable dust to which miners are exposed.
 - c. To observe miners during the shift to verify the job classifications previously recorded.
 - d. To determine from discussions with a representative number of miners whether working conditions and activities during sampling by either MSHA or the operator are representative of non-sampling periods, and document any relevant findings in the inspector's notes. Since any shift may exhibit wide variations in working conditions and activities, it should be determined if these are "typical" conditions.

Authorized Representatives (Inspectors) must remain in the area where sampling (plan evaluation, routine respirable dust, quartz evaluation, citation/order abatement, monitoring inspection) is being conducted to ensure the samples are representative of the normal mining activities. The inspector will observe enough of the sampling activity to ensure that the sampling units are maintained in the environment being sampled, the pump flow rate is maintained, sampling units are not abused, normal mining activities are taking place, a determination of production level is made, dust control practices and work activities are properly documented, etc. The inspector will not perform other activities that will require being away from an MMU (section dumping point and inby) more than 15 minutes during the sampling shift. This requirement, however, does not prevent the inspector from performing other work on the MMU being sampled while conducting the sampling inspection. An inspector trainee under the direction of an Inspector may assist in the collection of respirable dust samples if the trainee has the MSHA certification to collect respirable dust samples. The Inspector and the trainee must remain on the specific MMU where sampling is being conducted. A trainee may not be left on an MMU while the inspector performs work on a different MMU – this includes “super-section” MMUs directly adjacent to the MMU being sampled, outby areas of the mine, or another mine. The inspector has the ultimate control over what level the trainee will participate in the sampling activities, including who will sign the dust data cards as the certified person, perform the checks of the sampling units during the shift, filling out the data cards, etc. Normally, the inspector will accompany the miners out of the mine except as noted in Item 15 of this section.

9. When sampling DWPs and outby DAs, an inspector normally should not remain with the entity for the entire sampling shift. Instead, the inspector should spend sufficient time to either properly place the sampler unit in the environment to be monitored or verify its location, record its location in the inspector’s notes, and make the on-shift pump checks. Additionally, the inspector should observe and record the operating conditions and work activities in the area, the controls in use with a general description and whether or not they seem adequate, and potential sources of dust exposure. The inspector must remain at the mine site while sampling is being conducted.

If the work position to be sampled involves the highwall drill operator, the inspector will first determine if the mine operator is in compliance with the drill dust control standard (72.620). (Refer to Appendix C of this chapter, formerly *Procedure Instruction Letter* (PIL) I98-V-1 for specific guidelines regarding enforcement of this standard.)

- a. Normally, the inspector should not continue sampling when visible dust is present, unless the drill is equipped with a properly maintained pressurized environmental cab and the only person potentially exposed to the drill dust is inside the cab. In such cases, the environment inside the cab shall be sampled

to determine if the pressurized cab is equipped with an effective air filtration system that is being properly maintained.

- b. In the cases where the dust control appears to be effective, samples should be collected from work positions where miners are exposed to drill dust to determine if the operator is complying with the respirable coal mine dust standard.
10. If during the shift an inspector observes another entity being sampled by the mine operator, the following steps will be taken:
- a. Record the location and general condition of the sampler unit, the time the sampler was observed operating, and the cassette number in the inspector's notes;
 - b. Check whether the pump is operating at the proper flow rate and, if not, record the company's pump identification number;
 - c. Document any abnormal conditions that exist in the sampling area and note worker activities;
 - d. Determine who is responsible for making the required pump checks and make an attempt to determine whether such checks were actually performed during the second and last hour of pump operation by a certified person;
 - e. Do not discuss his/her observations with the mine operator while on site; and
 - f. Inform the responsible field office supervisor so that appropriate follow-up enforcement action can be taken if the sample in question is transmitted to MSHA as a valid sample. This may involve meeting with the operator to discuss findings, initiating a special investigation, or conducting a monitoring and/or sampling inspection, etc.
11. Intake air samples taken at DA locations by inspectors or mine operators will be coded as "Type 3" samples on the dust data card, and the entity block (Block 10) should be identified using the "801-0 through 899-9" numbering series in the following manner:
- a. The first digit will always be "8." This indicates the sampling entity is located in intake air and is recognized by the computer for the purpose of applying the 1.0 mg/m^3 intake air standard.
 - b. The next two digits, in this case "01," indicate that this intake air "DA" is associated with MMU 001-0.

- c. The fourth digit, in this case "0," indicates that this is the first intake air DA associated with a particular MMU, and is useful, especially, in identifying MMUs with multiple intake air "DAs," except when the DA sampling entity has been established as a result of a petition for modification. In only those instances, the fourth digit will be a "9" to denote this fact.
 - d. Other "intake air" samples taken by inspectors from areas that are not a DA will be coded as "Type 7" (in Block 9) on the dust data card, and the entity number of the associated MMU (i.e., 001-0 thru 099-0) will be entered in Block 10.
12. The District Manager must be able to reliably ascertain whether the approved ventilation plan's minimum control parameters (e.g., air quantity, number of sprays, water pressure, etc.) allow for effective and consistent control of respirable dust and methane. Data based on samples collected when control parameters significantly exceeded the ventilation plan minimums (and/or when production is significantly below normal levels) cannot reasonably or reliably serve as the basis for justifying the continued approval of a ventilation plan.

Since a primary sampling objective is to assess the effectiveness of the control parameters in the approved ventilation plan, when an operator is operating with any parameters that exceed 120% of the quantities/volumes specified in the approved ventilation plan, the inspector will inform the operator that he/she may adjust the parameters to levels that do not exceed 120% of the specified quantities/volumes. If a plan specifies a range of values as a control parameter, the lowest value in the range is the quantity/volume to which the 120% factor will be applied. The inspector will inform the operator that, if such adjustments are not made, the District Manager may determine that the minimum plan parameters do not reliably assure protection for all miners over all shifts, even if the MSHA sampling results do not exceed the applicable dust standard.

If the operator adjusts the control parameters as requested, and the MSHA samples indicate compliance with the applicable respirable dust standard, the District Manager will consider this data as evidence, but not definitive proof, that the approved ventilation plan's minimum control parameters allow for the effective and consistent control of respirable dust and methane. If the MSHA samples indicate **noncompliance** with the applicable respirable dust standard, or there are **individual occupation samples** that exceed the applicable dust standard, the District Manager will consider this data as evidence that the approved ventilation plan's minimum control parameters are insufficient to assure the effective and consistent control of respirable dust and methane.

If the MSHA sampling results and other relevant data/information support a determination that the plan parameters are inadequate to reliably and consistently

protect each miner from exposure to respirable dust concentrations that exceed the applicable standard, the District Manager will undertake the 3-step process to gain modification of the existing ventilation plan. The first step of the 3-step process is a notification to the operator of the District Manager's determination and rationale. If the MSHA samples indicate noncompliance with the applicable respirable dust standard, or there are individual occupation samples that exceed the applicable dust standard, the modified plan should include parameters that exceed those measured by the inspector during the sampling inspection. Additional controls, such as those listed in section IV H. of this Chapter, and modification or elimination of deep-cut systems, may also be required to help ensure miners are protected against respirable dust overexposures.

If the plan being evaluated stipulates the use of blowing or exhausting face ventilation in any entry at any time, each type of face ventilation should be evaluated separately or the use of all blowing face ventilation must be evaluated to retain the option in the approved plan. For MMUs that specify in the plan specific entries that will use blowing face ventilation and specific entries that will use exhausting face ventilation, this combination of face ventilation must occur during the sampling shift so that the MSHA sampling reflects these conditions.

It is important that the inspector's notes and MSHA Form 2000-86 accurately reflect the dust controls being used and the actual quantities measured. This will serve as supporting documentation when plan changes are required and/or enforcement actions are taken.

13. At least **twice** during the sampling shift, the inspector will verify that **all** dust control parameters stipulated in the approved ventilation plan are in place and functioning properly and make other necessary measurements as detailed below. These complete checks will be initiated at least at the beginning of the shift and between the 4th and 5th hour of operation. When checking air quantities and velocities, the inspector will make such measurements in as many working places as practical and immediately prior to the operation of the miner in that place, recording the results on MSHA Form 2000-86, July 93 (revised), *Respirable Dust Sampling and Monitoring Data*.

If the plan requires the use of a machine-mounted dust collector, the inspector should follow the procedures outlined in Appendix E (formerly PIL I97-V-8) in performing the required visual checks and measurements to verify that the scrubber is being maintained and is operating properly. In addition, inspection personnel will conduct a full pitot tube traverse on each scrubber at least every other fiscal year quarter. This traverse data will be attached or otherwise included with the 2000-86 form. This information will be used by the inspector to determine if the plan scrubber quantity is correct. The inspector can also use this data to determine a centerline correlation (if a centerline hole is provided) which can be used during non-measurement inspections of the scrubber system to determine if the scrubber is being maintained and the ventilating

air current is suitable for this system of mining. A duct set-up for a centerline hole will always have an odd number of holes.

NOTE: A full pitot tube traverse will consist of collecting approximately 16 data points (not less than 14) from holes in the scrubber duct that must be less than 6 inches from the sides and between each hole. For example: Scrubber duct measuring 20" X 20". A minimum of 4 holes must be present spaced equally across the duct. A minimum of 4 readings at each hole will be taken that are equally spaced in the 20 inch depth. This will result in 16 velocity pressure (VP) readings. The 16 VP readings must be converted to velocity (V) readings and then the 16 V readings averaged. This average is the velocity of the air in the scrubber. A chart of conversions from VP to V is presented on page 1.16 to aid in this work. The average velocity is then multiplied by the area of the duct ($20 \times 20 = 400$ square inches/ $144 = 2.78$ square feet in this example) to obtain the volume of air in CFM for the scrubber. This number is what the plan should specify for the scrubber quantity and is what should be recorded on the 2000-86 form. The reference used to obtain the traverse information is the ACGIH "Industrial Ventilation: A Manual of Recommended Practice" 22nd Edition.

The results of the complete on-shift checks of plan parameters may be recorded on a single 2000-86 form if all readings can be accommodated and the data from each check is clearly labeled as being the first or second check. Inspection personnel can continue to record each check on separate 2000-86 forms if preferred or if necessary to accommodate the information. Record other dust controls or work practices (i.e., higher air quantities, greater number of water sprays, frequency of scrubber screen cleaning, wetting roadways or shields, bolting procedures, etc.) that are in use but not included in the approved plan in the comment section of MSHA Form 2000-86.

The inspector will also include in the comment section of MSHA Form 2000-86, the method used to determine the average production over the last 30 production shifts. This will include the date range for data utilized, the total production during the 30 shifts, the average for the 30 shifts, the normal shift length, the conversion to an 8-hour equivalent, and the percent of the 30-shift average obtained during this sampling shift. The preferred method of determining the 30 shift average is to measure the mine map for the distance mined and calculate the cubic feet of material mined. All measurements, as well as any conversion factor used, must be included in the comments section. Note that material mined includes all material mined, including rock. Each MSHA Form 2000-86 will be reviewed and signed by the inspector's supervisor indicating that the data is complete and accurate.

Velocity Pressure Conversion

VP	V	VP	V								
0.01	401	0.51	2860	1.01	4025	1.51	4921	2.01	5678	2.60	6458
0.02	566	0.52	2888	1.02	4045	1.52	4938	2.02	5692	2.70	6581
0.03	694	0.53	2916	1.03	4065	1.53	4954	2.03	5706	2.80	6702
0.04	801	0.54	2943	1.04	4084	1.54	4970	2.04	5720	2.90	6820
0.05	896	0.55	2970	1.05	4104	1.55	4986	2.05	5734	3.00	6937
0.06	981	0.56	2997	1.06	4123	1.56	5002	2.06	5748	3.10	7052
0.07	1060	0.57	3024	1.07	4143	1.57	5018	2.07	5762	3.20	7164
0.08	1133	0.58	3050	1.08	4162	1.58	5034	2.08	5776	3.30	7275
0.09	1202	0.59	3076	1.09	4181	1.59	5050	2.09	5790	3.40	7385
0.10	1266	0.60	3102	1.10	4200	1.60	5066	2.10	5804	3.50	7493
0.11	1328	0.61	3128	1.11	4220	1.61	5082	2.11	5818	3.60	7599
0.12	1387	0.62	3154	1.12	4238	1.62	5098	2.12	5831	3.70	7704
0.13	1444	0.63	3179	1.13	4257	1.63	5113	2.13	5845	3.80	7807
0.14	1499	0.64	3204	1.14	4276	1.64	5129	2.14	5859	3.90	7909
0.15	1551	0.65	3229	1.15	4295	1.65	5145	2.15	5872	4.00	8010
0.16	1602	0.66	3254	1.16	4314	1.66	5160	2.16	5886	4.10	8110
0.17	1651	0.67	3278	1.17	4332	1.67	5176	2.17	5900	4.20	8208
0.18	1699	0.68	3303	1.18	4351	1.68	5191	2.18	5913	4.30	8305
0.19	1746	0.69	3327	1.19	4369	1.69	5207	2.19	5927	4.40	8401
0.20	1791	0.70	3351	1.20	4387	1.70	5222	2.20	5940	4.50	8496
0.21	1835	0.71	3375	1.21	4406	1.71	5237	2.21	5954	4.60	8590
0.22	1879	0.72	3398	1.22	4424	1.72	5253	2.22	5967	4.70	8683
0.23	1921	0.73	3422	1.23	4442	1.73	5268	2.23	5981	4.80	8775
0.24	1962	0.74	3445	1.24	4460	1.74	5283	2.24	5994	4.90	8865
0.25	2003	0.75	3468	1.25	4478	1.75	5298	2.25	6007	5.00	8955
0.26	2042	0.76	3491	1.26	4496	1.76	5313	2.26	6021	5.50	9393
0.27	2081	0.77	3514	1.27	4513	1.77	5328	2.27	6034	6.00	9810
0.28	2119	0.78	3537	1.28	4531	1.78	5343	2.28	6047	6.50	10211
0.29	2157	0.79	3560	1.29	4549	1.79	5358	2.29	6061	7.00	10596
0.30	2194	0.80	3582	1.30	4566	1.80	5373	2.30	6074	7.50	10968
0.31	2230	0.81	3605	1.31	4584	1.81	5388	2.31	6087	8.00	11328
0.32	2266	0.82	3627	1.32	4601	1.82	5403	2.32	6100	8.50	11676
0.33	2301	0.83	3649	1.33	4619	1.83	5418	2.33	6113	9.00	12015
0.34	2335	0.84	3671	1.34	4636	1.84	5433	2.34	6126	9.50	12344
0.35	2369	0.85	3692	1.35	4653	1.85	5447	2.35	6140	10.00	12665
0.36	2403	0.86	3714	1.36	4671	1.86	5462	2.36	6153	10.50	12978
0.37	2436	0.87	3736	1.37	4688	1.87	5477	2.37	6166	11.00	13283
0.38	2469	0.88	3757	1.38	4705	1.88	5491	2.38	6179	11.50	13582
0.39	2501	0.89	3778	1.39	4722	1.89	5506	2.39	6192	12.00	13874
0.40	2533	0.90	3799	1.40	4739	1.90	5521	2.40	6205	12.50	14160
0.41	2564	0.91	3821	1.41	4756	1.91	5535	2.41	6217	13.00	14440
0.42	2596	0.92	3841	1.42	4773	1.92	5549	2.42	6230	13.50	14715
0.43	2626	0.93	3862	1.43	4789	1.93	5564	2.43	6243	14.00	14985
0.44	2657	0.94	3883	1.44	4806	1.94	5578	2.44	6256	14.50	15251
0.45	2687	0.95	3904	1.45	4823	1.95	5593	2.45	6269	15.00	15511
0.46	2716	0.96	3924	1.46	4839	1.96	5607	2.46	6282	15.50	15768
0.47	2746	0.97	3944	1.47	4856	1.97	5621	2.47	6294	16.00	16020
0.48	2775	0.98	3965	1.48	4872	1.98	5636	2.48	6307	16.50	16268
0.49	2804	0.99	3985	1.49	4889	1.99	5650	2.49	6320	17.00	16513
0.50	2832	1.00	4005	1.50	4905	2.00	5664	2.50	6332	17.50	16754

V = 4005 X √ VP

V = Velocity in fpm

VP = Velocity Pressure "WG

The inspector will also determine if the operator performed an on-shift examination of the respirable dust control parameters as specified in the approved mine ventilation plan (Refer to Appendix D of this chapter, formerly PIL I97-V-6).

14. If a mine operator is found to be in violation of the approved ventilation plan, the operator will be cited and required to take immediate corrective action while the sampling is taking place. If this occurs, the inspector will document in his/her notes what specific action was taken and when it was taken during the sampling shift.
 - a. Consideration should be given to a finding of S&S when an operator is found to be in violation of the approved ventilation plan. In determining whether the violation should be designated as S&S, the inspector will take into consideration all facts surrounding the violation and make a judgment based on his/her past experience of whether the operator's failure to comply could result in overexposure. One key factor to be considered is the extent of the deviation from the plan and its potential impact on the dust exposure. For instance, if the plan calls for 30 operating sprays and 3 were found defective but were separated by other functional sprays, the violation may not be considered S&S because its impact on the miner's dust exposure may be minimal. On the other hand, if the 3 sprays that were not operating were in the same location, such as in the throat of the continuous miner, the impact on the dust suppression could be more severe and may justify a finding of S&S.
 - b. When deciding on the degree of negligence, consideration will be given to a high negligence finding if the mine operator was in a position to be aware of the conditions based on the results of the on-shift examination of the dust control parameters and there were no mitigating circumstances. Because of the on-shift requirement, the mine operator is expected to be fully familiar with the provisions of the approved ventilation plan.

Furthermore, if there are unique aggravating circumstances associated with the violation, such as repeated violations of the same standard, serious consideration will be given to recommending the violation for special assessment.

15. Full-shift samples will be considered 8-hour samples, taken portal to portal, unless the normal work shift is less than 8 hours. When the normal work shift is longer than 8 hours, remove the sampler units from the occupations being sampled near the end of the eighth hour, carry them to the surface, and turn them "OFF" after exiting the portal of the mine.

If this is not possible because of the unavailability of transportation to the surface or involvement in other inspection work, the inspector will turn "OFF" and remove the sampling device from the occupations being sampled at the expiration of the 8-hour

sampling period. Once the sampling device is removed, the inspector will exercise care to protect it from mishandling, particularly the sampling head assembly. Also, the inspector will note on the dust data card that the pump was turned “OFF” in the mine at the end of the 8-hour shift.

NOTE: A 15-minute window is provided in both the inspector and operator sampling programs to cover unanticipated delays when exiting the mine.

16. At the conclusion of the sampling shift, record the time, examine the condition of the sampler units for any evidence of mishandling, and note any findings in the inspector's notes. Also, when sampling MMUs, estimate the amount of total material in tons that was mined during the time the sampler unit(s) was located on the section based on either the number of feet advanced, number of passes, or number of cars loaded. Tonnage for sampling purposes includes all mined material, which may be rock or coal or both. (See para. E.13 above). Record this information on the dust data card and MSHA Form 2000-86.
17. MSHA samples will be valid if production is at least 80% of the average of the previous 30 production shifts. MSHA samples will be voided with the production (PRO) void code on the dust data card by the inspector if the production is less than the 80% level prior to the samples being submitted to the Pittsburgh laboratory.

If the production obtained during sampling is less than the 80% level and the subsequent sample results indicate one or more samples having a concentration that exceeds the applicable standard by any amount, all samples from this survey will be modified by the district to remove the production void code. These samples may be voided for other reasons at the inspector's discretion. Removing the void code from these samples will permit the district to count this survey toward their sampling completion rates.

F. Post-Inspection Procedures

1. Complete the dust data card for each exposed filter cassette and review the information for clarity, legibility, and accuracy. Refer to paragraph E.4.a. for completing the dust data card for a control filter cassette.
 - a. Cassette Number: This number is supplied by the manufacturer and must correspond to the number on the filter cassette bearing the identical serial number.
 - b. Mine ID Number: The seven-digit number assigned by MSHA.
 - c. Contractor Code: No entry required.

- d. Mine Name: Name of the mine being inspected.
- e. Company Name: Name of the company that operates the mine.
- f. Date Sampled: The date the sample was taken. When entering the date, be sure to enter a zero before single-digit months or days so that each box contains a digit (Example: [02 28 93]).
- g. Sample Start Time: The hour on a 24 hour clock that the sampling unit is started (if start time is 7:15, 7:30, or 7:45 a.m., record 07).
- h. Sampling Time: The **actual** elapsed time in minutes between when the pump was started and when the pump was turned “OFF”. The total time cannot be more than 495 minutes or the sample will be voided (a 15-minute window is provided to cover unanticipated delays when exiting the mine). Also, the time cannot be less than 360 minutes, unless that is the normal length of the shift or the Administrator for CMS&H has granted written permission to run less than 360 minutes. If the actual time is less than the normal full-shift time, note on the dust data card the length of the normal full shift.

NOTE: Although the actual elapsed time can be 495 minutes for the sample to be considered valid, the concentration will be determined by using a maximum time of 480 minutes.

- i. Tons This Shift - Tons of material produced. This item is required for samples taken on MMUs only. Tonnage less than five digits must be preceded by zeros (Example: [0 1 2 3 0]).

If a situation should arise during which no material was mined but other ongoing activities resulted in dust exposures, the actual production must be reported as [0 0 0 0 1] since the computer will not accept zero production for an MMU.

- j. Type of Sample - The number identifying the type of sample collected.

Designated Occupation (DO)	1
Nondesignated Occupation (NDO)	2
Designated Area (DA)	3
Designated Work Position (DWP)	4
Part 90 Miner	5
Nondesignated Area (NDA)	6
Intake Air	7

Nondesignated Work Position (NDWP)	8
Control Filter	9

Sample codes "1" through "5" will be used by coal operators and MSHA inspectors. However, the only time that an operator would use sample code "2" would be after an excessive dust citation has been issued on a nondesignated occupation, which requires the operator to sample the environment to demonstrate that the violation has been abated. Codes "6" through "9" will be used only by MSHA inspectors.

- k. MMU/DA/SA: These four blocks are for the number assigned by MSHA to identify the MMU, DA, surface area (SA), or Part 90 miner. Part 90 miners working underground, but not working on an MMU, are coded 850-0. When a Part 90 miner is working on an MMU, the MMU identification number is used (Example: 001-0). Part 90 miners working in surface occupations are coded 950-0.
- l. Occupation Code: Enter the appropriate three-digit occupation code. This block is not filled out when DAs are sampled.
- m. Part 90 Miner Sampled: Complete only if the miner sampled is one who has exercised the option to work in a less dusty area of the mine (a "Part 90 miner"). The Part 90 miner's social security number or other MSHA assigned identifier is entered, one digit in each box.
- n. Certified Person - Enter the certification number of the inspector taking the sample by entering the inspector AR/RE number followed by zeros. (Ex. AR # 2-0743 certification number for dust data card would be: [2][0][7] [4][3] [0][0][0][0]).
- o. Record the district field office code number in the lower right-hand portion of the dust data card. A stamp with this number is preferred.
- p. All MSHA samples shall be considered valid by the inspector, except the following:
 - BRK** - Broken (actual physical damage)
 - CON** - Contaminated (abnormal particle size or foreign material)
 - IVR** - Inspector void - rain (rain caused environmental changes that are not normal)

- MFP** - Malfunctioning pump (pump would not operate or maintain proper flow rate)
- PRO** - Production less than 80% of the last 30 shift average
- TME** - Invalid Time (less than 360 minutes or greater than 495 minutes)
- IWS** - Invalid Work Shift - activity is not representative of normal operation.

NOTE: If an inspector recommends that a sample be voided, the appropriate void code shall be entered in the "Void Code" box located in the lower right-hand portion of the dust data card.

- q. Review the dust data card information for clarity, legibility and accuracy, and then reattach the **control** filter cassette and each exposed filter cassette to the data card via the hole in the card.
2. Package all cassettes from each sampling inspection along with the **control** filter cassette and properly completed dust data cards in one mailing container. If more than one container is required, securely tape both containers together and mail to the following address:

Respirable Dust Processing Laboratory
PSHTC
P.O. Box 18179
Pittsburgh, PA 15236-0179
Cochrans Mill Road, Bldg 38 (FOR OVERNIGHT MAIL)

Multiple surveys may be packaged in the same mailing container if each survey is placed in a sealed plastic bag and the multiple bags are then placed in the mailing container. All cassettes will be wrapped with "bubble-wrap" or similar packing material prior to placement in the shipping container. The packing material should result in the shipping container being lined with the "bubble-wrap" or other packing material.

NOTE: Never split cassettes from the same inspection and mail them separately.

3. Complete all applicable sections of the computer-generated report, *Respirable Dust Sampling Inspection Results*, MSHA Form 2000-83 (Revised) for each of the checks conducted during the shift sampled, MSHA Form 2000-142 (MMU/DA/DWP Data) if necessary, and other required information and send it to the appropriate office for filing and mailing.

G. Evaluation of Sampling Results

1. After dust sample processing and determination of the MRE equivalent dust concentration, refer to the Sampling Decision Charts on page 1.23 and 1.24 and Table 1 on page 1.25 to determine if compliance or noncompliance is demonstrated or if sampling should continue. Additional sample days shall be treated the same as the initial day of sampling with **ALL** occupations being sampled each day. If additional samples are required, the additional sampling must be collected within 14 calendar days of receiving the sample results from either the Denver Computer Center (DCC) or the Pittsburgh Safety and Health Technology Center (PSHTC).
 - a. If a designated area (i.e., roof bolter DA) has been created on a MMU or a Part 90 miner is on a MMU, neither sampling result can be used in arriving at the MMU average dust concentration.
 - b. Before referring to Table 1, note that the individual dust concentrations, as well as the average concentration calculated from multiple samples collected on one day, reported by either the DCC Denver Computer Center or PSHTC will be in milligrams and thousandths of a milligram. A noncompliance decision results when the average concentration is greater than or equal to (\geq) the “noncompliance” value listed in Table 1.

SAMPLING DECISION CHART

SECTION 1

1ST DAY SAMPLING

<p>a. MMU 5 samples, including DO * EXCEPT AS NOTED</p>	<p>Avg. conc. \leq applicable standard, and each sample is \leq the applicable std.</p>	<p>Avg. conc. $>$ applicable standard * <u>less than 5 samples - avg. conc. \geq "noncompliance" value in Table 1</u></p>	<p>Avg. conc. \leq applicable std., 1 or more samples $>$ applicable standard</p>
<p>b. DA, DWP</p>	<p>Conc. Is \leq applicable standard</p>		<p>Conc. is $>$ applicable standard</p>
<p>c. Part 90</p>	<p>Conc. is \leq applicable standard</p>		<p>Conc. is $>$ applicable standard</p>
<p>ACTION TO BE TAKEN BY INSPECTOR</p>	<p>PERMITTED TO STOP SAMPLING</p>	<p>NONCOMPLIANCE INDICATED - STOP SAMPLING</p>	<p>CONTINUE SAMPLING ALL OCCUPATIONS & REFER TO SECTION 2</p>

SECTION 2 SUBSEQUENT DAYS SAMPLING

NOTE:MUST SATISFY REQUIREMENTS FOR SECTION 2 a. and b.

<p>a. MMU (section avg.) (5 samples, one shift with DO. Do not use previous days samples)</p> <p>* EXCEPT AS NOTED</p>	<p>Avg. conc. \leq applicable standard, and each sample is \leq applicable standard</p>	<p>Avg. conc. $>$ applicable standard</p> <p>* <u>less than 5 samples - avg. conc. \geq "noncompliance" value in Table 1</u></p>	<p>Avg. conc. \leq applicable standard, 1 or more samples $>$ applicable standard</p>
<p>b. DA, DWP, PART 90 & INDIVIDUAL OCCUPATIONS ON MMU (INCLUDING DO)</p>	<p>Avg. conc. of 2 or more samples is \leq applicable standard</p>	<p>Avg. conc. of 2 or more samples is \geq "noncompliance" value listed in Table 1 for the applicable number of samples</p>	<p>Avg. conc. of 2 or more samples is $>$ applicable standard but $<$ the "noncompliance" value listed in Table 1 for the applicable number of samples</p>
<p>ACTION TO BE TAKEN BY INSPECTOR</p>	<p>PERMITTED TO STOP SAMPLING</p>	<p>NONCOMPLIANCE INDICATED - STOP SAMPLING</p>	<p>CONTINUE SAMPLING ALL OCCUPATIONS ACCORDING TO THIS SECTION</p>

TABLE 1
 "NONCOMPLIANCE VALUES"

Applicable standard	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.0	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1
2 Samples																				
≥ Stop Sampling Noncompliance	5.3	5.0	4.8	4.5	4.3	4.0	3.8	3.5	3.3	3.0	2.8	2.5	2.3	2.0	1.8	1.5	1.3	1.0	0.8	0.5
3 Samples																				
≥ Stop Sampling Noncompliance	3.5	3.4	3.2	3.0	2.9	2.7	2.5	2.4	2.2	2.0	1.9	1.7	1.5	1.4	1.2	1.0	0.9	0.7	0.5	0.4
4 Samples																				
≥ Stop Sampling Noncompliance	2.7	2.5	2.4	2.3	2.2	2.0	1.9	1.8	1.7	1.5	1.4	1.3	1.2	1.0	0.9	0.8	0.7	0.5	0.4	0.3
5 Samples																				
≥ Stop Sampling Noncompliance	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.0	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.2

Examples:

1)	<u>Occupation</u>	<u>Concentration</u>	Standard: 2.0
	036		2.091
	035		2.000
	050		1.204
	046		1.881
	047		<u>1.702</u>
	Total		8.878
	Avg.		8.878/5 = 1.775

1.775 is < standard but 1 sample (036) exceeds the standard. Continue sampling all occupations for additional shifts.

2)	036		2.402
	035		2.471
	050		1.253
	046		2.281
	047		<u>2.122</u>
	Total		10.529
	Avg.		10.529/5 = 2.106

2.106 is > 2.1 which indicates noncompliance with 2.0 Standard.

When multiple days of sampling are to be averaged, the inspector will total the dust concentrations as reported by the lab to the thousandths. Then divide this total by the number of samples used and report the resulting average to the thousandths of a milligram. If the average concentration is \geq the “noncompliance” value in Table 1, noncompliance is demonstrated.

Examples:

1) DWP

<u>Day</u>	<u>Conc.</u>	<u>Total/No. Samples = Avg.</u>	
1	2.661		
2	2.215	4.876/2	= 2.438
3	1.903	6.779/3	= 2.260
4	1.120	7.899/4	= 1.975

1.975 is < 2.0. In Compliance with 2.0 Standard-- Stop Sampling.

2) DA

<u>Day</u>	<u>Conc.</u>	<u>Total/No. Samples = Avg.</u>
1	2.914	
2	2.870	5.784/2 = 2.892
3	2.881	8.665/3 = 2.888
4	2.723	11.388/4 = 2.847

2.847 exceeds the Table 1 “noncompliance” value of 2.7 for 4 samples on a 2.0 standard. Noncompliance is established - Stop Sampling.

2. If the sampled entity is on a reduced standard, the inspector will delay any enforcement action until the results of quartz analysis are received. If the percentage of quartz found in a set of samples that met or exceeded the Noncompliance Value established in Table 1 on page 1.30 would not cause the dust standard to change, the operator will be cited for violation of the dust standard. However, as illustrated in the example below, if the percentage of quartz found in the sample would cause the dust standard and the corresponding Noncompliance Value to change so that the average concentration would no longer indicate noncompliance, no citation will be issued.

For example, suppose that the MMU is on a 1.3 mg/m³ dust standard and an average concentration of 1.605 mg/m³ is reported. Since this concentration exceeds the applicable standard, the operator is in violation of the standard. However, subsequent quartz analysis of the DO sample shows the sample contained 6 percent quartz which, if used, would result in a 1.7 mg/m³ standard. Based on this analysis, there is indication that quartz levels have changed in the environment of the DO, suggesting that the current standard may no longer be valid. Therefore, since the original concentration of 1.605 mg/m³ is less than the 1.7 mg/m³ standard that would have been in effect on the shift sampled if the result was used to set the standard, a citation should not be issued in this case.

3. When completing MSHA Form 7000-3, *Mine Citation/Order*, refer to Chapter 7 - *Health Citations and Orders*, Coal Mine Health Inspection Procedures Handbook, for specific guidelines. Dust citations and orders will generally be designated as "significant and substantial" (S&S). The proper use of personal protective equipment (PPE), however, should be taken into account, as well as any other evidence that miners were not exposed to the hazard posed by the excessive concentration of respirable dust. Although the use of PPE may not constitute compliance with the dust standard, the proper use of PPE by the miners affected by the violation is relevant to determining whether the violation is S&S. Therefore, under these circumstances, the inspector will evaluate the effectiveness of the PPE (Refer to Appendix F to this chapter, formerly PIL I97-V-1). This evaluation will include consideration of whether the PPE has been properly

selected, used, and maintained to ensure that an adequate degree of protection is afforded to the miner.

A high degree of negligence will be considered. "Reckless disregard" should be considered if the operator was in a position to be aware of the condition that contributed to the high dust levels in the environment and there were no mitigating circumstances, or if there are unique aggravating circumstances associated with the violation, such as repeated past violations of the same standard at the mine. Otherwise, the negligence would be less than high. When high negligence is assigned, such violations will be reviewed for special assessment.

In setting time for abatement of a violation for excessive dust (only), the Inspector/Supervisor shall allow a maximum of 21 calendar days to implement corrective action(s) and submit the required respirable dust samples to determine compliance. The mine operator should implement corrective actions immediately, after issuance of the citation, so as to have sufficient time to collect the required 5 valid respirable dust samples and submit those samples to the MSHA laboratory. The primary consideration in setting a reasonable abatement time shall be the health and safety of the miners. Abatement times shall not be established for the convenience of the operator or inspector nor shall they be set based on an appeal to the FMSHRC. In the event that the abatement time must be extended, written justification establishing the specific reason(s) for extension must be documented on the extension (MSHA Form 7000-3a Continuation) and maintained in the district health files. The written justification shall be provided to Headquarters Staff upon request of the Chief, Division of Health.

Examples: The MMU under citation has been idle for 19 of the 21 days provided for abatement. An additional 5 days will be necessary for the operator to collect and submit the required respirable dust samples to determine if implemented dust control measures will achieve compliance.
(Acceptable)

Additional time is needed for the mine operator to achieve compliance.
(Unacceptable)

4. If a NDE is cited, MSHA Form 2000-142, will be completed. The violation information must be promptly entered in the computer before it will accept operator abatement dust samples from the NDE. For example, if the shuttle car operator (Occ. 050) on MMU 001-0 was cited, the operator will be instructed to sample a nondesignated entity ("Type 2" sample) identified as 001-1, Occ. 050. The effective date of this action (Item 4 on Form 2000-142) will be the actual date the citation was issued (Item 1 on MSHA Form 7000-3).

5. The District Manager may require the operator to submit the date on which abatement sampling will begin so that an inspector can monitor the action(s) taken to correct the condition causing the violation. Note requirement of Section IV C to monitor operator compliance sampling.

The information gathered during this on-site visit will enable the inspector to better evaluate whether the dust control portion of the ventilation plan needs to be revised after the operator has abated the violation, or whether the abatement period needs to be extended if samples show continued noncompliance. When onsite, the inspector will determine if the operator has made available, approved PPE and whether this equipment, if utilized, is being worn properly and by whom. If approved PPE is not made available, the inspector will take appropriate enforcement action.

- a. If the condition that caused the violation has been corrected through the application of additional controls not included in the approved ventilation plan and after examination of all factors the inspector has determined that changes in the plan are necessary to protect miner health, the mine operator will be instructed to update the ventilation plan and incorporate the parameters that were observed and documented by the inspector while the samples were collected.
 - b. However, if the operator fails to correct the condition within the period of time set forth in the citation, the inspector will review the circumstances surrounding the operator's failure to abate and determine whether an extension is justified. Refer to Chapter 7 of the *Coal Mine Health Inspection Procedures Handbook* for specific guidelines. If an extension of time is not justified, the inspector will issue a withdrawal order under Section 104(b). The inspector will document the following in the narrative portion of the order:
 - 1) the action or inaction of the mine operator that made it necessary to issue the order; and
 - 2) the area(s) of the mine affected by the violation.
6. Once an order is issued, MSHA must be reasonably assured that the mine operator is able to achieve and maintain dust levels within the applicable respirable dust standard before the order is terminated. Therefore, the inspector will take the following action.

- a. Determine, based on the history of this and similar entities, whether the corrective actions proposed by the operator, in writing, may reasonably be expected to achieve compliance.
 - b. Ensure that the mine operator implements the corrective actions.
 - c. Modify the order to allow production in the affected area so that respirable dust samples can be collected to determine if the violation has been abated. The inspector will outline in the narrative portion of the modification to the order the corrective action that has been taken or refer to the submitted revised ventilation plan. The samples will be collected by MSHA in accordance with the requirements of this document. The samples will be collected on one shift from five occupations including the DO.
 - d. MSHA collected samples will be transmitted via overnight mail or equivalent, to the Pittsburgh laboratory the next MSHA normal business day.
 - e. Determine compliance/noncompliance according to Section IV.G.of this chapter.
 - f. Record on MSHA Form 2000-86 (Revised) the dust controls that are actually used by the mine operator to abate the violation.
7. Once the condition that caused the violation has been corrected and compliance is achieved, the inspector will terminate the order. The mine operator must submit a revised ventilation plan for the entity in question (if not already submitted). The revised plan should include all parameters that were observed and documented by the inspector while the samples were collected. If the operator fails to submit a revised plan after the order has been abated, the District Manager will notify the operator that his current plan is inadequate following the procedures discussed in paragraph H.1. below.
 8. If compliance is not achieved, the inspector will modify the order to its original state until the operator determines what other measures need to be taken that could reasonably be expected to achieve compliance. Follow the steps outlined in paragraph G.6.a. thru f. above until the order can be terminated.

H. Evaluation of Ventilation Plan

1. MSHA personnel shall determine whether the operator's ventilation plan provides sufficient controls to reliably and consistently protect each miner from exposure

to concentrations of respirable coal mine dust that exceed the applicable standard. MSHA may determine that a ventilation plan is inadequate, even if the operator has not been cited for an excessive concentration of respirable dust when there is a reasonable basis to conclude that, if the mine operated in accordance with the minimum plan parameters, one or more miners would be exposed to concentrations of respirable dust exceeding the applicable standard. If a review of the operator's ventilation plan results in a determination by MSHA that it is inadequate to control dust, the District Manager will send written notification to the operator that changes are needed in the plan. The notice will identify the reasons(s) why such changes are needed, afford the operator an opportunity to meet with District personnel to discuss any proposed changes, and set a reasonable time for the operator to submit revised plan provisions to the District. The existence of:

- a citation for excessive dust,
- multiple samples (4 or more samples from a particular entity in a one-year period) that exceed the applicable standard, or
- issues related to Section E.12. of this chapter

are among the factors that, in conjunction with other supporting information/data, would justify a written notification to the operator.

If the operator fails to respond within the time provided, or if the District and operator discuss the plan but cannot resolve the differences and the operator does not submit a revised plan, the District Manager will send a second written notification to the operator. This notification shall (1) inform the operator that the District continues to be unable to approve the plan with the existing provisions, (2) specify a time by which suitable plan provisions must be submitted by the operator to the District, and (3) make it clear that, if suitable provisions are not submitted, approval of the plan in its present form will be revoked and the operator will be without the required approved plan. Operating after the revocation date is a violation of the standard requiring the approved plan.

2. When MSHA collected respirable dust samples are determined to have greater than 119 μ g of quartz present, the following actions will be considered in securing a revised ventilation plan:
 - a. Mining Machine with Scrubber:
 - 1) Require use of at least a 30 mesh screen.
 - 2) Adjust the ventilating air quantity to no more than 1000CFM greater than the scrubber quantity in the working place when using blowing ventilation (ventilating air quantity measured with the scrubber turned off)

- 3) Removal of the “Deep-Cut” provisions. Permit tubing/curtain set-back incrementally so that MSHA can sample to determine that miners are not exposed to quartz levels greater than 119 μ g. MSHA samples must reflect normal mining activity and include those activities that would result in the greatest dust levels such as advancing to the deepest point of penetration in plan, turning crosscuts, mining on side of section opposite the return and cutting top or bottom.
 - 4) Scrubber duct cleaned each day or shift.
 - 5) Scrubber screens cleaned each cut as a minimum.
 - 6) Require specific checks of scrubber air quantity and condition of screen and ductwork to be performed during 75.362(a)(2) on-shift examination.
- b. Roof Bolting Machine:
- 1) Require on-shift examination to cover specific areas of dust collection system in the plan.
 - 2) Specify vacuum setting for each drill pot in plan.
 - 3) Specify periodic cleaning of dust collection system in the plan.
 - 4) Specify procedure to dump dust collection box in the plan.
 - 5) Specify type of bits to be used in the plan.
 - 6) Specify the amount of time that roof bolting can be done down wind of continuous miner in the plan.
 - 7) Specify the ventilating air quantity where bolting in the plan.
- c. Other Areas/Occupations:
- 1) Review ventilation plan to determine if additional controls will reduce quartz levels. Identified improvements will be specified in the plan.

I. Compliance Assistance

In addition to following the procedures outlined in section G. when sampling additional shifts, the inspector will also offer compliance assistance to mine operators and miners as part of an overall enforcement strategy to achieve a healthier work environment for all miners on all shifts. The type and level of compliance assistance to be offered will depend on the frequency and the gravity of overexposures measured, the mine’s compliance history, the specific help requests by either the operator or miner(s), and on the willingness of individual operators and miners to work with MSHA to resolve identified overexposures and achieve and maintain compliance on a continuous basis. Examples of the types of compliance assistance to be made available include:

1. Assisting in determining the cause(s) of identified overexposure(s) and in sharing information on available dust controls and “best practices” to implement that are designed to protect miners on all production shifts. This will be the standard practice whenever an inspector returns to the mine to conduct additional sampling.
2. Offering educational and training expertise and aids aimed at improving and reinforcing operator and miner awareness of the health hazards associated with exposure to excessive concentrations of coal mine dust and quartz dust, of the “best practices” available to address those hazards on a continuous basis, and of the importance to implement and maintain these practices operational on each production shift in order to make the workplace safer and healthier. In certain circumstances, it may be necessary to provide “one-on-one” training to help operators and miners better understand their individual responsibilities in achieving and promoting a healthier workplace.
3. Encouraging the operator or miner(s) to seek the expertise of MSHA’s Technical Support to achieve a workplace that is free of excessive dust when initial efforts by the inspector and operator fail to resolve the identified overexposures. This assistance can be in the form of a consultation visit involving the sharing of technical knowledge acquired over the years or an in-mine visit when dictated by the complexity of the particular situation. The latter will enable MSHA personnel to identify the various dust-generating sources in the workplace that may be responsible for causing individual miners to be overexposed, quantify the amount of respirable dust generated by each source, identify potential solutions, and, if requested, assist the operator in evaluating their effectiveness in achieving and maintaining compliance on a continuous basis

J. Selecting Designated Occupations

In some cases the DO specified by section 70.207(e) for operator sampling may not be the occupation exposed to the most dust. The following procedure will ensure that the proper occupation is selected for operator sampling.

1. After each sampling inspection of an MMU, the results will be reviewed to verify that the correct occupation was assigned as the DO for the MMU sampled.
2. If the results indicate that some other occupation has the highest dust exposure, serious consideration should be given to changing the DO or establishing a DA for the occupation in question. However, a change should not be based solely on the results of a single sampling inspection. For example, if the dust concentration at the off-side shuttle car operator location on an MMU operating under a deep

cut plan exceeds that of the DO during two consecutive inspections, consideration should be given in this instance to changing the DO to the shuttle car operator.

3. If a decision is made to change the DO, the coal mine operator must be notified in writing in accordance with Section 70.207(e) using MSHA Form 2000-96, *Designated Occupation Change Notice*. This change will be entered in the computer using MMU/DA/DWP Status Form (MSHA Form 2000-142) on the first day of the next bimonthly sampling cycle.

K. Establishing Designated Areas (DAs) or Designated Work Positions (DWP)

In some instances after completion of a sampling inspection, it may be necessary to establish additional DAs or DWPs for operator bimonthly sampling in order to ensure the health of miners working in the affected work area(s)/position(s). The following procedure will be applied to ensure that the work area(s)/position(s) are properly designated.

1. After each respirable dust sampling inspection, the results will be reviewed to determine if additional sampling entities must be established.
 - a. When a sample collected by the inspector is found to exceed 1.0 mg/m^3 or a reduced standard less than 1.0 mg/m^3 , and the sampling entity is not being adequately protected by dust control measures that are in place at another entity in the same area, a DA/DWP shall be established.
 - b. When an MMU uses belt air to ventilate the face areas, a DA shall be established in accordance with 75.350(b)(3), unless already required by a petition for modification. The intake air coursed through a belt conveyor haulage way shall be sampled at a location as stipulated in the petition for modification allowing the use of belt air or as stipulated in 75.350(b)(3). The DA sampling locations shall be maintained continuously during the sampling shift within the stated area.
2. When a new DA or DWP is to be established, the District Manager or his/her authorized representative will notify the mine operator in writing and identify the following:
 - a. the cassette number and sample concentration and, if applicable, the quartz percentage of the cassette(s) used to establish the entity as a DA or DWP;

- b. the code the mine operator will use to identify the sample type for sampling purposes (Item 9 on dust data card) which shall be "Type 3" for DA and "Type 4" for DWP samples;
- c. the codes the mine operator will use to correctly identify the MMU/DA/SA entity in question (Item 10 on dust data card) as listed below or as designated by the district:

DA Codes (Sample Type #3)

100-0 -- 199-0 Track Haulage
 200-0 -- 299-0 Belt Area
 300-0 -- 399-0 Trackless Haulage
 400-0 -- 499-0 Shops
 500-0 -- 599-0 Section Dumping Points
 600-0 -- 699-0 Rotary Dumps and Crushers
 700-0 -- 799-0 Miscellaneous
 800-0 -- 899-0 Intake Air
 900-0 -- 999-0 Roof Bolters

DWP Codes (Sample Type #4)

001-0 -- 099-0 Surface Mines
 900-0 -- 999-0 Surface Area UG Mines

- d. the occupation code the mine operator will use to identify the DWP (Item 11 on dust data card);
 - e. the date that bimonthly sampling will begin for the newly established entity (this normally is the first day of the next bimonthly sampling period for DAs and DWPs); and
 - f. requiring the mine operator to submit a short addendum to the approved ventilation plan that shows the location of the new DA to be sampled bimonthly, and the position of the sampling unit within the DA, including the type of dust controls that are to be maintained.
3. Enter the required information in the computer using MSHA Form 2000-142 on the first day of the next bimonthly sampling period. If the newly established entity is an intake air DA on a 1.0 mg/m³ dust standard, Item 7B on MSHA Form 2000-142 shall be marked "Yes."

Examples:

1. The sample concentration of the roof bolter occupation on an MMU with double-split ventilation exceeds 1.0 mg/m^3 or the applicable standard, and the DO on the MMU and the roof bolter occupation are on different splits of air. Since the respirable dust level in the environment of the DO is not representative of the dust concentration to which the roof bolter is exposed and the dust control measures for the DO do not protect the environment of the roof bolter occupation, a DA will be established on the roof bolter.
2. A reduced dust standard is established for the roof bolter at an MMU with single-split ventilation. Since the dust standard of the roof bolter is significantly lower than the DO's and the environment to which the DO is exposed does not contain over 5 percent quartz, a DA will be established on the roof bolter.
3. A sample is taken on the highwall drill helper occupation on a reduced dust standard and is found to exceed the reduced standard. Since the highwall drill operator is established as a DWP (i.e., 001-0 384) but his or her duties require that the drill rig be operated from within the cab of the machine and the operator is not exposed to the quartz dust, the highwall drill helper occupation will be established as a DWP (i.e., 001-0 383) using the same surface area identification number that was assigned to the highwall drill operator DWP.
4. The DWP will be established with the appropriate DWP number, identification of the occupation code and completion of the location description. The location description shall establish the type of work that the occupation must be performing while monitoring the DWP.

Example 1: A bulldozer operator (occupation code 368) is determined to be exposed to 1.705 mg/m^3 of respirable dust and has a quartz level of 10.0% while performing the task of pushing rock at a surface mine. Other bulldozers surveyed were not pushing rock and did not have respirable dust levels exceeding 1.0 mg/m^3 and quartz exceeding 5.0%. The DWP would be established as:

DWP:	001-0
Occupation Code:	368
Location:	Bulldozer pushing rock

If the operator assigns another bulldozer to pushing rock, then that bulldozer pushing rock could be monitored as the DWP.

Example 2: A contract highwall drill operator (occupation code 384) is determined to be exposed to 1.224 mg/m³ of respirable dust and has a quartz level of 20.0% while performing the task of drilling at a surface mine. The DWP would be established as:

DWP:	001-0
Occupation Code:	384
Location:	Highwall drill drilling blast holes

The DWP would be established such that any contract drill brought onto the site to perform this task would be the DWP.

Specific pieces of mining equipment, through listing of the serial number or company number, will only be tied to the DWP when there are multiple pieces of the same equipment being used at the mine site performing the same tasks. The operation/duties performed that resulted in the need to establish the DWP will be the primary determinate of the location where to monitor the potential exposure.

Example of multiple pieces of equipment: A haul truck driver is found to be exposed to 1.607 mg/m³ while hauling coal from the pit to the preparation plant in truck # 555. There are 4 additional haul trucks that haul coal from the pit to the Preparation plant. The other truck drivers are not exposed to dust concentrations exceeding 1.0 mg/m³. The DWP would be established as:

DWP:	001-0
Occupation code:	376
Location:	Truck driver hauling pit to plant Co. truck #555

If truck #555 is removed from the mine property, the DWP will be abandoned.

L. Removing DAs or DWPs from Sampling Status

It may be necessary to withdraw the designation of a work position or an underground area for operator bimonthly sampling upon finding that the operator is able to maintain continuing compliance with the applicable dust standard. To ensure that the proper work positions or areas are removed from bimonthly sampling and that miners are not being overexposed, apply the following procedures:

1. Before conducting a respirable dust sampling inspection, the inspector shall review the computer report MSM035, *Review List For Potential Removal From Sampling*.
2. Identify the DAs (excluding those required by a petition for modification) or DWPs that have the potential to be removed from required operator bimonthly sampling.
3. Determine what dust control measures are in place in the environment of the DA or DWP being sampled.
4. For those entities identified on MSM035, collect a sample from the DA or DWP.

For DWPs, if the sample concentration is at or below 1.0 mg/m^3 when the entity is on a standard of 2.0 mg/m^3 or at or below the applicable standard when the entity is on a standard of 1.0 mg/m^3 or less, the District Manager shall notify the mine operator in writing that the entity is being removed from the bimonthly sampling status.

However, if the entity is a DA, the District Manager has the discretion to remove the entity from bimonthly sampling, provided the operator was able to maintain continuing compliance with the applicable dust standard during the previous six bimonthly sampling cycles and this was verified by an MSHA sample taken during the same period. A minimum of five (5) valid respirable dust samples - combination of MSHA and operator samples - must be available during this time period. The notification shall include the following information:

- a. the cassette numbers and sample concentrations of all operator and MSHA samples that were used in making the determination;
 - b. identity of the type of sampling entity, DA or DWP;
 - c. the entity ID (Item 10 on Dust Data Card); and
 - d. the occupation code (if applicable) of the entity in question.
5. Complete MMU/DA/DWP form (MSHA Form 2000-142) and enter the required information in the computer. This is to update the sampling status of the entity

and prevent the computer from generating erroneous "Failure-to-Sample" advisories for the entity in question. Therefore, if a DA or DWP is no longer required to be sampled by the operator, the entity shall be placed in "D" status (Sampling not required) by checking Item 6D on the form.

M. Establishing a Reduced Respirable Dust Standard

In some cases, it may be necessary to establish a reduced standard for an entity when a sample contains more than 5 percent quartz or more than 10 percent quartz for Part 90 miner samples. Apply the following procedures to ensure that miners are protected from breathing respirable dust containing quartz levels in excess of 5 percent.

1. The following inspector samples will be analyzed for quartz:
 - those with at least 0.200 mg weight gain collected from the environment of a DO, roof bolter, DA, DWP, NDE, or Part 90 miner; and
 - those with at least 0.100 mg weight gain collected from these occupations: blaster/shooter/shotfirer (code 307), bulldozer operator (code 368), high lift operator/front end loader (code 382), highwall drill helper (code 383), highwall drill operator (code 384), refuse/backfill truck driver (code 386) and from any other occupations identified by the inspector.

If the weight gain is less than 0.450 mg, the results will not be used to initiate the dust standard setting process unless the sample contains at least 25 micrograms (0.025 mg) of quartz.

2. If any sample from a DO, DA, DWP, or NDE (NDO, NDA, or NDWP) on a 2.0 mg/m³ dust standard contains more than 5 percent quartz, the mine operator will be notified via computer message of the option to collect a respirable dust sample from the affected area or occupation within 7 calendar days after receipt of the computer message.

NOTE: If from an NDE, the entity must first be established in "Q" status by MSHA before a computer message is generated informing the operator of the MSHA sample results and the option to collect a sample for quartz analysis. Operator optional samples will be used only for purposes of quartz analysis to adjust the standard and not for compliance determinations. Optional samples may be collected over more than one shift if there is reason to believe that sampling for one shift will not produce sufficient weight gain for quartz analysis (at least

0.45 mg on operator collected samples). Mine operators may also pre- and post-weigh the entire cassette package to determine whether it contains sufficient dust for quartz analysis. However, the cassette package shall not be opened. All optional samples must be collected in accordance with Parts 70, 71, or 90 (with the above exceptions) and transmitted to MSHA within 24 hours after the end of the sampling shift(s).

- a. If an optional sample is received by MSHA within 10 calendar days after its collection, MSHA will compare the results of quartz analysis from MSHA's sample and the operator's sample. The District Manager may grant the operator additional time to submit samples under these procedures due to idling of the mine or other unforeseen circumstances.
 - b. If the percent of quartz found in the MSHA sample differs by 2 percent or less from that found in the operator's sample (for example, if the MSHA sample contains 10 percent quartz, the operator's sample would differ by 2 percent or less if it contained either 8 percent or 12 percent quartz), the quartz percentages will be averaged and the result will be used to establish the reduced dust standard for the affected areas or occupation.
 - c. If the percent of quartz found in the MSHA sample differs by more than 2 percent from that found in the operator's sample, the operator will be notified by computer message and afforded the opportunity to collect a second optional sample from the affected area or occupation within 7 calendar days after receiving such notification. If the quartz level of the operator's first optional sample differs by more than 5 percent from that of the MSHA sample, the District Manager should request that the mine operator inform MSHA when the second optional sample will be collected. An inspector should be present to observe collection of the second optional sample.
 - d. If the operator's second optional sample is received within 10 calendar days after its collection, MSHA will determine the percentage of quartz present in the sample; and the result will be averaged with the previous two samples -- the MSHA sample and the operator's first optional sample.
 - e. If the average percent quartz in the three samples is greater than 5 percent, the average result will be used to determine the applicable standard.
3. If the operator's first optional sample is not collected in accordance with sampling procedures under Parts 70, 71, or 90, not received within 10 calendar days following its collection, or if such optional sample is submitted with weight gain insufficient for quartz analysis, the percentage of quartz found in the MSHA respirable dust sample will be used to set the applicable standard. If this occurs

with the operator's second optional sample, the higher percentage of quartz in the MSHA or operator samples will be used to set the standard.

4. When MSHA collects respirable dust samples from DOs, DAs, DWPs, Part 90 miners, and NDEs that are already on a reduced dust standard, the applicable standard will be adjusted in the following manner:
 - a. If the percent of quartz differs by 2 percent or less from the previously-established quartz value, these two values will be averaged. The result will be used to determine the applicable dust standard for the affected area or occupation.
 - b. If the percent of quartz in the MSHA sample differs by more than 2 percent from the previously established quartz value, MSHA will notify the operator, via computer message, of the option to collect a respirable dust sample from the affected area or occupation within 7 calendar days after receiving MSHA notification. Preceding paragraphs 2(a) - (e) and 3 will then be followed,
5. Approximately every 6 months, MSHA will automatically conduct quartz analysis of one valid operator bimonthly sample with sufficient weight gain that was submitted under Parts 70, 71, and 90 from DOs, DAs, DWPs, and Part 90 miners on reduced standards.
 - a. If the percentage of quartz found in a respirable dust sample submitted by the operator for a DO, DA, DWP, or Part 90 miner differs by 2 percent or less from the previously-established quartz value used to set the dust standard for that occupation or area, it will be averaged with the previously-established value. The result will be the basis for applying an adjusted dust standard to the affected area or occupation.
 - b. If the percentage of quartz found in the operator's sample differs by more than 2 percent from the previously-established quartz value for that occupation or area, MSHA will notify the operator via computer message of the option to collect a respirable dust sample from the affected area or occupation within 7 calendar days after receiving MSHA notification.
 - c. If the sample is received by MSHA within 10 calendar days of its collection, MSHA will determine the percentage of quartz present in the sample and average the result with previously-established quartz value for the affected area, miners, or occupations and with the quartz value of Parts 70, 71, or 90 samples. Based on the average of these three quartz values, the respirable dust standard will be adjusted.

- d. If the operator's optional sample is not collected in accordance with Parts 70, 71, or 90, is not received within 10 calendar days following its collection, or is submitted with insufficient weight gain for quartz analysis, the previously-established respirable dust standard will remain in effect.
6. When results of quartz analysis indicate that a change may be required in the dust standard for a nondesignated occupation, area, or work position, the following procedures apply:
 - a. All new NDEs added to the data base for the purpose of quartz analysis only must be entered with a status of "Q" and with the status date that is equal to or prior to the date the sample was taken.
 - b. Once established in "Q" status, the computer will notify the operator that a "temporary" entity has been established and of the option to submit a sample for quartz analysis.
 - c. Upon completion of quartz processing and after a new dust standard is determined, the District Manager will be notified via computer message of the results of the quartz analysis. The District Manager will then determine whether or not to retain the entity in "temporary" status or establish it as a permanent entity in sampling status. If the latter option is selected, the entity will be placed in "P" status via the MMU/DA/DWP form. The computer will then send a message to the operator detailing the results of the quartz analysis, informing the operator that the entity must be sampled on a bimonthly basis, and indicating the dates of the first bimonthly cycle and the applicable standard. The entity will be placed in producing status at this time.
 - d. If the District Manager determines that the entity should not be made a permanent entity, he will place the entity in "R" status and the quartz history will be maintained on a "dead DA/DWP" file which can be obtained via an overnight query. The computer will then send a message to the operator of the results of the quartz analysis, and notify him that he will not be required to submit bimonthly samples on this entity. In the case of a roof bolter that is not a DA, the standard of the DO will be noted as the applicable standard. The temporary entity will then be deleted from the data base by the computer.

NOTE: If the district desires to track for its own sampling purposes a nondesignated work position that did not meet the criteria for a DWP but was on a reduced dust standard, it can do so by establishing it as a DWP in "D" status.

- e. If the District Manager fails to respond with a "P" or "R" status within 7 days, a reminder will be sent. A monthly quality control report, MSM053, is generated by MSIS showing the mines and entities that have quartz samples pending over 30 days due to delay in establishing the entity on the data base.
 - f. The operator should be informed that DAs in "P" or producing status should be included in an addendum to the approved ventilation plan.
 - g. Bimonthly sampling for an operator under the new standard normally begins on the first production shift in the next bimonthly period following the date of notification.
7. When a mine operator or miners' representative requests a quartz reevaluation based on but not limited to justification listed in paragraph L.9. (below) and MSHA elects to conduct such reevaluation, the inspector will first determine if the applicable dust standard has been exceeded in accordance with Section IV.G. of this chapter before submitting the sample for quartz analysis. If the entity is in citation processing, the violation must be abated before the entity can be sampled by MSHA. When sampling for quartz purposes, the inspector should collect samples not only from the occupation(s) originally requested but from other occupations that normally would be sampled during a respirable dust spot inspection.
8. MSHA's procedures for applying a reduced standard will parallel those of issuing citations on an MMU. This includes keeping the reduced standard, as well as any citations issued for exceeding the reduced standard, with an entity when it moves to a new location. The following examples address some situations that may occur as sampling results are received and entities move to new locations.
- a. An MMU is operating in location 1 under a reduced standard and is moved to location 2 (for example, 3000 feet away). The reduced standard remains in effect on that MMU in location 2. If subsequent sampling by the operator indicates a violation of the reduced standard at location 2, the inspector issues a citation. However, when sampling by MSHA indicates a violation, the inspector shall refer to paragraph G.2. of this chapter.
 - b. An MMU is operating in location 1 under a reduced standard and a citation is in effect. Mining is completed in location 1 and the MMU is moved to location 2 (for example, 3000 feet away). The citation remains in effect until the violation is abated.

9. Reevaluation of an entity's airborne quartz levels may become necessary because of the following.
 - a. **Changing conditions** - such as cutting more or less roof or bottom, variation in the coal seam parting, etc. - have resulted in increased or decreased quartz content.
 - b. **Improved dust controls** - mine operator requests MSHA to resample because of improved mining methods, ventilation controls, or engineering controls.

10. During the reevaluation, the inspector should look for possible sources that may be the cause of the excessive quartz and include this in the inspection notes along with other information on the types of controls in use and mining conditions being encountered. This can be used to compare operating conditions observed in subsequent surveys.

Appendix A

Respirable Dust Sampling of Contractors Employees and Construction Sites at Coal Mines

Purpose

The Secretary's Advisory Committee On The Elimination Of Pneumoconiosis Among Coal Mine Workers was charged to make recommendations for improved standards, or other appropriate actions, on permissible exposure limits to eliminate black lung and silicosis; the means to control respirable dust levels; improving monitoring of respirable dust levels and the role of the miner in that monitoring; and the adequacy of the operator's current sampling program. The Advisory Committee issued a final report on November 14, 1996, in which recommendations were made to improve the existing program to control respirable coal mine dust and silica in U.S. coal mines. One recommendation relates to providing protection for contractor employees and construction workers. The Committee found that MSHA has not focused on this portion of mine workers with regard to dust control plans, training, hazard surveillance and compliance activities.

Procedure Instruction

- a. The Advisory Committee recommended that MSHA should develop an initiative to ensure the protection of mine construction workers, contract drillers, and other contract employees from respirable coal mine dust and silica exposures. During MSHA inspections, inspectors shall collect respirable dust samples of contract workers potentially exposed to coal mine dust while on mine property. Due to the erratic nature of contract work at mine sites, inspectors should determine if an operator uses contractors at various times and maintain information on the contractor's presence on the mine site so that when possible, sampling can be conducted at times when the contractor's employees are present on the same site. Although respirable dust samples must be collected over the full shift, there is no requirement for a minimum production level for the sample to be considered valid. Some contract work is of long duration, such as shaft sinking or contract mine maintenance. These activities shall be sampled by MSHA personnel to establish sampling entities, evaluate quartz levels and determine compliance with the applicable standards. Appropriate dust control plans or amendments to current plans shall be required where necessary to maintain respirable dust levels at or below the applicable standard. Contractors performing work on coal mine property must comply with MSHA regulations under 30 CFR. Among other things, this includes required training, maintaining the environment at or below the applicable dust standard, sampling for compliance/non-compliance, complying with dust control plans and reporting occupational injuries/illnesses.

Appendix B

Respirable Coal Mine Dust Samples Containing Quartz in Excess of 100 Micrograms Per Cubic Meter ($\mu\text{g}/\text{m}^3$)

Purpose

The Secretary of Labor's Advisory Committee on the Elimination of Pneumoconiosis Among Coal Mine Workers was chartered to "... make recommendations for improving the program to control respirable coal mine dust in underground and surface mines in the United States." On November 14, 1996, the Committee submitted its report in which it recognized that "the potential for exposure to silica in coal mines is substantial." The report stated that there was consensus of the Committee that miners exposed to silica in excess of the current standard for long durations are at risk of silicosis. The report also noted that some miners "continue to work in silica concentrations of in excess of $100 \mu\text{g}/\text{m}^3$." Accordingly, the Advisory Committee recommended that efforts be made to target enforcement actions to reduce such exposures and conduct more extensive silica hazard surveillance. This program implements part of that recommendation by stressing that increased emphasis should be replaced by all CMS&H personnel on the examination of dust controls when $100 \mu\text{g}/\text{m}^3$ ($0.100 \text{ mg}/\text{m}^3$) or more of quartz is present in respirable coal mine dust samples.

Procedure Instruction

30 CFR §70.101 and §71.101 require that respirable dust levels be reduced if the respirable dust in the mine atmosphere contains more than 5 percent quartz. Reducing the $2.0 \text{ mg}/\text{m}^3$ respirable coal mine dust standard when more than 5 percent quartz is present is intended to provide miners with an environment containing less than $100 \mu\text{g}/\text{m}^3$ of quartz.

MSHA is aware there may be instances when miners can be exposed to more than $100 \mu\text{g}/\text{m}^3$ of quartz even when the operation is in compliance with the respirable dust standard that is in effect. Breathing excessive amounts of crystalline silica (quartz) can cause a serious and sometime fatal respiratory disease called "silicosis," according to the National Institute for Occupational Safety and Health. As a result, MSHA is instituting a special emphasis program to investigate operations where miners are exposed to $100 \mu\text{g}/\text{m}^3$ or more of quartz.

Procedures have been initiated to notify MSHA personnel of the quartz content in $\mu\text{g}/\text{m}^3$ on samples analyzed for quartz. The Pittsburgh Safety and Health Technology Center (PS&HTC) will send out a weekly report via E-mail to each District Health Supervisor and to the Division of Health listing the inspector and operator samples that have $100 \mu\text{g}/\text{m}^3$ or more of quartz present. This information should be compared to the

information retrieved from the dust subsystem of the Management Information System. All samples with elevated quartz levels are of concern; however, samples with excess quartz that comply with the applicable standard are of particular concern. When these samples are identified, based on staff availability, an inspector should conduct a follow-up inspection to determine the cause of the elevated quartz level. These inspections can be integrated into any enforcement activity at the mine or by scheduling the next regular inspection (E01) at the mine as soon as practical. When the operation is in non-compliance with the applicable respirable dust standard, MSHA personnel should take appropriate enforcement action.

Samples collected on highwall drills and roof bolters containing $100 \mu\text{g}/\text{m}^3$ or more of quartz are of particular concern. The drill dust standard contained in 30 CFR §72.620 requires effective dust controls to be utilized when drilling on the surface. 30 CFR §72.630 requires effective dust controls to be utilized when drilling underground. Inspection personnel can visually observe if effective dust controls are in place and functioning properly on surface and underground drills. If follow-up inspections show that effective dust controls are either not installed or not functioning properly, appropriate enforcement action should be taken.

Other occupations associated with surface and underground operations may also be in compliance with the applicable respirable dust standard but contain more than $100 \mu\text{g}/\text{m}^3$ of quartz. When such entities are identified, they should be investigated to determine the reason for the high levels of quartz. Inspection personnel may rely on visual observations, interviews of miners, repeat sampling, or other appropriate means to identify the problem.

Appendix C

Procedures for Assessing Compliance with §72.620 - Drill Dust Control at Surface Coal Mines and Surface Areas of Underground Coal Mines

Purpose

The purpose of this document is to provide additional guidance to enforcement personnel for assessing compliance with §72.620, which addresses means of controlling exposure to drill dust. Specifically, this document is intended to (1) explain how the surface drill dust control standard is to be enforced; (2) define the operating conditions under which cyclonic dust collectors are an accepted drill dust control; and (3) establish the minimum criterion for determining if a highwall drill is equipped with an environmental cab.

Instructions

Section 72.620 provides that drill holes shall be collared and drilled wet or that other effective dust control measures shall be used when drilling non-water-soluble material. This standard requires operators to provide effective drill dust control, regardless of exposure. Consequently, mine operators will be cited when a dust control is missing, not maintained, defective, or ineffective, generally based on a visual inspection.

How the surface drill dust control standard is to be enforced.

MSHA will enforce the drill dust control standards as explained in the agreement reached between the American Mining Congress and the Secretary of Labor on May 26, 1995, as set out in paragraphs 1 through 6 below. In response to inquiries by MSHA inspectors, paragraph 1 below also discusses the phrase “collaring a hole.” The following will guide enforcement personnel in determining the appropriate action to take in specific situations with regard to enforcement of §72.620.

1. The operator is in compliance if the drill holes are collared and drilled wet or other effective dust control measures are used. According to the *Dictionary of Mining, Mineral, and Related Terms*, published by the former U.S. Bureau of Mines in 1968, “collaring a hole” means “the formation of the front end of a drill hole, or the collar, which is the preliminary step in drilling to cause the drill bit to engage in the rock.” Thus, collaring is the preliminary step in drilling when the drill bit initiates the drill hole, and collaring of the hole is complete once the drill bit has entered the earth. The depth of the hole once collaring is complete would be the length of the actual bit, which is approximately 12 inches. The duration of collaring should never exceed one minute. Therefore, the dust generated when starting to drill does not constitute a violation of §72.620, until after collaring has been completed.
2. The operator is not in compliance if drill dust controls are not installed.
3. The operator is not in compliance if drill dust controls are installed but are not operating.
4. The operator is not in compliance if a drill dust control is installed and operating but: (a) the control is operating improperly; (b) the control has not been maintained properly; (c) the control is not an effective control for the condition or location in which it is operating (e.g., bailing air volume exceeds the dust collector volume); (d) a necessary dust control

component is missing, broken, or malfunctioning; or, (e) the skirt is not close enough to the ground to confine dust at the hole.

5. If an operator's drill dust controls are properly installed and maintained, and appear to be operating properly after inspection of all components of the dust control system but there is still visible dust, no citation will be issued at that time. Instead, the MSHA inspector will take the following actions:
 - a. The MSHA inspector will request assistance from persons with technical expertise, either in the MSHA District Office or from MSHA's Pittsburgh Safety and Health Technology Center (PSHTC), in evaluating the specific drill and its operation at the mine. If MSHA's district personnel with technical expertise or the PSHTC personnel determine that the drill dust controls are operating improperly, or that the controls have not been maintained properly, MSHA will issue a citation for violation of the drill dust control standards.
 - b. However, if the evaluation by MSHA's district or technical center personnel identifies a manufacturing or design defect or flaw in the drill dust control mechanism or device or reveals that the drill dust control device is being used in a manner that exceeds or is inconsistent with its design capacity, MSHA will inform the operator of its findings and give the operator a reasonable time to correct the situation before a citation is issued.
 - c. Finally, if the evaluation by MSHA's technical personnel does not identify any manufacturing or design defects or flaws or any use of the drill dust control mechanism or device in a manner or capacity for which it was not designed, MSHA will not issue a citation.
6. In addition, as explained in the preamble to the final rule, in cases where it is not obvious that the dust control is effective, MSHA also has the option to collect dust samples from areas where miners are exposed to drill dust to evaluate the effectiveness of dust controls. If samples exceed the applicable dust standard, MSHA will issue a citation for exceeding the permissible exposure limit. If the samples do not indicate an overexposure, no citation for exceeding the exposure limit would be issued.

Because of the need to control drill dust at the source, effective drill dust controls do not include administrative controls, which control exposure by limiting the amount of time a miner is in a contaminated atmosphere, or personal protective equipment.

Even though wet drilling is the preferred means to control drill dust at the source, §72.620 permits the use of effective alternative dust control measures. Dry dust collectors of either the filter or cyclonic type have been used at some mines. Effective filter-type dry dust collectors have been determined to provide the same level of drill dust control as an effective wet-drilling system. Of these two classes of dust collectors, the National Institute for Occupational Safety and Health (NIOSH) considers the cyclonic type as unsuitable for providing sufficient control of respirable dust.¹ For this reason, the use of cyclonic dust

¹ Page, S.J. and J.A. Organiscak. *Taming the Dust Devil - An Evaluation of Improved Dust*

collectors as the sole means of drill dust control will not be accepted as meeting the requirements of §72.620, except under certain operating conditions where cyclonic-type dust collectors can be effective in controlling dust.

Operating conditions under which cyclonic dust collectors are an accepted drill dust control.

Cyclonic dust collectors are not designed as high-efficiency collectors of very small dust particles and tend to discharge significant quantities of visible dust (respirable and nonrespirable) into the atmosphere. In the case of a more commonly used cyclonic dust collecting system, such as the Rotoclone system, the collector discharge typically goes through a short section of pipe where it is directed vertically so that the prevailing winds disperse the dust away from the drilling operation. Since this system relies on ambient wind on the drill bench to disperse the emitted drill dust, both MSHA and NIOSH consider the Rotoclone dry-dust collection system to be the least effective drill dust control system.

Although this type of dust collector may provide protection for a drill operator under some operating conditions, it does not protect other surface miners working at the drill site. As a result, the use of cyclonic dust collectors as the sole means of drill dust control does not normally satisfy the requirements of §72.620. MSHA will accept a cyclonic dust collector as effective only under the following conditions: (1) the driller is the only individual that potentially can be exposed to the drill dust; (2) the dust cloud emitted by the cyclonic dust collector is always carried away from the driller; and (3) the drill is used only where conditions (1) and (2) exist.

In addition to dry dust collectors, MSHA will also consider positive-pressure enclosures (environmental cabs) on surface drills to be effective in controlling exposure to drill dust if they are properly designed and maintained and the only person(s) exposed to the drill dust is inside the cab. Such enclosures can also offer cost-effective means of reducing exposure to other environmental hazards such as noise and heat stress. Listed below are the minimum criteria for determining if a particular drill is equipped with an environmental cab and for assessing its adequacy.

Minimum criterion for determining if a highwall drill is equipped with an environmental cab.

CMS&H considers positive-pressure enclosures (environmental cabs) on surface drills to be an effective control under §72.620 if they are properly designed and maintained to withstand the drilling environment and the only person(s) exposed to the drill dust is located inside the cab.

To be classified as an environmental cab, the cab's interior must be always pressurized (positive pressure relative to the outside) with filtered air under all conditions of heating, ventilating, and air conditioning to prevent drill dust from entering the cab. That is, all outside intake air used to pressurize the operator cab must pass through a filtering system that captures particulate matter. If pressurized, the direction of air movement should always flow from the cab toward the outside, which can be checked using chemical smoke tubes. This test should be performed under normal operating conditions with doors and windows in the closed position.

To determine if the pressurized cab is equipped with an effective air filtration system that is being properly maintained will require the inspector to sample the environment of the highwall drill operator in accordance with established procedures during each 6-month respirable dust sampling inspection at the mine. This is necessary for two reasons.

Controls for Surface Drills using Rotoclone Collectors. Eng. and Min. J., Nov. 1995, pp. 30-31

1. First, the filter(s) typically used for filtering the outside intake air is not marked to enable the inspector to identify the type of media employed, its classification (e.g., designed to remove vapor, particulate, or vapor and particulate), or its efficiency rating.
2. Secondly, even if the filter is clearly marked, neither the filter's performance as installed or its current condition can be adequately evaluated through visual inspection. Even if the inspector observes dust inside the cab, this by itself is insufficient to conclude that the cab is equipped with an ineffective filtration system, because the dust could be due to inadequate housekeeping.

Therefore, since the objective is to assess the adequacy of the cab's filtration system, the sampling device must remain inside the cab during the entire sampling shift. If overexposure is found, the operator will be cited under either §71.100 or §71.101. Any dust control plan submitted following termination of the citation shall specify the dust control measures used to abate the violation. If the operator elects to use a more efficient particulate air filter to achieve compliance, the plan shall describe the type of filter to be used and how it will be maintained to assure that respirable dust levels stay continuously within the applicable standard inside the cab. Additionally, consideration should also be given to including in the plan, provisions requiring the cab's interior to be periodically cleaned to maintain it relatively dust-free.

All inspector highwall drill samples having sufficient weight gain are also analyzed for quartz content. If those results indicate that the standard should be reduced further, the enclosed cab may need to be evaluated again to assess its adequacy under the lower standard, unless the measured dust concentration is less than or equal to the lower standard.

If other miners are working in the immediate vicinity of the drill (within 100 feet) and they are being exposed to the dust, the drill would be in noncompliance with §72.620 because environmental cabs do not control drill dust at the source.

Appendix D

Inspection Procedures for Assessing Compliance With §75.362(a)(2)- Respirable Dust Control On-shift Examination and §75.362(g)(2)- Respirable Dust Control On-shift Certification

Purpose

The Secretary of Labor's Advisory Committee on the Elimination of Pneumoconiosis Among Coal Mine Workers was chartered to "... make recommendations for improving the program to control respirable coal mine dust in underground and surface mines in the United States." On November 14, 1996, the Committee submitted its report in which it recognized the importance for mine operators to examine respirable dust control parameters on a regular basis. This document establishes inspection procedures for 30 CFR §75.362(a)(2) and §75.362(g)(2).

Instructions

§75.362(a)(2) requires the operator of an underground coal mine to perform an on-shift examination of respirable dust control parameters specified in the approved mine ventilation plan. The mine operator may designate a person or persons to conduct this examination. Such persons must be familiar with the respirable dust control parameters specified in the mine ventilation plan for the area they have been designated to examine and must have the instruments necessary to determine that the dust controls are functioning properly.

The provisions of §75.362(a)(2) and §75.362(g)(2) do not require the on-shift examination of respirable dust control parameters to be conducted by a certified person; however, they do require a certified person to direct the respirable dust control on-shift examination and certify by initials, date, and time that the examination was made. MSHA expects that if the certified person is directing this examination, the person will be present at the site of the examination while it is being conducted. The standard does not specify where the mine operator should document this type of certification. However, in order to ensure that the miners on the section can verify that the required on-shift examination was made, the certification should appear at or near a place on the section where the miners would be able to make such a determination.

When a shift change is accomplished without an interruption in production, such as when miners change out at the face, i.e. "hot seat," the required examination is to be made within 1 hour after the shift change. Some of the dust control parameters can be evaluated without ceasing production. If the evaluation of the parameters cannot be determined through a continuous monitoring system or established operating relationship, production must cease in order for the examiner to make these determinations. In those instances when there is an interruption in production during the shift change, such as when miners leave the section before the oncoming shift arrives, or the section was not producing on the previous shift, the required examination must be made before production begins on the section.

The required examinations shall be sufficient to ensure that all dust control parameters, specified in the approved mine ventilation plan, are in place and functioning properly. Some of the parameters may only require a visual observation to ensure the parameters are in place and functioning properly. However, other parameters such as air quantities, air velocities, spray nozzle water pressures, and water system flow rates require measurements in order to ensure they are functioning properly.

All deficiencies identified as a result of the on-shift examination of the dust control plan parameters shall be corrected before production begins or resumes. The standard does not require a mine operator to record the identified deficiencies unless a determination has been made that the deficiencies create a hazard for the miners. In such cases, the mine operator would be required to record the identified hazard(s) under the requirements of §75.363 Hazardous Conditions; Posting, Correcting, and Recording.

During each inspection or investigation activity being conducted on a producing mechanized mining unit (MMU) the inspector shall determine if the coal mine operator conducted the required on-shift examination of the dust control parameters stipulated in the mine ventilation plan. This determination should be made as soon as practical after the working places are checked for imminent dangers.

When an inspector is conducting a health-related inspection activity (collecting respirable coal mine dust samples, monitoring the mine operator's sampling program, or conducting a respirable dust technical investigation) he/she shall complete in its entirety, MSHA Form 2000-86, July 93 (revised). A separate MSHA Form 2000-86 shall be completed for each producing MMU and shift that the inspector visits. A copy of the completed MSHA Form 2000-86 shall be filed with the appropriate inspection or investigation report as currently required. During these inspections or investigations, inspectors must evaluate and record the respirable dust controls in use. This includes their placement, condition, and ability to actually control the dust levels.

All primary section dust generating sources, such as continuous and longwall mining machines, roof and rib bolters, coal drills, cutting machines, rock dust equipment, and the section loading point must be inspected for compliance with the respirable dust control parameters specified in the plan. The inspection shall include an examination of airflow quantities and velocities, water pressures and flow rates, water spray size and orientation, section ventilation and dust control device placement, and any other dust controls specified in the mine ventilation plan. This may include, but is not limited to, work practices, physical conditions, and enclosures.

The actual airflow delivered by scrubbers is critical to the performance of dust control and ventilation systems. Coal mine inspectors shall measure the airflow of scrubbers and dust collectors during respirable dust inspections and investigations. Mine ventilation plans that include air-directing spray systems, such as shearer clearer and fan sprays, usually specify spray angles. CMS&H does not expect inspectors to measure precise spray angles during each respirable dust inspection or investigation. However, inspectors shall determine that sprays are directing the ventilation as stipulated in the plan. A sketch of the water spray system should be provided in the space available on Form 2000-86. The inspector shall also determine the water pressure and flow used on the dust control system. These may be measured indirectly by the mine operator based on a relationship or remote sensor. The inspector shall determine, during the inspection, if such indirect method is accurate and take appropriate enforcement action if such method is inadequate.

There are a number of ventilation requirements in Part 75 Subpart D-Ventilation that have a significant effect on respirable dust levels and that are not required to be addressed in the mine operator's approved mine ventilation plan since they apply generally to all coal mines. Accordingly, mine operators are not required by §75.362(a)(2) to certify, prior to beginning production, that these controls, which are not included in the plan, are in place and properly functioning. However, mine operators are required to maintain compliance with these provisions at all times. If an inspector determines that the mine operator is not maintaining compliance, the inspector shall take appropriate enforcement action.

When an inspector determines that the mine operator has failed to conduct the required on-shift examination of the dust control parameters, or has failed to complete the examination prior to beginning or resuming production, the inspector shall take appropriate enforcement action under §75.362(a)(2). If the examination was completed but the person directing the on-shift examination does not certify by date, time, and initials that the examination was conducted, appropriate enforcement actions shall be taken under §75.362(g)(2).

If the inspector determines that the mine operator failed to correct any identified deficiencies found during the required examination prior to beginning or resuming production, the inspector shall take appropriate enforcement action under §75.362(a)(2). The inspector shall include the appropriate provision of the mine ventilation plan that was not being complied with in the narrative of the violation.

In addition to the on-shift requirements required by this standard, many ventilation plans contain more frequent examination requirements for the dust controls at various times during the mining cycle. The mine operators must continue to comply with the provisions as outlined in the mine ventilation plan. If the inspector determines that the mine operator failed to maintain compliance with the requirements of the approved mine ventilation plan, the inspector shall take appropriate enforcement action under §75.370(a)(1). The inspector shall include in the violation narrative, the appropriate parameter(s) of the approved mine ventilation plan that were not being complied with.

Appendix E

Maintenance of Dust Controls on Roof Bolters and Machine-Mounted Dust Collectors on Continuous Mining Machines

Purpose

On November 14, 1996, the Advisory Committee on The Elimination of Pneumoconiosis Among Coal Mine Workers submitted its report to the Secretary of Labor recommending actions that should be taken to improve the current MSHA program to control respirable coal mine dust. In that report, the Advisory Committee recognized that there continues to exist a “significant silica exposure hazard in coal mining, especially for some operations such as roof bolting.” The Committee also noted a substantial potential for silica exposure among continuous miner operators and selected other occupations. Accordingly, the Advisory Committee recommended that efforts be made to target enforcement actions to reduce such exposures. This document implements part of that recommendation by stressing that increased emphasis should be placed by all CMS&H personnel on the examination of dust controls on roof bolters and machine-mounted dust collectors (scrubbers) on continuous mining machines.

Instruction

Environmental control measures continue to be the primary means of maintaining compliance with respirable coal mine dust levels in the mine atmosphere. Inspection personnel are required to examine respirable dust control parameters as part of regular health and safety inspections (E01). These controls are also checked during technical sampling and non-sampling inspections. This document outlines the areas which should be examined to properly inspect these controls. It is imperative that these controls be properly installed and maintained. Dust controls on roof bolters and machine-mounted dust collectors on continuous mining machines are two primary engineering controls utilized by mine operators to reduce respirable coal mine dust in the active workings of the mine environment. Roof bolting machines normally utilize either dry dust collectors or wet drilling methods. Both methods have been shown to be effective in controlling the dust generated from drilling holes for roof bolts.

Dry dust collection systems on roof bolters have numerous components critical to effective operation that must be regularly examined. Inspection of the dry dust collector should include an examination of the seals around the dust box, the mechanism utilized to keep the door of the dust box secure, the hoses from the drill pod to the dust box, the hoses from the dust box to the vacuum pump, and the hoses from the pump to the mufflers to ensure that there are no holes or leaks. If these components are not maintained, a violation of §72.630(b) should be cited.

The muffler is an excellent barometer for indicating whether the operator is maintaining the dry dust collector properly. Visual observations can be made on the clean side of the dry dust collector to determine if the filter has been damaged or bypassed. If dust is present on the inside of the muffler exhaust, the filter associated with the dry dust collector has been bypassed. When this occurs, the system should be thoroughly cleaned from the exhaust back to the filter. If dust is not present on the inside of the muffler exhaust, the system should still be checked. The filter should be checked for holes and removed to check the seal between the filter and the exhaust. If the filter has holes or the seal is missing or damaged, the dry dust collector is not being properly maintained. A violation of §72.630(b) exists if these conditions are observed.

The vacuum pressure of the dry dust collection system should also be checked. Pressure readings at the drill pod can be taken and these readings compared to the manufacturer's specifications. If pressure readings cannot be taken, the inspector can still check the system by blowing smoke or sprinkling rock dust over the inlet at the drill pod and observing if the smoke or dust is captured by the system. If the vacuum associated with the dry dust collector is not maintained, a violation of §72.630(b) should be cited.

Emptying the roof bolter dry dust collector box is important in limiting exposures to drill dust. This dust may routinely contain a high quartz content. Mishandling of such dust can contaminate the section ventilating air, increasing the potential exposure to excessive quartz levels. In order to address this problem, the method utilized to empty the dust box and the location where this process takes place should be addressed in the approved ventilation plan. If the section or roof bolter is on a reduced standard, incorporating such procedures in the approved plan is even more important. If these procedures are contained in the approved plan and the operator does not follow these procedures, a violation of §75.370(a)(1) should be cited.

Some roof bolters are equipped with an automatic dump box. These units have been found to have improperly fitting filters which sustain damage when the door closes. The damage allows the dust to bypass the filter and be introduced into the working environment. The failure to maintain the dust collection system as approved is a violation of §72.630(b).

Wet drilling methods have fewer working components and therefore require less maintenance. However, it is still imperative that the wet drilling system be properly installed and maintained. The water delivery system should be checked to ensure no leaks are present that would prohibit sufficient water from reaching the drill steel. If multiple pieces of drill steel are utilized, this could be a problem area for the bolter operator since water loss can occur at the connection. Proper water pressure and volume, as well as the ability to control these variables, are critical when utilizing wet drilling methods. Observation of dust while drilling with a wet drilling system may indicate an insufficient dust control system and may be a violation of §72.630(a).

The type of drill bit used affects the dust generation and capture efficiency of drill dust control systems. Research by the former United States Bureau of Mines has shown that drill bits that have openings on the bit at or near the cutting surface generate less dust when compared to bits that capture dust at the end of the drill steel. The research also indicated that these bits have a better capture efficiency. Accordingly, mine operators should be encouraged to utilize the most effective respirable dust control methods, procedures, and components for drilling in rock that are available.

Continuous mining machines equipped with machine-mounted dust collectors are common in underground mining. As auxiliary controls, flooded bed scrubbers on continuous mining machines have allowed the mine operator to take cuts in excess of 20 feet. The scrubber has also allowed the operator to operate the continuous mining machine with line curtain or tubing distances up to 50 feet from the deepest point of penetration without decreasing the level of protection afforded miners from respirable dust. As with any respirable dust control measure, the scrubber must be properly installed and maintained. If operators are utilizing scrubbers for these curtain setbacks, maintenance requirements should be incorporated in the approved mine ventilation plan.

Inspectors should perform the following visual checks on the scrubber system to verify that the scrubber is being maintained. The inlets, exhaust, and ductwork of the scrubber must be free from obstructions. This requires the operator to routinely flush or wash the inside of the ductwork in its entirety to remove

any materials that have been deposited in the duct, as well as clearing the inlets and exhaust. These deposits cause restrictions in the system and will not allow the proper air quantity or velocity to be maintained. The scrubber screen should also be cleaned on a regular basis. The inspector should also check the screen to ensure that the water spray hits the entire screen and not just the center of the screen. If the screen is not completely covered by the water spray, dust may pass through the screen and become entrained in the section air flow. Surveys have shown that without proper cleaning of the ductwork, scrubber screen, inlets, and exhaust, the efficiency of the scrubber is greatly reduced. The flooded bed scrubber is also equipped with a de-mister. Inspection personnel can check the de-mister by checking the exhaust of the scrubber system. If the exhaust contains water mist, the de-mister is not working properly. A common problem encountered is for the sump to be clogged by material that will not pass through the system. A thorough cleaning of the sump should correct this problem. Routine maintenance of the scrubber system is critical for the proper and effective operation of scrubbers. If scrubber maintenance requirements are incorporated in the plan and the operator is not performing the maintenance, a violation of §75.370(a)(1) exists.

Appropriate inspection personnel should also take measurements of engineering parameters to determine if the operator is maintaining the scrubber system properly. Pitot tube readings can be taken on the scrubber to determine if the scrubber is producing the correct amount of air as stipulated in the approved mine ventilation plan. If the operator submits the name plate quantity of the machine-mounted dust collector as the operating volume, this is the minimum quantity that must be maintained at all times. If the measured operating capacity reveals that the name plate quantity is not indicative of actual conditions, or if respirable dust samples indicate that this quantity is not sufficient, appropriate enforcement action shall be taken and plan revisions may be necessary. (Examples: require the operator to take periodic pitot tube readings on the scrubber, increase the air required to be maintained behind the line curtain or tubing, require more frequent cleaning of the filter and ductwork (manufacturers routinely call for scrubber screens to be changed at least every 4 hours), etc.)

Providing and maintaining adequate ventilation for roof bolters and continuous mining machines continues to be an integral part of any effective respirable dust control strategy to limit miners' exposure to respirable coal mine dust. During the inspection of respirable dust controls for roof bolters and continuous mining machines, inspection personnel should take sufficient air readings to verify that the operator is maintaining adequate ventilation as stipulated in the approved mine ventilation plan. If the approved quantity of air or mean entry air velocity, if required, is not maintained, a violation of §75.370(a)(1) should be cited for a failure to follow the approved ventilation plan provisions required by §75.371(g) or §75.371(h), respectively. In addition, §75.362(a)(2) requires that deficiencies in dust controls shall be corrected before production begins or resumes on a section. When deficiencies discovered during an on-shift have not been corrected and production is underway, §75.362(a)(2) should be cited. §75.362(a)(2) should also be cited when the on-shift examiner conducts an inadequate examination of respirable dust control parameters specified in the approved mine ventilation plan.

Appendix F

Evaluation of an Acceptable Respiratory Protection Program

Purpose

The purpose of this document is to inform CMS&H employees of the basic elements of an acceptable respiratory protection program as set forth in American National Standards Institute (ANSI) Z-88.2-1969 which is incorporated into 30 CFR 72.710. This document does not replace the requirements of Z-88.2 but merely highlights those elements that form the core of an acceptable respiratory program that provides positive and reliable protection. This document can assist in a determination to extend an abatement time or to classify a violation as non-S&S.

Instruction

Section 72.710 of 30 CFR provides that approved respirators shall be selected, fitted, used and maintained in accordance with the provisions of ANSI Z-88.2, "Practices for Respiratory Protection." Paragraph 1.3 of Z-88.2-1969 provides that the provisions of Z-88.2 are mandatory in nature where the word "shall" is used and advisory where the word "should" is used.

This document is provided to guide the inspector through the review of an operator's respirator program to assess whether miners are provided protection against the full extent of exposure to airborne hazards. While all of the listed elements are necessary to have an acceptable program, each incidence must be reviewed in relation to the specific citation or exposure situation to determine that miners were protected from contaminant levels exceeding the appropriate standard. The use of personal respiratory protection will not prevent the issuance of citations for exceeding the applicable respirable dust standard. 30 CFR Parts 70, 71, and 90 require that respirable dust levels be controlled at or below the applicable standard in the mine atmosphere.

The items listed below comprise the minimum requirements necessary to determine that a personal respiratory program is acceptable:

- A. Written procedures detailing the selection and use of available respirators which include an evaluation of:
 - 1. the nature of the hazard;
 - 2. the limitations of the respiratory protection device;
 - 3. the job duties potentially requiring the use of respirators;
 - 4. where the personal protection is needed; and
 - 5. who is responsible for each respirator program area (training, fit-test, maintenance, selection, etc.).
- B. Provisions for training of all persons associated with the use and/or selection of personal respiratory protection which include:

1. explanation of the type of hazard, i.e., is the hazard quick acting or does it require a long duration exposure;
 2. the limitation of each available personal respiratory protective device;
 3. explanation of when the respirator is to be used;
 4. hands-on experience of putting the respirator on, exercising while wearing the respirator, and testing for proper facepiece-to-face seal; and
 5. the cleaning, disinfecting, and maintenance procedures used and how to determine that the respirator being provided is clean and functioning properly.
- C. Provisions for a facepiece fit-test for each miner prior to being expected to utilize each such respirator. The test should be conducted on each miner required to wear a personal respiratory protective device at least every 12 months. The test shall be conducted by subjecting each miner, while wearing the appropriate respirator, to a test atmosphere as specified by a scientifically acceptable test method. Note however, that a fit-test is not necessary for the use of some respirators such as an Airstream helmet. Examples of two widely accepted test methods are:
1. Qualitative Fit Test - the fit is acceptable if the miner, while wearing a respirator fitted with high efficiency particulate filters, is subjected to a test atmosphere of irritant smoke from a stannic chloride smoke tube and does not cough.
 2. Quantitative Fit Test - the fit is acceptable if the miner, while wearing a fitted respirator which has been outfitted with a sample port, is subjected to a test atmosphere (usually mineral oil mist) and the concentration of test atmosphere inside the respirator is negligible.
- The miner must perform exercises while wearing the respirator in the test atmosphere to determine if the respirator is properly fitted. Exercises should simulate at least the work of lifting, bending over, talking, movement of the head in all directions and exhibiting various facial expressions.
- D. Provisions require miners who wear a respirator to maintain the facepiece-to-face seal at all times by maintaining the facial surfaces free of hair or other interferences at the face to respirator contact points and in areas that may cause interference with the respirator valves or flow characteristics.
- E. A program for the maintenance and care of all respirators which includes:
1. provisions for the inspection of each respirator for defects conducted prior to and after each use;
 2. provisions for cleaning and disinfecting each respirator after each use and at periodic intervals if not used for an extended period of time (30 days);

3. provisions for storage of respirators in a convenient, clean and sanitary location; and
 4. provisions for a person to perform the maintenance and cleaning of respirators who is trained for such duty and is knowledgeable in the respirator manufacturer recommendations for the use, care and maintenance of each model of respirator provided by the mine operator.
- F. Records of actions taken in relation to the respirator program including at least:
1. records of fit-test which identify:
 - a. the exact model and size respirator;
 - b. date of testing;
 - c. the fit-test method; and
 - d. whether the miner passed or failed the test.
 2. records of training provided which include at least:
 - a. identification of miners;
 - b. date of training; and
 - c. topics covered.
- G. A statement of use which includes:
1. a requirement that an assigned respirator will be worn by miners at all times while in the normal work area such as the face area of an MMU; and
 2. a requirement that management personnel will make frequent checks of the work area to ensure that miners, mandated by the mine operator to wear respirators, are wearing such respirators.

Background

Provisions of 30 CFR require that respiratory protection be made available to affected miners when an area has been determined to be in noncompliance with the applicable respirable dust standard. Such protection, when utilized properly, may justify extensions of time to abate the excessive respirable dust conditions. Respiratory protection properly provided and utilized may also result in a condition being considered as non-S&S. These requirements detail what MSHA inspectors need to review to assess the adequacy of the operator's program to provide an appropriate degree of protection for the miners exposed. 30 CFR Section 72.710 requires that respirators be selected, fitted, used and maintained in accordance with the provisions of ANSI Z88.2-1969.

Chapter 2 - PART 90 PROGRAM

The Part 90 rule provides protection for miners with Coal Worker's Pneumoconiosis. Inspection personnel must be familiar with this rule to make decisions as to whether the operator is in compliance during, inspections and investigations, and to implement an effective enforcement program.

A. Medical Examinations

Section 203 (a) of the Act requires mine operators to provide medical examinations to miners they employ. This requirement applies only to miners employed at underground coal mines and surface work areas of underground coal mines; it does not apply to miners employed at entities identified as surface coal mines or surface coal facilities. The National Institute for Occupational Safety and Health (NIOSH) is responsible for administering all rules for providing medical examinations while MSHA is responsible for the enforcement of these rules.

B. Posting Chest X-Ray Examinations

Underground coal mine operators should either have a NIOSH approved plan for medical examinations under Section 203(a) of the Act and 42 CFR Part 37 or comply with a written notice of arrangements for medical examinations that were made by NIOSH. In either instance, the operator is required to post the approved plan or NIOSH Notice for medical examinations on the mine bulletin board. If the mine has been open for 6 months or more and the most recent NIOSH listings identify an underground mine as having an approved plan, the inspector shall issue the operator a citation if this plan or notice is not posted on the mine bulletin board.

C. Miner Notification

After interpretation of a miner's chest x-ray, NIOSH, for the Chief, Division of Health (DOH), informs the miner of any rights he or she may have under Part 90 and includes a copy of the NIOSH report of medical findings. If the interpretation reveals evidence of pneumoconiosis, the miner also receives a form that is to be used to exercise the option to work in a low dust area of a mine. It is possible for an underground coal miner, at his or her own expense, to be examined at an "approved facility" which will submit the medical information to NIOSH. NIOSH will evaluate the x-ray in the same manner as if it were submitted under the operator's plan or the NIOSH arrangements. If the findings from the approved facility show evidence of the development of pneumoconiosis, the miner will be awarded the right to exercise the Part 90 option.

D. Security of Part 90 Miner Information

All medical findings resulting from participation in the chest x-ray program are kept confidential by NIOSH and MSHA. However, when a miner exercises his or her rights under Part 90 by signing and dating the option form, MSHA informs the appropriate officials at the mine that the miner is a "Part 90 miner" and is entitled to protection under the rule. Medical findings are

privileged information and mine operators are prohibited from requiring any miner to disclose his or her medical information.

All records identifying Part 90 miners shall be kept in locked files when the information is not being used. These records include all Part 90 miner computer messages and computer input forms, all part 90 correspondence between the miner, operator and MSHA, the operator's Part 90 dust control plans, and all information resulting from inspections and investigations that identifies a Part 90 miner.

E. Exercising the Part 90 Option

When an eligible coal miner receives an exercise of option form, he or she alone is responsible for exercising his or her Part 90 option. If the miner is exercising the option for the first time, this is accomplished by the miner signing, dating and mailing the form in the preaddressed envelope provided to the Chief, Division of Health, Coal Mine Safety and Health, 1100 Wilson Boulevard, Arlington, Virginia 22209. Each request should include the name and address of the mine and company or corporation where the miner is employed.

The eligible miner is under no time limit as to when he or she must exercise the Part 90 option. The option can be exercised at any time. To prevent further development of pneumoconiosis, it is to the miner's advantage to exercise the option as soon as possible. Only after the option is exercised may the miner be assured of working in a less dusty area of the mine. However, this choice is the miner's alone, mine operator may not interfere with the miner's decision.

In several instances, miners have exercised their super-seniority rights as a letter carrier under the contractual agreement to obtain better jobs or hours without first exercising the option. When this situation occurs, the miners will not be protected under Part 90 unless MSHA receives an exercise of option form from the miner. The mine operator is not obligated to comply with Part 90, nor may MSHA enforce Part 90, until the miner has exercised the option. If a dispute should occur, MSHA personnel should inform the miner that the option must be signed, dated and submitted to the Chief, Division of Health.

F. Part 90 Dust Standard

The revised rule under Part 90 supersedes Section 203(b) of the Act and provides a miner who has black lung with greater protection from respirable dust. Revised Part 90 prohibits employment of a Part 90 miner in concentrations of respirable dust which exceed 1.0 mg/in^3 . Evidence shown that mine operators can attain a 1.0 mg/in^3 standard in many areas of a mine. The respirable dust standard will be lowered below 1.0 mg/in^3 whenever the concentration of quartz in the Part 90 miner's environment exceeds 10 percent. In that case, a new dust standard applicable to that affected miner would be computed by dividing the percent of quartz present into the number 10. For example, if the concentration of quartz in the Part 90 miner's environment was 20 percent, then the new standard would be 0.5 mg/in^3 .

G. MSHA Notification to Mine Operator

After a signed and dated exercise of option form, or written request for reexercise of option, is received from a Part 90 miner, the Chief, Division of Health, will notify officials at the appropriate mine in writing of the Part 90 miner's exercise of option. Also, copies of this written notification are sent to the affected miner and the appropriate District Manager.

H. Grace Period (20 Days)

Once an operator receives written notice from MSHA that an employee at the mine exercised the Part 90 option, several obligations must be carried out within certain time frames. Upon receipt of the notice, an operator is allowed a 20-day grace period after which the Part 90 miner must be working in a position which complies with the 1.0 mg/in³ standard. Because the operator has 20 days to assure the Part 90 miner is in a 1.0 mg/in³ environment, MSHA shall not sample Part 90 miners during this time period.

I. Operator's Written Notice to MSHA

During the same 20-day grace period, the mine operator must give the District Manager written notification of the occupation and, if applicable, the mechanized mining unit to which the Part 90 miner will be assigned on the 21st calendar day. The notice should include the shift or shift rotation and, if nonface, the area of the mine.

J. Achieving Compliance

The rule permits the operator to achieve compliance with the respirable dust standard in either of two ways. The operator must either implement control measures to lower the dust in the Part 90 miner's position; or transfer the Part 90 miner to an area of a mine where the dust does not exceed 1.0 mg/in³. However, where the Part 90 miner is already working in an atmosphere which complies with the 1.0 mg/in³ standard, there will be no need to lower the dust concentration in that position or to transfer the Part 90 miner to another position. If after this 20-day period the concentration of respirable dust in the Part 90 miner's job exceeds 1.0 mg/in³, a violation of the rule has occurred and an inspector issues a 104 (a) citation.

During the 20day period following the operator's receipt of MSHA's notification that a miner exercised the option, the mine operator may conduct sampling to determine the concentration of respirable dust in an occupation. However, the mine operator shall inform the District about the samples being used in accordance with 30 CFR 90, Section 90.209(d), if the sampling is being conducted with cassettes and equipment approved under 30 CFR 74. Also, the operator should not submit these samples to MSHA because they were not taken to satisfy any of the requirements of the Part 90 rule.

K. Transfer of Part 90 Miner

1. Defining Transfer - The amended Part 90 rule defines a transfer as "any change in work assignment of a Part 90 miner by the operator and includes (1) any change in occupation code of a Part 90 miner; (2) any movement of a Part 90 miner to or from a mechanized mining unit; or (3) any assignment of a Part 90 miner to the same

occupation in a different location at a mine.”

2. Transfer Protection

- a. **Shift Protection** - If, at any time, a Part 90 miner is transferred because the respirable dust standard has been exceeded in that miner’s position, the operator is restricted in the choice of jobs to which the Part 90 miner may be assigned, except as provided in paragraph “b” below. The Part 90 miner has to be transferred to an existing job at the same coal mine on the same shift or shift rotation on which the miner was employed immediately before the transfer.
- b. **Written Agreement** - If, at any time, a Part 90 miner is transferred because the respirable dust standard has been exceeded in that miner’s position, the mine operator may assign the Part 90 miner to a different coal mine (either surface or an underground coal mine), a newly created position, or a position’ on a different shift or shift rotation only if the miner agrees in writing to a transfer of this nature. However, it is important to note that (a) the Part 90 option can only be exercised while the miner is employed at an underground mine; and (b) any Part 90 miner who is transferred to another position by the operator remains a Part 90 miner at the new position, even if the job is at a surface mine.

3. Transfer After Grace period - Part 90 also requires that after the 20-day grace period, the mine operator shall notify the District Manager in writing before any transfer of a Part 90 miner is allowed to occur. This notification must include the scheduled date of transfer.

4. Transfer to Surface Mine - Miners can only exercise their Part 90 options while they are employed at an underground mine. Under the amended rule in 30 CFR 90, Section 90.102(a), a Part 90 miner may be transferred from an underground coal mine or surface work area of an underground coal mine to a surface mine or facility identified by a surface identification number and retain his/her Part 90 miner rights.

L. Part 90 Miner Compensation

1. Same Job - A Part 90 miner is compensated at not less than the regular rate of pay received by that miner immediately before exercising the option. Also, a Part 90 miner must receive wage increases in the job.

Example; The miner is earning \$7.00/hour, exercises the option, and the operator leaves the Part 90 miner in this job because it meets the 1.0 mg/in³ standard. The Part 90 miner continues to receive \$7.00/hour and any wage increases in that job.

2. Transfer to a New Job - Whenever a Part 90 miner is transferred, the operator must

compensate the miner at not less than the regular rate of pay received by that miner before the transfer. Also, a Part 90 miner must receive wage increases that apply to the new job.

Example: The miner is earning \$8.00/hour in Job 1, exercises the option, and the operator transfers the Part 90 miner to Job 2. In Job 2, the Part 90 miner will continue to receive \$8.00/hour, although other miners in the same job receive \$7.00/hour. If a pay increase occurs in which fellow miners in Job 2 receive a \$0.30 wage increase from \$7.00 to \$7.30/hour, the Part 90 miner will then earn \$8.30/hour. If the Part 90 miner is again transferred by the operator to Job 3, the miner will earn not less than \$8.30/hour in the new job and be entitled to any wage increases in the new Job 3.

3. Temporary Employment - The amended rule addresses compensation of miners who are temporarily employed in an occupation other than his or her regular job classification for 2 months or more before exercising the Part 90 option. In this case, once the option is exercised, the Part 90 miner will receive the higher of the temporary or regular rates of pay and also receive any future wage increases in the assigned position.

Example: The miner is in Job 1 earning \$6.25/hour but the operator temporarily assigns him to Job 2 at \$6.50/hour. While in Job 2 after 3 months, the miner exercises the option to work in a low dust area of a mine. The operator transfers the Part 90 miner to Job 3 which usually pays the hourly rate of \$6.00/hour. Because the Part 90 miner worked at least 2 months in the temporary Job 2 before exercising the option, under this rule, the miner must now be paid at least \$6.50/hour and will receive any future wage increases in the new job.

M. Sampling Part 90 Miner

Sampling under the Part 90 rule must be performed within specified time frames and must be “valid” dust samples.

1. Exercise of Option - Sampling (Five Valid Samples - 15 days) By the end of the 20-day grace period after notification from MSHA, the Part 90 miner is required to be in an environment of 1.0 mg/in³ or less. During the subsequent 15-day transition period (21st through 35th day after notification), the operator must collect five valid samples from the Part 90 miner while he or she is performing normal work duties. If these samples show compliance with the respirable dust standard, the mine operator will begin a bimonthly schedule of sampling with the next bimonthly period as set forth in the rule; for example, if the last sample was collected in the April -May cycle, the next bimonthly cycle would be June - July. If noncompliance is indicated, a citation shall be issued.

2. Bimonthly Sampling (One Valid Sample - 60 Days) The mine operator is required to collect one sample during each bimonthly period for each Part 90 miner while he or she is performing normal work duties.
3. Bimonthly Sample Exceeds 1.0 mg/in³ (Five valid Samples - 15 Days) If a bimonthly sample collected for a Part 90 miner exceeds 1.0 mg/in³ or the standard established when quartz is present, the mine operator is required to collect an additional five valid respirable dust samples within 15 calendar days from that Part 90 miner's environment for a compliance decision. If the results of these five samples show noncompliance with the applicable dust standard, the inspector shall issue a 104(a) citation. However, if these sample results show compliance, the mine operator will begin a bimonthly schedule of sampling for that Part 90 miner with the next specified bimonthly period.
4. Part 90 Miner Transfers (Five Valid Samples - 15 Days)
The mine operator shall collect five valid samples from the environment of a Part 90 miner within 15 calendar days following implementation of any subsequent transfer that occurs after the 20-day grace period. If the results of these five samples show noncompliance with the applicable standard, the inspector shall issue a citation. Similarly, if results of these five samples show compliance with the applicable dust standard, the mine operator will begin a bimonthly schedule of sampling for that Part 90 miner within the next specified bimonthly period.
5. Part 90 Miner Sample Results - Mine operators are required to provide a copy of the Part 90 miner sample results to the affected miner, but the operator is prohibited from posting the original or a copy of this report on the mine bulletin board.
6. Transmittal of Samples - Each sample collected by the operator must be transmitted to MSHA within 24 hours after the end of the sampling shift. Each sample is assumed to be taken to fulfill the sampling requirements of either Parts 70, 71, or 90. However, if operators want to collect samples for their own use, they must notify the District Manager in writing prior to the intended sampling shift and declare which samples are intended for purposes other than fulfillment of sampling requirements. This prior written notification is not required if non-approved samplers and cassettes were used by an operator for experimental purposes.
7. Dust Data Card - All samples transmitted to MSHA must be accompanied by the appropriate completed dust data card. These cards are supplied by the cassette manufacturer and each card has an identification number identical to that on the filter cassette for which it was provided. The card must be completed and signed by a certified person. Each completed card from a sample collected on a Part 90 miner shall have that miner's social security number on the card. A miner's social security number will be noted on the data card only for Part 90 miners.
8. MSHA Reporting of Operator Sampling Results - In addition to the operator providing copies of sample results to each Part 90 miner, MSHA will notify each

Part 90 miner of respirable dust sampling results whenever a bimonthly sample submitted for that miner exceeds the standard. MSHA will also notify the affected Part 90 miner of the results of compliance sampling taken by the operator in accordance with Section 90.207. As these computer messages are received, the MSHA office shall mail copies of these results to the appropriate Part 90 miner's resident address.

N. MSHA's Technical Inspections and Investigations

Prior to inspections and investigations that may involve the Part 90 rule, inspection personnel shall familiarize themselves with the field office records. The Uniform Mine File Notebook will indicate whether Part 90 miners are employed at the mine. When this record indicates "yes," the inspector shall review the Part 90 miner files that are kept in a locked file to determine the status of the miner in relation to execution of the option, transfer, sampling, dust control plan, correspondence and existence of citations and orders.

1. Posting Medical Examination Plans - At each underground mine which has been open for 6 months or more, the inspector shall check the bulletin board for an approved medical examination plan.
 - a. If the mine does not appear on either computer listing from NIOSH, send a completed mine status form to NIOSH's Division of Respiratory Disease Studies, X-ray Receiving Center, P.O. Box 4258, Morgantown, West Virginia 26505-2888.
 - b. If the mine does appear on either list as having an approved x-ray plan and the plan **is not posted**, a citation shall be issued.

* A violation of 42 CFR 37, Section 37.4(e), shall be listed on a citation when the operator's approved plan is not posted on the mine bulletin board; or

- * A violation of 42 CFR 37, Section 37.6(c), shall be listed on a citation if the "Notice of NIOSH Arrangement" for x-ray plans has not been posted on the mine bulletin board.

2. Sampling Frequency

MSHA personnel should make every effort to sample each Part 90 miner during every technical inspection (sampling) as specified in Chapter 1 of this handbook.

O. Part 90 Miner Dust Control Plan

1. Dust Control Plan

If the mine operator abates a violation of the applicable dust standard in the environment of a Part 90 miner by implementing additional control measures at the

Part 90 miner's work position, a respirable dust control plan must be submitted. This dust control plan shall be submitted to the District Manager for approval within 15 days after the citation is terminated.

Mine operators are required to provide a copy of the Part 90 miner dust control plan to the affected miner, but the operator is prohibited from posting the original or a copy of this plan on the mine bulletin board.

2. Dust Control Plan Content

The plan must include specific details on the control measures that were implemented to reduce the dust and abate the violation and specific time, place and manner that the control measures will be used to continuously maintain compliance with the standard.

3. No Plan Required

If the mine operator abates a violation of the applicable dust standard by transferring the Part 90 miner to another position, the operator is not required to submit a dust control plan to the District Manager for approval.

P. Report of Status Changes

Any change in status of a Part 90 miner that affects sampling must be reported in writing by the mine operator to a designated MSHA District office within 3 working days after the change in status has occurred. Section 90.220 shall be cited when the operator has failed to collect samples for a Part 90 requirement and it is determined that the operator did not notify the District Manager in writing within 3 days after a status change has occurred.

Whenever changes occur which affect a Part 90 Miner's option, the procedures listed below shall be followed:

1. Miner Declines Option or Waives Rights

Investigate to determine whether the miner freely made the decision not to complete the transfer.

Explain Part 90 rights and assure that the miner has knowledge of the circumstances and how this decision may affect his/her health.

Promptly notify the Arlington Division of Health (DOH) in writing of the investigation results.

2. Miner Terminated, Laid Off, Retired or Deceased

Promptly inform DOH in writing after this is verified and include the effective date

of the action.

3. Miner in Unavailable Status for More Than One Year

Verify this status with the mine operator and/or the miner and the reason for this prolonged condition.

Record this action in the miner's file and submit a copy to DOH.

When DOH receives information concerning Item 1 or 2 above, DOH informs the miner that he/she is being removed from active Part 90 status and that the Part 90 rights can be reestablished, provided the miner is employed at an underground coal mine and submits a written request to the DOH Chief.

Q. Waiver of Part 90 Option

A Part 90 miner may waive his or her Part 90 rights by (1) giving written notification to the Chief, Division of Health, Coal Mine Safety and Health; (2) applying for and accepting a position in an area of a mine which the miner knows has an average respirable dust concentration exceeding 1.0 milligrams per cubic meter of air or exceeding any standard below 1.0 mg/in³ established by excessive concentrations of quartz; or (3) refusing to accept another position at the same coal mine which meets the requirements of 30 CFR 90, Sections 90.100, 90.101 and 90.102(a), when sample results show that the applicable dust standard is exceeded in his or her current position. When a miner does waive Part 90 rights, protection under Part 90 terminate until the miner reexercises the option at a later date. There is no limit on the number of times a Part 90 miner may waive his or her rights. Once these rights are waived, the miner may reexercise the option at any time, as long as he or she is employed at an underground coal mine or at a surface work area of an underground coal mine.

The Part 90 rule does not require the miner or operator to provide a written statement when the Part 90 miner refuses to accept another position offered by the operator; i.e., when the respirable dust concentration exceeds 1.0 mg/in³ or the standard established by Section 90.101. Written notice by the Part 90 miner or operator also is not required when a miner accepts an occupation where respirable dust concentrations exceed 1.0 mg/in³. When these situations occur, the inspector shall establish facts through reviewing job bidding documents, company records, and through discussions with the Part 90 miner and operator.

R. Ineligibility of Option

1. Notification

There have been occasions where a miner was awarded the option, exercised his or her rights, and later NIOSH discovered that a mistake was made. Because of the mistake, that miner was never actually eligible to exercise the option. Although the miner had been notified of transfer rights under the old Section 203 (b), these rights had to be withdrawn because there was not sufficient evidence of pneumoconiosis.

Under amended Part 90, the miner who exercised the option and then received notice of ineligibility will remain in his or her current job at the same rate of pay until one of two resolutions is agreed upon.

2. Resolutions

- a. The miner and operator may agree in writing that the miner will stay in the current position if written agreement is reached, the miner shall be compensated at no less than the regular rate of pay for the agreed upon position and Part 90 protection will terminate.
- b. When another position at this same mine becomes available on the same shift and in the same occupation in which the miner was employed immediately before exercising the option, the mine operator shall offer this position to the affected miner. At this point, the miner has 15 days to make up his or her mind on whether to accept this written offer. If the miner accepts the job, the mine operator is required to make the reassignment and compensate the miner at not less than the regular rate of pay for the new job. However, if the miner fails to act on the operator's offer of this available position within 15 days, his or her failure will act as a rejection of the offer. At this point, the miner is no longer entitled to any protection under this Part 90 rule.

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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**

<u>Measurement Parameter</u>	<u>Value</u>		
	<u>Dosimeter I</u> (Action Level)	<u>Dosimeter II</u> (PEL)	<u>Dosimeter III</u> (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's 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 (TWA₈) in dBA.
- p. Record the dose percentage for the 90 dBA Permissible Exposure Level (90 dBA threshold) and associated time-weighted average (TWA₈) 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 dBA¹; 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.

¹ 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).

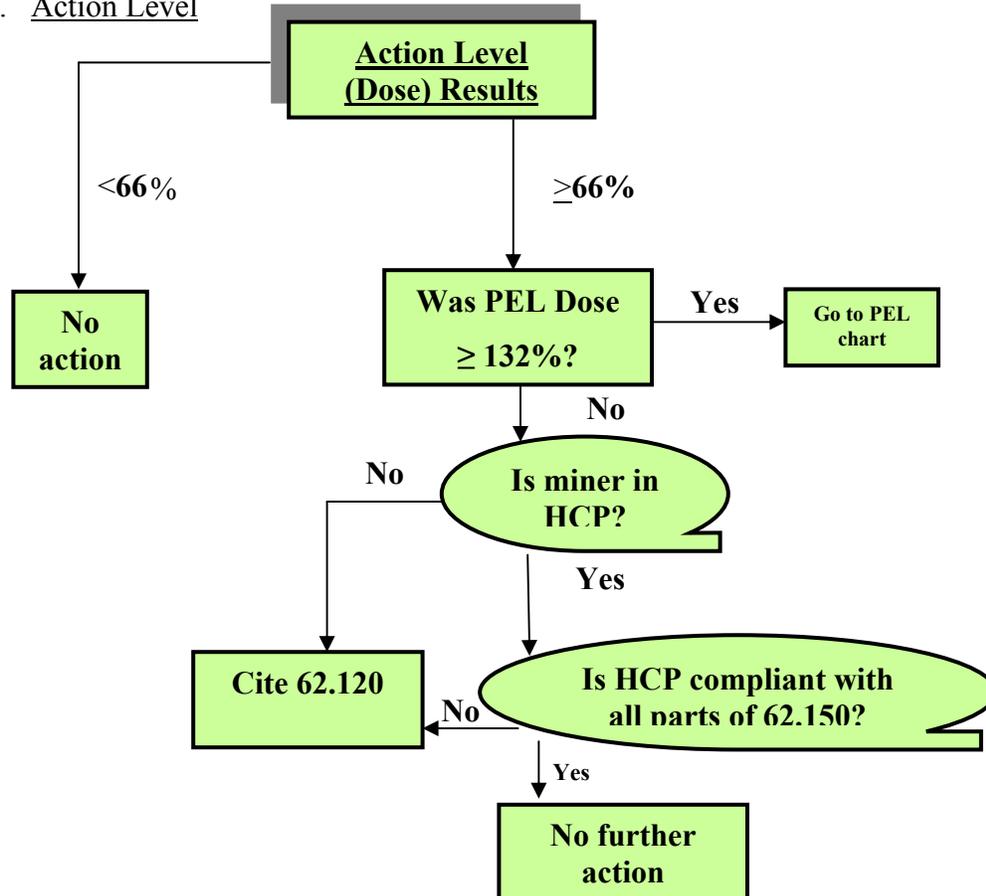
NOTE: Assistance in estimating costs will be available on MSHA's website.

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 (TWA₈ of 85 dBA) up to the Permissible Exposure Level (TWA₈ 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:

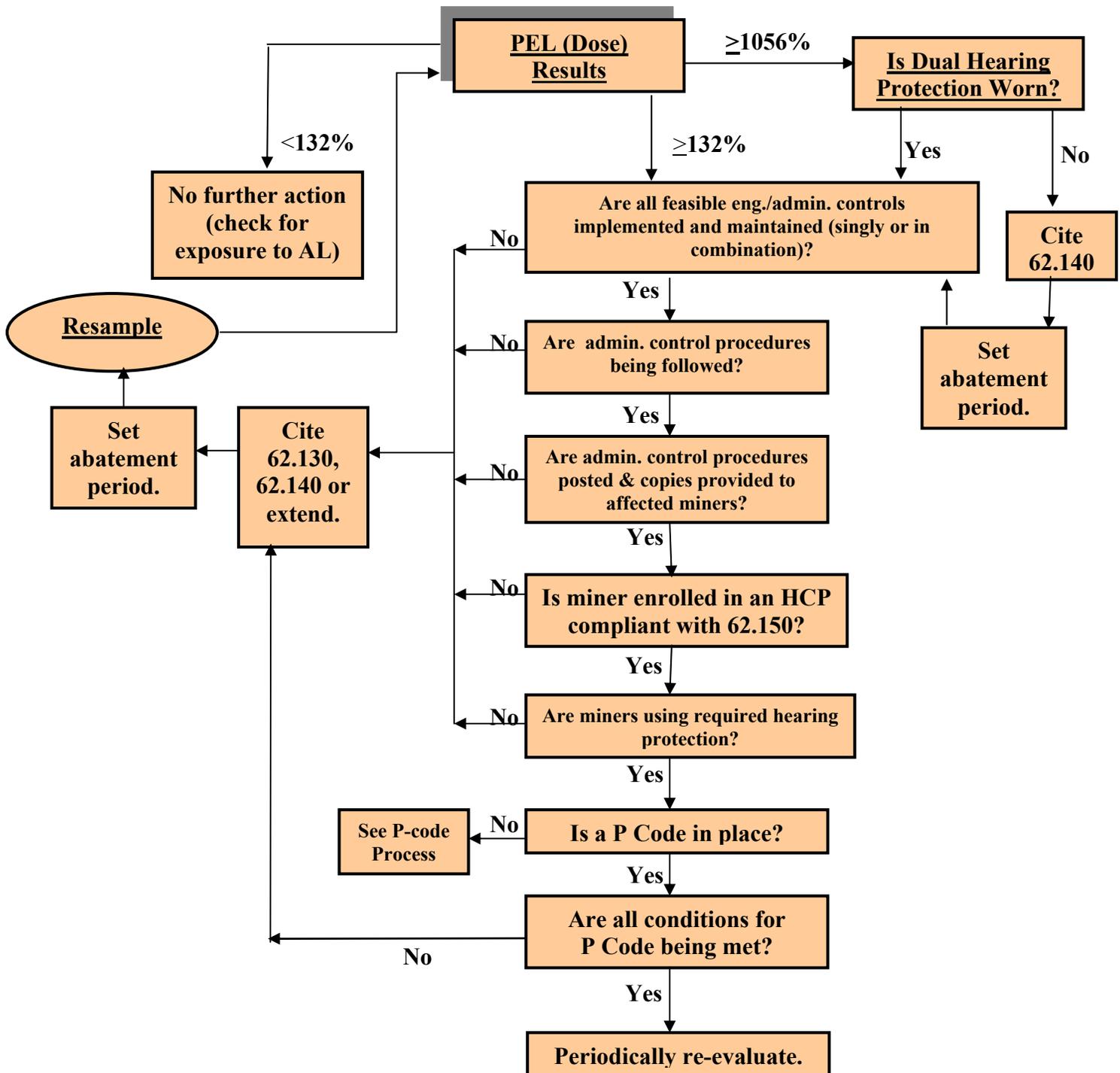
30 CFR 62.160(c) (1) – the miner has incurred a Standard Threshold Shift (STS); or

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 (TWA₈ 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.

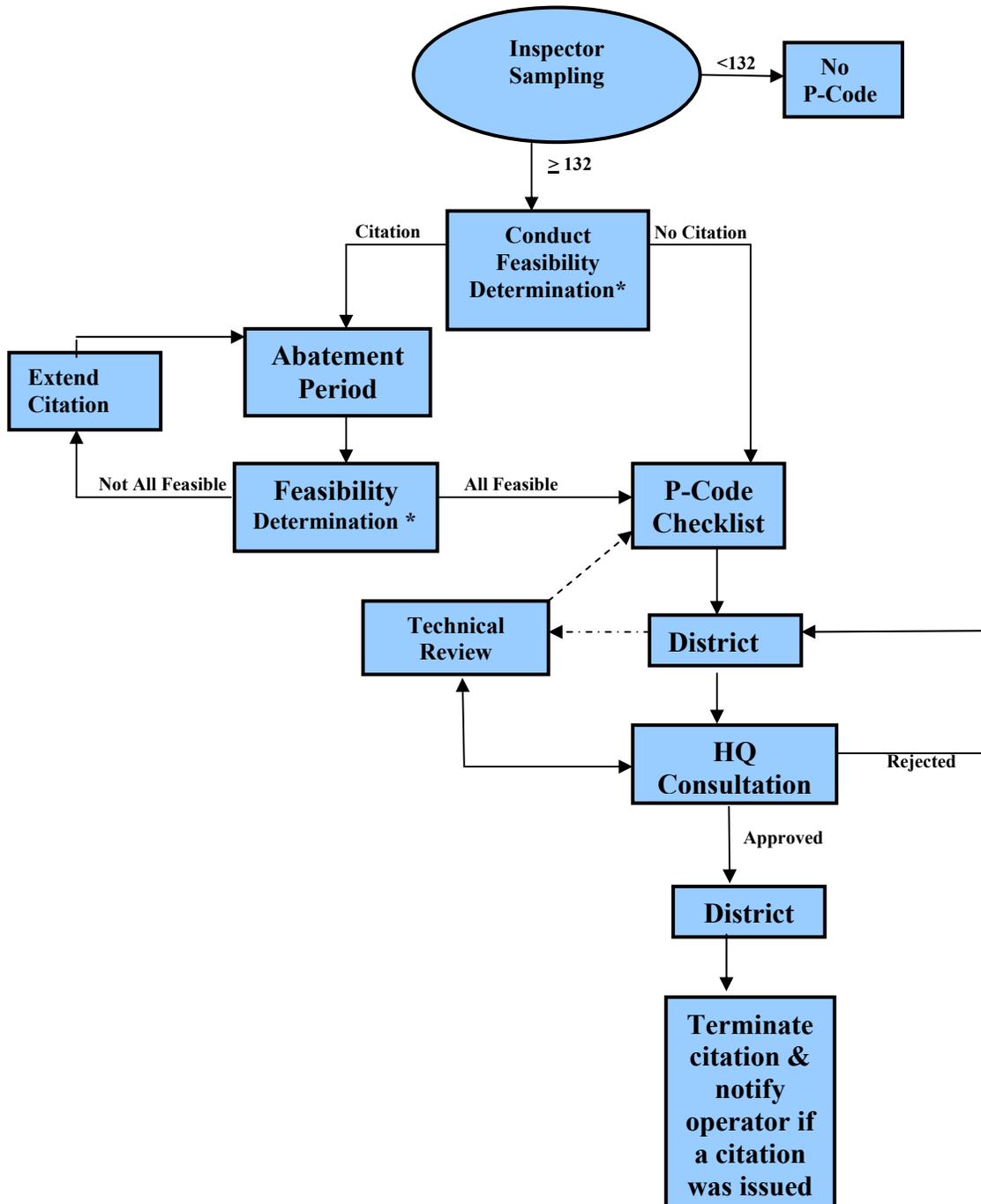
7. **For Coal**, Press the **“LEVELS”** key then press the **ARROW UP ▲** or **ARROW DOWN ▼** until **“MAX”** is displayed. Record the **90 PEL Max** under item **“X”** on 2000-84. (use no decimals ex 123.9 = 123 dBA).
8. **For Coal**, Press the **“TIMES”** key then press the **ARROW UP ▲** or **ARROW 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>What is the origin of the P-code request?</p> <p>a) Mine inspector request based on a citation b) Mine inspector request without a citation</p>
ITEM	YES	NO	<p>Information for Items B - I to be provided</p>
B.			<p>Is a brief narrative describing the operation and working conditions that resulted in an overexposure included? If so, please attach.</p>
C.			<p>Are there occupational / tasks details such as:</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>Is the noise overexposure linked to a discrete piece or pieces of equipment?</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>Is a description and effectiveness of the engineering controls currently being used included?</p>
F.		<p>Is a description of engineering controls considered, but not used, included?</p> <p>Are reasons included why the engineering controls were not used and /or considered infeasible?</p>
G.		<p>Is a description and effectiveness of the administrative controls currently being used included?</p>
H.		<p>Is a description of administrative controls considered, but not used, included?</p> <p>Are reasons included why the administrative controls were not used and /or considered infeasible?</p>
I.		<p>Are any consultant’s reports included with operator documentation?</p> <p>If yes, are the following included?</p> <ul style="list-style-type: none"> a) Test data and results b) Recommendations and conclusions
		<p>Information for Items J - O to be provided by MSHA District</p>
J.		<p>Has a citation been issued?</p> <p>If yes, has the following information been provided and/ or conditions met?</p> <ul style="list-style-type: none"> a) Citation b) Citation Extensions c) Inspectors field notes d) Compliance has not been achieved <p>Is the citation based on:</p> <ul style="list-style-type: none"> a) All feasible engineering and administrative are not in place b) Operator-provided hearing protection is not being worn by miners c) Affected miners are not enrolled in a HCP 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 <p>If no citation has been issued, then have the following conditions been met?</p> <ul style="list-style-type: none"> a) Noise sampling indicating exposure > PEL b) All feasible engineering and administrative controls in place/maintained c) Copy of administrative control procedures posted and provided to all affected miners d) All affected miners enrolled in a compliant Hearing Conservation Program that meets all the aspects of 62.150 e) Operator-provided hearing protection has been provided and is being worn by miners.

K.		<p>Has Technical Support been involved?</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>Has the MSHA Noise Source Identification Team been involved?</p> <p>If yes, are the report / recommendations attached?</p>
M.		<p>If engineering/ administrative control options were provided by the inspector or specialist and not implemented, were reasons provided why not and what were they?</p>
N.		<p>Noise Data</p> <p>Has a Q-300 noise dosimeter sampling and time motion study 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>District Approval</p> <p>Has a cover memo been included from the District Manager requesting a P-code?</p>
		<p>Item P for Headquarters use</p>
P.		<p>Does the report provide the needed information to evaluate the P-Code request?</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>Administrator's Action</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>

Chapter 4 - INDUSTRIAL HYGIENE

A. Industrial Hygiene Inspection Frequency and Scope

Industrial Hygiene (IH) inspections shall be conducted annually in at least 5 percent of all surface and underground mines located within each district. Special emphasis should be placed on surface shops and coal testing laboratories.

An IH inspection can be either a complete inspection for a mine site of all health hazards or a limited inspection such as that of a process, a chemical or physical hazard.

B. Qualifications of IH Inspection Personnel

All-IH inspections are to be conducted by MSHA employees who meet at least one of the requirements listed below:

1. The person can meet the requirements specified in OASAM Directive No. OD-236-83;
2. the person has successfully completed the advanced IH training course (16 to 18 weeks) at the National Mine Health and Safety Academy in Beckley, West Virginia; or
3. the person is determined to be qualified to conduct IH inspections by the District Manager. However, due to the possible hazards associated with toxic substances, District Managers should ensure that individuals qualified under this provision are fully aware of the proper sampling techniques for each toxic substance sampled.

C. Pre-inspection Procedures

Due to the wide variety of conditions in coal mining and processing, preinspection preparation is essential in conducting a quality inspection.

1. The IH inspector shall carefully review all pertinent information contained in the mine file and should review appropriate reference sources to become knowledgeable in the potential hazards.
2. The IH inspector should review appropriate standards and sampling methods. Based on experience and information known about the mine, the IH inspector should anticipate the instruments necessary for the inspection. The IH inspector or technician should then prepare the instruments and equipment according to the standard method of sampling and calibration.
3. The IH inspector should coordinate the inspection with the local MSHA field office supervisor.
4. The IH inspector shall prepare and use appropriate personal protective equipment when exposure to toxic substances is anticipated.
5. Upon arriving at the mine site, the IH inspector shall contact a representative of the operator and the miners informing each of the inspection. Where there is no

representative, the IH inspector shall consult with a reasonable number of the miners concerning matters of health and safety in such mines.

6. The IH inspector should obtain a list of operations, processes, and chemicals in use at the mine, if available, in an effort to set priorities for the inspection. Material safety data sheets should be requested for chemicals in use. If necessary to assist the inspection, the IH inspector should request blueprints, process flow charts or mine maps. If these are not available, the IH inspector should sketch, as necessary during the course of the inspection, a diagram identifying the operations and the relative dimensions of the work area. Where pertinent, distribution of equipment, including engineering controls in use, should also be included on the sketch.

D. Inspection Procedures

1. A walk-through (partial or full) is required for all IH inspections. The main purpose of the walk-through is to identify potential health hazards in the workplace.
2. As the walk-through proceeds, the IH inspector should record all relevant information concerning potential exposure to chemical substances or physical hazards, such as, potential sources of the health hazards, duration and frequency of the hazard, employee symptoms, pertinent employee comments, location of employees during the inspection, types of engineering controls and use of personal protective equipment –including types of respirators, ear and eye protection, clothing, etc. Material safety data sheets (MSDS) should be reviewed where available and appropriate.
3. The IH inspector shall inventory the toxic materials found at each mine site. A good place to start is at the mine supply house or warehouse. Upon completion, list the toxic materials found on the IH Inspection Data Form No. 2000187 and submit the information to the District Health Office to assist in compiling a toxic material data bank.
4. The following areas should also be evaluated during the IH inspection:
 - a. Education and Training. Observations should be made to determine if the operator's training program, as it relates to toxic substances and harmful physical agents, is adequate. If a miner has not attended the training required by 30 CFR 48.25(b) (8) or 48.28 (b) (8), appropriate citations will be issued. A special effort shall be made to determine miners' knowledge of (a) health hazards at the mine, (b) precautions that need to be taken, (c) emergency procedures, and (d) maintenance and use of personal protective equipment. If the miners' knowledge is inadequate, the details shall be promptly brought to the attention of the appropriate Education and Training Specialist so that remedial action can be taken.
 - b. Protective Clothing and Respiratory Equipment. A detailed evaluation shall be made to determine compliance with the specific regulations which require protective clothing and respirator equipment (30 CFR 70.300, 70.305, 75.1720, 77.1710).

- c. Bathing facilities, Change Rooms, Sanitary Flush Toilets and Sanitary Toilet Facilities. A detailed evaluation shall be made to determine compliance with the specific regulations which cover bathing facilities, change rooms, sanitary flush toilets and sanitary toilet facilities (30 CFR 71.400 through 71.501, and 75.1712 through 75.1712-10).
- d. Drinking Water. An evaluation shall be made to determine if there is an adequate supply of drinking water, if it is being maintained and dispensed in a sanitary manner in accordance with 30 CFR 71.600, 71.602, 71.603 and 75.1718.
- e. Reports of Occupational Illness. The IH inspector shall determine compliance with 30 CFR 50, with respect to occupational illness.

E. Collecting Samples

The IH inspector shall determine whether sampling is required by utilizing the information collected during the walk-through and from the preinspection review. If sampling is necessary, a sampling strategy shall be developed by considering potential chemical and physical hazards, number of samples to be taken and the operations and locations to be sampled.

1. Representative occupations must be selected for sampling and personal sampling devices prepared accordingly. Employees with the highest expected exposure at specific operations shall be monitored.
2. All sampling equipment shall be checked and calibrated prior to collecting samples. A record of each calibration shall be maintained.
3. Although it is not essential that the IH inspector continuously observe each employee being monitored, an accounting of each monitored employee's movements and duties in each area of the mine which may significantly affect the total exposure must be made.
4. Sampling equipment shall be checked frequently during the inspection to ensure proper operation.
5. If the employee refuses to wear the sampling pump and another employee who is similarly exposed cannot be sampled, the IH inspector shall collect the sample by holding the collection device in the breathing zone of the employee or by any other means which provides a representative sample of the employee's exposure.
6. Area samples may be taken to identify contaminant sources and their relative contributions to employee exposure (e.g., to assist in the determination of the effectiveness of, or need for, engineering controls).
7. Where the IH inspector doubts the quality of drinking water, the drinking water shall be tested to determine whether it meets the requirements of 30 CFR 71.601 and 75.1718-1.
8. Where necessary, the appropriate tests shall be conducted to determine whether bathing facilities, change rooms, toilet facilities, and sanitary toilets meet the

requirements of 30 CFR 71.402(a), 71.501, 75.1712-3(a), and 75.1712-10.

F. Evaluation of Sampling Data

The IH inspector shall evaluate all sampling data to determine whether applicable standards have been exceeded or whether a potential health hazard exists.

1. If at any time during the inspection noncompliance is determined, the appropriate citation(s) and/or order(s) shall be issued.
2. Airborne contaminant standards in 30 CFR 71.700 or gas standards in 75.301-2 should be referenced when making compliance or noncompliance decisions.
3. If, while indicating compliance with the applicable standard, the sample data suggests a potential health hazard, the IH inspector shall bring this to the attention of both labor and management and should offer assistance to the operator in preventing the condition from developing into an actual health hazard. A potential health hazard exists if the measured levels exceed 50 percent of the TLV level.
4. Additional sampling may be necessary either before or after the preventative action has been taken to further assess the condition.
5. If the sampling data results in a citation, a reasonable time shall be given to abate the condition. When corrective action has been taken, the IH inspector shall collect additional samples to determine the effectiveness of the control measures. However, at surface mines and surface areas of underground mines, the IH inspector may collect the additional samples or require the coal operator to collect the additional samples in accordance with 30 CFR 71.701. Sampling data obtained during the reevaluation shall be used to determine whether compliance has been achieved.

G. Closing Conference

The IH inspector shall meet with a representative of the operator and an authorized miner representative to discuss all available inspection results. Since the IH inspector may not have the results of all samples prior to the closing conference, a second closing conference may be necessary to inform both labor and management of sample results.

H. Sample Analysis and Reporting Procedures

1. All samples collected during the inspection shall be sent to the appropriate MSHA laboratory for analysis provided MSHA can do the analysis. If MSHA cannot do the analysis, arrangements with an independent laboratory will need to be made. When possible, a bulk sample of no more than 100 milliliters should be sent along with the environmental samples to the MSHA laboratory.
2. If no samples were collected during the inspection or if no sample results are outstanding, the IH inspector shall consider the inspection completed and submit a final IH inspection report to the supervisor.
3. All IH inspections shall be reported under the inspection code AEA (Toxic

Substances, Harmful Physical Agents Investigations).

4. If samples are outstanding at the conclusion, the inspector should complete an interim report and submit it to the supervisor.
5. Upon receipt of the sample results, the IH inspector shall evaluate the data, take appropriate actions under 30 CFR, and conduct a second closing conference with both labor and management.
6. Following the second closing conference, the IH inspector shall complete the final IH inspection report and submit it to the supervisor.
7. Any MSDS obtained from a coal operator should be maintained in the district files for further reference and a copy of the MSDS should be forwarded to the Chief, Physical and Toxic Agents Division (PTAD), Pittsburgh Health Technology Center (PHTC).
8. Form 2000-187 is to be completed for each industrial hygiene inspection. One copy is to be included with the AEA inspection report and a second copy is to be mailed, to the Chief, PTAD, PHTC, for computerization of the data, after all sample results have been received and the survey has been completed.
9. Form 2000-194 is to be completed only if samples were collected. If this form is completed, it should also be included with the AEA report and a copy sent, to the same location listed above, after all sample results have been received and the survey has been completed.

COAL MINE HEALTH INSPECTION PROCEDURES HANDBOOK

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Diesel Survey Summary Form

Chapter 5 DIESEL EXHAUST GAS MONITORING

I. Introduction

The purpose of monitoring diesel exhaust gas emissions is to evaluate miners' exposure to carbon monoxide (CO) and nitrogen dioxide (NO₂) and to determine the effectiveness of the approved mine ventilation plan controls as they relate to diesel exhaust emissions. Samples may be collected concurrently with any inspection event.

II. Sample Frequency

Samples shall be collected at the following times:

1. On at least one shift during each longwall move where diesel equipment is utilized either on the teardown section, transportation, or set-up section.
2. At least once each quarter on sections utilizing diesel face haulage equipment.
3. Twice each fiscal year on a representative number of diesel powered pieces of equipment operated in the outby areas of each mine utilizing such equipment (two-three different types of diesel equipment if available).

III. Sample Location and Duration

- A. Longwall Moves - Samples shall be collected in the breathing zone (as described in 30 CFR 70/71.208 for respirable dust sampling) of each operator of diesel powered equipment for the full shift or at least 8 hours. An area sample shall also be collected at a point in the split of air ventilating diesel equipment immediately downwind of the most inby miner.
- B. Sections utilizing diesel face haulage equipment - Samples shall be collected in the breathing zone of each operator of diesel powered equipment, including scoops, operated on such sections for at least four 15-minute periods representing the entire normal production shift. Full shift or 8-hour samples may be collected on each operator. An area full shift or 8-hour sample shall also be collected at a point in the split of air ventilating diesel equipment immediately downwind of the most inby miner.
- C. Outby diesel powered equipment - Samples shall be collected from a number (two-three) of outby occupations that operate different types of diesel powered equipment

for the duration of one full shift or for at least 8 hours. Samples shall be collected in the breathing zone of the subject equipment operators.

IV. Sampling Equipment

- A. All samples collected during longwall moves and on sections with diesel face haulage shall be collected utilizing direct-reading instruments capable of determining the 8-hour time-weighted-average, maximum concentration, and short-term exposure limit (15-minute intervals) for exposure to CO and NO₂.
- B. Samples collected on outby equipment may be collected utilizing long-duration detector tubes for both CO and NO₂ or by using direct-reading instruments. However, if any detector tube sample indicates a level greater than or equal to 50% of the current exposure limit for the applicable gas, a full shift exposure assessment shall be conducted within 7 days utilizing a direct-reading instrument. The equipment operator's activities should be included in this assessment.

V. Prior to Sampling/During Sampling Shift

- A. Inspection personnel should review the mine ventilation plan for any requirements necessitated by the use of diesel powered equipment and the diesel equipment inventory for the number and type of diesel units at the mine. This information will aid in determining the number of samples to be collected.
- B. Sampling equipment shall be properly prepared prior to use. Direct-reading instruments shall be calibrated according to the manufacturer's instructions. The calibration date shall be recorded in the inspection notes. Long-duration detector tubes shall be within the useable shelf life.
- C. Inspectors shall discuss the diesel monitoring with the miner's representative if available, and miners working in the area at the beginning of the shift or, as appropriate, during the shift being monitored. The inspector shall determine and document in his/her notes, if there are situations different than those specified in this procedure where miners may be exposed and that should be monitored.
- D. Inspectors shall discuss the results of this evaluation with the mine operator, the miners working with the equipment sampled, and the representative of the miners.
- E. All data listed on the attached Diesel Survey Summary sheet shall be recorded during

the inspection/evaluation. This data sheet permits up to six different sampling periods to be recorded for any one piece of diesel powered equipment.

VI. Compliance/Noncompliance Determinations

A. Compliance/noncompliance determinations will be made by comparing the monitoring results (after taking into account the applicable instrument accuracy) to the appropriate standard. The appropriate citation/order shall be issued under 30 CFR 75.322 when any miner's exposure exceeds the Threshold Limit Value (TLV) listed for the contaminant in question.

B. The current TLVs for CO and NO₂ are listed in the 1972 American Conference of Governmental Industrial Hygienists (ACGIH) TLV book. Those limits are as follows:

CO	8-hour time-weighted average	50 ppm
	Short-term exposure (15 min.)*	400 ppm
NO ₂	Ceiling limit (Never to be exceeded)	5 ppm

* The 75 ppm excursion limit cannot be defended; the scientifically-accepted short term exposure limit for CO is 400 ppm.

VII. Data Collection

All data points as listed on the attached Diesel Monitoring Survey Summary shall be collected during each survey. A copy of the diesel monitoring database will be provided to each district for tracking this data. Survey sheets/data shall be submitted to the Chief, Division of Health, by the fifteenth of the month following the end of each quarter.

VIII. Diesel Equipment Inventory

It is important to maintain an accurate inventory of all diesel equipment that is taken underground, whether approved or unapproved. Each district shall make corrections and/or additions to the inventory quarterly. The MSHA Form 2000-198, Diesel Equipment Inventory (see Page 6.51, Chapter 6), may be duplicated locally and used for initial and updating actions. Upon completion, forms are to be submitted to:

Mr. Gary L. Clark
MSHA Approval and Certification Center
R.R. 1, Box 251, Industrial Park Road
Triadelphia, WV 26059

Any District Manager requiring additional or nonstandard reports should make arrangements with the Chief, Mechanical Safety Division, Approval and Certification Center.

Diesel Survey Summary

District

<i>Mine ID:</i>	<i>MMU:</i>	<i>Survey Type:</i>	<i>Survey Date:</i>	<i>Survey Start Time:</i>
<i>Equipment Type:</i>		<i>Company Equipment ID</i>		<i>Catalytic Converter Used:</i>
<i>Model:</i>		<i>Air Qty (CFM):</i>		<i>Exhaust Filter Used:</i>
<i>Engine Size (HP):</i>		<i>Gas Smp Loc:</i>		<i>Production:</i>
<i>Nameplate Qty (CFM):</i>		<i>Fuel Type:</i>		

Start Time (24 hr clock) *Sample Period 1* *Sample Period 2* *Sample Period 3* *Sample Period 4* *Sample Period 5* *Sample Period 6*

Time (hrs)

NO2 Max (ppm)*

NO2 Avg (ppm)*

NO2 STEL (ppm)*

CO Max (ppm)*

CO Avg (ppm)*

CO STEL (ppm)*

** Parts Per Million*

Notes:

Observations:

Chapter 6

HEALTH FORMS

The following pages are forms that the inspector must use for health inspections or health investigative reports. Other forms, such as the Mine Activity Data Form (2000-22), commonly called the cover sheet, the Mine Status Data Form (2000-122), impoundment inspection forms, rock dust and air sample cards, are addressed in the General Inspection Procedures Handbook.

Form 2000-83	(Respirable Dust Laboratory Report)	6.3
Form 2000-84	(Environmental Noise Report)	6.7
Form 2000-86	(Appraisal of The Dust Control Plan)	6.11
Form 2000-87	(Inspector's Review of Waiver Request).....	6.15
Form 2000-88	(Waiver Request Action <u>Underground</u>)	6.19
Form 2000-90	(Waiver Request Action <u>Surface</u>)	6.23
Form 2000-95	(Mine Operator's Respirable Dust Sampling Program Survey)	6.27
Form 2000-96	(Designated Occupation Change Notice)	6.31
Form 2000-142	(MMU/DA/DWP Data)	6.35
Form 2000-144	(Part 90 Miner Status)	6.39
Form 2000-187	(I.H. Inspection Data)	6.43
Form 2000-194	(I.H. Sampling Data)	6.47
Form 2000-198	(Diesel Equipment Inventory).....	6.51
Dust Data Card.....		6.55
Request for Mining Health Hazard Evaluations (HHEs)		6.59

LEAVE BLANK

Respirable Dust Laboratory Report

U.S. Department of Labor
Mine Safety and Health Administration

A. Mine ID Number

B. Mine Name

C. Company Name

D. MMU/DA/SA ID Number

E. Average Production (last 30 prod. shifts)

F. Survey Conducted By

G. Samples Weighed By

	Sample 1		Sample 2		Sample 3		Sample 4		Sample 5		Sample 6	
	Cassette	Conc										
H. Sampling Dates												
I. Production This Shift												
J. Occupation Code												
K.												
L.												
M.												
N.												
O.												
P.												
Q.												
R.												
S.												
T. Totals												
U. Section Averages												

V. Citation/Order Issued Yes No W. Reason For Void Samples

Type _____ Number of Citation _____

X. O.S.P. Checked Y. Date Lab Analysis Comp. Z. Comments

MSHA Form 2000-83, June 82 (revised)

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FORM 2000-83 - RESPIRABLE DUST LABORATORY REPORT

The purpose of this form is twofold; one, it will serve as a laboratory record of respirable dust samples collected and analyzed by MSHA, and two, it will be used by the health supervisors as an aid when evaluating the dust control plan. The form has been designated to be a complete record of all actions taken by MSHA laboratory technicians regarding respirable dust samples. When completed, a copy of this form will be kept as the laboratory record, the original will be attached to Form 2000-86 (Appraisal of Dust Control Plan).

- A. Mine I.D. Number - The seven-digit number assigned to all mines routinely inspected by MSHA.
- B. Mine Name - Name of the coal mine as reported on the Legal Identity form submitted by the coal company.
- C. Company Name - Name of the company as reported on the Legal Identity form.
- D. MMU/DA/SA ID Number - The four-digit identification number assigned to a mechanized mining unit, designated area, or surface area by MSHA.
- E. Average Production (last 30 prod. shifts) - Average production of a section in an underground mine. This does not apply to surface sampling.
- F. Survey Conducted By - Person or persons who collected the respirable dust samples.
- G. Samples Weighed By - Person or persons who weighed the respirable dust samples.
- H. Sampling dates - Dates that the respirable dust samples were collected.
- I. Production This Shift - Tons of material mined during the sampling date. Not applicable to surface mining.
- J-S. Occupation Code - MSHA's code number for the occupation sampled.

Cassette - The eight-digit identification number printed on each respirable dust cassette.

Concentration (Conc.) - Respirable dust concentration in MRE equivalent.

Average (Avg.) - Average dust concentration for each occupation.

- T. Totals – Cumulative totals of respirable dust concentrations. Cumulative totals of samples collected. Not applicable to surface sampling.
- U. Section Average - Average concentration of all samples collected on the section. Not applicable to surface sampling.
- V. Citation/Order Issued Yes () No () - Check appropriate box to show if a citation or order was issued.

Type _____ - Identify the section of the Act under which the inspector has taken action, 104(a), 104(d), etc.

Number of Citation _____ - The seven digit preprinted number in the top right corner of each citation.

- W. Reason for Void Samples - Indicate by cross reference any samples that are voided (K-1, P-4, S-6, etc.) and give an explanation or reason why the respirable dust samples were determined void.
- X. O.S.P. Checked - List all samples that are checked for oversize particles by cross-reference (K-1, P-4, S-6, etc.)
- Y. Date Lab Analysis Completed - Date that the respirable dust laboratory report is completed for the entire survey.
- Z. Comments - Any comments that the lab technician or the inspector would like to make that are pertinent to the survey should be made in this space.

NOTE: Since sampling results for Part 90 miners are not to be included with samples from other entities, sampling data on Part 90 miners should not be shown on the same form with other entities. If this is done, the form must be locked away to secure the confidential information.

Environmental Noise Report

U.S. Department of Labor
Mine Safety and Health Administration

A. Mine ID Number	B. Mine Name	C. Company Name		G. AR Number		H. Field Office No.	
-							
D. MMJ/Pit/Area ID Number		E. Average Production					
F. Signature of A/I							

I. Survey Date	Mo	Da	Yr	Mo	Da	Yr	Mo	Da	Yr
J. Instrument Type									
K. Instrument Property Number									
L. Calibrator Property Number									
M. Occupation Code									
N. Machine Code									
O. Manufacturer Code									
P. Time Stop									
Q. Time Start									
R. Total Survey Time (minutes)									
S. Production this Shift									
T. Noise Dosage (percent)									
U. NRR Value (if PHP considered)									
V. Adjusted Dosage (if PHP considered)									
W. Calibration/Check (Yes or No)									
X. Citation Number (if issued)									

Y. Comments:

MSHA Form 2000-84, Mar 88 (Revised)

Manufacturer Codes	Manufacturer Codes	Manufacturer Codes	Equipment Codes
001 Abax	041 Ford	081 Nolan	01 Air Compressor
002 Ackler	042 Fuller	082 Northers & Renaud	02 Auger Miner (UG or S)
003 Acme	043 Galt's FM Calco	083 Northwest	03 Bludizer
004 Advance Mining	044 Gardner-Denver	084 Christian & Kopper	04 Classifier, Cyclone
005 Aerodrome	045 General Electric	085 Daskosh	05 Coal, Face Drill
006 Allen-Sherman-Hoff	046 GMC (Limby)	086 Owens	06 Continuous Miner (ripper)
007 Allis-Chalmers Bulldozer & Flat	047 Goodman	087 Page	07 Continuous Miner (boiler)
008 Alpine	048 Gorman-Rupp	088 Pennkill	08 Conveyor (all types)
009 American Hoist	049 Gredwall	089 Pioneer	09 Crane (all types)
010 Atlas-Copco	050 Haruchewey & P&H	090 Plymouth	10 Crawler, Hoist or
011 Baldwin-Lima-Hamilton	051 Hewitt-Holmes	091 Hays	11 Cutting Machine
012 Barlow-Greene	052 Ingersoll-Rand	092 Richmond	12 Dragline
013 Betti	053 Insley	093 Ripco	13 Dredge
014 Black & Decker	054 International Harvester (IH)	094 Robbins	14 Elevator, Hoist
015 Bucyrus-Erie (BE)	055 Jeffrey-Dresser	095 Risco	15 Fan (fixed or auxiliary)
016 Buffalo-American	056 Jaki	096 Royal	16 Flotation & Filters
017 Case	057 Jay	097 Salm	17 Forklift
018 Caterpillar (cat)	058 Kenworth	098 S & S	18 Front End Loader, Hightlift
019 Cedar Rapids	059 Kenworthy	099 Schramm	19 Gantry Machine
020 Chevrolet	060 Kohler	100 Schuchle	20 Hand Tools
021- Chicago Pneumatic	061 Kolanda	101 Stacy	21 Highwall Drill
022 Clark	062 Koehring	102 Sumler	22 Hydraulic Jaws
023 Cline	063 Komatsu	103 Symons	23 L-H-D (surface)
024 Coeur d'Alenes	064 Kress	104 Trismit	24 Lifting Machine
025 Cushman	065 Krupp	105 Terex	25 Locomotive (UG or S)
026 Dart	066 Lee-Norse	106 Unit Rig Equipment Co.	26 Longwall Pile
027 Demag	067 Long-Airdux	107 Universal	27 Longwall Shear
028 Deutz	068 Mack (Bulldog)	108 Walco	28 Roadgrader
029 Dorr-Oliver	069 Manitowoc	109 Walper	29 Rockdrilling Machine
030 Dravo	070 Marion	110 Warner Swensy	30 Roof Bolting Machine
031 Eaton	071 Marathon Le Tourneau	111 Westfalia	31 Rotary Bucket Excavator
032 Eckhoff	072 Messy-Ferguson	112 Westinghouse	32 Rotary Dump
033 Emco	073 McLanehan	113 White	33 Scraper, Pan
034 Elkhorn	074 Mevter	114 Wilcox	34 Screen
035 Emazo	075 Michigan	115 Willoy	35 Shovel (not dragline)
036 Epling	076 Mine Equipment Co.	116 Winter-weiss	36 Shuttle Car (diesel)
037 Euclid (ukel)	077 Mining Progress Inc.	117 Wirth	37 Shuttle Car (electric)
038 Fairchild	078 Myers-Whealy	118 Yale	38 Tractor, Scoop
039 Fletcher	079 Naajle	119 Not on this list	39 Truck
040 FMC & Link Belt	080 National Mine Service	120 Unknown	40 Not on this list
			41 Unknown

Reverse, MSHA Form 2000-94, Mar 86 (Revised)

FORM 2000-84 - ENVIRONMENTAL NOISE REPORT

MSHA's noise data from surveys made during an inspection or investigation shall be recorded on Form 2000-84. This information shall be included with the cover sheet (2000-22) of the inspection or investigation report. On this form list the results of the noise surveys obtained by dosimeter or by sound level meter.

- A. Mine I.D. Number - Enter the seven-digit mine identification number assigned by MSHA.
- B. Mine Name - Enter the mine name as it appears on the Legal Identity Report Form No. 2000-7.
- C. Company Name - Enter the company name as it appears on the Legal Identity Report Form.
- D. MMU/Pit/Area ID Number - Enter the four-digit identification number assigned to the section, pit or area by the mine operator.
- E. Average Production - Enter the average production determined over the last 30 production shifts.
- F. Signature of AR - Signature of the AR performing the environmental noise survey.
- G. AR Number - Enter the five-digit identification number from the AR's card of authorization (MSHA Form 1000-186).
- H. Field Office No. - Enter the five-digit number assigned to the MSHA CMS&H office under which the coal mine is inspected.
- I. Survey Date - Enter date(s) of survey(s) in two digit month-day-year format.
- J. Instrument Type - Enter 1 for dosimeter, 2 for sound level meter.
- K. Instrument Property No. - Enter the number from the MSHA property ticket affixed to the instrument.
- L. Calibrator Property No. - Enter the number from the MSHA property ticket affixed to the calibrator.
- M. Occupation Code - Enter the MSHA three-digit code for the occupation sampled.
- N. Machine Code - Enter the appropriate two-digit machine code from the lists on the reverse side of MSHA Form 2000-84.

- O. Manufacturer's Code - Enter the appropriate three-digit manufacturer's code from the list on the reverse side of MSHA Form 2000-84.
- P. Time Stop - Enter the 24-hour clock time when survey was completed.
- Q. Time Start - Enter the 24-hour clock time when survey was begun.
- R. Total Survey Time - Enter the survey time in minutes.
- S. Production This Shift - Enter here the material production in tons for the shift on which noise exposure was determined.
- T. Noise Dosage - Enter the actual C/T percent value (decimal readout times 100) here.
- U. NRR Value - Enter the NRR value for the particular PHP device(s) used.
- V. Adjustment Dosage - Enter the calculated percent C/T value reaching the miner's ears after accounting for protection provided by PHP.
- W. Calibration/Check - Note here the appropriate calibration checks made before and after the noise survey.
- X. Citation Number - Enter citation identification number if citation is issued.
- Y. Comments - Self-explanatory. The date(s) of the instrument(s) and/or calibrator may be entered here showing the annual calibration check.

Appraisal of the Dust Control Plan

U.S. Department of Labor
Mine Safety and Health Administration



Regular Inspection Technical Inspection

1. Date Submitted by Inspector 2. District 3. Mine ID 4. Mine Name

5. Parameters Same as in Plan

Yes No (if no, explain)

6. Company

7. ID Number of MMU or DA Covered by this Appraisal

8. MMU/DA

Wet Damp Dry

9. Type of Mining

Development Retreat

10. Method of Face Ventilation

Exhaust

Blowing

Combination

11. (a) Velocity and Quantity of Air at Each Working Face. (b) For Longwalls - Quantity at Point 20 Feet Outby Headgate Operator's Station and Velocity at (1) 30 Feet Inby Headgate, (2) Midpoint of Longwall Face, and (3) 30 Feet Inby Tailgate.

A. Face (number from left to right)							
B. Quantity (cf/m)							
C. Mean Entry Velocity in each Working Face (according to Sec 75.301-4, 30 CFR 75)							

12. Roof Drill

A. Type

Twin Head

Single Head

B. Dust Control

Wet Head

Dust Collector

Ventilation

13. Mining Machine

A. Type of Mining Equipment

Conventional

Continuous (check type)

Ripper

Longwall

Borer

Other (specify)

Auger

D. Number and Location of Water Sprays (sketch diagram of spray location)

B. Water Sprays Used

Yes

No

C. Operating Water Spray Pressure Measured at the Spray Nozzle

14. Comments (use reverse if necessary)

15. Recommend

Approval

Disapproval

16. Total Number of 104(a) Citations for Excessive Respirable Dust Issued in the Last Twelve Months

17. Signature

File a copy of this form with the District Ventilation System and Methane and Dust Control Plan and include the latest copy in the Field Office Mine File.

MSHA Form 2000-86, Mar 82 (revised)

LEAVE BLANK

Respirable Dust Sampling and Monitoring Data

U.S. Department of Labor
Mine Safety and Health Administration



1. Type of Inspection: Regular Technical Monitoring 2. Date: _____ 3. Field Office Code: _____

4. Mine I. D. : _____ 5. Mine Name: _____ 6. Company Name: _____

7. MMU/DA/SA: _____ 8. Times Entailty/Mine Cited for Excessive Dust Last 12 Months: _____

9. AR Signature: _____ AR Number: _____ 10. Supervisor Signature: _____

11. Type Mining System:
 A. Longwall Cut Sequence B. Continuous C. Conventional
 I. Single Drum i. Tail-Head I. Ripper
 II. Double Drum ii. Head-Tail II. Auger Other (specify) _____
 III. Plow iii. Both III. Borer

12. Mining Ht. : _____ in.
Inches of Rock Mined: _____

13. Remote Operation of Miner?:
 Yes
 No

14. Type of Mining 15. Physical Conditions:
 I. Development Face Area Wet Damp Dry
 II. Retreating Roadways Wet Damp Dry Compacted

16. Type of Haulage Equipment:
 Electric Battery Diesel Other (specify) _____

17. Roof Bolter Type: Number of Bolters

I. Twin Head _____

II. Single Head _____

III. Integral _____

A. Ventilation
 I. Operates on Separate Split of Air: Yes No
 II. Operates on Return-Side of DO: Yes No

B. Is Roof Bolter DA Established? Yes No C. Type of Dust Control I. Wet Head II. Dust Collector

18. Dust Control Parameters - Ventilation System:

A. Method of Face Ventilation: B. Face Ventilation Device: C. Line Curtain/Tubing Distance: _____ ft.
 I. Blowing I. Curtain D. Is Face Area Ventilated with Belt Air? Yes No
 II. Exhausting II. Tubing E. If, Yes, Quantity in Belt Entry: _____ cfm
 III. Both III. Both

F. Air Quantity: Longwall (Between 50 and 100 feet of Headgate and Tailgate)

Quantity (Q), cfm	
Location	Observed
Headgate	
Tailgate	

Velocity (V), fpm		
Location	Plan	Observed
Headgate		
Tailgate		

Continuous/Conventional/Handloading

	Plan	Observed			
Face (Q)					
MEAV (V)					
Scrubber*					

MEAV (V) - for exhausting only

* - operational cfm only

19. Dust Control Parameters - Water Spray System:

Location	Number of Operating Sprays		Operating PSI	
	Plan	Observed	Plan	Observed

Sprays Located per Plan
 Yes No

Sprays Angled per Plan
 Yes No

20. Auxilliary Controls:

Scrubber Frequency Screen Checked: _____
 Frequency Ductwork Checked: _____
 Fan Spray Sprays Located per Plan Yes No Sprays Angled per Plan Yes No
 Work Practices Describe: _____
 Enclosures Describe: _____
 Other (Wetting Agents; Wetting face, supports and roadways; ect.) Describe: _____

21. Are Approved Respirators Being Worn? Yes No If Yes, By Whom: _____
 Make: _____ Model: _____

22. Do Miners Work Downwind of the Longwall Shearer? Always Part of the Shift Never

23. Was the Operator Cited for Violating the Dust Control Parameters of the Ventilation Plan? Yes No
 If Yes, specify: _____

24. Were Dust Control Parameters Changed During Sampling? Yes No If Yes, specify: _____

25. Production (tons): At Time of Sampling: _____ tons At Time of Monitoring: _____ tons During Last 30 Shifts: _____ tons

26. Bi-monthly Sampling Conducted By: Operator Contractor Contractor I.D.: _____

27. Sampling Equipment: Provided By Operator Contractor Calibrated and Maintained By Operator Contractor

28. Inspector Recommendations and Comments:

USE SPACE BELOW FOR SKETCHES OR OTHER INFORMATION

FORM 2000-86 RESPIRABLE DUST SAMPLING AND MONITORING DATA

This form is used to record the respirable dust control parameters that are observed and measured during inspection activities involving either the collection of respirable dust samples or the monitoring of the operator's dust sampling program. This form should also be completed whenever the inspector believes that the approved plan parameters are not effective in maintaining dust concentrations at or below the applicable dust standard.

It is essential that the information/data recorded on MSHA Form 2000-86 accurately reflect the dust control measures and practices being used and the actual quantities measured, and is consistent with Chapter 1 – Respirable Dust as the completed form will serve as supporting documentation when plan changes are required and/or enforcement actions are taken.

The following instructions explain how to complete the form. Mine-specific information, or approved plan-specific information, may be completed in the office prior to the inspection.

1. **Type of Inspection:** This item contains three blocks. The inspector should check the appropriate block (s) to identify the type (s) of inspection activity being conducted.

Regular: If conducting dust sampling under an E01 inspection activity code, check the *Regular* block and complete items **1** through **25** and **28**. If not sampling and the inspector believes that the parameters in the mine operator's approved mine ventilation plan are not effective, complete items **1** through **7**, **9** through **23**, and **28**.

Technical: If conducting other than a regular E01 inspection that involves collecting respirable dust samples, check the *Technical* block, note the inspection activity code, and complete items **1** through **25** and **28**. If samples are not taken, complete item **1** through **7**, **9** through **23**, and **28**.

Monitoring: If the inspection activity involves monitoring the operator's respirable dust sampling program, check the *Monitoring* block and complete **all** items on the form.

NOTE: It is possible that more than one block could be checked depending on the type (s) of inspection activity conducted.

2. **Date:** The date the inspector actually conducted the evaluations.
3. **Field Office Code:** The five-digit identification number of the MSHA CMS&H office assigned the responsibility for inspecting the coal mine.
4. **Mine I.D.** - The seven-digit MSHA identification number assigned to the coal mine.
5. **Mine Name** - The name of the mine as it appears on the Legal Identity Report Form No. 2000-7.

6. **Company Name** - The name of the coal company as it appears on the Legal Identity Report Form.
7. **MMU/DA/SA** - The four-digit MSHA identification number assigned to the Mechanized Mining Unit (MMU), Designated Area (DA) or Surface Area (SA) that was evaluated.

NOTE: A separate MSHA Form 2000-86 should be completed for each MMU or DA evaluated.

8. **Times Entity/Mine Cited for Excessive Dust Last 12 Months** The number of excessive dust citations issued on the MMU/DA being evaluated, and the total number of excessive dust citations issued to the mine operator during the previous 12 month period.
9. **AR Signature/AR Number** - The signature of the inspector performing the evaluation and his/her five-digit identification number from the AR's card of authorization (MSHA Form 1000-186).
10. **Supervisor Signature** - The signature of the supervisor assigned inspection responsibility for the affected mine after reviewing the form for completeness and accuracy.
11. **Type of Mining System** - Check the appropriate box that best describes the mining system in use: **A.** Longwall; **B.** Continuous; or **C.** Conventional. Also check each appropriate box under the type of system to more fully identify the type of equipment being used and the cut sequence.

NOTE: Under Conventional, the inspector should identify the type of system used to extract the coal, such as, scoop shooting-off-solid, cutting machine, etc.

12. **Mining Ht** - The total mining height in inches, and the total amount of rock being mined in inches.
13. **Remote Operation of Miner** - Check the appropriate block.
14. **Type of Mining** - Check the appropriate block. **Note:** Longwall mining systems that do not mine from previously driven entries are considered development.
15. **Physical Conditions** - Check the appropriate blocks.
16. **Type of Haulage Equipment** - This item applies only to continuous and conventional mining sections. Check the appropriate block to identify the type of haulage equipment that is being used to transport the coal from the face to the section dumping point.

17. **Roof Bolter Type** - This item applies only to continuous and conventional mining sections. Check the appropriate block(s) to identify the type of roof bolting machine (s) used on the MMU and show the number of each type being used. **A.** Check the appropriate block to identify whether the roof bolting machine is being operated on a separate split of air from the Designated Occupation (DO), or working downwind of the DO. **B.** Check this block if there is a Designated Area (DA) established for the roof bolting machine operator. **C.** Check the block that describes the type of dust collecting system used on the roof bolting machine(s).

NOTE: If more than one roof bolting machine is operated on the MMU and the machines have different types of dust collecting system, the inspector should specify which machine has which type of dust collecting system.

18. **Dust Control Parameters – Ventilation System** - This is a six-part question that requires the inspector to record what was actually observed and/or measured at the time of the evaluation.
- A. Method of Face Ventilation:** Check the appropriate block(s) to show the type of ventilation used. If **Both** is checked, briefly explain the circumstances under Item 28.
- B. Face Ventilation Devices:** Check the appropriate block(s).
- C. Line Curtain/Tubing Distance:** Enter the maximum observed distance in feet that the ventilation device (s) is located from the area of deepest point of penetration to which any portion of the face has been advanced.
- D. Is Face Area Ventilated with Belt Air?** Check the appropriate block.
- E. If Yes, Quantity in the Belt Entry (cfm):** Enter the quantity of air in the belt entry in cubic feet per minute (cfm).
- F. Air Quantity:** Fill in the information for the type of mining system being used. This is a two-part question. Each part requires the inspector to enter both the approved plan minimum requirements and the actual quantities and velocities that were measured at the time of the evaluation for each of the listed control parameters. The recorded scrubber operational cfm must be the result of an actual full pitot tube traverse as determined in accordance with Chapter 1 or a correlated centerline measurement. Also, identify whether the readings were obtained during the 1st or 2nd half of the shift.
19. **Dust Control Parameters – Water Spray System** - This is a three-part question. The first part requires the inspector to enter both the approved minimum plan requirements and what was actually observed in use and/or measured at the time of the inspection. When determining the operating water spray pressure, remove the spray nozzle and place the pressure gauge in the spray hole using a tee fitting and then place the spray nozzle in the tee to obtain an accurate reading. The second and third parts are self-explanatory and require the inspector to check the appropriate blocks.

20. **Auxiliary Controls** - Enter the appropriate information about the auxiliary dust controls or work practices observed in use at the time of the inspection, even if these controls are not listed in the approved mine ventilation plan.

For example, this may include the use of additional ventilation controls to divert the dust away from the miners; use of wetting agents; additional wetting of the coal prior to mining; the frequency of wetting down roadways; administrative controls such as limiting the amount of time roof bolter operators or others work downwind of the mining machine; the frequency the roof bolter operator cleans the dust box; and where the fines from the dust box are deposited.

The dust control measures and work practices that are in use but are not listed in the approved plan may be critical in determining if the miners are adequately protected during normal mining operations. If these measures are being used only when dust sampling is occurring, it is likely that miners may be exposed to higher dust concentrations during normal mining operations. Inspectors should ask a representative number of miners if these control measures are in use all the time. If not, the inspector should make note of this in Item 28.

21. **Are Approved Respirators being Worn?** - Check the appropriate block. If miners are observed wearing respirators, the inspector should identify which miners are wearing respirators and the make and model of the device being worn. Additionally, the inspector should determine if the affected miners have been fit-tested and trained in the proper use and maintenance of the respirators.
22. **Do Miners Work Downwind of the Longwall Shearer?** - Check the appropriate block that most accurately describes the amount of time miner (s) was observed working downwind of the shearer at the time of the inspection.
23. **Was the Operator Cited for Violating the Dust Control Parameters of the Ventilation Plan?** - This question applies to this inspection. If the operator was cited for violating the plan during this inspection, the inspector should record the citation number and what provisions of the plan were violated. If possible, the inspector should determine approximately how much material was mined during the period of time that the plan was not being complied with.
24. **Were Dust Control Parameters Changed During Sampling?** -This item should only be completed when the inspector collects respirable dust samples or monitors the operator's respirable dust sampling program. Check the appropriate block; if **Yes**, indicate the specific changes that were made here and under Item 28. This item is critical in determining if there is a need to require the mine operator to upgrade the plan's minimum parameters.

25. **Production (tons)** - This item applies only to MMUs. It should be completed whenever dust samples are collected and/or the operator's respirable dust sampling program is monitored. Fill in the information that applies to the type of inspection activity conducted. If the inspector sampled and monitored the same MMU, it is not necessary to place the tonnage in both blocks. The tonnage reported represents the best estimate of the amount of material in tons that was mined on the MMU at the time of sampling or monitoring. The tonnage may be based on either the number of feet advanced or the number of passes. This is raw tonnage and not clean coal, so it should include all material that was mined.

The tonnage information for the last 30 production shifts is an average. The preferred method of determining this value is to measure the mine map for the distance mined and calculate the volume of material mined in cubic feet as discussed in Chapter 1. In the event the mine map has not been sufficiently updated, another acceptable method is to use operator provided production data. If the data is based on production shifts longer than eight hours, the 30-shift average must be adjusted to an 8-hour average equivalent production using the factor $8/t$, where t is actual length of the normal production shift over which the operator production level was obtained. For example, if the 30-shift average is calculated as 1250 tons based on a 9-hour production shift, this quantity is multiplied by $8/9$, yielding an 8-hour average equivalent production of 1111 tons. The inspector should record the date range for the data used.

26. **Bi – monthly Sampling Conducted By** - This item applies to the mine operator's respirable dust sampling program and should only be completed when monitoring operator's bi-monthly sampling. Check the appropriate block. If the bi-monthly samples are collected by a contractor, fill in the contractor's I.D. number.
27. **Sampling Equipment** - This item applies to the mine operator's dust sampling program and should only be completed when monitoring the operator's bi-monthly sampling. Check the appropriate blocks.

NOTE: If the sampling equipment is calibrated or maintained by a different contractor, other than the one conducting bi-monthly sampling, the inspectors should also include the I.D. number of the contractor who calibrates and maintains the sampling equipment.

28. **Inspector Recommendations and Comments** - Self explanatory. If the inspector recommends that the approved plan be revised, or a proposed plan should not be approved, he/she should provide the rationale for that determination in the space provided. This space should also be used whenever the inspector believes that the additional controls employed by the operator should be included in the approved plan. Also, record the shift length here, as well as the method used to determine the average production over the last 30 production shifts, and any other information required by Chapter 1.

This space below Item 28 should be used to sketch the placement of water sprays and for other information that would be useful in evaluating the observed parameters.

Inspector's Review of Waiver Request

U.S. Department of Labor
Mine Safety and Health Administration



I. Administrative Data

1. Date of Review	2. District	3. Mine ID Number	4. Mine Name
5. Company Name		6. To District Manager	
7. Through		8. Request for <input type="checkbox"/> Waiver <input type="checkbox"/> Extension of Waiver	
9. Number of Employees	10. Remaining Life of Mine	Note: Life of mine must include all of the area within boundaries of Mine ID Number which the operator may mine in the future.	

II. Inspector's Review

11. Is it practical to develop a private water supply and sanitary waste disposal program? <input type="checkbox"/> Yes <input type="checkbox"/> No	19. Sanitary facilities provided at administrative office or other relatively permanent installation connected with company. <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, is it practical to expand them for miners' use? Explain.
12. Is electricity available? <input type="checkbox"/> Yes <input type="checkbox"/> No	
13. Is it practical to construct a central bathhouse and change room and make it available to all workers of several different operations? <input type="checkbox"/> Yes <input type="checkbox"/> No	
14. Operator submitted a signed statement by all employees agreeing that a waiver should be granted. <input type="checkbox"/> Yes <input type="checkbox"/> No	
15. Contract or agreement made between operator and employees for bathing at home. <input type="checkbox"/> Yes <input type="checkbox"/> No	
16. Availability of facilities through third party <input type="checkbox"/> Available <input type="checkbox"/> Non-available If available, describe in remarks.	
17. Are adequate drainage facilities available? <input type="checkbox"/> Yes <input type="checkbox"/> No If no, is it practical to provide the facilities? <input type="checkbox"/> Yes <input type="checkbox"/> No	20. Agreement Mine <input type="checkbox"/> Yes <input type="checkbox"/> No
18. If surface mine, copy of application posted on mine bulletin board with addresses of Regional Program Director, NIOSH, and District Manager, MSHA, per Section 71.404(b). <input type="checkbox"/> Yes <input type="checkbox"/> No	21. Discussion held with representative number of miners, or, if agreement mine, with Safety Committee. <input type="checkbox"/> Yes <input type="checkbox"/> No Comments of representatives contacted:

Remarks (reverse may be used)

22. Date Submitted	23. Recommend Waiver Be <input type="checkbox"/> Granted <input type="checkbox"/> Denied	24. Signature, Federal Coal Mine Inspector
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FORM 2000-87 - INSPECTOR'S REVIEW OF WAIVER REQUEST

The "Inspector's Review of Waiver Request" shall be completed by each inspector conducting an investigation pursuant to Part 71, Subpart E, "Surface Bathing Facilities, Change Rooms and Sanitary Flush Toilet Facilities at Surface Coal Mines" and Part 75, Section 75.1712, "Bathhouse and Toilet Facilities at Underground Mines." The following instructions give a step-by-step description of how this form is to be used:

1. Date of Review - Date an investigation was conducted at the mine site to review this waiver request.
2. District - Coal Mine Safety and Health District number.
3. Mine ID Number - Mine identification number assigned by MSHA.
4. Mine Name - Name of the coal mine as submitted on the Legal Identity form submitted by the coal company.
5. Company Name - Name of the company as reported on the Legal Identity form.
6. To District Manager - District Manager's name.
7. Through - Through inspector's immediate supervisor or subdistrict manager.
8. Request for - Mark appropriate box.
9. Number of Employees - Number of mine employees that will be affected by this waiver.
10. Remaining Life of Mine - Life in years and months of the area within the boundaries of the mine ID number which the operator may mine in the future.
11. Is it practical to develop a private water supply and sanitary waste disposal?
Describe on the reverse side of this form, the local water supplies available; i.e., well, city, town or community water supply and the availability of a septic tank, community waste disposal system or company system.
12. Is electricity available?
If no, is availability practical? - If no, sketch the mine and location of nearest available electrical supply. Indicate distance to electrical supply.

13. Is it practical to construct a central bathhouse and change room and make it available to all workers of several different operations? - The company may operate several small mines in the same vicinity. If so, sketch the mine or mines, roads used, and location of the bathhouse facility. Show the route of travel (with mileage) and number of miners traveling each, route.
14. Operator submitted a signed statement by all employees agreeing that a waiver should be granted. - Check to see that all of the mine employees have freely signed the statement.
15. Contract or agreement made between the operator and employees for bathing at home. - Mine may be operated by members of a single family or the operator may pay the miners to bathe at home.
16. Availability of facilities through a third party. If there is an agreement through a third party to provide facilities, then a copy of the agreement must be submitted.
17. Are adequate drainage facilities available? - The location of the mine may make it impractical to construct adequate drainage facilities.
18. Yes or No - Check appropriate block.
19. Yes or No - Check appropriate block.
20. Agreement Mine - Are the miners represented by a labor union?
21. Yes or No - Check appropriate block.
22. Date Submitted - Date inspector's Review of Waiver Request was submitted to his supervisor.
23. Recommend Waiver Be - Check appropriate block. If the inspector recommends the waiver not be granted or extended, explain reasons for that recommendation under remarks.
24. Signature, Federal Coal Mine Inspector.

Waiver Request Action
(underground)

U. S. Department of Labor
Mine Safety and Health Administration



1. Date _____ 2. District _____ 3. Mine ID Number _____

4. Mine Name _____ 5. Company Name _____

6. Post Office Address of Mine Operator _____ 7. Waiver Number _____

8.

Based on an investigation by Mine Safety and Health Administration personnel concerning the application, a waiver of bathhouse requirements, as outlined in Sections 75.1712-1, 75.1712-2, and 75.1712-3 of the Code of Federal Regulations, cannot be granted for this mine.

This waiver entitles the operator to waive the installation of the requirement of 75.1712-1, 75.1712-2, and 75.1712-3.

Note
This waiver is issued because it is impracticable for the operator to construct the necessary facilities now. This waiver is issued with the stipulation that sanitary toilet facilities approved under Section 71.500(a), 30 CFR 71, will be provided at each surface worksite.

This waiver must be posted on the mine bulletin board for at least 30 days.

9.

This waiver is nontransferable and may be modified or terminated if an inspection reveals such facilities should be provided.

10. This waiver is, or is not, granted for the following reason(s) and is subject to periodic review:

11. District Manager _____

MSHA Form 2000-88, May 80 (replaces Apr 79)

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FORM 2000-88 - WAIVER REQUEST ACTION (UNDERGROUND)

This form is intended to be used by the district office to notify the mine operator of the results of an investigation concerning a request for a waiver of sanitary facilities at an underground mine. In the event this waiver is granted, a copy of it shall be placed in the field office Mine File for as long as the waiver continues in effect at the mine.

The following instructions give a step-by-step description of how this form is to be used:

1. Date - The date the district issued this waiver.
2. District - The district number where the mine is located.
3. Mine ID Number - Mine ID number as reported on the Legal Identity Report (MSHA Form 2000-7).
4. Mine Name - Mine name as it appears on the Legal Identity Report (MSHA Form 2000-7).
5. Company Name - Company name as reported on the Legal Identity Report (MSHA Form 2000-7).
6. Post Office Address of Mine Operator - The nearest post office to location of the mine.
7. Waiver Number - The number of this waiver.
8. Based on an investigation by Mine Safety and Health personnel concerning the application, a waiver of bathhouse requirements, as outlined in Sections 75.1712-1, 75.1712-2, 75.1712-3, 30 CFR, cannot be granted for this mine.

This explains why a waiver for this mine could not be granted. Additional explanations may be included under Item 10.

This waiver entitles the operator to waive the installation of the requirements of Sections 75.1712-1, 75.1712-2, and 75.1712-3.

This explains to the operator the provisions of the regulations that have been waived for this particular mine.

NOTE: This waiver is issued because it is impracticable for the operator to construct the necessary facilities now. This waiver is issued with the stipulation that sanitary toilet facilities approved under Section 71.500(a), 30 CFR, will be provided at each surface worksite.

This waiver must be posted on the mine bulletin board for at least 30 days. The inspector should check to see that the mine operator posts this waiver on the mine bulletin board for at least 30 days.

9. This waiver is nontransferable and may be modified or terminated if an inspection reveals such facilities should be provided.
10. This waiver is, or is not, granted for the following reason(s) and is subject to periodic review - District Manager should explain why the waiver was or was not granted in this space.

If the waiver involves a third party agreement for bathing facilities the following statement should be added:

“This waiver is granted due to a third party agreement: MSHA retains the right to inspect third party bathing facilities for compliance with MSHA health standards and to require corrective action where necessary.”

11. District Manager - Signature of the District Manager should appear here.

Waiver Request Action
(surface)

U. S. Department of Labor
Mine Safety and Health Administration



1. Date	2. District	3. Mine ID Number
4. Mine Name	5. Company Name	
6. Post Office Address of Mine Operator		7. Waiver Number
		8. Issuing Date
		9. Expiration Date

- 10.
- Based on an investigation by Mine Safety and Health Administration personnel concerning the application, a waiver of bath-house requirements, as outlined in Section 71.400 of the Code of Federal Regulations, Title 30, cannot be granted for this mine.
 - In accordance with Section 71.403 of the Code of Federal Regulations, Title 30, a waiver is issued to waive the requirements of Section 71.400, Code of Federal Regulations, as they apply to sanitary bathing facilities, change rooms and sanitary flush toilets; however, sanitary toilet facilities, meeting the requirements of Section 71.500 of the Code of Federal Regulations, must be provided at surface worksites.

This waiver must be posted on the mine bulletin board for at least 30 days, and is effective for a maximum of one year from the date of issued.

11. This waiver is nontransferable and may be modified or terminated if an inspection or investigation reveals such facilities should be provided.

12. This waiver is, or is not, granted for the following reason(s) and is subject to periodic review:

13. District Manager

MSHA Form 2000-90, Apr 79 (replaces Apr 79 edition)

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FORM 2000-90 - WAIVER REQUEST ACTION (SURFACE)

This form is intended to be used by the district office to notify the mine operator of the results of an investigation concerning a request for a waiver of sanitary facilities at a surface mine. In the event this waiver is granted, a copy of it shall be placed in the field office Mine File for as long as the waiver continues in effect at that mine.

The following instructions give a step-by-step description of how this form is to be used:

1. Date - Issue date of the waiver.
2. District - The district number where the mine is located.
3. Mine ID Number - Mine ID number as reported on the Legal Identity Report (MSHA Form 2000-7).
4. Mine Name - Mine name as it appears on the Legal Identity Report (MSHA Form 2000-7).
5. Company Name - Company name as reported on the Legal Identity Report (MSHA Form 2000-7).
6. Post Office Address of Mine Operator - The nearest post office to location of the mine.
7. Waiver Number - The number of this waiver.
8. Expiration Date - The date this waiver expires.
9. Based on an investigation by Mine Safety and Health personnel concerning the application, a waiver of bathhouse requirements, as outlined in Section 71.400, 30 CFR, cannot be granted for this mine. This is an explanation of why a waiver cannot be granted for this mine. Additional information may be added in Item 11.

In accordance with Section 71.403, 30 CFR, a waiver is issued to waive the requirements of Section 71.400, as they apply to sanitary bathing facilities, change rooms and sanitary flush toilets; however, sanitary toilet facilities, meeting the requirements of 71.500, 30 CFR, must be provided at surface work sites.

This is an explanation of what facilities must be required at the mine even though a waiver of the other surface facilities has been granted.

This waiver must be posted on the mine bulletin board for at least 30 days, and is effective for a maximum of 1 year from the date issued.

10. This waiver is nontransferable and may be modified or terminated if an inspection or investigation reveals such facilities should be provided.

11. This waiver is. or is not granted for the following reasons and is subject to periodic review - Explain why the waiver was or was not granted in this space. If the waiver involves a third party agreement for bathing facilities, the following statement should be added:

“This waiver is granted due to a third party agreement: MSHA retains the right to inspect third party bathing facilities for compliance with MSHA health standards and to require corrective action where necessary.”

12. District Manager - The signature of the District Manager will be provided here.

Mine Operator's Respirable
Dust Sampling Program Survey

U. S. Department of Labor
Mine Safety and Health Administration



1. Date _____ 2. District _____ 3. Mine ID Number _____ 4. Mine Name _____

5. Company _____ 6. Name (person responsible for calibration and maintenance of approved sampling devices) _____

7. Name (person qualified to conduct sampling program) _____ 8. Number of Dust Pumps (in use at mine) _____ 9. All Dust Pumps Have Been Calibrated within Last 200 Hours
 Yes No

10. Name(s) of Person(s) Assigned to Check Pumps During Sampling _____

11. Results of at Least Six Checks by Soap Film Calibrator

Check	Pump Number																	
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
Avg																		

12. Reverse May Be Used for Remarks _____

13. Person Conducting Survey _____

Attach a copy of this form to the Technical Inspector's Appraisal of the Dust Control Plan, MSHA Form 2000-86.
MSHA Form 2000-95, Apr 79

LEAVE BLANK

FORM 2000-95
MINE OPERATOR'S RESPIRABLE DUST SAMPLING PROGRAM SURVEY

This form shall be filled out at the completion of each technical health evaluation. The following instructions give a step-by-step description of how this form is to be used:

1. Date - Date the operator's sampling equipment was checked.
2. District - MSHA District in which the mine was located.
3. Mine ID Number - Self-explanatory.
4. Mine Name - Self-explanatory.
5. Company - Self-explanatory.
6. Name (person responsible for calibration and maintenance of approved samplina devices) - Self-explanatory.
7. Name (person qualified to conduct sampling program) - Self- explanatory.
8. Number of Dust Pumps (in use at the mine) - Self- explanatory.
9. All Dust Pumps Have Been Calibrated Within the Last 200 Hours? - Self-explanatory.
10. Name(s) of Person(s) Assigned to Check Pumps During Sampling - Self-explanatory.
11. Results of at Least Six Checks by Soap Film Calibrator - The results of the checks should be averaged to determine if the pumps are operating within their specified tolerance range. See MSHA Informational Report 1121 (1980), "Standard Calibration and Maintenance Procedures for Wet Test Meters and Coal Mine Respirable Dust Samplers (Supersedes IR 1073)," for an explanation of the proper procedures to follow when using a wet test meter.
12. Reverse May be Used for Remarks - Self-explanatory.
13. Person Conducting Survey - Self-explanatory.

LEAVE BLANK

Designated Occupation
Change Notice

U.S. Department of Labor
Mine Safety and Health Administration



1. Date 2. District Number 3. Mine ID Number

4. Mine Name 5. Company

6. Post Office Address of Mine Operator

7.

Notice is hereby given that the "designated occupation" on which sampling is required with respect to each working section by Title 30, Code of Federal Regulations, Part 70—Mandatory Health Standards—Underground Coal Mines, is changed as follows:

8. Changed from (occupation code) 9. Changed to (occupation code) 10. On MMU

11.

Beginning with the next bimonthly period, you are hereby directed to initiate action to establish a bimonthly sampling cycle for the new "designated occupation".

12. Remarks

13. District Manager 14. Signature

MSHA Form 2000-98, Mar 82 (revised)

LEAVE BLANK

FORM 2000-96 - DESIGNATED OCCUPATION CHANGE NOTICE

If it is determined by respirable dust samples collected during safety and health technical inspections that an occupation, other than the designated occupation, has average dust concentrations which exceed the designated occupation, MSHA may change the designated occupation by notifying the operator in writing of such a change. The subdistrict office shall immediately complete a new "MMU/DA/DWP STATUS" form and enter the information into the AIS computer.

Instructions for completing MSHA form 2000-96 are as follows:

1. Date - Date this designated occupation change notice was completed.
2. District Number - Coal Mine Safety and Health District number.
3. Mine ID Number - MSHA identification number assigned to the mine where the designated occupation was changed.
4. Mine Name - Name of coal mine as reported on the Legal Identity form submitted by the coal company.
5. Company - Name of the coal company as reported on the legal Identity form submitted by the coal company.
6. Post Office Address of Mine Operator - Self-explanatory.
7. N/A
8. Changed from (occupation code) - Occupation code number that was used before this form was completed.
9. Changed to (occupation code) - New occupation code number.
10. On MMU - MMU number where the occupation was changed.
11. N/A
12. Remarks
13. District Manager - Name of District Manager.
14. Signature - Signature of District Manager.

LEAVE BLANK

MMU/DA/DWP Data

U.S. Department of Labor
Mine Safety and Health Administration



The following items must always be completed:

1. Action		A. New Entry	B. Update		
2. Mine ID	-		3. Organization Code		2
4. Effective Date of Action		Mo	Da	Yr	
5. Entity Type (select one)	A. MMU <input type="checkbox"/>	MMU Number	-		Occupation Code (DO or NDO)
	B. DA <input type="checkbox"/>	DA Number	-		
	C. DWP <input type="checkbox"/>	SA Number	-		Occupation Code

MMU/DA/DWP Information (complete as required)

6. MMU/DA/DWP Status	A. Producing	B. Nonproducing	C. Abandoned	D. Sampling N/R (is not required) (DA or DWP only)
7A. Location Description				
7B. DA Dust Level: (check one) Check how 70.100b applies to DA (1.0 max dust level if it does)	<input type="checkbox"/> N—No <input type="checkbox"/> Y—Yes		7C. Dust Standard: Immediate Setting Headquarters Only	<input type="checkbox"/> *

MMU Information (complete each item for new MMU entry, or complete only items to be updated)

8. Method of Mining (check only one entry)		9. Mining and Machine Configuration (check as many entries as necessary)	
01. Longwall/Shear	01. Advancing	16. Remote Controlled, Radio	
02. Longwall/Plow	02. Retreating	17. Fixed Arm Shearer	
03. Continuous/Ripper	03. Exhausting Ventilation	18. Ranging Arm Shearer	
04. Continuous/Bore	04. Blowing Ventilation	19. Single Drum Shearer	
05. Continuous/Auger	05. Exhausting/Blowing Ventilation	20. Double Drum Shearer	
06. Continuous/Shortwall	06. Auxiliary Fan and Tubing	21. Fixed Cutting Head (cont./ripper)	
07. Conventional with Cutting Machine	07. Diffuser Fans Used	22. Oscillating Cutting Head (cont./ripper)	
08. Scoop with Cutting Machine	08. Homotropical Ventilation (longwall)	23. Spray Fan System Used	
09. Scoop/Shoot Off Solids	09. Antitropical Ventilation (longwall)	24. Flooded-Bed Dust Scrubber	
10. Conv./Shoot Off Solid-Loading Machine	10. Unidirectional Cutting (longwall)	25. Water-Powered Dust Scrubber	
11. Hand Load/Cutting Machine	11. Bidirectional Cutting (longwall)	26. Wetted-Fan Dust Scrubber	
12. Hand Load/Shoot Off Solid	12. Roof Bolting, Single Head	27. Drum Sprays	
13. Hand Load/Anthracite	13. Roof Bolting, Dual Head	28. Shearer-Clearer System	
	14. Diesel Equipment Used	29. Water Infused, Near-Face	
	15. Remote Controlled, Cord	30. Water Infused, Panel	

Complete for Update MMU Entry Only (when necessary)

10. New Production Tonnage				
----------------------------	--	--	--	--

11. Remarks:

12. Submitted By	Date
------------------	------

13. Key Entered By	Date
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LEAVE BLANK

FORM 2000-142 - MMU/DA/DWP DATA FORM

The form will be used to establish a new MMU, DA, or DWP on the MIS database, to change the status of an MMU, DA, or DWP, or to update any information on the form relevant to the MMTJ, DA, or DWP. This form should be completed in black ink. An explanation follows with corresponding reference numbers for the information required for each line, space or block.

1. Action - Indicate whether this is the initial action to add new information to the database, or if it is to update the information on the database.
2. Mine ID - Enter the authorized seven-digit number that identifies the mine.
3. Organization Code - Enter the last four digits of the code for the field office having jurisdiction over the mine.
4. Effective Date of Action - Enter the month, day and year the status shown in Item 6 became effective.
5. Entity type - Identify the type of entity, either "A", "B", or "C", being affected by this action.
- 5A. MMU - If affected by this action, enter the four-digit identification number assigned to the MMU (001-0 through 099-0).
Occupation Code - Enter the appropriate three-digit code, beginning with "0", assigned to the affected designated occupation (DO) or the nondesignated occupation (NDO).
- 5B. DA - If affected by this action, enter the four-digit identification number assigned to the DA conforming to the established numbering scheme, beginning with digits one through nine.
- 5C. DWP - If affected by this action, enter the four-digit surface area (SA) number identifying the DWP which conforms to the established numbering scheme for surface mines (001-01 through 099-0) and for underground mines (900-0 through 999-0).
Occupation Code - Enter the appropriate three-digit code, beginning with "3", assigned to the designated surface work position.
6. MMU/DA/DWP Status - Indicate status of affected entity by checking either "A", "B", "C" or "D". Refer to 30 CFR 70.220 and 71.220 for definitions of each specific status.

- 6D. Sampling N/R - Check this item only when a DA or DWP sampling entity, currently in normal bimonthly processing with no outstanding advisories pending, is no longer in or is to be removed from sampling status after having met qualifying criteria.
- 7A. Location Description - Identify the location of the entity (MMU, DA or DWP) to be sampled. For example, MMU 001-0 is located "9 road 6 left."
- 7B. DA Dust Level - This item is coded whenever you are adding a DA. Indicates whether 70.100(b) applies to the entity (is within 200 feet outby the working face) and the applicable standard for that entity will be set at 1.0 milligrams of respirable dust per cubic meter of air (mg/in³). However, if "N" is checked, indicating that 70.100(b) does not apply to the entity, the system will establish a maximum dust level of 2.0.
- 7C. Dust Standard - Completed by districts or subdistricts when necessary to administratively adjust the applicable dust standard to the correct standard. Once entered, it will be set immediately.
8. Methods of Mining - Complete this item for MMU's only. Complete this item for a new MMU or when the present method of mining has changed. Check only one entry.
9. Mining and Machine Configuration - Complete this item for MMU5 only. Complete this item for a new MMU or when the present method of mining has changed. Check as many entities as necessary to describe the MMU. Item 9 should be reviewed and updated as necessary on each BAB inspection.
10. New Production Tonnage - This item is applicable to MMUs only. The average production tonnage produced by an MMU is set by the last five valid bimonthly samples collected, and, therefore this item is normally left blank. This item should only be completed when the operator requests a change.
11. Remarks - Self explanatory.
12. Submitted By/Date - Self explanatory.
13. Key Entered By/Date - Self explanatory.

Part 90 Miner Status

U.S. Department of Labor
 Mine Safety and Health Administration



The following items must always be completed.

1. Action	A. Initial or Additional Transition Period	B. Update	
2. Part 90 Number			3. Mine ID
			4. Organization Code
			2

Complete the following to define a Part 90 work position:

5. MMU/DA/SA		6. Occupation Code
7. Location Description		

Complete the following when necessary for an additional transition period:

8. Date Additional Transition Period Begins	Mo	Da	Yr	9. Discontinue Additional Transition Period	Mo	Da	Yr

Complete the following to establish a new dust standard:

10. New Dust Standard (Headquarters Only)	

Complete the following to change status of miner:

11. Sampling Status	A. Available	B. Unavailable	C. Terminated	11a. Date of Status	Mo	Da	Yr

Complete the following to correct name or update address:

12. Last Name																			
13. First Name						14. Middle Initial													
Miner's Mailing Address	15. Street or Box Number																		
	16. City																		
	17. State Name						18. Zip Code												

19. Remarks:

20. Submitted By _____ Date _____

21. Key Entered By _____ Date _____

LEAVE BLANK

FORM 2000-144 - PART 90 MINER STATUS

MSHA Form 2000-144 is completed primarily to record a Part 90 miner's (a miner with evidence of pneumoconiosis who exercises the option) work position in the MIS system. It also serves to update, restore missing information and correct some information without causing a change in the computer processing. The form should be completed in black ink.

1. Action - Indicate whether this action pertains to an initial or additional transition period, or is to update information about the miner on the database. A transition period is the 15 calendar days in which the operator must collect and submit five valid samples from a Part 90 miner's work position to determine if that position meets the dust standard.
2. Part 90 Number - Enter the miner's social security number.
3. Mine ID - Enter the authorized seven-digit number that identifies this mine.
4. Organization Code - Enter the last four digits of the code for the field office having jurisdiction over the mine.
5. MMUIDA/SA - Enter the three-digit number which identifies the type of entity. If the miner is assigned to an MMII, use the first three digits of that MMU number (001 through 099). If the miner is assigned to a nonface underground area, use the number "850". If the miner is assigned to a surface area, use the number "950".
6. Occupation Code - Enter the three-digit code assigned to a specific occupation by the Office of the Administrator (see MSHA Form 2000-157).
7. Location Description - Identify the location of the entity or describe the miner's job duties or equipment used. Shift information may also be included.
8. Date Additional Transition Period Begins - Enter the date when an additional transition period begins.
9. Discontinue Additional Transition Period - Enter the date an additional transition period was discontinued because the miner decided to return to the previous work position.
10. New Dust Standard - Completed only by DOH when necessary to administratively adjust the miner's applicable dust standard. The new standard cannot be greater than 1.0 or less than 0.1 mg/in³ of air.

- 11A. Sampling Status - Complete this item to change the status of a miner. Refer to 30 CFR 90.220 for definitions of each specific operational status. Since initial entry of this form assumes availability, do not check the "A" box or it will cause the transaction to reject.
- 11B. Date of Status - Enter the effective date of the change in status.
12. Last Name - Enter the miner's last name, followed by "Jr." or "Sr." if applicable.
13. First Name - Enter the miner's first name.
14. Middle Initial - Enter the first letter of the miner's middle name if there is one.
15. Street or Box Number - Enter the miner's mailing address, leaving a single space between each part.
16. City - Enter the name of the city, abbreviate if necessary.
17. State Name - Enter the name of the state. Do not use the two-letter postal abbreviation for the state.
18. Zip Code - Enter the appropriate zip code. If only five digits are known, place them in the first five boxes and leave blanks in the rest.
19. Remarks - This space is used for additional information, explanations or administrative purposes, and is not entered into the system.
20. Submitted By/Date - Enter the name of the person completing this form and the date it was completed.
21. Key Entered By/Date - Signature of the person inputting this information into the computer and the date he/she entered it.

I.H. Inspection Data

U.S. Department of Labor
Mine Safety and Health Administration



A. First Day of Inspection			B. Mine ID Number			C. Mine Name					
Mo	Da	Yr									
D. Company Name				E. Inspector Name				F. AF Number		G. Field Office No.	
H. Site Codes for: 1—MMU, 2—UG Shop, 3—UG Warehouse, 4—UG Other, 5—Surf Pit, 6—Surf Shop, 7—Surf Warehouse, 8—Laboratory, 9—Bathhouse, 10—Prep Plant & 11—Surf Other.											

I. Areas or Items Evaluated:

1. List Site Code(s) for Area(s) Inspected.....

--	--	--	--	--	--	--	--	--	--

In Blocks Below Check "Yes", "No", or "NA"

2. Miners Knowledgeable of Safe Work Procedures.....

--	--	--	--	--	--	--	--	--	--

3. Engineering and Administrative Controls Adequate.....

--	--	--	--	--	--	--	--	--	--

4. Personal Protective Equipment Adequate.....

--	--	--	--	--	--	--	--	--	--

5. Change Room, Bathing and Toilet Facilities Adequate.....

--	--	--	--	--	--	--	--	--	--

6. Change Room, Bathing and Toilet Facilities Sanitary.....

--	--	--	--	--	--	--	--	--	--

7. Drinking Water Supply Adequate.....

--	--	--	--	--	--	--	--	--	--

8. Drinking Water Sanitary.....

--	--	--	--	--	--	--	--	--	--

9. Occupational Illnesses Reported (if any).....

--	--	--	--	--	--	--	--	--	--

J. For items checked "No" above, explain corrective action taken or planned. Also, list any special observations, recommendations, or improvements made during the course of this inspection:

K. List chemicals found on mine property on the back of this form. (if so, check box)
MSHA Form 2000-187, Mar 86 (Revised)

L. Chemicals Used or Stored on Mine Property	Approximate Amount Stored (M)	Approximate Amount Used Last 12 Months (N)	Potential Exposure Number People (O)	Site Code (P)	(✓) MSDS (Q)
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					

Attach list of remaining chemicals on additional sheet if necessary.
 Reverse, MSHA Form 2000-187, Mar 86 (Revised)

FORM 2000-187 - I.H. INSPECTION DATA

This form is normally used during an Industrial Hygiene Inspection to locate and identify chemicals being used or stored and to evaluate the surface or underground environment of the miners.

- A. First Day of Inspection - Enter inspection start date in two-digit month-day-year format.
- B. Mine I.D Number - Enter the seven-digit mine identification number assigned by MSHA.
- C. Mine Name - Enter the mine name as it appears on the Legal Identity Report Form No. 2000-7.
- D. Company Name - Enter the company name as it appears on the Legal Identity Report Form.
- E. Inspector Name - Enter the name or names of the inspector(s) performing the sampling survey.
- F. A.R. Number - Enter the five-digit identification number from the AR's card of authorization (MSHA Form 1000-186).
- G. Field Office No. - Enter the five-digit number assigned to the MSHA CMS&H Office under which the coal mine is inspected.
- H. Site Codes - The site codes listed are to be used in column (1-3) for showing the location of where the samples were collected.
- I. Areas or Items Evaluated - Enter the appropriate site code(s) for Item 1. For Items 2 through 9 enter a "yes," "no" or "NA" in the blocks provided under each site inspected.
- J. Comments - Space provided for the inspector to list any special observations, recommendations or improvements made during the inspection.
- K. Block - Check block if chemicals are found on mine property.
- L. Chemicals - List chemical names or trade names of all substances of concern found on the mine property. Chemical names are preferred. Be as accurate as possible.
- M. Approximate Amount Stored - Enter quantity stored on mine property. Use appropriate measurement quantity in order to avoid ambiguous terms such as 3 drums, 10 cans, 2 bottles, etc.

- N. Approximate Amount Used - Enter quantity used in the last 12 months. Use appropriate measurement quantity in order to avoid ambiguous terms such as 3 drums, 10 cans, 2 bottles, etc.
- O. Potential exposure - Enter the number of people who could be exposed. Take into consideration the number of people who may be exposed on other work shifts.
- P. Bite Code - Use one (1) site code number for each chemical. The codes are shown under Item H above.
- Q. MSDS - Check the block if a material safety data sheet was obtained for the chemical noted.

I.H. Sampling Data

U.S. Department of Labor
Mine Safety and Health Administration



A. Date Samples Collected			B. Mine ID Number			C. Mine Name				
Mo	Da	Yr								
D. Company Name				E. Inspector Name			F. AR Number		G. Field Office No.	

H. Site Codes for: 1—MMU, 2—UG Shop, 3—UG Warehouse, 4—UG Other, 5—Surf Pit, 6—Surf Shop, 7—Surf Warehouse, 8—Laboratory, 9—Bathhouse, 10—Prep Plant & 11—Surf Other.

I. Sampling Data	Sample 1	Sample 2	Sample 3
1. Sample ID Number			
2. Type of Sample			
3. Site Code			
4. Occupation Code			
5. Pump Number			
6. Time Stop			
7. Time Start			
8. Total Time (minutes)			
9. Flow Rate			
10. Sample Medium			
11. Lot Number			
12. Temperature (°F)			
13. Humidity (%)			
14. Barometric Pressure (mmHg)			
J. Operation/Location			
K. Type Analysis Desired			

L. Special Instructions or Comments

M. Date Sample(s) Submitted for Analysis	Mo	Da	Yr

MSHA Form 2000-194, Mar 86

N. Analysis--This Page to be Completed by Analytical Laboratory Only	O. Date Samples Received	Mo	Da	Yr											
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> </tr> </table>					<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> </tr> </table>					<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> </tr> </table>				

P. Laboratory Sample Number(s)	Sample 1	Sample 2	Sample 3
Contaminant Number 1			
Amount			
TLV			
Analysis by (initials)			
Contaminant Number 2			
Amount			
TLV			
Analysis by (initials)			
Contaminant Number 3			
Amount			
TLV			
Analysis by (initials)			
Contaminant Number 4			
Amount			
TLV			
Analysis by (initials)			
Contaminant Number 5			
Amount			
TLV			
Analysis by (initials)			
Contaminant Number 6			
Amount			
TLV			
Analysis by (initials)			

Q. Special Instructions or Comments

R. Analysis Reviewed and Approved by (name)	S. Date Analysis Sent to Inspector	Mo	Da	Yr											
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> </tr> </table>					<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> </tr> </table>					<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> </tr> </table>				

Reverse, MSHA Form 2000-19-1 Mar 86

FORM 2000-194 - I.H. SAMPLING DATA

This form is also used during an Industrial Hygiene Inspection, but is used to record the collection of chemical samples or contaminants for analysis and subsequent determination of exposures.

- A. Date Samples Collected - Enter date the samples were collected in two-digit month-day-year format. A separate form will need to be filled out for each sampling day.
- B. Mine I.D. Number - Enter the seven-digit mine identification number assigned by MSHA.
- C. Mine Name - Enter the mine name as it appears on the Legal Identity Report, MSHA Form No. 2000-7.
- D. Company Name - Enter the company name as it appears on the legal identity report form.
- E. Inspector Name - Enter the name or names of the inspector(s) performing the sampling survey.
- F. A.R. Number - Enter the five-digit identification number from the AR's card of authorization (MSHA Form 1000-186).
- G. Field Office No. - Enter the five-digit number assigned to the MSHA CMS&H Office under which the coal mine is inspected.
- H. Site Codes - The site codes listed are to be used in column (1-3) for showing the location of where the samples were collected.
- I. Sampling Data
 - 1. Sample I.D. Number - A number that uniquely identifies each sample or container.
 - 2. Type of Sample - Physical nature of samples; e.g. liquid, soil, bulk, oil, diesel fuel, etc. (If dosimeter sample, classify as personal or area).
 - 3. Site Code - Use one (1) site code number for each sample. The codes are shown under Item H above.
 - 4. Occupation Code - Enter the three digit occupation code for the person sampled or the occupation code of the person working nearest the sample location.
 - 5. Pump Number - Print in the MSHA property number found on the pump.

6. Time Stop - Print in the time the pump stopped sampling. Use military time 0000 to 2400 hours.
 7. Time Start - Print in the time the pump started sampling.
 8. Total Time - Total sampling time in minutes.
 9. Flow Rate - Pump flow rate in millimeters per minute (ml/min).
 10. Sample Medium - Description of adsorbing or absorbing media with which samples were taken; e.g. midget impinger with name of absorbing agent and/or solvent, charcoal tubes, florasil tubes, specific types of filters used.
 11. Lot Number - the number of the particular batch or kind of sample media, e.g. each package of chemical tubes has a specific number.
 12. Temperature - Ambient temperature measured in degrees Fahrenheit.
 13. Humidity (%) - Relative humidity measured with a sling psychrometer in percent.
 14. Barometric Pressure (mm/Hg) - Measured in millimeters of mercury.
- J. Operation/Location - Print in the type of operation being sampled; e.g., degreasing, float-sink, frothing, welding, etc. Also, print in the location; e.g., 3rd floor, outside, etc.
- K. Type Analysis Desired - Print the type or kind of analysis or analyses desired. Also list the suspected contaminants in each sample.
- L. Special Instruction or Comments - Any additional comments that need to be made for the person doing analysis can be included in this space.
- M. Date Sample(s) Submitted for Analysis - Enter the date the samples are to be mailed for analysis.
- N-S. Analysis - This side of the page is to be completed only by the analytical laboratory and returned to the inspector.

LEAVE BLANK

FORM 2000-198 - DIESEL EQUIPMENT INVENTORY

The Diesel Equipment Inventory data form is to be filled out for each piece of diesel-powered equipment used underground at each mine. The information requested on this form should be obtained from an actual inspection of the equipment at the mine site. This will prevent possible discrepancies between the actual equipment and information obtained for a particular machine from records at the mine office. These records might list the machine purchased as a utility truck and the actual machine might, in fact, have been converted to a personnel carrier. However, some of the information (i.e., date manufactured, engine model number, etc.) might not be obtainable from examining the equipment. Therefore, you should attempt to obtain as much of the remaining information from the mine office records. If any equipment information still cannot be found, leave those lines blank. Do not speculate on what the missing equipment information should be.

1. Verify Type (check one):

Active Machine - This is to be marked on the forms for equipment being used at that specific mine. Regardless of whether this piece of equipment was previously submitted for the inventory.

Delete Machine - This is to be marked on the forms for equipment that is no longer being used or located at that specific mine.

2. Date - The date this form was filled out.

3. Inspector Name - The name of the inspector who filled out the data form. Note: The inspector's name is strictly in case there is a need for clarification with a piece of data on the form.

4. A.R. Number - The five-digit identification number assigned by the Mine Safety and Health Administration to all field inspectors.

5. Field Office ID Number - The five-digit identification number assigned by the Mine Safety and Health Administration to all field offices.

6. Mine Name - The full name of the mine. Example: Foidel Creek Mine.

7. Mine ID - The seven-digit identification number assigned by the Mine Safety and Health Administration.

8. Equipment Approval Number - (if applicable) The four-or-five-digit number assigned by MSHA's Approval and Certification Center to diesel equipment verifying that these machines are approved under either Parts 36 or 32 of the Code of Federal Regulations. Not all equipment will have an approval number.

Example: Part 36 number is 31-62 (permissible). Part 32 number is 24-153 (nonpermissible).

Note: The approval number will be stamped on a metal approval plate and attached to the machine.

9. Equipment Manufacturer - The name of the company that manufactures this particular piece of equipment.

Example: Wagner Mining Equipment Incorporated

10. Equipment Model Number - The numbers and/or letters assigned by the equipment manufacturer to a certain model or type of equipment.
11. Equipment Type - A name given the equipment which describes its function or use at this particular mine.

Example: Powder Loading Truck

12. Serial Number - The identification number assigned by the equipment manufacturer to a specific piece of equipment.
13. Date Manufactured - The year in which the machine was manufactured.
14. Engine Manufacturer - The name of the company that manufactured the engine used in this machine.
15. Engine Model - The numbers and/or letters assigned by the engine manufacturer to a certain model or type of engine.
16. Machine Features - (Methane Monitor, 2G Electrical Components and Rail-Mounted) Each box is to be marked if the diesel equipment is equipped with each machine feature listed beside the box.
17. Type of Mine - Coal or metal/nonmetal mine.
18. Comments - Only pertinent information pertaining to the equipment that cannot be noted anywhere else on the form.

Dust Data Card

1. Cassette Number _____

2. Mine ID Number 3. Contractor Code

4. Mine Name _____

5. Company Name _____

6. Date Sampled 7. Sampling Time
Mo. Da. Yr. (min)

8. Tons This Shift  **ATTACH CASSETTE HERE**

9. Type of Sample (select one)
 (1) designated occ (ug)
 (2) nondesignated occ (ug)
 (3) designated area (ug)
 (4) designated work position (sur)
 (5) part 90 miner

10. MMU DA/SA 11. Occ Code

12. Part 90 Miner Sampled
 SSN

13. Certified Person
 SSN

Signature _____

Laboratory Analysis _____

Final Weight _____

Initial Weight _____

Weighed By _____ OSP Checked By _____ Void Code

Date Processed _____

RETURN THIS COPY TO MSHA WITH CASSETTE.
CBF 085 REV 0 489751

LEAVE BLANK

DUST DATA CARD

The inspector should take extreme care in filling out the dust data card

The dust data card should be filled out as follows:

1. Cassette Number - The cassette number on the dust data card is supplied by the manufacturer and must correspond to the number on the filter cassettes. The card must be submitted along with the filter cassette bearing the identical serial number.
2. Mine ID Number - The mine ID number is a seven-digit number assigned by MSHA.
3. Contractor Code - A three-digit ID number assigned by MSHA.
4. Mine Name - The specific name of the mine is required. The mine ID number and the name of the mine must match.
5. Company Name - The name of the company that operates the mine is required.
6. Date Sampled - The date the sample was taken is required, not the date it was mailed or is due. When entering the date, be sure to enter a zero before single-digit months, or days so that each box contains a number.
7. Sampling Time - The sampling time, expressed in minutes, represents the actual elapsed time between when the pump was started and when the pump was turned off. Total time should not be more than 480 minutes or less than 360 minutes.
8. Tons This Shift - Tons of material produced. This item is required for samples taken on the mechanized mining unit. Tonnage less than four digits must be preceded by zeros. This item is not required to be filled out for samples taken in surface areas.
9. Type of Sample (select one) - The number of the correct sample type is entered in the box provided. The environment sampled should be numbered as follows:
 - (1) designated occ (ug)
 - (2) nondesignated occ (ug)
 - (3) designated area (ug)
 - (4) designated work position (sur)

- (5) part 90 miner
- (6) nondesignated area (ug)
- (7) intake air (ug)
- (8) nondesignated work position (sur)

Code numbers 1 through 5 will be used by coal operators and MSHA inspectors. Numbers 6 through 8 will be used by MSHA inspectors only. Code number 2 is to be used by MSHA inspectors when an underground nondesignated occupation is sampled. The only time that an operator would use code 2 would be after an excessive dust citation has been issued on a nondesignated occupation and the operator samples the environment to get back into compliance.

- 10. MMU/DA/SA - These four blocks are for the number assigned by MSHA to identify the mechanized mining unit (MMU), designated area (DA), surface area (SA), or Part 90 miner. Part 90 miners working underground should be coded 850-0 if not working on an MMU. If the Part 90 miner is working on an MMU, the MMU identification number shall be used. Part 90 miners working on the surface shall be coded 950-0.
- 11. Occ Code - The appropriate three-digit occupation code. This block does not need to be filled out when designated areas are sampled.
- 12. Part 90 Miner Sampled - This section need only be completed if the miner sampled is one who has exercised the option to work in a less dusty occupation (a "Part 90 miner"). The Part 90 miner's social security number shall be entered, one digit in each box.
- 13. Certified Person - The respirable dust certification number of the person taking the sample must be entered to verify the person's certification.

The information in the section marked "Laboratory Analysis" will be completed by the laboratory technician.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
 NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

REQUEST FOR MINING HEALTH HAZARD EVALUATION

This form is provided to assist in registering a request for a health hazard evaluation with the U.S. Department of Health and Human Services as provided in Section 501(a)(11) of the Federal Mine Safety and Health Act of 1977. (See Statement of Authority on Reverse Side.) This section provides for evaluation of health hazards at a mine resulting from exposure to chemical substances or physical agents (such as noise, heat, radiation, etc.) including exposure to substances or agents resulting from equipment used in the mines.

Name of Establishment Where Evaluation is Requested _____

Company (Street) _____ (Telephone No.) _____
 Address _____
 (City) _____ (State) _____ (Zip Code) _____

1. What Product or Service does the Establishment Produce? _____

2. Specify the particular building or worksite where the substance(s) or physical agent(s) is located, including address. _____

3. Specify the name, title, and phone number of the employer's agent(s) in charge. _____

4. Describe briefly the substance(s) or physical agent(s) which exists by completing the following:

Identification of Hazardous Physical Agent(s) _____

Identification of Toxic Substance(s) _____

Trade Name(s) (if applicable) _____ Chemical Name(s) _____

Manufacturer(s) _____

Does the material have a warning label? ___ Yes ___ No. If yes, attach a copy of the information contained on the label.

Physical Form of Substance(s): Dust Gas Liquid Mist Other

How are you exposed? Breathing Swallowing Skin Contact Other

Number of People Exposed _____ Length of Exposure (Hours/Day) _____

Occupation of Exposed Employees _____

5. Using the space below, describe further the nature of the conditions or circumstances which prompted this request and other relevant aspects which you may consider important such as the nature of the illness or symptoms of exposure, the concern for the potentially toxic or hazardous effects of a new chemical substance or physical agent introduced into the workplace, etc. _____

CDC/NIOSH 2.108
 Rev. 1/81

6. (a) To your knowledge has this substance or agent been considered previously by any Government agency? _____ (b) If so, give the name and address of each.

(c) and, the approximate date it was so considered. _____

7. (a) Is a similar request currently being filed with or under investigation by any other Government (State or Federal) agency? _____ (b) If so, give the name and address of each _____

8. Requester - The undersigned Requester believes that a substance (or substances) or physical agent (or physical agents) normally found in the concentrations or levels used or found may have potentially toxic or hazardous effects in the concentrations or levels used or found.

Signature _____ Date _____

Typed or Printed Name _____

Phone: Home - _____ Business - _____

Street _____

Address City _____ State _____ Zip Code _____

Check One:

- I am an Operator Representative.
- I am an Authorized Representative of, or an officer of the organization representing the miners for purposes of collective bargaining. State the name and address of your organization. _____
- I am an Authorized Representative of two or more miners in the workplace where the substance or physical agent is normally found. Add signatures of authorizing miners below:
 Name: _____ Phone _____
 Name: _____ Phone _____
- I am one of three or less miners in the workplace where the substance or physical agent is normally found.

Please indicate your desire: I do not want my name revealed to the employer.
 My name may be revealed to the employer.

Authority: In accordance with the provisions of the Federal Mine Safety and Health Act of 1977, Section 501(a) The ... the Secretary of Health and Human Services, as appropriate shall conduct such studies research, experiments, and demonstrations as may be appropriate... (11) to determine, upon the written request by any operator or authorized representative of miners, specifying with reasonably particularity the grounds upon which such request is made, whether any substance normally found in a coal or other mine has potentially toxic effects in the concentrations normally found in the coal or other mine or whether any physical agents or equipment found or used in a coal or other mine has potentially hazardous effects, and shall submit such determinations to both the operators and miners as soon as possible ... (b) Activities under this section in the field of coal or other mine health shall be carried out by the Secretary of Health and Human Services through the National Institute for Occupational Safety and Health

For Further information - Telephone: AC 304 595-7203

Send the completed form to:
 National Institute for Occupational Safety and Health
 Mining Health Hazard Evaluations
 944 Chestnut Ridge Road
 Morgantown, West Virginia 26505

REQUEST FOR MINING HEALTH HAZARD EVALUATIONS (HHEs)

This form is for mining health hazard evaluations requested by the mine operator or a representative of the miners. The form should be given to miner representatives or mine operators who have concerns about potential health hazards that do not involve compliance with existing regulations.

Chapter 7 - HEALTH CITATIONS AND ORDERS

A. Respirable Dust Violations

Due to changes in 30 CFR Part 70 and in the interest of conformity, all citations or orders issued for excessive respirable dust (underground or surface) shall be issued under Sections 104(a), 104(d), or 104(e). Therefore, Section 104(f) is no longer cited when issuing any citation or order.

When a respirable dust standard at a surface or underground mine is exceeded based on MSHA or operator samples, a 104(a) citation shall be issued to the operator prescribing a reasonable time in which the condition is to be abated (see Example 1).

When a respirable dust standard is reduced because of excess quartz in a surface or underground mine and when the reduced standard is exceeded based upon operator (or MSHA) samples collected in the working environment of the miners, a 104(a) citation shall be issued to the operator prescribing a reasonable time in which the condition is to be abated (see Example 2).

A citation for failure to take valid respirable dust samples (for a bimonthly period) for the first time should be issued and terminated before it is delivered or mailed to an operator (see Example 3). In situations where the requirement to take bimonthly samples is again violated during the next bimonthly period, a citation should be issued and not terminated until the required number of samples are received. The citation must set a reasonable period of time within which the bimonthly samples are to be collected.

NOTE: Because each Form 7000-3 has a unique preprinted number, it was necessary to reserve numbers 9,000,000 through 9,950,000 for Coal's health program and assign a portion of these numbers to each district. This procedure allows clerical personnel to type a master copy of each type of health citation issued and photocopy a supply of the forms for their use. Anytime a photocopy form is used, it will be necessary to place a unique number from the reserved numbering sequence in item 3 on the citation form.

Upon issuing a citation or order for excessive dust the following actions must be taken. For a nondesignated entity, a MMU/DA/DWP form (see Respirable Dust System User's Manual) is to be completed and entered into the computer's data base. Item 3 (Effective Date of Action on the MMU/DA/DWP form and item 6A.1 (Date) on the Citation/Order Data form should reflect the actual date the citation or order was issued. Both forms must be completed and entered into the system on the next workday following the issuance of the citation.

Upon issuing a citation, the inspector shall establish the code for the operator to use in transmitting samples with respect to the work environment cited and include this code in the narrative statement of the citation. Also, he shall inform the operator of the importance of using the code to identify samples transmitted from the operator's sampling program to satisfy the requirements of the violation.

Because the operator must first take corrective action before collecting samples, inspection personnel shall determine what corrective actions are needed when they decide on the reasonable time for abatement of respirable dust violations.

The inspector shall remind the operator of his obligation to sample during each production shift, after corrective action has been taken, until five valid samples are collected and transmitted. The specific environment or occupation to be sampled shall be written on the citation. When two or more occupations are involved in a violation, the inspector determines the dust generation sources and requires the operator to sample the environment of the occupation which is most affected by these sources. In most cases, this will be the working environment with the highest dust concentration.

Citations that result from a mine operator's samples shall not be sent by certified mail if an inspection is in progress at that mine. The inspector shall go to the area identified on the noncompliance message to assess the engineering aspects of the dust control problem that has been identified and to establish a reasonable time for abatement.

If the citation is not terminated as a result of the operator's samples, an inspector shall, upon the expiration date, determine whether the reasonable time should be extended (see Example 4). In making this determination, the inspector shall consider the following:

1. Was the initial time granted sufficient?;
2. Has the mine operator provided a plan, in writing, which prescribes additional dust control measures to be taken and a schedule of implementation to further reduce respirable dust concentrations to the acceptable limit?;
3. Was the revised plan, which resulted from MSHA's sampling, being implemented?;
4. Are respirable dust concentrations being reduced in the miners' working environment? and,
5. Has an approved respirator been made available to each miner in the affected area? NOTE: The use of respirators shall not be submitted for environmental control measures in the active workings.

B. Respirable Dust - 104(b) Order

If an inspector finds that an extension of the period of reasonable time on a citation for respirable dust is not justified, i.e., the operator does not take corrective action to reduce the concentration of dust before taking samples and the sampling results show continuing noncompliance, the inspector shall not extend the time for abatement of the violation and the inspector shall issue a 104(b) withdrawal order. Such an order shall not be issued by certified mail. The order shall describe the same area specified in the citation; in cases where an exact description of the

affected area would be impractical (i.e., laborer, occupation 016, etc.), the order shall show the affected area to include the entire mechanized mining unit or the entire mine (see Example 5).

The order shall be modified permitting workers to return to the affected area when the inspector has reason to believe, based on actions taken by the operator, that the violation has been abated. To justify the modification of an order, the inspector shall describe on the modification each of those actions which have been taken by the operator. An order modification may be warranted if the following conditions are met (see Example 6):

1. A revised plan containing specific corrective actions, which the inspector believes will reduce concentrations to the applicable limit, has been submitted by the operator;
2. The specific corrective measures are in place and ready to be implemented; and
3. The inspector has evaluated the corrective actions by measuring velocities and quantities of ventilation, water pressure, etc., and verified that these improvements are ready for implementation.

An MSHA representative will sample each workday during the modified order period.

If the mine operator does not maintain the controls prescribed in the revised dust control plan, the inspector shall issue citations or orders under Sections 104(a), 104(d) or 104(e) as appropriate, citing 30 CFR 75.316, and shall reinstate the order for excessive respirable dust.

If, after corrective action has been taken and compliance is achieved, based on results of from two to five samples, the inspector shall terminate the order (see Example 7). A Citation/Order Data form must be completed and entered into the computer system the day after the order is terminated (see Respirable Dust System User's Manual).

If compliance is not achieved, the withdrawal order shall be modified to its original state (see Example 8). When the inspector believes that new actions taken by the operator have abated the violation, this paragraph and the preceding four paragraphs (steps) would again be applicable.

C. Part 90 Violations

Citations of 30 CFR 90 shall not identify the Part 90 miner by name, social security number, work position, etc.

The condition or practice that constitutes the violation will be described in the citation (see Example 9).

If a citation of Part 90 is based on findings resulting from an inspection, that information shall be provided to the Subdistrict/District office by the next workday so that a citation input Form 2000-146 can be completed for a remote terminal transmission to the computer in Denver, Colorado.

If an inspector finds that an extension of the reasonable time period on a 104(a) citation for exceeding the respirable dust standard for a Part 90 miner is not justified, the inspector shall issue a 104(b) withdrawal order. This order shall affect only the Part 90 miner (see Example 10).

The operator must submit a respirable dust control plan to the District Manager within 15 days after termination of a citation for a violation of the applicable dust standard. However, if the mine operator moved the Part 90 miner to another less dusty position to abate the violation, a respirable dust control plan is not required. If, after 15 days, this plan is not submitted by the operator, a citation shall be issued to the operator prescribing a reasonable time in which the condition must be abated (see Example 11).

D. Noise Violations

If the results of a supplemental noise survey show that (1) the multiple noise exposure of any miner is 1.32 or greater, (2) a single reading lasting at least 30 seconds is equal to or greater than 117 dBA, or (3) each of three or more 30-second (or longer) readings is 116 dBA; the permissible noise exposure prescribed in Table 1 of Section 70.510 has been exceeded, a citation under Section 70.501 shall be issued to the operator.

A reminder to the operator to submit a hearing conservation plan within 60 days should be given in the body of the citation.

The body of the citation should not identify the miner by name or social security number. Identification should be made by section identification number, occupation code and if necessary, other data such as "right side roof bolter operator." This does not apply to citations issued to mine operators for failure to collect periodic noise surveys in accordance with Sections 70.508 and 71.803 (see Examples 12 and 13).

Periodic surveys of the noise levels to which each miner is exposed are required at intervals of at least every 6 months. If the operator fails to conduct this survey, a citation shall be issued to the operator prescribing a reasonable time in which the condition is to be abated (see Example 14).

Mine Citation/Order

U.S. Department of Labor
 Mine Safety and Health Administration

Section I -- Violation Data

1. Date	Mo	Da	Yr	2. Time (24 Hr. Clock)		3. Citation/Order Number	
	0	7	0	7	8	7	1
							5
							0
							0
4. Served To John Brown				5. Operator XYZ Company			
6. Mine No. 3				7. Mine ID 4 4 - 0 1 7 0 2 - (contractor)			
8. Condition or Practice							8a. Written Notice (103g) <input type="checkbox"/>
Based on the results of five valid dust samples collected by the operator (or inspector), the average concentration of respirable dust in the working environment of the designated occupation (continuous miner operator - 036) in mechanized mining unit 001-0, was 3/0 mg/m ³ which exceeded the applicable limit of 1.2 mg/m ³ . Management shall take corrective action to lower the respirable dust and then sample each production shift until five valid samples are taken and submitted to the Pittsburgh Respirable Dust Processing Laboratory (or the designated MSHA office).							
See Continuation Form (MSHA Form 7000-3a) <input type="checkbox"/>							

9. Violation	A. Health Safety Other	<input checked="" type="checkbox"/>	B. Section of Act		C. Part/Section of Title 30 CFR	
				-		0 7 0 . 1 0 1

Section II -- Inspector's Evaluation

10. Gravity:

A. Injury or Illness (has) (is): No Likelihood Unlikely Reasonably Likely Highly Likely Occurred

B. Injury or Illness could reasonably be expected to be: No Lost Workdays Lost Workdays or Restricted Duty Permanently Disabling Fatal

C. Significant and Substantial (See Reverse): Yes No D. Number of Persons Affected 0 0 7

11. Negligence (check one)
 A. None B. Low C. Moderate D. High E. Reckless Disregard

12. Type of Action 1 0 4 - a - , - - 13. Type of Issuance (check one)
 Citation Order Safeguard

14. Initial Action
 A. Citation B. Order C. Safeguard D. Written Notice E. Citation/Order Number
 F. Dated Mo Da Yr

15. Area or Equipment

16. Termination Due	A. Date	Mo	Da	Yr	B. Time (24 Hr. Clock)
		0	7	2	7
					8
					7
					0
					8
					0
					0

Section III -- Termination Action

17. Action to Terminate

18. Terminated
 A. Date Mo Da Yr B. Time (24 Hr Clock)

Section IV -- Automated System Data

19. Type of Inspection (activity code)	B	A	B	20. Event Number		21. Primary or Mill
				5	0	3
				2	4	0
				9		
22. Signature Thomas Morris						23. AR Number
						0
						2
						4
						2
						0

MSHA Form 7000-3 Mar 85 (Revised)

104(a) CITATION - REDUCE DUST STANDARDS
 EXAMPLE 2

Mine Citation/Order
Continuation

U.S. Department of Labor
Mine Safety and Health Administration

Section I -- Subsequent Action/Continuation Data

1. Subsequent Action <input checked="" type="checkbox"/>	1a. Continuation <input type="checkbox"/>	2. Dated (Original Issue)	Mo 0	Da 7	Yr 8	7	3. Citation/Order Number	2	0	7	1	0	0	2	-	0	1
4. Served To John Brown						5. Operator XY Company											
6. Mine No. 3						7. Mine ID 4 4 - 0 1 7 0 2 - (contractor)											

Section II -- Justification for Action

MMU - 001 had been idle for a period of 10 days during the period for abatement. Samples have been collected during each working shift and two samples have been received my MSHA. Additional time is granted to allow more samples to be transmitted so a determination can be made of compliance or noncompliance.

See Continuation Form

Section III -- Subsequent Action Taken

8. Extended To	A. Date	Mo 0	Da 7	Yr 2	3	8	7	B. Time (24 Hr. Clock)	0	9	0	0	C. Vacated	<input type="checkbox"/>	D. Terminated	<input type="checkbox"/>	E. Modified	<input type="checkbox"/>
----------------	---------	---------	---------	---------	---	---	---	------------------------	---	---	---	---	------------	--------------------------	---------------	--------------------------	-------------	--------------------------

Section IV -- Inspection Data

9. Type of Inspection	C	F	B	10. Event Number	5	0	3	2	4	1	9	11. Signature	AR Number	12. Date	Mo 0	Da 7	Yr 2	1	0	1	13. Time (24 Hr. Clock)	1	5	3	0
Thomas Morris													0	2	4	2	0								

MSHA Form 7000-3a, Mar 85 (Revised)

EXAMPLE 4

Mine Citation/Order

U.S. Department of Labor
Mine Safety and Health Administration

Section I -- Violation Data

1. Date	Mo	Da	Yr	2. Time (24 Hr. Clock)	3. Citation/Order Number												
	0	7	2	4	8	7	0	8	0	0	2	0	7	1	0	0	3
4. Served To John Brown				5. Operator XY Company													
6. Mine No. 40				7. Mine ID 44 - 01702 - (contractor)													
8. Condition or Practice											8a. Written Notice (103g) <input type="checkbox"/>						

Results of the five most recent samples received my MSHA and collected from the working environment of the designated occupation (Continuous miner operator - 036) in mechanized mining unit 001-0 shows an average concentration of 5.7 mg/m³. Due to the obvious lack of effort by the operator to control respirable dust, the period of reasonable time for the abatement of this violation is not further extended, and all miners working on this section shall be withdrawn until the violation is corrected.

See Continuation Form (MSHA Form 7000-3a)

9. Violation	A. Health Safety Other	<input checked="" type="checkbox"/>	B. Section of Act	C. Part/Section of Title 30 CFR
				70.101

Section II -- Inspector's Evaluation

10. Gravity:

A. Injury or Illness (has) (is): No Likelihood Unlikely Reasonably Likely Highly Likely Occurred

B. Injury or Illness could reasonably be expected to be: No Lost Workdays Lost Workdays or Restricted Duty Permanently Disabling Fatal

C. Significant and Substantial (See Reverse): Yes No D. Number of Persons Affected 0 0 1

11. Negligence (check one)
A. None B. Low C. Moderate D. High E. Reckless Disregard

12. Type of Action 1 0 4 - b - , - - 13. Type of Issuance (check one)
Citation Order Safeguard

14. Initial Action
A. Citation B. Order C. Safeguard D. Written Notice E. Citation/Order Number 2 0 7 1 0 0 2 F. Dated Mo Da Yr 0 7 0 7 8 7

15. Area or Equipment
The mechanized mining unit - 001-0.

16. Termination Due	A. Date	Mo	Da	Yr	B. Time (24 Hr. Clock)

Section III -- Termination Action

17. Action to Terminate No action required because bimonthly sampling requirements can only be satisfied during the established bimonthly period.

18. Terminated	A. Date	Mo	Da	Yr	B. Time (24 Hr Clock)

Section IV -- Automated System Data

19. Type of Inspection (activity code)	C	F	B	20. Event Number	5	0	3	2	4	1	0	21. Primary or Mill				
22. Signature Thomas Morris											23. AR Number	0	2	4	2	0

MSHA Form 7000-3 Mar 85 (Revised)

EXAMPLE 5 - 104(b) Order

Mine Citation/Order

U.S. Department of Labor
Mine Safety and Health Administration

Section I -- Violation Data

1. Date	Mo	Da	Yr	2. Time (24 Hr. Clock)	3. Citation/Order Number
	0	7	15	0900	9071004
4. Served To Ralph Bunny, Safety Director				5. Operator Bambu Company	
6. Mine No. 300				7. Mine ID 45-00020- (contractor)	
8. Condition or Practice				8a. Written Notice (103g) <input type="checkbox"/>	

Section 90.201(d), 30 CFR, requires that corrective action shall be taken and that five valid respirable dust samples shall be collected in the Part 90 miner's work position and transmitted by the date to termination. The Part 90 miner identified in the Advisory No. 0012, dated 07/15/84, was exposed to an average respirable dust concentration of 1.4 mg/m³.

See Continuation Form (MSHA Form 7000-3a)

9. Violation	A. Health Safety Other	<input checked="" type="checkbox"/>	B. Section of Act	C. Part/Section of Title 30 CFR
				090100

Section II -- Inspector's Evaluation

10. Gravity:

A. Injury or Illness (has) (is): No Likelihood Unlikely Reasonably Likely Highly Likely Occurred

B. Injury or Illness could reasonably be expected to be: No Lost Workdays Lost Workdays or Restricted Duty Permanently Disabling Fatal

C. Significant and Substantial (See Reverse): Yes No D. Number of Persons Affected 0001

11. Negligence (check one)
A. None B. Low C. Moderate D. High E. Reckless Disregard

12. Type of Action 000-a- , - - 13. Type of Issuance (check one)
Citation Order Safeguard

14. Initial Action
A. Citation B. Order C. Safeguard D. Written Notice E. Citation/Order Number 00000000 F. Dated 000000

15. Area or Equipment

16. Termination Due	A. Date	Mo	Da	Yr	B. Time (24 Hr. Clock)
	0805	8	7		0800

Section III -- Termination Action

17. Action to Terminate

18. Terminated

A. Date	Mo	Da	Yr	B. Time (24 Hr. Clock)

Section IV -- Automated System Data

19. Type of Inspection (activity code)	20. Event Number	21. Primary or Mill
C F B	5032424	
22. Signature Thomas Morris		23. AR Number 02420

MSHA Form 7000-3 Mar 85 (Revised)

Mine Citation/Order

U.S. Department of Labor
Mine Safety and Health Administration

Section I -- Violation Data

1. Date	Mo	Da	Yr	2. Time (24 Hr. Clock)		3. Citation/Order Number	
	0	8	0	5	1 4 0 0	2 0 7 1 0 0 5	
4. Served To				5. Operator			
Ralph Bunny, Safety Director				Bambu Company			
6. Mine				7. Mine ID			
No. 300				4 5 - 0 0 0 2 0 - (contractor)			
8. Condition or Practice							8a. Written Notice (103g) <input type="checkbox"/>

The respirable dust concentration for the Part 90 miner identified in Citation NO. 9071004, dated 07/15/87, is still in excess of the applicable standard and the time for abatement should not be further extended.

See Continuation Form (MSHA Form 7000-3a)

9. Violation	A. Health Safety Other	B. Section of Act	C. Part/Section of Title 30 CFR
			9 0 . 1 0 0

Section II -- Inspector's Evaluation

10. Gravity:

A. Injury or Illness (has) (is): No Likelihood Unlikely Reasonably Likely Highly Likely Occurred

B. Injury or Illness could reasonably be expected to be: No Lost Workdays Lost Workdays or Restricted Duty Permanently Disabling Fatal

C. Significant and Substantial (See Reverse): Yes No D. Number of Persons Affected

11. Negligence (check one)

A. None B. Low C. Moderate D. High E. Reckless Disregard

12. Type of Action

1 0 4 - b - , - -

13. Type of Issuance (check one)

Citation Order Safeguard

14. Initial Action

A. Citation B. Order C. Safeguard D. Written Notice E. Citation/Order Number

9 0 7 1 0 0 4 F. Dated

Mo 0 7 Da 1 5 Yr 8 7

15. Area or Equipment

The Part 90 miner identified in the attached Advisory No. 11

16. Termination Due	A. Date	Mo	Da	Yr	B. Time (24 Hr. Clock)

Section III -- Termination Action

17. Action to Terminate

18. Terminated

A. Date	Mo	Da	Yr	B. Time (24 Hr. Clock)

Section IV -- Automated System Data

19. Type of Inspection (activity code)	20. Event Number	21. Primary or Mill
C E D	5 0 3 2 4 2 5	
22. Signature		23. AR Number
Thomas Morris		0 2 4 2 0

MSHA Form 7000-3 Mar 85 (Revised)

EXAMPLE 10 - 104(b) Order - Failure to Comply with Part 90 Respirable Dust Violation

Mine Citation/Order

U.S. Department of Labor
Mine Safety and Health Administration

Section I -- Violation Data

1. Date	Mo	Da	Yr	2. Time (24 Hr. Clock)	3. Citation/Order Number
	07	06	87	1500	2071008
4. Served To Rene Tower				5. Operator COM Company	
6. Mine No. 275				7. Mine ID 45.10101- (contractor)	
8. Condition or Practice					

8a. Written Notice (103g)

As indicated by the results of a supplemental noise survey conducted during an MSHA inspection on 07/06/87, the continuous miner operator in the South off Main West Section (I.D. No. 009-0) was exposed to 95 dBA for 40 minutes, 102 dBA for 25 minutes, 98 dBA for 90 minutes and 92 dBA for 25 minutes. The results obtained using the formula in Section 70.502 and Table I in Section 70.510 of 30 CFR is 1.47 and therefore exceeds the noise standard. A hearing conservation plan, as required by Section 70.510, shall be submitted to MSHA within 60 days from the date of this citation.

See Continuation Form (MSHA Form 7000-3a)

9. Violation	A. Health Safety Other	<input checked="" type="checkbox"/>	B. Section of Act	C. Part/Section of Title 30 CFR

Section II -- Inspector's Evaluation

10. Gravity:

A. Injury or Illness (has) (is): No Likelihood Unlikely Reasonably Likely Highly Likely Occurred

B. Injury or Illness could reasonably be expected to be: No Lost Workdays Lost Workdays or Restricted Duty Permanently Disabling Fatal

C. Significant and Substantial (See Reverse): Yes No D. Number of Persons Affected 001

11. Negligence (check one)

A. None B. Low C. Moderate D. High E. Reckless Disregard

12. Type of Action 104-b-

13. Type of Issuance (check one)
Citation Order Safeguard

14. Initial Action

A. Citation B. Order C. Safeguard D. Written Notice E. Citation/Order Number

F. Dated Mo Da Yr

15. Area or Equipment

16. Termination Due

A. Date Mo Da Yr 072387

B. Time (24 Hr. Clock) 0800

Section III -- Termination Action

17. Action to Terminate

18. Terminated

A. Date Mo Da Yr

B. Time (24 Hr Clock)

Section IV -- Automated System Data

19. Type of Inspection (activity code) BB

20. Event Number 5032428

21. Primary or Mill

22. Signature Thomas Morris

23. AR Number 02420

MSHA Form 7000-3 Mar 85 (Revised)

EXAMPLE 13 - Noise Citation (Sound Level Meter)

Mine Citation/Order

U.S. Department of Labor
Mine Safety and Health Administration

Section I -- Violation Data

1. Date	Mo	Da	Yr	2. Time (24 Hr. Clock)	3. Citation/Order Number
	0	8	1	4	8
				7	2
				0	0
				8	0
				0	0
				0	9

4. Served To Rene Tower	5. Operator Bambu Company
6. Mine No. 275	7. Mine ID 4 4 - 1 0 1 0 1 - (contractor)
8. Condition or Practice Periodic noise level surveys for the second quarter of 1987 have not been collected for the miner (s) identified below:	

1. Ron Casey - 673-10-1020
2. Ben Casey - 671-11-1120
3. Frank Smith - 680-14-3030

See Continuation Form (MSHA Form 7000-3a)											
9. Violation	A. Health Safety Other	X	B. Section of Act	C. Part/Section of Title 30 CFR	7	0	0	5	0	8	

Section II -- Inspector's Evaluation

10. Gravity:	A. Injury or Illness (has) (is):	No Likelihood	<input type="checkbox"/>	Unlikely	<input checked="" type="checkbox"/>	Reasonably Likely	<input type="checkbox"/>	Highly Likely	<input type="checkbox"/>	Occurred	<input type="checkbox"/>
	B. Injury or Illness could reasonably be expected to be:	No Lost Workdays	<input checked="" type="checkbox"/>	Lost Workdays or Restricted Duty	<input type="checkbox"/>	Permanently Disabling	<input type="checkbox"/>	Fatal	<input type="checkbox"/>		
	C. Significant and Substantial (See Reverse):	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	D. Number of Persons Affected	0	0	3		

11. Negligence (check one)	A. None	<input type="checkbox"/>	B. Low	<input type="checkbox"/>	C. Moderate	<input checked="" type="checkbox"/>	D. High	<input type="checkbox"/>	E. Reckless Disregard	<input type="checkbox"/>			
12. Type of Action	1	0	4	-	b	-	13. Type of Issuance (check one)	Citation	<input checked="" type="checkbox"/>	Order	<input type="checkbox"/>	Safeguard	<input type="checkbox"/>

14. Initial Action	A. Citation	<input type="checkbox"/>	B. Order	<input type="checkbox"/>	C. Safeguard	<input type="checkbox"/>	D. Written Notice	<input type="checkbox"/>	E. Citation/Order Number	F. Dated	Mo	Da	Yr
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15. Area or Equipment

16. Termination Due	A. Date	Mo	Da	Yr	B. Time (24 Hr. Clock)
	0	9	0	1	8
					7
					0
					8
					0

Section III -- Termination Action

17. Action to Terminate					
18. Terminated	A. Date	Mo	Da	Yr	B. Time (24 Hr Clock)

Section IV -- Automated System Data

19. Type of Inspection (activity code)	B	B	B	20. Event Number	5	0	3	2	4	2	9	21. Primary or Mill				
22. Signature	Thomas Morris										23. AR Number	0	2	4	2	0

MSHA Form 7000-3 Mar 85 (Revised)

EXAMPLE 14 - Failure to Conduct Noise Survey

Chapter 8 - ASBESTOS

A. Asbestos Health Effects

Asbestos exposure has been associated with various health effects including asbestosis (a pneumoconiosis) and cancer (including that of the lung, chest or abdomen, larynx, and gastrointestinal tract). Studies allegedly show development of lung cancer after only a single exposure to airborne asbestos fibers. Also, cigarette smoking has been shown to enhance the carcinogenic property of asbestos. Therefore, the use of asbestos substitutes should be encouraged.

B. Asbestos Use in the Coal Mining Industry

Uses of asbestos in the coal industry include jointings and packing in electrical cable entrances on permissible electrical equipment, brake linings on mobile equipment and large cable reels, gloves for handling hot materials (welders and laboratory workers), welding blankets; thermal insulation of buildings, boilers, and pipelines; and acoustic insulation in offices and other buildings. All of these uses of asbestos represent a potential exposure hazard to employees at mining operations and related worksites. Authorized representatives should be especially vigilant in seeing that asbestos exposure is minimized at construction, renovation and demolition sites.

C. Asbestos Exposure Standard

The allowable exposure for employees at surface coal mines, the surface work areas of underground coal mines, preparation plants and other surface facilities subject to the provisions of the Federal Mine Safety and Health Act of 1977, as amended, is established by 30 CFR 71.702 as two fibers (greater than 5 microns in length and with an aspect ratio of at least 3 to 1) per cubic centimeter of air as determined over an 8 hour (workday]. However, an exposure of up to 10 fibers/cubic centimeter is allowed for up to 1 hour during each 8 hour [work] day. There is no exposure standard for underground coal mine employees.

D. Procedure When Asbestos is Suspected

When the presence of asbestos is suspected, the authorized representative should discuss with the mine management (or contractor) the hazards associated with employee exposure to the material.

1. The authorized representative shall procure at least two samples of the suspected material. One sample shall be analyzed in the District by use of one of the commercially available "instantaneous" asbestos testing systems. When the presence of asbestos is positive through the field testing procedure, the second sample shall be sent to the servicing Health Technology Center for confirmation analysis.
2. The district health supervisor shall be promptly informed of any field test result giving a positive indication for asbestos presence. The district health specialist will

make immediate arrangements to have asbestos exposure sampling conducted of the affected mine (or contractor) employees.

E. Asbestos Sampling

1. Miners to be Sampled:

Personal samples shall be collected where deemed necessary by the District Manager in order to evaluate miner exposure to airborne asbestos fibers.

2. Who May Sample:

Sampling shall be conducted only by persons deemed qualified by the District Manager to conduct such sampling. In determining such qualification, the District Manager should consider such factors as knowledge of contaminant sampling and control techniques.

3. Sampling Equipment and Methodology:

The District Manager shall make sampling equipment available for use by the authorized representatives assigned to conduct asbestos fiber exposure surveys. The specialized devices (other than air pumps) are available upon request from the Health Technology Center servicing the District.

4. Prior to Sampling:

- (a) The appropriate uniform mine file shall be reviewed by the authorized representative prior to sampling.
- (b) Appropriate sampling equipment shall be prepared and calibrated prior to conducting the exposure evaluations. Instructions for the preparation and calibration procedures are available from the Health Technology Center.

5. Conducting the Survey:

Sampling shall be conducted by the authorized representative in accordance with the instructions provided by the Health Technology Center. Samples collected should be sufficient to reflect the exposure over the entire shift or duration of the tasks involving the use of asbestos, whichever is longer.

F. Personal Protective Equipment:

When the authorized representative reasonably expects to be exposed to asbestos, he/she shall, to the maximum extent feasible, wear appropriate personal protective clothing and respirators.

G. Reporting Sampling Results:

Results of asbestos sampling for material analysis and exposure assessment purposes shall be recorded on MSHA Form 2000-194, I.H. Sampling Data and a copy of the completed form attached to the inspection report. Also, the appropriate samples and a copy of the completed MSHA Form 2000-194 shall be sent to:

Analytical Branch
Dust Division, PHTC
4800-D Forbes Avenue
Pittsburgh, Pennsylvania 15213

Because the asbestos exposure evaluations may be performed as part of any inspection event, it will not be necessary to prepare a separate Mine Activity Data Report (MSHA Form 2000-22) for the survey. Only when the survey is conducted expressly as an AEA event will a separate MSHA Form 2000-22 be required.

H. Asbestos Bulk Sampling Procedures:

Taking a sample of asbestos-containing material can damage the material and cause significant release of fibers. The following guidelines are designed to minimize both damage and fiber release:

1. Wear at least a half-face respirator with disposable filters;
2. Wet the surface of the material to be sampled with water from a spray bottle or place a plastic bag around the sampler;
3. Sample with a single-use sampler;
4. With a twisting motion, slowly push the sampler into the material. Be sure to penetrate any paint or protective coating and all the layers of the material;
5. For single-use samplers, extract, wet wipe the exterior, and cap it;
6. Label the container;
7. Clean debris using wet towels and discard them in a plastic bag;
8. For surfacing material, use latex paint or a sealant to cover the sample area. For pipe and boiler insulation, use a nonasbestos mastic; and
9. Contact your district health specialist or the Technical Support Safety and Health Technology Center, Toxic Materials Division, to obtain the sampler/container.

I. Asbestos Airborne Sampling Procedures

1. Sampling Equipment Required

Personal Sampler Pump: A pump with a flow rate which can be determined within an accuracy of ± 5 percent. The pump must be calibrated with a representative filter and filter holder in line.

Filter Holder: A three-piece, 37mm filter holder and back-up pad.

Filter: A 0.8 micron pore size mixed cellulose membrane filter.

2. Pump Flow Rate, Sample Volume and Sampling Time

The pump shall be calibrated to a flow rate of 1.5 liters per minute. The sample volume shall be 135 liters; thus, the sampling time shall be 90 minutes.

3. Sample Collection

Assemble the filter, filter pad and three-piece filter holder. Close firmly to ensure that the center ring seats firmly and seals the edge of the filter. If the filter holder will not seal tightly, discard it.

Attach the filter holder to the sampling pump using a 1/4-inch diameter, 3-foot section of tubing and the adapter supplied with the filter holder.

Remove the face cap from the filter holder. Clip the filter holder to the worker's lapel. The open face of the filter should be pointed downward.

Turn the pump on and begin sample collection. Check the pump flow-rate periodically and readjust it if necessary.

Terminate sampling at the predetermined time. Note the sample's flow-rate and collection time. Also, record the ambient temperature and barometric pressure if known. When the barometric pressure is not known, record the approximate elevation at which the sample was taken.

Replace the filter holder face cap and the small inlet and outlet plugs.

Subject one of the filters to the same handling procedures as the sample except draw no air through it. Label this filter as the blank.

4. Sample Submittal

Complete MSHA Form 2000-194 listing all samples and blanks submitted for analysis. Filter holders shall be labeled to correspond to the sample numbers listed on MSHA Form 2000-194.

Ship the samples and a copy of completed MSHA Form 2000-194 in a container designed to prevent damage to the samples to:

Analytical Branch
Dust Division, PHTC
4800-D Forbes Avenue
Pittsburgh, Pennsylvania 15213

5. Additional Information

The filters, filter holder and connecting adapters are available from the Technical Support Health Technology Centers upon request.

J. Compliance/Noncompliance Determination

Compliance/noncompliance determinations shall be made by comparing sampling results with the appropriate 8-hour and/or 1-hour exposure standards listed in 30 CFR 71.700 in the case of surface worksite exposures. The appropriate citation or order shall be issued where exposure exceeds either or both standards.

Polyurethane Foam

A. Background

Polyurethane foam products have been used in the coal mining industry as an effective way to aid in: sealing ventilation controls such as stoppings and overcasts; reducing the effects of high air velocities on the mine roof and ribs; helping stabilize the mine roof in high stress areas; and in building ventilation control structures.

Most polyurethane foam products contain a form of diisocyanates, a group of low-molecular-weight aromatic and aliphatic compounds. The most common diisocyanates are: methylene bisphenyl isocyanate (MDI); toluene diisocyanate (TDI); or hexamethylene diisocyanate (HDI). The most hazardous are those products containing compounds of either MDI or TDI. A National Institute for Occupational Safety and Health (NIOSH) ALERT titled "Preventing Asthma and Death from Diisocyanate Exposure" was published in March 1996. This ALERT states, "Workers exposed to diisocyanates may develop serious or fatal respiratory disease."

If proper safety precautions are followed, polyurethane foam products can be used safely without exposing miners to any of the health hazards associated with these chemicals. However, misuse of these products may result in serious health problems, such as asthma, respiratory diseases, or death.

Isocyanates are powerful irritants to the mucous membranes of the eyes, gastrointestinal tract, and respiratory system. The major route of exposure is by inhalation of the vapor or burning of the product which may be encountered during fire fighting operations. Persons exposed in this manner may suffer from respiratory irritations that may progress to chemical bronchitis with severe bronchospasms. Exposure also occurs through skin contact during the handling of the components while in liquid form. Direct skin contact can result in marked inflammation of the exposed skin.

Persons exposed to isocyanates can become sensitized, making them subject to severe asthma attacks if they are re-exposed, even at very low concentration. Persons suffering from acute hypersensitivity typically develop symptoms 4 to 6 hours after exposure. Symptoms are often flu-like and include fever, muscle aches, and headaches. Symptoms may also include a dry cough, chest tightness, and difficult breathing. Persons suffering with chronic hypersensitivity often experience progressively more difficult breathing, fatigue, and weight loss.

B. Instructions

Before an underground coal mine uses polyurethane foam, the mine operator should be advised that the ventilation plan and roof control plan for the mine must be suitable to the conditions and the mining systems in use at the mine. Thus, if polyurethane foam is being used as a roof control material, suitable provisions addressing polyurethane foam should be included in the roof control plan. Likewise, if polyurethane foam is being used as a ventilation control material, suitable provisions addressing polyurethane foam should be included in the ventilation plan. The provisions should address; notification of use, storage, pumping, application, ventilation, fire protection, spills, disposal, and training.

The following precautions and guidelines are compiled to provide assistance to mine operators in developing suitable provisions addressing the minimum requirements for the safe storage, handling and use of polyurethane foam. The MSHA districts will use these guidelines in reviewing a mine operators' proposed roof control and ventilation plan for mines using polyurethane foam products. These guidelines incorporate information from NIOSH and polyurethane manufacturers, including material from the manufacturers' Material Safety Data Sheets (MSDS) and other technical literature. Underground coal mine operators may adopt the guidelines in the proposed roof control or ventilation plan or may propose other suitable equally effective measures addressing the safe storage, use and handling of polyurethane foam products.

C. Safety Precautions and Guidelines**1. Notification of Use**

All miners who may be affected should be notified of the storage, use or transport of polyurethane foam materials in the mine prior to the components or application equipment being moved into the mine.

2. Storage

- a. Polyurethane foam chemical components are classified by the National Fire Protection Association as Class III B combustible liquids. Accordingly they should be stored in tightly closed containers, as supplied by the manufacturer, and handled in accordance with the manufacturer's specifications.
- b. Underground storage areas for polyurethane foam components should be constructed of fireproof materials and have fire fighting equipment available commensurate with the maximum amount of material to be stored. As a minimum, this should include 2 portable fire extinguishers and 240 pounds of

rock dust. This firefighting equipment is in addition to the firefighting equipment required by 30 CFR Section 75.1100-2.

- c. The maximum quantity underground should be limited to normally no more than a one week supply, and the maximum quantity at an application site should be limited to an amount sufficient for use in a 24 hour period. Unused polyurethane foam material should be promptly returned to either a suitable designated underground or surface storage area, normally within 24 hours of the end of the application.

3. **Pumping of Polyurethane Foam**

When polyurethane foam is being transferred or applied by pressure pumping, the mine operator should include provisions in the appropriate roof control or ventilation plan addressing the following minimum requirements.

- a. Pumping equipment should be provided with a pressure relief safety valve on the pump that bleeds the over pressure back through the pumping system lines as opposed to venting to the atmosphere.
- b. All fittings should be locked in place and have a pressure rating of at least 4 times the maximum rated pressure of the pumping system.
- c. All hoses should have a burst rating of at least 4 times the maximum rated pressure of the pumping system.
- d. A person should be provided to monitor the polyurethane spraying application who is responsible for immediately notifying miners working in the downwind zone to immediately remove themselves to a point out by the application site at any sign of a leak in the pumping system.

The downwind zone is defined as a distance that is 3 times the air velocity at the application site. Example: velocity at the application site = 150 feet per minute, 3 times 150 = 450 feet.

- e. All personnel at the application site should be instructed that at the first sign of any leak, the system should be shut off, and immediately repaired.

4. **Application of Polyurethane Foam**

- a. The method of application should be specified in the approved plan parameters associated with each different method noted. Different methods

of application include, but are not limited to, injection into the roof strata, spraying on various surfaces, and pouring.

- b. All persons working directly on a polyurethane foam spraying application (as opposed to a roof injection or pouring application) should be required to wear an approved Self-Contained Breathing Apparatus (SCBA) or Supplied Air Breathing Apparatus (SABA) during the application and for a period of at least 15 minutes after the cessation of the spraying action.
- c. Miners not directly involved in the spraying application process should not be permitted to work in the downwind zone (as determined in item 3.d. above) of a spraying application site. However, if it is necessary that miners perform work in the specified downwind zone, then those miners should be required to wear appropriate respiratory protection which is any approved SCBA or SABA. The purpose of this requirement is to prevent the accidental exposure of miners who are not directly involved in the application process. This is necessary due to the large quantities of isocyanate material put into the atmosphere by the spraying application.

Note: Self-Contained Self-Rescuers (SCSR's) are approved for emergency escape only, and shall not be used in lieu of a SCBA or SABA.

- d. All persons engaged in, assisting in, or supervising the application of the polyurethane foam material should be required to wear personal protective clothing consisting of chemical goggles or face shields, protective gloves, and body coverings. Protective gloves should be of a material providing protection from the polyurethane components. Body coverings may include long-sleeve shirts and full length pants. Contaminated protective clothing should be laundered before reuse or replaced. Protective clothing should be replaced if damaged or torn.
- e. All persons working on an application should have direct communications with others working on the same application. Communications may be accomplished by cap lamps if in a close area. Telephone communication may be necessary if the distance is great or the physical layout makes visual communication impractical.

5. **Ventilation**

- a. Underground storage areas where the chemicals may be opened or exposed to the atmosphere should be ventilated in such a manner that the air current is directed away from any active working sections, preferable coursed into a return air course.

- b. All work with components (transfer and injection applications sites) should be conducted in areas with adequate ventilation. If adequate ventilation cannot be maintained, all persons within 50 feet of the application site must wear an approved SCBA or SABA during the application and for at least 15 minutes after the application ceases.

Mine operators should be aware that 30 CFR Section 75.322 limits the concentration of noxious and poisonous gases (except for carbon dioxide, which is covered in 30 CFR Section 75.321) to the threshold limit values as specified and applied by the American Conference of Governmental Industrial Hygienists in "Threshold Limit Values for Substances in Workroom Air" (1972).

6. **Fire Protection**

- a. Open flames and high heat sources should be kept at least 50 feet or the distance recommended by the manufacturer, whichever is greater, from the area where polyurethane foam products are being applied.
- b. Polyurethane foam being sprayed onto the mine roof, ribs, and on ventilation controls should meet the following requirements.
 - i. Polyurethane foam applied either to seal or coat ventilation controls, such as stoppings, overcasts, seals, and outer surfaces of ventilation ducts or tubing, **shall**, as required by 30 CFR Section 75.333(f), have a flame spread index of 25 or less as determined by the "Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source", known as the ASTM E162-87 Method of Test. In addition, any overlap onto the mine roof or rib(s) should not be more than 12 inches.
 - ii. Polyurethane foam applied on the rib(s) **and** across the roof should be resistant to combustion as indicated by passing the ASTM E136-92a Method Of Test, "Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C".

Note: The ASTM documents referenced above may be purchased from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.

- iii. Polyurethane foam should not be applied to the inner surfaces of ventilation duct or tubing.

- iv. If the combustion resistance and flame spread are not known, the test results, for ASTM E136-96a and for ASTM E162-87 Methods of Test, should be obtained from an independent testing laboratory.
- v. Polyurethane foam products that meet the ASTM E162-87 Method of Test with a flame spread index of 25 or less, but do not pass the ASTM E136-96a Method of Test may be used. However, the following guidelines should be used to reduce the possibility of fire propagation. If these products are being used, the additional measures should be identified in the appropriate approved roof control or ventilation plan.
 - 1. The application of polyurethane foam should be limited only to the roof or only to the ribs. Such applications should never be applied to both the mine roof and ribs at the same application site.
 - 2. Each roof application site should extend less than 30 feet in length, and each additional application of foam should be separated by bare sections of roof or rib at least 40 feet in length. Such applications should not overlap onto the rib(s) by more than 12 inches.
- vi. During the application of material, each layer should average no more than 2 inches in thickness over any area of 1 square foot or larger. Succeeding layers should not be more than 2 inches in thickness and should only be applied after the underlying material has cured.
- vii. The material should be examined following application of each layer for evidence of self-heating in accordance with the manufacturer's instructions. If there are no manufacturer's instructions, the material should be examined within 1 to 3 hours after application.
- viii. If overheating is detected, immediate action should be taken to assure the safety of affected miners. If it is deemed necessary, the mine operator should take appropriate action to cool the affected area by following the manufacturer's instructions outlined in the MSDS. If the MSDS does not address this matter, the operator should contact the appropriate manufacturer to assure the proper action can be taken if such an event were to occur.

7. **Spills**

If at all possible, spills of the isocyanate components of polyurethane foam should be cleaned up immediately. Technical publications and the MSDS recommend that the spilled material should be covered with rock dust, coal fines, sawdust, vermiculate, or other absorbent material. The absorbed material should then be shoveled into an open container and a neutralizing solution (water with 2-5 percent ammonia) added to equal or greater volume than the spilled material. The container should be left standing open for 24 to 48 hours and then disposed of in accordance with applicable laws. If the spill is in an underground mine and will be inaccessible to miners within 24 hours after the time of the spill, the material does not have to be removed, provided, the spilled material is covered with the proper absorbent and the neutralizing solution as stated above.

8. **Disposal**

Empty polyurethane foam containers should be disposed of in accordance with the manufacturer's recommendations and local requirements. As a minimum, empty containers should be filled with water and allowed to stand open for 24 to 48 hours prior to their disposal.

9. **Training**

All persons working directly in the application of polyurethane foam, transporting or handling polyurethane foam containers or application equipment, or performing other work in an area where polyurethane foam is being used, should be trained in the approved plan requirements, hazards, safety precautions, and manufacturer's data which should, at a minimum, include all data included in the MSDS for all of the components being used. This training should be provided in accordance with the requirements of Title 30 CFR Section 48.7(a) (4) .

Chapter 10 - HEAT STRESS

During the summer months, mine operators and employees should be aware of the potential health hazard of heat stress. Outdoor heat exposure, particularly in direct sun, can affect miners who work on the surface, such as shovel operators, bulldozer operators, drillers, laborers, and other workers. Illnesses such as heatstroke and heat exhaustion, as well as general fatigue and effects on performance, are possible.

In addition to high air temperatures, outdoor workers are exposed to radiant heat from the sun, and sometimes high humidity as well. High humidity reduces heat loss from the body by evaporation of perspiration, the main avenue of heat loss in hot environments. In general, increased air velocity or movement increases the cooling effect on the body.

Physical fitness and health are important personal factors in heat exposure. Workers with heart, circulatory, lung, or skin disorders usually do not get along well in the heat. Acclimatization, or the process by which a worker gains increased tolerance to heat exposure gradually as work in that exposure continues, should be considered.

The following measures are suggested as means of reducing heat exposure, preventing heat ailments, and generally increasing efficiency and morale:

1. Arrange for miners who are to be exposed to heat stress to have a medical examination by a physician prior to assignment. Be sure that the physician is informed of the heat exposure so as to make the proper evaluation.
2. Allow new workers in heat exposure a period of 5 to 6 workdays to become acclimatized, by gradually increasing workload and exposure time during this period. Start by allowing new workers to work only 50 percent of regular work time in the heat. Check at the end of the 6 workday period to see how they are getting along.
3. Schedule rest periods during the work shift as necessary to avoid severe strain among acclimatized workers. Schedule the heaviest work, particularly manual labor, for the cooler parts of the shift if possible.
4. See that workers wear light clothing for protection against the sun, not tightly fitted to allow for air circulation, and light protective hard hat.
5. Consider and use engineering controls such as air-conditioning for cabs of heavy equipment, and ventilating and circulating fans, where applicable. Provide shelters for protection against the sun during rest periods.
6. Supply adequate quantities of drinking water, cooled if possible, and salt tablets to workers for their use as desired.
7. Plan in advance to ensure that first-aid treatment for heat ailments is available, as well as transportation for medical treatment, if necessary.

Chapter 11 - POLYCHLORINATED BIPHENYLS (PCBs)

A. Reporting PCB Spills

Under the authority of the Toxic Substances Control Act, the Environmental Protection Agency (EPA) requires that spills of polychlorinated biphenyl (PCB) be reported whenever the incident poses a substantial risk to human health or to the environment. PCBs have been shown to cause chronic toxic effects in many species even when they exist in very low concentrations. Well-documented tests show that PCBs cause, among other things, reproductive failures, gastric disorders, skin lesions, and tumors in laboratory animals.

Workers exposed to PCBs may show a number of symptoms and adverse effects including, but not limited to, chloracne and other epidermal disorders, digestive disturbances, jaundice, impotence, throat and respiratory irritations, and severe headaches.

Spills in mines most commonly result from damage to transformers or capacitors containing PCB dielectric fluid. EPA assumes that a transformer or capacitor contains PCBs if: (1) the nameplate indicates it contains PCB dielectric fluid; or (2) the owner or operator has any reason to believe that it contains PCB dielectric fluid. If a transformer or capacitor does not have a nameplate, and there is no information to indicate the type of dielectric fluid in it, the transformer or capacitor is assumed to contain PCB fluid. PCB dielectric fluids may be listed under the following trade names: Askarel, Aroclor, Pydraul, thermal, pyroclor, Santotherm, Pyralene, Pyranol, Inerteen, Asbestol, Chlorextol, Diachlor, Dykanol, Elemex, Hyvol, No-Flamol, Saf-T-Kuhl, Aroclor B, Chlorinol, Chlorphen, and Eucarel.

As a general rule, EPA does not require that spills involving a single capacitor be reported unless PCBs threaten to enter a watercourse. Minor leaks in transformers, such as bushing leaks or weeping, also do not require reporting. However, such spillage or leaking should be stopped and repaired as soon as possible.

If a spill should occur at a mine, the mine operator's first priority should be to control the spread of the spill by damming or diking the leak. Any threat of contamination to water supplies should be given the highest priority. Appropriate personal protection (e.g., impermeable gloves, boots and aprons, goggles, and respirators) must be worn by persons cleaning up spills pursuant to applicable MSHA regulations.

Once the spill is contained, cleanup measures can begin. All materials contaminated with PCBs, including soil and debris, should be collected, stored and disposed of in accordance with EPA regulations. Upon discovery of a PCB spill, the district manager shall be notified immediately.

B. Hazards of PCBs

1. Polychlorinated biphenyls, or PCBs, have been used as dielectric fluids in transformers and capacitors and in some electric motors.

2. PCBs are highly toxic on inhalation (breathing) or ingestion (swallowing), can cause dermatitis (skin rash), and can be absorbed through the intact skin.
3. When there is exposure of workers because of a leak or broken equipment, precautions must be taken to avoid inhalation of vapors and direct skin contact.

C. EPA Provisions and Requirements

Mining Machinery

1. Mining machinery containing electric motors with PCBs has been banned for use in mining since January 1, 1982. The machinery affected in coal mining were the following:

Joy Model CU43 Continuous Miner
Joy Model 9CM Continuous Miner
Joy Model I4BUIO Loader

2. This means that if any of the above equipment with PCB containing motors is in service there is a violation of EPA regulations.
3. If any of the above equipment is in service, and has had the motors rebuilt as non-PCB motors, it is permissible that such equipment remain in service. The motors of such equipment are no longer allowed to be rebuilt. Cutoff date on rebuilding of motors of continuous miners was January 1, 1980, and the cutoff date on rebuilding of motors of loaders was January 1, 1982.
4. This information should be brought to the attention of any mine operators that are using any of the mining machinery listed in Item 1 above.

D. Control and Cleanup of Spills and Leaks

Control and cleanup of spills and leaks of PCB liquid are the responsibility of the mine operator. The following items are listed to indicate the types of actions that should be given attention when a spill or leak occurs. MSHA supervisory personnel in district and subdistrict offices should be aware of those provisions, so as to advise inspectors and mine operators as necessary.

1. Spills and leaks of PCB liquid (as from a transformer or capacitor) have to be reported to MSHA whenever the incident poses risk to human health. Thus, any spill will be reported when people come into direct and uncontrolled contact with PCBs.
2. When PCB liquid spills or leaks onto land, as onto a mine floor, the cleanup procedure consists primarily of removing the contaminated soil and disposing of it in an EPA-approved chemical waste landfill or in another manner approved by EPA.

3. When a spill or leak of PCB liquid occurs, it is most important for miners to avoid skin contact with the liquid, as by proper tools, protective gloves and clothing, safety glasses or face shields, and other means as appropriate. Next, exposure to air contaminated with the vapors of PCBs and any additive ingredients (such as trichlorobenzene) should be avoided to the extent possible, as by improving mine ventilation.
4. As a first step when a spill occurs, it is recommended that a 103(k) order be placed on the area of the spill. This closes the area to miners (except for corrective work), keeps exposure at a minimum, and allows plans for cleanup to go forward promptly.
5. Prior to cleanup, careful observation of the spill area should be made, and the area from which soil will be removed should be defined in length, width, and depth.
6. Soil removed from the mine floor should be loaded into drums, the drums covered, and the drums disposed of in an approved chemical waste landfill. As an alternative, and with approval of EPA, contaminated soil may be disposed of in a gob area which will be completely sealed off promptly.
7. Following soil removal, it is advisable that the area of the spill, from which soil was removed, be covered with generous quantities of rockdust.
8. During cleanup operations, it is important that ventilation be provided at a higher-than-normal rate to minimize exposure of workers to vapors of PCB's and additive ingredients. Protective clothing including gloves, boots, and safety glasses or face shields should be worn.
9. Contaminated clothing such as gloves and coveralls should be disposed of in the same way as contaminated equipment; that is, packed in steel drums with sawdust or other absorbent material, for disposal in an approved chemical waste landfill (see Item .11 below).
10. Disposal of leaking PCB (askarel) transformers may be carried out as follows:
 - a. Drain liquid PCBs into approved containers;
 - b. Fill transformers with kerosene or fuel oil, and allow to stand for at least 18 hours;
 - c. Drain into approved containers;
 - d. Seal up drained transformers and dispose of in an approved chemical waste landfill; and
 - e. Dispose of liquid in an approved chemical waste landfill incinerator (check with EPA).

11. Disposal of large PCB capacitors must be in an approved chemical waste landfill. Capacitors must be shipped in steel drums, packed with sawdust, dirt, or other absorbent material. Small PCB capacitors have no special disposal requirements.

E. Additional Advice and Assistance on PCES

1. When a spill or leak of PCBs occurs at a mine site, either underground or on the surface, the Division of Health (CMS&H), Arlington, Virginia, should be notified if the incident is considered a hazard.
2. MSHA Technical Support, Pittsburgh Health Technology Center, is available for technical assistance in incidents of PCB spills and leaks, including air and soil sampling, and analyses.
3. Further information or technical assistance is available by calling the following EPA telephone numbers:

800-424-9065 (Toll Free)
202-554-1404 (Washington D.C. area)

Chapter 12 - HEALTH HAZARD EVALUATIONS (HHEs) AND TECHNICAL ASSISTANCE

HHEs and TAs are environmental investigations conducted by the National Institute for Occupational Safety and Health (NIOSH) for evaluation of occupational health hazards. Authority for such investigations in mines is contained in Section 501(a) (11) of the Federal Mine Safety and Health Act of 1977.

In accordance with regulations and policies of NIOSH and our recent agreement, the following are major provisions pertaining to HHEs and TAs:

- A. By definition of NIOSH, HHEs are investigations requested, in writing, by a representative of management (mine operator) or an authorized representative of the miners' labor organization (generally a union official) or a miner who secures the written authority of at least two other miners to be their representative. TAs are investigations requested, in writing, by any local, State or Federal agency with interest or authority in mining, such as MSHA.
- B. When a request for an HHE is received by NIOSH which appears to be a matter of compliance with existing regulations, that request will be referred to the division of Health, Coal Mine Safety and Health, for inquiry and action.
- C. All requests for TAS originating in district, subdistrict, or field offices shall be forwarded to the Division of Health for review prior to forwarding to NIOSH. In an emergency, the Division of Health should be contacted by telephone.
- D. If an inspector becomes aware of a problem at a coal mine that NIOSH apparently should address, the miners' representative should be urged and assisted to make a request, in writing, for an HHE to the following address:

Attention: Coordinator, Mining Health Hazard Evaluations
National Institute for Occupational Safety and Health
944 Chestnut Ridge Road
Morgantown, West Virginia 26505-2888

The request should contain the following basic information, if possible:

1. Name of Company;
2. Name and location of mine;
3. Brief description of problem or hazard;
4. Ill effects reported, if any;

5. Chemical or Physical agent responsible, if known; and
 6. Name and telephone number of contact at mine.
- E. If the mine is covered by the BCOA - UMWA contract and the miners' representatives do not wish to write NIOSH, they should be urged to contact the Director of Occupational Health, UMWA, at the following address:

United Mine Workers of America
900 15th Street, NW.
Washington, D.C. 20005

- F. An example of the form for submittal of requests to NIOSH for HHEs is shown in Chapter 6 of this manual.