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Program Policy Manual

VOLUME IV

METAL AND NONMETAL MINES

INTERPRETATION, APPLICATION AND GUIDELINES ON ENFORCEMENT OF 30 CFR

56/57.15003 Protective Footwear

This standard requires that all persons shall wear suitable protective footwear when in or around an area of a mine or plant where a hazard exists which could cause injury to the feet.

The standard considers the existence of a hazard to the feet as the basic criterion necessitating the wearing of protective footwear. Inspectors should carefully examine the work areas and procedures to make this determination. However, it is rare that such hazards are not encountered in mining or milling operations.

Most mining company safety requirements for protective footwear are more stringent than the MSHA standard. A company policy requiring everyone to wear protective footwear at all times at the mining operation is much easier to implement and provides better protection than determining individual situations where protective footwear is required.

MSHA's standard does not define protective footwear. MSHA considers substantial hard-toed shoes or boots to be the minimum protection acceptable for most mining applications. There may be times when special purpose foot protection, such as metatarsal protectors, is needed. There may also be some instances where heavy leather shoes or boots will provide adequate safety for the feet.

56/57.15004 Eye Protection

This standard requires that all persons shall wear safety glasses, goggles or face shields or other suitable protective devices when in or around an area of a mine or plant where a hazard exists which could cause injury to unprotected eyes.

Photo-gray lenses which comply with ANSI Z87.1-1979 for impact and shatter resistance and frame construction would meet the requirements of this standard. However, these lenses do not meet the requirements for radiant energy generated during electric arc welding or gas flame cutting and, therefore, are not acceptable for these uses. Additionally, their use underground or at night is not advisable because most photo-gray lenses respond too slowly to changes in light level and may not lighten rapidly enough to provide unimpaired vision when traveling from a well-lighted area to a dark area.

56/57.15006 Protective Equipment and Clothing for Hazards and Irritants

This standard requires that special protective equipment and special protective clothing shall be provided, maintained in a sanitary and reliable condition, and used whenever hazards of process or environment, chemical hazards, radiological hazards, or mechanical irritants are encountered in a manner capable of causing injury or impairment.

The standard is intended to cover obvious work situations where the normal and ordinary work clothing and safety equipment provided by the miner for his/her own protection is not adequate to

provide the level of protection required for the work being done. Usual items, such as safety glasses, hard hats, and safety-toed shoes, would not normally come under this standard.

Unusual items for conditions requiring extra protective measures could include aprons, rubber gloves, asbestos blankets, leg shields, protective creams, solvent impermeable coveralls, and other items such as tag lines, safety belts and lines. These must be maintained in a clean and reliable condition, ready for use.

The inspector must exercise considerable judgement in the enforcement of this standard. It is not feasible to develop a policy which covers all conceivable circumstances. However, as guidelines to enforcement, protective clothing would definitely be required if the worker experiences any irritation no matter how slight. Also, skin protection would definitely be required when exposed to chemicals that bear a "skin" notation in the TLV booklet, even if the exposure is only 5 minutes a day and the worker does not exhibit any irritation.

57.15030 Provisions and Maintenance of Self-Rescue Devices

This standard requires that a 1-hour self-rescue device approved by MSHA shall be made available by the operator to all personnel underground and that each operator shall maintain self-rescue devices in good condition.

While the detection and reporting by miners of defective self-rescuers is a part of the training program required under CFR 57.18028, the operator has the final responsibility to see that all self-rescue devices are fully operable and to replace them immediately if they are defective. This responsibility can be discharged successfully only through a regular inspection program conducted by the operator, supplemented by the training of each miner to recognize and report defective self-rescue devices.

The operator needs an effective inspection program to ensure that each self-rescue device is maintained in "good condition." An effective inspection program established by the operator must include visual inspection and weighing. Visual inspection serves to identify surface defects such as a crushed case or dented seal. The operator's inspection program should also provide for the weighing of each self-rescuer at least every 90 days and for keeping a record of weighing for each device.

A self-rescuer is weighed by first cleaning the device, i.e., scraping off debris and wiping with a damp cloth, and then placing it on the balance. The balance used for weighing must have a capacity of at least 1100 grams and an accuracy of +1 gram. The current weight is compared with the manufacturer's weight stamped or etched in the self-rescuer case.

Self-rescue devices shall be removed from service if the device has a crushed or deeply dented case, the device has dents or damage around the seal area, or the device has a weight gain of 10 grams or more above the weight imprinted on the self-rescuer case.

Citations for violations will be issued for all self-rescuers which are not found to be in "good condition" as required by this standard.

Subpart O Materials Storage and Handling

56/57.16003 Storage of Hazardous Materials and

56/57.16004 Containers for Hazardous Materials

Standard 56/57.16003 requires that materials that can create hazards if accidentally liberated from

their containers shall be stored in a manner that minimizes the dangers. Standard 56/57.16004 requires that hazardous materials shall be stored in containers of a type approved for such use by recognized agencies and that such containers shall be labeled appropriately.

Potential hazardous materials exist and are used throughout most mining and milling processes. Such materials must be properly and securely stored, based on the type of potential hazard (e.g., toxic, corrosive, flammable). The container must be appropriately labeled showing the contents.

Commercially supplied materials are generally labeled by the distributor. Unstable cabinets and shelves containing hazardous chemicals shall be securely fastened and made stable.

Corrosive substances are those that cause visible destruction or irreversible alterations to the body tissue on contact. Acids and corrosive chemicals shall not be stored with alkalies or solvents or stored on shelves above eye level. Common corrosive chemicals are mineral acids, e.g., hydrochloric (HCl), hydrofluoric (HF), nitric (HNO₃), sulfuric (H₂SO₄), acetic (CH₃COOH), etc., and basic solutions, e.g., sodium (NaOH), potassium (KOH) and ammonium (NH₄OH) hydroxides, etc.

Concentrations of solvent and other flammable vapors shall be kept at a minimum by ventilation of storage areas. Flammables shall be stored in a cool place away from all ignition sources, such as open flames, hot plates and sparking electrical equipment. There shall be no smoking in areas of solvent use or in any other flammable storage areas.

56/57.16016 Lift Trucks

This standard provides that fork and other similar types of lift trucks shall be operated with the: (a) Upright tilted back to steady and secure the load; (b) Load in the upgrade position when ascending or descending grades in excess of 10 percent; (c) Load not raised or lowered enroute except for minor adjustments; and (d) Load-engaging device downgrade when traveling unloaded on all grades.

The requirement that load-engaging devices when empty be placed in a downgrade position when traveling on all grades reflects the accepted safety practice of traveling or tramping with the load-engaging mechanism as low as possible. This practice is set forth in Chapter 22, Powered Industrial Trucks, Industrial Safety, published by the National Safety Council and is also a requirement of the Occupational Safety and Health Administration, Standard 29 CFR 1910.178(n)(i), (ii), and (iii). In most situations when tramping without a load, the load-engaging mechanism should be kept as close to the ground as safety permits. However, in situations where adjustments will be necessary to facilitate safe operation of the vehicle (e.g., when traveling on inclines, declines or over rough terrain), the load-engaging mechanism may be adjusted enroute.

Subpart Q Safety Programs

56/57.18002 Examination of Working Place

30 CFR §§ 56/57.18002, Examination of working places, provide:

- a. A competent person designated by the operator shall examine each working place at least once each shift for conditions which may adversely affect safety or health. The operator shall promptly initiate appropriate action to correct such conditions.
- b. A record that such examinations were conducted shall be kept by the operator for a period of one year, and shall be made available for review by the Secretary or his authorized representative.

- c. In addition, conditions that may present an imminent danger which are noted by the person conducting the examination shall be brought to the immediate attention of the operator who shall withdraw all persons from the area affected (except persons referred to in section 104(c) of the Federal Mine Safety and Health Act of 1977) until the danger is abated.

MSHA intends that the terms "competent person" and "working place," used in §§ 56/57.18002(a), be interpreted as defined in §§ 56/57.2, Definitions.

A "competent person," according to §§ 56/57.2, is "a person having abilities and experience that fully qualify him to perform the duty to which he is assigned." This definition includes any person who, in the judgment of the operator, is fully qualified to perform the assigned task. MSHA does not require that a competent person be a mine foreman, mine superintendent, or other person associated with mine management.

The phrase "working place" is defined in 30 CFR §§ 56/57.2 as: "any place in or about a mine where work is being performed." As used in the standard, the phrase applies to those locations at a mine site where persons work during a shift in the mining or milling processes.

Standards 56/57.18002(b) require operators to keep records of working place examinations. These records must include: (1) the date the examination was made; (2) the examiner's name; and (3) the working places examined. MSHA intends to allow operators considerable flexibility in complying with this provision in order to minimize the paperwork burden. Records of examinations may be entered on computer data bases or documents already in use, such as production sheets, logs, charts, time cards, or other format that is more convenient for mine operators.

In order to comply with the record retention portion of §§ 56/57.18002(b), operators must retain workplace examination records for the preceding 12 months. As an alternative to the 12-month retention period, an operator may discard these records after MSHA has completed its next regular inspection of the mine, if the operator also certifies that the examinations have been made for the preceding 12 months.

Evidence that a previous shift examination was not conducted or that prompt corrective action was not taken will result in a citation for violation of §§ 56/57.18002(a) or (c). This evidence may include information which demonstrates that safety or health hazards existed prior to the working shift in which they were found. Although the presence of hazards covered by other standards may indicate a failure to comply with this standard, MSHA does not intend to cite §§ 56/57.18002 automatically when the Agency finds an imminent danger or a violation of another standard.

57.18028 Mine Emergency and Self-Rescuer Training

This standard applies to underground mines only and states that all persons who are required to go underground shall be instructed in MSHA's approved course in mine emergency training. In addition to regular underground employees, the phrase "all persons who are required" shall be construed to mean those persons who through their duties must intermittently work underground even though their primary functions are on the surface. These include, but are not limited to engineers, surveyors, electricians, mechanics, maintenance personnel or laborers who repair, maintain, install, or perform their job assignments underground when necessary.

All persons who go underground, whether routinely or on occasion, shall be instructed in a course in either the MSA W-65 Self-Rescuer or the Permissible Draeger 810 Respirator for Self-Rescue. After the initial instruction, any person who has not had instruction in the use of either of these devices

within the immediately preceding 12 months shall receive such instruction prior to going underground.

In instances where individuals who are infrequent visitors are permitted to go underground in the accompaniment of responsible and trained company personnel, these individuals would not be required to take the approved course in mine emergency training prior to going underground. In lieu of the approved course on self-rescuers, the individual or individuals entering the mine shall have been instructed in the use of the self-rescuer informally by a person trained in the use of this equipment.

The instruction shall be given by an MSHA instructor or by an instructor certified by the district manager. Provisional approval, in regard to the instruction of new employees, shall be interpreted to mean those company personnel who have received additional training under a cooperative plan, but who have not as yet been certified as instructors under such plan, and who can give the necessary instructions when the services of an MSHA or other certified instructor cannot be obtained.

Recordkeeping Requirements This standard (underground only) specifies that all persons who are required to go underground be instructed on an annual basis in MSHA approved courses contained in the Bureau of Mines instruction guide 19 "Mine Emergency Training"; and instruction guide 2, "MSA W-65 Self-Rescuer" or instruction guide 3, "Permissible Draeger 810 Respirator for Self-Rescue." Records of all instructions are required to be kept at the mine site or at the nearest mine office for two years, and copies must be submitted to MSHA. 30 CFR Part 48.9 (Records of Training) requires an operator, upon a miner's completion of each MSHA Approved training program, to record and certify that the miners received the specified training.

The recordkeeping requirement of this standard may be satisfied by meeting the recordkeeping requirement contained in 30 CFR Part 48.9.

Subpart R Personnel Hoisting

56/57.19025 Hoist Rope Load End attachments

The standard requires, in part, that wire rope shall be attached to the load by a method that develops at least 80 percent of the nominal strength of the rope. The short-coupled thimble attachment ([see the diagram](#)) has been evaluated as being safe, and it is acceptable for personnel and material hoisting applications for hoist rope of 1-inch, 1-3/8 inch and 2-1/8 inch diameters, subject to the following conditions:

1. Repair and replacement parts are manufactured from the specified material and are within the engineering dimensions and tolerances specified by the manufacturer.
2. The manufacturer's assembly instructions are followed.
3. A weekly inspection procedure for slippage is conducted.

56/57.19045 Metal Bonnet

Metal bonnets shall be provided above those cages and skips specifically designed for man hoisting and above those work platforms, stages, or other temporarily or permanently installed shaft conveyances used by workers for shaft inspection, maintenance, or repairs.

Safety ropes or belts shall be worn at all times by shaftmen doing shaft work (56/57.15005).

56/57.19083 Overtravel Backout Device

The manufacturer of any hoist should be able to furnish material or information on a device or interlock that will comply with the requirements of the standard. The device prevents a conveyance or counterbalance from moving until the motor has developed enough power to move the conveyance in the right direction.

56/57.19120 Procedures for Inspection, Testing, and maintenance

During MSHA inspections, the inspector shall observe while the hoisting engineer makes actual tests on hoisting equipment to determine the adequacy of over speed and overtravel controls,braking mechanisms, limit switches, dead man controls, and position indicators. Prior to making these tests, all personnel shall be removed from the man cages or other locations which would be hazardous in the event of mechanical failure. When checking the overtravel controls, the first test should be made with the hoist at a low speed to determine if the brakes are functioning and the power circuit is deenergizing. The second test shall be made with the hoist running at normal operating speed.

The inspector should observe these tests at a time that is convenient to the mine operator. This could be at shift changes or at some other convenient time.

Refusal by an operator to make necessary tests in the inspector's presence constitutes an admission of failure of the safety devices. An order shall be written prohibiting the use of the hoist until the necessary adjustments or repairs have been made and the hoist tested in the inspector's presence.

Subpart S Miscellaneous**56/57.20002 Potable Water**

This mandatory standard is to ensure that potable drinking water is supplied and made available to all workers during working hours in all active working areas to prevent water-deficiency related illness and to prevent workers from drinking ground water which could be contaminated. The common drinking cup is prohibited in order to prevent the spread of communicable diseases. Containers from which drinking water must be dipped are prohibited because cups can contaminate the entire water supply. Containers from which water must be poured are prohibited because size and weight of containers encourage dipping. When water is cooled by ice, the ice shall either be made from potable water or shall not come in contact with the water in order to prevent contamination. Potable water outlets shall be posted to distinguish them from non potable water outlets. Potable water systems shall be constructed to prevent backflow or back siphonage of non potable water in order to prevent contamination.

The inspector should take a sample of the drinking water and have it analyzed for potability when complaints are received or when contamination is suspected. Contamination of potable water may be suspected when the potable water has unusual physical characteristics such as color, odor, or taste; when there are indications of bacteriological, chemical or radiological contamination of drinking water supplies; and/or when cross connections or back siphonage is evident.

Potable water means water which shall meet the applicable minimum health requirements for drinking water established by the State or community in which the mine is located or by the Environmental protection Agency in 40 CFR Part 141, pages 169-182, revised as of July 1, 1977. Where no such requirements are applicable, the drinking water provided shall conform with the Public Health Service Drinking Water Standards, 42 CFR Part 72, Subpart J, pages 527-533, revised as of October 1, 1976.

Local health authorities or a Safety and Health Technology Center should be contacted for guidance concerning water analysis.

56/57.20005 Carbon Tetrachloride

Carbon tetrachloride is a known carcinogen, and it is therefore prohibited for use on mine properties. There are adequate substitutes available for all relevant mining operations.

Inspectors are to inform the Chief of the Health Division in Arlington when carbon tetrachloride is encountered on a mine property.

56/57.20008 Toilet Facilities

This mandatory standard is to ensure that toilet facilities be provided and readily accessible to workers. Toilet facilities shall be kept clean and sanitary to prevent the spread of communicable disease. Determinations regarding readily accessible locations, cleanliness and sanitary conditions, and the number of separate toilet rooms required, are to be made by the mine inspector.

56/57.20011 Barricades and Warning Signs

This mandatory standard is to ensure that barricades are provided or warning signs posted to alert workers and other persons and to prevent them from inadvertently entering areas in which health or safety hazards exist but are not obvious. Examples of health hazards are heat, acids, gases, dusts, noise, and radiation. All areas of a mine or mill should be checked for imperceptible health hazards. Storage facilities, laboratories, dumps, and tailings commonly contain toxic substances.

Warning signs are posted for the purpose of describing particular hazards and indicating precautions to be followed in order to avoid injury and illness.

56/57.20012 Labeling of Toxic Materials

This mandatory standard is to ensure that toxic materials that are used, discarded as a by-product, or stored during mining or milling processes, be plainly marked or labeled in order to positively identify the nature of the safety or health hazard and the protective action required to prevent injury and illness. Toxic materials can produce injury or illness through ingestion, inhalation, and absorption. As the chemical, physical, and toxicological properties vary among toxic materials, each one must be treated and handled on an individual basis. Labels can include the chemical, physical, and/or toxicological properties of the substances as well as precautions and personal protective equipment required for safe use and handling. Precautionary labeling should be classed "**CAUTION**", "**WARNING**", or "**DANGER**", depending on the severity of the hazard associated with a particular toxic material.

There are ten separate hazard classes which should be considered under these standards. They are: explosives, compressed gases, flammable liquids, flammable solids, oxidizers, irritants and poisons, radioactive materials, corrosives, biohazards and carcinogens. These materials may be commonly found in dump sites, storage areas, laboratories, and bag and drum containers.

Subpart T Safety Standards for Methane in Metal and Nonmetal Mines

57.22302, .22303, .22304, .22305 Minimum Air Quantity Formula for Gassy Metal/Nonmetal Mines Operating Multiple Diesel Units

MSHA's regulations specify that when a single unit of permissible diesel equipment is used in a gassy metal and nonmetal mine, the required "minimum" quantity of ventilating air is specified on the

machine's approval plate, 30 CFR 36.45(a). This quantity is applicable only when one machine is operated.

According to a formula developed by the Bureau of Mines, the total ventilation for multiple units need not be the sum of the recommended rates for all the individual approved units. This formula is based on available evidence which suggests that while one unit is operating under a heavy load, the engines of other units being loaded are normally idling. MSHA has adopted, and will uniformly apply this formula to all "gassy" metal and nonmetal mines when two or more diesel units are operated in the same airway or split of air. MSHA will accept this formula as meeting the requirements for "minimum" air quantity as long as airborne contaminants remain below the listed TLV.

The minimum air volume formula is expressed:

$$QT = 100\% Q1 + 75\% Q2 \dots + 50\% Qn$$

Where:

QT = Total air quantity required;

Q1 = the permissibility volume rating for largest rated diesel unit;

Q2 = the permissibility volume rating for the next largest rated diesel unit; and

Qn = the combined permissibility volume ratings for all additional diesel units.

The examples set forth below illustrate the use of the formula for determining required air quantity, in cubic feet per minute, when two or more diesel units are used in the same airway or split of gassy mines. The examples are for one underground mine with five diesel units operating on the upper level in the main haulageway and three diesel units operating on the lower level in the 1400 haulageway.

Upper Level, Main Haulageway

Eng. Mfg.	Unit	hp	Air Req'd for Single Unit (cfm)	Adjustment for multi- use combination	
GM	1	227	46,000	x 1	46,000 cfm
GM	2	197	40,000	x .75	30,000
GM	3	160	32,000	x .50	16,000
GM	4	119	24,000	x .50	12,000
Deutz	5	196	31,000	x .50	15,500
Total cfm required.....					119,500 cfm

Lower Level, 1400 Haulageway

Eng. Mfg.	Unit	hp	Single Unit (cfm)	Adjustment for multi- use combination	
GM	1	227	46,000	x 1	46,000 cfm
Duetz	2	196	31,000	x .75	23,250
Caterpillar	3	100	14,500	x .50	7,250
Total cfm required.....					76,500 cfm