GENERAL MINERAL MINER TRAINING

Course Guide

Revised as of March 2001

Incorporating provisions of Board of Mineral Mining Examiners (BMME) regulations, State mining laws, and safety and health regulations for mineral mining.

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Topic:

This course is intended to be used as a supplement to the "new miner" training element of a mine operator's mine safety training plan required by Title 45.1-161.292:73 of State mining laws, and where applicable, MSHA Part 46 new miner training. Upon completion of this segment of training, new miners must undergo "task training" for their initial work assignment as well as any remaining training subjects specified in the company's mine safety training plan.

General Mineral Miner Certification Summary

As specified in Title 45.1-161.292:28 of ***Mineral Mine Safety Laws Of Virginia,*** new miners commencing work after January 1, 1997 must be certified by the Board of Mineral Mining Examiners (BMME) as general mineral miner (GMM) prior to starting work. BMME regulation 4VAC25-35-120 specifies topics that must be covered in the training, which includes the following:

*Review of State mining laws; each miner must be provided a copy of State mining laws.

*Review of DMM safety and health regulations for mineral mining.

*Review of GMM emergency first aid procedures:

1. Identification of trauma symptoms.
2. Recognition and treatment for external bleeding.
3. Recognition and treatment for internal bleeding.
4. Recognition and treatment of shock.
5. Treatment for fractures.
6. Treatment for exposure to extreme heat.
7. Treatment for exposure to extreme cold.

GMM instructors can obtain the current (March 2001) version of DMM's General Mineral Miner Training Course (Power Point), or other training materials by contacting the DMM training section at (434) 951-6315.

The GMM training must be conducted by a DMM-approved instructor, BMME-certified mine foreman, or MSHA-approved instructor. In addition, the instructor must include a demonstration of skills or written examination to prove to the BMME, the participant's knowledge of topics covered (4VAC25-35-120.B).

Upon completion of training and testing, each participant must complete a GMM training/certification form (BMME-4), which must be signed by both the GMM applicant and instructor. In addition, the instructor must complete a GMM course roster provided by DMM which specifies date of training, names of applicants, and GMM certificate identification numbers issued. The course roster, along with completed application forms (BMME-4) and a check made payable to the Treasurer of Virginia covering the $10 certification fees, is then sent to the DMM office in Charlottesville, Virginia for processing. Failure to submit the required certification fee ($10 per applicant) within 30 days will result in revocation.

Mine operators and independent contractors must maintain a record of all GMM-certified employees working at the mine, and a record of all previously employed (prior to January 1, 1997) personnel who are not required to have GMM certification (4VAC25-25-120.B.G). The records must include the following:

1. Employee name, address, and telephone number.
2. Employees job title, date of hire, and GMM certification number if applicable.
3. Date GMM training was completed and name of the approved instructor conducting the class.
4. Date of employment prior to January 1, 1997 for those employees who are exempt from GMM certification. Mine operator should have documentation to prove the previous work experience at a mineral mine in Virginia.

Instructors who are authorized by the Board of Mineral Mining Examiners (BMME) to carry out GMM training & certification are individually accountable for the classes they conduct. Course content must be consistent with topics specified in State mining laws and BMME regulations. GMM instructors should not certify any class participant who is unable to demonstrate a general working knowledge of the topics specified in GMM training (***45.1-161.292:28.B Mineral Mine Safety Laws Of Virginia).***

GMM Lesson Plan #1: **Review of State Mining Laws**

Overall Objective:	Familiarize new miners with Virginia mine safety laws.
Specific Objectives:	Review definition of miner, operator, and independent contractor. Review training and certification requirements. Review mine safety inspection requirements. Review methods of reporting safety violations. Review DMM enforcement actions.
Instruction Time:	½-hour.
Instruction Method:	Lecture and discussion using student handouts and slides.
Training Materials:	Law book for each participant. Handout "Overview of State Mining Laws For New Miners". Handout "Virginia Mine Safety Laws & Regulations". DMM updated (March 2001) GMM course CD, or 35-mm slides. Computer w/projector, or 35-mm slide projector, and screen.

Using slides 1 – 18 provided in Part 1 (Mine Safety Laws) of the GMM course, and student handouts listed above, instructor will review and discuss the sections of law that pertain to a new miner. See the enclosed GMM Course slide script.

GMM Lesson Plan #2: **Review of DMM Safety & Health Regulations.**

Overall Objective: Familiarize participants with potential safety or health hazards associated with mineral mining, and DMM safety and health regulations that address those hazards.

Specific Objectives: Review highlights of regulations Parts 1 – 15 that all new miners must be aware of for their individual safety.

Instruction Time: 3 ½ - hours.

Instruction Method: Lecture and discussion by use of course slides.

Training Materials: Copy of ***Safety And Health Regulations For Mineral Mining.***
DMM updated (March 2001) GMM course CD and computer, or 35-mm slides with projector, and screen.

Using slides (19 - 147) provided in Part 2 (Safety 7 Health Regulations) of the GMM course, instructor will review potential hazards and regulations that pertain to a new miner employed at a mineral mine in Virginia. See enclosed GMM Course slide script.

GMM Lesson Plan #3: **GMM Emergency First Aid Procedures**

Overall Objective: Familiarize participants with emergency first aid procedures to be used when treating an injured victim.

Specific Objectives: Review & practice identification & treatment for:

Trauma.
External bleeding.
Internal bleeding.
Shock.
Fractures
Exposure to extreme heat.
Exposure to extreme cold.

Instruction Time: 2-hrs.

Instruction Methods: Lecture, instructor demonstration, student practice.

Training Materials: GMM course on CD or 35-mm slides.
First aid practice materials.

Using slides 148 - 170 provided in Part 3 (GMM First Aid) of the GMM course, instructor will discuss, demonstrate, and supervise participant practice of the seven first aid procedures. See enclosed GMM Course slide script.

General Mineral Miner Course Slide Script
March 2001

Part 1 of 3: Review of State Mining Laws:

1. General Mineral Miner Training. A supplement to new miner training specified in the mine operator's mine safety training plan required by State mining laws.

2. GMM Certification Required Prior To Start Of Work (45.1-161.292:28). For those persons engaged in work related to extraction or processing. Persons working at mineral mines in Virginia prior to January 1, 1997 are exempt.

3. Topics & Reference Books. Virginia mine safety laws, DMM safety and health regulations, and MSHA first aid booklet #3.

4. GMM Certification Training. (4VAC25-35-120.B). Training must be taught by BMME-certified mine foreman or DMM/MSHA approved instructor. (4VAC25-35-120.B.2). Training must include demonstration of skills or passing a written examination.

5. Enforcement of State Mining Laws and Regulations. Training, certification, and other State mine safety laws & regulations enforced by Division of Mineral Mining. Training assistance is also provided to mine operators and contractors.

6. Section I State Mining Laws. (45.1-161.292:70.B). New employees must be given a copy of ***Mineral Mining Safety Laws of Virginia***. Mine employees, supervisors, managers, contractors, or other persons working at mine are individually accountable for complying with State mining laws and safety regulations applicable to their work.

7. Mine Work Restrictions. (45.1-161.292:5). No person under the age of 18 is allowed to work at mines. (45.1-161.292:73). All persons working at mines must be given site-specific hazard awareness training. (45.1-161.292:8.B). Compliance with State mining laws & regulations required regardless of MSHA inspection status.

8. BMME Certification of Persons 45.1-161.292:19. The following must be certified by BMME: surface & underground foremen; surface & underground blasters, mine electricians, new miners (GMM), and State mine inspectors. (45.1-161.292:25). Certification, except GMM, must be renewed every 5 years.

9. Revocation & Penalties. (45.1-161-292:67/68). Any BMME certification may be revoked for just cause: intoxication, neglect of duties or violations. Violations issued to person(s) responsible for the violation and willful violations can be prosecuted.

10. "Miner" Means Any Person Working At Mine. Persons employed by licensed mine operator or any independent contractor performing work related to extraction or processing must be GMM certified. (45.1-161.292:73). Miners must be trained in accordance with the mine safety training plan.

11. "Operator". (45.1-161.292:2). Means either the mining company, or the "independent contractor" performing services or construction at mine.

12. BMME-Certified Mine Foreman. (45.1-161.292:29). When 3 or more persons are working at a mine, a certified foreman must be employed by the operator. (45.1-161.292:29.D). Contractors not engaged in extraction or processing activities, working away from on-going mining work can utilize a "competent person."

13. BMME-Certified Mine Foreman 45.1-161.292:29. When 3 or more persons working: mine employees, contractor employees, and/or other persons.

14. DMM Training Requirements. (45.1-161.292:73). Mining companies, and independent contractors must have a complete "Mine Safety Training Plan." (4VAC25-40-100). New miner training must include GMM training & certification, and initial task(s) training.

15. Reporting Safety Violations. (45.1-161.292:70). Any person may file an anonymous safety complaint to DMM alleging violations of State mining laws or regulations. Telephone numbers of DMM office and state mine inspectors must be posted at mine for reporting violations, accidents, serious fires, or other mine emergencies.

16. DMM Complaint Investigations. DMM cannot reveal the identity of person(s) filing a safety complaint. (45.1-161.292:70). Information regarding the identity of the person reporting violations shall be excluded from the investigation report and exempt from the Virginia Freedom of Information Act.

17. DMM Enforcement Actions. (45.1-161.292:63). A ***Notice of Violation*** (NOV) is issued for safety hazards/violations detected during inspections or complaint investigations. (45.1-161.292:64). A ***Closure Order*** is issued for imminent danger or failure to comply with an NOV. (45.1-161.292:67/68). Willful violations can be prosecuted.

18. Mineral Mine Safety Laws Highlights. Individual accountability to comply with State mining laws and regulations. Violations are issued to responsible person(s). All persons working at the mine must receive safety training as specified in employer's mine safety training plan.

End of Part 1 of 3.

Part 2 of 3 Review of Safety And Health Regulations For Mineral Mining:

19. Section II Safety & Health Regulations. An overview of regulations found in ***Safety And Health Regulations for Mineral Mining***. (4VAC25-40-100). An in-depth review of regulations applicable to assigned task(s) required upon completion of GMM training during task training.

20. Part 1 General Provisions. (4VAC25-40-10); (45.1-161.292:2). Definitions. (4VAC25-40-40). Persons responsible for mining or blasting must be certified by the BMME. (4VAC25-40-50). Accidents involving death or "serious personal injury" to any person must be reported immediately.

21. DMM Accident Investigation Fatal Contractor Accident. (4VAC25-40-50). Accidents involving serious personal injury or death must be reported immediately, and the accident scene secured.

22. Documents Incorporated Into Regs (4VAC-40-90). TLV's for miner's exposure to dust, noise, and other air contaminants in Part 5. Table of Distances for explosives storage magazines for use, in Part 6. National Electrical Code for use in Part 12. Boiler & Pressure Vessel Regulations for use in Part 8.

23. Part 2 General Safety Provisions. General safety provisions for all types of mines: quarry, open pit (S&G) mine, bank gravel pit, and underground mine.

24. Inexperienced Employees 4VAC25-40-110. Miners with less than 6-months experience must work with, or under the direction of an experienced miner. No one under 18 allowed to work at mines.

25. Pre-Shift Examination of Pit 4VAC25-40-120/130. Performed by a mine foreman at beginning of each shift. Objective to detect & eliminate hazards prior to miners starting work in the area. Record of inspections required.

26. Pre-Shift Examination of Plant 4VAC25-40-120/130. Certified foreman examines general work environment to detect and eliminate hazards prior to miners starting work in the area. Miners inspect individual pieces of equipment.

27. Pre-Operational Inspection of Mobile/Stationary Equipment. (4VAC25-40-145). Miners inspect assigned equipment to use each shift. Safety defects must be reported to the mine foreman. Serious safety defects must be repaired prior to use.

28. First Aid Training & Supplies 4VAC25-40-140/1690. Certified foreman must be trained & certified in first aid. First aid kits must be provided at all work areas.

29. Working In A Hazardous Area 4VAC25-40-150. No person shall be assigned, allowed, or required to work alone in a hazardous area, such as a confined space (silos), unless they can be seen or heard by someone in attendance.

30. Mine Communication System 4VAC25-40-180. Miners working alone must have some means to summons help in case of an emergency: cellular/landline telephone, radio, etc.

31. Work Environment Requirements. (4VAC25-40-200). Adequate Illumination. (4VAC25-40-220). Drinking water. (4VAC25-40-230). Sanitary toilets.

32. Cleanliness of Work Areas 4VAC25-40-210. Work areas, structures, and travelways must be kept clean and orderly. Check during pre-operational inspection. Also, check walkway support structures.

33. Liquor & Illegal Drugs Prohibited 4VAC25-40-250. The use of alcohol and narcotics is prohibited. SF must be informed when prescription or over-the-counter drugs that may impair safety are used.

34. Posting Hazard Signs 4VAC25-40-260. Warning signs specifying hazard(s) must be posted in areas where the hazard is not obvious.

35. Restricting Access to Idle Mines 4VAC25-40-290. Access to mine must be restricted by the use of a gate or fence, and warning signs must be posted.

36. Use & Maintenance of Equipment. (4VAC25-40-330). Use only for intended purpose, and within the designed capacity. (4VAC25-40-360). Maintained within the manufacturer's specifications, and "red tag" defective equipment.

37. Lubricating Equipment 4VAC25-40-340. De-energize, lock & tag out unless, equipped with remote lube points (grease tubes/oil cups). Work from a safe position.

38. Repairing Stationary Equipment 4VAC25-40-350. De-energize, lockout, & tag out equipment. Block belt against sudden movement. Isolate other energy sources. Work from a safe position with PPE.

39. Repairing Mobile Equipment 4VAC25-40-350/1685. Block equipment against motion: tires, blade, truck bed, etc. Perform repairs in safe area away from traffic. De-energize/tag-out energy sources: engine, air pressure, hydraulic, etc.

40. Maintenance & Repair Work Hazards. Often requires working beyond hand railing. Wear safety harness with tied-off lanyard. Do not work alone.

41. Use of Grinding Wheels 4VAC25-40-380. Maintain according to manufacturer's specifications: safety hood, tool rest, safety washer, RPM rating of wheel.

42. Use of Mobile Cranes 4VAC25-40-385. Limited to lifting material unless special safety provisions are provided to protect persons being lifted. Hazard training must be given for crane contractor.

43. Part 3 Ground Control Requirements. Quarries, Sand & Gravel Mines, Sand/Shale Pits, Underground Mines.

44. Quarry Development 4VAC25-40-390. Mining method must ensure ground, wall, bench, and bank stability in rock and overburden extraction activities. Benching of quarry walls required.

45. Determining Bench Height. Geology, condition of post-blast free-face, type of drill, reach of pit shovel/F-E loader, and method of scaling to be used.

46. Bench Height Factors 4VAC25-40-390/420. Size of mobile equipment being used to load & haul: Equipment cab protection, and ability to reach & remove (scale) loose rock on face above. Safe means of scaling loose rock from face of bench or wall must be provided. Stability of post-blast walls & benches as a result of geologic conditions & blasting.

47. Highwalls Vs. Benches. Inactive highwall in background poses serious safety hazards: wall not benched, loose rock on wall not scaled. Area must be barricaded & posted with warning signs.

48. Example of Safe Bench Height. Reach of F-E loader allows operator to scale loose rock from face of bench. Wall above work area benched.

49. Sand & Gravel Pit Development 4VAC25-40-390. Mining method must ensure bank stability; including sloping banks to **angle of repose* to ensure ground stability for mobile equipment (crane) operator and other persons.

50. Vertical Pit Bank Not Sloped to Angle of Repose. (4VAC25-40-390). Vertical bank must be sloped to "angle of repose" to ensure back stability. Reach of the F-E loader consistent with bank height for use in sloping for ground stability.

51. Stockpile Safety Requirements. (4VAC25-40-480). Keep trimmed to angle of repose to ensure stability. Stockpile loader operator should trim pile prior to moving.

52. Part 4 Fire Prevention & Control. Requirements for fire extinguishers, warning signs, training, and storage of combustible & flammable liquids.

53. Fire Extinguishers 4VAC25-40-610. Must be suitable for class of fire hazards (A, B, C), in fire-ready condition, strategically located, appropriate size & quantity for any fires that may occur, and must be inspected monthly.

54. Fire Extinguishers On Mobile Equipment 4VAC25-40-670. Mounted in cab, on outside or within 100 ft. of where equipment is being operated.

55. Warning Signs At Fueling Area. (4VAC25-40-510). Warning signs are required. (4VAC25-40-490). No smoking or open flames within 25 feet. (4VAC25-40-520). Stored in acceptable containers.

56. Fire Emergency Summary. (4VAC25-40-640). Meet with local fire officials to review potential fire hazards at mine, and discuss state mining laws related to mine fires. Review Fire Emergency Response plan with all employees & contractors working at the mine.

57. Part 5 Health Requirements. Dust, Noise, Welding fumes, and Other air contaminants/materials.

58. Potential Health Hazards at Mineral Mines. Respirable dust containing free silica. Nuisance dust which can pose safety or health hazard. Noise from mobile & stationary equipment. Toxic welding fumes. Contact with hazardous materials.

59. Employee Dust Exposure Limits 4VAC25-40-720. Employee's exposure cannot exceed limits specified in ACGIH TLV's. Limit (TLV) based upon rock (free silica content). Respirator cannot be used in lieu of dust control devices.

60. Controlling Dust At Mines 4VAC25-40-740. Sources of dust shall be wetted-down unless controlled by dry collection measures such as wet suppression (water sprays), dry collection (bag-house), and/or isolation by enclosure.

61. Controlling Dust On Haul Roads 4VAC25-40-740. Fugitive dust from haul roads can pose both a health and safety hazard to miners. Active haul roads must be wetted down.

62. Noise Exposure Limits 4VAC25-40-770. Miner's exposure limit cannot exceed 90 dB. Hearing protection must be provided upon request. Use engineering and administrative controls to limit exposure.

63. Other Hazards & TLV's 4VAC25-40-720. Welding fumes when working in confined spaces. Carbon monoxide from gas engines. Nitrogen oxides from diesel engines.

64. Part 6 Explosives. Storage, transportation, use, effects, and other restrictions.

65. Use of Explosives 4VAC25-40-800. BMME-certified blaster must be in direct charge. Miners who assist blaster must be GMM certified & task trained in accordance with employer's mine safety training plan.

66. "Blast Site" Must Be Cleared Prior To Start of Loading. (4VAC25-40-800.G.4). Mining equipment & other persons must be removed from "blast site" prior to start of loading of shot. Stay a safe distance away!

67. "Blast Area" Must Be Cleared Prior to Detonation. (4VAC25-40-800.R). Blast area must be cleared prior to detonation. Blast area, as defined in Part 2 definitions, usually the entire quarry pit.

68. Detonators & Explosives Safeguards 4VAC25-40-800. Caps & explosives separated at borehole. Primers cannot be assembled in advance of hole being loaded. Lower primers down borehole slowly. Never tamp a primer.

69. Loading Equipment Restrictions 4VAC25-40-800.P. Keep equipment a safe distance from caps & explosives on ground. Never operate mobile equipment used for dewatering or stemming holes directly over a loaded hole.

70. Post-Blast Exam of Blast Area 4VAC25-40-800.T. Blaster & foreman must examine area for misfires or ground control hazards; actual misfire shown. Other persons cannot return to area until blaster gives "all clear" signal.

71. Effects of Blast Must Be Within DMM Limits. (4VAC25-40-880). Ground Vibration. (4VAC25-40-890). Airblast. (4VAC25-40-800.D). No flyrock.

72. Flyrock Can Be Fatal! (4VAC25-40-800.Q). Blast warning signal required. Failure to move to a safe location may result in injury or death.

73. Part 7 Drilling Requirements. Inspection of equipment. Inspection of work area. Ground control hazards.

74. Inspection of Drill Equipment 4VAC25-40-950. Inspect drill prior to use each shift; report unsafe conditions to mine foreman. Inspect work area prior to start of work; and frequently thereafter.

75. Hazardous Work Area For Drillers & Blasting Crew. A number of safety hazards & violations make this work area unsafe! Continuing to work under the quarry wall exposes drillers and blasters to serious risk!

76. Inspection of Work Area 4VAC25-40-970. Inspect area prior to start of work and frequently thereafter. Certified foreman must conduct pre-shift examination prior to drillers starting work.

77. Drilling Hazards Can Kill! Bench height should be consistent with geology. Never work under hazardous wall. Loose material must be scaled prior to start of drilling.

78. Part 8 Compressed Air & Gases. Compressor safety devices. Use of compressed air of cleaning. Compressed gas cylinders. Welding & cutting.

79. Compressor Safety Devices. (4VAC25-40-1110). High temperature fusible plug set @ 400 degrees. (4VAC25-40-1120). Automatic pressure release valves. (4VAC25-40-1180). Checked daily.

80. Use of Compressed Air 4VAC25-40-1200. At no time shall compressed air be directed towards a person unless a diffuser limiting pressure to no more than 30 PSI is used. Be safe, remove jacket or coveralls prior to cleaning with compressed air.

81. Compressed Gas Cylinders. (4VAC25-40-1220). Stored away from oil & grease. (4VAC25-40-1240). Valves closed. (4VAC25-40-1250). Secured in upright position.

82. Welding & Cutting Restrictions. Task training required prior to use. Well-ventilated work area required. Fire prevention safeguards required: fire extinguishers, shields, covering combustibles with water, sand, etc.

83. Use of Welding/Cutting Equipment. (4VAC25-40-1260). Tank valves and gauges protected. (4VAC25-40-660). Never cut into a flammable liquid container prior to draining, cleaning, & filling with inert gas or material.

84. Part 9 Mobile Equipment Requirements. Pre-operation inspections. Equipment safety requirements. Safe operating procedures. Repairs. Safe work environment.

85. Mobile Equipment Safety Responsibilities. Company must provide mobile equipment in safe operating condition. Miners must be "task-trained" and operate equipment in a safe manner. Company must provide safe work environment.

86. Pre-Operational Inspection 4VAC25-40-145. Performed by the equipment operator prior to use each shift. Report serious safety defects to foreman for repair prior to use.

87. Using All Types of Ladders. (4VAC25-40-1850). At least 3" toe clearance. (4VAC25-40-1910). Face ladder and have both hands free for climbing. Keep rungs clean.

88. Services (Foot) Brakes 4VAC25-40-1320. Brakes on trucks, loaders, pans, and other types of mobile equipment must be capable of "stopping & holding" loaded vehicle on steepest grade traveled.

89. Emergency Brakes 4VAC25-40-1330. A separate emergency brake system must be provided on mobile equipment when generally available for the particular class of equipment.

90. Safety Requirements. (4VAC25-40-1340). Sound warning prior to starting or moving. (4VAC25-40-1350/1360). Cab & glass in good condition. (4VAC25-40-1380). No extraneous material in cab.

91. Safety Equipment. Automatic back-up alarm: or strobe light at night. Ladders, hand railing, glass & lights in good condition. Drive line & steering systems in good condition.

92. ROPS Cab & Seat Belts 4VAC25-4-1370. Appropriate Roll Over Protection (ROPS) or Falling Object Protection (FOPS) required on mobile equipment manufactured after 6/30/69. Equipment operator must use seat belt provided.

93. Traffic Control Signs 4VAC25-40-1540. Traffic, speed limits, patterns & rules must be posted. Stop or Yield signs at intersections. One-way traffic areas. Drive left vs. right. Yield to loaded trucks.

94. Safety Berms Required on Roads 4VAC25-40-1410. If road elevation is sufficient to cause a vehicle to overturn. Berm must be capable of *restraining* the largest piece of mobile equipment in use. Use both boulders and fines for strength.

95. Determining Height of Berms 4VAC25-40-1410. Height & width must increase when there is an increase in: size of equipment, grade of road (steep), in authorized speed limit.

96. Hazardous Haul Road. Open boulder berm not capable of *restraining* an out of control haul truck on quarry ramp. Roads should not approach walls or benches head-on.

97. Working From Bucket Prohibited 4VAC25-40-1680. Working from a raised F-E loader bucket not allowed. Use man-lifts designed to lift persons.

98. Repairing Mobile Equipment 4VAC25-40-1685. Shut engine off and tag-out. Block raised bed and other parts against motion. Keep tire secured until attached to hub.

99. Mobile Equipment Safety Summary. Equipment in safe operating condition. Operate equipment in safe manner per task training. Ensure work area is free of safety hazards.

100. Part 10 Personal Protection Equipment. First aid materials. Basic PPE. Fall protection. Welding & cutting. Finger ring restriction. Reflective tape on hard hats. Falling material hazard.

101. First Aid Materials 4VAC25-40-1690. First kits must be provided in all work areas. First Aid booklet useful in each kit. Should be covered in annual safety training.

102. Basic PPE At Mines. (4VAC25-40-1710). Hard hat. (4VAC25-40-1720). Safety-toe footwear. (4VAC25-40-1730). Safety glasses.

103. Fall Protection PPE 4VAC25-40-40-1740. Harness & attached lanyard required if working beyond hand railing; or other areas in plant or pit where fall hazard exists.

104. Scene of Fatal Suffocation Deaths in Crusher-Run Bin. Two miners killed in bin under conveyor when suffocated in crusher run material. Safety harness & attended lifeline must be used when entering partially filled confined space.

105. Welding & Cutting Hazards 4VAC25-40-1750. Flying material & ultraviolet radiation burn to eyes. Shaded welder's goggles required. Fire-resistant clothing if exposed to hot slag.

106. Use of Dust Respirator. (4VAC25-40-720). Cannot be used in lieu of feasible engineering to control sources of dust. Must be suitable for type of dust or other contaminant in work environment.

107. Finger Rings Prohibited 4VAC25-40-1780. Finger rings shall not be worn while operating on equipment or tools. Numerous injuries have resulted from wearing finger rings while working at mines.

108. Use of Reflective Tape 4VAC25-40-1785. On hat or clothing when working at night or in UG mine. Visible from all directions.

109. Protection From Falling Material 4VAC25-40-1800. (4VAC25-40-1800). Barricade access to grizzly impact area. Post warning signs.

110. PPE Requirement Summary. Required PPE depends on what you are doing and where you are doing it. Use of proper PPE protects you!

111. Part 11 Travelways. Safe access to work areas. Railed walkways & work platforms. Ladders. Keeping travelways clean.

112. Safe Means of Access 4VAC25-40-1810. Railed walkways, stairs, work platforms, or other structures. Portable & fixed ladders. Designated paths along ground surface. Roadways & ramps. Mobile equipment designed to lift persons. Boats.

113. Requirements For Elevated Walkways & Stairs. (4VAC25-40-1820). Substantial constructions, provided with handrails, and toeboards where passing over roads or travelways.

114. Railed Walkway Requirements. (4VAC25-40-1810/1890). Where miners regularly travel. (4VAC25-40-1880/1960). Non-skid walking surface kept clean & free of ice.

115. Travelway Safety Hazard 4VAC25-40-1980. Fall hazard on short ladder requires back-guard to prevent accidental fall to ground below walkway. (4VAC25-40-1930). Conveyor crossover required.

116. Railed Work Platform Requirements. (4VAC25-40-2010). Must be provided at elevated areas where miners work. Also required at work locations over water such as floating pump stations.

117. Safe Access to All Work Areas by Ladder/Walkways/Equipment. Equipment used must be designed to lift persons (man-lift).

118. Part 12 Electrical Requirements. Electrical system & components. Installation restrictions. Warning signs & restricted access. Electrical safeguards. Lockout & Tag out. Electrical grounding.

119. Electrical System Components. Transformer. Electrical switches. System ground rod. Equipment ground conductors. Current-carrying conductors (wires). Motors, lights, etc.

120. Electrical Installation Requirements. Installed in accordance with DMM Part 12 regulations, and the National Electrical Code (NEC). (4VAC25-40-2015). Installed & tested by a certified electrician.

121. Motor Control Center (MCC). (4VAC25-40-2190). Danger-sign posted. (4VAC25-40-2200). MCC access limited to trained persons. (4VAC25-40-2170). 3-ft. clearance around equipment.

122. Circuit & Equipment Protection. (4VAC25-40-2020/2030). Fuses, circuit breakers, and switches. (4VAC25-40-2160). Switches must be labeled. (4VAC25-40-2180). Dry wood floor or rubber mats.

123. Switch-House Safety Equipment. (4VAC25-40-2330). Fuse tongs. (4VAC25-40-2370). Functional operating handles/controls on boxes. (4VAC25-40-2020). Properly sized fuses, breakers, & starters.

124. Electrical Lockout and Tag-Out. (4VAC25-40-2140/2150). Company must provide miners with lock-out/tag-out devices, and training in their use. Miners must lock-out/tag-out equipment prior to start of repairs or maintenance of equipment.

125. Miner's Inspection of Assigned Electrically-Powered Equipment. When performing pre-operational inspection of equipment, visually check for missing covers, broken conduit, stray current, or other hazards. Report hazards to mine foreman.

126. Electrical Safety Summary. All miners must receive electrical hazard recognition training. Task training required prior to performing any electrical task under the general supervision of a certified electrician. Always lockout & tag-out prior to starting repairs on electrically powered equipment.

127. Part 13 Materials Handling. Confined space hazards. Safeguards. Handling methods.

128. Confined Space Entry 4VAC25-40-2550. Lockout & tag-out supply & discharge conveyors. Wear safety harness with attended life-line. Enter from top, bardown loose material to avoid entrapment.

129. Use of Cranes. (4VAC25-40-2580). Hitches & slings of safe designs & capacity. (4VAC25-40-2590). Use tag lines to guide suspended load. (4VAC25-40-2600). Stay clear of load.

130. Lifting & Dropping Materials In Plant Area. Lift heavy materials by use of fork-lift truck, hoist, or crane. (4VAC25-40-2620). Riding load prohibited. (4VAC25-40-2610). Barricade impact area prior to drop.

131. Handling Heavy Materials. Avoid a back injury…. use mechanical aids such as hoist truck, fork-lift, loader, or crane to lift heavy loads! Bend at knees when lifting!

132. Part 14 DMM Guarding Requirements. Two (2) levels of equipment guarding: (4VAC25-40-2680). All moving parts within 7-ft. reach, except conveyor pulleys, must be guarded to prevent **accidental contact**. (4VAC25-40-2700.A). Conveyor pulleys within 7-ft. reach must be guarded to prevent **deliberate contact** due to higher risk of serious or fatal injury.

133. Guarding Responsibilities. Company must install guarding required by DMM Part 14 regulations. Miner assigned to operate equipment must ensure guards in place prior to use. Certified foremen must ensure that defective guards reported by miners are repaired or replaced.

134. Guarding Criteria #1. If it moves and is within 7-ft. reach, it must be guarded!

135. Guarding Criteria: (4VAC25-40-2680). Guarding on accessible equipment, except conveyor pulleys, must prevent accidental contact. Hand railing is not an acceptable guard.

136. Guarding Criteria: Conveyor Pulleys. (4VAC25-40-700.A). Pulleys (tail, head, drive, snub, and take-up) which pose a high risk of severe injury, must be guarded against deliberate contact.

137. Inadequate Head-Pulley Guard 4VAC25-40-2700.A. Guard must extend a distance sufficient to prevent reaching behind, over, or under and becoming caught in moving parts.

138. Guarding Moving Belt & Idlers. (4VAC25-40-2700.B). By use of inside hand railing or emergency stop-cord. Position to prevent fall on or against moving belts & open idlers.

139. Guards In Place Prior To Starting Equipment. (4VAC25-40-2740). Do not start equipment without guards in place. Exception: testing equipment. Check guards during "pre-operational inspection."

140. Maintenance of Guards 4VAC25-40-2750. Guards must be sufficiently strong & maintained to prevent contact with moving parts. Miners must check each shift prior to start-up.

141. Part 15 Underground Mineral Mines. Underground haulroad at quarry. Underground limestone mine portals.

142. Inspection of Work Areas by Certified Foreman & Miners. Certified underground mine foreman must conduct pre-shift examination of all work areas prior to miners starting work. Miners must also inspect their work area and equipment prior to start of work.

143. Ground Control Requirements. Mine operator must use mining method which ensures ground stability; including rock bolting, timbering or other types of support where necessary.

144. Ventilation & Air Quality. Mines must have sufficient ventilation to dilute gases from diesel equipment and other sources. Air quality testing must be conducted each shift.

145. Travelways/Escapeways. Escapeways must be clearly marked, and covered in mine emergency training. Miners must have a self-rescue breathing device available for use during a mine emergency.

146. Additional Training Required. In addition to the topics covered thus far, persons who will be assigned to work underground must undergo addition training in topics related to potential hazards and safe work practices in underground mineral mines. Some of the topics to be covered are shown in the following slides.

147. DMM Regulations Summary. In addition to the general review just completed, new miners must be given additional instruction in specific company and DMM safety and health regulations related to their initial task(s) at the mine. Once properly trained, miners must comply with regulations applicable to their work at mineral mines.

End of Part 2 of 3.

Part 3 of 3 GMM Emergency First Aid Procedures:

148. Section III Emergency First Aid Procedures. Trauma. External & internal bleeding. Physical shock. Fractures. Exposure to extreme heat & cold.

149. Accident Scene Precautions. Ensure your personal safety, as well as that of the injured victim and bystanders. Summon help: mine foreman with first aid supplies and rescue squad. Tread victim where found unless accident scene is unsafe.

150. Trauma Symptoms. Sudden physical injury which can involve external or internal bleeding, broken bones, physical shock, or skin tissue damage resulting from exposure to extreme heat or cold.

151. ABC's of Initial Assessment. Ensure airway (A) is open. Ensure victim breathing (B). Check for blood circulation (C) pulse and treat severe bleeding. After life-threatening conditions are under control, check for & treat any other injuries.

152. Open Victim's Airway (A). Use head-tilt, chin-lift method if no spinal injury is suspected. Use modified jaw thrust if spinal injury is suspected. If necessary, clear any obstruction in airway.

153. Clear Airway Obstruction. If victim is conscious, use the Heimlich Maneuver as shown. If victim is unconscious on their back, give abdominal thrusts with heel of hand between navel and tip of sternum.

154. Assess Victim's Breathing (B). Look, listen, and feel for normal breathing; if absent, use mouth-to-mouth airway shield to perform artificial ventilation. Ventilate victim's lungs 1 ½ to 2 seconds in duration at a rate of 10 to 20 times per minute.

155. Assess Blood Circulation (C). Check for normal pulse rate (60-80 beats per minute) at carotid artery; if absent, administer CPR if trained/certified. Examine for and treat any severe bleeding.

156. Identify Type of Bleeding.

157. Control External Bleeding. Use sterile dressing. Apply direct pressure on the open wound. Once bleeding subsides apply outer bandage over dressing. Elevate limb to reduce blood pressure at wound.

158. Use of Pressure Points to Control Arterial Bleeding. Artery located over a bone near the surface of skin. Apply digital pressure on pressure point located between the heart and the wound. Release pressure slowly when bleeding subsides.

159. Internal Bleeding Symptoms. A victim who suffers a fall injury may exhibit signs & symptoms similar to physical shock: pale, cool & clammy skin; rapid breathing, weak pulse; dull eyes & enlarged pupils; nausea & vomiting; and pain in affected area.

160. Treatment for Internal Bleeding. Do not give victim anything to drink. Anticipate vomit and keep airway clear. Treat patient for shock. Transport patient to hospital ASAP.

161. Symptoms of Physical Shock. Physical changes: shallow breathing, weak & rapid pulse, dull eyes with enlarged pupils, dazed look, cool, moist skin, nausea & vomiting. Emotional changes: partial or complete unconsciousness, or slow response to questions. Always suspect & treat for shock!

162. Treatment for Physical Shock. Treat other injury. Keep victim lying down. Keep airway clear. Cover patient with blanket to keep warm. Elevate feet if no head injury.

163. Symptoms of Fractures. Pain, swelling, deformity, and loss of function.

164. Treatment for Fractures. Handle carefully and gently. Do not attempt to straighten deformed limb. Support & immobilize the fractured limb by use of a splint.

165. Splinting Fractured Arm. One rescuer supports injured limb while the other applies the splint and bandages. Immobilize splinted limb against chest by use of triangular bandages.

166. First Aid Treatment – Heat. Move victim to cool area. Loosen clothing & apply cool packs. Apply cool, wet towels to skin. Fan victim. Transport to hospital ASAP.

167. Cold Injury Symptoms. Shivering, numbness, drowsiness, decrease in level of consciousness, and red or blue skin that feels hard.

168. First Aid for Cold Injuries (Hypothermia). Move victim to warm area. Remove any wet clothing & wrap with blankets. Warm trunk of body first, do not warm too quickly. Bandage (loosely) frostbite or frozen areas. Transport to medical facility.

169. GMM First Aid Summary. Be aware that the mine foreman is fully trained in first aid, and that first aid materials are available at mine site. Do not become a second victim, assess the accident scene prior to rendering first aid assistance to an injured victim. Don't act alone, summons additional help immediately.

170. Summary of GMM Course. Upon completion of GMM training and certification, all miners must undergo additional training as specified in the *"New Miner"* segment of their employer's training plan; including initial *"task training"* for your initial job assignment at the mine.

End of Part 3 of 3.

At this point the instructor should evaluate each participant by written examination and/or demonstration of skills learned as required by BMME regulation 4VAC25-35-120.B.2. Each instructor is responsible for developing their own method of evaluation, and evaluation documents should be attached to the Instructor Copy of the GMM certification forms (DMM/BMME-4).

GENERAL MINERAL MINER TRAINING COURSE

APPENDIX OF MATERIALS

Safety Talk: **Virginia Mine Safety Laws & Regulations**
March 2001

Safety and health requirements found in ***Mineral Mine Safety Laws Of Virginia*** **and** ***Safety And Health Regulations for Mineral Mining*** establish comprehensive safeguards intended to protect persons working at surface or underground mineral mines. In addition, State reclamation laws and regulations establish strict environmental standards that all mine operators must follow from the time a mine is opened through final reclamation and close out. State mineral mining laws and regulations are enforced by the Division of Mineral Mining (DMM) of the Virginia Department of Mines, Minerals, & Energy. The DMM office is located in Charlottesville, VA. and can be contacted at (434) 951-6310.

There are approximately 490 mineral mines currently permitted/licensed by DMM; these mine produce crushed stone, sand & gravel, chemical lime, and other construction and industrial products necessary to support a growing economy. Mine operators employ approximately 5,000 miners and utilize approximately 1800 contracting companies who perform service or construction work at mine sites. All persons working at a mine are considered miners, and must comply with State mining laws and regulations applicable to their work. DMM programs include both enforcement and operator assistance necessary to achieve compliance in the following areas:

Permitting & licensing of mine sites.

Training and certification of workers.

Compliance with DMM safety & health regulations

Investigation of accidents and complaints.

Compliance with DMM reclamation regulations.

The objective of DMM programs is aimed at promoting safe and environmentally sound mineral mining by eliminating safety, health, and environmental hazards.

State mine safety laws make each person individually accountable for compliance; safety violations are issued to the person or persons responsible which could include the mine operator or agent, contractor, supervisor, or employee. DMM safety regulations assign certain safety requirements to various persons such as the mine operator, certified mine foreman, certified blaster, certified electrician, or certified miners employed by the mining company or contractor working at a mine. Regardless of federal MSHA inspection status, all mine operators and persons working at mines must comply with State mining laws and regulations. Any person aware of a violation of State mining laws or regulations can file an anonymous complaint with DMM.

Overview Of State Mining Laws For New Miners

(March 2001)

The following requirements are found in ***Mineral Mine Safety Laws Of Virginia:***

- The term "miner" means any person working at a mine. The type of work performed determines the level (comprehensive or hazard training only) of training required. Miner training must be spelled out in the company's mine safety training plan.
- The term "operator" means any mine operator or independent contractor who operates a mine or performs services at a mine.
- Mine operators and other persons working at mine must comply with applicable State mining laws and regulations (45.1-161.292:8).
- New employees engaged in work related to extraction or processing, must be certified as "General Mineral Miner" prior to starting work at a mine (45.1-161.292:28.A).
- General Mineral Miners must be trained in State mine safety laws, DMM safety and health regulations, and emergency first aid procedures (45.1-161.292:28.B).
- No person under the age of 18 is allowed to work at mines (45.1-161.292:5).
- Mine foremen, blasters, electricians, and new miners must be certified by the Board of Mineral Mining Examiners (BMME) 45.1-161.292:19.
- When 3 or more persons are working at a mine, a BMME-certified mine foreman is required (45.1-161.292:29) who must ensure safe working conditions and practices.
- All mines, except those being inspected by MSHA, must be inspected by DMM on a periodic basis (45.1-161.292:54); MSHA sites are not exempt from compliance with State mining laws and regulations. DMM enforcement at MSHA sites limited to investigation of reported accidents or complaints.
- Any person may file an anonymous safety complaint with DMM alleging violations of State mine safety laws or regulations (45.1-161.292:70.A) by contacting the DMM office at (434) 951-6310, or any State mine inspector at their home office.
- Violations (Notice of Violation) of State mining laws or regulations are issued to the operator, supervisor, employee, contractor, or other person(s) responsible for the violation (45.1-161.292:63).
- A "Closure Order" can be issued for failure to comply with a "Notice of Violation", an imminent danger, securing the scene of an accident, or operating without a mine license (45.1-161.292:64).
- Mine operators, and independent contractors performing services or construction work at a mine, must have a complete mine safety training plan (45.1-161.292:73) for training employees. Records of training must be maintained for review by DMM.

Board of Mineral Mining Examiners
Fontaine Research Park
900 Natural Resources Drive
P.O. Box 3727
Charlottesville, VA 22903-0723
(434) 951-6310

Verification of Training Completed for General Mineral Miner (GMM) Certification

Type or print this form in ink and submit it to the **Board of Mineral Mining Examiners** with a roster and $10 processing fee in the form of a check or money order made payable to the **Treasurer of Virginia**. Cash will be accepted if paid in person at a Division of Mineral Mining Office.

1. Full Name: _____ S.S. #: _____
2. Date of Birth: _____
3. Address: _____
   Street or P.O. Box City State Zip Code
4. Home Phone No.: ( ) _____ Date of Employment: _____
5. VA Mine Permit Number: _____ Mine Phone No.: ( ) _____
6. Employer Company Name: _____ Mine Name: _____
   Address: _____
   Street or P.O. Box City State Zip Code
7. Job title/description of job duties: _____
8. I received training in first aid, or I have attached a copy of my valid first aid card, and received Training in Virginia's mineral mining law and regulations on _____
   Date or Dates

I hereby certify that the above answers are true to the best of my knowledge and belief.

Signed: _____ Date: _____
Signature of applicant for certification

I hereby certify to the BMME that the training I provided to the applicant set forth above meets the requirements of Virginia Code § 45.1-161.292:28 B, 4 VAC 25-35-120 and the applicant has satisfactorily demonstrated to me the required knowledge of first aid practices, Mineral Mine Safety and Health Regulations, and the Mineral Mine Safety Laws of Virginia.

Name printed and signed: _____
Certified foreman, certified MSHA instructor, or instructor approved by DMM to provide training

#: _____ Cert. #: _____

Commonwealth Of Virginia
Division Of Mineral Mining

Name Of Miner

Social Security # Date Of Certification

Classification:

General Mineral Miner

Name Of Certified Instructor/Certified Forman

Certification #

GENERAL MINERAL MINER COURSE ATTENDANCE RECORD

This record may be used as the **GMM Course Roster**, **which is to be submitted** with the BMME-4 form and $10 fee when seeking certification for a new employee. The instructor simply completes the requested information and sends a copy of this record with the BMME-4 form and fee. This can be used cumulatively, so the employer or instructor can have a centralized record of all GMM courses conducted throughout the year.

NOTE: The last column may be used by the Instructor for recording the GMM certificate number of the employee once issued by the Board to maintain record of the employee's certificate number with course record.

GMM TRAINING DATE	INSTRUCTOR	CERT.#	NAME (last,first,mi)	SOCIAL SECURITY #	LOCATION	BMME CERT # ISSUED

DMM EMERGENCY TELEPHONE NUMBERS

September 1, 2001

State mining laws & regulations being enforced by the Division of Mineral Mining (DMM) of the Virginia Department of Mines, Minerals, & Energy require mine operators to post office and home telephone numbers of DMM state mine inspectors for use in reporting accidents, fires, safety violations, or other emergencies. Accidents involving death or serious personal injury to any person on mine property must be reported immediately by the quickest available means; contact with a DMM official is required, leaving a message on an answering machine is not acceptable for reporting accidents.

Listed below is the updated telephone numbers for DMM officials:

DMM office (8-5) Charlottesville……..(434) 951-6310

Conrad Spangler, DMM Director (home)……..(434) 974-6862

Barney, Gary……. (434) 929-7511/6021

Benner, David…….(804) 739-8052

Bibb, Tom……..(434) 245-1361

Bishop, Allen……. (434) 975-2512

Cress, Dave…… (540) 722-6350

Fehrer, Damien…….. (434) 315-0305

Grizzle, Paul……...(804) 443-4685

Hagy, Mac……..(276) 597-7642

Johnson, Darrell…….(757) 242-9971

Morgan, Bob……..…… (540) 847-7943/786-8225

Smith, Charlie…… (276) 773-2960

Smith, Jim…….. (540) 586-0232

If unable to contact the mine inspector assigned to your mine, contact any other person listed above.

GMM Emergency First Aid Procedures

Topics: Trauma
External bleeding
Internal bleeding
Shock
Fractures
Exposure to extreme heat
Exposure to extreme cold

Trauma

When you arrive on the scene to care for an injured or ill person, you must make several decisions regarding not only the patient, but also the surrounding area. They are:

Scene Size-Up

- Scene Safety – As you approach the scene, begin to observe the scene to ensure personal, patient, and bystander safety. Do not move the injured person unless absolutely necessary—you and/or the patient are exposed to further danger at the accident site.
- Body Substance Isolation Precautions (BSI) – Determine and don the appropriate personal protective equipment that will be needed prior to patient contact.
- Mechanism of Injury – If possible, determine what forces caused the injury or the evidence of a medical problem. Consider what witnesses tell about the accident, what you observe about the patient, and what the patient (if conscious) can tell you.
- Determine the Number of Patients – If there is more than one patient, call or have someone else call for assistance.
- Stabilization of Spine – During the initial assessment, avoid unnecessary movement or rough handling of the patient because it might aggravate undetected fractures or spinal injuries.

Initial Assessment

- Form a general impression.
- Look at and listen to patient.
- Determine if the patient is alert and responsive or unresponsive.
- Assess airway.
- Ensure airway is open and remains open.
- Assess breathing.
- Ensure patient is breathing and breathing is adequate.
- Assess circulation.
- Control severe bleeding.
- Determine the priority of the patient.
- Determine if the patient needs immediate transportation.

Once life-threatening conditions are under control and obvious injuries have been treated, continue with the head-to-toe (detailed) examination. Look for any type of abnormalities such as swelling, discoloration, lumps, and tenderness that might indicate a hidden injury. The detailed examination should include the:

- Head
- Neck
- Chest
- Abdomen
- Pelvis
- Arms
- Legs
- Back surfaces

FIRST AID PROCEDURES FOR LIFE-THREATENING CONDITIONS

The most important concern is immediate recognition and correction of life-threatening conditions and taking action to prevent death or further injury, to relieve pain, and to counteract shock.

Treat life-threatening conditions in the following order:

- Restore natural breathing.
- Restore circulation – Cardiopulmonary Resuscitation (if necessary).
- Control bleeding.
- Reduce severity of shock.

Respiratory Arrest

If you determine the patient is not breathing or breathing efforts are minimal, you must provide artificial ventilation by mouth-to-mask, mouth-to-mouth, or mouth-to-nose.

When giving artificial ventilation, always use a barrier, such as a pocket face mask. The pocket face mask is made of soft, collapsible material and is small enough to be carried in a pocket or purse. It has a chimney with a one-way valve that allows your ventilations to enter, but prevents the patients exhaled air from coming back through the valve and in contact with you.

A patient not breathing is a life-threatening condition, and artificial ventilation must begin at once.

Causes

- Suffocation
- Gas poisoning
- Electrical shock
- Drowning
- Heart failure

Signs/Symptoms

- The chest or abdomen does not rise and fall.
- Air cannot be felt coming from the nose or mouth.
- Skin color is blue or gray.

Mouth-to-Mask

- Establish if the patient is unresponsive (tap the shoulder and ask, "Are you OK?").
- If the adult patient is unresponsive and you are alone, immediately call 911 (if a telephone is reasonably close).
- Determine that breathing is absent or inadequate.
- Position patient on back. If necessary, roll patient as a single unit, keeping the back and neck straight avoiding the aggravation of any possible spinal injury.
- Position yourself at the patient's head and open the airway using the head-tilt/chin-lift maneuver (if no spinal injury is suspected) or the jaw-thrust maneuver (if spinal injury is suspected).
- Take 3-5 seconds to listen and feel for air exchange and look for chest movements.
- If no breathing is present, position the mask on the patient's face so that the apex (top of the triangle) is over the bridge of the nose and the base is between the lower lip and prominence of the chin.
- For modified jaw-thrust maneuver (FIGURE 1), hold the mask firmly in place while maintaining the proper head tilt by placing: Both thumbs on the sides of the mask. Index, third and fourth fingers of each hand grasping the lower jaw on each side between the angle of the jaw and the ear lobe to lift the jaw forward.
- Take a deep breath and exhale into the one-way valve at the top of the mask port. Each ventilation should be delivered over 1 ½ to 2 seconds in adults and 1 to 1 ½ seconds in children and infants. Watch for the patient's chest to rise.
- Remove your mouth from the port and allow for passive exhalation.
- If the attempt to ventilate is unsuccessful, reposition the patient's head and try again.
- If the patient does not begin spontaneous breathing after these initial breaths, begin Cardiopulmonary Resuscitation (CPR) if you have been trained.

Figure 1.

If you have not been trained in CPR, continue with rescue breathing.

- Take a deep breath and exhale air through the valve of the mask.
- Break contact with the mask.
- Watch for the patient's chest to fall and listen and feel for the return of air.
- Take another deep breath and begin the cycle again. Provide breaths at the rate of 10-to-20 per minute.

Mouth-to-Mouth (Nose)

- Establish if the patient is unresponsive (tap the shoulder and ask, "Are you OK?"
- If the adult patient is unresponsive and you are alone, immediately call 911 (if a telephone is reasonably close).
- Determine that breathing is absent or inadequate.
- Position patient on back. If necessary, roll patient as a single unit, keeping the back and neck straight avoiding the aggravation of any possible spinal injury.
- Open airway by using head tilt/chin lift method (FIGURE 2A) if no spinal injuries are present, or use modified jaw-thrust maneuver (FIGURE 3) if a spinal injury is suspected.
- Take 3-5 seconds to listen and feel for air exchange and look for chest movements.
- If no breathing is present, pinch the nose closed with your fingers, form an airtight seal by placing your mouth over the patient's mouth and breathe into the patient's mouth until his/her chest rises (FIGURE 2B). (If using the mouth-to-nose method seal the patient's mouth with your hand and breathe in through his/her nose).

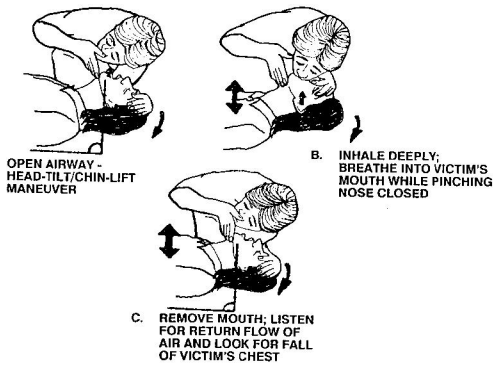

Figure 2. Mouth-to-Mouth Ventilation.

- If the attempt to ventilate is unsuccessful, reposition the patient's head and try again.
- Each ventilation should be delivered over 1 ½ to 2 seconds in duration in adults and 1 to 1 ½ seconds in children and infants at the rate of 10 to 20 times per minute.
- Allow for passive exhalation.
- If the patient does not begin spontaneous breathing after these initial breaths, begin Cardiopulmonary Resuscitation (CPR) if you have been trained.

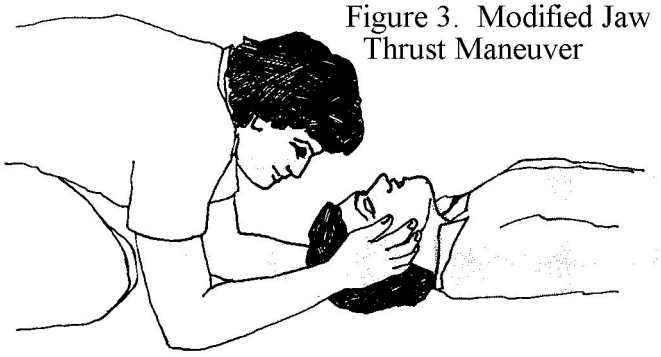
Figure 3. Modified Jaw Thrust Maneuver

If you have not been trained in CPR, continue with rescue breathing.

- If the attempt to ventilate is unsuccessful, reposition the patient's head and try again.
  - Pinch the nose closed with your fingers, and breathe into the patient's mouth until his/her chest rises. (if using the mouth to nose method, seal the patient's mouth with your hand and breathe in through his/her nose.)
  - Break contact with either the mouth or the nose.
  - Air should be passively released from the patient's lungs while you watch the patient's chest fall and listen and feel for the return of air.
  - Take another deep breath and begin the cycle again.

Repeat breathing. Remove mouth each time to allow air to escape (FIGURE 2C). Repeat 10 to 12 times per minute for an adult, 15 times per minute for a child, and 20 times per minute for an

infant. Use deep breaths for an adult, less for a child, and gentle puffs for infants. As the patient begins to breathe, maintain an open airway.

DO NOT STOP! Continue artificial ventilation until patient is revived, a doctor pronounces the patient dead, another person relieves you, or you are physically unable to continue. If patient must be moved, continue artificial ventilation.

Foreign Objects in the Throat
(Conscious Patient – Heimlich Maneuver)
(FIGURE 4)


Figure 4. Universal distress symbol for choking.

Signs/Symptoms

- Gasps for breath
- Has violent fits of coughing
- Quickly turns pale then blue
- Cannot talk or breathe

First Aid Treatment

- Determine if airway obstruction is partial or complete.
- If obstruction is partial (air exchange) encourage patient to cough.
- If there is no air exchange, stand behind the patient and place your arms around the patient's waist (FIGURE 5).
- Grasp one fist in your other hand and position the thumb side of your fist against the middle of the patient's abdomen between the lower tip (xiphoid process) of the sternum and the navel.
- Press your fist into the patient's abdomen with a quick upward thrust.
- Repeat the procedure if necessary ensuring that each new thrust is a separate and distinct movement.
- Repeat thrusts until the foreign body is expelled or the patient becomes unconscious.

Foreign Objects in the Throat
(Unconscious Patient)

Figure 5. Heimlich Maneuver.

First Aid Treatment

- Position patient on back.
- Straddle the patient's hips.
- Place the heel of one hand against the middle of the patient's abdomen between the lower tip (xiphoid process) of the sternum and the navel with fingers pointing toward the patient's chest.
- Place your other hand on top of the first.
- Press into the patient's abdomen area with a quick upward thrust.
- Open patient's mouth and grasp dislodged foreign object with fingers to remove obstruction.

- Repeat procedures if necessary ensuring that each new thrust is a separate and distinct movement.
- Repeat thrusts until the foreign body is expelled.

External Bleeding

Hemorrhaging or bleeding is a flow of blood from an artery, vein or capillary. The best all around method of controlling bleeding is applying pressure directly to the wound.

Signs/Symptoms

- **Artery –** spurting blood, bright red in color
- **Vein –** continuous flow of blood, dark red in color
- **Capillary –** blood oozing from a wound

First Aid Treatment

- Direct Pressure – Cover wound with a clean cloth or your gloved hand and apply direct pressure on the wound. Most bleeding can be stopped this way (FIGURE 6).
- Elevation – If the wound is on an arm or leg and there is no fracture, elevate extremity above heart as you apply pressure.
- Digital Pressure – Use digital pressure point, when necessary, to control arterial bleeding from a wound (bright red blood spurting). Place your fingers on the appropriate pressure point between the heart and the wound. Hold pressure point tightly until bleeding is controlled. Since digital pressure shuts off the supply of oxygenated blood to the brain, use the pressure points in the head and neck for only brief periods.

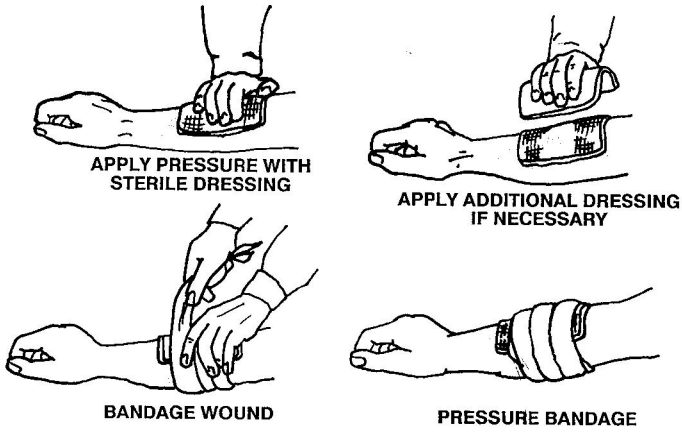

Figure 6. Direct Pressure.

Tourniquets

A tourniquet is a device that restricts all blood flow to and from an extremity. It is to be used ONLY AS A LAST RESORT, when all other methods fail, since the use of the tourniquet often results in the loss of the limb. Apply tourniquet between the wound and the heart as close to the wound as possible, but never over a joint. Tighten the tourniquet to the point where bleeding is controlled.

For an improvised tourniquet, wrap the material around the extremity and tie it in a half-knot. Place a stick or similar object on the half-knot and tie a full knot. Twist the stick to tighten the tourniquet only until the bleeding is controlled. Secure the stick in place with the loose ends of the tourniquet, another strip of cloth, or other improvised material. (FIGURE 7).

Once the tourniquet is in place, DO NOT LOOSEN. Make note of time applied, mark a "T" or "TK" on the patient's forehead, and get him/her to a medical facility as soon as possible.

NOTE: Improvise a tourniquet from a strap, belt, handkerchief, necktie, cravat bandage, etc. (Never use wire, cord or anything that will cut into the flesh.)

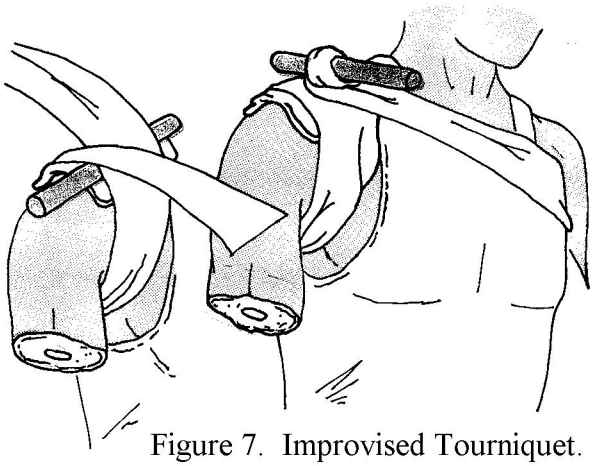

Figure 7. Improvised Tourniquet.

Internal Bleeding

Internal bleeding occurs within the body and cannot be seen. It can be minor or life threatening.

Signs/Symptoms

- Pale, cool and clammy skin
- Profuse sweating
- Rapid shallow breathing
- Weak and rapid pulse
- Dull eyes and enlarged pupils
- Possible thirst
- Nausea and vomiting
- Pain in affected area

First Aid Treatment

- Treat patient for shock.
- Anticipate that patient may vomit; give nothing by mouth.
- Get the patient to professional medical help as quickly as possible.

Shock

Shock may accompany any serious injury: Blood loss, breathing impairment, heart failure, burns, etc.

Shock can kill; therefore, treat as soon as possible and continue until medical aid is available.

Signs/Symptoms

- Shallow breathing
- Rapid and weak pulse
- Nausea, collapse, vomiting
- Shivering
- Pale, moist skin
- Mental confusion
- Drooping eyelids, dilated pupils

First Aid Treatment

- Establish and maintain an open airway.
- Control bleeding.
- Keep patient lying down.
- Elevate foot of stretcher unless an injury will be aggravated by this position such as head and chest injuries, heart attack, stroke, and sun stroke. If there is no spinal injury, patient may be more comfortable and breathe better in a semi-reclining position. If in doubt, keep patient lying down.
- Maintain normal body temperature. Place blankets under and over patient.
- Do not give stimulants.

Fractures

The musculoskeletal system is composed of all the bones, joints, muscles, tendons, ligaments, and cartilages in the body. The musculoskeletal system is subject to injury from sprains, strains, fractures, and dislocations. Since these injuries present basically the same signs and symptoms, treat all injuries to the bones and joints as fractures.

The usual sign of a strain, sprain, fracture, or dislocation will be pain; therefore, you should keep patient at rest, not moving any part of the body. Even though a strain, sprain, and dislocation may appear obvious, you cannot rule out a fracture.

Musculoskeletal injuries (FIGURE 8) are classified as either closed, painful, swollen, deformed extremities (skin is not broken) or open painful, swollen, deformed extremities (skin is broken).

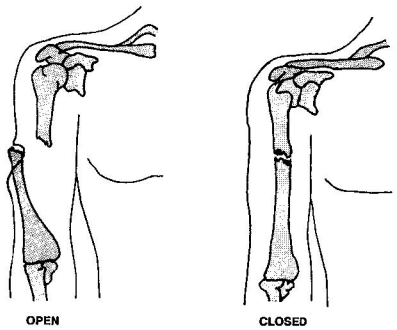

Figure 8. Open painful, swollen, deformed extremity and closed painful, swollen, deformed extremity.

Signs/Symptoms

- Pain
- Swelling
- Deformity

First Aid Treatment

- Immobilize suspected fracture.
- Handle as gently as possible—one person to immobilize the limb one to apply the splint.

- Do not attempt to straighten any painful, swollen, deformed extremity. Splint in the position found. Move injured extremities as little as possible to avoid damage to exposed nerves, blood vessels and surrounding tissue.
- Splints:
    - Splints should be long enough to support joints above and below suspected fracture.
    - Splints should be rigid enough to support the suspected fracture.
    - Pad improvised splints to ensure even contact and pressure between the limb and the splint, and to protect all bony prominences.
    - Types of splints: Air splint, padded boards, rolled blanket, tools, newspapers, and magazines.
- Applying improvised splints:
    - Handle the affected limb as gently as possible.
    - Place the padded splint under, above, or alongside the limb.
    - Tie the limb and splint together with bandaging materials so the two are held firmly together. Make sure the bandaging material is not so tight that it impairs circulation. Leave uninjured fingers and toes exposed, so the circulation can be checked constantly.
- Applying inflatable splints:
    - Use inflatable splints to immobilize fractures of the lower leg or forearm.
    - To apply an air splint, gather splint on your own arm so the bottom edge is above your wrist.
    - Help support the patient's limb—or have someone else hold it.
    - Hold injured limb and slide the splint from your forearm over the patient's injured limb.
    - **Inflate by mouth only** to the desired pressure. Inflate to the point where your thumb makes a slight indentation.
    - If it is a zipper type air splint, lay the patient's limb in the unzipped splint, zip it and inflate. Traction cannot be maintained when applying this type of splint.
    - Change in temperature can affect this type of splint—going from cold to warm and warm to cold areas can cause the splint to expand or deflate. It may be necessary to check the splint for proper pressure.
    - Transport only after all fractures are immobilized unless the patient and first aider are in immediate danger at the accident site.

Exposure to Extreme Heat

Exposure to excessive heat can create heat that is not needed for temperature maintenance.

Generalized Hyperthermia

Hypothermia is an abnormally high body temperature caused by the body not being able to rid itself of excessive heat. Exposure to excessive heat and high humidity are often associated with hypothermia.

Signs/Symptoms – Moist, Pale, Normal-to-Cool Skin

- Muscular cramps – usually in the legs and abdomen
- Weakness or exhaustion, dizziness or faintness
- Rapid, shallow breathing
- Weak pulse
- Moist pale skin which may feel normal to cool
- Heavy sweating
- Possible loss of consciousness

First Aid Treatment – Moist, Pale, Normal-to-Cool Skin

- Remove patient from the hot environment and place in a cool environment.
- Loosen or remove clothing and cool patient by fanning. Watch for shivering; do not chill.
- Keep patient lying down with foot-end of stretcher elevated.
- If the patient is responsive and not nauseated, give water to drink; otherwise, give nothing by mouth.
- Apply moist applications over cramping muscles.

Signs/Symptoms – Hot, Dry, or Moist Skin

- Rapid, shallow breathing
- Full and rapid pulse
- Weak
- Hot, dry or possibly moist skin
- Little or no perspiration
- Loss of consciousness or altered mental state
- Dilated pupils
- Patient may experience seizures, but no muscle cramps

First Aid Treatment – Hot, Dry, or Moist Skin

- Remove patient from the hot environment and place in a cool environment.
- Loosen or remove clothing and apply cool packs to neck, groin, and armpits. Keep skin wet by applying water by sponge or wet towels. Fan patient.
- If immediate transport is delayed immerse patient up to the neck in a tub of cool water.

Exposure to Extreme Cold

Exposure to cold and hot temperatures can cause life-threatening problems. Understanding how the body regulates its own temperature can help give effective first aid when a person is simply too hot or too cold.

Cold Emergencies

When the environment is too cold, body heat is lost faster than it can be generated. This may result in damage to exposed tissue and body functions may be greatly reduced or stopped.

Generalized Hypothermia

Hypothermia is a general cooling of the entire body, even in temperatures well above freezing. When the inner core of the body is chilled, the body cannot generate enough heat to stay warm. The injured or ill patient and the young or old are most susceptible to hypothermia. With time, the body is unable to maintain its proper internal temperature and can lead to death.

Signs/Symptoms

- Shivering
- Numbness
- Drowsiness and/or muscular weakness
- Rapid breathing and rapid pulse
- Decreased level of consciousness
- Reddened skin in early stages. In prolonged cases, skin is pale to bluish and some body parts are stiff and hard (frozen).

First Aid Treatment

- Get patient into a warm area.
- Remove all wet clothing.
- Wrap the patient in blankets. Maintain patient's body heat by placing blankets under as well as over the patient or place another rescuer in the blankets with the patient. (Do not warm too quickly.)
- Warm trunk of body first.
- Handle the patient gently and get him/her to a medical facility as soon as possible.

Localized Hypothermia

Cold-related emergencies are those affecting particular parts of the body being exposed to intensely cold air or liquid. Most commonly affected are the nose cheeks, ears, toes, and fingers. Localized cold injuries are classified as early or superficial, and late or deep.

Signs/Symptoms – Early or Superficial Cold Injury

- In early or superficial cold injury, light skin first reddens; dark skin lightens. Both then blanch (whiten).
- Superficial cold injury feels numb to the patient.

First Aid Treatment

- Get patient out of the cold environment.
- Warm the affected area.
- Splint affected extremity. Do not rub or massage and do not re-expose to the cold.

Signs/Symptoms – Late or Deep Cold Injury

- In late or deep cold injury, the skin appears white and waxy and later turns from mottled or blotchy to grayish yellow and finally grayish blue.
- Deep cold injury feels frozen on the surface.

First Aid Treatment

- Get patient out of the cold environment.
- Handle frostbite or frozen area by using a covering such as loose, soft, sterile dressing, and handling it as gently as possible.
- Do not re-expose patient to the cold.
- Transport to a medical facility as soon as possible.
- In cases of extreme hypothermia, assess the carotid pulse for 30-45 seconds. If there is no pulse, start CPR immediately, if you have been trained. Transport immediately.

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E & T SERVICE EVALUATION

Type of Training: ☐ Blaster ☐ Foreman ☐ First Aid ☐ Annual Refresher ☐ New Miner ☐ General Mineral Mine

☐ GMS **Safety Meeting** (topic): _____

Date: _____ **Location:** _____

Instructor Name(s): 1. _____ 2. _____ 3. _____

Please rate the following areas and provide comments below:

COURSE/SERVICE PROVIDED: (Circle the number) 1 = poor, 5 = best

1.	Information was new – I learned something new and/or useful	1	2	3	4	5
2.	Up-to-date information provided	1	2	3	4	5
3.	Quality of the content	1	2	3	4	5
4.	Quality of the audio-visuals/hand-outs	1	2	3	4	5
5.	Information organized efficiently	1	2	3	4	5
6.	Information provided of sufficient length of time	1	2	3	4	5
7.	Overall rating of the quality/helpfulness of information	1	2	3	4	5

INSTRUCTOR/SERVICE PROVIDER:

8.	Instructor was well prepared	1	2	3	4	5
9.	Instructor provided time for and responded to questions	1	2	3	4	5
10.	Instructor was clear and understandable	1	2	3	4	5
11.	Adequate time given for breaks in class	1	2	3	4	5
12.	Overall rating of the instructor/provider	1	2	3	4	5

13. Recommendation(s) for changes to content or presentations: _____

_____

14. Which segment did you consider to be the most important: _____

15. Which segment did you consider to be the least important: _____

16. Related to your job, what other topics would you like to have offered: _____

_____

17. Do you think the information presented in this class improved your safety knowledge or will positively influence your safety practices on the job? ☐ Yes ☐ No

OPTIONAL: Name: _____ Company: _____

MINER'S TRAINING RECORD

DMM Mine Permit #_____

This record specifies training information required by *Mineral Mine Safety Laws of Virginia, and DMM Safety & Health Regulations for Mineral Mining,* which took effect on July 1, 1998:

Name: _____ SSN: _____

Hire Date: _____ GMM Date: _____ Job Title: _____

Task Qualifications As of June 30, 1998:

Stationary equipment, mobile equipment, tools, or work procedures miner qualified to perform based on previous training and/or experience: (Miner's Initials:_____)

(1)	(11)
(2)	(12)
(3)	(13)
(4)	(14)
(5)	(15)
(6)	(16)
(7)	(17)
(8)	(18)
(9)	(19)
(10)	(20)

Training For New Tasks As of July 1, 1998:

As specified in DMM safety & health regulation 4 VAC 25-40-100, new or re-assigned miners must be indoctrinated in company and DMM safety & health regulations; and be task trained prior to being assigned a new task or duty. Miner to initial date of training.

Training Date	**Instructor Name**	**Task/Potential Hazards/Safe Work Procedures for the specific mobile/stationary equipment or tools**

Miner's Training Record, continued. page 2 of 2

Record of All Other Training Provided to Miner:

Date	Instructor	Type of Training & Topic(s) Covered	Hrs.	Miner's Initial

NOTES: (1) Records of training must be kept at mine office for at least 2 years; or for 60 days after miner's termination of employment.

For MSHA regulated mines, this information should also be recorded on the MSHA recommended training forms.

NEW MINER TRAINING RECORD/CERTIFICATE

Miner's Full Name (Print)_____

Mine or Contractor Name _____ **ID#** _____

Subject 30 CFR Part 46.5	Course Length	Date	Competent Person	Location (Name & Address if Institution)	Miner's Initials
(b) (1) Introduction to work environment, mine tour, mining method/operation					
(b)(2) Instruction on recognition and avoidance of electrical and other hazards					
(b)(3) Emergency procedures, escape, and firefighting					
(b)(4) Health and safety aspects of tasks assigned					
(b)(5) Instruction on statutory rights of miners and their representatives					
(b)(6) Authority & responsibility of supervisors and miners' representatives					
(b)(7) Introduction to your rules and procedures for reporting hazards					
(c)(1) Self-rescue, respiratory devices, if used					
(c)(2) First aid					

False certification is punishable under section 110 (a) and (f) of the Federal Mine Safety and Health Act
I certify that the above training has been completed

_____

(Signature of person responsible for health and safety training) (Date)

Accident Trends

- **Since January 1, 1986:**
  - **2908 injuries have been reported, including:**
    - **21 fatalities or less than 1 %**
    - **93 serious personal injuries, about 3 %**
    - **2794 medical treatment treatment**

Fatality Statistics

- **Since January 1, 1986 there have been 21 fatalities recorded on mineral mines in Virginia**
  - **Of these:**
    - **11 involved mine employees;**
    - **7 involved contractor or customer employees**
    - **3 involved the general public**
    - **Truck drivers accounted for 24% of all fatalities reported.**

Serious Personal Accident Statistics

- *78% of the serious personal injuries involved mine employees.*
- *22% of the serious personal injuries involved contract workers.*
- *48% of all serious personal injuries involved maintenance related activities.*

Number of Fatal and Serious Accidents 1989 - 2000