

**UNDERGROUND
GENERAL
COAL MINER
CERTIFICATION**

FOR

**UNDERGROUND MINES
AND
SURFACE AREA OF
UNDERGROUND MINES**

Requirements For General Coal Miner Certification

The following procedures are to be followed to secure certification:

- A. Applicants employed in Virginia coal mines prior to January 1, 1996 who wish to become certified shall:
 - 1. Submit Form DM-BCME-1, Application for Certification.
 - 2. Submit a notarized Work Experience Form, DM-BCME-2, Verifying mining experience prior to January 1, 1996.
 - 3. Pay a \$10.00 fee for certification.
 - 4. Underground miners must pass the gas detection examination if they are not already gas detection qualified.

- B. Applicants seeking certification **after January 1, 1996** shall:
 - 1. Submit Form DM-BCME-1, Application for Certification.
 - 2. Pay a \$ 10.00 fee for certification.
 - 3. Submit documentation to the Division of Mines verifying completion of new miner training, supervisory retraining, annual refresher training, or submit a valid EMT, EMT-first responder, advanced first aid certificate or card or submit proof of two hours first aid training within the past twelve months signed by an approved instructor or as otherwise indicated in General Coal Miner Certification (next page) section I-3. The training shall include highlights of the Coal Mine Safety Laws of Virginia and the Coal Mine Safety and Health Regulations of the Division of Mines and the Board of Coal Mining Examiners. The training shall include a demonstration of knowledge or passing of a written examination of Virginia's coal mine safety laws and regulations.
 - 4. Submit Form DM-BCME-3, Verification of Training Completed for General Coal Miner Certification prior to commencing work in a coal mine. The form shall be signed by the employee and the instructor and the date they sign will be the effective date of the General Coal Miner Certification.
 - 5. Underground miners must pass the gas detection examination.

For information call Mary S. Gibson, Regulatory Boards Administrator, 276/523-8234.

General Coal Miner Certification Process

I. Materials needed:

- A. Furnished by Applicant
 1. Proof of age (must be at least 18 years of age)
 2. \$ 10.00 in cash, check or money order (**Money may be received at our Big Stone Gap or Keen Mountain offices or through the mail**).
 3. Proof of first aid training
 - a. 5000-23 MSHA form for training that includes at least 2 hours first aid training (new miner, annual refresher, supervisory retraining), within the last twelve months.
 - b. State of Kentucky training slip that includes at least 2 hours first aid training, within the last twelve months.
 - c. Any proof of first aid training in the last 12 months signed by an approved MSHA instructor, at least 2 hours of training
 - d. Valid Virginia EMT-B or EMT-First Responder or Advanced First Aid, certificate or card
 - e. Valid Kentucky MET or West Virginia EMT card
- B. Furnished by DM person conducting certification training:
 1. Coal Mine Safety Laws of Virginia, 1999 Edition
 2. General Coal Miner Study Guide
 3. DM-BCME-1 Form
 4. DM-BCME-3 Form
 5. General Coal Miner Study Questions
 - a. **Underground study questions if applicant wants GMUO (underground only); this includes surface area of underground mine**
 - b. **Surface study questions if applicant wants GMSO (surface only); this includes surface mine or auger mine only**
 6. Student Retention Quiz
 - a. GMUO – Underground Quiz – 20 questions
 - b. GMSO – Surface Quiz – 10 questions

II. Certification process:

- A. Applicant is given the applicable general coal miner study guide, study questions, and a copy of the Coal Mine Safety Laws of Virginia, 1999 Edition. The applicant uses the applicable study guide and Coal Mine Safety Laws to find answers to the questions.
- B. After answering the study questions, the person conducting the certification training shall review each question with the applicant to ensure the applicant understands and acknowledges the correct answers.
- C. After completion and discussion of the study questions, the applicant is given the applicable student retention quiz. If the applicant does not respond correctly to the questions, then the applicant should be required to review the appropriate sections of the Coal Mine Safety Laws of Virginia until that person can answer the questions correctly.

NOTE: This is not a test that implies a passing or failing score. This quiz is designed only to help the person administering the training to evaluate the student's retention of the training.

The total concept of the General Coal Miner Study Guide, study questions, and student retention quiz is to ensure that applicants have a general working knowledge of the Act and should not be perceived as a test with a passing or failing score.

- D. After the applicant completes the study questions and student retention quiz and both have been discussed by the person conducting the training, then that person completes the instructor section of the DM-BCME-3 form and signs in the appropriate place. **The proper code (GMUO or GMSO) must be written in the upper right corner of this form.** If more than one person is receiving training, than a roster must be filled out and attached to the DM-BCME-3 form.

III. Mailing procedure

- A. Attach copy of proof of first aid, DM-BCME-1, DM-BCME-3, and roster (if necessary) together, making sure all forms are completed and signed.

1. If this is being conducted at a Division of Mines office, the \$ 10.00 fee is to be paid to the appropriate person and receipted before the certification process begins. After the process is completed, the forms and the receipt are taken back to the person authorized to accept payment so they can be processed.

NOTE: A copy of completed form DM-BCME-3 needs to be given to the applicant to serve as proof that they have successfully completed all the requirements for the general coal miner certification until their card is received in the mail. Allow approximately one month to receive the card.

2. If this certification is being done at a mine site or other remote location, the completed material is given to the applicant in an envelope addressed to the DM office, either at KMO or BSG, and instructions are given in person or mail the material along with the fee to that address. If no copy machine is available, a TS-1 can be filled out with a statement saying the person has passed the requirements for general coal miner and include their name and social security number. Give the applicant a copy of the TS-1-S (Field Report Form) to use as proof of training until the card arrives.



Board of Coal Mining Examiners
P.O. Drawer 900
Big Stone Gap, VA 24219
(276)523-8149

Verification of Training Completed for General Coal Miner Certification

Type or print this form in ink and submit it to the Board of Coal Mining Examiners with a \$10 processing fee in the form of a certified check, cashier's check, or money order made payable to the Treasurer of Virginia. Cash will be accepted if paid in person at a Division of Mines' (DM) office.

1. Full Name _____ S.S.# _____

2. Address _____
Street or P.O. Box _____ City _____ State _____ Zip Code _____

3. Home Phone No. (____) _____ Date of Employment _____

4. Employer Company Name _____ Mine Name _____

Address _____
Street or P.O. Box _____ City _____ State _____ Zip Code _____

5. Job title/description of job duties _____

6. I received training in first aid and Virginia's coal mining law and regulations on _____ or I have attached a copy of my valid first aid card. _____ 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 BCME that the training I provided to the applicant set forth above meets the requirements of Virginia Code §45.1-161.37 and the Virginia Administrative Code 4 VAC25-20, and the applicant has satisfactorily demonstrated to me the required knowledge of first aid practices and the mine safety laws of Virginia.

Name printed and signed _____
Certified foreman or instructor approved by DM providing training

Cert. No. _____

Name printed and signed when the applicant is hired _____
Mine operator employing applicant



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P.O. Drawer 900
Big Stone Gap, VA 24219
(276)523-8149

Application for Certification Examination

Applicants for certification must complete this form and submit a \$10.00 non-refundable fee for each exam. Type or print the information in ink or pay the fee with a certified check, cashier's check or money order made payable to the Treasurer of Virginia. Cash will be accepted if paid in person. Submit the application and fee to the board of Coal Mining Examiners at least five working days prior to the date of examination.

1. Full Name _____ S.S.# _____

2. Address _____
Street or P.O. Box _____ City _____ State _____ Zip Code _____

3. Date of Birth _____ Home Phone No. () _____
Month/Day/Year

4. Total years employed at a coal mine: _____
Underground _____ Surface _____

5. List your current (or most recent) mining experience
Company Name _____
Address _____
Street or P.O. Box _____ City _____ State _____ Zip Code _____

6. Attach copies of the required documentation needed for each certification.

- 7. Examination Requested (Check One) *BCME Instructor check the courses you wish to teach
[] Advanced first aid [] Automatic elevator operator [] Blaster endorsement-DMLR (no fee)
[] Chief electrician (sur/UG or sur) [] Diesel engine mechanic instructor [] Dock foreman
[] Electrical maintenance foreman (sur/UG or surface) [] First aid instructor [] First class mine foreman
[] General coal miner (surf/strips and augers or surf/UG) [] First class shaft or slope foreman [] Gas detection qualification (no fee)
[] Mine inspector [] Hoisting Engineer [] Instructor - BCME*
[] Surface facilities foreman for shops, labs, and warehouses [] MSHA electrical reinstatement [] Preparation Plant Foreman
[] Surface electrical repairman
[] Underground diesel engine mechanic [] Surface blaster [] Surface foreman [] Top person
[] Underground electrical repairman [] Underground shot firer

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

Signed _____ Date _____



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Verification of Work Experience Form

Complete this form for **each employer** to certify the experience requirements have been met and have it signed by a company official knowledgeable of your work history before a notary public. Type or print the information in ink and submit it to the **BCME**.

1. Full Name _____ S.S.# _____

2. Address _____
Street or P.O. Box City State Zip Code

3. Employer Company Name _____ Mine Name _____
 Address _____
Street or P.O. Box City State Zip Code

4. Job Title _____ From _____ To _____
Month/Day/Year Month/Day/Year

Description of job duties which are **applicable** to certification requested: _____

Job Title _____ From _____ To _____
Month/Day/Year Month/Day/Year

Description of job duties which are **applicable** to certification requested: _____

5. I hereby certify, under the penalties of perjury, that the information related to this applicant's experience as submitted on this form is correct.

Signature of Company Official _____ (Print or Type Name) Title _____ Date _____

6. State of _____ county/city _____ of to wit:

I, _____ a notary public in and for the State and county/city aforesaid, do certify that _____ whose name is signed to #5 above, Company Official

on the _____ day of _____, 20____ has acknowledged the same before me in my county/city aforesaid. Given under my hand this _____ day of _____, 20____.

 Notary Public

My commission expires the _____ day of _____, 20____. SEAL

COAL MINE SAFETY LAWS OF VIRGINIA

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- 45.1-161.10 Special company safety rules
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**GENERAL COAL MINER – UNDERGROUND
COAL MINE SAFETY LAWS OF VIRGINIA**

GENERAL PROVISIONS

45.1-161.8

1. Authorized Person – A person assigned a duty by the operator or agent and has demonstrated the ability to perform such duty or duties safely and effectively.
2. Certified Person – A person assigned to perform a task that requires a certificate to be issued by the Board of Coal Mining Examiners, such as a mine foreman, repairman, shot firer, etc.
3. Experienced Surface Miner – A person with more than six months experience at a surface mine or the surface area of an underground mine.
4. Experienced Underground Miner – A person with more than six months of underground mining experience.
5. Hazardous Condition – Conditions likely to cause death or serious personal injury to persons exposed to such conditions.
6. Imminent Danger – A condition or practice that could reasonably be expected to cause death or serious personal injury before such condition can be corrected.
7. Inexperienced Underground Miner – A person with less than six months of underground mining experience.
8. Intake Air – Air that has not passed through the last working place and contains not less than 19.5% oxygen, not more than .5% carbon dioxide, nor any dangerous amounts of flammable or harmful gases.
9. Mine Foreman – A person issued a mine foreman certificate by the Board of Coal Mining Examiners.
10. Mine Fire – A fire that cannot be extinguished in 30 minutes.
11. Miner – Any individual working in a mine.
12. Operator – Any person who operates, controls or supervises a mine or any independent contractor performing services at a mine.
13. Return Air – Air that has passed through the last active working place on each split or air that has passed through worked-out areas, whether pillared or nonpillared.
14. Serious Personal Injury – Any injury which has a reasonable potential to cause death or an injury other than a sprain or strain which requires an admission to a hospital for twenty – four hours or more for medical treatment.

15. Work Area – All areas of a surface coal mine in production or being prepared for production and those areas which may pose a danger to miners.
16. Working Face – Any place where coal is extracted.
17. Working Place – Any area inby the last open crosscut.
18. Working Section – All areas from the loading point to and including the working faces.

45.1-161.10

An operator has the right to adopt special safety rules but shall not be in conflict with the Coal Mine Safety Laws of Virginia. The operator should post such rules or furnish a printed copy to all miners.

45.1-161.12

- A. No miner or other person shall carry in a mine any intoxicating liquors or controlled drugs without the prescription of a licensed physician; enter any part of a mine against caution; or disobey any order issued pursuant to the provisions of this Act.
- B. Each miner at any mine shall comply fully with the provisions of this Act and other mining laws of this Commonwealth that pertain to his duties.

CERTIFICATION OF COAL MINE WORKERS

45.1-161.28

The Board of Coal Mining Examiners requires certifications of those persons who perform work whose duties require a certification, such as a mine foreman, repairman, shot firer, and does include a general coal miner after January 1, 1996.

45.1-161.30

- A. It shall be unlawful for any person to perform any task requiring certification by the Board of Coal Mining Examiners until he has been certified. It shall also be unlawful for an operator or his agent to permit any uncertified person to perform such tasks. A violation of this subsection shall constitute a Class 1 misdemeanor. Each day of operation without a required certification shall constitute a separate offense.
- B. A certificate issued by the Board of Examiners prior to July 1, 1994, shall be acceptable as a certificate issued by the Board of Coal Mining Examiners until the Board of Coal Mining Examiners shall provide otherwise by appropriate regulations.

45.1-161.35

The Board may revoke certificates for intoxication while on duty, neglect of duties, violation of the mining laws, using any controlled drugs without the prescription of a physician or other just cause.

45.1-161.37

Every person commencing work in a coal mine after January 1, 1996, shall be issued a general coal miner certificate issued by the Board of Coal Mining Examiners.

Each applicant for a general coal miner certificate shall prove to the Board that he has a knowledge of first aid practices and has a general working knowledge of the Coal Mine Safety Laws of Virginia.

45.1-161.38

A mine foreman shall be employed where 3 or more persons work in a mine.

LICENSING OF MINES

45.1-161.57

A license is required for the operation of any coal mine.

45.1-161.60

A mine license may be revoked for committing a pattern of willful violations that result in imminent dangers to miners.

45.1-161.64

A mine map showing all entries, escapeways, intakes, returns, etc. shall be posted in a place accessible to all miners.

MINE EXPLOSIONS, MINE FIRES, ACCIDENTS

45.1-161.77

Mine fires and explosions shall be reported to the Chief by the quickest available means.

45.1-161.78

Each operator shall promptly report any accident to the Department. The scene of the accident shall not be disturbed pending an investigation except to the extent necessary to rescue or remove a person, prevent or eliminate an imminent danger, prevent destruction of mining equipment or prevent suspension of a slope, entry or facility vital to the mine.

45.1-161.79

- A. Each miner employed at a mine shall promptly notify his supervisor of any injury received during the course of his employment.
- B. Each operator shall keep on file a report of each accident including any accident which does not result in a lost-time injury. Copies of such report shall be given to the person injured or

to his designated representative to review the accident report and verify its accuracy prior to filing such report for the review of state or federal mine inspectors.

MINE INSPECTIONS

45.1-161.81

The Chief shall conduct a complete inspection of every underground coal mine at least twice per year.

45.1-161.84

No person shall give advance notice of any mine inspection conducted in accordance with the Coal Mine Safety Laws of Virginia.

45.1-161.88

A mine inspector shall inspect all active workings, travelways, intakes, returns, accessible worked-out areas, escapeways, etc.

45.1-161.89

Inspection reports shall be posted in a location accessible to be read by miners.

ENFORCEMENT AND PENALTIES, REPORTS OF VIOLATIONS

45.1-161.90

- A. If the Director, the Chief, or a mine inspector has reasonable cause to believe that a violation of the Act has occurred, he shall with reasonable promptness issue a notice of violation to the person who is responsible for the violation.
- B. The notice of violation shall be deemed to be the final order of the Department and not subject to review by any court or agency unless, within twenty days following its issuance, the person to whom the notice of violation has been issued appeals its issuance.

45.1-161.91

Closure orders require an area or equipment to be cleared of all workers.

45.1-161.94

Any person convicted of willfully violating any provisions of this Act or any regulation promulgated pursuant to this Act, unless otherwise specified in this Act, shall be guilty of a Class 1 misdemeanor.

45.1-161.97

Any person aware of a violation of the Coal Mine Safety Laws of Virginia may report it to a mine inspector or to any other DM employee in writing or by telephone. A list of offices and home telephone numbers of DM inspectors shall be posted at the mine office.

All reports of alleged violations will be kept strictly confidential and DM shall not reveal the name of any person who reports alleged violations.

ROOF, RIB AND FACE CONTROL

45.1-161.108

The method of mining shall not expose miners to hazardous mining methods or working conditions.

45.1-161.109

The Chief shall prescribe a roof control plan which contains minimum standards for supporting the mine roof.

The approved roof control plan shall be posted conspicuously at the mine and a copy shall be available at each section of the mine. Every person that enters the mine shall comply with the roof control plan.

45.1-161-110

The operator or his agent shall instruct all miners on the installation of temporary and permanent roof supports.

45.1-161.115

The operator or his agent shall provide suitable materials to secure all roof, ribs and faces. If such materials are not available, the mine foreman shall withdraw all miners from the affected area. The operator or his agent shall make immediately available for emergency use at each mine site two 40 ton jacks or two equivalent lifting devices.

45.1-161.116

The operator or his agent shall instruct all miners on how to make visual examinations and sound and vibration testing of roof, face and ribs. Miners shall examine and test the roof, face and ribs before starting work and as necessary to ensure a safe work area. At least once each shift or more often if necessary, a mine foreman or other certified person shall examine and test the roof, face and ribs in all active working sections where coal is produced while miners are working there in.

45.1-161.118

No person shall work or travel under unsupported roof except to install temporary supports in accordance with the approved roof control plan. If roof, face or rib conditions are found to be unsafe, no person shall start work until such conditions have been corrected.

PROXIMITY OF MINING TO GAS AND OIL WELLS AND ABANDONED AREAS

45.1-161.121

An operator shall not remove coal within 500 feet of a gas or oil well drilled into projected mine workings before notifying the Chief. Any operator shall have written approval from the Chief before removing coal within 200 feet of a gas or oil well or vertical ventilation hole drilled or in the process of being drilled into the projected mine workings.

45.1-161.122

Bore holes shall be drilled when mining near abandoned areas, old mines, etc.

MECHANICAL EQUIPMENT

45.1-161.123

While remote control equipment is in operation or is being trammed, no miner shall position himself or be placed in a pinch point between such equipment and the face or ribs of the mine or another piece of equipment in the mine.

45.1-161.124

Gears, sprockets, belt drives, tail rollers, etc. shall be guarded. Machinery shall not be repaired or serviced while the machinery is in motion.

EXPLOSIVES AND BLASTING

45.1-161.126

Separate surface magazines shall be provided for the storage of explosives and detonators.

45.1-161.127

Explosives or detonators shall be transported underground in individual containers. Explosives or detonators shall not be transported on the same trip with miners.

45.1-161.128

Explosives and detonators stored underground shall be kept in separate magazines.

45.1-161.129

Examinations for gas shall be made immediately before firing each shot and after blasting is completed. All shots shall be fired by a certified underground shot firer. All miners, who may be

endangered by a shot, shall be removed to a safe location and ample warning shall be given before shots are fired.

45.1-161.131

A waiting period of 15 minutes is required prior to returning to a misfire shot area.

TRANSPORTATION

45.1-161.135

A clearance of 24 inches is required on the clearance side where track systems are used.

45.1-161.136

Suitable facilities for crossing conveyors (beltlines) shall be provided where it is necessary for miners to cross such conveyors (beltlines).

45.1-161.140

All self propelled mobile transportation and haulage equipment shall be maintained in safe operating condition. (brakes, lights, horns, etc.).

45.1-161.145

No person shall ride on supply cars nor shall any person ride on top of self propelled mobile equipment.

45.1-161.147

Haulage equipment operators shall sound a warning before starting equipment, approaching doors, curtains, and other places where persons are likely to be.

45.1-161.150

Mantrips shall be maintained in safe operating condition and shall be under the charge of an authorized person. Miners shall not board or leave moving mantrips.

HOISTING

45.1-161.153

All hoists used for handling men shall be equipped with overspeed, overwind, and automatic stop controls. Any platform or work deck used for transporting miners or materials shall be equipped with leveling indicators.

45.1-161.154

Hoisting ropes on all cages or trips shall be adequate in size to handle the load and have a proper factor of safety. Visible or audible warning devices shall be installed in a slope where they can be seen or heard by persons approaching the slope track.

45.1-161.155

Cages used for hoisting miners shall be of substantial construction and shall be equipped with safety catches that activate in an emergency.

45.1-161.156

All shafts shall be equipped with safety gates at the top and at each landing. Ice shall not be permitted to accumulate excessively in any shaft where miners are hoisted or lowered.

45.1-161.157

Two independent means of signaling shall be provided between the top, bottom, and intermediate landings of shafts, slopes, surface inclines and the hoisting station. A uniform signal code approved by the Chief shall be in use at each mine.

45.1-161.158

Before hoisting or lowering miners in a shaft, the hoisting engineer shall operate empty cages up and down each shaft at least one round trip at the beginning of each shift and after the hoist has been idle for one hour. (Does not apply to automatic elevators).

A test of safety catches on cages shall be made at least once each month. (Does not apply to automatic elevators).

45.1-161.159

A certified hoisting engineer shall be either on duty continuously or available within a reasonable time as determined by the Chief to provide immediate transportation while miners are transported into and out of mines by hoists. (Does not apply to automatic elevators).

The loading and unloading of miners and movement of a cage when miners are hoisted or lowered shall be under the direction of an authorized person. (Does not apply to automatic elevators).

45.1-161.160

The speed of a cage or trip in shafts, slopes, or surface inclines shall not exceed 1000 feet per minute when miners are hoisted or lowered.

No person shall ride on a loaded cage.

45.1-161.161

Hoists, ropes, cages, and other hoisting equipment shall be maintained in safe operating condition.

Hoisting ropes shall be replaced as soon as there is evidence of possible failure.

MINE OPENINGS AND ESCAPEWAYS

45.1-161.162

One travelway shall be designated as the primary escapeway and shall be in intake air.

45.1-161.165

Mine entries shall be maintained in a safe condition for entering and leaving the mine.

45.1-161.166

A continuous lifeline shall be installed and maintained in each primary escapeway.

Direction signs shall be posted conspicuously in the escapeway to indicate the direction of exit from the mine.

45.1-161.167

The mine foreman or his assistants shall examine all escapeways for hazardous conditions at least once per week.

PERSONAL SAFETY, SMOKING

45.1-161.174

Every person underground shall have on his person an identification number and a record that has the same number shall be maintained on the surface.

45.1-161.175

Protective hard hats and footwear (hard-toed shoes) shall be worn when around or in the mine.

45.1-161.177

No person shall smoke, carry or possess smoker's articles while underground. Any person convicted of this section shall be guilty of a Class 6 felony. The operator shall institute a smoker search program to ensure persons going underground do not carry smoker's articles.

45.1-161.178

No mine operator, agent or mine foreman shall permit any person to smoke, carry, or possess smoker's articles underground. Any person convicted of this section shall be guilty of a Class 6 felony.

45.1-161.179

A sign shall be posted at the mine office, bath house, and on a bulletin board that states "It is unlawful for a miner to smoke, or carry or possess underground any smoker's articles, or matches, lighters or similar materials generally used for igniting smokers articles. A violation is punishable as a Class 6 felony..."

ELECTRICITY**45.1-161.184**

Suitable danger signs shall be posted at all transformer and high voltage stations.

45.1-161.188

All metallic frames and equipment shall be grounded effectively to prevent shock hazards on the frames of such equipment.

45.1-161.189

Automatic circuit breakers or fuses shall be installed to protect all electric equipment. Insulating mats or dry wooden platforms shall be provided at all stationary equipment where shock hazards exist.

45.1-161.191

Telephone service between the surface and underground shall be provided and an authorized person shall always be on duty on the surface when miners are underground to be able to respond immediately in the event of an emergency.

45.1-161.193

Electric equipment taken into or used in by the last open crosscut or in other than intake air shall be permissible equipment. Electric equipment shall not be taken into or operated in an area where 1% or more methane is detected.

45.1-161.194

Trailing cables shall be provided with a means of disconnecting power from the cable.

45.1-161.195

Electric equipment and wiring shall be inspected by a certified person weekly if located underground and monthly if located on the surface.

A functional test of methane monitors on face equipment shall be conducted on each production shift in the presence of the mine foreman. A calibration test of methane monitors on face equipment shall be conducted each week.

45.1-161.196

No electrical work shall be performed on low, medium or high voltage circuits except by a certified person or a person trained to perform electrical work under the direct supervision of a certified person. All power circuits and electric equipment shall be de-energized; locked-out and tagged before electrical repairs are made.

FIRST AID EQUIPMENT, MEDICAL CARE, EMERGENCY MEDICAL SERVICES PROVIDED

45.1-161.197

Each mine shall have an adequate supply of first aid equipment.

45.1-161.198

Injured persons shall be brought promptly to the surface. Adequate transportation shall be available for transporting injured persons to the surface.

45.1-161.199

A working coal miner certified as an Emergency Medical Technician (EMT), EMT-First Responder, or First Aid Trainees (Advanced First Aid) approved by the Chief shall be available for duty when miners are working.

FIRE PREVENTION AND FIRE CONTROL

45.1-161.200

Each mine shall be provided with suitable fire-fighting equipment adequate for the size of the mine.

Fire extinguishers, rock dust or clean dry sand shall be provided and placed at each electrical station such as substations, transformers, permanent pumps.

Suitable fire extinguishers shall be provided on all self-propelled mobile equipment, belt heads and inby end of belts.

All fire fighting equipment shall be maintained in a useable and operative condition.

45.1-161.201

When a fire that may endanger persons underground cannot be extinguished immediately, the persons shall be withdrawn promptly from the mine.

45.1-161.202

Operators shall develop an emergency response plan. The plan shall include: (1) a fire communication plan; (2) an evacuation procedure; (3) brattice numbering system; (4) location

of escapeways; and (5) other fire evacuation planning as required by the Chief. The emergency response plan shall be posted in a place accessible to all miners, both on the surface and underground. The operator shall train all miners in the implementation of the response plan and shall conduct practice drills.

45.1-161.203

The operator shall report any unplanned fire at a mine not extinguished within thirty minutes of discovery to the Chief by the quickest available means.

45.1-161.206

Diesel powered equipment shall not be taken underground without written approval of the Chief.

VENTILATION, MINE GASES AND OTHER HAZARDOUS CONDITIONS

45.1-161.208

Within 3 hours preceding the beginning of a shift, before anyone on the oncoming shift can enter the mine, a mine foreman shall conduct a preshift examination.

During a preshift examination, the mine foreman shall examine for hazardous conditions, methane, oxygen deficiency, and shall insure ventilation is adequate in all areas examined.

A preshift examination shall include the following areas: track entries, haulageways, areas where persons are scheduled to work or travel during the oncoming shift, sections where equipment is being installed or removed, approaches to worked out areas along intake air courses, and seals along intake air courses.

A preshift examination shall include ventilation measurements at the following locations: in the last open crosscut, intake entries of longwall sections, and at the intake end of each pillar line.

Any area where hazardous conditions are found shall be “dangered off with a danger sign”. No person shall enter such areas “dangered off” except those persons designated by mine officials to evaluate or correct such hazardous conditions.

The mine foreman shall place his initials, date and time at all areas required to be preshift examined.

Idle and worked-out areas shall be inspected by a mine foreman immediately before other miners are allowed to enter.

The mine foreman shall place a danger light at the mine entrance or use other means to ensure other miners do not enter the mine before a preshift examination has been completed. No miner shall pass the signal or enter the mine until the mine foreman has completed the preshift examination and reported the mine safe.

In multiple shift operations, a mine foreman in the mine can make a preshift examination for the next or succeeding shift.

45.1-161.209

At least once a shift, or more often if necessary, a mine foreman shall examine all underground sections where coal is produced and on sections where equipment is being installed or removed, and all beltlines shall be examined. Generally referred to as "on shift examination".

The mine foreman shall examine such places for hazardous conditions, methane, oxygen deficiency, and sufficient ventilation.

Air measurements shall be taken at the following locations during onshift examinations: the last open crosscut, intake end of each pillar line, volume and velocity on each longwall.

Inspections for methane shall be made before taking or operating electrical equipment in by the last open crosscut and at least every 20 minutes while equipment is operated in by the last open crosscut.

45.1-161.210

A mine foreman shall conduct examinations at least every seven days of all air courses, roads, and openings to worked-out areas. An examination of the bleeder system shall be conducted at least every seven days by a mine foreman.

Any hazardous condition that cannot be removed within a reasonable time shall be reported to the Chief by the quickest available means.

45.1-161.211

An authorized person shall conduct a daily examination of the fan.

45.1-161.212

The results of a preshift examination shall be recorded in a book, kept on the surface by the person conducting the examination, or by the person on the surface who received the results of the examination by telephone.

45.1-161.213

The mine foreman shall record the results of daily and weekly examinations in a record book kept on the surface.

45.1-161.214

The mine foreman shall give prompt attention to the removal of all hazardous conditions reported to him.

45.1-161.215

A sign shall be posted at each mine that states "Notice: It is unlawful to disturb, disconnect, bypass, impair, or otherwise tamper with methane monitors or other devices capable of detecting

the presence of explosive gases in an underground coal mine. A violation is punishable as a Class 6 felony”.

45.1-161.216

All mines shall be ventilated with a fan. All mine fans shall be operated continuously unless the Chief has granted permission for planned stoppages.

45.1-161.217

A fan stoppage plan approved by the Chief shall be provided for each mine.

All miners shall be withdrawn from the face areas and electrical power cut off from such portion of the mine affected when the fan fails or stops.

All miners shall be withdrawn from the mine if mine ventilation is not restored within a reasonable time, not to exceed 15 minutes.

If ventilation is restored within a reasonable time, a mine foreman will examine all face areas, restore power, and work may resume.

If ventilation is not restored within the time established in the fan stoppage plan, and the miners are evacuated from the mine, then the main fan shall be operated for a time specified in the fan stoppage plan before anyone enters the mine.

45.1-161.219

The quantity of air in the last open crosscut and the intake end of a pillar line shall be at least 9000 CFM. The amount of air at all working faces shall under all conditions have a sufficient volume and velocity to dilute and carry away flammable gases.

45.1-161.220

A bleeder plan is a plan approved by the Chief. The bleeder plan is a system of air courses designed to provide positive movement of air through or around worked out areas which is sufficient to prevent a hazardous accumulation of gas in such areas to minimize the effect of variations in atmospheric pressure.

45.1-161.222

Intake air shall contain at least 19.5% oxygen and not more than .5% carbon dioxide.

Ventilation shall be improved if 1% methane is detected in a working place, in an intake air course or in an area where mining equipment is being installed or removed.

Miners shall be withdrawn, electrical power cut off from such portion of the mine and ventilation improved when 1.5% methane is detected in a working place, in an intake air course or in an area where mining equipment is being installed or removed.

45.1-161.224

Permanent stoppings shall be installed between intake, belt haulageways and return air courses. Temporary stoppings (line curtains) are allowed to be used in the second crosscut and last open crosscut unless otherwise approved by the Chief. Permanent stoppings shall be maintained to and including the third crosscut outby the working face.

45.1-161.226

Line curtains (brattice curtains) shall be used to provide ventilation across the last open crosscut to the faces to provide adequate ventilation.

45.1-161.228

Worked-out areas shall be sealed or ventilated.

45.1-161.231

Certified persons (mine foreman) whose duties require them to inspect working places in any mine shall have in their possession and use a device to detect methane and oxygen deficiency. A sufficient number of permissible methane detectors shall be kept at each mine inby the last open crosscut. All miners working inby the last open crosscut shall be certified to conduct gas tests.

45.1-161.232

No person shall tamper, disturb, disconnect, bypass, or impair methane monitors or other devices used to detect methane. The methane monitor may be bypassed or disconnected to remove the monitor to repair or replace if such monitor malfunctions. A conviction of this section is a Class 6 felony.

45.1-161.233

An operator, agent or mine foreman shall not knowingly permit any person to work in a mine while having knowledge that a methane monitor has been tampered with, impaired, disturbed, or disconnected other than for repair or replacement. A conviction of this section is a Class 6 felony.

45.1-161.234

Coal dust shall not be permitted to accumulate in active areas or on electrical equipment.

45.1-161.235

All underground areas of a mine shall be rock dusted to within 40 feet of all working faces. All crosscuts that are less than forty feet from working faces shall also be dusted.

SURFACE AREAS

45.1-161.236

Good housekeeping shall be practiced in and around mine buildings, shafts, yards, and other areas of the mine.

45.1-161.237

Lights shall be provided near roads, paths and walkways with proper illumination if used at night.

45.1-161.238

Oil, grease and other flammable materials shall be kept in closed containers.

The area within 100 feet of all mine openings shall be kept free of combustible material.

All oxygen and acetylene bottles shall be stored in racks, with caps in place and secured when not in use and posted with "no smoking" signs.

45.1-161.242

Fire fighting equipment shall be readily available when welding or cutting is performed.

ADDITIONAL DUTIES OF CERTIFIED PERSONS AND OTHER MINERS

45.1-161.249

The mine foreman shall insure that requirements of the Coal Mine Safety Laws are fully complied with at all times.

The mine foreman shall see that every miner employed is made aware of all hazardous conditions associated with his work before beginning work.

45.1-161.251

Inexperienced underground miners shall be required to work with an experienced underground miner for a total of six months following underground employment.

Experienced surface miners shall only be required to work with an experienced underground miner for 60 days following underground employment.

No inexperienced underground miner shall be assigned, or allowed, or be required to perform work alone in any area where there is potential to endanger his safety, unless he can communicate with others, can be heard, or can be seen.

45.1-161.252

No miner shall be placed in charge of a cutting, loading, drilling, continuous miner or timbering machine in any mine who is not an authorized person capable of determining the safety of roof

and ribs. Such miner shall be capable of detecting explosive gas and shall be certified in gas detection before being permitted to be in charge of such machines.

**GENERAL COAL MINER – UNDERGROUND
COAL MINE SAFETY LAWS OF VIRGINIA**

UNDERGROUND STUDY QUESTIONS

1. What is a person classified as that has less than 6 months of underground mining experience?
45.1-161.8

2. How long is an inexperienced underground miner required to work with an experienced underground miner?
45.1-161.251

3. Where are inexperienced underground miners allowed to work?
45.1-161.251

4. What is a “serious personal injury”?
45.1-161.8

5. What is a “working face”?
45.1-161.8

6. What is a “working place”?
45.1-161.8

7. How shall the scene of an accident be left?
45.1-161.78

8. Where shall inspection reports be posted?
45.1-161.89

9. Who may report an alleged violation of the Mine Safety Laws to any DM person?
45.1-161.97

10. Who shall comply with all requirements of the approved roof control plan?
45.1-161.109

11. Which mining personnel shall be instructed in “proper testing of the roof, face and ribs”?
45.1-161.116

12. Who is allowed to work or travel under unsupported roof?
45.1-161.118

13. How shall all transportation and haulage equipment be maintained?
45.1-161.140

14. Who is allowed to ride on supply cars or on top of self propelled mobile equipment?
45.1-161.145

15. What type of identification shall each person have on their person that goes in a mine?
45.1-161.174

16. What type of headwear and footwear shall be worn by all persons when in or around a mine?
45.1-161.175

17. Who is allowed to smoke or carry smokers articles underground?
45.1-161.177

18. What is the penalty of any person convicted of smoking or possessing smokers articles underground?
45.1-161.177

19. What type of program shall be implemented at each mine to prevent carrying smokers articles underground?
45.1-161.177

20. Can a mine official or mine foreman permit any person to smoke or carry smokers articles underground?
45.1-161.178

21. What shall be posted at the mine office, bath house and on a bulletin board in relation to “smokers articles”?
45.1-161.179

22. What types of “shock hazard” devices shall be provided at all stationary electrical equipment?
45.1-161.189

23. Are miners allowed to go into the mine without an authorized person stationed on the surface for communications purposes?
45.1-161.191

24. What shall be done with persons that are injured underground?
45.1-161.198

25. What person with medical qualifications shall be available for duty when miners are working?
45.1-161.199

26. Where shall copies of the emergency response plan be posted?
45.1-161.202

27. Who shall be trained on the requirements of the “emergency response plan”?
45.1-161.202

28. What shall a mine foreman place at all areas where preshift examinations are conducted?
45.1-161.208

29. How often shall methane tests be made while electrical equipment is operated in by the last open crosscut?
45.1-161.209

30. How often shall an authorized person conduct an examination of the fan?
45.1-161.211

31. What shall be posted at each mine stating that it is “unlawful to disturb, disconnect, bypass, impair, or tamper with” a methane monitor?
45.1-161.215

32. What is the penalty for bypassing or tampering with a methane monitor?
45.1-161.215

33. How shall all mine fans be operated?
45.1-161.216

34. What action shall be taken at a mine when the fan fails or stops?
45.1-161.217

35. What action shall be taken if the fan fails and ventilation is not restored within a reasonable time, not to exceed 15 minutes?
45.1-161.217

36. What is a bleeder plan designed to do?
45.1-161.220

37. How much oxygen is intake air required to have?
45.1-161.8

38. What shall be used to provide ventilation across the last open crosscut to the faces?
45.1-161.226

39. What shall be applied in all active areas and to within 40 feet of the working face?
45.1-161.235

40. Who has the responsibility to see that every miner employed is made aware of all hazardous conditions associated with his work before beginning such work?
45.1-161.249

Answers are available through the Department of Mines, Minerals and Energy's Division of Mines for all persons meeting the Division of Mines criteria. For more information please contact our office at (276)523-8227 or via e-mail at rlm@mme.state.va.us

**GENERAL COAL MINER – UNDERGROUND
COAL MINE SAFETY LAWS OF VIRGINIA**

1. What is a person classified as that has less than 6 months of underground mining experience?
 - A. Experienced underground miner
 - B. Inexperienced underground miner
 - C. Qualified equipment operator
 - D. Classified employee

2. How long is an “inexperienced underground miner” required to work with an experienced underground miner?
 - A. 6 months
 - B. 3 months
 - C. 2 months
 - D. 1 month

3. Are “inexperienced underground miners” allowed to work alone?
 - A. Yes
 - B. No
 - C. Yes, if not working around belt drives
 - D. Yes, if not allowed to work around equipment

4. Where are “inexperienced underground miners” allowed to work?
 - A. At belt drives if on-shift examinations are conducted in such areas
 - B. Haul supplies into the mine by themselves if they can operate equipment safely
 - C. Where they can communicate with others, can be heard and seen by other miners
 - D. Install timbers in the return airways by themselves if a preshift examination is conducted in such areas

5. Who may report an alleged violation of the Mine Safety Laws to any DM person?
 - A. Any person
 - B. The mine foreman as long as legal action will not be taken against him
 - C. Equipment operators only
 - D. Repairman only

6. What shall be provided in the “primary escapeway”?
 - A. Timbers, even if the roof is not hazardous
 - B. Safety jacks every 500 feet
 - C. 200 lbs. of rock dust every 500 feet
 - D. A continuous lifeline and directions signs

7. Who is allowed to smoke or carry smokers articles underground?
 - A. No one
 - B. The mine foreman
 - C. The mine superintendent
 - D. The repairman if equipped with a gas detection device

8. What is the penalty for any person convicted of smoking underground?
 - A. Class 1 misdemeanor
 - B. Class 6 felony
 - C. No penalty if the mine foreman takes gas tests every 20 minutes
 - D. No penalty if the mine foreman takes gas test every 3 minutes

9. How much methane is electrical equipment allowed to be operated in or taken into?
 - A. No more than 5%
 - B. No more than 1.5%
 - C. Less than 1%
 - D. No more than 5% if equipment operators take gas tests every hour

10. What action shall be taken on power circuits and electric equipment before electrical repairs are made?
 - A. De-energize only if the voltage exceeds 300 volts
 - B. De-energize only if the voltage exceeds 440 volts
 - C. De-energize only if the voltage exceeds 950 volts
 - D. De-energize, lock out and tag

11. Who shall be trained on the requirements of the “emergency response plan”?
 - A. All miners
 - B. Equipment operators only
 - C. Only the mine foreman
 - D. Only mine foreman and personnel working on belt lines

12. Who is allowed to work or travel under “unsupported roof”?
- A. Only the mine foreman
 - B. Equipment operators only
 - C. Only the mine superintendent
 - D. No person except those designated to install roof supports
13. What shall a mine foreman place at all areas where preshift examinations are conducted?
- A. Date and time
 - B. Initials, date and time
 - C. Initials only
 - D. Date only
14. How often shall methane tests be made while electrical equipment is operated in by the last open crosscut?
- A. Once every hour
 - B. Once every 45 minutes
 - C. Once every 30 minutes
 - D. At least every 20 minutes
15. What action shall be taken by the mine foreman when hazardous conditions are reported to him?
- A. Give prompt attention to the removal of such hazardous conditions
 - B. Give prompt attention only when the hazardous conditions are located in the escapeway
 - C. The mine foreman shall give prompt attention only where the roof is affected
 - D. Give prompt attention only where most of the crew travels through such area of hazardous conditions.

Answers are available through the Department of Mines, Minerals and Energy’s Division of Mines for all persons meeting the Division of Mines criteria. For more information please contact our office at (276)523-8227 or via e-mail at rlm@mme.state.va.us

UNDERGROUND GENERAL COAL MINER

ROOF CONTROL

- **From 1996 through March 2001, Virginia experienced 12 roof fall fatalities, four (4) were operating continuous mining machines, four (4) were foreman, two (2) were operating roof bolting machines, one (1) was operating a shuttle car and one (1) was dislodging timbers using a three-wheel personnel carrier. In most cases, adverse geological roof conditions were present in or near the accident area.**
- **Roof falls in coal mines account for the most serious disabling injuries and fatalities in Virginia and nationwide.**
- **The coal mines in Southwest Virginia have the most severe geological fault conditions (roof conditions) east of the Mississippi River. We must recognize and respect geological conditions to prevent roof fall accidents.**
- **Geological conditions can cause adverse roof and can abruptly change mine roof conditions.**
- **Mining above, below, or adjacent to other active or abandoned mines can directly affect roof control safety.**
- **Thorough roof examinations and testing and roof support evaluations are necessary to help identify potential mine roof failure. Thorough examinations and accurate evaluations prevent serious accidents, so always examine and test the roof in all work areas prior to performing work and make frequent checks thereafter since roof conditions can change at any time.**
- **Always communicate changes in mine roof conditions to all miners and report suspected hazardous conditions to the mine foreman immediately.**

UNDERGROUND GENERAL COAL MINER

ROOF CONTROL

“NEVER TRAVEL UNDER UNSUPPORTED ROOF – IT COULD COST YOU YOUR LIFE”

- From 1996 through March 31, 2001, three (3) Virginia Coal Miners received fatal injuries when they traveled inby permanent roof supports. Two (2) were roof belting machine operators and one (1) was a section mine foreman.
- You must never forget, that currently in Virginia we have the worst roof conditions that have ever been encountered in this state. Most coal seams with somewhat stable roof have been mined out, and we can no longer pick and choose seams that have stable roof.
- The Coal Mine Safety Laws of Virginia require the following:
 - 45.1-161.116: The operator or his agent shall instruct all miners on how to make visual examinations and sound and vibration testing of roof, face and ribs. Miners exposed to danger from falls of roof, face and ribs shall examine and test the roof, face and ribs before starting work and as frequently thereafter as necessary to ensure safety.
- Section 45.1-161.118 requires that “no person shall work or travel under unsupported roof except to install temporary supports in accordance with the approved roof control plan”.
- Before entering any working place, check for a reflectorized or other conspicuous sign required to be installed on the last row of permanent roof supports.
- Always be cautious and alert when approaching areas that may be “unsupported”. The sign required to be installed on the last row of permanent roof supports is sometimes difficult to see, especially in low coal seams.
- If a person travels under unsupported roof, it’s not a matter of being seriously injured or killed, but a matter of when.

UNDERGROUND GENERAL COAL MINER

REMOTE CONTROL MINERS

- **From 1990 through 2000, Virginia experienced four (4) fatalities involving the operation of remote control miners. These fatalities occurred when coal miners were positioned in an unsafe location.**
- **Never position yourself or allow others to position themselves in an unsafe location when near energized remote control miners. Never position yourself between equipment and the face or ribs during miner operations and never position yourself alongside the machine during tramming operations. Always stay out of the turning radius while a continuous miner is being moved.**
- **Always maintain good communications with all mining personnel located in the vicinity of the mining machine. Many near misses have occurred when miner operators failed to warn others of equipment operation.**
- **Always recognize that mine floor conditions, especially wet and muddy conditions, can cause sudden, unexpected movement of a continuous miner.**
- **Potential pinch point hazards are increased in low coal seams by wet and muddy conditions, and unusual conditions such as dips, hills, and rolls that create steep grades.**
- **Always test the emergency stop switch prior to use and ensure that operational controls are functioning properly.**

UNDERGROUND GENERAL COAL MINER

MINE EXAMINATIONS

- **Pre-shift examinations for hazardous conditions, tests for methane and oxygen and proper ventilation shall be completed by a certified mine foreman in all areas where persons are scheduled to work or travel.**
- **Onshift examinations for hazardous conditions, tests for methane and oxygen and proper ventilation shall be conducted by a certified mine foreman at least once each shift on any underground section where coal is produced or where mining equipment is being installed or removed.**
- **Examinations for gas shall be made by an authorized person (1) before taking equipment in by the last open crosscut; (2) before applying power to machinery that remains at or in by the last open crosscut; (3) at 20 minutes intervals where equipment is operated in by the last open crosscut; (4) both before and after blasting; (5) continuously while cutting and or welding.**
- **Idle and worked out areas shall be inspected for gas and hazardous conditions by a mine foreman, immediately before miners are permitted to enter or work in such places. Never travel or work in areas that have not been properly examined. If you are assigned to travel to an idle or worked-out area to perform work, first check with the mine foreman to ensure the area has been properly examined.**
- **No miner shall smoke, carry or possess smoker's articles in any underground coal mine. Smoking or ignition of smoker's articles has been known to cause mine explosions.**

UNDERGROUND GENERAL COAL MINER

MINE EMERGENCIES

- **Mine emergencies including mine fires, explosions, inundations of water, and inundations of methane and low oxygen have occurred in Virginia coal mines, resulting in serious injuries and death to miners.**
- **Mine emergencies involving inundations of water, methane and low oxygen occur frequently in Virginia coal mines when mines cut into other abandoned mines and sealed areas of the same mine. Mining near old, abandoned mines or sealed areas of the same mine always has a potential of serious injury or death, if cut into.**
- **Always remember that old, abandoned mines and sealed areas may contain extremely dangerous amounts of water, methane, low oxygen and other poisonous gases.**
- **Personal preparation for mine emergencies includes a person's knowledge of the mine emergency escapeway routes and a persons ability to properly don an SCSR.**
- **The Coal Mine Safety Laws of Virginia and MSHA Code of Federal Regulations require miners to participate in six-week practice escapeway emergency evacuation and ninety-day fire drills to ensure, that miners are consistently updated and trained on escape routes and to safely react to a mine emergency. This training includes the donning of SCSR's and must be taken seriously by everyone because your life may depend on it.**

UNDERGROUND GENERAL COAL MINER

LOW COAL HAZARDS

- **Low height coal seams present many unique hazards including limited visibility, restricted personal mobility and inability to escape quickly in the event of an emergency.**
- **The majority of coal mines operated in Virginia is mining low coal seams that range from 28 inches to 48 inches in mining height.**
- **Pinch point hazards are increased in low coal seams due to your limited ability to move quickly when necessary.**
- **The operation of equipment in low coal seams present special hazards because of equipment operators limited visibility of your presence.**
- **Be cautious when near operating equipment in low coal seams and always try to position yourself on the same side that the equipment is being operated from so equipment operators can see you.**
- **Always inform equipment operators of your presence when located near mining equipment being operated.**
- **Never position yourself alongside a continuous mining machine during tramming operations.**
- **Never position yourself behind curtains until you have confirmed that all applicable equipment operators that may travel through the area are made aware of your location.**

UNDERGROUND GENERAL COAL MINER

MACHINERY

- **From 1998 through 2000, Virginia experienced three (3) underground machinery fatalities, one (1) involved a mantrip, one (1) was a roof bolter operator and one (1) was a remote control miner operator.**
- **Many machinery accidents result from miners caught between moving parts of a machine or between the machine and other equipment or objects.**
- **Before starting machinery, ensure that other miners in the area are in the clear and made aware that the machine is being started.**
- **Miners have experienced many near misses of being caught between equipment or equipment and ribs because operators failed to provide ample warning that a machine would be moving.**
- **Never place yourself in a hazardous position and be aware of the location of others while operating equipment.**
- **Always conduct a pre-operational inspection of machinery prior to operating and ensure safety devices including panic bars, brakes, headlights, foot switches, tram levers, emergency stop switches, etc. are operating properly.**
- **Only properly trained, authorized personnel should operate machinery.**

UNDERGROUND GENERAL COAL MINER

GENERAL MINE SAFETY

- **Never alter or defeat equipment safety devices including panic bars, foot switches, tram controls, ground – ground monitoring protection, circuit breakers, etc. Coal miners in Virginia have been seriously injured and sometimes killed when safety devices had been altered or defeated.**
- **Always be cautious and stay alert of pinch points. Many pinch points are present with all types of mining equipment. Some of the most common pinch points are the continuous miner conveyor boom, roof bolter drill head scissors arm and scoop center section area. Even though many other pinch point areas are present in the mines, many Virginia coal miners have been seriously injured in the pinch points identified.**
- **Never work underneath equipment until it is securely blocked. Many near miss accident situations have occurred when coal miners began repair work prior to securely blocking equipment.**
- **Always stay cautious when located near trailing cables that provide power to equipment that have cable reel take up devices. These cables have injured coal miners when the cable reel take up device was activated or when a person was located on top of the cable when the equipment approached.**
- **Remember that some cable reel take up devices are activated by the equipment operator while others are activated when the equipment is energized. Roof bolting machines and shuttle car trailing cables account for most injuries associated with cable reel devices.**
- **Always be cautious of haulage equipment hazards. Hazardous locations include equipment traveling through curtains, blind spots, low visibility areas and all equipment being trammed from one location to another location.**
- **Always ensure that the correct electrical circuit has been de-energized, locked out and tagged prior to performing electrical work on such equipment. Never forget that coal miners have been seriously and sometimes fatally injured when the proper circuit was not de-energized, locked out and tagged.**

UNDERGROUND GENERAL COAL MINER

BELTS/BELT DRIVES

- **When working around and prior to starting belts and belt drives, always make absolutely certain that all personnel are in the clear of moving parts of the belt and or belt drive. Always wear tight fitting clothing to prevent accidental entanglement with moving parts.**
- **Never remove beltline or belt drive guards to perform cleaning or any type of work when a belt or belt drive is operating. Coal miners in Virginia have been seriously injured when they removed various types of guards and attempted to clean the area or attempted to remove objects such as roof bolts fouled in a belt drive, around a roller, etc. Make sure all guards are in place before starting belts.**
- **When cleaning (shoveling) belt lines, always shovel in the direction that the belt is traveling. Miners in Virginia have been seriously injured shoveling against the direction of travel of a beltline as their shovels were kicked back from the moving belt.**
- **Always make sure that electrical disconnecting devices are de-energized, locked out and suitably tagged before performing work on belts or belt drives. This means disconnecting the appropriate belt drive circuit breaker cathead and not just switching the beltline on/off switch to the off position.**
- **Never attempt to cross a moving belt or a belt that may be started. Coal miners have been seriously injured when they attempted to cross an idle belt and some other person energized the belt from a different location.**
- **When working along belt lines or around belt drives, make sure roof and rib conditions are examined prior to performing work and frequently thereafter. Coal miners have been seriously injured by roof falls or rib rolls while performing belt work because they failed to properly examine and evaluate roof/rib conditions.**
- **Report all belt line deficiencies including belt alignment, stuck or worn out rollers, bad splices, objects fouled in a drive or roller, etc. to the foreman in charge. Always report hazardous conditions immediately to the foreman in charge.**

GAS DETECTION

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF MINES, MINERALS AND ENERGY
DIVISION OF MINES

Applicant's Name

Social Security Number

MINE GAS DETECTION QUALIFICATION

DIVISION OF MINES USE ONLY

This check list is to be completed by a Division of Mines Inspector, Instructor, or Technical Specialist providing training and evaluation of a coal miner for qualification to conduct methane test pursuant to 45.1-161.231 and 45.1-161.252 of the Coal Mine Safety Laws of Virginia. **(FORM DM-BCME-1 APPLICATION FOR CERTIFICATION, MUST BE SUBMITTED WITH THIS CHECKLIST)**

MINE GASES

<input type="checkbox"/>	Properties of Gases
<input type="checkbox"/>	Different Mine Gases- Overview
<input type="checkbox"/>	Methane gas- Detailed review of Properties
<input type="checkbox"/>	Carbon Dioxide (Low Oxygen Hazard)
<input type="checkbox"/>	Carbon Monoxide
<input type="checkbox"/>	Hydrogen Gas
<input type="checkbox"/>	Oxygen

METHANE TEST (State and Federal)

<input type="checkbox"/>	How to perform Legal Test
<input type="checkbox"/>	When Testing is Required
<input type="checkbox"/>	Where Testing is Required

ACTIONS FOR EXCESSIVE METHANE

<input type="checkbox"/>	Action required for excessive methane in working
--------------------------	--

METHANE DETECTORS

<input type="checkbox"/>	Types of Detectors- Overview
<input type="checkbox"/>	Operating Procedures
<input type="checkbox"/>	Maintenance and Permissibility Requirements
<input type="checkbox"/>	Calibration Procedures
<input type="checkbox"/>	Care and Handling of Detectors

PRACTICAL DEMONSTRATION BY MINER

<input type="checkbox"/>	Pre-operation Check of Detector
<input type="checkbox"/>	Calibration of Detector
<input type="checkbox"/>	Conduct test for Methane

I certify that the above named miner has received the instruction in mine gases and methane detection indicated and has demonstrated proficiency in conducting proper tests for methane using a hand-held methane detector.

Signature, DM Representative

Date

SUBMIT CHECKLIST AND DM-BCME-1 TO THE CERTIFICATION SECTION FOR ISSUANCE OF GAS CARD
REVISED 5/10/99



Board of Coal Mining Examiners
P.O. Drawer 900
Big Stone Gap, VA 24219
(276)523-8149

Application for Certification Examination

Applicants for certification must complete this form and submit a \$10.00 non-refundable fee for each exam. Type or print the information in ink or pay the fee with a certified check, cashier's check or money order made payable to the Treasurer of Virginia. Cash will be accepted if paid in person. Submit the application and fee to the board of Coal Mining Examiners at least five working days prior to the date of examination.

3. Full Name _____ S.S.# _____

4. Address _____
Street or P.O. Box City State Zip Code

3. Date of Birth _____ Home Phone No. () _____
Month/Day/Year

4. Total year employed at a coal mine: _____
Underground Surface

8. List your current (or most recent) mining experience

Company Name _____

Address _____
Street or P.O. Box

9. Attach copies of the required documentation needed for each certification.

10. Examination Requested (Check One) *BCME Instructor check the courses you wish to teach

- List of examination options with checkboxes: Advanced first aid, Chief electrician, Electrical maintenance foreman, General coal miner, Mine inspector, Surface facilities foreman, Underground diesel engine mechanic, Automatic elevator operator, Diesel engine mechanic instructor, First aid instructor, First class shaft or slope foreman, Hoisting Engineer, MSHA electrical reinstatement, Surface blaster, Surface foreman, Underground electrical repairman, Blaster endorsement-DMLR, Dock foreman, First class mine foreman, Gas detection qualification, Instructor - BCME*, Preparation Plant Foreman, Surface electrical repairman, Top person, Underground shot firer.

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

Signed _____ Date _____

GAS DETECTION TRAINING

When conducting gas detection training you are requested to thoroughly review with the individual the following:

- The properties of mine gases, including discussions on specific gravity & effects of temperature and pressure.
- The list of mine gases with emphasis on methane, oxygen, hydrogen, and carbon dioxide and carbon monoxide.
- Proper procedures for taking a gas test. NOTE: “Hands On” participation by student.
- When and where gas tests are required.
- Procedures when methane is detected in a working place.
- Calibration of gas detection instrument. NOTE: “Hands On” participation by students.
- Duties and responsibilities as a miner under Mine Safety Act.



45.1-161.229



45.1-161.231



45.1-161.232



45.1-161.233

PROPER PROCEDURES FOR TAKING A GAS TEST

- ✓ Check instrument for mechanical condition. (per manufacturer's recommendation)
- ✓ Check battery for proper voltage level. (per manufacturer's recommendation)
- ✓ Check mechanical "zero". (per manufacturer's recommendation)
- ✓ Calibrate (per manufacturer's recommendation) – must be calibrated monthly and more often if needed.
- ✓ Conduct test for methane by activating detector and reading concentrations 12" from mine roof, face, and floor in the area being examined.
- ✓ Avoid holding methane detectors in a bleeder for extended periods of time as this will render the sensor defective.
- ✓ When higher concentrations of methane have been encountered, calibrate your detector as soon as possible.
- ✓ Avoid synthetic fuels when conducting methane checks since these materials can affect readings and damage sensors.
- ✓ Protect methane detectors from water and other adverse environmental conditions.

METHANE TESTS ARE REQUIRED

- Prior to energizing equipment in and inby the last open crosscut
- Prior to taking equipment into working place and at 20 minute intervals
- Prior to cutting and welding and continuously during this activity
- Prior to and after detonation of explosives
- During required examinations:
 1. Pre-shift and on-shift examinations of working places.
 2. Required examinations of immediate returns.
 3. Places where methane is likely to accumulate.
 4. Return side of each set of seals.
 5. Weekly examinations of ventilation and bleeder system.

NOTE: Oxygen Deficiency Tests are required during examinations. If oxygen is below 19.5% by volume, ventilation must be improved. Oxygen tests should be made frequently when approaching or around old works.

WHEN METHANE IS DETECTED IN YOUR WORKING PLACE!!



- At 1% - stop operations, deenergize at the machine breaker and improve ventilation to reduce below 1%.
- At 1.5% or greater – stop operations, deenergize at the source (power center) and withdraw personnel from affected area except for those needed to improvements to reduce methane levels.
- At 5%+, notify your foreman promptly. This will be treated as an imminent danger situation which could require withdrawal from the mine. Do not attempt to move or ventilate high concentrations of methane unless you are designated to correct the problem and then only at the direction of certified persons and following precautions to avoid potential ignition sources.

MEMORANDUM

DATE: August 25, 1997

TO: All DM Personnel Conducting Gas Detection Training

FROM: _____
Frank A. Linkous, Chief

The requirement for all miners who work in face areas to be trained in gas detection is an important provision of the Coal Mine Safety Laws of Virginia. From time to time, you may be required to perform instruction and hands-on training to qualify miners for performing gas tests. This packet of information has been developed to assist you in your efforts to train miners in the properties of mine gases, proper procedures for conducting gas tests, and response to excessive levels of methane.

All gas detection qualification training must include these basic areas of instruction to be considered complete. You should review and discuss each outline as developed, provide hands-on demonstration in the proper use, maintenance and calibration of the methane detector, and present the completed packet of information to the miner for his further review and reference as needed.

Upon completion of instruction, you should ensure that the two required BCME forms included in the packet are completed and delivered to the DM Certification Section.

pm

Gas Detection Chart

Gas	Detection Methods	When to Test
Oxygen (O ₂)	Oxygen indicator. Flame safety lamp. Chemical analysis	During any examination.
Nitrogen (N ₂)	Chemical analysis	When an oxygen deficient atmosphere is suspected. In mines where nitrogen issues from rock strata. In inactive areas where ventilation has been inadequate.
Carbon Dioxide (CO ₂)	Carbon dioxide detector. Multi-gas detector.	After a fire or explosion. When entering abandoned areas. When reopening sealed areas.
Methane (CH ₄)	Methane detector. Chemical analysis	During any examination. When normal ventilation is disrupted. When entering abandoned workings.
Carbon Monoxide (CO)	Carbon monoxide detector. Multi-gas detector. Chemical Analysis.	After a fire or explosion. When entering abandoned areas of the mine. When reopening sealed areas.
Nitrogen Dioxide (NO ₂)	Nitrogen dioxide detector. Multi-gas detector. Chemical analysis. Color.	After mine fires or explosions. When diesel equipment is used. After detonation of explosives.
Hydrogen (H ₂)	Multi-gas detector. Chemical analysis foam in firefighting	After mine fire or explosion. Near battery charging stations. When steam is produced by water, mist or foam in firefighting.
Hydrogen Sulfide (H ₂ S)	Hydrogen sulfide detector	In poorly ventilated areas. During unsealing operations. Following mine fires.
Sulfur Dioxide (SO ₂)	Multi-gas detectors. Chemical analysis. Odor, taste, and respiratory tract irritation.	When standing water is disturbed.
Heavy Hydrocarbons Ethane (C ₂ H ₆) Butane (C ₂ H ₈) Propane(C ₄ H ₁₀)	Multi-gas detector. Chemical analysis.	Following fires or explosions when methane is present. Following accidental entry into adjacent oil or gas well casings.
Acetylene (C ₂ H ₂)	Multi-gas detector, chemical analysis, odor.	Following a methane explosion in air which is low in oxygen or from disruption/opening of acetylene tank.

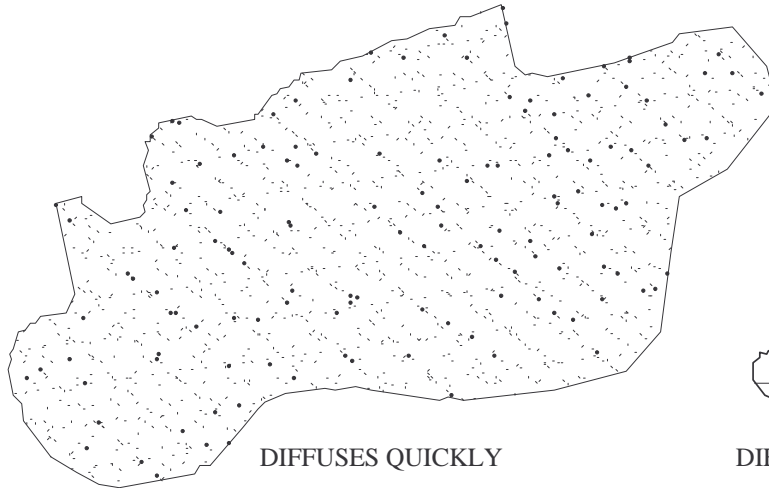
Gas	Chemical Symbol	Specific Gravity	Explosive Range	Health Hazards	Solubility	Colors	Odor	Taste
Air	--	1.000	--	- -	--	--	--	--
Oxygen	O ₂	1.1054	Supports combustion	Oxygen deficiency: 17% panting, 15% dizziness and headache, 9% unconsciousness, 6% death	Moderate	--	--	--
Nitrogen	N	0.9674	--	Asphyxiation (oxygen depletion)	Slight	--	--	--
Carbon Dioxide	CO ₂	1.5241	--	Increases breathing rate. May cause death in high concentration.	Soluble	--	--	Acid in high concentration
Methane	CH ₄	0.5545	5 to 15%	Asphyxiant (rare)	Slight	--	--	--
Carbon Monoxide	CO	0.9672	12.5 to 74.2%	Highly toxic. Can be an asphyxiant.	Slight	--	--	--
Nitrogen Dioxide	NO ₂ N ₂ O ₄	1.5894	--	Highly toxic. Corrosive effect on lungs. May be asphyxiant.	Slight	Reddish brown	Blasting powder fumes	Blasting powder fumes
Hydrogen	H ₂	0.0695	4.0 to 74.02% Highly explosive	Asphyxiant (oxygen depletion).	--	--	--	--
Hydrogen Sulfide	H ₂ S	1.1906	4.3 to 45.5%	Highly toxic. Can be an asphyxiant.	Soluble	--	Rotten eggs	Sweetish
Sulfur Dioxide	SO ₂	2.2678	--	Highly toxic. Can be an asphyxiant.	Highly	--	Sulfurous	Acid (bitter)
Ethane	C ₂ H ₆	1.0193	3.0 to 12.5%	Asphyxiant (rare)	Slight	--	--	--
Propane	C ₃ H ₈	1.5625	2.12 to 9.35%	Asphyxiant (rare)	Slight	--	"Carry" in high concentrations	--
Butane	C ₄ H ₁₀	2.0100	1.86 to 8.41%	Asphyxiant (rare)	Slight	--	"Carry" in high concentrations	--
Acetylene	C ₂ H ₂	0.9107	2.5 to 80%	Only slightly toxic. Asphyxiant (rare)	Only slight	--	--	Garlic

MINE GAS CHART

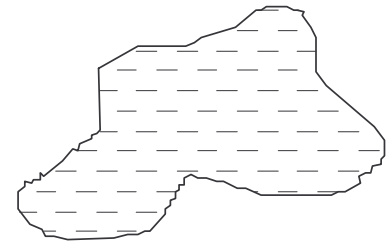
Effects of Temperature and Pressure on Gas

Effects of Temperature on Gas

HOT



COLD

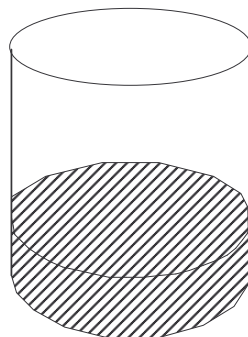


temperature increases - gas expands
temperature decreases - gas contracts

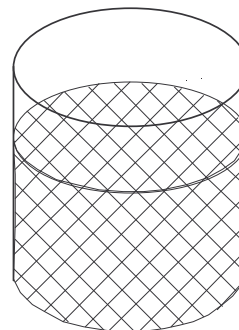
pressure increases - gas contracts
pressure decreases - gas expands

Effects of Pressure on Gas

Pressure Increases

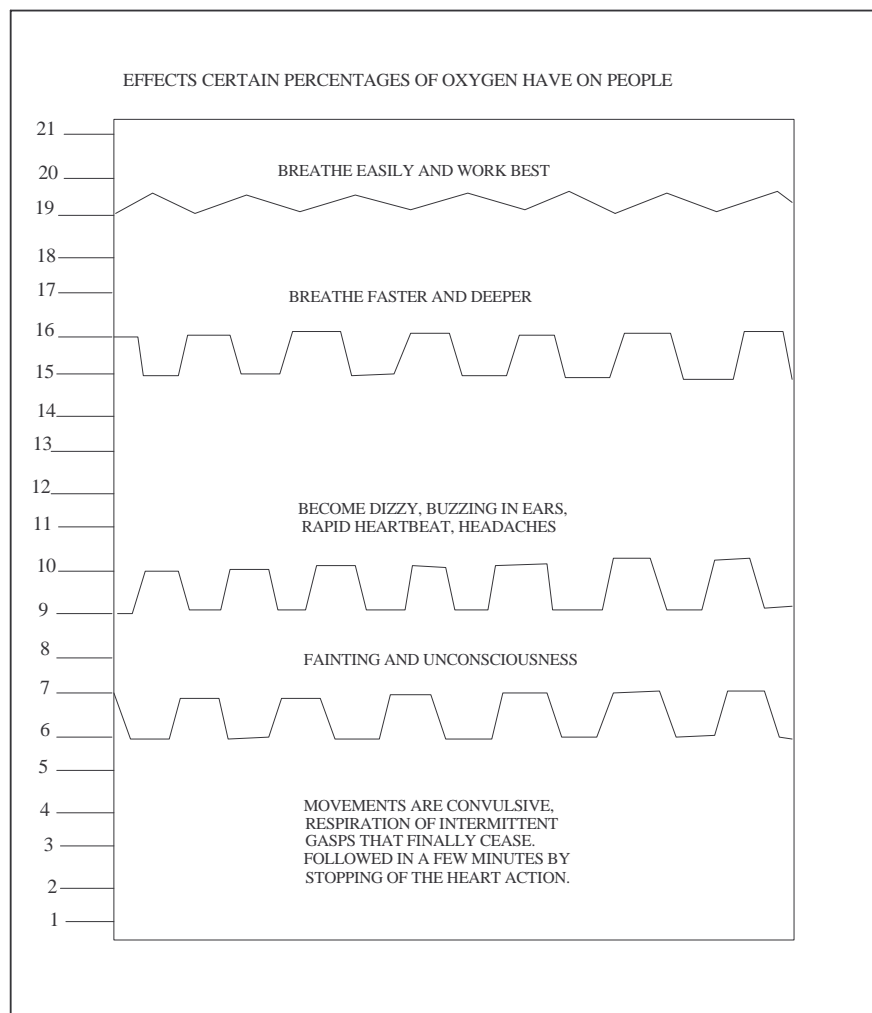


Pressure Decreases

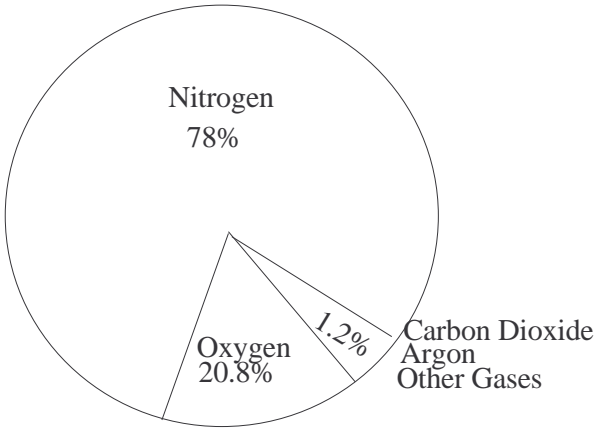


EFFECTS OF TOXIC GAS DEPEND ON:

1. CONCENTRATION
2. TOXICITY
3. LENGTH OF EXPOSURE



Contents of Normal Air



Specific Gravity (Relative Weight)

