

**20178 STATEMENTS OF FACT
MINE RESCUE**

1. To test for methane, use a methane detector or chemical analysis.
2. Carbon monoxide can be detected by means of carbon monoxide detectors, multi-gas detectors, or by chemical analysis.
3. Nitrogen dioxide is produced by burning and by the detonation of explosives.
4. A mixture of coal dust in air reduces the explosive limit of methane.
5. One and one-half to two percent methane together with coal dust in air may be explosive.
6. Mines below the water table tend to have more methane than those above the water table.
7. After a fire or explosion in a mine, rescue teams are usually needed to go into the mine to assess and re-establish ventilation.
8. The range of concentrations within which a gas will explode are known as its "explosive range".
9. Any flammable gas can explode under certain conditions.
10. Indirect firefighting methods allow firefighters to remain a safe distance from the fire.
11. Temporary seals are built before permanent seals are erected in order to seal off a fire area as quickly as possible.
12. In mines where head coal (roof coal) is left, a fire will spread more rapidly.
13. One hazard of heat during a fire is that it tends to weaken the roof, especially where head coal is left.
14. Fires can be attacked by the use of a foam generator from a distance of 500-1,500 feet.
15. It is generally recommended that teams not travel through foam filled areas.
16. One method of indirect firefighting is flooding the sealed fire area with water.

17. Once an explosion has occurred, there is always the possibility of further explosions.
18. Mine rescue teams may find it necessary to use line brattice to sweep noxious or explosive gases from a face area.
19. Once ventilation has been re-established and fresh air advanced, non-apparatus crews can take over the rehabilitation and cleanup effort.
20. Rescue teams are responsible for assessing damage to the ventilation system.
21. Information the team relays to the fresh-air base as it proceeds is known as the "progress report".
22. It is the responsibility of rescue team members to have all the information needed to do the work.
23. When a team locates a body, its location and position should be marked on a mine map and on the roof or rib close to the body.
24. The rescue team captain should regulate the team's pace according to conditions encountered.
25. When a body is first located, every effort should be made not to disturb any possible evidence in the area.
26. In situations too hazardous for teams to explore and reventilate safely, teams may be instructed to seal the area.
27. New mine rescue team members must have at least 20 hours of instruction on the breathing apparatus used by the team.
28. Before the team leaves the fresh-air base to travel inby, the captain should take note of the time of departure.
29. It is recommended that team checks be conducted every 15 to 20 minutes.
30. It is recommended that the first stop for a team check be just inby the fresh-air base.
31. ~~For teams using a compressed oxygen breathing apparatus, the captain usually notes each team member's gauge reading at each rest stop and reports the lowest~~

~~reading to the fresh air base.~~ Teams should report the lowest team member's oxygen gauge reading at each team check.

32. "Tying in" is the process by which you systematically explore all crosscuts and adjacent areas as you advance.
33. As the team advances underground, the captain takes the lead.
34. It is important that the team pace its work so that it can return to the fresh air base on time.
35. As the team advances, the map man records what the team encounters by marking the information on a mine map.
36. The team is responsible for choosing the exact sites within headings for building seals.
37. Smoke causes a lack of orientation which may cause a team member to lose his/her sense of balance.
38. Class B fires involve flammable or combustible liquids.
39. Class D fires involve combustible metals.
40. Before using a hand held extinguisher it must be checked for the type of fire you are fighting.
41. Solubility is the ability of a gas to be dissolved in water.
42. Pools of water can release water soluble gases into the air when they are stirred up.
43. High expansion foam is light and resilient and can travel long distances to a fire without breaking down.
44. Low expansion foam is very wet and heavy and can only be used when you're close enough to a fire to force the foam directly onto the fire.
45. Carbon monoxide is explosive.
46. Oxygen is a supporter of combustion.

47. If smoke is so dense as to make visibility poor, you may need to keep in constant physical contact with ~~an object rail, a compressed air or water line,~~ or ~~the~~ a rib in order to feel your way along.
48. Two types of fire cannot be fought directly, fuel rich and spon com (spontaneous combustion). ~~these will be extinguished only by remote controls.~~
49. Team safety must not be compromised. ~~Although "Time is never your friend" do not be in too great a hurry and do not permit others to hurry.~~
50. Monitoring pressures and gases helps determine ~~the effectiveness of firefighting and the potential~~ ~~what is the~~ danger of an explosion. ~~how soon firefighters have to move to safety, how effective are the techniques being used and is the fire under control.~~
51. Sulfur dioxide and hydrogen sulfide are water soluble gases.
52. Color, odor, and taste are physical properties that help to identify gases during barefaced exploration.
53. Only detectors and chemical analysis can positively identify a gas.
54. The effects of toxic gases depend on the concentration, toxicity, and exposure time.
55. Asphyxiates are gases which cause suffocation or choking.
56. Firedamp is a mixture of methane in air that will burn or explode when ignited.
57. If there is a sufficient amount of hydrocarbons in smoke, the smoke may be explosive.
58. Ventilation controls are used underground to properly distribute air to all sections of the mine.
59. Gases with specific gravities less than 1.0 tend to seek high places.
60. Gases with specific gravities greater than 1.0 tend to seek low places.
61. In order to maintain an airlock, one door of the airlock must be kept closed while the other is opened.

62. Rescue teams should build an airlock so that the two stoppings are erected as close together as possible yet with enough space to allow room for the team and their equipment to fit in between.
63. If the fresh air base is underground, it should be located where it's assured a fresh air travelway to the surface.
64. The fresh air base should be located where it's assured positive ventilation and fresh air.
65. Elevators should be tested before use following a disaster.
66. As a team advances, it is important to stay in close contact with the fresh air base/command center. ~~to report team progress and to receive further instructions.~~
67. Methane is lighter than air.
68. Normal air has a specific gravity of one.
69. Sufficient time should be allowed for a fire area to cool before it is unsealed.
70. Team captains should inspect roof and ribs before the team members advance into the area.
71. The roof and ribs should be tested before extinguishing a fire.
72. Hazardous areas should be marked to warn other teams that may enter the area after yours.
73. Progress reports should include reports on roof and rib conditions and gas conditions.
74. The time spent under oxygen by a rescue team is usually limited to two hours or less.
75. When looking for survivors, it is important to both look and listen for clues.
76. For a Class C fire (electrical), if power has been cut off to the burning equipment, it may be treated as a Class A or B fire.
77. When survivors are located, their location, identities, and condition should be reported immediately to the command center.

78. When survivors are located, the location, time, and date should be marked on the team's map and on the rib where they are found.
79. When survivors are ~~found~~ located, they should be transported to safety and fresh air as quickly as possible.
80. The main objective of recovery work is to put the affected area of the mine back in operation as soon as possible.
81. All temporary seals should be well hitched in the floor roof, and ribs to improve their strength.
82. Urethane foam is an effective sealant when used around the perimeter of a seal.
83. High volatile coal burns much faster than low or medium volatile coal.
84. It may be necessary to double or triple the thickness of the material in order to improve the effectiveness of a temporary seal.
85. Seals should be built at locations with good roof and even roof and ribs.
86. ~~Hazards of direct firefighting are electric shock or electrocution, toxic and asphyxiating gases, oxygen deficiency, explosive gases, heat, smoke and steam~~
Rescue Teams may encounter many hazards while fighting fires directly by hand.
87. When fires are sealed in gassy or dusty mines, a thick coating of rock dust should be applied to the ribs, roof and floor for several hundred feet out by the seals. ~~and if possible, inside the seal, to reduce the chance of propagating a coal dust explosion.~~
88. The main objectives of exploration work during a mine fire are locating the fire and assessing conditions in the fire area.
89. A self-contained breathing apparatus is a completely portable unit that supplies oxygen or air independently of the surrounding atmosphere.
90. A smoke tube is used to show the direction and velocity of slow moving air.
91. If a team member must return to the fresh air base because of a problem, it is standard practice among teams for the entire team to go back with that person.
~~No one should ever travel alone.~~

92. Thermal imaging cameras should only be used in less than 1 percent of Methane.
93. Once rescued, survivors should never be left alone.
94. The lower explosive limit of hydrogen is 4.0 percent.
95. The IDLH of Nitrogen Dioxide is 20 ppm.
96. Clean, dry air at sea level is made up of 78 percent nitrogen and 21 percent oxygen.
97. After a fire has been sealed, ~~the practice has been~~ it is recommended to wait 72 hours before making the initial visit to the seals.
98. When appropriate, a fire area is not un-sealed until the oxygen content is low enough to make explosions impossible and the carbon monoxide has disappeared.
99. Firefighters force inert gases into areas where they are trying to remove the oxygen leg of the fire triangle.
100. A team is a unit made up of individuals working toward a common goal.