

# **NAMHO Guidelines for Mine Exploration**

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## Underground Exploration - Novices

If you have never explored a disused mine before, remember that it can be EXCITING if done properly but LETHAL if you do not know what you are doing. Here are 12 basic rules for your survival.

### 1. JOIN A MINING HISTORY GROUP

There are many groups in the UK that cover the whole of the country. Unless you are attending a special course, consider joining one of these and they will teach you how to be safe underground.

### 2. GET THE BASIC GEAR

The basic things that you need are :-

Warm clothing and a boilersuit  
Strong boots or wellingtons  
Helmet  
Lamp

For simple mines a torch is OK but the best is a miner's electric headlamp. ALWAYS carry spare lighting and REMEMBER a change of clothes.

### 3. ALWAYS GET PERMISSION

Always ask the mine owner for permission to enter. If you don't know the owner, ask the local mining history group. Never break in, or trespass, if permission is refused. Always leave mines safe by replacing gates or lids before you leave.

### 4. TELL SOMEONE WHERE YOU ARE GOING

If you have an accident, you want people to know where to locate you! Leave a message with a responsible person, giving the following details :-

- name and location of the mine
- anticipated time down the mine
- anticipated time out of the mine
- time due back to the person you have told
- details of how to get the rescue service, if needed.

### 5. NEVER GO UNDERGROUND ALONE OR INCAPABLE

FOUR is the minimum safe number underground so that, in the case of an accident, one can stay with the casualty and two can go for help. NEVER take alcohol or drugs before or during a trip as this will reduce concentration, with potentially lethal results.

### 6. DO NOT EXCEED YOUR CAPABILITY

Choose easy trips at first and leave the more difficult techniques until you are used to moving underground. Ladder climbing, for instance, can be very strenuous at times and it is always harder climbing back out! If in doubt, turning back is better than having to be rescued.

### 7. DO NOT GET LOST

Some mines are like mazes and it is very easy to get lost. If there is a plan of the mine (your local mining history group can advise you) take a copy with you. One good idea is to cut small arrows from a brightly coloured polythene bag and, whenever you come to a junction, leave one of them pointing towards the entrance. ALWAYS pick them up on the way out.

### 8. NEVER CLIMB ON OLD LADDERS OR MACHINERY

You may come across old ladders, timbers, etc which were used by the miners. NEVER use these as they are of uncertain age and probably rotten. Similarly, don't climb on old machinery as it is probably rusty and may collapse.

## 9. NEVER CLIMB ON STACKED ROCK OR WALLS

For their convenience, miners often left waste rock in the mine. It was stacked up and supported by timbers, which have long since rotted away, leaving the rock precariously balanced. DON'T TOUCH, or climb, on these features or you may bring down tons of rock onto yourself and others.

## 10. NEVER FOOL AROUND WHEN UNDERGROUND

People in groups sometimes do silly things but, with the dangers underground, practical jokes can have tragic endings. Be a steadying influence on your friends. They may laugh when you say "better safe than sorry" but this is a small price to pay for your life and theirs.

## 11. DO NOT RUIN THE MINE ENVIRONMENT

This is what you have come to see, so leave it in a good condition for others. Don't :-

- hammer minerals in an indiscriminate manner
- destroy or remove artefacts or other archaeological features
- interfere with plant or animal life
- leave litter (this can destroy mine life without your realising)
- leave graffiti.

TAKE only photographs. LEAVE only footprints.

## 12. KNOW WHAT TO DO IN AN EMERGENCY

Mines are dangerous places and accidents can happen to even the most experienced people. If, however, you don't panic then the casualty stands a good chance of surviving. Learn about simple First Aid so that you can make them comfortable. Exposure is one of the most dangerous things - learn about its symptoms and treatment. Always leave someone with the casualty and send at least two people for help. The area Cave Rescue Organisations are very efficient and can be called out by dialling 999 and asking for the Police. Tell them what has happened, the location of the mine and the nature of any injuries.

These 12 rules are the most basic knowledge that you need but it will take a few years before you are anything like experienced. THE BEST WAY TO GAIN THIS EXPERIENCE IS TO JOIN A RECOGNISED MINING HISTORY GROUP AND TO GO UNDERGROUND WITH EXPERIENCED PEOPLE. You can also write to the Secretary of NAMHO and ask which groups cover the area you are interested in.

## Mineral Collecting at Disused Mines

DOES THIS AFFECT ME?

If you visit disused mines to collect mineral specimens, then you should read the following.

WHY DOES MINERAL COLLECTING AFFECT OTHERS?

Disused mines are used by several other groups of people for recreational purposes, ie Naturalists, Cavers and Industrial Archaeologists. All have a particular interest but sometimes the activities of one group can seriously interfere with the enjoyment of others, albeit unknowingly. This can sometimes lead to friction and, in extreme cases, cause one group to gate entrances and deny access to others. If we respect the interests and needs of other users, this situation should not arise.

HOW DO I RESPECT THE NEEDS OF OTHERS?

Follow the simple guidelines below and you can collect mineral specimens without interfering with others.

WHAT SHOULD I DO ON THE SURFACE?

1. NEVER visit a mine site without the landowner's permission. If refused, withdraw politely so that future access negotiations are not prejudiced.
2. Follow the Countryside Code at ALL times.
3. Do NOT interfere with buildings, machinery or artefacts. These are of interest to archaeologists and what appears to be rotten wood or rusty metal can supply vital clues to the history of the mine.
4. NEVER scatter dump materials onto adjacent land.
5. NEVER hammer outcrops.
6. Watch out for unprotected shafts and open stopes. NEVER allow children or dogs to wander about unsupervised.

WHAT SHOULD I DO UNDERGROUND?

7. ALWAYS be properly equipped with helmet, spare lighting, warm clothing and sensible footwear.
8. ALWAYS tell someone on the surface where you are going and notify them when you come out.
9. The minimum safe number underground is four persons. In case of accident, one can stay with the casualty while the other two go for help.
10. Learn and obey the rules of safety and consider joining a mining history society or caving club. Guidelines on underground safety are available free of charge from the Association.
11. NEVER break into a mine.
12. ALWAYS securely replace any gate or cover to a mine entrance.
13. NEVER interfere with stacked rock (in the roof or walls), roof supports, pillars or other features of a mine. If you do so, you may bring tons of rock down upon yourself and destroy features of interest to archaeologists.
14. Use hand tools only, NEVER use explosives.
15. Collect enough specimens for your own needs only and NEVER collect for commercial gain.
16. Do NOT destroy mine "scenery" by hammering at materials which will be irreparably damaged in so doing. Consider leaving such mineralisation in situ for future generations to enjoy.
17. NEVER collect from sites of special scientific or archaeological interest.
18. NEVER interfere with flora or fauna and avoid sites used by hibernating bats between November-March.
19. Take your litter home with you and do not leave graffiti on walls.
20. Remember, wherever possible - TAKE only photographs. LEAVE only footprints.

## Underground Exploration - Leaders

You may be an experienced caver but disused mines contain many dangers not found in natural caves. Unless you can recognise and avoid these dangers you are playing Russian Roulette with your life (and the lives of your party).

If you intend to lead a party of novices into an old mine, you are responsible for their lives as well as your own. Training and Assessment Courses for Cave Leadership are available through the Training Committee of the National Caving Association.

The following advice has been compiled from people who have had many years experience in the exploration of disused mines. We do not claim that it is a definitive set of rules, we merely hope that you will take note of the advice and perhaps a tragedy may be avoided through a greater understanding of the dangers facing you underground.

### ACCESS

The problems of access to disused mines are different from those for caves. The existence of mineral rights means that the mine owner is not necessarily the same as the land owner. Remember that it is often less trouble for a mine owner to close the entrance completely than to allow access to explorers. Mining history groups have worked for years, both nationally and locally, to get access agreements. Don't be the one to deny access for everyone through a thoughtless act. Follow these simple rules and help to keep the mines open.

1. ALWAYS get permission from the land or mine owner before exploring. If the owner is not known, ask the local mining history group.
2. OBEY the Country Code when crossing land to get to the mine.
3. NEVER break into a mine, or section thereof, if it has been sealed off and do not trespass if permission has been refused.
4. ALWAYS ensure that any gate or lid to a mine entrance is securely replaced after your visit. If you are not leaving anyone on the surface during your trip, ensure that the open entrance will not be a danger to cattle or passers-by.
5. ALWAYS ensure that you are not contravening Health & Safety Legislation. NAMHO/NCA have issued guidelines on this.

### SAFETY

6. NEVER explore disused coal mines, they are prone to weak strata and bad air.
7. ALWAYS check out a mine with an experienced party before taking novices in.
8. FOUR is the minimum safe number underground in case of accident, 1 to stay with the victim and 2 to go for help.
9. NEVER have a ratio of more than 5 novices to 1 experienced person. Have an experienced person at the front and rear of the party and, with large numbers, spread the experienced persons amongst the party.
10. NEVER drink alcohol or take drugs before or during a trip. This can reduce concentration and increases the risk of exposure.
11. NEVER go underground unless properly equipped. The leader is responsible for checking everyone's equipment and should be prepared to leave anyone who is not so equipped on the surface. Disappointment is better than disaster.
12. ALWAYS wear a helmet and check that it fits securely before going underground. It should have a chinstrap and be comfortable. The easiest way to check is to shake the head up and down and from side to side - if the helmet moves it is too loose.
13. ALWAYS wear strong boots or wellingtons with a good tread. Never use boots with lace hooks since these can catch on electron ladders.
14. EVERY person must have a light. A miner's-type electric headlamp is best but a strong torch with spare batteries is acceptable in easy mines. Carbide lamps are not recommended. If any vertical climbing is involved, a headlamp is essential.

15. EVERY party should carry spare lighting for emergencies, even if only candles.

16. ALWAYS wear warm clothing, preferably with a boiler suit on top. Remember to have a change of dry clothes on surface.

17. ALWAYS tell a responsible person where you are going. Ideally you should give them a written message showing :-

- a) location, grid reference and name of the mine.
- b) time down (anticipated).
- c) time due out (anticipated).
- d) time due back at base (for cancellation of message).

Ensure that the person with this message knows what to do if you are overdue and that you contact them when you exit from the mine.

18. IN EMERGENCY you should dial 999 for the POLICE and ask them for CAVE RESCUE. Give them full details of the location of the mine, the extent of injury to the victim and whereabouts in the mine they are. Stay by the telephone unless they say otherwise.

19. Carry some high-calorific food (eg Mars Bars) and a drink in case of emergency.

20. Carry a plan of the mine, if available. Your local mining history group can advise you if there is a plan of the mine.

21. ALWAYS count the number of persons in a party before going underground and check regularly during the trip, especially on exit. With absolute novices, allocate a place in the line and tell them to keep their position, to be patient and not to overtake.

22. Just inside the entrance, wait 5 minutes to allow the eyes to get accustomed to the dark. During this time, check that everyone's lamp is working.

23. The helmet will protect your head from a low roof but not against dangers on the floor like rocks or open holes. When moving, keep your eyes mainly on the floor to avoid these dangers. If you want to look around - STOP.

24. Ensure that the party does not become separated. If anyone lags behind, the person in front of them should stop and shout ahead for the party to wait.

25. When you come to a junction, look back and memorise the way out as it can look different from the other way. Better still, leave a marker such as coloured polythene arrows (remember to remove them on the way out) or a line of stones.

26. If someone's light fails, there should be a spare. In emergency, however, you can get someone to walk just behind and to one side and, proceeding slowly, there should be sufficient light for both to see ahead. If all lights fail, be patient and sit it out until rescued. Feeling the way in the dark is courting disaster.

27. NEVER use a mining trip to test endurance and stamina. If someone feels claustrophobic or tired DON'T make them carry on - take them out. Novices should be told that there is no shame in turning back, there will be less embarrassment over this than pushing on and risking an accident.

*ABANDONED MINES ARE MAN-MADE AND HAVE MANY FEATURES NEVER ENCOUNTERED IN CAVES. THIS HAS BEEN MENTIONED BEFORE AND CANNOT BE OVER-STRESSED. THE FOLLOWING SECTION DRAWS YOUR ATTENTION TO SPECIFIC HAZARDS FOUND IN MINES.*

28. NEVER touch anything that looks like explosives or detonators. These may be unstable through age and extremely dangerous. Make a note of their position and tell your local mining history group.

29. Miners often made false floors by building timber roadways over a stope (a large open working). These are not always obvious since they may have been covered by mud and even hold water. When the timbers rot you risk falling through into the stope below. If the floor feels shaky or hollow - TURN BACK.

30. Miners often drove through soft ground for speed, erecting roof supports which may have now rotted. NEVER disturb roof supports.

31. Miners often left waste rock underground to save the trouble of taking it to the surface and sometimes used it to support the roof. This rock, called "Deads", was often stacked on timbers in the roof or sides of passages but, over the years, the timber rots and leaves the deads jammed together. NEVER touch or climb on deads anywhere in a mine or you may bring down tons of rock onto the heads of yourself and others.

32. Hoppers were used to draw off rock from stopes into wagons on levels below. There is often a great deal of loose rock jammed in these hoppers. NEVER interfere with hoppers or you may release tons of rock.

33. When wading through water, beware of flooded shafts in the floor. After the first person has passed, the water becomes muddy and you cannot see anything. Shafts are often to one side of a passage so you may miss them on the way in but find them unexpectedly on the way out! The first person should pass a warning back along the line and mark the position for the trip out.

34. In deep water, keep to the sides of the passage where it is often shallower and (if in solid rock) you can steady yourself on the walls. Beware of submerged rocks on the floor - if you find one, pass a message back. Go at the pace of the slowest person. NEVER race and NEVER swim underground.

35. The edges of shafts can be loose so NEVER stand on the edge. If you must look down then get someone to lifeline you, lie on the floor and peer over the edge. The tops of large shafts can also be timbered over leaving a small access hole. Beware of standing on this timber which may be rotten.

36. Shafts often have drystone walling at the top called "Ginging". When descending, beware of touching this in case you cause it to collapse on people below.

37. NEVER climb on or over old machinery, since it may be severely weakened by rust. Apart from the safety considerations, you may spoil the mine environment for others.

38. In some mines, ladders were used to get from one level to another, with wooden platforms at intervals. In other mines, timbers called "Stemples" were jammed across shafts to climb on. ALL such structures are now suspect through age so NEVER climb on old ladders, platforms or stemples left in a mine.

39. Beware of gas underground. Although it is rare in non-coal mines, it can be lethal. The commonest gases are :-

a) Hydrogen Sulphide

Found in shaly areas (especially where pyrites are present) or recently drained levels. It has a characteristic "bad eggs" smell.

b) Carbon Dioxide

Found where there is no air flow and, being heavier than air, is often found in blind shafts. It is tasteless and the first signs will be rapid breathing and headaches.

c) Methane

Found in coal or shale strata. It is tasteless but highly explosive.

Atmospheric conditions can affect the quantity of gas in a mine and it may be found one day but not the next. If you suspect gas - TURN BACK. Better still, carry an oxygen meter or a miner's flame lamp. When exploring a shaft, test for gas at the bottom before descending.

40. NEVER light fires underground. Combustion will produce gases which are difficult to detect and lethal.

41. In unventilated mines with no air flow, there is a possible danger of Radon gas which is radioactive. This changes to minute particles which are carried in the air and can be absorbed into the lungs, possibly causing cancer. It is recommended that you do not explore unventilated mines. If you must, it is recommended that you wear a dust mask which absorbs most of these particles.

42. It is recommended that you do not smoke underground because :-

a) there may be inflammable gas present.

b) Radon particles (if present) are absorbed in smoke particles.

c) it is anti-social if there is little air flow.

d) it disturbs bats.

43. Beware of chemicals dumped down shafts - some of these are poisonous.

*THE PREVIOUS SECTIONS HAVE DEALT WITH DANGERS SPECIFIC TO MINES. THE FOLLOWING SECTIONS DEAL WITH GENERAL DANGERS AND APPLY EQUALLY TO CAVING AS WELL AS MINE EXPLORATION. LADDER CLIMBING, ROPEWORK AND ESPECIALLY SINGLE ROPE TECHNIQUES ARE COMPLEX AND CONTINUALLY DEVELOPING. YOU ARE RECOMMENDED TO TAKE LESSONS FROM THOSE ALREADY PROFICIENT IN THE TECHNIQUES. THE NATIONAL CAVING ASSOCIATION CAN PROVIDE INFORMATION ABOUT SUITABLE COURSES.*

44. If the party gets wet or cold, beware of exposure. The warning signs are slowness of movement, unreasonable or irritable behaviour, slurred speech, cramps, shivers and (in more extreme cases) the smell of peardrops on the breath. STOP IMMEDIATELY and take the victim to a suitable spot where they can be kept warm and dry. Give warm drinks, food, glucose tablets and extra clothing if available but NOT alcohol. Place victim in a survival bag and get another person to share body heat by "cuddling". If no improvement after a short rest - GET HELP. NEVER attempt to walk a badly exposed person out under their own steam as this can be fatal.

45. Exposure can set in after an accident and can often be a greater danger than broken bones. If an accident happens in a wet or cold place, it is better to risk further injury by moving the victim to a dry spot out of the direct air flow. Warm drinks should be given since an anaesthetist can deal with a full stomach if a later operation is necessary. In an underground environment, preventing loss of body heat is much more important.

46. ALWAYS use a lifeline when negotiating a vertical descent or ascent and make sure that the lifeline is securely tied onto a separate belay from the ladder, if used. On scrambles, remember to move only one foot or hand at a time.

47. Apart from short, easy scrambles, an electron ladder should be used. Novices should learn how to use an electron ladder on the surface first.

48. NEVER tread on ropes, you may cause damage inside. When cleaning ropes, check that no mud or grit has got inside since this acts as a very good abrasive, shortening the life of the rope and possibly yourself!

49. Check the wire of electron ladders for cuts, snapped strands or rust. Check the rungs for damage. NEVER use ladders with hemp-cored wire.

50. Clean mud out of the hinges and screw threads of carabiners. If a carabiner has been dropped onto a hard surface, discard it. Invisible hairline cracks can occur which may cause it to break under load.

51. Clean and check all your equipment after each trip and, if in doubt about the safety of anything, replace it. It is foolish economy to risk your life.

52. All persons using a ladder must be able to tie a bowline and figure-of-eight knot in case of emergency, when help may not be available.

53. NEVER approach the top of a ladder pitch unless you are lifelined. It is good practice to keep away until you are ready to descend, otherwise you may accidentally knock rocks down onto a person climbing the ladder.

54. NEVER have more than one person on a ladder at a time.

55. Deep shafts can distort sound. Before descending, arrange signals such as a whistle blast or tug on the rope, eg

1 - STOP  
2 - UP  
3 - DOWN

56. ALWAYS send an experienced person down a ladder first. At the bottom, untie and move away from the ladder in case of falling rocks.

57. If you ever knock an object down a shaft, shout "BELOW". If you ever hear this shout - NEVER LOOK UP. Get under cover or stand flat against the wall with your head hunched into your shoulders.

58. If you want to look up a shaft, peer up from under the brim of your helmet which will protect you from any stones falling down.

59. NEVER carry extra equipment down a shaft - lower it separately.

60. NEVER trust old rings, timbers, etc as belay points.

61. If your party is to separate after descending a shaft, agree some form of message so that the first group back leaves the ladder in place.

62. NEVER remove another party's ladder, etc - one day it might be you stuck at the bottom! If a pitch is already rigged and there is no space for your ladder, use the one in place and leave your tackle at the top. When the other party ascends, they should lower your ladder for you.

63. NEVER use single rope techniques underground unless you are already well-practiced on the surface. Muddy ropes can affect the friction on descendeurs and cause ascendeurs to slip or jam up.

#### PRESERVATION

People explore disused mines for a number of reasons. You might only be interested in a tourist trip but remember that others have different interests, eg history, geology, biology, photography, etc. Please follow these guidelines.

64. NEVER interfere with old mine buildings or equipment whether underground or on the surface. Removing old tools, etc is a specialised art and best left to the experts for display in a mining museum. If you find artefacts in a mine, tell the local mining history group.

65. NEVER hammer rock formations indiscriminately. This not only destroys the scenery but can be dangerous in unstable areas. Take only a few specimens for personal use.

66. NEVER interfere with roosting bats underground, they are protected by the Wildlife & Countryside Act 1981. Try to avoid visits to known bat hibernation sites between November and March. Report any bats seen to the local bat group, the Nature Conservancy Council or the Flora & Fauna Preservation Society. See "Bats in Caves: a Conservation Code", published by the FFPS, c/o Zoological Society of London, Regents Park, London NW1 4RY.

67. Many insects and even smaller animals live in mines, often in pools. Some of these animals are rare and damaging their environment can kill the whole population. NEVER dump carbide in a mine and avoid muddying pools wherever possible.

68. Many forms of fungus are found in mines where they live on old timber, etc. Some of these are rare and should NEVER be damaged.

69. Mine water is sometimes used as a water supply. NEVER pollute underground water and NEVER drink it.

70. Remember - TAKE only photographs. LEAVE only footprints.