

ESTA  
ARCHIVE

22 MAY  
COPY



**SAFETY  
IN  
EARTH SCIENCE FIELDWORK**

**GUIDANCE NOTES  
ON FIELDWORK LEADERSHIP**

Recommendations of the Fieldwork Group  
of the  
Earth Science Teachers' Association

**EARTH  
SCIENCE**



**TEACHERS'  
ASSOCIATION**

FIRST EDITION

Distributed by:  
Geology & Cartography Division  
School of Construction & Earth Sciences  
Oxford Brookes University





## SAFETY IN EARTH SCIENCE FIELDWORK

### Recommendations of the Fieldwork Group of the EARTH SCIENCE TEACHERS' ASSOCIATION

#### Preface

Under the terms of the Health and Safety at Work Act 1974, all organisations engaged in fieldwork should have codes of practice within which they must work. The Act does not provide a definition of a code of practice but states that the term may be applied to "any documentary form of practical guidance" (S.53). The Health and Safety Commission may either issue codes of practice itself or approve codes drawn up by other organisations. Only those codes of practice which have been issued or approved by the Health and Safety Commission have legal status, with the implications of criminal liability for those who do not adhere to the provisions of such codes. Nevertheless, employees are bound to obey instructions on health and safety either laid down or provided by their employers.

The purpose of this document is to provide guidance notes to employers (Governing bodies or L.E.As) on appropriate safety, leadership management and behaviour of parties carrying out earth sciences fieldwork, as suggested by E.S.T.A., the professional association concerned with teaching the earth sciences. It does not provide detailed guidance on the administration and organisational side of field excursions such as finance, consent, transport arrangements, insurance etc. Much of this aspect of field excursions is dealt with in other publications. Also, guidance on appropriate procedures relevant to particular environments eg. quarries, mountain areas, should be sought from specific codes of conduct (see Appendix 3).

Whilst every effort has been made to draw on and give the best advice available, no claim is made for comprehensiveness, nor should the contents be taken as giving an authoritative interpretation of the law. It is also recognised that whilst guidelines can give general guidance on good practice, leaders will have to exercise a professional judgement in many circumstances concerned with safety. It is therefore considered essential for leaders and staff to receive appropriate professional training in fieldwork safety and leadership.

E.S.T.A. acknowledge help and advice from a number of individuals and organisations who have generously donated their experiences for us to draw on; these includes:

British Aggregate Construction Materials Industries, British Geological Survey, Committee of Heads of University Geology Departments, Institute of Biology, Natural Environment Research Council, Imperial Chemical Industries, RoSPA, Mr Tony Thomas, Mr J. Tingle, Mr Tony Winall, Mr Chris King.

E.S.T.A. recognise that none of the above can be held responsible for any of the recommendations and guidelines outlined in the document, which were drawn up entirely by the Fieldwork Working Group of E.S.T.A.

## 1. Introduction

The objectives of field studies are for pupils to observe, record and interpret the environment directly, in order to gain knowledge, understanding and a full appreciation of the world around them. As a consequence of being conducted out-of-doors, fieldwork has often been classified alongside outdoor pursuits, and therefore subject to the same regulations. However, it must be stressed that the prime objective of fieldwork is the *study* of the environment, whereas the emphasis of outdoor pursuits is on the skills associated with the *challenge* of the outdoors. Whilst it is recognised that there is some overlap in the necessary training and skills required for leadership of the two activities, the fundamental educational differences in approach and range of activities suggests that the two should be distinct. It is, therefore, recommended that each responsible body (i.e. employer) should have a separate set of regulations and/or guidelines covering the organisation and leadership of field studies.

## 2. Leadership Experience and Training

The suitability of staff to lead field excursions should be judged on the basis of the following:

- (i) the past experience of staff in leading field excursions;
- (ii) familiarity of hazards in particular environments;
- (iii) appropriate training of staff.

The holding of a recognised outdoor pursuits qualification (e.g. Mountain Leadership Training Board qualifications) will not necessarily indicate that a leader is suitably experienced to lead a field excursion; and such outdoor pursuits qualifications should not be regarded as essential pre-requisites for field leadership.

It is recommended that all staff should attend a training course on *fieldwork* safety and leadership, to raise their awareness of hazards, safety issues and other problems that can arise during field excursions (see Appendix 1).

## 3. Fieldwork Site Pre-visit

Leaders should undertake a site pre-visit shortly before each excursion, even if the site has been visited previously, in order to assess:

- (i) whether the locality will allow the fieldwork tasks to be reasonably undertaken and the objectives achieved;
- (ii) site access arrangements;
- (iii) contingency plans (in case of emergency, e.g. telephone points, escape routes etc.);
- (iv) changes in site circumstances (e.g. fencing, filling in or quarries etc.);
- (v) new and specific site hazards.

For sites that are practicably too distant to undertake a pre-visit leaders should make all reasonable efforts to ensure they have up-to-date, detailed local information of the condition of the site(s) (e.g. 'phoning the landowner, contacting colleagues who have recent experience of the site).

#### 4. Fieldwork Safety Check (see Appendix 2)

It is recommended that a Fieldwork Safety Check Sheet should be completed by the leader in order to ensure that:

- (i) the leader is clear about the field organisation, potential hazards and safety procedures of the excursion;
- (ii) there is a record placed with/checked by/authorised by a responsible body or person.

It is advised that for residential field excursions a Field Safety Check Sheet is completed for each day and deposited with a responsible person at the place of residence.

It is recommended that all completed Field Safety Check Sheets are kept on file for future reference.

#### 5. Medical Conditions

Leaders should ensure that they are aware of any medical conditions of pupils/students and any accompanying staff.

The responsibility of informing staff about medical conditions should be placed upon students/pupils (of legal age) or parents/guardians, through a signed declaration document. This document should be handed to the leader at least one week before the excursion.

#### 6. Briefing

Leaders should ensure that pupils/students are adequately briefed not only as to the nature of the fieldwork, but also as to potential hazards and expected and appropriate behaviour.

It is recommended that this is not presented in an alarmist fashion but in a rational way and showing a sense of responsibility. It is important for the leader to share with the pupils/students the educational reasons, both general and specific, for the excursion. If the purpose of the fieldwork is fully explained, this can encourage a responsible attitude amongst the group.

Leaders should re-enforce and, where circumstances dictate, adjust this briefing in the field, at appropriate localities or before particular activities.

#### 7. Behaviour of Individuals

After reasonable consideration, Leaders should be able to reserve the right to exclude from any excursion any individuals who they perceive as a potential risk to their own or the group's safety as a result of:

- (i) inappropriate/untrustworthy behaviour;
- (ii) inadequate clothing or footwear;
- (iii) medical risk;
- (iv) inadequate intake of food and drink;
- (v) any other justifiable circumstances.

## 8. First Aid

Standard First Aid courses and qualifications are often inappropriate for fieldwork situations, as they are geared to office/domestic incidents.

Leaders should have a working knowledge of situational first aid, concerned with small accidents and incidents that can happen out-of-doors. This should be provided for by an appropriate training course.

Leaders should carry or have access to at all times a First Aid pack, appropriate to the planned activity. They should be aware of its contents and how they should be used.

Leaders should be aware of current medical advice on the administration of creams, lotions and tablets.

## 9. Management of Parties in the Field

Leaders should:

- (i) have a planned itinerary (with approximate times);
- (ii) have a check-list of student names;
- (iii) have knowledge of the whereabouts of pupils/students working in unsupervised parties;
- (iv) brief pupils/students about potential hazards/behaviour/working areas;
- (v) establish rules/code of conduct during non-activity periods e.g. lunchtime;
- (vi) be prepared to change or abandon the planned activity in the event of unforeseen circumstances e.g. bad weather, illness, access problems, increased hazards etc.;
- (vii) report to a pre-arranged person on arrival and leaving working sites.

## 10. Supervision Ratios

The appropriate ratio of staff to pupils/students should be decided after a consideration of:

- (i) the age and/or maturity of pupils/students;
- (ii) the itinerary and distance from transport to the location;

- (iii) the nature of the location(s) and assessment of potential hazards;
- (iv) the experience of the staff;
- (v) the gender balance of the group.

As a general principle it is recommended that there is a **minimum** staff/student ratio of 1:16.

## 11. Clothing & Equipment

Leaders should ensure that pupils/students are appropriately and adequately clothed and equipped for the location and activity to be undertaken.

The following is generally advised:

- (i) a safety helmet, conforming to British Standard 5240, should be worn when visiting old quarries, cliffs and scree slopes or where there is risk from falling objects. It is obligatory to do so when visiting working quarries, mines and building sites. The helmet should be well fitting and preferably with a chin strap. Helmets that are damaged by being dropped or subject to a sharp blow should be discarded;
- (ii) safety goggles (or safety glasses with plastic lenses) should be worn for protection against flying splinters when hammering rocks or chisels;
- (iii) waterproof clothing (such as a cagoule and trousers) should be carried by each pupil/student;
- (iv) warm clothing should be taken by each pupil/student; as some activities, such as measuring and sketching, tend to be static and can lead to individuals feeling cold (even under 'mild' conditions), if inadequately clothed. Leaders should stress the importance of wearing warm, as opposed to fashionable clothing;
- (v) Walking boots (with rubber mountaineering soles) should be worn in mountains, quarries and rough country. Wellingtons may be useful for shallow water and boggy ground. Sports shoes ('Trainers') are *not* generally advised for such terrain.

## APPENDIX 1

### SUGGESTED CONTENT FOR FIELD LEADERSHIP TRAINING COURSE

For courses beyond the urban fringe the following is recommended. The course should be residential. Practical skills should be developed through simulations and exercises which should take place out of doors. Lectures on specialised topics would be appropriate and group discussions should be initiated, aimed at highlighting the responsibilities and safety consciousness of potential field leaders.

The following topics should be covered:

1. Party leadership and the responsibilities of the party leader; care and safety of party; responsibilities to party members, parents, school, LEA, general public, farmers and other users of the local environment.
2. Personal and party equipment.
3. Emergency procedures in the event of an accident.
4. Awareness of the hazards in the environment such as.
  - a) coastal areas (tide tables, sea cliffs, currents, beaches, etc.);
  - b) upland and moorland areas (navigation, party management, route choice, scree, forestry areas, etc.);
  - c) rivers and reservoirs (currents, waterfalls, swimming areas, gorges etc.);
  - d) quarries and mines (assessing stability, going into mines, caves, mine shafts etc.);
  - e) farms (machinery, grain silos, animals, etc.);
5. First aid: avoidance and treatment of injuries; hypothermia, hyperthermia, lightning, resuscitation, etc.
6. Weather: obtaining and interpreting weather forecasts; sources of information; importance of weather considerations.
7. Preliminary visit(s) to study area(s).
8. Minibuses: driving, handling of a trailer, simple maintenance.
9. Dealing with distressed children (not necessarily always in the field).
10. Access and conservation: sources of information, etc.
11. Country and field study codes and sources of further training.
12. Assessment of teacher's mental and physical fitness.

## APPENDIX 2

### THE FIELDWORK SAFETY CHECK SHEET

#### NOTES

1. The purposes of the Fieldwork Safety Check Sheet is to enable a leader to properly prepare for the field aspects of an excursion, to anticipate potential hazards and know what appropriate action is required in order to reduce such hazards to a minimum.
2. It is recognised that even with the greatest care in preparation and anticipation, that some hazards may arise due to unforeseen circumstances and, therefore, the Check Sheet cannot be taken as definitive in a leader's preparedness or actions in covering all possible hazardous events. However, if the leader is consciously aware of potential hazards and appropriate action, it seems likely that he/she will be more fit to deal with and remedy unforeseen circumstances.
3. The Check Sheet should be used by authorising bodies/persons to assess whether:
  - a) adequate preparation for the excursion has been undertaken (particularly in gaining knowledge of the fieldwork location(s));
  - b) the leader is sufficiently experienced/trained for the location(s) and activity;
  - c) supervision ratios are appropriate;
  - d) any other requirements (as laid down in guidelines) have been met.
4. The Check Sheet could provide a useful excursion evaluation record and if filed would prove an invaluable reference for future planning of excursions.

FIELDWORK SAFETY CHECK SHEET

DATE ..... LOCATIONS ..... Grid Ref .....  
..... Map Sheet .....

**TYPE OF LOCATION(S)**

Disused Quarry / Working Quarry / River Cliff / Stream / Sea Cliff  
Rocky Shore / Beach / Mudflat / Hill Outcrop / Mountain Outcrop /  
Rough Country / Cutting / Town / Other (Specify).....

CLASS ..... SIZE OF GROUP M ..... F ..... Total .....

STAFF (1) ..... (2) ..... (3) .....

ACTIVITY OBJECTIVES(S) .....

TIMES Depart ..... Return .....

PRE-VISIT ..... Date .....

SITE OWNER ..... ACCESS PERMISSION .....

DISTANCE FROM VEHICLE .....

ITINERARY

KNOWN POTENTIAL HAZARDS

ACTION

SIGNED (Leader) ..... Date.....

AUTHORISED ..... POSITION ..... Date.....

POST-VISIT COMMENTS

SAMPLE

FIELDWORK SAFETY CHECK SHEET

DATE 12.6.89 LOCATIONS..Ladyford..... Grid Ref..145721.....  
..... Map Sheet .74.....

**TYPE OF LOCATION(S)**

Disused Quarry / Working Quarry / River Cliff / Stream / Sea Cliff  
Rocky Shore / Beach / Mudflat / Hill Outcrop / Mountain Outcrop /  
Rough Country / Cutting / Town / Other (Specify) .....

CLASS ..3W... SIZE OF GROUP M ..12... F ..18... Total ..30....

STAFF (1) ...J.Allnutt..... (2) ...P.Briggs..... (3) .....

ACTIVITY OBJECTIVES(S) *River Studies -Velocity/Bedload/Meander Beaches*

TIMES Depart ..12.00... Return ..4.30.....

PRE-VISIT ..... Date ...10.5.89.....

SITE OWNER ....Mr K Inglis..... ACCESS PERMISSION ...10.5.89.....

DISTANCE FROM VEHICLE ....100m (across field).....

**ITINERARY**

**KNOWN POTENTIAL HAZARDS**

**ACTION**

- |                        |   |
|------------------------|---|
| 1. Deep Pools          | <i>Students do not need to go near pools - NO GO AREA!!</i> |
| 2. Rocky Bed           | <i>Warn students about footing</i>                          |
| 3. Barbed wire on gate | <i>Students must cross fence <u>by stile only.</u></i>      |

SIGNED (Leader) *J. Allnutt* ..... Date ...13.5.89.....

AUTHORISED ...*P. J. Briggs*..... POSITION ...HEAD..... Date.16.5.89.

**POST-VISIT COMMENTS**

*Need to keep an eye on pupils working too close to pool areas - Ranging poles would be useful to mark out upstream working boundary Remind pupils to bring wellies!!! Another member of staff would be useful.*

SAMPLE

FIELDWORK SAFETY CHECK SHEET

DATE .31.10.88.... LOCATIONS *Bishops Rock*..... Grid Ref ..024 054..  
..... Map Sheet .121.....

**TYPE OF LOCATION(S)**

Disused Quarry / Working Quarry / River Cliff / Stream / Sea Cliff  
Rocky Shore / Beach / Mudflat / Hill Outcrop / Mountain Outcrop /  
Rough Country / Cutting / Town / Other (Specify) .....

CLASS ..6A.... SIZE OF GROUP M ..10... F ...4.... Total ..14....

STAFF (1) ..*F. Smith*..... (2) ..... (3) .....

ACTIVITY OBJECTIVES(S) *Sedimentary logging Pal environments*.....

TIMES Depart .09.00.... Return ....17.30.....

PRE-VISIT ..... Date .26 August 1988.

SITE OWNER ...*Trinity House*..... ACCESS PERMISSION.....0.9.88.....

DISTANCE FROM VEHICLE ....300m.....

**ITINERARY**

*From cliff top Car Park - descent cliff path to shore. Working area is 100 m to E. along rocky shore.*

**KNOWN POTENTIAL HAZARD**

**ACTION**

1. *Tidal area (low water 14.00 hrs) - watch time! (Finish by 3.30 latest).*
2. *Sea cliff - Hard hats to be worn at all times/No climbing.*
3. *Slippery Foreshore - Warn students about footing.*
4. *Steep access path - Warn students - Firm footing - watch out for nervous students.*

SIGNED (Leader) ..*F. Smith*..... Date ...1.10.88.....

AUTHORISED ..*A.S. Morris*..... POSITION .....HEAD... Date.8.10.88.

**POST-VISIT COMMENTS**

1. *Good site.*
2. *Access path has been fenced off - had to walk 3km as a detour! Key to gate can be obtained from Trinity House, Truro.*

## APPENDIX 3

### USEFUL REFERENCES & CODES OF CONDUCT

#### References

*Safety in Outdoor Education*, D.E.S., HMSO, 1989

*Safety Out of Doors*, M. O'Connor, School Curriculum Development Committee/Methuen, 1987.

*Beyond the Classroom*, National Union of Teachers, 1986.

*Safety on School Journeys*, Professional Association of Teachers, 1987.

*Out of School (3rd Edition)*, Assistant Masters and Mistresses Association, 1987.

*Geography Outside the Classroom*, The Geographical Association, 1990.

*Hobsons School Travel Organiser's UK Handbook*, Chris Lowe, Hobsons 1991

#### Codes of Conduct

*A Code for Geological Fieldwork*, Geologists' Association.

*Code of Practice for Geological Visits to Quarries, Mines and Caves*, The Institution of Geologists.

*Advice on Safety and Behaviour for Individuals and Parties Carrying Out Geological Fieldwork*, Committee of Heads of University Geology Departments.

*The Outdoor Studies Code*, Council for Environmental Education.

*Outdoor Education: Safety and Good Practice*, National Association for Outdoor Education.

*The Country Code*, Countryside Commission.

*The Fieldwork Code*, National Association of Field Study Officers.

*Safety in Biological Fieldwork*, Institute of Biology.

*The Blue Code for Water Safety*, The Royal Life Saving Society.

*The Mountain Code*, British Mountaineering Council.

#### Slide Set

*What would you do? Aspects of expedition first aid*, (a set of 47 slides with notes), Duke of Edinburgh Award.

#### Training Course

*Safe and Effective Leadership Outside the Classroom*, Environment and Training Group. Details from E.T.G., Central Services, Preston Montford Bridge, Shrewsbury, SY4 1HW.