

Scientific and archaeological diving projects

Diving at Work Regulations 1997

Approved Code of Practice and guidance



L107 (Second edition) Published 2014

This Approved Code of Practice (ACOP) and associated guidance provides practical advice and sets out what you have to do to comply with the requirements of the Diving at Work Regulations 1997 (the Diving Regulations).

It applies to divers who are engaged in scientific and archaeological diving projects within the United Kingdom waters adjacent to Great Britain (generally 12 nautical miles from the low water line). This includes all diving projects undertaken in support of scientific research or scientific education.

In order for a diving project to fall within the Diving Regulations, there must be at least one diver participating in it who is 'at work'. This means that at least one person must be diving as an employee or a self-employed person.

It does not cover the recovery of items for salvage and then sale or personal use. This is covered by the Inland/inshore ACOP (L104).

Diving for scientific or archaeological purposes which falls within the scope of the Offshore ACOP (L103) is covered by that ACOP and not by this, for example diving projects where closed bell or saturation diving techniques are used.

This edition of the ACOP has been revised in order to simplify some of the information, update the references and provide greater consistency across all the ACOPs covering diving at work. This document has also been updated to reflect changes in technology and industry practice.

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Approved Code of Practice

This Code has been approved by the Health and Safety Executive, with the consent of the Secretary of State. It gives practical advice on how to comply with the law. If you follow the advice you will be doing enough to comply with the law in respect of those specific matters on which the Code gives advice. You may use alternative methods to those set out in the Code in order to comply with the law.

However, the Code has a special legal status. If you are prosecuted for breach of health and safety law, and it is proved that you did not follow the relevant provisions of the Code, you will need to show that you have complied with the law in some other way or a Court will find you at fault.

Guidance

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

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Introduction

About this book

- 1 This Approved Code of Practice (ACOP) sets out what you have to do to comply with the requirements of the Diving at Work Regulations 1997 (the Diving Regulations).¹ The ACOP text and associated guidance provide practical advice on how you can comply with the requirements of the Regulations.
- 2 The ACOP applies to divers who are engaged in scientific and archaeological diving projects. In order for a diving project to fall within the Diving Regulations, there must be at least one diver participating in it who is 'at work'. This means that at least one person must be diving as an employee or a self-employed person. (See paragraph 13 for definition of 'at work'.)
- 3 Archaeological diving projects include activities carried out in support of the investigation of sites of historic interest, the analysis of physical remains, the recovery from such sites of articles for preservation and further analysis, and educational instruction. It does not cover the recovery of items for salvage and then sale or personal use, this is covered by the inland/inshore ACOP (see paragraph 12).
- 4 Scientific diving projects include all diving projects undertaken in support of scientific research or scientific education.
- The ACOP applies to all scientific and archaeological diving projects within the United Kingdom waters adjacent to Great Britain (generally 12 nautical miles from the low water line).
- 6 Diving for scientific or archaeological purposes which falls within the scope of the Offshore ACOP is covered by that ACOP and not by this; for example, diving projects where closed bell or saturation diving techniques are used.
- 7 The ACOP has been revised in order to simplify some of the information, update the references and provide greater consistency across all of the ACOPs covering diving at work. Revisions in this ACOP have also reflected changes in technology and industry practice. The most significant changes relate to:
- (a) availability of compression chambers. This change is to reflect medical advice and research into time to treatment for decompression illness;
- (b) fitness to dive. Further information has been provided for divers regarding medical treatment, medical conditions or medication being taken, that may make them unfit to dive;
- (c) diving in pools and tanks. Changes have been made regarding team size and risk assessment to ensure consistency;
- (d) two-way communications. Clarification of requirements for communication with divers;
- (e) provision of oxygen. Additional information has been provided on the provision of sufficient oxygen for the transport of an injured diver to a compression chamber or hospital.

About ACOPs

- 8 ACOPs are approved by the HSE Board with the consent of the Secretary of State (see 'Appendix 1: Notice of Approval' for details).
- 9 The ACOP describes preferred or recommended methods that can be used (or standards to be met) to comply with the Diving Regulations and the duties imposed by the Health and Safety at Work etc Act.² The accompanying guidance also provides advice on achieving compliance, or it may give information of a general nature, including explanation of the requirements of the law, more specific technical information or references to further sources of information.
- 10 The legal status of ACOP and guidance text is given on the copyright page (page 2).

Presentation

11 The ACOP text is set out in **bold** and the accompanying guidance in normal type, the text of the Regulations is in *italics*. Coloured borders also indicate each section clearly.

The other diving ACOPs

- 12 There are four other ACOPs covering diving at work:
- (a) Commercial diving projects offshore;3
- (b) Commercial diving projects inland/inshore;4
- (c) Media diving projects;⁵
- (d) Recreational diving projects.6

Definitions in the Regulations

Regulation 2 Interpretation

Regulation

2

(1) "diver" means a person at work who dives;

Guidance

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- 13 'At work' means as an employee or as a self-employed person. The phrase covers divers who dive as part of their duties as an employee and divers who are in business on their own account during the time that they devote themselves to work as a self-employed diver. Diving does not have to be the main work activity of the employee or the self-employed person. The Diving Regulations apply to any diving project where at least one diver is at work.
- 14 There is nothing in the Diving Regulations that prevents scientific and archaeological dive teams being made up of a mix of both people who are at work and people who are not. However, such an arrangement may introduce additional risks to be addressed in the diving project plan. All people who dive must be competent to do so. If anyone in the team who is not at work is allocated duties under the Diving Regulations they must be competent to perform them.

Regulation

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- (2) For the purposes of these Regulations a person "dives" if -
- (a) he enters
 - (i) water or any other liquid; or
 - (ii) a chamber in which he is subject to pressure greater than 100 millibars above atmospheric pressure; and
- (b) in order to survive in such an environment he breathes in air or other gas at a pressure greater than atmospheric pressure;

Guidance 2

15 Environments such as scientific clean rooms or submersible craft subject to an internal pressure of less than 100 millibars above local ambient atmospheric pressure are not covered by the Diving Regulations.

Regulation

2

(1) "diving project" means any activity, made up of one or more diving operations, in which at least one person takes part or will take part as a diver and extends from the time when that person, or the first such person, commences to prepare to dive until that person, or the last such person, has left the water, chamber or other environment in which the dive, or any part of the dive, took place and has completed any requisite decompression procedures, including, where it may be reasonably anticipated that this will be needed, any therapeutic recompression:

Guidance 2

- 16 'Diving project' is the term used for the overall diving job whether it lasts two hours or two months. It can be made up of one or more diving operations.
- 17 A number of diving projects could take place on one site at the same time. Each of these projects could be separate from the others, and each could have a separate diving contractor in charge.

Regulation

2

(1) "diving operation" means a diving operation identified in the diving project plan pursuant to regulation 8(3);

Guidance

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- 18 'Diving operations' can be made up of either a number of dives or sometimes, a single dive. A diving operation should be that portion of a diving project identified in the diving project plan which one supervisor can safely supervise. One supervisor must be appointed for each diving operation.
- 19 The diving project plan should identify how the diving project is broken down into diving operations and how many supervisors will be needed. The diving contractor should determine this after studying the risk assessment. Factors such as the task, site conditions and the diving technique will contribute to making the decision. It is also a good idea to involve the supervisor or supervisors in the process. If a supervisor does not agree with the size or complexity of the portion of the diving project allocated to them to supervise, they should raise the matter with the diving contractor. Supervisors should not participate in a diving operation which they consider in their opinion to be unsafe because insufficient supervisors have been appointed or which they are not competent to supervise.

Regulation 3 Application and extent

Regulation

3

- (1) These Regulations shall apply to and in relation to any diving project apart from the following
 - (a) the care or treatment of patients in a hospital or other place, not under the control of the diving contractor, where emergency medical treatment is provided or in transit to such hospital or place where the means of transit is provided by or in respect of the hospital or other place;

Guidance

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- 20 The use of compression chambers within diving projects is covered by the Diving Regulations. However, those receiving hyperbaric treatment at a hospital or other place are outside the scope of the Diving Regulations. This is to avoid duplication of responsibilities when another authority is involved in the medical treatment of a diver.
- 21 Where hyperbaric treatment is to be provided at a hospital or other place, the arrangements for this should be covered in the diving project plan. The arrangements should include ensuring the availability of that chamber and arrangements to ensure the safe transport of the diver for treatment.

Regulation 5 The diving contractor

Regulation

5

(1) No person at work shall dive in a diving project and no employer shall employ any person in such a project unless there is one person and one person only who is the diving contractor for that project.

Guidance !

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22 The term 'person' used to identify the diving contractor under this regulation means any person with a legal identity. An individual would be a person within the meaning of this term and so would a company.

Clients and others

Regulation 4 Duty to ensure compliance with these Regulations

Regulation

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Every person who to any extent is responsible for, has control over or is engaged in a diving project or whose acts or omissions could adversely affect the health and safety of persons engaged in such a project, shall take such measures as it is reasonable for a person in his position to take to ensure that these Regulations are complied with.

ACOP

- 23 Actions or omissions of other people can affect the safety of the dive team even though these people are not members of the team. These people include:
- (a) The client, who has the responsibility of selecting a diving contractor to perform the project. This responsibility means that the client should make their selection on grounds of how the diving contractor proposes to comply with the Diving Regulations and the diving contractor's plans for a safe system of work, as well as the many other factors that the client should consider when making their selection. While the duties of the client under this regulation do not extend to checking the quality of the diving contractor's risk assessment or diving project plan, a client, before engaging a diving contractor, should establish basic details of how the diving contractor will go about this task. It is essential that adequate resources are allocated to the diving contractor to enable them to perform the diving contractor's duties under the Diving Regulations.
- (b) Site owners and charitable trusts should pass on relevant information to the diving contractor they engage. They should consider whether any underwater or above water hazards could be a risk to the safety of the divers. They should also ensure that other activities in the vicinity do not affect the safety of the diving project.
- (c) Vessel operators should ensure that any equipment under their control does not adversely affect the safety of the diving project. They should keep the supervisor informed of any changes in circumstances which may affect the safety of the diving project, and co-operate with the diving contractor to enable their obligations under the Regulations to be fulfilled.
- 24 Each of these people should take reasonable steps to ensure that any diving contractor selected is capable of complying with the Regulations.
- 25 The duty under this regulation also extends to diving contractors, supervisors, divers and to people indirectly involved in the diving project, such as crane operators, lorry drivers, and maintenance personnel. These people should ensure that their tasks and the way they undertake them does not affect the safety of the dive team.

Diving contractors

Regulation 5 The diving contractor

Regulation

5

- (1) No person at work shall dive in a diving project and no employer shall employ any person in such a project unless there is one person and one person only who is the diving contractor for that project.
 - The diving contractor shall, subject to paragraph (3), be the person who -
 - is the employer of the diver or divers engaged in the diving project; or
 - dives in the diving project as a self-employed diver.
- Where there is more than one person falling within paragraph (2) those persons shall jointly appoint in writing before the commencement of the diving project one of themselves to act as diving contractor.

- The Diving Regulations require that one person is identified as the diving contractor for every diving project. The main duties under the Diving Regulations are placed on the diving contractor.
- The diving contractor must either be the employer of the divers taking part in the diving project, or someone who dives in the diving project as a self-employed diver. The employer could carry out their legal duty as a diving contractor by instructing a suitable employee* with expertise in diving matters to discharge some of the specialist duties of the diving contractor on their behalf. The employee instructed to carry out these duties must be competent to perform them.
- 'Competence' means having a combination of training, knowledge and experience which enables a person to do the job required in a safe manner. Evidence of past experience in organising a diving project in a safe and effective manner and appropriate qualifications would be ways of demonstrating competence. The employee selected will also need the authority and resources to effectively discharge these duties. The duties will remain with the employer who must be satisfied that the employee selected will be able to perform the duties on their behalf without risk to the dive team or to that employee.
- Where there is more than one employer of divers or more than one selfemployed diver taking part in the diving project, it must be established and recorded in writing who will be the diving contractor for that project.
- This person need not be an employee it could be somebody brought in for the purpose.
- The duty to appoint a supervisor at regulation 6(2)(b) is personal to the diving contractor. +

Regulation 6 Duties of diving contractor

Regulation

6

- (1) The diving contractor shall ensure, so far as is reasonably practicable, that the diving project is planned, managed and conducted in a manner which protects the health and safety of all persons taking part in that project.
 - (2) The diving contractor shall -
 - (b) before the commencement of any diving operation -
 - appoint a person to supervise that operation in accordance with regulation 9;
 - (ii) make a written record of that appointment; and
 - (iii) ensure that the person appointed is supplied with a copy of any part of the diving project plan which relates to that operation;
 - (c) as soon as possible after the appointment of a supervisor, provide that supervisor with a written record of his appointment.
 - (3) The diving contractor shall -
 - (d) ensure, so far as reasonably practicable, that any person taking part in the diving project complies with the requirements and prohibitions imposed on him by or under the relevant statutory provisions and observes the provisions of the diving project plan;
 - (e) ensure that a record containing the required particulars is kept for each diving operation;

ACOP

- 30 The diving contractor has overall responsibility for the safety of the diving project. This includes ensuring that:
- (a) a suitable risk assessment and diving project plan have been prepared which identify the number of supervisors, divers and equipment needed (see 'Diving project plan and risk assessment'):
- the size and abilities of the dive team are sufficient to enable the diving project to be carried out safely (see 'Dive teams and associated working practice');
- (c) the place from which the diving is to be carried out is suitable and safe;
- (d) supervisors are appointed in writing (this must be done by the diving contractor) for the diving operation which they are to supervise and are supplied with copies of their formal appointment and the part of the diving project plan relevant to their operation:
- (e) a sufficient number of suitably qualified personnel are used and are competent to undertake the tasks assigned to them. Members of the team who are not at work and who are allocated duties under the Diving Regulations must be competent to perform them (see 'Supervisors' and 'Divers and persons who dive in diving project');
- (f) the team is medically fit to dive (see 'Medical checks');
- (g) the supervisor and dive team are fully briefed on the project and aware of the contents of the diving project plan;
- (h) suitable plant and equipment are provided and are properly maintained (see 'Diving plant' and 'Maintenance of diving plant');
- (i) adequate arrangements exist for emergencies, including first-aid and medical treatment (see 'Dive teams and associated working practice');
- (j) an up-to-date record is kept for each diving operation;
- (k) all other relevant regulations are complied with.

Regulation 7 Information to be supplied to Executive by diving contractor

Regulation 7

- (1) No person shall act as a diving contractor unless the particulars listed in Schedule 1 have been supplied in writing to the Executive by or in respect of that person.
- (2) Where there is a change in any of the particulars supplied under paragraph (1) the diving contractor shall ensure that details of the change are forthwith supplied in writing to the Executive.
- ACOP 7
- 31 Before any person (see paragraph 22 for the definition) acts as a diving contractor, they must ensure that HSE is provided with information about their identity and where they can be contacted. The diving contractor is also required to inform HSE of any subsequent changes to this information.



32 The particulars to be sent to HSE relating to the diving contractor's identity are set out in Schedule 1 to the Diving Regulations. HSE will acknowledge receipt of such information.

Diving project plan and risk assessment

Regulation 6 Duties of diving contractor

Regulation

6

- (2) The diving contractor shall -
- (a) ensure that, before the commencement of the diving project, a diving project plan is prepared in respect of that project in accordance with regulation 8 and that the plan is thereafter updated as necessary during the continuance of the project;

Regulation 8 Diving project plan

Regulation

8

- (1) The diving project plan shall be based on an assessment of the risks to the health and safety of any person taking part in the diving project and shall consist of a record of the outcome of the planning carried out in accordance with regulation 6(1) including all such information and instructions as are necessary to give advice to and to regulate the behaviour of those so taking part to ensure, so far as is reasonably practicable, their health and safety.
- (3) The diving project plan shall identify each diving operation which makes up the diving project and the nature and size of any diving operation so identified shall be such that it can be safely supervised by one person.

ACOP 6, 8

- 33 The diving contractor is responsible for ensuring that before the start of the diving project a suitable risk assessment and diving project plan have been prepared. The diving contractor may take on the task of preparing the dive plan or ask the supervisor to prepare one. In any event the diving contractor must check that a diving project plan has been prepared and completed in advance for each diving project and is suitable and sufficient for each diving project under their responsibility.
- 34 In addition to any generic risk assessments in the diving project plan, all diving projects should have a site and date specific risk assessment. These risk assessments should be kept with the diving project plan together with any additional safety procedures needed. Both the risk assessment and the diving project plan must be documented.
- 35 The diving project plan should specifically identify how the diving project is broken down into individual operations which can be safely supervised by one person. When making this decision the diving contractor should take into account the size and nature of the diving project.

Risk assessment

36 The risk assessment should identify any risks associated with a diving project as well as the measures to control those risks. These include:

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- (a) water conditions, underwater visibility, pollution, depth, temperature;
- (b) access to and from the shore/boat/platform;
- (c) breathing gas mixture and the equipment needed;
- experience and number of personnel (including people who are not at work but are part of the dive team);
- (e) emergency procedures, including the location and proximity to emergency facilities, such as compression chambers and medical expertise;
- (f) the method chosen for the dive, ie surface supply or *SCUBA*, stating the safety reasons for the choice.
- 37 This is not a complete list of all hazards and measures needed to control risks. An appraisal of the hazards at a specific dive site will identify the full extent of the safeguards needed to protect the safety of the dive team.
- 38 As a matter of safe working practice, the supervisor should keep the site-specific risk assessment under review and revise it if necessary.
- 39 As well as the particular diving project plan for the individual operations there will be generic diving rules, such as the Scientific Diving Supervisory Committee (SDSC) advice notes and any in-house rules. The supervisor should have copies of both the generic diving rules and the diving project plan for their operation. All members of the team should have access to copies of these and should also become familiar with them before the dive.
- 40 A risk assessment made under these Regulations will cover in part the obligation to make an assessment under the Management of Health and Safety at Work Regulations 1999 (the Management Regulations). There will be no need to repeat those aspects of the assessment, so long as they remain valid, in any other assessment that the diving contractor carries out. However, the diving contractor will need to ensure that all significant risks not covered by the diving project assessment (including risks to members of the public arising from the diving project/diving activities) are covered by the risk assessment carried out under the Management Regulations (or in any assessment required to be carried out under other specific regulations).

Decompression procedures

41 Decompression procedures (including the use of a decompression computer) should be appropriate for the type of diving technique undertaken and their use included in the diving project plan. For surface-orientated diving, decompression procedures should be consulted to determine whether the dive requires 'in-water' decompression. All decompression procedures should be designed to take into account the risks of a particular type of dive and should include the various rules and procedures needed in order to reduce the risk of decompression illness (DCI).

Dive teams and associated working practice

Regulation 6 Duties of diving contractor

Regulation

- (3) The diving contractor shall —
- (a) ensure that there are sufficient people with suitable competence to carry out safely and without risk to health both the diving project and any action (including the giving of first-aid) which may be necessary in the event of a reasonably foreseeable emergency connected with the diving project;

ACOP

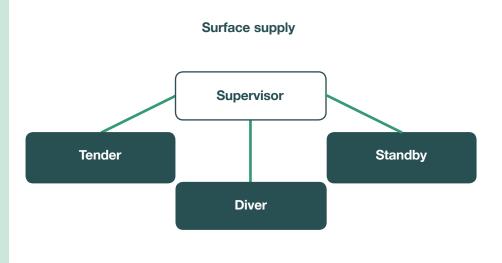
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Dive teams

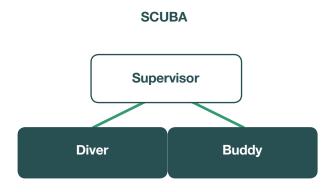
- 42 The diving contractor should identify the minimum size of team for safe operations based on the requirements of the risk assessment and diving project plan. The risk assessment should take into account the number of divers needed in order to carry out the project safely and deal with how foreseeable emergencies will be managed. This information should be included in the diving project plan.
- 43 The following guide (see Figure 1) indicates the minimum team size for benign conditions: clear water, negligible tide or current, no trapping hazard, easy entry and exit from the water, and where the task to be performed is not arduous.

Figure 1 Minimum dive team for benign conditions using surface supply



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Figure 2 Minimum dive team for benign conditions using SCUBA



- 44 Only rarely will it be acceptable to use the minimum team size. The acceptability of this number should be established from the risk assessment and included in the diving project plan.
- 45 The supervisor should be familiar with the diving project plan and the emergency arrangements for obtaining immediate assistance in the event of an incident; for example, it may be necessary to have another person to help recover someone from the water or to go for help. Any additional people must be included as members of the dive team under direct control of the supervisor.
- 46 All the people who form part of the dive team must be competent to discharge their duties. HSE approves certain qualifications for diving under this ACOP which indicate that a minimum level of competence has been assessed. Qualifications alone do not always demonstrate fitness to undertake a task. The diving contractor has a duty to engage competent people, which may require that the dive team's competence is verified or demonstrated. This is particularly important when allocating duties for mixed team diving. In such cases the diving contractor should ensure that everyone is competent to undertake their tasks safely and without risk to themselves and other members of the team.
- 47 The supervisor should decide upon a common system of signals to be used between the dive team and others involved in the diving operation and ensure that everyone is familiar with this system. This should be done before the start of the diving operation for which they are responsible, and recorded in the diving project plan.

Pools and tanks

- 48 For diving in clear water in tanks and pools using SCUBA, where the diver is in full view from the surface at all times, where no entanglement or entrapment hazards are present and there is no interference from other activities, eg no powerful or aggressive animals in fish storage tanks or aquariums, as justified by the risk assessment, the minimum team size can be three.
- 49 This may be a dedicated person on the surface and two qualified divers (one of whom would have to be the supervisor) in the water who must each act as standby diver to the other, or the supervisor on the surface, a diver on a lifeline and a third person on the surface to assist with the emergency recovery of the diver, if needed. In either case, the person on the surface does not have to be a qualified diver but they should be familiar with the diving project plan

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- and arrangements for obtaining immediate assistance in an emergency. They should not leave the dive site while the operation is taking place.
- 50 The risk assessment must identify the situations where this is safe and record the appropriate measures which should be taken to ensure that the risks are controlled. It should cover how the diver, if injured or unconscious, can be lifted from the water before help arrives and how help can be summoned without delaying assistance to the diver.

First-aid training and competencies

- 51 The diving contractor is responsible for ensuring that enough people in the diving project are trained and competent in first aid. The risk assessment should identify the first-aid equipment required on site and the number of qualified personnel needed to use it.
- 52 The risk assessment should take into account the type of diving taking place, the size of the team and the distance of the dive site from the emergency services. It is sensible to have more than one person in the team qualified in first aid in case that person becomes injured. Those who are qualified should not hold other important duties which could conflict with the need to administer first aid in an emergency.
- There are situations where some members of the dive team should have additional training in first aid. The need for additional training may arise where remoteness from local emergency medical services means there is a need to maintain life until the emergency medical services are able to assume responsibility; and where the diver requiring first aid is inside a compression chamber and medical assistance cannot be provided by normal emergency medical services. The Health and Safety (First-Aid) Regulations 1981: Guidance on Regulations (L74)⁸ sets out additional advice for those areas where special additional training may be necessary to cover less common risks.
- 54 At least one member of the dive team should be qualified in resuscitation and oxygen administration.
- 55 The diving project plan should record who in the diving team has responsibility for first aid and what type of first-aid equipment is available for the diving project.

Regulation 10 Duties of supervisor

Regulation

- (2) The supervisor shall not dive during the diving operation which he is supervising unless
 - (a) (ii) the dive is for archaeological, educational or scientific purposes, takes place in a tank or pool artificially constructed for the purpose of swimming or diving and the persons taking part in the dive use only self-contained underwater breathing apparatus; and
 - (b) the supervisor can so dive without risk to the health and safety of those taking part in that operation and of other persons who may be affected thereby; and
 - (c) the diving project plan which relates to that operation specifically provides for the supervisor to so dive.

Where a dive takes place in a swimming pool or tank and SCUBA is used, the supervisor may dive during the course of the diving operation which they are supervising. The diving project plan must make specific provision for this and identify the measures needed to ensure that the operation takes place without risk to those taking part in it or others who might be affected by the operation.

Diving plant

Regulation 6 Duties of diving contractor

Regulation

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- (3) The diving contractor shall -
- (b) ensure that suitable and sufficient plant is available whenever needed to carry out safely and without risk to health both the diving project and any action (including the giving of first-aid) which may be necessary in the event of a reasonably foreseeable emergency connected with the diving project;

ACOP

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- 57 The diving project plan should identify the type and amount of equipment required depending on the circumstances of the diving project.
- 58 Each diver should be supplied with breathing gas which is to an appropriate national, European or international standard, and which is adequate in volume and rate of supply for the specific diving operation. In the case of surface supplied diving operations, independent primary and secondary supplies of breathing gas should be available to each diver. Such gas supplies should be arranged so that interruption of the supply to one diver will not affect other divers' supplies. Whatever type of breathing apparatus is in use, each diver should carry an alternative breathing gas source or life support system for emergency use. This should have sufficient capacity to allow the diver to reach a place of safety.
- 59 A means of two-way communication between the supervisor and the divers should be provided. Two-way voice communications should be available for all dives. However if this is not practicable, then other means of two-way communication (eg lifeline signals) may be used. This decision should be based on the findings of the risk assessment. Where reliance is placed on a fixed surface marker buoy then there should be a boat or other method to maintain communication with the diver.
- 60 There are benefits to recording voice communications and keeping the recording until the dive is successfully completed. For example, if an incident occurs during the dive the recording may help in any subsequent investigation.
- 61 Suitable thermal and safety protection equipment should be provided for all personnel involved in the diving project.

Dealing with emergencies

62 For each diving project the risk assessment should include a suitable casualty evacuation plan. This should include the arrangements for the emergency recovery of a casualty from the water and their transportation to a compression chamber or specialist treatment centre. The details of the

- 6 emergency arrangements should be recorded in the diving project plan. The initial stages of these arrangements should be tested periodically in order to ensure that they are effective.
 - 63 There should also be a means of summoning further emergency assistance that does not involve the supervisor or other essential personnel leaving the immediate dive site. This should be planned for when deciding the team size.
 - 64 An appropriate first-aid kit including an emergency oxygen administration set should be immediately available on the dive site. Oxygen should be immediately available at all locations covered by this ACOP, including those where there is a compression chamber. Sufficient gas should be provided for the duration of a transfer of a diver to a compression chamber, hospital or other place. It should be provided by a tight-fitting mask or by a mouthpiece with a nose clip.
 - When diving in polluted waters suitable decontamination/disinfection procedures should be in place before and after the diving project.

Availability of compression chambers

- 66 The diving contractor has a responsibility to ensure the provision of facilities so that a diver can be recompressed in an emergency, should this be necessary. Treatment of DCI in a compression chamber should commence as soon as possible (subject to medical advice). The provision of a compression chamber should be in accordance with the decompression procedures selected as part of the diving project plan.
- 67 In addition, the following minimum standards should be applied:
- (a) for dives that are shallower than 10 metres with planned in-water decompression not exceeding 20 minutes, the diving contractor should identify the nearest suitable operational two-person, two-compartment chamber. Under no circumstances should this be more than 6 hours travelling distance from the dive site;
- (b) for dives between 10 and 50 metres with planned in-water decompression not exceeding 20 minutes, the diving contractor should assess the risk of DCI and likelihood of a diver requiring emergency recompression. This should be based on the depth and duration of the planned dives. The assessment should also consider factors which may increase the risk of DCI such as water temperature, type of work and the number of dives/ascents. If the assessment demonstrates a significant risk of DCI a suitable, operational, two-person, two-compartment chamber should be provided for immediate use at the site of the diving project. If the assessment demonstrates relatively low risk of DCI, the diving contractor should identify the nearest suitable, operational, two-person, two-compartment chamber. Under no circumstances should this be more than 6 hours travelling distance from the dive site;
- (c) for dives with planned in-water decompression stops greater than 20 minutes or any dives deeper than 50 metres the diving contractor should provide a suitable, operational, two-person, two-compartment chamber for immediate use at the site of the diving project. The diver should be able to leave the water quickly and easily and be pressurised within the chamber to the appropriate recompression pressure as defined by the time in the decompression schedule being used. The controls of a compression chamber should only be operated by people competent to

- do so. Such competence will be achieved by a combination of training and experience. The degree of supervision provided should reflect the experience of the operator.
- 68 The diving project plan should demonstrate that in an emergency, where the compression chamber is not located on the site, a diver will be able to be transported and recompressed to ensure, so far as reasonably practicable, their safety. If the diving project plan relies on the support of any emergency services, then that plan should be subject to continued assessment and take into account any factors which may affect such support (for example changing weather conditions).
- 69 If a situation arises where a diver may need hyperbaric treatment at a chamber provided by another chamber owner, then provision for this should be made in the diving project plan.
- 70 If the diving contractor is responsible for transporting the injured diver to a hospital or other place, their duty will continue until the diver is admitted to the hospital or other place.

Maintenance of diving plant

Regulation 6 Duties of diving contractor

Regulation

6

- (3) The diving contractor shall -
- (c) ensure that the plant made available under sub-paragraph (b) is maintained in a safe working condition;

ACOP

- 71 Diving plant and equipment is used under extreme conditions, including immersion in salt water. It therefore requires regular inspection, maintenance and testing to ensure that it is fit for use and not damaged or suffering from deterioration.
- 72 In order to ensure that the equipment is maintained, the diving contractor should have a written scheme of equipment maintenance and inspection. All plant and equipment should be checked by a competent person immediately before use and this check entered in the diving operation record.
- 73 The equipment maintenance scheme should be based on the manufacturers' recommendations and be in accordance with the appropriate national, European or international standards.
- 74 The diving contractor should ask divers using their own diving equipment to confirm that it has been serviced in accordance with the appropriate equipment supplier's service schedule and that all the cylinders have been tested for fitness-for-use in line with statutory requirements under other regulations. Prior to the dive, this should be confirmed to the supervisor and recorded in the diving operation record for their operation.
- 75 The diving contractor should also ensure that before the start of the diving operation, divers will be asked to carry out a pre-dive visual inspection and check of their equipment to ensure that it is in a serviceable condition and working correctly.
- 76 Where breathing and similar equipment is likely to be shared, appropriate disinfection procedures should be used.

Supervisors

Regulation 9 Appointment of supervisor

Regulation 9

9

9

(1) Only one supervisor shall be appointed to supervise a diving operation at any one time.

ACOP

Supervisor's appointment

- 77 A supervisor must be appointed in writing by the diving contractor. If a diving project is complex or takes place over such an area or timescale that its operation cannot be safely supervised by one supervisor, then the project should be divided up and further supervisors should be appointed for separate operations. Enough supervisors must be appointed to cover the entire diving project.
- 78 Written appointments should clearly define the times and areas of control, and the name of the person appointed and supervising at the time should be entered in the diving operation record. The supervisor should have immediate overriding control of all safety aspects of the diving operation for which they are appointed.
- 79 During the period of appointment the supervisor should not leave the dive site or dive without formally handing over to another supervisor. The handover should be entered in the diving operation record.

Regulation 9

(2) No person shall be appointed, or shall act, as a supervisor unless he is competent and, where appropriate, suitably qualified to perform the functions of supervisor in respect of the diving operation which he is appointed to supervise.

ACOP

Supervisor's competency

- 80 The diving contractor must consider the competence of a person before appointing them as a supervisor. When considering competence, the diving contractor should consider such questions as whether the person is knowledgeable, practical, reliable; capable of conducting the diving operation in a safe manner; capable of managing members of the diving team appropriately and remaining calm in an emergency. A formal supervisor qualification is one way of demonstrating competence.
- 81 The diving contractor will be in a good position to decide on a person's competence if the person has worked for the organisation for some time. If the diving contractor does not know the person, it will be necessary for the diving contractor to make appropriate enquiries concerning the person's knowledge and experience.

9

- 82 A supervisor must be suitably qualified. This means holding an approved qualification as a diver for the diving techniques they are supervising. A list of approved qualifications is available on the HSE diving website (see 'Further reading').
- 83 Supervisors who do not dive do not have to have a certificate of medical fitness to dive.

Regulation 10 Duties of supervisor

Regulation

10

- (1) The supervisor shall, in respect of the diving operation for which he has been appointed as supervisor
 - (a) ensure that it is carried out, so far as is reasonably practicable -
 - (i) without risk to the health and safety of all those taking part in that operation and other persons who may be affected thereby;
 - (b) before the commencement of the operation, ensure that each person taking part is aware of the contents of the diving project plan which relate to that operation; and
 - (c) enter in the diving operation record the particulars required by regulation 6(4) during the course of the operation.

ACOP

10

The supervisor's responsibility

- 84 The supervisor has legal responsibility for the safety of the diving operation they are supervising and should be on site, in direct control of the diving operation taking place. This includes confirming that:
- (a) all relevant authorities are aware that a diving operation is in progress, and all the necessary permits and permissions have been obtained;
- (b) the competencies, abilities and fitness of all the personnel involved in the diving operation have been assessed and the people making up the dive team are capable of carrying out safely the tasks required of them. Everyone in the dive team is responsible for making a realistic assessment of their own fitness and capabilities;
- (c) if a task requires the use of any specialised equipment, all the personnel involved are adequately trained and aware of any particular hazards and risks associated with the equipment and if appropriate hold a certificate of training or competency in the use of specialist equipment;
- (d) the diving project plan and arrangements for dealing with foreseeable emergencies are clearly understood by all those engaged in the diving operation. This would normally be ensured by a pre-dive briefing session with all those involved;
- (e) the diving operation record is accurate and kept up to date.
- 85 The supervisor should carry out or check that a site-specific risk assessment has been carried out and ensure that it is still current for the prevailing circumstances on the day of and during the dive.
- 86 The supervisor's responsibilities to the divers in a diving operation will continue until all necessary decompression has finished, unless the treatment takes place in a hospital or other place, or until the responsibility has been handed over to another appointed supervisor.

Regulation 11 Power of supervisor to give directions

Regulation

-11

A supervisor may, whilst supervising the diving operation in respect of which he is appointed, give such reasonable directions to any person taking part in that operation or who may affect the safety of that operation as are necessary to enable him to comply with regulation 10.

ACOP

11

Directions

- 87 As the person in charge, the supervisor may give reasonable instructions to any person taking part in the diving operation. This includes people who are not at work diving in a mixed dive team.
- 88 Although the supervisor does not need to have direct personal control over all items of plant, machinery, and control systems involved in the diving operation, they should have direct communication links with the operators of such equipment.

Divers and persons who dive in a diving project

Regulation 12 Duties of and restrictions on divers

Regulation 12

- (1) No diver shall dive in a diving project unless he -
- (a) has, subject to paragraph (2), an approved qualification which is valid for any activity he may reasonably expect to carry out while taking part in the diving project;
- ACOP 12
- 89 Divers (people who dive as employees or who are self-employed) must have an HSE-approved qualification in order to dive as a nominated member of the dive team. A list of approved qualifications is available on the HSE diving website (see 'Further reading').
- 90 When any equipment other than self-contained, open circuit, air diving equipment is used, the diver, standby diver and supervisor should have suitable training in its use. Mixed gas diving requires a specific qualification. Rebreathers also require specific training and this training should be endorsed by the manufacturer.

Regulation 12 Duties of and restrictions on divers

Regulation 12

- (3) Every diver engaged in a diving project shall -
- (a) maintain a daily record of his diving;
- ACOP 12

91 Diving logs should include as a minimum the particulars recommended by the SDSC advice notes. They should be accurate and reflect the information contained in the diving operation record.

Regulation 13 Duties of and restrictions on persons engaged in a diving project

Regulation 13

- (1) No person shall dive in a diving project -
- (a) unless he is competent to carry out safely and without risk to health any activity he may reasonably expect to carry out while taking part in the diving project;

ACOP 13

Competence

92 Divers (people who dive as employees or who are self-employed) without an HSE-approved qualification (see paragraph 89) will not be considered competent to dive as a nominated member of the dive team.

- 93 If the dive team includes people who are not at work, they must be competent to perform any task allocated to them.
- 94 The risk assessment should address the level of competence required for the particular diving project.
- 95 All members of the dive team should be fully trained and familiar with any specialised items of equipment that they will be using, and if appropriate, hold a certificate of training or competency in the specialist equipment.

Regulation 13

- (2) Every person engaged in a diving project shall comply with -
- (a) any directions given to him by a supervisor under regulation 11; and
- (b) where they would not conflict with those directions, any instructions applicable to him in the diving project plan.

ACOP 13

- 96 All members of the dive team, including those not at work, have a responsibility to co-operate with the supervisor and to follow any reasonable directions and instructions that the supervisor gives.
- 97 All members of the dive team, including those not at work, should thoroughly familiarise themselves with the equipment used in the diving operation. This should be done before the operation commences.

Regulation 17 Transitional and supplementary provisions

Regulation 17

(1) Any certificate of training and any certificate of medical fitness to dive issued, or having effect as if issued, under the Diving Operations at Work Regulations 1981 ("the 1981 Regulations") shall have effect, subject to any conditions or limitations contained in any such certificate, as if it were, as the case may be, an approved qualification or a certificate of medical fitness to dive for the purposes of these Regulations.

ACOP 17

98 All HSE certificates issued under the Diving Operations at Work Regulations 1981 remain legally valid.

Medical checks

Regulation 13 Duties of and restrictions on persons engaged in a diving project

Regulation 13

- (1) No person shall dive in a diving project -
- (b) if he knows of anything (including any illness or medical condition) which makes him unfit to dive.

ACOP 13

Fitness

99 Divers whose medical fitness may be in doubt for any reason, for example fatigue, minor injury, recent medical treatment or who are taking any medication, must inform their supervisor. Even a minor illness, such as the common cold or a dental problem, can have serious effects on a diver under pressure, and should be reported to the supervisor before the start of a dive. Medications routinely taken may have significant side effects in hyperbaric environments. Supervisors should seek guidance from the diving contractor or the company's medical adviser if there is doubt about that person's fitness to dive.

100 If the dive team includes people who are not at work, they should have evidence that they are fit to dive. This includes an appropriate medical recommended by their recreational diving organisation and undertaken by a doctor. Also see Para 101 below.

Regulation 12 Duties of and restrictions on divers

Regulation 12

- (1) No diver shall dive in a diving project unless he -
- (b) has a valid certificate of medical fitness to dive.

ACOP 12

Medicals

101 All divers at work (and volunteers who are needed to make up the minimum dive team size) must have a valid certificate of medical fitness to dive issued by a HSE medical examiner of divers, generally known as an Approved Medical Examiner of Divers (AMED). The certificate of medical fitness to dive is a statement of the diver's fitness to perform work underwater, and is valid for as long as the doctor certifies, up to a maximum of 12 months. A list of HSE medical examiners is available on the HSE diving website (see 'Further reading').

102 Where an annual medical examination is carried out less than a month before the expiry of the current medical certificate to dive, the start of the new certificate may begin from the expiry date of the current certificate.

Regulation 15 Certificate of medical fitness to dive

Regulation	15

(1) A certificate of medical fitness to dive is a certificate from a medical examiner of divers (or from the Executive following an appeal under paragraph (4)) that the person issuing the certificate considers the person named in the certificate to be fit to dive.

ACOP 15

103 The medical examination and assessment looks at the diver's overall fitness to dive. This includes the main systems of the body – cardiovascular system, respiratory system and central nervous system – as well as the ears, nose and throat, vision, dentition, and the person's capacity for exercise.

Regulation 15

(6) In this regulation, "medical examiner of divers" means a medical practitioner who is, or who falls within a class of medical practitioners which is, for the time being, approved in writing by the Executive for the purposes of this regulation; and any such approval may be given generally or restricted to any class of diver or dive.

ACOP 15

104 HSE approves doctors to carry out diving medical examinations. A list of these medical examiners is available on the HSE diving website (see 'Further reading').

Appendix 1 Notice of Approval

By virtue of section 16(4) of the Health and Safety at Work etc Act 1974, and with the consent of the Secretary of State for Work and Pensions, the Health and Safety Executive has on 13 August 2014 approved the revised Code of Practice entitled *Scientific and archaeological diving projects* (Second edition, 2014, L107).

The revised Code of Practice gives practical guidance on the requirements of the Diving at Work Regulations 1997 (SI 1997/2776) with respect to regulation 3 of the Management of Health and Safety at Work Regulations 1999 (SI 1999/3242). The Code of Practice comes into effect on 8 December 2014.

This revised edition replaces the previous edition entitled *Scientific and archaeological diving projects* (First edition), which came into effect on 1 April 1998.

Signed

TERESA QUINN Secretary to the Board of the Health and Safety Executive

2 December 2014

Appendix 2 Relevant legislation

This legislation covers all industries and may be relevant to diving projects. This list is not exhaustive. You can find details of relevant guidance on all these pieces of legislation on HSE's website at www.hse.gov.uk. Statutory Instruments can be viewed free of charge at www.legislation.gov.uk where you can also search for changes to legislation.

- 1 Diving at Work Regulations 1997 cover all divers when one or more divers are at work, whether employed or self-employed.
- 2 The Health and Safety at Work etc Act 1974 sets out the general duties that employers and the self-employed have towards employees and members of the public, and the duties that employees have to themselves and to each other.
- 3 Management of Health and Safety at Work Regulations 1999 require employers to carry out risk assessments, make arrangements to implement necessary measures, appoint competent people and arrange for appropriate information and training.
- 4 Workplace (Health, Safety and Welfare) Regulations 1992 cover a wide range of issues such as ventilation, heating, lighting, seating and welfare facilities.
- 5 Personal Protective Equipment at Work Regulations 1992 require employers to provide appropriate protective clothing and equipment for their employees.
- 6 Provision and Use of Work Equipment Regulations 1998 require that equipment provided for use at work including machinery is safe.
- 7 Manual Handling Operations Regulations 1992 cover the moving of objects by hand or bodily force.
- 8 Health and Safety (First-Aid) Regulations 1981 cover requirements for first aid.
- 9 Health and Safety Information for Employees (Modifications and Repeals) Regulations 1995 require employers to display a poster telling employees what they need to know about health and safety.
- 10 Employers' Liability (Compulsory Insurance) Act 1969 requires employers to take out insurance to cover their liability for accidents and ill health sustained by their employees.
- 11 Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 require employers to report and keep records of work-related accidents which cause death, serious injuries, diagnosed cases of certain industrial diseases and certain dangerous occurrences.

- 12 Control of Noise at Work Regulations 2005 require employers to take action to protect employees from hearing damage.
- 13 Electricity at Work Regulations 1989 require people in control of electrical systems to ensure they are safe to use and maintained in a safe condition.
- 14 Control of Substances Hazardous to Health Regulations 2002 require employers to assess the risks from hazardous substances and take appropriate precautions.
- 15 Health and Safety (Training for Employment) Regulations 1990 set out how certain people being trained for employment should be treated for the purposes of health and safety law.
- 16 The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 – regulate the transport and labelling of cylinders used for the transportation of pressurised gas.
- 17 Pressure Systems Safety Regulations 2000 impose safety requirements in relation to pressure systems used or intended to be used at work. These Regulations may apply to pressure systems that are not used in, but which are ancillary to, the diving project such as compressor systems used to fill breathing gas cylinders.

References and further reading

References

- 1 The Diving at Work Regulations 1997 SI 1997/2776 The Stationery Office www.legislation.gov.uk
- 2 Health and Safety at Work etc Act 1974 (c.37) The Stationery Office 1974 ISBN 978 0 10 543774 1 www.legislation.gov.uk
- 3 Commercial diving projects offshore. Diving at Work Regulations 1997.

 Approved Code of Practice and guidance L103 (Second edition) HSE Books 2014 ISBN 978 0 7176 6592 1 www.hse.gov.uk/pubns/books/l103.htm
- 4 Commercial diving projects inland/inshore. Diving at Work Regulations 1997. Approved Code of Practice and guidance L104 (Second edition) HSE Books 2014 ISBN 978 0 7176 6593 8 www.hse.gov.uk/pubns/books/l104.htm
- 5 Recreational diving projects. Diving at Work Regulations 1997. Approved Code of Practice and guidance L105 (Second edition) HSE Books 2014 ISBN 978 0 7176 6594 5 www.hse.gov.uk/pubns/books/l105.htm
- 6 Media diving projects. Diving at Work Regulations 1997. Approved Code of Practice and guidance L106 (Second edition) HSE Books 2014 ISBN 978 0 7176 6595 2 www.hse.gov.uk/pubns/books/l106.htm
- 7 The Management of Health and Safety at Work Regulations 1999 SI 1999/3242 The Stationery Office www.legislation.gov.uk
- 8 First aid at work: The Health and Safety (First-Aid) Regulations 1981. Guidance on Regulations L74 (Third edition) HSE Books 2013 ISBN 978 0 7176 6560 0 www.hse.gov.uk/pubns/books/L74.htm

Further reading

HSE's diving website: www.hse.gov.uk/diving

Are you involved in a diving project at work? A brief guide to complying with health and safety law Leaflet INDG266(rev2) HSE Books 2015 www.hse.gov.uk/pubns/indg266.htm

First aid at work: Your questions answered Leaflet INDG214(rev2) HSE Books 2014 www.hse.gov.uk/pubns/indg214.htm

Respiratory protective equipment at work: A practical guide HSG53 (Fourth edition) HSE Books 2013 ISBN 978 0 7176 6454 2 www.hse.gov.uk/pubns/books/hsg53.htm

Breathing gas management Diving Information Sheet DVIS3 HSE 1998 www.hse.gov.uk/pubns/dvis3.pdf

Exposure limits for air diving operations Diving Information Sheet DVIS5 HSE 1998 www.hse.gov.uk/pubns/dvis5.pdf

Diving in benign conditions, and in pools, tanks, aquariums and helicopter underwater escape training Diving Information Sheet DVIS8 HSE 1999 www.hse.gov.uk/pubns/dvis8.pdf

Divers breathing air standard and the frequency of examination and tests Diving Information Sheet DVIS9(rev1) HSE 2008 www.hse.gov.uk/pubns/dvis9.pdf

Diving cylinders: Guidance on internal corrosion, fitting valves and filling Diving Information Sheet DVIS10 HSE 2007 www.hse.gov.uk/pubns/dvis10.pdf

Diving cylinders: Guidance on their manufacture, inspection and carriage Diving Information Sheet DVIS11 HSE 2009 www.hse.gov.uk/pubns/dvis11.pdf

Cleaning of diving equipment Diving Information Sheet DVIS12 HSE 2010 www.hse.gov.uk/pubns/dvis12.pdf

Advice notes for the Scientific and Archaeological Approved Code of Practice www.uk-sdsc.com/documents/AdviceNotes.pdf

Glossary of terms and abbreviations

Buddy A buddy is the term given to a dive partner who in an emergency situation would be available to provide assistance to the other diver.

Competence Competence means having a combination of training, knowledge and experience which enables a person to do the job required in a safe manner.

Hazard A hazard is something with the potential to cause harm. This may include water, environmental factors, plant, methods of diving and other aspects of work organisation.

Risk A risk is the possibility that someone will be harmed by an identified hazard. The extent of the risk includes the numbers of people who might be affected by the risk.

Surface-orientated diving A diving technique in which the diver enters the water from the surface and then returns to the surface after completion of the dive, other than by means of a closed diving bell.

DCI Decompression illness.

HSE Health and Safety Executive.

SCUBA Self-contained underwater breathing apparatus.

SDSC Scientific Diving Supervisory Committee.

Further information

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit www.hse.gov.uk. You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

British Standards can be obtained in PDF or hard copy formats from BSI: http://shop.bsigroup.com or by contacting BSI Customer Services for hard copies only TeI: 0845 086 9001 email: cservices@bsigroup.com.

The Stationery Office publications are available from The Stationery Office, PO Box 29, Norwich NR3 1GN Tel: 0870 600 5522 Fax: 0870 600 5533 email: customer.services@tso.co.uk Website: www.tsoshop.co.uk. (They are also available from bookshops.) Statutory Instruments can be viewed free of charge at www.legislation.gov.uk where you can also search for changes to legislation.

This publication is available at www.hse.gov.uk/pubns/books/l107.htm.