
Safe Intrusive Activities on Land Potentially Impacted by Contamination



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Prepared by
British Drilling Association

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Foreword

This guide has been compiled to provide health, safety and environmental information and recommendations on good practice for all those engaged with intrusive activities on land potentially impacted by contamination. These include any individuals or organisations involved in such work's specification, procurement, execution or supervision. The scope of the guidance provides information relevant to all intrusive activities, including ground investigations, piling, land drilling, earthworks and ground remediation.

Clients and designers have a duty of care to provide complete and accurate information, as early as possible, to allow contractors to develop safe systems of work to eliminate the potential impact of contamination on human health and the environment.

This document promotes safe working practices and improves awareness of health, safety and environmental matters. Land potentially affected by contamination contains particular hazards that require the employment of specialist geoenvironmental services with appropriately trained and experienced office and site personnel, suitable plant and equipment, and high levels of supervision and response.

There is no intention that this publication should replace any acts, regulations, codes or other legislative or contractual documents which have legal standing.

The Health and Safety Executive (HSE) publishes guidance to assist employers in implementing the minimum legal requirements imposed on them by acts, regulations and codes (or Approved Codes of Practice (ACoPs)). The HSE cannot publish guidance specific to any industry and, as such, industry bodies such as the British Drilling Association (BDA) create the benchmark for good practice. The guidance in this document is not a legal requirement, but the HSE advises that organisations following it should be doing enough to comply with the law. Where appropriate, the good practice recommendations contained herein should be incorporated into the contract documentation at procurement stage where there is a likelihood of intrusive activities on land potentially impacted by contamination.

This guidance assumes that the majority of intrusive activities will be carried out in accordance with the Construction (Design and Management) Regulations 2015 but, where these may not apply, to ensure good practice, it is assumed duty holders will adopt similar roles and responsibilities.

This publication should be read in its entirety to optimise all aspects of managing health and safety. Selective reading or part implementation of its recommendations will not ensure the protection of individuals to the fullest degree possible. All parties should agree to the publication as good practice.

This guidance is structured for reading as presented chronologically: firstly examining the legislative background and then detailing each stage of activity from pre-construction through to completion of site works.

Safe Intrusive Activities on Land Potentially Impacted by Contamination

1. Introduction

In 1992, the British Drilling Association (BDA) published *Guidance Notes for the Safe Drilling of Landfills and Contaminated Land*. This was in response to a significant increase in drilling requirements for these situations and the absence of national guidelines covering these operations.

The Site Investigation Steering Group (SISG) subsequently adopted the BDA Guidance Notes, sponsored by the Institution of Civil Engineers. With minor modifications, they were republished in 1993 as Part 4 *Guidelines for the Safe Investigation by Drilling of Landfills and Contaminated Land*, this being the last part of the Thomas Telford publication series *Site Investigation in Construction*. Since this was published, there has been a great deal of change, such as

- increased statutory and regulatory legislation
- changes in working practices resulting from the above, particularly in procurement, to reflect health and safety requirements
- more prominence given to continuous/dynamic risk assessment
- wider understanding of what constitutes a hazard
- greater reuse of ‘brownfield sites’
- an increase in awareness of the environment and environmental concerns
- increased liability and insurance issues
- technological changes in equipment and methods
- increased focus on competence and qualifications.

This publication replaces SISG Part 4 (1993) and is based on the BDA publication *Guidance for Safe Intrusive Activities on Contaminated or Potentially Contaminated Land* (published in 2008), which it also replaces.

This revision emphasises that safe working practices should be paramount to those procuring, contracting and operating on sites where intrusive activities are likely to encounter contaminated land. The Health and Safety Executive (HSE) maintains that cost constraints are not a defence in the absence of safe working practices. There is a clear requirement for organisations to recognise the need to operate a ‘safe system of work’ as the main priority and not select a contractor by cost criterion only.

The importance of designing health, safety and environmental matters into a project from its inception is a legal and best practice requirement. All parties should exchange information and knowledge, consult at all levels and agree – in writing – on all matters of health, safety and environment before, throughout and after site works.

This publication has retained but reviewed the BDA site categorisation colour coding system (Green, Yellow or Red) introduced in 1992. This system has been extensively adopted in the industry and helps to provide readily understandable guidance regarding the potential hazards that parties may encounter on site and the precautions to be considered. Consideration was given to introducing additional colour categories, particularly between Yellow and Red, however, the decision was taken that the existing three categories adequately indicate low-, medium- and high-risk ratings.

This revised guidance gives more emphasis to pre-construction activity before determining site categorisation. The importance of detailed desk studies, the preparation of the health and safety pre-construction information (PCI) (as required by the Construction (Design and Management) Regulations 2015 (CDM Regulations) and the Management of Health and Safety at Work Regulations 1999), preparatory works, induction, competence and risk assessment are all stressed and explained.

Activities following intrusive works, such as the handling and testing of potentially contaminated materials, are considered more prescriptively than previously.

This publication provides guidance for clients, designers, contractors, site operatives and others who may be exposed. Specific advice, such as the harmful or hazardous effects of contaminants, is not given – parties should obtain this additional information from appropriate technical references and specialists in land contamination.

These guidance notes do not relieve anyone of their responsibility to consult the various acts, regulations, standards and industry guidance that are relevant.

This publication does not include the presence of radioactive materials on a site. These are the subject of the Radioactive Substances Act 1993, the Ionising Radiations Regulations 2017 and the HSE's 2018 Approved Code of Practice (ACoP) *Working with Ionising Radiation*.

When the CDM Regulations apply to the intrusive activity, the roles and responsibilities of the client, principal designer, designer, principal contractor and contractor are well defined. However, it is recognised that a small percentage of intrusive activities may fall outside these requirements and, in these instances, this guidance assumes duty holders will adopt similar roles. Therefore, for consistency, the terms client, designer and contractor have been used throughout this document and imply the same duties as those defined in the CDM Regulations and as detailed in Section 4.0.

The application of these guidance notes has been widened to include all intrusive activities, methods and processes involved in land potentially impacted by contamination. This addition acknowledges that the original publication was directed to ground investigation only.

Regarding drilling into landfills, parties should also refer to the Environmental Services Association publication *Drilling into Landfill Waste* (ICoP 4). ICoP 4 relates explicitly to situations where a potentially explosive atmosphere is, or could be, present and is intended as guidance to assist the waste management industry in meeting the requirements of the Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR). In 2013, the HSE issued an ACoP (L138), which is primarily for an informed and experienced audience such as health and safety professionals. Also in 2013, the HSE produced the leaflet *Controlling Fire and Explosion Risks in the Workplace* (INDG370), which provides a short guide to DSEAR for small and medium-sized businesses.

There is a legal requirement to obtain Coal Authority permission before any work activities proceed with respect to coal seams, coal workings and mine entrances. Any activities that intersect, disturb or enter any of the Coal Authority's interests require prior written permission from the Coal Authority. The client needs to obtain a formal permit prior to commissioning any intrusive activities (see www.coal.gov.uk for details). Further guidance is provided in the 2019 Coal Authority publication *Guidance on Managing the Risk of Hazardous Gases when Drilling or Piling Near Coal*.

There is a further requirement for all planned drilling greater than 30 m deep and within 1 km of mining activities to be reported to HM Inspector of Mines in accordance with the Borehole Sites and Operations Regulations 1995.

It is the responsibility of users to ensure they are compliant with all the legislation relating to the scope of the works.

2. Legislation

2.1. General

The recommendations contained in this publication were compiled considering current legislation in force in the UK at the time of preparation. Variations are likely to occur over time and in other countries, and therefore reference should be made to the appropriate current national legislation.

Management of organisations and their employees must always observe health and safety legislation and regulations and consider the safety of others, including the public, who may be affected by any activity.

Sections 2.2 and 2.3 provide brief descriptions of current primary legislation (Acts) and secondary legislation (Regulations) applicable to these guidance notes. However, the list is not inclusive of all legislation that may need to be consulted. The BDA publication *Health and Safety Manual for Land Drilling: A Code of Safe Drilling Practice*, published in 2002 and republished in 2015, should also be consulted.

Practical guidance on applying specific regulations is published as Approved Codes of Practice (ACoPs). These ACoPs guide matters relating to health and safety and are approved in writing by the Health and Safety Executive (HSE) in accordance with section 16.0 of The Health and Safety at Work etc. Act 1974. An ACoP has a special legal status in that anyone subject to legal proceedings and proved in court not to have followed the relevant provisions of the ACoP can be found guilty unless they can show they have complied with the law in some other way.

This document focuses on the health, safety and environmental aspects of intrusive activities on land potentially impacted by contamination. In addition, there is a great deal of legislation related to the environment that readers should also consider. Individuals must ensure that they are aware of the current national legislation and practices, some of which are now discussed.

2.2. Acts

The Health and Safety at Work etc. Act 1974 (HASWA)

HASWA applies to all types of work activity in the workplace and imposes on organisations and self-employed persons the duty to ensure, so far as is reasonably practicable, the health, safety and welfare of their employees and others, including the public who may be affected by the work activity. HASWA also places the same responsibility on employees. It requires all organisations that employ more than five persons to prepare and revise as necessary a written safety policy and communicate its content to all employees. HASWA also permits the Secretary of State or other ministers to make regulations relating to health and safety matters. Section 2 of HASWA sets out the duty of care required by organisations concerning the health and safety of their employees while at work, and includes such things as

- the provision and maintenance of plant and systems of work that are safe and without risks to health
- ensuring that the use, handling, storage and transport of articles or substances is safe and without risk to health
- the provision of information, instructions, training and supervision for employees.

The Control of Pollution (Amendment) Act 1989

The Control of Pollution (Amendment) Act 1989 relates to construction sites and gives power to local authorities to control noise. Under the Act, they may serve notices that

- restrict the use of specific items of a contractor's plant or equipment
- restrict certain hours of working
- impose noise limits during certain periods of the day or week.

This Act also makes it an offence to cause or knowingly permit pollution of inland or coastal waters.

The Environmental Protection Act 1990

The Environmental Protection Act 1990 deals with the control of significant emissions to air, land and water from scheduled processes. All waste in the classification of ‘controlled waste’ must be disposed of correctly at an approved waste disposal site and accompanied by a complete description of the waste.

The Environment Act 1995

The Environment Act 1995, with the insertion of section 57 into the Environmental Protection Act 1990 as Part IIA, gives greater clarity and emphasis is given to contaminated land issues and its legal administration. Additional legislation is included in

- the Contaminated Land (England) (Amendment) Regulations 2012
- the Contaminated Land (Scotland) Regulations 2005
- the Contaminated Land (Wales) (Amendment) Regulations 2012.

2.3. Regulations

At least 29 sets of regulations may be relevant in part or whole. Some of the more important for this guide are as follows.

The Management of Health and Safety at Work Regulations 1999 (MHSWR)

The MHSWR impose a duty on an organisation to assess its entire operation from a safety perspective. The duty applies to most types of work activity and includes the requirement to

- assess the risk to the health and safety of employees and other persons who could be affected by the work activity
- institute measures shown by the risk assessment to be necessary for the management of health and safety
- appoint competent persons to carry out these activities
- set up emergency procedures
- supply employees with adequate information regarding health and safety
- ensure that all employees are suitably trained in health and safety matters
- provide welfare.

The Construction (Design and Management) Regulations 2015 (CDM Regulations)

The CDM Regulations impose duties upon all parties involved in construction work, including site clearance, exploration and investigation (but not site survey). The CDM Regulations apply to all construction activities; therefore, all types of contracts carried out in relation to civil engineering construction or building works (including any intrusive investigation or other forms of intrusive activity) would be subject to the regulations. Compliance with the CDM Regulations is therefore mandatory for intrusive activities following this definition. The CDM Regulations aim to integrate health and safety into the management of a project and to encourage everyone to work together to

- improve the planning and management of projects from the very start
- identify risks early on so that they can be eliminated or reduced at the design or planning stage and the remaining risks can be properly managed
- target effort where it can do the best in terms of health and safety
- discourage bureaucracy

The Construction (Head Protection) Regulations 1989

The Construction (Head Protection) Regulations 1989 require organisations to provide, maintain and replace, as necessary, suitable head protection for employees and other persons working or entering the working area for which they have responsibility. They must ensure that head protection is worn unless there is no risk of head injury other than from falling over.

The Personal Protective Equipment at Work Regulations 1992

The Personal Protective Equipment at Work Regulations 1992 refer to personal protective equipment (PPE). This includes waterproof clothing, gloves, safety footwear, high-visibility jackets and waist-coats, eye protection, respirators, safety harnesses and the like. Every organisation is required to provide suitable PPE to every employee who is exposed to risk at work.

The Control of Substances Hazardous to Health (Amendment) Regulations 2004 (COSHH)

These regulations provide a framework for controlling substances at work that may be hazardous to health, for example toxic substances and substances that cause irritation or are corrosive. Organisations must assess the risks from the hazardous substance and decide on control measures to prevent harmful exposure.

The Reporting of Injuries, Diseases and Dangerous Occurrence Regulations 2013 (RIDDOR)

These regulations are concerned with reporting incidents that occur during or because of work activity. Responsibility for reporting the incident lies with the 'responsible person' as defined in the regulations or the person in charge. The HSE also provides a brief guide to RIDDOR in INDG453. Amendments specific to the quarrying industry are provided in the 1999 HSE *Guide to the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995* (L73).

The Health and Safety (First Aid) Regulations 1981

These regulations set out organisations' duties for providing first aid at the workplace.

The Workplace (Health, Safety and Welfare) Regulations 1992

These regulations set out the minimum legal requirements for providing workplace health, safety and welfare standards, which include providing welfare facilities, lighting, heating and ventilation, access and pedestrian and traffic routes, drinking water supplies and protection from falls or items falling from height.

The Control of Lead at Work Regulations 2002

These regulations define occupational exposure limits, risk assessment procedures, control measures, care and decontamination of PPE and the organisation's duty to prepare emergency procedures.

The Control of Asbestos Regulations 2012

These emphasise risk assessment, control measures and emergency procedures.

3. Competence, training and qualifications

3.1. General

Only competent personnel should be used to design, manage and supervise intrusive activities in contaminated or potentially contaminated land. They should have sufficient and relevant experience, be appropriately qualified and trained to carry out the work safely and capable of recognising new or unexpected risks as they arise.

Preferentially, competent personnel are also recommended in relation to all activities where practicable. However, it is permissible that trainees or less experienced personnel may be used in low-risk situations under competent supervision. The competent person represents the responsible person in these circumstances.

Competent personnel are expected to know how to deal with known, potential or exposed hazards, thus allowing the management and control of hazards, together with the minimisation of risk to any person, whether on site or potentially affected by site operations.

3.2. Competence

Competence is a combination of

- training
- knowledge
- experience
- skill
- attitude.

All organisations must ensure that their staff are competent to carry out their roles safely, particularly with providing health and safety assistance, as required by HASWA.

Designers and contractors should keep records of the competence of all persons, including dates and contents of training, qualifications, certification and experience. This information should be provided to clients upon request. Records may also need to be provided in the event of accidents or incidents.

Where specific competencies are required for the intrusive work, these should be identified by the specifier or designer in the specification. If the AGS 2022 publication *UK Specification for Ground Investigation* is adopted, these details should be provided within the schedules.

3.3. Qualifications

Land drilling lead drillers need to hold or be registered and working towards an appropriate National Vocational Qualification (NVQ) for the type of machine being used and their work activity. This should either be a Level 2 Diploma in Drilling Operations – Lead Driller or a Level 3 Diploma in Advanced Land Drilling. Drilling support operatives shall hold or be registered and working towards a Level 2 Diploma in Drilling Operations – Drilling Support Operative.

Land drilling operatives should hold a BDA Audit Card as proof of current competence. This card is renewable every 12 months after on-site auditing by the BDA. It displays the job category (lead driller or drilling support operative) and, for lead drillers, the drilling categories for which they have been audited. BDA Audit Cards are only issued to NVQ land drilling qualified personnel with a Construction Skills Certification Scheme (CSCS) Blue Skilled Worker or Mineral Products Qualifications Council (MPQC) competency card in land drilling.

The BDA Audit Card should mirror the NVQ certificate and CSCS/MPQC card, detailing the relevant pathway, endorsement(s) and category(s) taken from the following

- pathway – lead driller or drilling support operative
- endorsements (for lead drillers only) – ground investigation, grouting, soil nailing and anchoring, water wells, landfill, geothermal, dewatering, extractives
- category (for lead drillers only) – cable percussion, rotary, sonic, dynamic sampling.

Piling rig operators should hold or be registered and working towards a Level 2 Diploma in Piling Operations – Piling Operative and piling attendants should hold or be registered and working towards a Level 2 Diploma in Piling Operations – Piling Attendant. In addition, piling rig operators should hold a valid and current Construction Plant Competence Scheme (CPCS) card relevant to the size of piling rig being operated.

No lead driller or piling rig operator should operate the machine without the correct competence, unless supervised by a competent person.

Every site worker should also hold either a CSCS skills, MPQC competency or CPCS skills card for which they have passed a Construction Industry Training Board (CITB) approved health, safety and environmental test, satisfying the requirements of their attained card.

The validity of a CSCS, CPCS or MPQC card can be checked with the issuing body or through smart card validation, where available. The validity of a BDA Audit Card can be checked by viewing the list of audited drillers on the BDA website or by clicking on the BDA Audit smart e-card held by the operative.

3.4. Training

All personnel working on site are required to have received relevant instruction and training from their employer. Additional task-specific or hazard-specific training may be required depending upon the nature and complexity of the work on the land potentially impacted by contamination.

Supervisors should attend a training course relevant to the work activity they are supervising, such as the IOSH (Institution of Occupational Safety and Health) Safe Supervision of Geotechnical Sites or, for construction-related activities, the CITB Site Supervisor's Safety Training Scheme. The supervisor or site manager should conduct a site safety induction (see Section 15.0) to explain the site-specific method statement and risk assessment based on the significant hazards identified from the desk study. Desk studies are discussed in greater detail in Section 5.0.

All site personnel should receive training in the symptoms of exposure to the principal contaminants, vapours and gases, and instruction on where and how to obtain treatment.

All personnel working on a landfill site should receive advice on diseases associated with such environments (such as leptospirosis (Weil's disease), tetanus etc.), as well as other ecological hazards. Similarly, they should receive advice on the health hazards associated with contaminated land.

Where asbestos is suspected or likely, site personnel should receive asbestos awareness training as a minimum or, depending upon the site-specific conditions and/or procedures, particularly when sampling is required, should have asbestos non-licenced training. More details can be found in the Control of Asbestos Regulations 2012, the 2021 AGS guidance on the *Assessment and Control of Asbestos Risk in Soil* and the 2016 CL:AIRE document *CAR-Soil*. Courses should relate to asbestos in soil, for example Equipe's Managing Asbestos Risk in Ground Investigation, CL:AIRE's Managing and Working with Soil and Construction & Demolition Materials Affected by Asbestos or UKATA's Asbestos Awareness in Soil and Made Ground.

These guidance notes recommend that all site operatives receive, as a minimum, Emergency First Aid at Work training, a one-day course run by approved organisations such as the British Red Cross, St Andrew's First Aid and St John Ambulance. All BDA-audited lead drillers and drilling support operatives are required to have attended the one-day Emergency First Aid at Work course.

Where flammable or explosive gases are anticipated or suspected, site personnel should receive training on how to use gas-detecting systems and what actions they must take should gas levels reach an action limit or the alarm sounds.

Site personnel should receive training in using respiratory equipment and other specialised PPE that they may require on contaminated sites. They should have also been face fitted for the specific respiratory protective equipment (RPE) to be used.

Prior to the set up and use of a decontamination unit, all site personnel should attend a familiarisation briefing and be made aware of the arrangement, set up and operation of the decontamination unit. This should include, as a minimum, the layout of the unit, rules for correct use and operation of the extraction system.