

Revision of BS10175:2001

“The proposed changes”

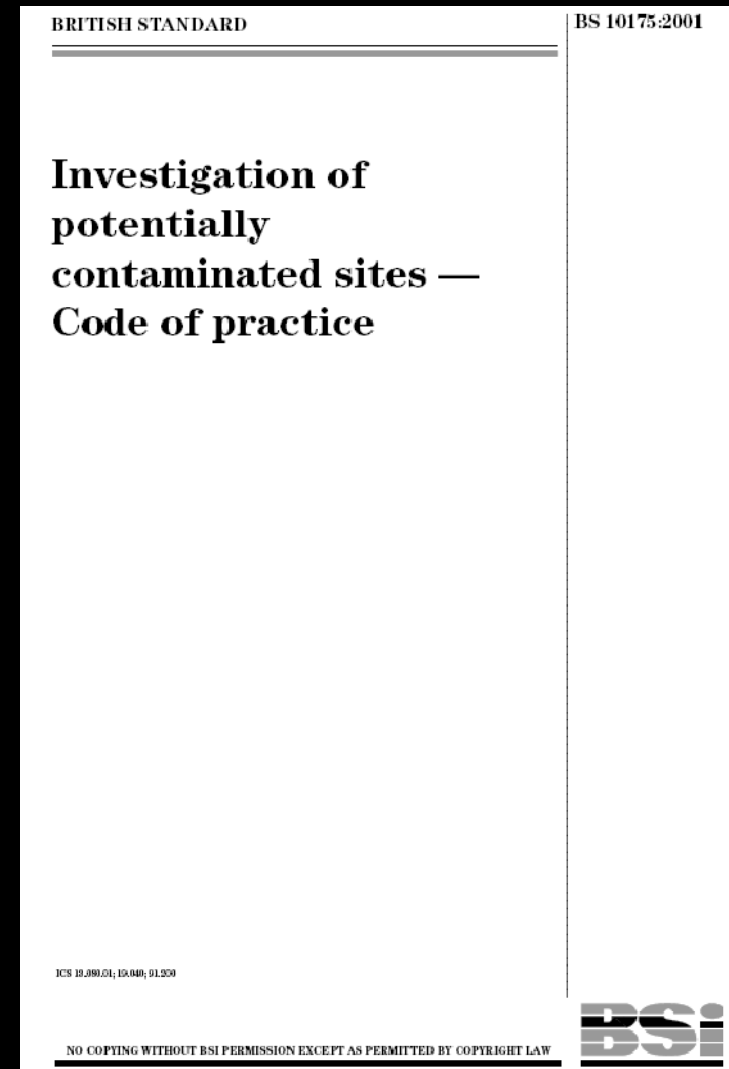
SCI Consultation Event

July 14, 2010

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Topics Covered

- Objectives of the revision
- Revision programme
- Methodology adopted
- Extent of changes - general
- Main changes in each Clause
- New guidance and standards



1. Objectives of the Revision

1. To bring the Code of Practice up-to-date:

- Make consistent with other standards, good practice industry guidance and legislation issued since 2000.
- Remove reference to out-dated references, legislation, standards etc.
- Reflect current organisations holding information, or who need to be consulted. Provide up-to-date contact details.
- Include Scottish and Northern Irish legislation, bodies, regimes.
- Reflect developments in investigation practices and techniques.
- Updated bibliography.

2. To extend guidance, where currently inadequate.

3. To improve clarity, including differentiation between good practice recommendations and background information.

2. Revision of BS10175 : Programme

- **September 2009** : BSI (EH4) decision to proceed.
- **Oct – Dec 2009** : BSI request for industry comments.
- **Jan 2010** : Arup appointed as research contractor.
- **Feb to June 2010** : Preparation of draft for public consultation.
- **July – Aug 2010** : Public Consultation
- **Sept. to Nov 2010** : Review of comments and preparation of publication draft.
- **Dec 2010** : Arup delivers Publication Draft to BSI.
- **2011** : BSI publish revised standard.

3. BS10175 revision : Methodology to date

- **Reviewed 2009 industry comments.**
- **Undertook critical review of existing text.**
 - Does it represent current 'good practice'?
 - What new good practice guidance should be referenced?
 - Are there new techniques in use as good practice?
 - Are there procedures, methods etc in existing standard are no longer good practice? (remove from standard in this revision)
 - Is the 'tense' of the guidance correct?
 - Are additional tables or flow charts necessary, to add clarity?
 - Compliance with latest BSI drafting guidelines.
- **Agreed revision framework with EH4 steering group.**
- **Three rounds of drafts and comments with EH4 steering group and committee.**

BS10175 revision : Text Conventions

Differentiation between Recommendations (Normative provisions) and Informative material :-

- **Normative Text** – Upright roman text, “should”
- **Informative Text** - Italics (commentaries, notes), and in Annexes

Other conventions :-

- “**Can**” = a possibility
- “**May**” = indicates permission to do something
- “**Will**” = verb avoided (can be ambiguous and seems predictive)
- “**Must**” = Cannot be used

4. BS10175 revision : Overview of main changes

- **Terminology for investigation stages**
- **Sampling uncertainty – included, recommend always considered, Annex D, further guidance.**
- **Field testing – Updated and expanded, new Annex G.**
- **Additional sampling drilling methods**
- **Ground gas investigation techniques and requirements**
- **Updated and expanded guidance on laboratory testing**
- **Up-to-date Bibliography**

BS10175 revision : Main changes

Investigation stages

Phase 1 Investigation	Preliminary investigation Desk study and site reconnaissance
Phase 2 Investigation	Exploratory investigation (optional) Limited initial field investigation
Phase 3 Investigation	Main investigation Detailed field investigation
Phase 4 Investigation	Supplementary investigation(s) (if reqd.) Targeted field investigation

5. Revision to BS10175 : Specific Changes

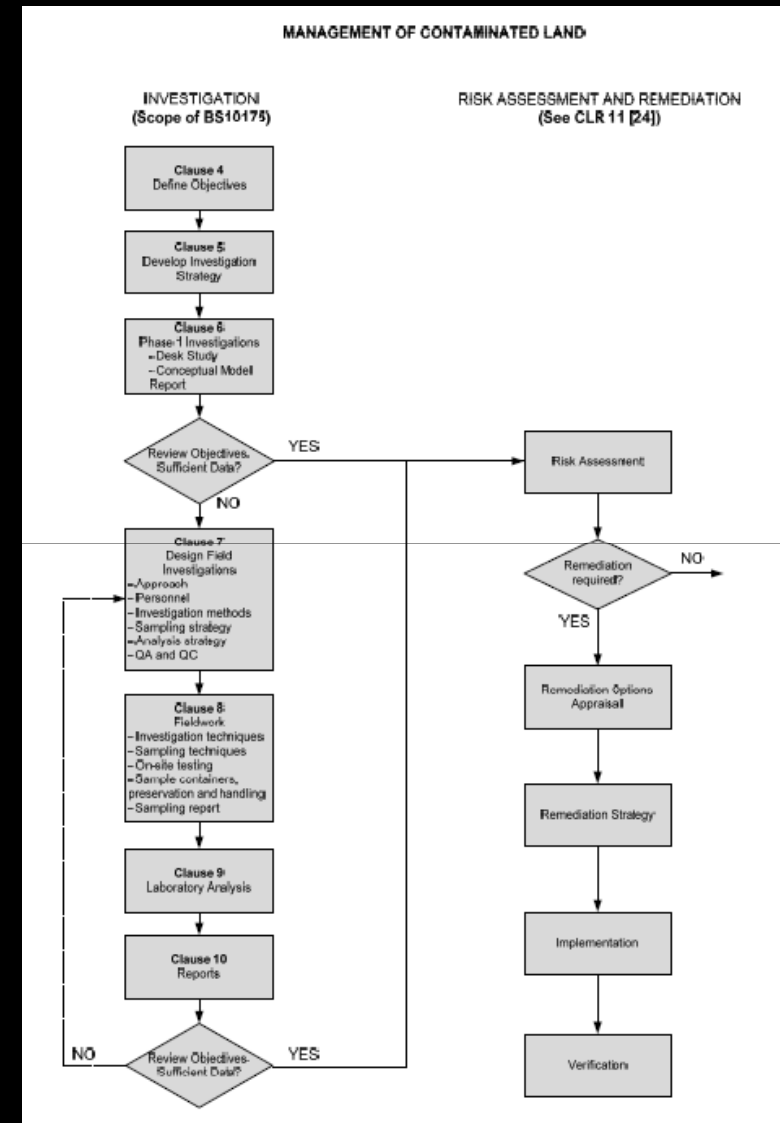
Foreword

- **Supersession of BS10175:2001**
- **Refers to introduction of Phase 1, 2, 3 and 4 investigation terminology**
- **Defines presentational conventions**
- **Adds additional primary legislation and regulations**

Revision to BS10175 : Specific Changes

Clause 1 : Introduction

- Expanded description of conceptual model.
- Expanded outline description of process of investigation.
- Reference to (now published) CLR 11.
- New Figure 1



Revision to BS10175 : Specific Changes

Clause 2 : Normative References

- **Water Sampling : BS ISO 5667 Parts 5, 6 & 11 added.**
- **Ground Gas : BS 8485:2007 added.**
- **Laboratory Testing : BS EN ISO 17025 : 2005 added.**
- **Now in bibliography : BS1377, BS1747.**
- **Deleted : BS1017.**

Revision to BS10175 : Specific Changes

Clause 3 : Terms and definitions

- **General reference to BS ISO 11074:2005 Soil quality vocabulary.**
- **“conceptual model” – expanded**
- **“contamination” – no change. “harmful agent” Note added.**
- **“controlled water” – Scotland and NI references in Notes.**
- **“hazard” – added “agent and organism”; added “which could give rise to harm”.**
- **“measurement uncertainty” – Added (new term).**
- **“risk assessment” – expanded.**
- **“soil” – expanded.**
- **“source” – “or feature” added.**
- **“uncertainty” – revised.**

Revision to BS10175 : Specific Changes

Clause 4 : Setting the objectives of an investigation

- **s4.1 General** : Modified to clarify recommendations; to refer to verification and re-use/waste characterisation investigations; and to highlight role of CLOs.
- **S4.2 Setting investigation objectives** : Modified to clarify recommendations.
- **Table 1** : Limited changes, mainly “Phase” terminology.
- **Previous s4.3 Example Objectives** : Has become new Annex B (with editing)

Revision to BS10175 : Edits to Table 1

Table 1 – Typical objectives of the different phases of an investigation	
Phase	Typical objectives
<p><u>Phase 1</u> (Preliminary investigation (clause 6) <u>desk study and site reconnaissance</u>)</p> <p>(Clause 6)</p>	<p>To provide information on past and current uses of the site and surrounding area, and the nature of any hazards and physical constraints.</p> <p>To identify receptors, potential sources of contamination and likely pathways and any features of immediate concern.</p> <p>To provide information on the geology, geochemistry, hydrogeology and hydrology of the site.</p> <p>To produce an initial conceptual model of the nature and extent of potential contamination (see 6.3.1).</p> <p>To provide data for <u>the</u> preliminary risk assessment (see 6.3.1).</p> <p>To enable informed decisions to be made on the need for specialist assessment, e.g. if there are ecological or archaeological considerations.</p> <p>To provide data to assist the design of exploratory <u>Phase 2</u> and main <u>Phase 3</u> investigations and to give an early indication of possible remedial requirements.</p> <p>To provide information relevant to worker health and safety, and to the protection of the environment during field investigations (Annex B, Annex C).</p> <p>To identify the need to involve regulatory bodies prior to intrusive investigation.</p>
<p><u>Phase 2</u> (Exploratory investigation) (optional)</p> <p>(Clauses 7, 8, 9 and 10)</p>	<p>To test the conceptual model of contamination and site characteristics.</p> <p>To obtain further information in relation to potential sources of contamination, likely pathways, <u>and</u> features of immediate concern.</p> <p>To obtain further information on the geology, geochemistry, hydrogeology and hydrology of the site.</p> <p>To provide further information to aid the design of the main <u>Phase 3</u> investigation, including health and safety aspects.</p> <p>To provide data for a review of the conceptual model and to update the risk assessment.</p>
<p><u>Phase 3</u> Main investigation</p> <p>(Clauses 7, 8, 9 and 10)</p>	<p>To obtain data on the nature and extent of contamination, the geology, geochemistry, hydrogeology and hydrology of a site.</p> <p>To provide data to review the conceptual model and to update the risk assessment.</p> <p>To provide data for the selection and design of remedial methods/works.</p>
<p><u>Phase 4</u> Supplementary investigation(s) (optional) (if required)</p> <p>(Clauses 7, 8, 9 and 10)</p>	<p>To provide clearer delineation of a particular area of contamination or a contamination plume.</p> <p>To address or clarify specific technical matters (e.g. to confirm the applicability and feasibility of potential remedial options).</p> <p>To validate remediation works.</p>
<p><i>NOTE- Examples of typical investigation objectives and applications are given in Annex B. For the purposes of this British Standard, information on geology includes made ground and fill.</i></p>	

Revision to BS10175 : Specific Changes

Clause 5 : Establishing an investigation strategy

- **s5.1, s5.2 & Figure 2 : Only minor changes.**
- **s5.3 Phase 1 investigation : Terminology and edited to clarify recommendations.**
- **s5.4 Phase 2 investigation : As above, also : new introductory paragraph, and part of existing text becomes Commentary.**
- **s5.5 Phase 3 investigation : Edited to clarify recommendations, and part of existing text to Notes 1 & 2.**

Revision to BS10175 : Specific Changes

Clause 5 : Establishing an investigation strategy (Contd)

- **s5.6 Phase 4 investigation** : Edited to clarify recommendations; some informative text deleted; and new Commentary added (examples of types of Phase 4).
- **S5.7 Investigation strategy** : Edited to clarify recommendations; reference added to early consultation with the EA and local authority CLO; sequence of questions (decisions) converted from main text to Commentary.

Revision to BS10175 : Specific Changes

Clause 6 : Phase 1 investigation

- **Added reference to commercial reports providing collation of relevant information (Note 2, pg 18).**
- **Revisions to 'source of information' organisations.**
- **Added internet website contact details.**
- **Added reference to internet aerial and street views.**
- **Added BGS as source of logs and well records.**
- **Moved typical industrial contaminative land use examples to new Annex E.**
- **Added reference to the potential presence of invasive plant species, and their significance.**

Revision to BS10175 : Specific Changes

Clause 6 : Phase 1 investigation (contd)

Agency	Information
Environment Agency (EA), Scottish Environment Protection Agency (SEPA), Environment and Heritage Service (EHS) Northern Ireland: Environment Agency (NIEA)	Information held on groundwater and surface water quality; information on pollution incidents; IPC and IPPC <u>environmental permitting</u> authorizations; current groundwater abstraction licences; operational and closed landfill and waste treatment sites. Special sites <u>special sites</u> .
Local authorities	Information held on contaminated land remediation. Historical experience of environmental nuisances. Conditions of any planning consents. Closed landfill sites and private water abstractions. <u>(Old) layouts shown in drawings attached to (old) planning applications.</u> <u>Building control records, including former layout of sites and actual or planned locations of underground and above-ground storage tanks.</u> <u>NOTE: Only available with the permission of the owner.</u>
HSE and Fire Authorities Petroleum Officer <u>officer</u>	Records of accidents and incidents; fuel storage . Location and status of fuel storage tanks. <u>NOTE: Information is usually only available with the permission of the site owner.</u>
Coal Authority <u>authority</u> National Radiological Health <u>Protection Board</u> (NPRB) <u>Agency (HPA) Radiation Protection</u> <u>Division</u>	Mining records; brine extraction hazards . Maps and information on radon in England and Wales.

Revision to BS10175 : Specific Changes

Clause 7 : Design and planning of field investigations

- **Editorial changes and use of Commentaries throughout, to add clarity to the guidance.**
- **s7.3 Personnel & Environmental Protection : No change to personnel descriptors “team leader” and “samplers”; reference to BS ISO 10381- 3 (2001) “Guidance on safety” (previous H&S references removed); reference to CDM Regs (2007).**
- **s7.6.2 Sampling of soils : Now refers to EA Secondary Model Procedures (2001) and BS ISO 10381-1 (2002). Also cross references to examples in Annex A.**

Revision to BS10175 : Specific Changes

Clause 7 : Design and planning of field investigations (contd)

- **s7.6.2.2 Targeted sampling** : Noted that this should not be used if statistical tests are to be applied to the data (xref to CIEH/CL:AIRE guidance (2008))
- **s7.6.2.5 Non-targeted sampling density** : Typical densities for Phase 2 investigations changed from 50 - 100m to 25 – 50m; typical densities for Phase 3 investigations changed from 20 - 25m to 10 – 25m.
- **s7.6.3 Sampling of waters** : Caution added to analytical data of water samples from trial pitting and from boreholes during drilling.

Revision to BS10175 : Specific Changes

Clause 7 : Design and planning of field investigations (contd)

s7.6.4 Sampling of Ground Gas

- Editorial changes to add clarity to the guidance.
- References to the following good practice guidance documents added : BS 8485:2007 and CIRIA 665 (2007).
- Spike hole surveys specifically not recommended.
- Specific monitoring frequency no longer recommended (xref to C665).

Revision to BS10175 : Specific Changes

Clause 7 : Design and planning of field investigations (contd)

s7.6.4 Soil testing design

- “The laboratory analysis should be MCERTS accredited (where possible).”
- Further guidance on testing requirements in recently published ISO standards.

S7.8 QA and QC

- Recommends MCERTS and UKAS accredited sub-contractors/ laboratories.
- Sampling uncertainty should be considered for all investigations. (xref Annex D)

Revision to BS10175 : Specific Changes

Clause 7 : Design and planning of field investigations (contd)

Sampling of Ground Gas

- Editorial changes to add clarity to the guidance.
- References to the following good practice guidance documents added : BS 8485:2007 and CIRIA 665 (2007).
- Spike hole surveys specifically not recommended.
- Specific monitoring frequency no longer recommended (xref to guidance in C665).

Revision to BS10175 : Specific Changes

Clause 8 : Fieldwork

- **Sonic drilling and dynamic sampling, window sampling and windowless sampling have been added to the methods of intrusive investigation text and tables.**
- **Updated British Standard references for sampling, in particular the BS EN ISO 5667 series for water sampling and the BS 10381 series for soil sampling.**
- **Removed description of on-site screening techniques/methods from s8.4 “On-site testing”. This informative text has been significantly updated and placed in Annex G.**
- **Sample containers guidance updated.**

Revision to BS10175 : Specific Changes

Clause 9 : Off-site analysis of samples

- **Laboratory method references have been moved to the further reading section (and are provided as links to pages on the www.iso.org website rather than as a long list)**
- **Added text to state that analytical methods should be accredited (where relevant) and validated for all relevant soil and water matrices.**
- **Added in some additional quality control reporting requirements such as date and time of sampling, the date analysis was complete and whether any sample preservation or stabilisation undertaken.**
- **Majority of text in Clause 9.6 Analysis of samples removed. Informative text on laboratory analysis (including pros and cons of various laboratory techniques) altered and moved to Annex H.**

Revision to BS10175 : Specific Changes

Clause 10 : reports

- **No major changes to this section of the guidance.**
- **Added requirement in s10.3.10 for the main text of the report to provide summary analytical data, sorted by zone, sampling location, sampling depth etc and , where applicable comparison tables with assessment criteria (in addition to including the raw data in an Annex).**
- **Recommended additional Annex for copies of key correspondence with regulators.**

Revision to BS10175 : Specific Changes

Annexes

- **Annex A : Examples of site investigations.**
- **Annex B : Examples of typical investigation objectives. (new)**
- **Annex C : Health and safety in site investigations.**
- **Annex D : Assessment and control of sampling uncertainty. (new)**
- **Annex E : Causes of contamination. (new)**
- **Annex F : Typical gas monitoring well construction.**
- **Annex G : On site screening methods (new)**
- **Annex H : Laboratory analysis (new)**
- **Annex I : Suitability of sample containers**

6. Revision to BS10175 : New Guidance

- **Environment Agency**

- Technical Aspects of Site Investigation (P5-065/TR), 2000
- Secondary Model Procedures (P5-066), 2001
- CLR11 Model Procedures, 2004
- Guidance on Requirements for Land Contamination Reports, 2005
- MCERTS Performance standard for laboratories, 2007
- R&D 66 Guidance for the safe development of housing on land affected by contamination, 2008
- Framework for the use of rapid measurement techniques, 2009

Revision to BS10175 : New Guidance (contd)

CIEH and CL:AIRE

- Guidance on comparing soil contamination data with a critical concentration, 2008

• CIRIA

- C665 Assessing risks posed by hazardous ground gases to buildings, 2007
- C681 UXO: a guide for the construction industry, 2009
- W30 SAFEGROUNDS Good practice guidance for site characterisation, 2009.

• ISO/BSI

- Various standards on soil quality sampling, handling and treatment

Thank You

ARUP