GEOENVIRONMENTAL STANDARDS FOR SOIL & SITE ASSESSMENT – 17 June 2022
An Occasional Newsletter

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To: ***National Brownfield Forum***

Please feel free to pass on to any of your contacts who might be interested.

INTRODUCTION

BSI EH4 Soil Quality is the BSI technical committee responsible for the production of standards relating to soil quality including contaminated land and natural and near-natural sites (e.g. farm land). Standards cover sampling, chemical analysis, physical testing, biological testing, and soil and site assessment. EH4 also deals with standards for the analysis and testing of wastes, standards relating to soil and climate change, and ecosystem services.

BSI EH4 shadows ISO (International Organization for Standardization) Technical Committee *TC 190-Soil Quality* and CEN *TC444-Environmental characterization of solid matrices*. CEN is the European standards organisation.

EH4 actively seeks to broaden its membership. The wider the membership, the greater the confidence that the standards produced are technically sound and known about by potential users from a wide variety of backgrounds. Participation in BSI, CEN and ISO committees can contribute to CPD. Contact the Committee Manager, Jessy Mathew (jessy.mathew@bsigroup.com) for more information.

Mike Smith

michael.a.smith@btinternet.com
17 June 2022

2015 International Year of Soils

Healthy soils
#IYS2015
for a healthy life

Our soils are in danger from expanding cities, deforestation, unsustainable land use, pollution, overgrazing and climate change, all of which compromise sustainable agriculture, food security and the provision of ecosystem services. To draw attention to their plight, the United Nations has declared 2015 the International Year of Soils, and 5 December World Soil Day*. Discover the work of ISO's technical committees to improve the quality of soils.

Soils **store and filter water**, improving our resilience to floods and droughts

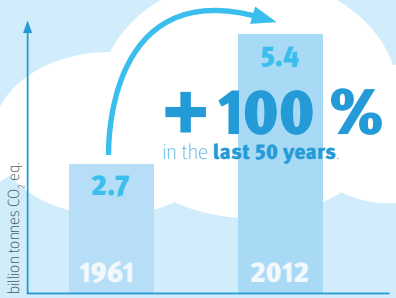
Of the estimated **1.4 billion hectares** of crop land worldwide,

≈80 %

are rain-fed and account for about **60 %** of global agricultural output.

ISO/TC 147, *Water quality*
ISO/TC 282, *Water re-use*
ISO/TC 275, *Sludge recovery, recycling, treatment and disposal*
▸ **293 standards published or in development**

Soils **help combat and adapt to climate change** by playing a key role in the carbon cycle



Global emissions from agriculture (crops & livestock) continue to increase.

ISO/TC 146, *Air quality*
▸ **155 standards published**

* Declared by the United Nations (UN) and implemented by the UN Food and Agriculture Organization (FAO). FAO has 39 liaisons with ISO technical committees and subcommittees.

Healthy soils are **the basis for healthy food production**

95%
of our food is directly or indirectly produced on our soils

ISO/TC 34, *Food products*
▸ **824 standards published**

Soils **support our planet's biodiversity** and they host a quarter of the total

Over **1000** species of invertebrates can be found in **1 m²** of forest soil

ISO/TC 190, *Soil quality*
ISO/TC 23, *Tractors and machinery for agriculture and forestry*
▸ **515 standards published**

Soils are **the foundation for vegetation** which is cultivated or managed for feed, fibre, fuel and medicinal products

26%
of the earth's terrestrial surface is occupied by grazing

ISO/TC 134, *Fertilizers and soil conditioners*
ISO/TC 238, *Solid biofuels*
ISO/TC 255, *Biogas*
▸ **52 standards published or under development**

Soil is a **non-renewable resource**. Its preservation is essential for food security and our sustainable future

Sustainable soil management could produce up to
58 %
more food

ISO/TC 207, *Environmental management*
ISO/TC 81, *Common names for pesticides and other agrochemicals*
▸ **44 standards published**

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REVISION OF BS 10175:2011+A2:2017

BS 10175:2011+A2:2017- ***Investigation of potentially contaminated sites – Code of Practice*** has recently been subjected to its regular five yearly review. Following this review, BSI Committee EH4 has agreed in principal to carry out minor revision. This decision is subject to confirmation by BSI, the formation of a Drafting Panel, and agreement on a timetable for the work. These formalities are likely to take at least several weeks to complete.

In addition to consideration by EH4, an informal consultation process has been followed involving circulation of information about the review to various stakeholder groups, and holding a free webinar at which information about BS10175 and the review process was provided. The consultations have not revealed any major technical issues although a few comparatively minor ones have been raised. The revision will include:

- consolidation of Amendments 1 & 2 into the text;
- updating of external references to guidance and regulatory regimes (some updating in this respect was undertaken when BS1075+A2 was prepared);
- revision with regard to some technical and wider issues including:
    - introduction of BS 10176 on sampling for determination of VOCs,
    - climate change,
    - sustainability, and
    - asbestos.

PAS 128:2022 - Underground utility detection, verification and location – Specification

PAS 128:2022, published in April, supersedes PAS 128:2014, which is withdrawn.

Its production was sponsored by the Institution of Civil Engineers (ICE). Its development was facilitated by BSI Standards Limited and it was published under licence from The British Standards Institution.

The purpose of this PAS (publically available specification) is to set out clear and unambiguous provisions for those engaged in the detection, verification and location of active, abandoned, redundant or unknown utilities. It aims to provide:

- clarity in the service provided and methods employed;
- consistency in the approach to data capture;
- classification of the results and the confidence that can be associated with them;
- an indication of the effort required to be confident that the survey is capable in principle of achieving higher accuracy levels in different settings; standardization of the format of deliverables; and
- accountability for the work undertaken.

michael.a.smith@btinternet.com

This full revision of the PAS introduces the following principal changes:

- addition of guidance on training and qualifications of practitioners (Clause **4**);
- updates to the application of post-processing in detection surveys (Table 2);
- new specification for buried utility detection and avoidance to support on-site permit to break ground (Annex A);
- new guidance on the accuracy of detection methods (Annex C); and
- new guidance on the technical factors that dictate the effort required for a detection survey (Annex D).

The PAS is not to be regarded as a British Standard. It will be withdrawn in the event it is superseded by a British Standard. The PAS process enables a specification to be rapidly developed in order to fulfil an immediate need in industry. A PAS can be considered for further development as a British Standard, or constitute part of the UK input into the development of a European or International Standard.

ASBESTOS

ISO TC190/SC3 Chemical and physical characterization and *CEN/TC 444/WG3* both have an interest in production of standards related to the determination of asbestos concentrations in granular materials including sampling and analysis.

CEN *TC351-Construction products* (shadowed by BSI B557 - *Construction products - Assessment of dangerous substances*) held webinars on asbestos in construction materials (this includes bulk materials such as aggregates from wastes) on 3 May and 14 June. TC 351/WG5 started work on production of a draft document at a dedicated Working Group meeting on 1 December. TC351/WG5 held a further meeting during the week starting 7 March 2022. The UK was represented by Stephen Forster and John Hubbard. A further meeting planned for the end of May has been postponed to a date yet to be agreed.

This project will be dealt with in the UK by BSI committee B557. However, liaison has been established with EH4 with the intent of trying to ensure wider UK participation in the work than might otherwise be the case.

michael.a.smith@btinternet.com

SOIL HUB

The on-line hub for 'all things soil' (**uksoils**) brings together the best available resources, including educational information and school activities, books and films, data and maps, plus guidance for farmers and land managers on how to support healthy soils. It is also a forum to enable the sharing of knowledge and experiences, encouraging people to link up and carry out initiatives to improve soil health and share locations around the country where soil health pioneers are trying out new technologies and management practices.

The hub is supported by a partnership comprising the UK Centre for Ecology & Hydrology (UKCEH), the Sustainable Soils Alliance, Earthwatch, the University of Sheffield, the British Soil Science Society and Scotland's Rural College (SRUC).

Standards Relating to Investigation, Assessment, Remediation and Development of Potentially Contaminated and Contaminated Sites

This AGS document provides key information required for a proper understanding and use of Standard Guidance documents and Standard Specifications. It also provides information about in which Standards guidance on various topics such as investigation, reporting and remediation can be found. It can be downloaded from:

https://www.ags.org.uk/item/standards-relating-to-investigation-assessment-remediation-and-development-of-potentially-contaminated-and-contaminated-sites/

michael.a.smith@btinternet.com
17 June 2022

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LISTINGS

Note: *This is not necessarily a complete listing of on-going projects in ISO TC190 and CEN TC444 and, in the case of geotechnical standards, ISO TC182 and CEN TC341. At any one time there are also likely to be a number of other chemical analytical, biological testing, geotechnical and ground engineering standards, progressing through the ISO/CEN/BS system.*

KEY
Drafts - New or amended entries – 1 January to 31 December 2021
Drafts - New or amended entries – 1-January to 31 March 2022
Drafts - New or amended entries – 1-30 April 2022
Drafts - New or amended entries – 1-31 May 2022
Drafts - New or amended entries – 1-30 June 2022
Published standards – 1 January – 31 March 2022
Published standards – 1-30 April 2022
Published standards – 1-31 May 2022
Published standards – 1-30 June 2022

ISO terminology: NWIP = New Work Item Proposal, WD = Working Draft, CD = Committee Draft, DIS = Draft International Standard, FDIS = Final Draft International Standard.

CEN terminology: prEN =enquiry stage (equivalent of DIS), FprEN = for Final Vote (equivalent of FDIS)

Copies of draft standards are available from the representatives of organisations that are members of the BSI Technical Committee concerned. In the case of EH4, these include for example, AGS, EIC, SCI (see "background" note at the end of this Newsletter for other members). If you do not know who represents an organisation to which you belong, you need to ask the organisation – this is not information that BSI is permitted to supply. However, in most cases I can supply copies for review. The BSI Committee Manager might also be willing to supply a copy.

michael.a.smith@btinternet.com

RECENTLY PUBLISHED STANDARDS		
BS 1377-2:2022	**Methods of test for soils for civil engineering purposes – Classification tests and determination of geotechnical properties** *Supersedes:* *BS 1377-2:1990,* *BS 1377-4:1990,* *BS 1377-5:1990,* *BS 1377-6:1990,* *BS 1377-7:1990*	**Published March 2022**
BS EN ISO 10390:2022	**Soil, treated biowaste and sludge – Determination of pH** **(*Replaces BS EN 15933:2012)*)**	**Published April 2022**
BS EN 15936:2022	**Sludge, treated biowaste, soil and waste – Determination of total organic carbon (TOC) by dry combustion** ***Replaces BS EN 15936:2012***	**Published March 2022**
BS ISO 23400:2021	**Guidelines for the determination of organic carbon and nitrogen stocks and their variations in mineral soil at field scale**	**Published April 2022**
BS EN ISO 24032:2021	**Soil quality - In-situ caging of snails to assess bioaccumulation of contaminants**	**Published March 2022**
PAS 128:2022	**Underground utility detection, verification and location – Specification**	**Published April 2022**

michael.a.smith@btinternet.com

DRAFT ISO/CEN GEOTECHNICAL STANDARDS ***These standards form part of the programme of work of BSI committee B526/3.***		
ISO 17892-1:2018/DAM1	Geotechnical investigation and testing – Laboratory testing of soil – Determination of water content – AMENDMENT 1	Comment period ended 10 January 2022
NWIP EN ISO 18674-7	Geotechnical investigation and testing – Geotechnical monitoring by field instrumentation – Part 7: Measurement of strains: Strain gauges	Approved to proceed by ISO TC 182 & CEN TC351 in June 2021
ISO CD 18674-8	Geotechnical investigation and testing – Geotechnical monitoring by field instrumentation – Part 8: Measurement of forces: Load cells	Comment period has ended
ISO DIS 22476-1	Geotechnical investigation and testing – Field testing – Part 1: Electrical cone and piezocone penetration test	Comment period ended on 7 July 2021
ISO DIS 22476-5	Geotechnical investigation and testing – Field testing – Part 5: Prebored pressuremeter test	Comment period ends 5 June 2022
ISO DIS 22477-2	Geotechnical investigation and testing – Testing of geotechnical structures – Part 2: Testing of piles: static tension load test	Comment period ends 5 June 2022
ISO DIS 24057	Array measurement of microtremors to estimate shear wave velocity profile	Comment period on DIS ended on 22 January 2022

michael.a.smith@btinternet.com

DRAFT ANALYTICAL AND BIOLOGICAL TESTING STANDARDS etc. ***These standards form part of the programme of work of BSI committee EH4***		
ISO DIS 4974	Soil quality – Guidance on soil temperature measurement	Comment period ended on 6 April 2022
ISO DIS 5120	Soil quality – Determination of perchlorate in soil using liquid chromatography-tandem mass spectrometry (LC-MS/MS)	Comment period ended on 5 March 2022
ISO CD TS 5594	Guidance document on designing interlaboratory trial for validation of biotests	Comment period ended 7 June 2021
ISO CD 11267.2	Soil quality – Inhibition of reproduction of Collemba (Folsomia candida) by soil contamination *(will replace BS EN ISO 11267:2014)*	Comment period on second CD ends 30 May 2022
ISO DIS 11268-2	Soil quality – Effects of pollutants on earthworms – Part 2: Determination of effects on reproduction of Eisenia fetida/Eisenia anndrei *(will replace [BS] EN ISO 11268-2:2015)*	Comment period ended 8 January 2022
ISO DIS 13914	Soil, treated biowaste and sludge – Determination of dioxins and furans and dioxin-like polychlorinated biphenyls by gas chromatography with high resolution mass selective detection (HR GC-MS)	Comment period ended 30 November 2021
ISO DIS 16387	Soil quality – Effects of pollutants on Enchytraeidae (*Enchytraeues sp.)* – Determination of effects on survival reproduction *(revision of BS EN ISO 16387:2014)*	Comment period ended on 2 April 2022
CEN FprEN 17503	Environmental solid matrices – Determination of polycyclic aromatic hydrocarbons (PAH) by gas chromatography (GC) and high performance liquid chromatography (HPLC) *(will supersede EN 15527:2008 & EN16181:2018)*	Comment period ended 22 November 2021
CEN prEN 17505	Soil and waste characterization – Temperature dependent differentiation of total carbon (TOC400, ROC, TIC900)	2nd enquiry completed. Proceeding to next stage
CEN prEN 17516:2022	Waste – Characterization of granular solids with potential for use as construction material – Compliance leaching test – Up-flow percolation test *(Text will be the same as EN 16637-3 on leaching of construction products)*	Comment period ended 19 April 2022

michael.a.smith@btinternet.com

CEN prEN 17813	Environmental matrices – Halogens and sulfur by oxidative pyrohydrolytic combustion followed by ion chromatography detection and complementary determination methods	Comment period ended 7 March 2022
CEN Fpr TS17847	Characterization of waste – Determination of selected low boiling point alcohols using gas chromatography with flame ionization detection after static head-space extraction (HS-GC-FID)	Closing date for comments 30 June 2022
ISO DIS 18400-301	Soil quality – Sampling - Sampling for volatiles and on site semi-quantitative determination in field investigations	Comment period on DIS ended 16 February 2022
ISO DIS 21268-5	Soil quality — Leaching procedures for subsequent chemical and ecotoxicological testing of soil and soil-like materials — Part 5: Batch test with forced aerobic or anaerobic conditions	Comment period ended 12 January 2022
ISO DIS 22036	Soil treated biowaste and sludge – Determination of elements using inductively coupled plasma optical emission spectrometry (ICP-OES)	Comment period ends 6 August
ISO DIS 22171	Soil quality – Determination of potential cation exchange capacity (CEC) and exchangeable cations buffered at pH 7 using a molar ammonium acetate solution	Comment period on DIS ended 12 April 2022
ISO DIS 23611-4	Soil quality - Sampling of soil invertebrates – Part 4: Sampling, extraction and identification of soil-inhabiting nematodes	Comment period ended 27 November 2021
ISO DIS 23265	Soil quality – Test for estimating organic matter decomposition in contaminated soil	Comment period ended 11 February 2022
ISO FDIS 23992	Soil quality – Framework for the recording and monitoring of changes in dynamic soil properties	Comment period on FDIS ends 21 June 2022
ISO CD 24212.2	Remediation techniques applied at contaminated sites	Comment period on Second CD ended on 8 May 2022

michael.a.smith@btinternet.com

NEW WORK ITEM PROPOSALS ***SUBJECT TO APPROVAL BY CEN TC444 and/or ISO TC190***		
CEN NWIP 444044	Characterization of waste - Determination of the content of elements and substances in waste	**Approved by CEN, May 2021** Working Draft available May 2022
ISO NWIP 7303	Soil quality – Simplified method for oral bioaccessibilty of metal(loids) in soils *Will complement BS ISO 17924 – see also NWIP 8529*	Second ballot closed 2 March 2022. BSI voted approval
ISO NWIP 8529	Soil quality – Bioaccessibility of organic and inorganic pollutants from contaminated soil and soil-like material *Will be based on DIN 19738 and complement BS ISO 17924 – see also NWIP 7303*	**Approved September 2021**
ISO NP 10382	Environmental solid matrices – Determination of polychlorinated biphenyls (PCB) by gas chromatography – Mass selective detection (GC-MS) or electron-capture detection (GC-EC)	Awaiting approval
CEN NWIP	Environmental characterization of leachates from waste and soil using reproductive and toxicological gene expression in *Daphnia magna*	**Approved March 2021**
ISO PWI 16965.2	Environmental solid matrices – Determination of elements using inductively coupled mass spectrometry (ICP-MS) *Includes merger of ISO TS16965 & EN 16171*	Subject to CEN & ISO approval ISO deadline for voting/comment21 March 2022
ISO PWI 18227.2	Environmental soil matrices – Determination of elemental composition by X-ray fluorescence spectrometry *Includes merger of ISO 18277 and EN 15309*	Subject to CEN & ISO approval ISO deadline for voting/comment 21 March 2022

michael.a.smith@btinternet.com

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BACKGROUND

BSI EH4 Soil Quality is the BSI technical committee responsible for the production of standards relating to soil quality including contaminated land and natural and near-natural sites (e.g. farm land). Standards cover sampling, chemical analysis, physical testing, biological testing, and soil and site assessment. EH4 also deals with standards for the analysis and testing of wastes produced by CEN TC444.

BSI EH4 shadows ISO (International Organization for Standardization) Technical Committee *TC 190 Soil Quality* and *CEN TC444* (*Environmental characterization of solid matrices*). CEN is the European standards organisation.

EH4 is also responsible for BS10175 (investigation of contaminated sites), BS 8576 (ground gas investigations), BS8454 (protection of buildings against gas) and BS 1076 (soil sampling for VOC determination of VOCs).

There are about twenty organisations (e.g. trade bodies, learned societies, professional bodies, quasi-government bodies etc.) represented on the committee at present together with a handful of individual experts who represent the UK on various ISO and CEN Working Groups (e.g. Paul Nathanail, Mike Ramsey). To find out who represents a particular organisation, the organisation should be contacted.

Nominated representatives of member organisations receive copies of formal drafts of standards, known in the case of ISO as Committee Drafts (CDs), Draft International Standards (DISs) and Final Draft International Standards (FDISs); and in the case of BSI as Drafts for Public Comment. They also receive copies of published standards for personal use.

Those representing an organisation are expected to circulate papers to, and consult, those they represent. Draft standards can be posted on “members-only” sections of web-sites for downloading or can be e-mailed to all members of the organisation that is represented.

EH4 actively seeks to broaden its membership. The wider the membership of EH4, the greater the confidence there can be that the standards produced are technically sound and known about by potential users from a wide variety of backgrounds. It also increases the pool of people from which it might be possible to draw on from time to time to represent the UK in ISO and CEN Working Groups. BSI can nominate one or more experts to each of the numerous Working Groups in ISO TC190 and CEN TC444. Whilst experts will hopefully attend meetings of the WGs, in practice this is not always possible and participation is limited to receipt and review of papers. BSI makes a contribution towards the costs of UK experts attending ISO and CEN meetings.

Member organisations of EH4 include:

> Association of Geotechnical and Geoenvironmental Specialists (AGS), British Society of Soil Science, Centre for Ecology & Hydrology, Chartered Institute of Environmental Health, Environment Agency, Environmental Industries Commission (EIC) , EIC Contaminated Land Working Group, Environmental Services Association, Institution of Environmental Sciences, Ministry of Defence, National House Building Council (NHBC), Royal Society of Biology, Society of Brownfield Risk Assessment (SOBRA), Society of Chemical Industry (SCI), the James Hutton Institute, University of Glasgow, Water UK, Yorkshire & Lincolnshire Pollution Advisory Group.

michael.a.smith@btinternet.com