GEOENVIRONMENTAL STANDARDS FOR SOIL & SITE ASSESSMENT – 18 March 2021
An Occasional Newsletter

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To: BSI EH4 and National Brownfield Forum

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.

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.

Mike Smith

BS10176 has been out for almost a year now. Do you know about it? Are you using it? Would you like to know more?

LQM will be hosting a FREE webinar about the **practical application of BS 10176** at 2 pm on 23 April.

Judith Nathanail will take you through the key features of BS10176 and the new requirements for sampling VOCs.

The webinar will include the presentation of data obtained recently in the UK which indicates clearly why it is necessary to use methanol immersion of samples in the field if the analytical results are to be used for risk assessment.

Two of the BS10176 committee - **Geraint Williams** (Chair) and **Mike Smith** will be panellists on the webinar to answer your questions.

Please register for **BS 10176 - SOIL SAMPLING - VOCs** on **Apr 23, 2021 2:00 PM BST** at:
https://attendee.gotowebinar.com/register/8451420729739759376

The webinar is being held with the support of BSI, SCI, AGS and the Geological Society CLSG

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BSI Committee Membership

BSI has revised the way in which it recruits committee members, Chairs and Deputy Chairs. All posts are open to self-nomination, although nomination from stakeholder organisations remains an important route as described in the background note about EH4 at the end of this Newsletter. BSI wants to try to ensure broad representation and diversity within all committees. EH4 welcomes applications for membership from individuals who think they could contribute to its deliberations. For more information see:

Become a standards maker | BSI (bsigroup.com)

Or, in the case of EH4, contact the Committee Manager, Jessy Mathew (jessy.mathew@bsigroup.com)

Organisations that have previously been represented on BSI but no longer have a nominated member include ICE, CIWEM and RSC. EH4 would welcome nominations from these and other organisations with an interest in its work.

NEW PROJECT PROPOSAL:

CEN NWI 44404 Characterization of waste - Determination of the content of elements and substances in waste

It is intended to provide guidance on the application of existing analytical and other standards to the characterization of solid and liquid wastes. The draft scope is:

> *"This document can be applied to all waste samples with unknown or partially known composition. It specifies the minimum laboratory methods and performance requirements for analysis of laboratory samples of liquid and solid waste to determine the inorganic elements and organic substances content of waste up to a cumulative mass of at least 90 % or a close and highest possible mass.*
>
> *In the case of information on the origin or on the composition of waste, given by the owner of waste, only part of this method can be applied (this method can be used to complete the knowledge on waste only)."*

The draft work item can be viewed and commented on at:

http://standardsdevelopment.bsigroup.com/projects/9021-05226

The document is about the application of existing analytical methods and as such we need people to contribute to the UK input to the development of this standard who have practical experience of waste characterization. Please contact jessy.mathew@bsigroup.com if you think you could help.

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NEW AGS GUIDANCE:

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

This new AGS guidance document provides key information required for a proper understanding and use Standard Guidance documents and Standard Specifications such as conventions in the use of language and the need for consistent use of terminology. 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/

PLASTICS AND THE ENVIRONMENT – MICROPLASTICS IN SOIL AND WATER

A Joint Working Group (JWG) is to be established between ISO TC147/SC2 (*Water quality - Physical, chemical and biochemical methods*) and ISO TC 61/14 (*Plastics - Environmental aspects*) with input from TC190. The Scope of the JWG has yet to be agreed. There will be a call for experts once this has been done. UK participation will be through EH3/2 *Water quality – Physical chemical and biochemical methods* with oversight from EH/3 *Water quality* relating to any out of scope matters. *EH3/6 Water Quality – Sampling* has now launched a new work item proposal dealing with sampling water for microplastics monitoring purposes in accordance with action agreed at the Tokyo meeting of ISO TC147 *Water Quality* in 2019.

From WHO information sheet Microplastics in drinking-water *(WHO, 2019):*

> As a category, microplastics encompass a wide range of materials composed of different substances, with different densities, chemical compositions, shapes and sizes. There is no scientifically-agreed definition of microplastics, although they are frequently defined as plastic particles <5 mm in length. However, this is a rather arbitrary definition and is of limited value in the context of drinking-water since particles at the upper end of the size range are unlikely to be found in treated drinking-water. A subset of microplastics <1 µm length are often referred to as nanoplastics.

> Microplastics are ubiquitous in the environment and have been detected in a broad range of concentrations in marine water, wastewater, fresh water, food, air and drinking-water, both bottled and tap water. The data on the occurrence of microplastics in drinking-water are limited at present, with few fully reliable studies using different methods and tools to sample and analyse microplastic particles.

From recent New Scientist (6 February 2021) note:

> "Microplastics in soil may be as damaging to soil ecosystems as drought."
>
> The study was made using polyester microfibers.

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ASBESTOS

ISO TC190 SC3 is taking the first steps towards deciding whether to produce standards related to determination of asbestos concentrations in soil materials including sampling and analysis. The intention is to start with an information gathering exercise to see what guidance documents and standards are available in member countries, and also to find out what other ISO TCs are doing – e.g. ISO TC147 *Air quality*.

CEN/TC 444/WG 3 has also agreed to review the existing technologies and standards for the determination of asbestos in soils and wastes as a basis for a potential standardization project in CEN/TC 444. Relevant information was requested from National Standards bodies to be supplied by the end of the 2020. BSI has provided the CEN and ISO WGs with a list, and copies where available, of guidance documents relating to asbestos in soil.

BSI EH4 will need to decide how to respond to this initiative including how to engage with those involved in current asbestos-related activities in the UK. It is possible that a Sub-committee will be set up within BSI EH4. It would be helpful to hear from anyone who might like to contribute to the UK input. CEN *TC351-Construction products* (shadowed by BSI B557*)* is planning a workshop on asbestos in bulk materials (e.g. aggregates from wastes). It may still be possible for EH4 to nominate participants via CEN TC444 if anyone would be interested in participating in the workshop. The workshop is scheduled for 20 May 2021.

ISO TC 190/WG3 - *SOIL FUNCTIONS/ECOSYSTEM SERVICES*

ISO TC190 has set up a new Working Group (ISO TC190/WG3) to address soil functions and ecosystem services. The establishment of the WG is an important and potentially far reaching initiative and could bring significant societal and environmental benefits. The first meeting of the WG will be held on 26 March 2021.

Initial tasks for the WG are:

- agreement on concepts and terminology ;
- agreement on a conceptual framework that clarifies soil functions and ecosystem services;
- to collate and analyse existing assessment methods of soil functions and services;
- to identify gaps in standards i.e. missing methods to assess functions and services.

The scope of the WG aligns with the UN Sustainable Development Goals (SDGs). There is likely to be an interesting dynamic with Government policies such as the basis of payment of 'Public Money for Public Goods', Environmental Land Management (ELMS), and other common agricultural policy CAP successor systems. See:

https://consult.defra.gov.uk/elm/elmpolicyconsultation/supporting_documents/ELM%20Policy%20Discussion%20Document%20230620.pdf

EH4 is considering how best to contribute to this initiative and how to best to ensure that those with an interest can be kept informed and involved. It is possible that a Sub-committee will be set up within BSI EH4. It would be helpful to hear from anyone who might like to contribute to the UK input.

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SOIL HUB

A new online hub for 'all things soil' has been launched, which experts hope will inspire action from policy-makers, researchers and practitioners to protect a precious resource.

uksoils – "a single source for all things soil" – has been launched 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).

The online hub will bring 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 will also provide a community 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 website – uksoils.org – is gradually being developed and will eventually host a series of online events targeted to different topics suggested by its users.

FUTURE OF BS1377

The test methods described in BS EN ISO 17892 parts 1 to 12 now supersede the same tests in BS 1377:1990 parts 2, 5, 6, 7 and 8, which should not be specified. Please see the relevant BSI webpages.

BSI Committee B/526/3, which holds responsibility for the technical content of BS 1377, has reviewed the current requirements for BS 1377 following publication of the EN ISO standards. The outcome of this review is the proposal to re-structure BS1377 into four parts as follows: Part 1 – General requirements and sample preparation; Part 2 – Classification tests and determination of geotechnical properties; Part 3 – Chemical and electrochemical tests; Part 4 – In-situ tests. Part 1, updated in 2016, covers general requirements and sample preparation. The new EN ISO Standards include equipment calibration and some sample preparation requirements, which take precedence over the requirements of Part 1. However, this document is still required for tests not included in BS EN ISO 17892 and a revision of Part 1 is not currently proposed.

BS 1377 Part 3 was revised recently and published as *BS 1377-3:2018 Methods of test for soils for civil engineering purposes - Chemical and electro-chemical testing*. An Amendment to *BS 1377-3:2018 Methods of test for soils for civil engineering purposes. Chemical and electro-chemical testing* has been published for public comment.

Work has started to edit, update and consolidate the laboratory soil tests in BS 1377:1990 Parts 2, 4, 5, 6, 7 and 8. A draft replacement British Standard (*BS 1377-2 Methods of test for soils for civil engineering purposes*, *Part 2- Classification tests and determination of physical properties*) will be published for public comment in 2021.

The "new" BS 1377 Part 4 would replace the existing BS 1377 Part 9 covering field tests, some of which have been replaced by the BS EN ISO 22476 suite of standards such as standard penetration test. The proposed rationalisation of BS 1377 should improve consistency in the scheduling and application of both BS and EN ISO standards for laboratory testing in UK ground investigation practice.

See also:
https://www.geplus.co.uk/news/bsi-outlines-proposed-revision-of-british-geotechnical-lab-testing-standard-14-12-2020/

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BREXIT, BSI & CEN

CEN members have approved extension of the transitional period for BSI membership until 31st December 2021. During 2021 CEN will consider how to update the organizations' statutes in response to the UK's departure from the EU in order to permit continued membership (membership is currently linked to membership of the Single Market). From 1 July 2020, BSI has been classed as a non-EEA member of CEN. This affects a few specific voting situations. For more information on BSI's CEN membership see https://www.bsigroup.com/en-GB/about-bsi/uk-national-standards-body/standards-and-eu-exit/

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Entries from before early March 2020
New or amended entries – Early March to 31 December 2020
New or amended entries – 1 -31 January 2021
New or amended entries – 1 -28 February 2021
New or amended entries – 1 -18 March 2021
Published standards – 1-31 December 2020
Published standards – 1-31 January 2021
Published standards – 1-28 February 2021
Published standards – 1 to 18 March 2021

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 FDI), PRF = Proof

Copies of draft standards are available from the representatives of organisations that are members of BSI Technical Committee EH4 (e.g. AGS, EIC, SCI). 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.

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BSI PROJECTS		
BS 1337-2	Will cover those tests in Parts 2-8 of BS 1377:1990 that have not been replaced by Parts 1 to 12 of BS EN ISO 17892 or BS 1377-3:2018.	Public consultation expected August/September 2021
BS 1337-3 Amendment 1	Amendment to BS 1377-3:2018 Methods of test for soils for civil engineering purposes. Chemical and electro-chemical testing	Public consultation expected April/May 2021
PAS 128 (revision)	Underground utility detection, verification and location – Specification	Public comment period ended 16 March 2020.
ISO/CEN GEOTECHNICAL STANDARDS		
ISO 17892-12:2018/DAM1	Geotechnical investigation and testing – Laboratory testing of soil – Determination of liquid and plastic limits – AMENDMENT 1	Comment period ends 5 April 2021
ISO DIS 22282-4	Geotechnical investigation and testing – Geohydraulic testing – Part 4: Pumping tests	Comment period ended 14 June 2020
BS EN ISO FDIS FprEN 22475-1	Geotechnical investigation and testing – Sampling of soil, rock and groundwater – Technical principles	Future subject to further debate
ISO DIS prEN 22476-4	Geotechnical investigation and testing – Field testing – Part 4: Prebored pressure test by Ménard procedure	Comment period ended 28 August 2020
ISO CD 24057	Array measurement of microtremors to estimate shear wave velocity profile	Comment period ended 8 March 2021

PUBLISHED ISO & CEN STANDARDS ON SOIL & SITE ASSESSMENT Etc.		

RECENTLY PUBLISHED ANALYTICAL AND OTHER TESTING SOIL QUALITY STANDARDS		
BS EN 13656:2020	**Soil, treated biowaste, sludge and waste – Digestion with hydrochloric (HCl), nitric (HNO_3) and tetrafluoroboric (HBF_4) or hydrofluoric (HF) acid mixture for subsequent determination of elements**	**Published November 2020**
[BSI] PD CEN/TS 16800:2020	**Guideline for the validation of physico-chemical analytical methods**	**Published December 2020**
BS EN ISO 23753-1:2019 + A1:2020	**Soil quality – Determination of dehydrogenases in soils -Part 1 Method using triphenyltetrazolium chloride (TTC)**	**Published November 2020**

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BS EN ISO 23753-2:2019 + A1:2020	**Soil quality – Determination of dehydrogenases in soils -Part 2 Method using iodotetrazolium chloride (TTC)**	**Published March 2021**
BS EN ISO 54321:2021	**Soil, treated biowaste, sludge and waste – Digestion of aqua regia soluble fractions of elements**	**Published February 2021**

DRAFT ISO & CEN STANDARDS ON SOIL & SITE ASSESSMENT Etc.		
ISO FDIS, CEN FprEN 12404,	Soil & Waste - Selection & application of analytical screening methods for on-site use (revision of BS EN ISO 12404: 2015 & BS EN 16123:2013)	Comment period ends 4 April 2021
ISO CD 18400-301	Soil quality – Sampling - Sampling for volatiles and on site semi-quantitative determination in field investigations	Comment period on CD ended 22 February 2021
ISO DIS 23400	Guidelines for the determination of organic carbon and nitrogen stocks and their variations in mineral soil at plot scale	Comment period ended 9 September 2020. Proceeding to FDIS
ISO CD 24212	Remediation techniques applied at contaminated sites	Comments period on CD ended 22 February 2021

DRAFT ANALYTICAL SELECTED AND BIOLOGICAL TESTING STANDARDS etc.		
ISO CD 5120	Soil quality – Determination of perchlorate in soil using liquid chromatography-mass spectrometry	Comment period ended 2 March 2021
ISO FDIS 10390	Soil, sludge and treated biowaste – Determination of pH	Comment period ended 28 March 2020
ISO CD 11268-2 Revision of [BS] ISO 11268-1:2012	Soil quality – Effects of pollutants on earthworms – Part 2: Determination of effects on reproduction of Eisenia fetida/Eisenia anndrei	Comment period ended 27 January 2021
ISO DIS 11916-3	Soil quality – Determination of selected explosives and related compounds – Part 3: Method using liquid chromatography-tandem mass spectrometry (LC-MS/MS)	Comment period ended 12 April 2020
CEN prEN 14735	Characterization of waste – Preparation of waste samples for ecotoxicity tests	Comment period ended 11 May 2020. Proceeding to FprEN

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ISO DIS 15192	Characterization of soil and waste – Determination of Chromium (VI) in solid material by alkaline digestion and ion chromatography with spectrophotometric detection	Comment period ended 10 June 2020.
CEN prEN 15216	Environmental matrices – Determination of dissolved solids (TDS) in water and eluates – Complementary element	Comment period ended 9 December 2019 Proceeding to FprEN
CEN prEN 15935	Sludge, treated biowaste, soil and waste – Determination of loss on ignition	Comment period ended 18 May 2020 Proceeding to FprEN
CEN prEN 15936	Sludge, treated biowaste, soil and waste – Determination of total organic carbon (TOC) by dry combustion	Comment period ended 17 August
CEN pr EN 16166	Sludge, treated biowaste, soil and sediments – Determination of adsorbed organically bound halogens (AOX)	Comment period ended 17 August
CEN prEN 17503	Environmental solid matrices – Determination of polycyclic aromatic hydrocarbons (PAH) by gas chromatography (GC) and high performance liquid chromatography (HPLC)	Comment period ended 30 June 2020. Proceeding to FprEN
CEN prEN 17505	Soil and waste characterization – Temperature dependent differentiation of total carbon (TOC400, ROC, TIC900)	Comment period ended 9 June 2020. Rejected by CEN TC444. 2nd enquiry planned for 2021.
CEN prEN 17516	Waste – Characterization of granular solids with potential for use as construction material – Compliance leaching test – Up-flow percolation test	Comment period ended 17 August 2020.
ISO NP 22036	Soil treated biowaste and slude – Determination of elements using inductively coupled plasma optical emission spectrometry (ICP-OES)	Subject to approval by CEN
ISO CD 23611-4	Soil quality - Sampling of soil invertebrates – Part 4: Sampling, extraction and identification of soil-inhabiting nematodes	Comment period ended 21 January 2021
ISO DIS 23646	Soil quality – Determination of organochlorine pesticides by gas chromatography with mass selective detection (GC-MS) and gas chromatography with electron—capture detection (GC-ECD)	Comment period ended 3 October 2020
ISO DIS 24032	Soil quality - In-situ caging of snails to assess bioaccumulation of contaminants	Comment period ended 10 January 2021

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ISO CD DTS 29843-2	Soil quality – Determination of soil microbial biodiversity – Part 2: Method by phospholid fatty acid analysis (PLFA) using the simple PLFA extraction method	Comment period ended 22 November 2020
CEN NWIP	Characterization of environmental solid matrices – Halogen and sulfur by oxidative pyrohydrolytic combustion followed by ion chromatography detection and complementary determination methods	Subject to approval by CEN TC444
CEN NWIP 444044	Characterization of waste - Determination of the content of elements and substances in waste	Subject to approval. Vote closes 4 May 2021.
ISO WD XXXX	Environmental solid matrices – Determination of elemental composition by X-ray fluorescence spectrometry *Proposed merger of [BS] ISO 18227 and [BS] EN 15309*	Comment period ended 16 January 2021
CEN NWIP	Enviromental characterization of leachates from waste and soil using reproductive and toxicological gene expression in *Daphnia magna*	Approved March 2021

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Background

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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 has recently assumed responsibility for European standards (ENs) for analysis and testing of wastes produced by CEN TC444.

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.

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