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The Technical Guidance Series aims to provide clarity on industry concerns, queries and any issues raised with the core focus on education and improvements.

The investigation and assessment of hazard, and risk from, asbestos in soil, construction and demolition materials on brownfield land.

Purpose of this Guidance Note

This Technical Guidance Note provides important clarifications with respect to the investigation[1] and hazard / risk assessment of land[2] contaminated with dispersed asbestos fibres and fragments of ACMs[3].

It is aimed primarily at asbestos consultants including asbestos in buildings surveying companies undertaking, or seeking to undertake, investigations and assessments of land contaminated by asbestos and asbestos-containing materials (ACMs).

It is intended to inform asbestos surveying organisations / asbestos consultancies of the potentially significant technical and commercial risks associated with the transfer of their knowledge and experience of surveying asbestos in buildings to the specific requirements of asbestos contaminated land investigation and assessment.

Practitioners should be aware of the potential liabilities in negligence that could arise and which could lead to significant reputational damage and financial liabilities.

[1] The term 'investigation' is used in preference to 'survey' as this reflects standard terminology in the land quality assessment sector.
[2] The definition of land includes *in situ* anthropogenically modified soils, made ground, fills, and stockpiles of similar materials. It can include these materials when encountered under buildings and over-site slabs.
[3] HSG248 clause 7.18 refers to "...*dispersed asbestos and ACM fragments*...". In the geoenvironmental field, it is important to differentiate between for e.g. exposure / risk assessment, and waste classification purposes.

Asbestos industry practitioners are advised that asbestos management or refurbishment and demolition surveys conducted '*in accordance with HSG264*'[ref. 1] using the material hazard and priority assessment algorithm from HSG227[ref. 2], is not appropriate for investigating and assessing risk of asbestos in soil, and in construction and demolition materials, on land.

NOTE: it is the intention that further, more detailed practical guidance on this subject will be produced by the geoenvironmental industry which will be of benefit to that sector as well as asbestos practitioners.

Occurrence of Asbestos on and in the Land

It is no surprise that the prolific use of asbestos in the construction of buildings, over the last century, has now resulted in asbestos being found on and in the ground on most brownfield[4] and even on some supposedly 'greenfield' sites.

Arguably, much of this is as a result of poor demolition practices, where asbestos materials were not fully removed prior to final demolition. Asbestos has been found to have been used under floor and ground slabs and hardstanding. Asbestos was also disposed of to land in a poorly-regulated manner, or illegally.

Opportunities and Potential Pitfalls

A broader awareness and recognition of some of the technical difficulties that arise when addressing asbestos in soil is a relatively recent issue. Publication of the CIRIA report C733[ref. 3], published in 2014, opened the door to asbestos in soil and made ground consultancy opportunities.

More recently, the second edition of HSG248[ref. 4], published in 2021, provided some technical guidance on procedures for assessing asbestos in soil contamination from a worker protection perspective.

As a sector, asbestos management practitioners are in a good position to provide industry best practice to support the land quality assessment and management industry in reducing the potential risk of exposure to asbestos on construction, development, and similar sites. But what do practitioners need to know to avoid potential liabilities, where technical competency and professional standing could be challenged?

[4] Fact sheet 7: Homes and different land types - brownfield, greenfield and Green Belt. Homes England.

Some fundamental questions requiring careful consideration by practitioners are:

1. Do you have the correct insurance cover to provide laboratory analysis and consultancy on asbestos in soils?
2. Do you have the correct knowledge, experience, and competence to consult / practice in the field of asbestos in soils?
3. Are you a member of a relevant professional body that recognises land contamination as a specific area of expertise as required by the National Planning Policy Framework[5]?

HSG264 trained surveyors may not have sufficient training in identifying ACMs on / in the ground and incorrectly apply HSG264 material assessment principles.

Recording loose asbestos debris or fibrous board may be more appropriate than referring to insulation or asbestos insulating board (AIB). Using HSG264 and HSG227 principles could significantly overestimate the risk of exposure during groundwork (**see WATCHPOINT 8**).

Some further additional questions, then, that you will also need to consider:

4. Can your surveyors identify when an ACM is **Clearly identifiable Original Form (CIOF)** in the ground?
5. Can you properly describe and log soil profiles to detail soil types, and location of the depth of asbestos to support any assessment of exposure risk, waste disposal requirements under Environment Agency guidance WM3[ref. 5] and/or remediation?
6. Do you understand the potential dangers of working near underground services, such as buried electricity cables, gas mains, water pipes and sewers, and so have the capability to plan and undertake a ground investigation safely in accordance with HSG47[ref. 6] and other published guidance[refs. 7, 8]?
7. Are you aware of other ground hazards and risks that might impact on safety and / or pollution potential? Unexploded ordnance, buried tanks, utilities, hazardous chemicals, mobile pollutants such as petroleum hydrocarbons that could cause environmental pollution as a result of a poorly planned and executed investigation are all real potential risks.

[5] The National Planning Policy Framework defines a competent person for assessing land contamination as: *"A person with a **recognised relevant qualification**, **sufficient experience** in dealing with the type(s) of pollution …, and **membership of a relevant professional organisation***

8. Are your asbestos analysts trained to recognise loose fibrous asbestos debris and fibrous board in soils and C&D materials during analysis[6]? If the analyst incorrectly records a product type, based on a sample in the petri dish with no contextual information, it can lead to an incorrect determination of the status of work, which in turn may present significant consequences for the planning and execution of remediation on site.

For example; a small fragment of board which is isolated from a soil sample and viewed under the stereo microscope in a petri dish, and which contains amosite, is reported as AIB, or a small bundle of chrysotile fibres is described as lagging. Either outcome is likely to be incorrect and could result in works incorrectly being categorised as licensed work.

This has ramifications and could be very costly to the client, potentially resulting in a claim for negligence and costs. Without an understanding of the wider implication's consultancies could be liable for damages by stating a material is licensable, when the licensing regime requirements in Regulation 2, CAR2012 may not have been met.

If the board fragment was recorded as 'fibrous board', or the bundle of fibres recorded as 'loose fibrous asbestos', the work category will be risk based, i.e. with reference to whether the Control Limit could be exceeded.

Technical Framework for Asbestos Hazard and Risk Assessment in Buildings

As stated earlier, asbestos management surveys '*in accordance with HSG264*' using the material hazard, and the priority assessment algorithm from HSG227, are not appropriate for investigating and assessing hazard and risk of asbestos on land (**see WATCHPOINT 1**).

WATCHPOINT 1

HSE guidance HSG264 at para 6 states:

"*The guidance does not cover airborne sampling or surveying contaminated land. These are specialised subjects outside the scope of this document*."

[6] HSG248 Appendix 7 indicates that fragments of similar ACM types are segregated for confirmation, e.g. see Figures A7.4 and A7.6.

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The use of asbestos management survey templates, therefore, is not appropriate for land investigations. This must not be done. Applying the material assessment approach based on HSG264, therefore, is not appropriate and must not be used.

If your company is issuing such reports, this could be considered to be an infringement of your asbestos surveying accreditation under ISO/IEC 17020:2012, since to cite HSG264 as an accredited method would be misleading (**see WATCHPOINT 2**).

Moreover, if your reports contain the UKAS symbol, this would be contra to the Terms of Use issued by the Office of Products Safety and Standards (**see WATCHPOINT 3**).

UKAS Accreditation for Analysis of Asbestos in Soils & C&D Materials

Analysis of soil or C&D material samples for the identification of asbestos asbestos-containing materials in these materials requires an extension to the scope of your UKAS accreditation to include these matrices.

Training laboratory analysts in recording products found during analysis in these matrices is a key part of the process.

A sample of any soil (or C&D materials) containing ACMs must be treated as 'soil' or 'aggregate' not 'dust' or 'debris'. Only undertake identification analysis of fragments of ACMs extracted from soil or C&D samples if you have an extension to your bulk identification accreditation. Accreditation for mass quantification of asbestos in soils is not mandatory but advised.

WATCHPOINT 2

For accredited organisations, ISO/IEC 17020 states that:

"7.1.1 *The inspection body shall use the methods and procedures for inspection which are defined in the requirements against which inspection is to be performed. Where these are not defined, the inspection body shall develop specific methods and procedures to be used.*

7.1.2 The inspection body shall have and shall use adequate documented instructions on inspection planning and on sampling and inspection techniques, where the absence of such instructions could jeopardize the effectiveness of the inspection process. Where applicable, the inspection body shall have sufficient knowledge of statistical techniques to ensure

statistically sound sampling procedures and the correct processing and interpretation of results.

7.1.3 When the inspection body has to use inspection methods or procedures which are non-standard, such methods and procedures shall be appropriate and fully documented."

WATCHPOINT 3

The Office for Product Safety and Standards guidance document The National Accreditation Logo and Symbols: Conditions for use by UKAS and UKAS accredited organisations states that:

"4.1.3 *The national accreditation symbols shall not be used in any way that might mislead the reader about the status of an accredited organisation.*

4.1.4 Any use of the national accreditation logo or symbols that might contravene the conditions laid down in this publication shall be referred to UKAS.

4.1.6 It is the responsibility of every UKAS accredited organisation to minimise the risk of a client/reader being misled as to the extent and limitations of its UKAS accreditation."

Competence in Asbestos Sampling and Analysis

UKAS-accredited Inspection Bodies are required to operate under LAB 30: Application of ISO/IEC 17025 for Asbestos Sampling and Testing, as well as RG 8: Accreditation of Bodies Surveying for Asbestos in Premises.

LAB 30 provides guidance on the application of specific requirements for laboratories carrying out asbestos sampling and/or testing, including for asbestos in soils bulk sampling and analysis (**see WATCHPOINT 4**).

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WATCHPOINT 4

LAB 30 states that:

"6.1.1.4 *Authorised samplers and analysts shall be suitably educated, qualified and trained, with the knowledge, skills and experience to be able to demonstrate technical competence in the appropriate area of work.*

7.7.2.2.1 The laboratory shall participate in appropriate inter-laboratory comparison exercises or proficiency testing schemes as relevant, e.g. ... the Asbestos in Soils (AISS) scheme.

7.1.5.2 A laboratory for which accreditation in asbestos in soils is not held, would for example, not normally handle a soil sample of 1kg size to then search for ACMs in the entire sample."

RG 8 provides guidance on the application of certain clauses of ISO/IEC 17020 (**see WATCHPOINT 5**).

Technical Guidance Framework for Land Contamination Assessment

The means by which ground contamination investigations are planned and executed, and the results interpreted, are complex.

A ground contamination investigation may have very different drivers, and consequently these need to be considered at planning stage if a technically competent execution and outcome is to be expected.

WATCHPOINT 5

RG 8 states that:

"*1.4 RG 8 will be used by UKAS for accreditation of bodies inspecting for asbestos in premises in connection with Regulation 4... (CAR), the... (ACoP L143) and... (HSG264). They are intended to provide guidance to Inspection Bodies assisting 'dutyholders' in meeting their statutory obligations by selection of 'competent bodies' for the purposes of the Regulations.*

1.6 Unless stated otherwise, the terms used in this publication are consistent with terms used in... HSE guidance HSG264 Asbestos: The Survey Guide.

7.3 Records held by the Inspection Body should indicate the competence of surveyors to perform survey work in different sectors...”

Readers should note that the Duty to Manage Asbestos in Non-Domestic Premises in Regulation 4 CAR does not apply to land (see CAR-SOIL)[ref. 9].

Many such investigations are carried out in respect of construction/development where strict planning conditions relating to land contamination assessment, and technical competency requirements apply as set out in long-established guidance issued by the Environment Agency, Land Contamination Risk Management (LCRM)[ref. 10].

This sets out a very detailed process that must be considered when designing land contamination assessments and remediation schemes.

These procedures are considered industry best practice and must be followed, especially if there is a planning requirement in force.

LCRM guidance also refers to British Standards and other guidance you can use including BS10175:2011+A2:2017, Investigation of potentially contaminated sites. Code of practice [ref. 11].

Planning conditions generally will require that adequate site investigation information, prepared by a competent person, in accordance with this guidance, is available to inform risk assessments. This is necessary in order to determine if land is suitable for use, including remediation requirements (**see WATCHPOINT 6**).

The Royal Institution of Chartered Surveyors (RICS) recognises that investigation of land for asbestos contamination is a specialist activity requiring specialist skills and competencies. (**see WATCHPOINT 7**).

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WATCHPOINT 6

The Environment Agency Guidance entitled '*Land contamination risk management (LCRM)*' notes on the page entitled '*Before you start*' that you should:

"*Use land contamination risk management (LCRM) to:*

- *identify and assess if there is an unacceptable risk*
- *assess what remediation options are suitable to manage the risk*
- *plan and carry out remediation*
- *verify that remediation has worked*

You can use LCRM in a range of regulatory and management contexts. For example, voluntary remediation, planning, assessing liabilities or under the Part 2A contaminated land regime. The Environment Agency expects you to follow LCRM if you are managing the risks from land contamination."

WATCHPOINT 7

The 4th edition of the RICS guidance note entitled 'Asbestos: Legal Requirements and Best Practice for Property Professionals and Clients' notes at p. 24 that:

"*Risk assessment and management of asbestos in soils and construction and demolition materials is a specialist and complex area. Suitably trained, competent and insured professionals and contractors should be used to provide advice or carry out work in this area. Comprehensive practical guidance has been produced by a Joint Industry Working Group (including RICS and supported by the HSE), which was published by CL:AIRE (Contaminated Land: Applications in Real Environments) and is known as CAR-SOIL. Other relevant guidance has been published by the Construction Industry Research and Information Association (CIRIA) and the Association of Geotechnical and Geoenvironmental Specialists (AGS).*"

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Industry guidance CAR-SOIL, published in 2016, provided much-needed and definitive interpretation of the Control of Asbestos Regulations 2012 and the accompanying ACOP and Guidance L143[ref. 12] for working with asbestos in and on land (**see WATCHPOINT 8**).

WATCHPOINT 8

The CL:AIRE industry guidance entitled '*Control of Asbestos Regulations 2012, Interpretation for Managing and Working with asbestos in Soil and Construction and Demolition materials: Industry guidance*', or 'CAR-SOIL', prepared by the Joint Industry Working Group (JIWG) on Asbestos in Soil and Construction & Demolition (C&D) Materials with support from the Health and Safety Executive (HSE).

The guidance is aimed at improvements within the brownfield and contaminated land industry, and notes in respect of AIB and insulation materials that:

*"42 It may not always be possible precisely to confirm the identity of the type of different ACMs present when mixed with soil and/or C&D materials, e.g. it may be difficult, or impossible, to positively confirm that debris is asbestos insulating board (AIB), or to differentiate between AIB and asbestos cement, based on appearance. The confirmation of ACM type by visual identification of small fragments of degraded ACMs in the ground on-site may not be at all straightforward, since degradation and coating by the host material may disguise them to the extent that they become very difficult, if not near impossible to spot. In such situations, a more accurate description of the material would be '**soil contaminated with asbestos sheeting/board debris**'."*

*"44 In many scenarios, when (what may have formerly been) asbestos coating material or asbestos insulation are encountered in the ground, where they are degraded, heavily wetted and mixed with soil, they no longer may easily be described as being asbestos coating or asbestos insulation. In such situations, a more accurate description of the material would be '**soil contaminated with loose fibrous asbestos debris**'."*

If materials are not clearly identifiable AIB or insulation, work on soil contaminated by these will not automatically be licensable work with asbestos.

CAR-SOIL's accompanying Work Category and Receptor Risk Ranking Decision Support Tools, provide some fundamentally different approaches for the assessment of land contaminated by asbestos and the determination of asbestos work category (**see WATCHPOINT 9**).

WATCHPOINT 9

Applying the material descriptions in HSG264[7] is not always appropriate and may lead to the incorrect determination of the status of work as being licensable, or notifiable non-licensable work. CAR-SOIL and the JIWG Work Decision Support Tool was developed to provide the best practice frameworks for this task.

The CL:AIRE Decision Support Tool for the Categorisation of Work Activities Involving Asbestos in Soil and Construction & Demolition Materials in accordance with the Control of Asbestos Regulations 2012 is a spreadsheet tool which provides the user with a decision support platform designed by the JIWG to assist in the categorisation of work with asbestos under CAR2012 and supports the JIWG Industry Guidance CAR-SOIL. The spreadsheet should be used in conjunction with the guidance in this publication.

The CL:AIRE Decision Support Tool for the Qualitative Risk Ranking of Work Activities and Receptors Involved in or Exposed to Asbestos in Soil and Construction & Demolition Materials provides the user with a decision support platform designed by the Joint Industry Working Group to assist in the risk-rank activities and receptors as part of a preliminary risk assessment under LCRM.

The aim of developing this tool is to provide industry with a consistent decision-making format that is aligned with UK health & safety and environmental regulatory policies and is consistent with the wider objectives of the JIWG.

Competence in Asbestos Sampling and Assessment of Asbestos in Soils

Environment Agency guidance in LCRM states that for "*land contamination and planning you must use and meet the National Planning Policy Framework (NPPF) definition of a competent person given in annex 2*" (**see WATCHPOINT 10**).

[7] The alternate descriptors provided in per CAR-SOIL enable a reasoned differentiation between AIB / fibrous board and insulation / fibrous asbestos, based on context; is the material in a Clearly Identifiable Original Form, or not?

If you cannot demonstrate the correct level of competence, you may find that you are uninsured in the event of a claim as a result of a poorly planned and executed investigation.

WATCHPOINT 10

The NPPF defines competence for land contamination assessment as:

"***Competent person*** *(to prepare site investigation information): A person with a recognised relevant qualification, sufficient experience in dealing with the type(s) of pollution or land instability, and membership of a relevant professional organisation*."

The NQMS provides:

"*… visible identification of documents that have been checked for quality by a Suitably Qualified and experienced Person (SQP). It provides increased confidence and improved quality of submissions made under regulatory regimes, particularly planning applications, related to previously used land*."

Under LCRM, practitioners can opt to use the National Quality Mark Scheme (NQMS) for reporting requirements for land contamination management. This is a voluntary scheme set up by the Land Forum in 2017 and administered by CL:AIRE.

The NQMS is underpinned by the National Brownfield Skills Framework (NBSF) which was developed to provide a framework to define the capabilities pertinent to practitioners operating within the brownfield, reclamation and regeneration industry and to provide a framework in support of the assessment of skills of a Suitably Qualified Person (SQP) associated with the NQMS for land contamination management.

The Specialist in Land Condition (SiLC) Register scheme have been nominated the awarding body for SQPs. A registered SiLC is a senior practitioner who has a broad awareness, knowledge and understanding of land condition issues, providing impartial and professional advice in their field of expertise.

Conclusions on surveying and sampling for asbestos management in buildings vs land contamination assessment

Surveying and sampling land suspected of contamination by asbestos requires a different set of skills that is more akin to a Geoenvironmental Consultant / Engineer than an Asbestos Building Surveyor.

The management of asbestos in buildings, based on commonly used survey report formats for management or refurbishment and demolition surveys, including that material hazard assessment in HSG264 and the priority assessment in HSG227, is not appropriate for contaminated land assessment.

Collaboration with a specialist Geoenvironmental Consultant/Engineer can bring together both skill sets and expertise to complement each other. Going it alone without understanding the risks could be very damaging to your business.

Some key reference documents are listed below.

1. Asbestos: The Survey Guide (second edition) (2012). HSG264. HSE.
2. A comprehensive guide to managing asbestos in premises (2002). HSG227. HSE.
3. Asbestos in soil and made ground: a guide to understanding and managing risks, *Nathanail et al* (2014). C733. CIRIA.
4. Asbestos: The Analysts' Guide (second edition) (2021). HSG248. HSE.
5. Technical Guidance WM3: Guidance on the classification and assessment of waste version 1.2. (2021). Environment Agency.
6. Avoiding danger from underground services (third edition) (2014). HSG47. HSE.
7. A guide for safe working on contaminated sites, *Steeds et al* (1996). R132D. CIRIA.
8. Protection of Workers and the General Public during the Development of Contaminated Land. HSG66. (1991). HSE (withdrawn)
9. Control of Asbestos Regulations 2012, Interpretation for Managing and Working with Asbestos in Soil and Construction and Demolition Materials: Industry guidance. (CAR-SOIL) (2016). CL:AIRE.
10. Land contamination risk management (LCRM). (2023) Environment Agency.
11. Investigation of potentially contaminated sites. Code of practice. BS10175:2011+A2:2017. (2017). British Standards Institution.
12. Managing and working with asbestos. Control of Asbestos Regulations 2012. Approved Code of Practice and guidance. L143 (second edition) (2013). HSE.

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This list is not extensive, and the reader is referred to the following websites for further information:

CL:AIRE Water and Land Library
Association of Geotechnical & Geoenvironmental Specialists
Construction Industry Research and Information Association

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NORAC National Organisation of Asbestos Consultants