ASBESTOS IN SOIL

Industry guidance on dealing with asbestos in contaminated land is fairly sparse, although it has started to gain pace. The Construction Industry Research and Information Association (CIRIA) has published technical guidance documents aimed at understanding and managing the risks of asbestos in soil and has organised a conference on the issue in October. Their 2014 publication, 'Asbestos in soil and made ground: a guide to understanding and managing risk' is the first good practice guide in the UK to amalgamate current industry knowledge on the subject since 1990 and identify gaps in the knowledge base.

Regulation

Relevant regulations and guidance from authoritative organisations include The Control of Asbestos Regulations 2012 (CAR), the HSE Managing and Working with Asbestos Control of Asbestos Regulations 2012 Approved Code of Practice (ACOP) L143 2013, HSG 248 Asbestos: The analyst guide for sampling, analysis and clearance procedures. The Hazardous Waste Regulations 2007, The Health and Safely at Work Act 1974 and the CIRIA publication Asbestos in Soil and Made Ground C733: a Guide to Understanding and Managing Risks. We should also consider the JIWG which is looking specifically into the management of asbestos in soils.

Key message

- Asbestos is primarily hazardous by inhalation
- Asbestos has been proved to cause mesothelioma and lung cancers in humans
  - Different types of asbestos have different potencies. In general, it seems crocidolite > amosite > chrysotile

- Very little guidance on asbestos in soil in the UK or elsewhere
  - Also, a limited amount of research to base guidance on
  - Only existing UK guidance (ICRCL 64/85 ver2) notes that 0.001% asbestos in soil can exceed occupational exposure limits (0.1 f/ml air)

- Risks from asbestos in soil can be assessed using BS10175:2011/CLR11 approach but:
  - Specific precautions will be needed during all site works
  - Sampling and testing strategies may be different from other contaminants
  - Asbestos-specific techniques will be needed for site investigation, risk estimation and evaluation

- Asbestos is potentially present at nearly all types of post-industrial site, but likely mostly at low concentrations

Asbestos is composed of six different types of natural minerals:

Most common types

- Chrysotile
- Amosite
- Crocidolite
- Tremolite
- Actinolite
- Anthophylli





Practical approach

The practical approach to dealing with an asbestos contaminated site remains virtually undiscussed however if we take a basic risk model and apply a 5-step process for approaching asbestos in soil, identifying the likelihood of contamination on site, and how we should deal with it should minimises the impact on construction.

Step 1
Actively engage with any contractor who is involved in the work must be the first step and define the problem. This involves assessing existing data and engaging an experienced asbestos soil surveyor as early as possible. This critical stage determines the level of further investigation required and, crucially, allows the client to understand any remedial cost implications early in the development process. This includes time-based costs from delays in construction if greater remedial works are required; if affected stakeholders have been identified; or if licences are required to deal with any contaminants.

Step 2
Forward planning, focuses on the development of a solution strategy that satisfies all interested parties, minimising disruption to the original development timescales. The remedial approach is based upon the findings from Step 1, taking into account the characteristics of the asbestos materials, their distribution and the soil type; the proposed land use; cost/benefit analyses; the impact on potential stakeholders; and the attitude of local regulators.

Step 3
The combined outcome of the first two steps facilitates Step 3: establishing a plan of work. Based on a thorough understanding of the site and its surroundings, specific methodologies can be formulated. At this point the key factors considered in planning and executing the work include the licensing regime; coordination with other contractors on site; site layout and access arrangements; plant and personnel decontamination; control measures and air monitoring strategy; and risk-based management of waste disposal.

Step 4
Engaging trained professionals to competently deal with the health and safety risks associated with asbestos contamination is paramount. Understanding the training policies, standards and accreditations that any chosen remediation contractor possesses is referred to as Step 4, Competency, and can play a big part in planning sign off at the end of decontamination works.

Step 5
The culmination of Steps 1-4 are ultimately designed to get you to the point of validation. After acquiring successful planning sign off, the project manager should ensure that he/she has access to all validation records and, where material has been retained onsite, an asbestos management plan. Reports will include a detailed audit trail of material movements, including disposal/reuse records and as-built drawings. Training should also be given to all follow-on site workers to ensure they have the knowledge to protect themselves and others.

Solutions/Treatment

We along with our specialist contractor should establish formal contact with the regulators, to explain what our surveys identified which should include extensive trial pitting and analytical testing to evaluate the type, extent and condition of asbestos. We can then look to create a site-specific Risk Assessment, Exposure Assessments and Plans of Work (POW) all of which are necessary to adequately plan works involving asbestos in accordance with the Control of Asbestos Regulations (CAR) 2012.

Several factors influence the methodology of asbestos remediation. These include but are not limited to: the media in which the asbestos is present, the form of asbestos - either asbestos containing materials (ACM's) or friable Asbestos fibres, concentrations and the types of asbestos (Crocidolite, Chrysotile or Amosite). Other factors may include proximity of works to the public, other contractors and site/environment conditions.

Examples of types of remediation techniques include:

Hand-picking;
Screening;
Solidification;
Soil washing;
Clean cover systems;
Offsite disposal; or
Offsite treatment;
and on-site controlled re-use

Control and Protection Measures

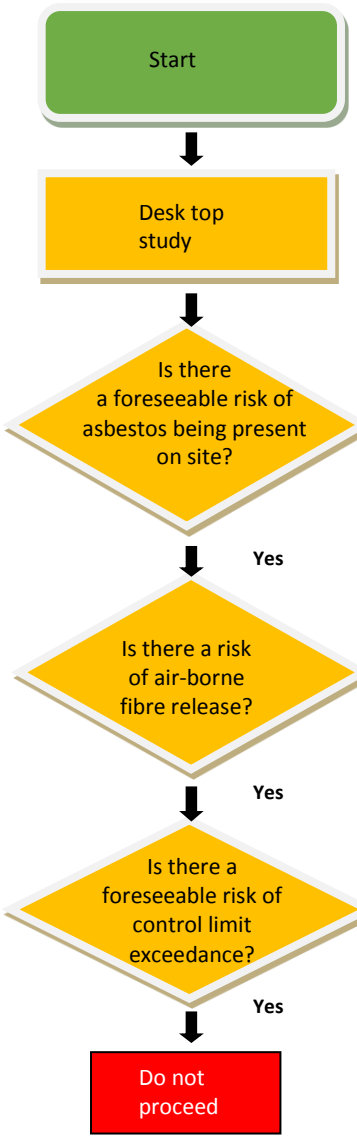
As part of the Risk Assessment and Plan of Works (POW) process, the works will be classified into one of the following categories:

- Non-Licensed asbestos work;
- Notifiable, Non-Licensed Asbestos Work (NNLW);
- Licensed Asbestos Work.

Generally, the most common type of work relating to asbestos in soils is Notifiable, Non-Licensed Asbestos Work (NNLW). This type of work requires notification to the local HSE office but does not require a license to undertake. For most NNLW work involving asbestos in soils, it is usually necessary to implement similar control methods and procedures to those that a licensed asbestos contractor will use. These may include but are not limited to:

- Full training - using staff that are adequately trained in Non-Licensed work.
- Use of appropriate PPE and RPE such as Category 3 Type 5 coveralls and FFP3 respirators.
- Record keeping ensuring staff receive medicals at least every 3 years (from April 2015).
- Using various dampening down techniques to control moisture and prevent fibre release.
- Utilising full decontamination facilities for staff.
- Installation of appropriately marked and segregated work areas and transit routes for both pedestrians and site traffic.
- Designated areas and ongoing various environmental monitoring activities including fugitive dust monitoring and collection and analysis of samples, reassurance monitoring and working area leak tests.

Site investigation procedure



This assessment can be recorded on CIRIA form A & B.

- Form A is the desk top form.
- Form B is after the 1st site visit form

No → Proceed as normal

Fibre release depends on:

- Type of material
- Condition of material
- Wet / damp or dry
- Buried or not

No → Proceed with due care

Investigation is notifiable under CAR 2012 unless the risk assessment clearly indicates that the exposure of any employees to asbestos is not liable to exceed the control limit

No → Proceed only with expert guidance

Examples:

Low risk - Greenfield sites

Medium risk - Sites developed or refurbished in the 1930s -1980s or landfills

High risk - All buildings 7 refurbishments 1960s – 1970s. Asbestos product works

Examples:

Low risk - Undistributed hard cover

Medium risk - crushed recycled aggregate. Demolition waste, backfilled basements. Bare soil with potential to generate any dust in dry condition. Visible asbestos.

High risk – Dust (especially demolition and where nearby asbestos working / storage.