RSPH Level 3 Award in Asbestos Surveying

Pre-Read Qualification Information

Qualification Overview

The objective of the course is to provide the knowledge and competency to surveyors and similar specialists when inspecting buildings and premises for asbestos and advising on subsequent management actions.

Instruction: 15 hours over 3 days
Prior learning/pre-reading: 3 hours which will include all the following information in this booklet and exerts from the reading list.
Assessment:

a) Written test paper (30 short answer questions in 90 minutes)
b) Practical assessment and witnessed exercises such as:
   i) Mock survey
   ii) Decontamination
   iii) Product recognition
   iv) Material risk assessment
   v) Oral questioning

Day 1

Unit 1 Health risks, uses and properties of Asbestos
Types and uses of asbestos containing products
Risks to health from exposure

Unit 2 Management of asbestos in buildings, carry out asbestos surveying and scoring material assessments

Day 2

Unit 2 Carrying out an asbestos surveying and scoring priority assessments and the evaluation of report formats.

Unit 3 Taking a bulk sample and re selection of PPE and the sampling of materials.

Day 3

Unit 4 The use of decontamination units and Type-H vacuums.
· Written test paper
· Assessment

The RSPH Qualification

Royal Society for Public Health (RSPH) is the awarding body for this qualification.

The qualification is set at Level 3 which is equivalent to an A Level.

The qualification depends on the candidate achieving:

a) 60% in exam for EACH unit
b) Satisfactory practical assessment for review of PPE, sampling and use of DCUs/Type-H vacuums.

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UNIT 1
Asbestos types, uses, health effects and legislation

HSE Statement

'Asbestos is the greatest single cause of work related deaths in the UK.' Currently around 5,000 deaths per annum.

The Current Problem

Approximately 6million tonnes of imported fibres went into 30 to 40million tonnes of building products. Large numbers of buildings still contain asbestos with between 500,000 and 2million commercial premises and around 2.5million domestic dwellings.

There is a large potential for exposure in the population with 2million working in building trades and 20million general building users/ occupants.

The problem is workers still don't know what it looks like, where it is or what the actual risks are from the products.

HSE Report RR696 – Prof. Peto

The predicted total of 90,000 UK mesotheliomas between 1970 and 2050 will include around 15,000 carpenters. The particularly high risk to carpenters is thought to be due to exposure to amosite (brown asbestos) while cutting AIB.

In the 1960s the UK imported almost half of all amosite mined to put into AIB products.

The HSE estimates 20% of ceiling area of public buildings built between 1967 and 1973 are AIB (plus all the Boots, M&S, Woolworths premises). Miscellaneous use of AIB is a bigger problem than lagging or sprayed coatings.

Section 1: Properties and characteristics of asbestos

Asbestos - "Natures Wonder Fibre"

Asbestos is a general name given to several naturally occurring fibrous minerals that have crystallised to form fibres. Asbestos fibres have properties that have been utilised to en-hance other products. These properties are:

a) Strength – stronger than steel
b) Flexibility – easily woven
c) Stability – will deteriorate only slowly
d) Very good thermal insulator
e) Have fantastic fire retardant properties.
f) Chemical and electrical resistant

Asbestos Types and Characteristics

Asbestos is generally divided into two sub-groups:

a) **Serpentine asbestos** (chrysotile or white asbestos) was the most commonly used type of asbestos.

   i} Chrysotile is a chain silicate that tends to be sharp, springy, (elastic) curly fibres. The fibres are hydrophilic (water loving) and less acid resistant than amphiboles, however far more alkali resistant and used extensively in cement and textile products.

b) **Amphibole fibres** (crocidolite - blue asbestos, amosite - brown asbestos, tremolite, actinolite and anthophyllite).

   i) The amphibole fibres are hydrophobic (water hating) and much better acid resistance than chrysotile.

   ii) Tremolite and actinolite form a 'solid-solution' series and have continuously variable composition depending on the source of the material.

   iii) Crocidolite, amosite, tremolite, actinolite and anthophyllite, are brittle fibres and are often rod or needle-like in appearance. It is this form that is more hazardous to health. Crocidolite was the most commonly used amphibole asbestos in the past.

   iv) Amosite was used in boarding products and ceiling tiles, but also as insulation and in sprayed coatings.

   v) Crocidolite has the best thermal properties and was used as insulation and as a spray coating

Section 2: Types and uses of asbestos containing materials (ACM's)

Location of ACM's in buildings

Cut Off Dates for Use of ACM

1969	Voluntary ban on blue asbestos commences
1974-75	Spray coating cease to be used.
1980-85	Pipe/boiler lagging cease to be used.
1985	AIB panels/ceiling tiles finally cease to be used.
1985	Statutory ban on brown and blue asbestos.
1985-89	Textured coating ceases to be used.
1990-95	Floor tiles/coverings and cement flues to boilers cease being used.
1999	Corrugated roof sheets cease to be used.
1999	Statutory ban on white asbestos in 1999, although there may still have been imports after domestic ban.

Loose fill insulation

Loose fibre such as blankets and mattresses were used as insulation. Some was packed in bags and used in flooring / Jiffy etc and some was hessian wrapped.

Loose fill was usually pure asbestos with the exception of linings or bags.

Mattresses and quilts were commonly filled with raw crocidolite and chrysotile and it can also used for acoustic insulation.

Dry material = high levels of exposure

Asbestos Product	Location/use	Asbestos and time/ date last used	Ease of fibre release and product names
Loose Insulation			
Bulk loose fill, bulk loose fibrefilled mattresses, quilts and blankets. Also 'jiffy bag' type products used for sound insulation.	Bulk loose fill insulation is now rarely found but may be encountered unexpectedly, eg DIY loft insulation and firestop packing around cables between floors. Mattresses and quilts used for thermal insulation of industrial boilers were filled with loose asbestos. Paper bags/sacks were also loose-filled and used for sound insulation under floors and in walls..	Usually pure asbestos except for lining/ bag. Mattresses and quilts usually contain crocidolite or chrysotile. Acoustic insulation may contain crocidolite or chrysolite.	Loose asbestos may readily become airborne if disturbed. If dry, these materials can give rise to high exposures. Covers may deteriorate or be easily damaged by repair work or accidental contact.

Sprayed Coatings

Sprayed coatings (limpet) were both a dry and wet application with usually a trowel finish. Crocidolite was the major type of asbestos fibre used until 1962 and then completely stopped in 1969 with a voluntary import ban. Amosite and chrysotile was used until 1974 when sprayed coatings were stopped as the process was too dangerous due to the high fibre concentrations. The amount of fibre used varied but up to 85% asbestos fibre was not uncommon. High fibre release was also associated due to its high friability

Sprayed coatings Its primary use was as fire protection in ducts, firebreaks and around structural steel work were used for both thermal and anti-condensation insulation usually on the undersides of roofs and occasionally sides of industrial buildings and warehouses. It can also be found as acoustic insulation in theatres and swimming pools.

Another use was as fire protection on steel and reinforced concrete beams / underside of floors.

Overspray of target areas can be found where the sprayed material is found anywhere around and beyond the sprayed area.

Residue from the original application and residual splats either side of the target area are what to look for.

The material is far more friable and prone to fibre release than the actual coating and could have contaminated areas which appear to be asbestos free.

It was very rarely used in domestic housing.

Below; Spray coat on a car park ceiling for fire protection.

Asbestos Product	Location/use	Asbestos and time/date last used	Ease of fibre release and product names
Sprayed Coating			
Dry applied, wet applied and trowelled finish.	Thermal and anti-condensation insulation on underside of roofs and sometimes sides of industrial buildings and warehouses. Acoustic insulation in theatres, halls etc. Fire protection on steel and reinforced concrete beams/columns and on under-side of floors. Over-spray of target areas is common.	Sprayed coatings usually contain 55%–85% asbestos with a Portland cement binder. Crocidolite was the major type until 1962. Mixture of types including crocidolite until mid–1971. Asbestos spray applications were used up to1974.	The surface hardness, texture and ease of fibre release will vary significantly depending on a number of factors. Sprays have a high potential for fibre release if unsealed, particularly if knocked or the surface is abraded or delami-nates from the underly-ing surface. Dust released may then accumulate on false ceilings, wiring and ventilation systems.' Limpet' (also used for non-asbestos sprays).

Thermal Insulation

Thermal insulation is generally regarded as high/medium risk material. The content of asbestos fibre used is highly variable and can vary greatly, 6 - 85%. Ad hoc mixtures were used on bends / pipe runs.

Pre-formed sections 85% magnesia 15% amosite.

Trade names such as 'Caposil' which is calcium silicate slabs / blocks contain 8 – 30% amosite and 'Caposite' sections which can contain 85% amosite.

An outer coating was usually applied to protect against damage. This could be a number of applications such as a hard setting compound or rolled metal such as aluminium.

Thermal insulation could contain blue, brown or white asbestos and was mixed on site prior to application.

Pre-formed sectional ("Caposite") lagging was also available and gives a more uniform finish. Pre-formed sections were very expensive.

Thermal insulation can come in many forms such as hand applied thermal lagging used for pipe and boiler lagging.

Preformed pipe sections, slabs and blocks used to lag very quickly but very expensive to buy.

Also tapes, ropes corrugated papers, quilts, felts and blankets were available.

All these applications may have outer coating of scrim, metal, cement or chicken wire.

All types of asbestos have been used in thermal insulation. Crocidolite was used in lagging until 1970.

Amosite phased out by manufacturers during 1970s.

The friability of the material depends on nature of lagging, high potential for fibre release unless sealed, and increases with age.

Common encapsulation methods include calico and paint, PVA, "ET150", or polymer emulsions such as "DECADEX".

A harder weather resistant finish for external pipe runs - commonly known as Bulldog.

Asbestos Product	Location/use	Asbestos and time/ date last used	Ease of fibre release and product names
Thermal Insulation			
Hand-applied thermal lagging, pipe and boiler lagging, pre-formed pipe sections, slabs, blocks. Also tape, rope, corrugated paper, quilts, felts and blankets.	Thermal insulation of pipes, boilers, pressure vessels, calorifiers etc	All types of asbestos have been used. Crocidolite used in lagging until 1970. Amosite was phased out by the manufacturers during the 1970s. Content varies 6-85%. Various ad hoc mixtures were handapplied on joints and bends and pipe runs. Pre-formed sections were widely used, eg '85% magnesia' contained 15%.	The ease of the fibre release often depends on the type of lagging used and the surface treatment. Often it will be encapsulated with calico and painted (eg PVA, EVA, latex, bitumen or propietary polymer emulsions or PVC, neoprene solutions}, eg 'Decadex' finish is a proprietory polymer.

Asbestos Insulating Board (AIB)

Asbestos insulating board (AIB) is generally regarded as a medium risk material. There is usually a fibre content present of 15 to 25%.
The material is less friable as compressing the board and paint acts as protective coating.

Asbestos Insulation Board (AIB) was mainly used to provide:

a) structural fire protection – Walls panels, ceiling tiles, fire breaks, door linings
b) heat resistance
c) acoustic insulation
d) partitioning, (e.g. doors, meter cupboards, ovens, domestic boiler casings, fire breaks etc) and
e) general building board (infill panels, bath panels, wall lining, canopies and porch linings).

Crocidolite used infrequently up to 1965 but Amosite is the main asbestos component and was used up to 1980 when manufacture ceased. There is usually 15 – 25 % amosite or a mixture of amosite and chrysotile in calcium silicate but older boards and early marine boards can contain up to 40%.

There are also a number of trade names to look out for such as

a) Asbestolux – 16 - 40 %
b) Turnasbestos
c) LDR
d) Asbestos Wallboard
e) Insulation Board
f) Marine Boards (Marinite – Shipboard).

AIB was used extensively up to 1985.

The UK was the world's largest importer of amosite (brown) with approximately 24,000 tons in 1960 and 40% of the global total.
It is known that 20% of the ceiling area of all new public buildings between 1967 and 1973 are made out of AIB ceiling tiles.
Former Woolworths stores are estimated to have 1 million sqm of ceiling tiles.

External canopy

Asbestos Product	Location/use	Asbestos and time/ date last used	Ease of fibre release and product names
AIB			
Insulating board in cores and linings of composite products.	Found in fire doors, cladding infill panels, domestic boiler casings, partition and cailing panels, oven linings and suspended floor systems. Used as thermal ionsulation and sometimes as acoustic attenuators.	Crocidolite used for some boards up to 1965, amosite up to 1980, when manufacture ceased. 16-40% amosite or a mixture of amosite and chrysolite.	Can be broken by impact; significant surface release possible by abrasion, but usually painted or plastered. Sawing and drilling will also give significant releases. 'Asbestolux' Caposil.

Fire break in ceiling void

Ceiling Tiles.

Millboard

A softer board than AIB and was used for heat insulation and fire protection, also as insulation to electrical equipment and plant.

Crocidolite used in some manufacture but usually chrysotile with a content of 37 – 97% asbestos with a remaining matrix of starch clay.

Millboard in a blown air heater.

Paper, Felt and Cardboard

Used for electrical heat insulation of electrical equipment and plant. These materials can be found in air conditioning systems as insulation and as an acoustic lining. Used to reinforce bitumen and as face linings to flooring products.

Corrugated cardboard can be used for duct and pipe insulation. Asbestos Paper can contain up to 100% chrysotile asbestos.

Asbestos corrugated paper as insulation.

Textiles and Rope

Woven and spun materials can contain up to 100% asbestos. All three main types of asbestos used until 1970, after which chrysotile was used.

Asbestos Rope used as an infill.

The content of asbestos is 100% unless combined with other fibres.

The material is liable to degrade if exposed to the atmosphere and also likely to become more friable with age.

Asbestos flashguards

Gaskets

These were widely used in domestic and industrial plant. The content can be variable, 5 to 20% or more, usually chrysotile.

Crocidolite used if the product was used in a chemical environment. There are a number of trade names including;
Klingerit, Lion jointing and Permanite

CAF – Compressed Asbestos Fibre.

Asbestos Cement

Generally contains 10 - 15 % asbestos bound in Portland cement or calcium silicate.

All three types of asbestos used but Chrysotile is most common. Crocidolite used– 1950-1969 and Amosite used 1945-1980

Used as compressed flat or corrugated sheets or moulded into products.

Asbestos cement is the most common type of asbestos containing material.

Fully compressed flat sheets, tiles and slates for cladding, decking and promenade tiles, roofing,

Preformed moulded products such as:
Cisterns, water tanks, drains, sewer pipes, rainwater goods, flue pipes, fencing, fascias, soffits, cable troughs and conduits and window flower boxes.

Corrugated asbestos cement sheets.

Textured Coatings and Paint

Commonly known as 'Artex' (applied mainly on ceilings) with an asbestos content of 1- 5% Chrysotile. The asbestos was added up to a base date of 1984 as a anti-slumping agent.

Be aware of dates as old stocks were re used.

There are a number of trade names such as, Artex, Wondertex, Suretex, Newtex , Pebblecoat and Marblecoat.

Bituminous Products

Asbestos bitumen products were used as bitumen roofing felt, damp-proof course, gutter linings and flashings.

Also, asbestos bitumen as a coating on metals known as 'Galbestos'.

The content was around 5 - 8% and was used up to 1992. Some adhesives may also have small content.

Asbestos containing sink pad.

Flooring material

Thermoplastic floor tiles can have up to 25% asbestos content.

PVC vinyl floor tiles and un-backed PVC flooring can contain less than 10% chrysotile.

Asbestos paper backed PVC floors – paper backing can be 100% chrysotile.

All these products used up to base date of 1992.

Any Fibre release is unlikely under normal usage conditions – more likely when paper backing removed or disturbed.

Vinyl floor tile adhesive.

Reinforced PVC and plastics

Asbestos was used as a reinforcement for domestic goods, toilet cisterns, battery cases, plastic handles etc.

The content was usually around 10% and amphiboles were used to improved acid resistance.

Bakerlite toilet cistern.

Debris and residues

Debris and residues could come from old lagging applications or inadequate removal and poor clearance tests.

Asbestos residue on a plant room wall.

Hazard and risk

Risk depends on the ease of fibre release (loosely or firmly bound) and the percentage content of fibres in the product itself.

Also the fibre type – blue, brown or white.

Below is a list in order of fibre release if disturbed (highest to lowest.)

1. Sprayed coatings
2. Thermal insulation
3. Asbestos insulation board (AIB)
4. Asbestos cement (AC)
5. Textiles
6. Composites/resins/reinforced plastics/bitumen.

Section 3: Risk to health

The Risk from Asbestos

Asbestos is only a problem if it is being disturbed and if fibres are released and become airborne. Those fibres can then enter your breathing zone and if you actually inhale the fibres they then reach deep into your respiratory system and they have to stay there. This has to happen repeatedly.

The Main Diseases

The main asbestos related diseases are as follows:

a) **Asbestosis.** This is scarring or fibrosis of the lung.
b) **Mesothelioma.** This is a cancer of the pleura or peritoneum.
c) **Asbestos related lung cancer.** Caused from dual exposure to Asbestos Containing Material (ACM) and tobacco.

However, there are non-fatal diseases such as asbestos warts, pleural plaques and pleural effusion thickening

Risk of Disease

Asbestos related lung cancer incidences are equal to the number of mesotheliomas, approximately 2000

Asbestosis related deaths are less than 300 and falling.

The dose-response relationship for mesothelioma and lung cancer is unknown but mesothelioma and lung cancer deaths will continue to rise until 2020 and then start to decrease.
The HSE estimates the number will peak in 2020 at around 5000.

Mesothelioma Projected Deaths

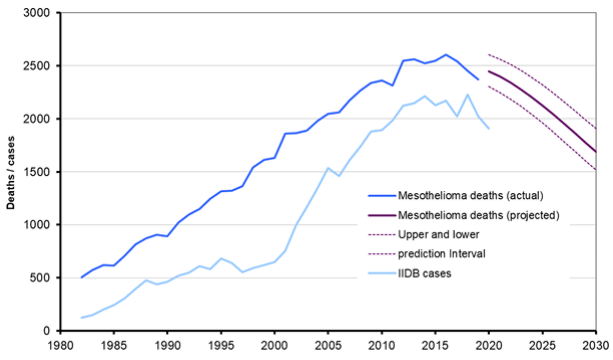


Figure 1 - Mesothelioma annual deaths, IIDB cases and projected future deaths to 2030 in GB.

Mesothelioma is a form of cancer that takes many years to develop following the inhalation of asbestos fibres but is usually rapidly fatal following symptom onset. Annual deaths in Britain increased steeply over the last 50 years, a consequence of mainly occupational asbestos exposures that occurred because of the widespread industrial use of asbestos during 1950-1980.

Defenses against Exposure

The respiratory system has certain defense mechanisms such as:

a) 'muco-ciliary escalator'
b) macrophages

Asbestos fibres have to be respirable in size –

a) Less than 3 microns in DIAMETER
b) Greater than 5 microns in LENGTH
c) Overall aspect ratio (length to diameter) of 3:1

Cumulative and repeated exposure is more significant than single 'events'.
Asbestos fibres within the body cannot be broken down and remain in the lungs, this is known as BIOPERSISTANCE

Background levels cause inevitable exposure but 1 fibre does not kill.

Exposure Limits

The Control Limit (Control of Asbestos Regulations 2012) for asbestos in the UK is:

- 0.1f/ml (also written as cm^3) averaged over a continuous 4 hour period

There is also a peak (or short term) exposure assessment of:

- 0.6 f/ml over 10 minutes

The Clearance Indicator Level for Certificate of Reoccupation is:

- 0.01f/ml

CAR 2012 Regulation 3 – Exemption

Licensing, notification and medicals shall not apply if:

a) Work is "sporadic and low intensity" which is defined as not exceeding 0.6f/ml over 10 minutes.
b) The Control Limit is also not exceeded
c) The work is short non-continuous maintenance activities.
d) The work is the removal of materials in which the asbestos fibres are firmly linked into the matrix, e.g. asbestos cement, vinyl tiles, textured coatings
e) The work is the encapsulation and sealing of ACM that are in good condition, e.g. AIB
f) Or if air monitoring or bulk sampling

Examples of sporadic and low intensity (i.e. non-licensed) work are described on the HSE Asbestos Essentials web pages.

a) Minor repairs to AIB or removal of single small boards
b) Cleaning and repairs to asbestos cement
c) Removal of asbestos cement or asbestos cement debris
d) Removal of vinyl floor tiles
e) Removal of asbestos fibre gaskets and rope seals
f) Laying cables in areas containing undamaged asbestos materials

Even though work may be non-licensed CAR 2012 still applies. This requires the following actions;

a) A risk assessment is carried out.
b) Procedures are used that prevent or reduce asbestos exposure to the lowest level possible
c) A plan of work is prepared
d) Staff carrying out the work are to be properly trained
e) If specific clearance testing is not required the work area should still be visually inspected to check that it is fit for re occupation.
f) Arrangements must be made for the safe disposal of any asbestos waste.

Section 4: Legislation

a) H&S legislation has different layers, each with different legal status
b) Acts of Parliament are legally binding such as The Health and Safety at Work Act 1974.
c) Regulations or Statutory Instruments are also legally binding such as The Control of Asbestos Regulations 2012.
d) Approved Codes of Practice (ACOPs) are not legally binding, but you must prove you did something at least equal, in other words, it is the minimum you need to do to comply with the regulations.
e) Guidance is not legally binding, you are not obliged to follow it, but it is regarded as best practice.

Health and Safety at Work etc Act 1974

For securing the health, safety and welfare of persons at work, for protecting others against risks to health or safety in connection with the activities of persons at work, for controlling the keeping and use and preventing the unlawful acquisition, possession and use of dangerous substances, and for controlling certain emissions into the atmosphere

Section 2 states:

It shall be the duty of every employer to ensure, so far as is reasonably practicable, the health, safety and welfare at work of all his employees.

a) Provide safe plant and systems of work
b) Information, instruction, training and supervision
c) Safe handling, storage and transportation of items or substances
d) Provision and maintenance of a safe work place
e) Provision and maintenance of a safe working environment

Section 3 states:

It shall be the duty of every employer (or self-employed) to conduct his undertaking in such a way as to ensure, so far as is reasonably practicable, that persons not in his employment who may be affected thereby are not thereby exposed to risks to their health or safety.

Management of Health and Safety Regulations 1999

The main duty placed on employers by the Management of Health and Safety at Work Regulations is to undertake risk assessments to:

a) Identify hazards
b) Identify existing controls
c) Assess if additional controls are required

Construction (Design and Management) Regulations 2015

Client's duty in relation to arrangements for managing projects:
Every client shall take reasonable steps to ensure that the arrangements made for managing the project are suitable to ensure that:

a) the construction work can be carried out so far as is reasonably practicable without risk to the health and safety of any person.

Client's duty in relation to information:
Every client shall ensure that (a) every person designing the structure; and (b) every contractor who has been or may be appointed by the client, is promptly provided with pre-construction information

a) The pre-construction information shall consist of all the information in the client's possession (or which is reasonably obtainable)

This is likely to include Health and Safety information such as an Asbestos Register

Hazardous Waste Regulations 2005

Hazardous waste if defined as any material containing more than 0.1% asbestos by weight.

Asbestos waste must be disposed at a Licensed Landfill site and transported under consignment note by a carrier holding a Waste Carriers License.

Control of Substances Hazardous to Health Regulations 2002 (as amended)

States the general requirements imposed on employers to protect employees and other persons from the hazards of substances used, or encountered, at work by risk assessment, control of exposure, health surveillance and incident planning.

COSHH substances can take many forms and include –

a) Chemicals used at work
b) Products containing a mixture of chemicals
c) Substances generated by work such as fumes, dust, vapours and mist
d) Gas
e) Biological agents encountered during work (like surveying) such as Guano, contaminated sharps (needles), Leptospirosis weils disease from rat urine, mould/fungi and Legionnaires disease

COSHH does not include Asbestos, Lead, Noise or Radiation as these have their own individual regulations.

Control of Asbestos Regulations 2012

Sets out the minimum standards for the protection of employees from risks related to exposure to asbestos. Employers should also take account of people not directly employed by them but who could be affected by the work being done on asbestos (including employees of other employers, people occupying buildings, members of the public etc) and control and prevent spread.

Regulation 4 – The Duty To Manage Asbestos in Non-Domestic premises.

Owners and occupiers of non-domestic premises, who have maintenance and repair responsibilities for those premises, have a duty to assess them for the presence and condition of asbestos – ***The Survey.*** Where asbestos is present the duty holder must ensure that the risk is assessed – ***The Register.*** That risk must then be managed by using The Asbestos Management Plan.

HSE also produce guidance such as: ***A Comprehensive Guide to to Managing Asbestos in Premises – HSG 227***

Regulation 11 – Prevention or reduction of the exposure of Asbestos

Requires employers to prevent the exposure to asbestos so far as is reasonably practicable, or of this is not possible, then put in place measures and controls necessary to reduce exposure to as low as reasonably practicable, by means other than the use of RPE.

Regulation 16 – Duty to prevent or reduce the spread of asbestos

Requires employers to prevent or, where this is not reasonably practicable, reduce to the lowest level reasonably practicable the spread of asbestos from any place where work under their control is carried out.

Regulation 11 – Prevention or reduction of the exposure of Asbestos

Requires employers to prevent the exposure to asbestos so far as is reasonably practicable, or of this is not possible, then put in place measures and controls necessary to reduce exposure to as low as reasonably practicable, by means other than the use of RPE.

Regulation 16 – Duty to prevent or reduce the spread of asbestos

Requires employers to prevent or, where this is not reasonably practicable, reduce to the lowest level reasonably practicable the spread of asbestos from any place where work under their control is carried out.

HSG264 Asbestos: The survey guide

Health and Safety guidance prepared by the Health and Safety Executive to help people carrying out asbestos surveys and those with specific responsibilities for managing the risks from asbestos in non-domestic premises under regulation 4 of the Control of Asbestos Regulations 2012 (CAR 2012).

The Asbestos Management Plan

The Asbestos management Plan contains details of ACM from the register. It requires you to risk assess for each ACM. Once the risk assessment has been conducted recommendations/ action for each asbestos location can be made and may include remove/repair/ encapsulate/enclose/manage or any combination of these.
Priority assessment outlined in HSG 227 allows you to create a table of priorities with timescales. Personnel with these responsibilities should be highlighted and will need training together with additional training arrangements for employees and contractors working in the premises. Arrangements then need to be put in place for monitoring the AC-M's present. The Asbestos Register together with the Asbestos Management plan then needs updating as and when inspections or removal/repair works are undertaken.

Assessment – Part 1

The first risk assessment is the material assessment and is carried out at the time of the sampling by the surveyor and includes: Product type

a) Product type
b) Extent of damage
c) Surface treatment
d) Asbestos type (analysis)

Risk Assessment – Part 2

The second part of the risk assessment is called the priority as-sessment and is carried out by the Dutyholder in accordance with the Management Plan and contains details on:

a) Occupant activity (what goes on in the building)
b) Likelihood of disturbance (including extent of ACM)
c) Exposure potential (number of users and frequency)
d) Maintenance activity (type and frequency.

This cannot be carried out by the surveyor as there needs to be significant client input. What priority assessment does is puts actions into order of priority not what action to take.

Personnel and Training

The Appointed Person whether that is the Asbestos Manager, As-bestos Management Team leader or an external consultant will need the appropriate training to carry out their duties. The responsible person for the management of ACM in the build-ing will also need training.
The training is essential for large or complex portfolios where a team of people have responsibilities.
The personnel will need skills, training and authority to carry out their work and implement the Management Plan.

Control of Building Work

When it comes to controlling building or repair works on the premises certain questions need to be asked such as:

a) Are current arrangements adequate
b) Remember Reg 5 says you must identify asbestos before work starts
c) Register check must become part of the works order system
d) Make sure system cannot be bypassed
e) Introduce Permits to Work
f) Make maintenance work an "authorised" activity
g) Include anyone involved in the planning, commissioning, procuring and authorising of work.

Think Asbestos!

Check the register before any work is carried out. Have all areas been inspected for ACM, have all building elements in those areas been inspected, is a more intrusive survey needed, and what's the likelihood of the work scope changing. if it does, re-check the reg-ister and what's more important is be vigilant - think asbestos.

Audit and Review

Documented re-inspections of ACM should be conducted at least annually. Who will do this and are they competent? Make sure the register is updated after removal/remedial work has been carried out. Review the Plan annually or if there are any significant changes. Investigate any breaches of the plan, especially where there are incidents of exposure.

Typical Questions from Unit 1

Q1. ***Briefly outline the requirements in regulation 4 (Duty to Manage Asbestos in Non Domestic Premises).***
Requires the dutyholder to identify asbestos locations, the type of asbestos present and its current condition. Then using the management plan ensure that potential exposure is kept to a minimum at least below the control limit, re-inspect on a regular basis to constantly assess the material and its likelihood of fibre release.

Q2. ***Describe where the following asbestos products are most likely found***
a) Sprayed coating
b) Structural fire protection to steelwork or concrete.

Q3. ***What is the 4-hour control limit?***
0.1f/ml over a continuous 4-hour period.

Q4. ***Outline the main duty as stated in Section 2 of the Health and Safety at Work Act 1974?***
Employers duty to employees with regards to protecting their health, safety and welfare.

Q5. ***List 5 properties of Crocidolite.***
It's blue in colour, hydrophobic, sharp springy elastic fibres, highly acid resistant.

UNIT 2
Asbestos Surveying and Management of Asbestos in Buildings

Section 1: Procedures prior to undertaking a survey

Background to HSG 264
The Method for the Determination of Hazardous Substances (MDHS 100) was published 2001 and was the method adopted to carry out an asbestos survey. The document pre-dated the 2004 Duty to manage regulation and was too focussed on methodology and gave limited client guidance on surveys.
So there needed to be a better link with other Duty To Manage guidance.

Main Features
The main features of the new guidance were on:

a) New terminology
b) Specific guidance for client and surveyor
c) Expanded survey methodology
d) Improved format for survey reports
e) More guidance on competence and QC
f) Advice on use of disclaimers/caveats
g) New section covering domestic sector
h) Greater detail on conducting Refurbishment/Demolition surveys.

Aims and Objectives of the new guidance are:

Surveyor:

a) Better informed
b) More aware of client's needs
c) Emphasis on survey planning
d) Better quality surveys = better reports

Client:

a) Better informed
b) Greater understanding of surveyor's needs
c) Recognition of need for various surveys of lifespan of buildings
d) Better management of asbestos.

Survey Types
Management Survey:
This is where there is continued use of the building with normal occupancy/activities and may involve minor intrusive work but also can be non-sampling like old Type 1 survey and there is no need to re-survey.

Refurbishment/Demolition Survey:
This type of survey differs from the Management Survey and will include "minor", "medium" and "major" refurbishment with the purpose of identifying all ACMs for removal prior to the refurbishment work.
A separate appendix and much more detail about where to check, what conditions that may be found and what to lift and examine together with knowledge of building construction are essential when conducting these surveys and additional training may be necessary.

Survey Planning
Survey planning is key and lists of things that need consideration are as follows:

a) Information from the client
b) Information from the surveyor
c) Confirm why survey needed and agree the type
d) Agree areas and/or buildings to be excluded
e) Agree report format
f) Discuss caveats and other issues
g) 4 step process for successful planning.

The four step process in planning

a) Collect all relevant information
b) Carry out desk top study
c) Prepare survey plan
   i) Survey scope and procedure
   ii) Sampling strategy
   iii) Report format
d) Complete risk assessments.

Step 1 – Information

a) Collect all relevant information
b) Preliminary meeting and walk through inspection
   i) Consider methodology and sampling strategy
   ii) Identify site hazards
   iii) Identify access restrictions
   iv) Assess need for 3rd parties, plant and equipment
c) Attain if possible accurate and up to date drawings.

Step 2 – Desk Top Study

a) Review of information from Step 1
b) Confirm resources and competency
c) Document plant, equipment and 3rd parties
d) Confirm methodology and sampling protocol.

Step 3 – Survey Plan

A written plan for the survey, ie a method statement including:

a) Scope of survey and any excluded areas
b) Survey procedure - how the survey will be carried out
c) Personnel and safety
d) Report format

These things are usually contained within the quotation or proposal document for the work to be undertaken.

Risk Assessments

There are in effect two types of hazard to consider non asbestos hazards and asbestos hazards.

Hazards and associated risks are generally managed using the **Hierachy of Control:**

a) Eliminate – Physically remove hazard
b) Substitute – Replace hazard or substance
c) Engineered controls – Isolate hazard
d) Administrative controls – Training
e) PPE

Non asbestos hazards can include heights; plant and machinery, confined spaces; electrical; noise; chemical and biological and lone working. There may also be specific site hazards, e.g. construction, nuclear, petrochemical.

Asbestos hazards are controlled by using specific control measures when removal works are in progress.

Asbestos hazards on a Refurbishment/Demolition survey can be controlled by using specific control measures when opening up or breaking into areas for inspection. Both RPE/PPE and full Decontamination may have to be considered when conducting this type of survey.

Listed below are a number of non-asbestos hazards that may be encountered:

Falling Objects
Working at Heights
Psittacosis
Radiation
Fire
Burns
Care of injured casualty
Manual Handling
Slips, Trips and Falls
Hot Works
Leptospirosis/Weils Disease
Biological
Electric Shock
Hazardous Substances
Noise
Vibration.

Work at Height

Falls from height are a key priority in the HSE injury reduction programme. Choice - die today or get that elusive sample!

INDG 402 Safe use of ladders

Work at Height is defined as any place a person could be injured falling from, even if it is at or below ground level. The 2 metre rule no longer applies.

Work is defined as any activity where there is a risk that a fall could cause injury.

The overriding principle is that you must do all that is reasonably practicable you can to prevent any person falling.

Do not forget other risks.

You need to achieve a balance and need to assess all risks such as fibre suppression and manual handling.

Certain questions need to be asked such as, "Do I need a working platform and if so, where should it be positioned?"

How do I get people, equipment, materials on and off the working platform and what factors are outside my control but may affect safety?

Ladders and Stepladders

Their use is not banned, though some sites may have their own stricter rules. They do not prevent a fall and they do not mitigate the effects of a fall. Their use is low risk short duration work only, i.e. sampling and inspecting.

There are certain things you must consider when using steps such as:

a) The 75% rule.
b) Use only Industrial grade ladders.
c) Use stabilisers where necessary.
d) Does the company insurance cover work using steps or ladders?
e) Are there any UKAS requirements?

Stepladders permitted for;

a) Short duration work and light work
b) Do not work off the top two steps (top three steps for swing-back/double-sided stepladders) unless you have a safe handhold on the steps
c) Avoid side-on working
d) Do not overreach – make sure your belt buckle (navel) stays within the stiles and keep both feet on the same rung or step throughout the task

Fire

For a fire to start, fuel, air and a source of ignition are needed so keep things that burn away from heat.

Are you working with highly flammable substances and are you familiar with the client's fire alarms, fire exits and assembly points?

Electric Shock

Electricity can kill. Even non-fatal shocks can cause severe and permanent injury, including burns. Shocks from faulty equipment may lead to falls from ladders or other work platforms.

Poor electrical installations and faulty electrical appliances can lead to fires.

Only those with appropriate technical knowledge and experience can carry out electrical work.

Do you work near or under overhead power lines?

Hazardous Substances

Certain chemicals can irritate or damage the skin so avoid contaminating yourself with the chemical. Always check your Control of Substances Hazardous to Health (COSHH) assessment sheets or hazard data sheets before working with chemicals and inform your supervisor immediately of any spillages. If skin contamination occurs, then flood the affected area with water for 20 minutes. If contamination is in the eye, flush the eye with water or sterile fluid for at least 10 minutes. Also includes substances encountered on site (refer to COSHH in Legislation.)

Manual Handling

Manual handling involves, lifting, lowering, pushing, pulling or carrying. More than third of all over three day injuries are caused by manual handling. Manual handling injuries include, cuts, bruises, muscle strain and in worst cases slipped discs.

Follow the procedures laid down in your company's manual handling risk assessment and think before lifting/handling – can you avoid it? Always adopt the correct lifting technique – do not lift with your back, always keep back straight.

Noise

High levels of noise can cause hearing damage. It may take years to become serious.

Is the noise such that people have to shout to each other at normal speaking distance to be heard?

Does anyone go home with ringing in their ears?

Do tools or equipment used make loud, explosive noises? Do you wear ear protection in some areas?

Slips, Trips and Falls

Slips, trips and falls are the single most common cause of injuries. The hazards that cause slips, trips and falls are:

a) Wet and dry spillages
b) Trailing cables
c) Miscellaneous rubbish
d) Rugs and mats
e) Poor lighting
f) Slippery surfaces
g) Change from wet to dry floor surface
h) Changes of level or slopes
i) Smoke/steam obscuring view
j) Unsuitable footwear

Other hazards can include:

a) Radiation or biological hazards – imperative to follow Client's on site procedures
b) Psittacosis which is passed via the urine, faeces and saliva of infected birds, gives flu-like symptoms
c) Leptospirosis/Weil's Disease which is passed via urine in rats and farm animals, gives flu-like symptoms.

Section 2: Procedures for carrying out a survey

Survey Process

Work down from top to bottom - discuss Work up from basement to roof - discuss

Inspect each area individually and work around each area clockwise from the door of entry.

Inspect each component inside each compartment in a logical order including ceiling, walls, floors, fixtures and fittings, equipment and services and look at each item individually.

The survey is an inspection of the building and all its elements and materials so sample and take photographs as you go along and recheck areas which are complex or have many items.

Finally do a walk-through, checking notes against plans. The RSPH Qualification is just the beginning.

This is a basic minimum qualification but a good one, therefore in addition, 6 months full time practical field experience on asbestos surveys covering Domestic, Commercial and Industrial properties and should cover Management and R&D surveys.

Competence proved by audit or assessment on a minimum of 5 surveys before becoming a lead surveyor.

Types of Survey

There are two types of survey:

Management Survey and Refurbishment/Demolition Survey.

The type of survey will vary during the lifespan of the premises; several may be required over a period of time.

Management Survey will be required during normal occupation of the building to manage in situ ACM.

Refurbishment/demolition survey will be required when the building or part of it is to be upgraded

Larger premises may require a mixture of types.

Levels of Presumption

Strongly Presumed.

Where laboratory analysis has confirmed the presence of asbestos in a similar material or where materials in which asbestos is known to have been commonly used e.g. corrugated AC sheets, AC gutters, cold water tanks, insulating boards can be strongly presumed.

Also materials which have the appearance of asbestos but no sample has been taken, e.g. thermal insulation where fibres are clearly visible.

Presumed - Default Situation

This is a scenario where a material is presumed to contain asbestos because there is no sufficient evidence (e.g. analysis) to confirm that it is asbestos free. Also, where a duty holder or surveyor decides that it is easier to presume materials for the ease of management.

A further default situation where materials must be presumed is in the situation of 'No access'.

Management Survey

This is the standard survey to start to comply with Regulation 4 and will often involve minor intrusive work and some disturbance but should include a Material Risk Assessment which will give a good guide for managing asbestos in the building.

HSG 264 states Management Surveys can involve a combination of sampling to confirm asbestos is present or presuming asbestos to be present.

The survey must cover all accessible areas as far as reasonably practicable and include:

a) Primary inspection: Walls, ceilings, pipes, boilers, cladding, floor tiles etc
b) Secondary inspection: Above false ceilings, inside risers, behind panels, in service ducts, tunnels etc
c) Mobile Elevated Working Platforms (MEWPs) may be required
d) Areas not inspected must be presumed to contain asbestos
e) Could involve heights up to 10m, inside plant, lifting external concrete duct covers - if that is what your client requests.

Refurbishment / Demolition Surveys

HSG 264 states that Refurbishment surveys will be required for all work which disturbs the fabric of the building in areas where the management survey has not been intrusive.

The Dutyholder will need to make the decision but probably with help from others.

The survey will be fully intrusive and involve destructive inspection as necessary to gain access to all areas.

The purpose is to identify ACM for removal, not manage it, therefore the survey does not normally assess the condition but if removal won't take place for some time, or building work is adapted to take into account ACM, materials will need to be assessed and managed.

Aggressive techniques will be adopted so robust controls are needed to prevent the spread of asbestos.

This survey should be conducted in unoccupied areas to minimise risks to employees and the public and the surveyed area must be fit for re-occupation after the survey either by thorough visual

inspection or dependent on destruction and findings reassurance air sampling with disturbance.

With the presence of textured coating, the surveyor must identify the nature of the substrate – plasterboard or concrete – as this determines the removal and disposal method.

There should be no access areas.

All no access areas on previous surveys be must inspected.

AIB ceilings

These should be entered by means of an enclosure and airlock system constructed by a licensed contractor and full decontamination may be necessary for the surveyor.

Partition Walls (Plasterboard AIB Sandwich)

Walls may not be uniform and may have undergone partial replacement so, all sections will need to be examined including the joints between walls which may contain fire seals and may only be visible upon removing the metal outer trim.

Cavity Walls

Wall cavities should be checked with an endoscope and entry points should be agreed with a builder and client and possible a structural engineer. Walls should also be checked where pipes pass through blockwork.

Apertures (doors, windows etc) must be inspected including airbricks which can be Asbestos Cement (AC).

Window frames commonly had AIB packers to level them and asbestos rope as fire seals are also common.

Door frames around fire doors and all architraves will need to be removed for inspection.

Floors

Carpets and tiles must be lifted to check for paper and adhesives. Ducts will need to be inspected (full length) and floor boards must be lifted to examine the void below with a check at the ends of joists for AIB packing.

Slab floors are known to contain rope used for expansion joints which may need a core sample and AC sleeves also used where cables run through a slab floor.

Ducts

Service risers, including fire stops between floors, if not previously inspected.

All internal lift shaft levels, including pit at the bottom of the shaft checking for cladding it is also possible to find columns or stanchions that may have AIB or sprayed coating as fire protection.

AIB in particular could be over-boarded with Supalux, wood or plasterboard etc; so check all columns.

In boiler rooms/plant room check for debris on floors and walls. Also, check where pipes pass through walls, sumps or gulleys, together with behind and underneath tanks or other plant.

It is common to find residue on walls that is painted over.

Heavy or difficult to move plant may need to be removed to complete the inspection.

Sectional boilers may need to be disassembled to fully locate asbestos.

Residue under non asbestos insulation may be easy to locate especially where the desk top study may reveal that asbestos insulation has previously been stripped and replaced by Man Made Mineral Fibre (MMMF) insulation. The MMMF should be removed to examine the extent of any asbestos debris on the pipes, bolt heads, flanges etc

If there are frequent occurrences then it is likely the pipes will need to be removed as ACM.

Roof Voids

Where Rockwool or vermiculite loft insulation is present in a roof void, the areas underneath should be inspected, particularly if there is evidence of other ACM.

Loose asbestos was common in houses around power stations, dockyards and former asbestos factories.

Previously demolished areas should be inspected and the desk top study should be used to identify if any previous structures remain or have released asbestos debris into the soil.

The use of AIB as packing and shuttering will depend on the age of the building, surveyors need to be vigilant in buildings constructed in 1960s-70s where this practice was common.

AIB was commonly used as a simple convenience board, i.e. like any piece of plasterboard or ply, rather than for fire protection.

Some areas may be difficult to gain access to and may need specialist equipment or assistance such as:

a) Mobile Elevated Working Platforms (MEWP)– high level access
b) Lift shafts will need a Lift Engineer
c) Licensed contractor – access behind AIB ceilings etc
d) There should be no restrictions on site
   i) *unless the site is unsafe*
   ii) *or caveats have been agreed in advance.*

Material Assessment Algorithm

Material assessment determines the likelihood of fibre release when ACM are disturbed and uses four parameters:

a) product type
b) extent of damage or deterioration
c) surface treatment
d) asbestos type

Sample variable	Score	Examples of Scores
Product type	1	Asbestos reinforced composites (plastics, resins, mastics, roofing felts, vinyl floor tiles, semi rigid paints or decorative finishes, asbestos cement
	2	AIB, millboards, gaskets, ropes, woven textiles, paper and felt
	3	Thermal insulation (e.g. pipe and boiler lagging), sprayed and loose asbestos, mattresses and packing

Assessment factor	Score	Examples
Extent of Damage/ Deterioration	0	Good condition: no visible damage
	1	Low damage: a few scratches or surface marks, broken edges on boards, tiles etc
	2	Medium damage: significant breakage of materials or several small areas where material has been damaged revealing loose asbestos fibres
	3	High damage or delamination of materials, sprays and thermal insulation. Visible asbestos debris

Sample variable	Score	Examples of Scores
Surface treatment	0	Composite materials e.g. reinforced plastics, resins and vinyl tiles
	1	Enclosed sprays and lagging , AIB (with exposed face encapsulated), asbestos cement sheets
	2	Unsealed AIB, or encapsulated lagging and sprays
	3	Unsealed lagging & sprays

Sample variable	Score	Examples of Scores
Asbestos type	1	Chrysotile
	2	Amphibole asbestos excluding Crocidolite
	3	Crocidolite

Material Assessment Score

Totals	Scores	Examples of Scores
Asbestos type	10 or more	High potential of fibre release if disturbed
	7-9	Medium potential
	5-6	Low potential
	<4	Very low potential for fibre release

Section 3: Reporting Survey Findings

The Survey Report from HSG 264

Should be easy for the client to use and formulate an asbestos register it is not already included as part of the report.

Report Sections

The client is usually most interested in the following:

1. Summary
2. Register
3. Actions
4. Drawings (not maps or charts!)

But the report should also contain the following:

a) Executive summary
b) Introduction covering the scope of work
c) General site and survey information
d) Survey results including material assessment
e) Conclusions and actions
f) Bulk analysis results

The report must be clear and precise with the bulk analysis results in an Appendix. The asbestos results and register should be room by room and the material assessment (putting the highest scores) first for priority action.

There should also be a summary of the immediate actions and a clear note on areas not accessed. (These should also be marked on the plan and have a separate list).

There should also be a clear note on actions.

a) Clearly identified ACMs in poor condition (ie high score rating) which need remedial action.
b) All areas not accessed must be presumed to contain ACMs
c) All ACMs identified need regular monitoring.

Caveats

These must always be agreed in advance and reported in a specific section in the report.

Caveats can be avoided by proper planning and discussion with the client.

Where they are necessary they must be fully justified and the reasons agreed between client and surveyor (in writing beforehand).

They must be documented in report.

Priority Assessment Algorithm

The dutyholder is required under Reg 4 to make the risk assessment and will use the surveyor's information to contribute towards it.

The risk assessment will form the basis of the management plan which is also the responsibility of the dutyholder.

The priority assessment looks at certain parameters such as:

a) The location of the material
b) Its extent
c) The use to which the location is put
d) The occupancy of the area
e) The activities carried out in the area
f) The likelihood/frequency with which maintenance activities are likely to take place.

Normal Occupant Activity

Assessment factor	Score	Examples
Normal Occupant Activity	0 1 2 3	Rare disturbance low activity Low disturbance (office type) Periodic disturbance (industrial/vehicular) High level disturbance (fire door with constant use)
Secondary Activities for area	As above	As above

Likelihood of disturbance

Assessment factor	Score	Examples
Location	0 1 2 3	Outdoors Large room or well ventilated area Rooms up to 100m^2 Confined spaces
Accessibility	0 1 2 3	Usually inaccessible or unlikely to be disturbed Occassionally likely to be disturbed Easily disturbed Routinely disturbed
Extent or amount	0 1 2 3	Small amounts or items (strings/gaskets) <10m^2 or <10m^2 pipe runs <10m^2 or <50m^2 <10m^2 or <50m^2 pipe runs <50m^2 or <50m^2 pipe runs

Human Exposure Potential

Assessment factor	Score	Examples
Number of Occupants	0 1 2 3	None 1 to 3 4 to 10 >20
Frequency of use	0 1 2 3	Infrequent Monthly Weekly Daily
Average time areas in use	1 2 3	>1 to >3 Hours >3 to >6 Hours >6 Hours

Maintenance Activity

Assessment factor	Score	Examples
Type of maintenance activity	0 1 2 3	Minor disturbance, possibility of contact when gaining access. Low disturbance. Light bulb change. Medium disturbance. Lifting AIB tiles to access valves etc. High level disturbance. Removing a number of AIB ceiling tiles to change a valve etc.
Frequency of maintenance activity	0 1 2 3	ACMs unlikely to be disturbed for maintenance. <1 per year >1 per year >1 per month

Analytical Results

Laboratories must be UKAS accredited to ISO 17025 and the analysts must have RSPH Level 3 in Bulk Analysis or BOHS P401. All laboratories must participate in external quality scheme AIMS.

A Certificate of Analysis should be included within the report.

Any materials sampled and found not to contain asbestos will be reported as:

Asbestos Not Detected, No Asbestos Detected or No Asbestos Detected In Sample.

Result will be the type of asbestos only because estimate of content/ volume or percentages are no longer allowed by UKAS.

In HSG 248 it says 1 or 2 fibres observed can be reported as 'Trace asbestos identified'.

Results are based on sample as submitted. This means that if samples are poorly taken or not representative of the item, the result is meaningless.

Contamination may lead to false positives. Poorly taken samples may lead to false negatives.

Competency and QA Procedures

Accreditation is NOT mandatory, but competency MUST be shown.

Sufficient training, qualifications and experience together with knowledge of specific tasks and risks.

Independence, impartiality and integrity must be shown and having an adequate quality management system is very important.

Adherence to HSG 264 as this is the current guidance. If in doubt, use an accredited surveyor.

Surveyor Knowledge

A surveyor must have an extensive knowledge on the following:

a) Asbestos products and their uses
b) Building construction – system build, traditional, industrial etc
c) Fire protection – steel framed, multi-occupancy, fire cells etc
d) Building services – risers, plenums, A/C systems, heating distribution.

Checking Competence

How the client can check competency.

Qualifications, accreditation, certification, H&S skills together with past experience and track record on survey type, references etc

What to do in absence of accreditation/ certification.

The client is responsible for checking the quality control and quality assurance procedures. Are there written procedures?

Check the annual refresher training for surveyors for both Management and Ref/Dem surveys.

A proportion of properties have to be re-inspected – 5% (BS6002).

Audit (annual) of management systems and procedures by checking completed surveys.

All non-accredited bodies should follow ISO 9001 as a minimum and RG8 documentation.

Section 4: Factors affecting the presence and location of ACM's

Asbestos in Buildings

When conducting an asbestos survey there are certain considerations to take into account such as the age of building, construction techniques, fire protection and building services.

Age

The age of building can roughly be estimated from its construction and design but there is no substitute for verified construction date such as:

a) Dated plans of construction and refurbishment (if available)
b) Dated foundation stones (although may have been relocated!).

The age and purpose of the building must be considered and questions asked such as:

a) Why was the building built?
b) What purpose was it to serve?
c) Who was the client?
d) Where was it built?
e) When was it built?
f) How many times has it been refurbished, and when?

Age and Purpose of a Building

Modern housing construction techniques are listed below:

a) Inner walls are constructed using insulation blocks; cavity is filled with insulation material.
b) Waterproof membrane layer covers the insulation, outer wall of stone, brick, timber
c) 'Wet-build' – use of cement based mortar for bonding brick / stone.

Domestic dwellings could contain:

a) Textured coatings – walls and ceiling
b) Floor tiles
c) Cement soffits, roof sheets, flues
d) AIB around heating
e) AIB panels for boxing, linings etc
f) Domestic electrical items – rare nowadays
g) Pipe lagging – virtually unheard of
h) Sprayed coatings – rarer than hen's teeth

Discuss:

Factory constructed in 1920s with brick, concrete, stone and glass. Repairs and refurbishment would be phased and probable later additional parts.

A 1980s steel framed, metal clad warehouse / factory unit – refurbished. Check for AIB fire breaks to roof void - note debris and off cuts. This modular unit was constructed of steel framework and was fire protected with spray or AIB.

Factories are often open plan to allow a smooth production flow. When surveying you must consider the following potential asbestos locations:

a) Lagging to pipe work
b) Suspended roof panels
c) Firebreaks within ceiling void
d) Boiler and plant rooms
e) Underground pipe runs
f) Asbestos within plant etc
g) Offices, labs, stores etc
h) Change of manufacturing process

Modern factory unit with less use of brick etc other than for decorative purposes and more steel frames, thermal blocks, outer metal cladding type building products.

Sheffield University has different construction techniques and designs that are reflected in the appearance of buildings such as 1880s, 1960s and 1980s buildings adjoining each other.

Early 1960s steel, glass and concrete with steel framework with potential sprayed asbestos applied. Internal lifts could be lined with AIB and a sprayed coating applied to the large foyer area.

Many public buildings had large amounts of ACM including Government buildings, MOD, Museums, Hospitals, Schools and Town Halls.

Don't forget historic buildings; Buckingham Palace, Tower of London, stately homes, mansions blocks.

Discussion

The Star Picture House which had seating for 1028 including 350 in the balcony. It was built in 1915 to show silent films. The first "talkie" being in 1929. It was then closed and reopened as a Bingo Hall 1962 and finally demolished in 1986.

Where is asbestos likely to have been used?

Fire Protection in Buildings

In office and commercial buildings the fire protection is compartmentalised to contain the spread of smoke and fire. They used fire resistant materials such as asbestos.

The smoke rising from the fire gets trapped by the ceiling and then spreads and deepens. The compartments have usually been penetrated by building services such as heating, ventilation, water and electrical services.

In a fire, the smoke will pass through any holes or gaps in the walls, ceiling or floor and eventually into other parts of the workplace. Fire doors present in corridors etc are designed to contain not only fire, but smoke and noxious gases.

Terminology

Compartment - part of a building separated from other parts of the building by fire-resisting walls, ceilings and floors.

Fire door - satisfies the BS criteria for integrity for at least 20 minutes or a longer period if this is specified.

Fire-resisting - the ability of a component or construction of a building to satisfy appropriate criteria specified in the relevant BS.

Protected route – Is a route with an adequate degree of fire protection to walls, doors, partitions, ceilings and floors separating the route from the remainder of the building.

Fire Protection in Buildings

Modern sprinkler systems overcome need for compartmentalisation. Installation of sprinkler systems will have meant drilling into asbestos to route the system!

Building Services

In a building there are many building services that run throughout the building such as:

a) Water
b) Electricity for lighting and power
c) Heating
d) Gas
e) Sprinkler systems
f) Foam and water risers
g) Telephone cables
h) Data cables
i) Lifts and stairwells

Building Services – Location

Questions you need to ask yourself are where there are access points and the panel covers mean a possible AIB location.

Pipes and cables were usually hidden for aesthetic reasons and utilise risers in walls, under floors, crawl ducts, suspended ceilings etc.

Sometimes they can appear bundled around a central core of lift shafts and fire stairs. The best way to survey these areas is to follow out from point of origin which is usually a plant room, switch room or a boiler room.

Types of Heating

There are a number of different types of heating system used in building, but not limited to:

a) Hot water
b) Boiler, burner, pipework
c) Heating flow and return
d) Domestic hot water services (DHWS)
e) Primary flow and return via calorifier
f) Secondary flow and return
g) Pump sets
h) Steam
i) Steam pipe, condense pipe, economisers
j) Pipework
k) In particular look for protection from the heat of the radiators.
l) DHWS also may be supplied by steam to local calorifiers.
m) Warm air systems built with asbestos applications
n) Offices – perimeter induction units with grilles in the window sills
o) Housing – heater in cupboard and then a ducted system through the property.

p) Electric storage heaters – mainly in housing
q) Radiant heaters – can be backed with asbestos
r) Hot ceilings - radiant panels built into ceilings, difficult to access
s) Under floor heating - early ones were associated with asbestos.

Air Conditioning

Air conditioning systems can provide heating as well as cooling. They can be centrally controlled passing an air supply through ducting or a plenum with no local control.

They can also have local control with room thermostats so occupants can choose their own temperature, essentially a hot water system with a cold water supply as well.

The ducting may be lagged externally or lined internally and also the plenum chambers could be lined with AIB.

Building Services – Pipework

With pipework the questions you need to ask are how old are the mechanical and electrical services? After 30 years the services can start to fail. Also, is there a maintenance regime that requires regular access for maintenance?

System Built Buildings

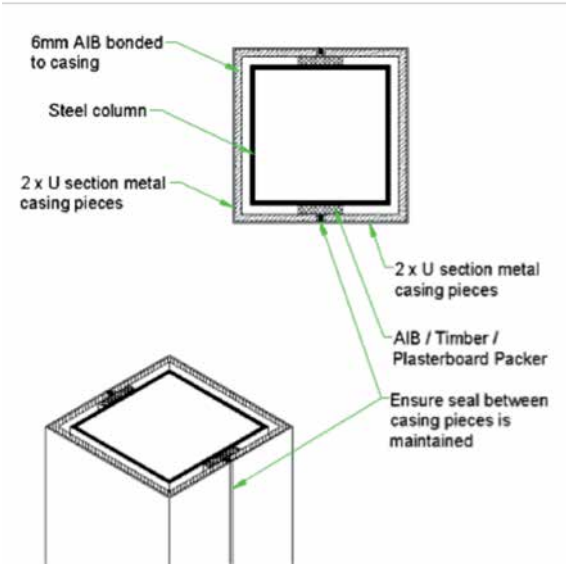
CLASP – (Consortium of Local Authority Special Projects).
These are schools which are located mainly in the north, Nottingham upwards and Wales.

SCOLA – (Secondary Consortium of Local Authorities)
Asbestos, usually AIB, is usually found in very specific locations and elements.

CLASP Column Casings

Used between 1945 and 1980

This is where AIB has been fixed directly to columns or glued to metal casing that surrounds the column itself. Also around window return panels and blind boxing.



Typical Questions from Unit 2

Q1. ***What is a risk assessment?***
This is an assessment of what the risk is e.g. working at height and how to overcome the risk safely. (Safe working platform etc).

Q2. ***What is the purpose of a management survey?***
A management survey is designed to locate asbestos in a building without being too intrusive, assess its condition and location with a view to building an asbestos management plan.

Q3. ***Why would you strongly presume asbestos was present rather than take a sample.***
If the a similar homogonous material had already been positively identified or if taking the sample was too dangerous a presumed sample would suffice. E.g. corrugated asbestos cement roof.

Q4. ***What is the purpose of a material risk assessment?***
This is a numerical assessment of the condition, type and surface treatment of the asbestos material found during a survey and allows the dutyholder to complete a risk assessment in the management plan.

UNIT 3
Bulk Sampling of Asbestos

Section 1: Survey preparation and risk assessment

Respiratory Protective Equipment (RPE)

In general surveyors will use the types below:

1. Half mask with P3 filter or FFP3
   a) Suitable for most inspection and sampling situations.
2. Full face respirator with P3 filter
   a) Used in areas of heavy contamination
   b) Entry into live enclosures for specialist inspections
   c) May need powered model for comfort.

Disposable

RPE TYPE	Maximum Exposure	Daily Checks	Monthly Checks	6 Monthly Service
Disposable	2 f/ml	Fit Check	X	X

Half Mask or Ori-nasal

RPE TYPE	Maximum Exposure	Daily Checks	Monthly Checks	6 Monthly Service
Half Mask	2 f/ml	Recorded by User	Competent Person	X

Power Assisted

RPE TYPE	Maximum Exposure	Daily Checks	Monthly Checks	6 Monthly Service
Full Face Power Assisted	4 f/ml	Recorded by User	Competent Person	Service or maintenance centre

RPE Legal Requirements

RPE has to be adequate and suitable for use, provide effective protection, 'CE' marked, selected, used and maintained by properly trained people, correctly stored, maintained, examined and tested, Records of selection, maintenance and testing and face-fit test for the model issued must be kept.

Maximum Dust Levels

Should not exceed 0.1 f/ml Control Limit multiplied by the Protection Factor

- Disposable FFP3 - 0.1 x 20 = 2 f/ml
- Orinasal - 0.1 x 20 = 2 f/ml
- Full face - 0.1 x 40 = 4 f/ml

In general surveyors will use the types below;

- P3 half mask which is suitable for most inspection, sampling and clearance procedures.
- Full face power assisted respirator which is used for entry into live enclosure. May be use on spray coating jobs, and can be considered

Fitting RPE

When using RPE the following checks must be carried out:

a) suitability of RPE (protection factors, filter type, etc.)
b) condition of RPE (straps, filters, mask body)
c) cleanliness
d) check position of straps – not twisted
e) check tension
f) hair not trapped under seal (full face)

Check fit and seal

PPE - hood over straps (not straps over hood)

Factors Affecting Performance

The guidance suggests that half mask RPE usage should not exceed 1 hour without a rest period.

Also the following will affect the performance:

a) Not being clean shaven will affect the seal
b) Other facial hair may affect the seal
c) Check before and after use - by user
d) Check – filter/straps/visor/non-return valves/ general condition.

Common Misuses of RPE

There are a number of common misuses of RPE which are listed below:

a) Facial hair
b) Failing to ensure that the RPE fits the wearer
c) Respirator left hanging around the neck
d) Using dirty, damaged or incomplete RPE
e) Failing to properly maintain the RPE
f) Leaving the mask lying around in the workplace

Face-fit Testing

Face-fit testing now applies to all users where RPE performance depends on the fit.

A test when first supplied and test for each RPE type/model. A Re-test will be required if:

a) significant change in weight or
b) major dentistry
c) change of RPE type or manufacturer

ACoP L143 (CAR2012), paragraph 306 states 'It is good practice to have a system in place to ensure repeat fit testing is carried out regularly, eg annual for workers involved in licensed asbestos work.'

Quantitative fit testing – ori-nasal half masks and full face.
Qualitative – disposable masks

- *Simple pass/fail test using sweet tasting aerosol or odour*

Face-fit Testing – Quantitative

The 'Portacount' tester based on ambient aerosol counts is used (i.e. quantitative)
This requires activities during the test such as:

- normal and deep breathing
- turning head side to side and moving up and down
- physical exertion (e.g. bending - touching toes!)
- speaking (usually a set text passage)

Recent research shows up to 50% of all RPE does not offer the required level of protection as it simply does not fit! Fit to Fit is the competency scheme for Fit Test Providers. ***www.Fit2fit.org***

Sampling Techniques

Bulk Sampling

Visually assess any areas of different material. 3 - 5 cm2 samples should be taken sampling the whole depth taking one or two samples representative of whole material.

There are various dust suppression techniques that can be adopted when sampling such as:

a) Mist spray
b) Injection
c) Paste/gel
d) Wet wipes
e) Shadow vacuuming
f) Or a combination of the above

Homogenous materials

These materials are generally factory produced to a specification or standard e.g. boards, sheets, cement pipes, textiles, ropes, friction products, plastics, vinyls, mastics, sealant, bitumen roofing, felt and gaskets. 1 or 2 samples sufficient in most cases.

Non-homogenous materials

These materials will need additional sampling to avoid false negatives such as insulation materials (repairs and patching) and overspray.

Sampling numbers will reflect the extent of variation, colour, shade, texture, depth, coatings of the material.

Use non visual senses such as characteristic sounds when knocked and warm or cold to touch.

Sample frequency

Sprayed coatings

This material is usually homogenous therefore two samples; one at either end will suffice. If the area is larger than 100sqm, sample every 25-30sqm and always sample all patches of repairs or alterations.

Pipe/thermal insulation

Hard set insulation can be highly variable in composition whereas sectional insulation is more homogenous. Repairs and piecemeal strips are very common. With short pipe runs (<20m) – 1 sample per 3m. Long pipe runs (>20m) – 1 sample per 6m. Boilers/calorifiers - 2 samples. You must pay attention to fittings such as valves, joints, couplings etc.

Insulation board/ceiling tiles

This material is usually homogenous in composition so one sample per room or every 25sqm will suffice but beware of replacement boards, repairs, colour, trade names.

Asbestos cement material

This material is usually homogenous so one sample of each sheet or product (roof sheet, gutters, down pipes) will suffice. Repeated sampling with asbestos cement is not usually necessary and the surveyor may be safer to strongly presume especially if there is a risk of falling or damage and the integrity of product, e.g. gas flues. Also be aware of fibre-cement replacement sheets coded 'NT' or 'AT' near edge of sheet.

Asbestos ropes, yarns, cloth, paper and millboard

A single small piece or fragment of $1cm^2$ is sufficient as they are generally uniform in composition.
N.B. Sampling may render material useless as a sealant or as caulking.

Textured coating

This material was often mixed on site therefore maybe non uniform. Two to three samples of up to 5cm^2 in different areas will suffice and avoid too much damage to decoration particularly in domestic dwellings. Always sample the substraite.

Thermoplastic floor tiles

With this material one sample, around 3cm^2, wherever change colour, type or location is sufficient. The surveyor must sample adhesive also if present.

PVC flooring

One sample, around 3cm^2, per roll or per room will suffice. Always check the back for backing paper and adhesives.

Debris

Sample suspect pieces and if possible source identified, but no debris visible, take representative sample of any dust or suspect material.

Always check less accessible areas which may not have been cleaned adequately.

PPE Required

The PPE will depend on the ACM, the site, the client, the cleanliness etc but normally disposable overalls – hooded, disposable overshoes or Wellingtons, disposable gloves and RPE - P3 filtration minimum.

Technique

Always employ dust suppression for each sample and wear PPE and RPE as described previously. Overalls and wet wipes should be disposed off as contaminated waste once sampling is finished and sampling tools to be cleaned after every sample to prevent cross-contamination.

Equipment

Prior to sampling an inspection should be undertaken. The surveyor should carry the tools required to successfully carry out any sampling required such as: torch, bradawl, chisel for knocking, tapping and identifying materials, riser keys, warnings signs, polythene and PPE.

Non-serrated pliers, screwdrivers, wet wipes, core samplers, Stanley knife, hand spray or other dust suppression, sample bags – different sizes and a Type-H vacuum (if R&D survey).

Post –sampling equipment will be necessary such as waste bags, sample point labels (if required), filler, and touch-up paint, cloth or foil tape, camera and data collection paperwork.

Procedure

Adequate risk assessment of the survey site, including PPE should have been undertaken. The surveyor must follow procedures defined in risk assessments and client's own procedures. There should be minimal disruption to client and the surveyor should consider others (CAR Regulation 16 Duty to prevent or reduce the Spread of Asbestos).

Always be methodical, systematic and diligent. Allow enough time and don't presume NOT asbestos just because items look similar. It is very good practice to survey in pairs with both inspecting same area same time. It is possible that ACMs will be missed where surveyor is tired or rushed and makes assumptions.

When sampling always adopt a safe system of works. Restrict entry, Post warning notice - 'Asbestos sampling in progress - keep out', Use polythene as a catch sheet below the sampling point, always seal sampling points (tape, fillers).

The sample area must be left free of debris. All samples sealed individually, polythene bags and double sealed.

With sprayed coatings, if they are encapsulated always use wet injection at the sample point.

Carefully cut with sharp blade to lift a minimal flap to sample. If spray is uncovered then both wetting methods and Shadow Vac may apply. As sprays are homogenous a surface sample should represent the full thickness of the material.

With pipe insulation the sample point should be fully wetted before and during sampling. Core samplers should be used, then insert filler once sample is removed, wet wipe inserted in the borer to form a plug, secondary wet wipe wrapped round the outside. The outer wet wipe can be placed in sample bag.

Below is a step by step method for taking pipe insulation samples using a core bore tool.

a) Secure area with signage
b) Put polythene under sample point
c) Sample bags should be prepared and labelled
d) Secure surface of pipe with tape
e) Decide if wetting down with spray or injecting
f) Corer prepared – wipe inside tube – wipe also around corer
g) Extract sample down to pipe
h) Sample pushed into bag with wipe bag sealed and double wrapped
i) Sample point filled and labelled
j) Corer cleaned – sheet wiped - all put into waste bag

When sampling AIB inspect for existing damage to use as sampling point. The sample should be taken from discreet location or corner with a sharp knife or chisel blade and beware debris if tile or panel is loose.

Below is a step by step method for sampling suspected AIB.

a) Secure area with signage
b) Put polythene under sample point
c) Sample bags should be prepared and labelled
d) Wet down with spray
e) Use knife or chisel
f) Sample into bag - sealed and double wrapped
g) Sample area sealed and labelled
h) Photograph of sample and area
i) Equipment cleaned down
j) Area wiped over
k) All cleaning wipes are disposable waste

With asbestos cement find a damaged part if there is one and sample size of 5cm^2 to enable search for amphiboles. Floor debris is a possibility but check source. Pliers with non-serrated edge should be used or snips and remember never walk on AC roof sheets.

Inconclusive results may require water absorption test for <30% water.

With gaskets, rope, paper and felts materials should be wet. The samples to be taken using a sharp knife and Ensure sufficient sample are taken to represent portion of the material.

With floor tiles the samples should be cut with a sharp knife. One sample from each colour or one sample from each type always check the back for asbestos paper.

With textured coating use a spray or wet wipe or paste depending on situation. Carefully scrape the coating using a sharp chisel holding the sample bag directly below sample point.

When sampling debris reverse the sample bag and collect dust/debris or use cardboard or plastic scraper to collect finely spread dust.

There are a number of inspection pitfalls such as cooperation from building manager and occupants, unrealistic timescales for

completion of survey, common finds per room – repetition, precise labelling of bags on site, abbreviated field log sheets due to rushing.

Additional inspection pitfalls that may be encountered are cross contamination of sampling equipment, multi-layered floor coverings, overspray. Always avoid the obvious – think outside the box and remember over 3000 products have contained asbestos so be diligent in your inspections.

Asbestos Waste

Asbestos waste must be disposed of only at a suitably licensed disposal site and in accordance with specific requirements laid down by the waste regulation authority which are the Environment Agency (EA) in England and Wales or Scottish Environmental Protection Agency (SEPA) in Scotland.

Any ACM or consignment of ACM containing >0.1% by weight of asbestos fibre is classified as a "Hazardous Waste" (and a "Special Waste" in Scotland).

Waste comes under the Hazardous Waste Regulations 2005 and aim to define waste and to make sure it is properly managed.

The regulations place duties on Places duties on the persons who cause hazardous waste to be removed from premises ('consignors'), the carriers and the persons to whom such waste is delivered ('consignees)'.

Waste from an asbestos survey could include RPE, PPE, wet wipes and discarded samples and it needs to be contained safely during the survey. The waste also needs to be dealt with correctly back at the office by placing into red and clear bags and disposing of correctly usually by the use of a collection service.

Typical Questions from Unit 3

Q1. ***What is the sampling frequency you would use when sampling a homogonous AIB ceiling?***
One or two samples depending on size of ceiling or one every 25 square metres.

Q2. ***What information is required on the sample bags when taking samples?***
Unique project number, sample number, date, surveyors initials, location.

Q3. ***What organisation accredits the analytical company under 17025 for analysing bulk samples?***
United Kingdom Accreditation Service. (UKAS)

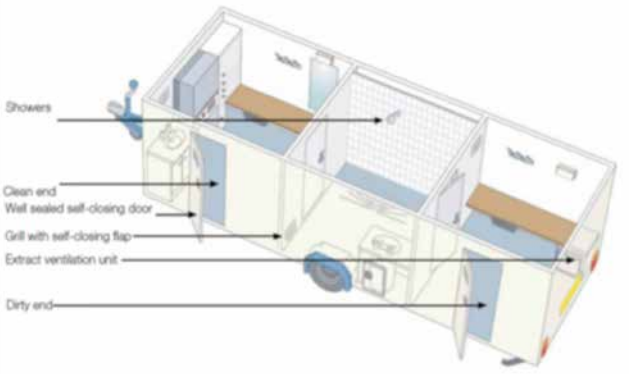
UNIT 4
Decontamination Units and Type-H Vacuums

Section 1:
Set up and use of DCUs

If a surveyor has to enter areas where the is significant contamination (eg. thermal insulation in crawl ducts, spray coating in ceiling voids), there is a greater potential for contamination of clothing and footwear. The risk assessment must take these conditions into account, as additional safety precautions and decontamination procedures will be needed. It may involve a higher standard of personal protection (eg. powered full-facepiece respirator fitted with P3 filter) and comprehensive decontamination procedures (eg. the use of a decontamination unit.)
Where entry into these locations is necessary, surveyors must be adequately trained in the use of high-performance RPE and in decontamination procedures (decontamination procedures are covered in Asbestos: The analysts' guide for sampling, analysis and clearance procedures.)

Where decontamination is deemed necessary surveyors should NOT wear any 'domestic' clothing under coveralls, if desired swimsuits can be worn (or alternative washable or disposable items) and the surveyors should be prepared to go through the DCU if the circumstances merit or require it.

Figure 8.1 General layout of a hygiene unit



DCU Certification

A check on the water and power must be made before use.

If the DCU is provided by a contractor there will be checks carried out whilst on site.

If the unit is hired the certification is provided by the hirer.

The paperwork required is as follows:

a) Six monthly DOP test on the NPU
b) Clearance air test from last site
c) Annual electrical and gas test certificate

Decontamination

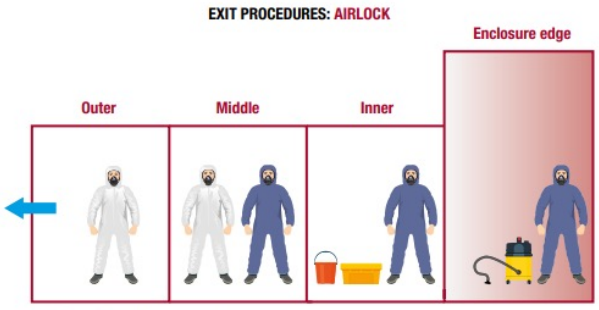
HSG 248 describes two levels of decontamination;

a) Preliminary (following minor contamination) – clean, remove and dispose of PPE
b) Full (after significant contamination) – use of DCU

Preliminary decontamination

With preliminary decontamination the following sequence must be adhered to:

a) RPE and PPE – vacuum or wipe down where necessary in work area/enclosure
b) Footwear – wipe down in work area/enclosure
c) Sampling equipment – wipe clean
d) Outer coveralls – remove in work area or middle stage of airlock if using
e) RPE and inner coveralls – exit work area/airlock, remove and place in bag



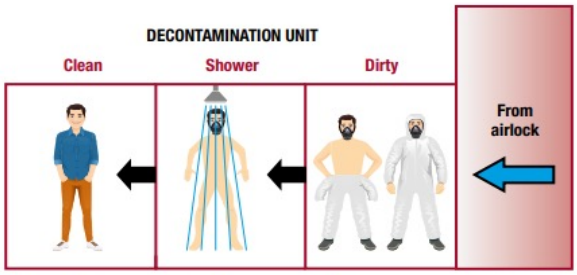
Full Decontamination – DCU

With full decontamination the DCU must comply with the following.

- The DCU not usually attached to work area so via transit arrangements. The DCU can be a modular unit but must comply with Approved Code of Practice (ACoP).
- The DCU must be easy to clean and have self -closing doors, hand basin, lockers, and mirror in clean end.
- A NPU is cited in the dirty end of the unit to draw air from clean to dirty end.
- The external doors labelled 'clean end' and 'dirty end' with correct signage.

They:

a) Must be on site, connected to services and functioning before work begins
b) Either attached or unattached, ie via transit
c) Modular units acceptable but must comply with ACOP
d) 1 shower head per 4 users maximum
e) Easy to clean, self-closing doors, hand basin, lockers, mirror in clean end
f) HEPA unit to draw air from clean to dirty end
g) External doors labelled 'clean end' and 'dirty end' with correct signage
h) Water heater must be GAS SAFE tested
i) Adequate balanced flue and Carbon Monoxide (CO) detectors
j) Gas generator powered should not be used inside unless flue is extended and vented outside
k) RCD protection on power inlet
l) Earth strap or spike
m) Stable and level when in use
n) Roadworthy



Dirty end: Remove and discard all items except RPE (and swimwear); carry footwear into shower
Shower: Wet mask, remove and clean; remove or cap filter; wash swimwear; clean footwear; carry items into clean end
Clean end: Dry and dress

Entering enclosure

Change out of 'domestic' clothing, this can be done in the clean end of the DCU, or an alternative location (however, clothing and clean disposable towels will need to be transferred to clean end of DCU before entering enclosure).

Don at least two sets of disposable coveralls. Swims suits or an alternative washable or disposable undergarment can be worn underneath if desired.

If changing within the DCU, leave via clean end door, there is no need to go through the shower cubicle or dirty end.

Transit to the work area or outer stage of the airlock.

Don RPE and perform appropriate checks.

Enter work area or pass directly through the 3-stage airlock and into the enclosure.

Leaving enclosure/work area

Perform preliminary decontamination as previously described.

Remove and discard the 'outer' coverall as contaminated waste in the middle stage of the airlock.

Put on overshoes/transit footwear left in outer stage of the airlock.

Emerge from the airlock, still wearing RPE, footwear and inner coverall, and proceed to the dirty end of the DCU.

In the DCU dirty end, remove all disposable clothing only (underclothes such as swimsuits can be retained) and footwear. Disposable items are discarded as asbestos waste. RPE should still be worn.

Enter the shower section carrying footwear and wearing RPE. Operate the shower. Wet the RPE and remove. Wash and clean the RPE if it is reusable. Discard disposable RPE as asbestos waste. Underclothes (eg swimwear) should be removed and washed or disposed of as asbestos waste.

Enter the clean end carrying footwear and reusable RPE (and washed swimwear if appropriate). Dry off and put on the normal clothing that was deposited there at the outset of the job.

Waste Water

The DCU water filtration system should filter to 5 microns and all waste water passes through the filter.

When the work is complete the filter is disposed of asbestos waste. Any waste water from buckets in airlocks should be disposed of through the filtered drainage system in the shower in the DCU.

Waste water should be directed into foul drain not rainwater run off drain.

Vacuum Cleaning Equipment

Known in the industry as Type-H or Class-H, H= HEPA filter – high efficiency particulate arrestor.

The vacuum cleaners must be specified to BS 8520 part 3.

The same certification is required whether they are provided by contractor or hired in.

They should carry a six monthly test certificate for the HEPA filter (DOP) and electrical test certificates.

Checks before taking to site and before use must be made and recorded.

Type-H vacuums should be used for cleaning fine dust and debris and not for rubble and large objects which will block the hose.

Cleaning in an enclosure should be from top down to bottom and always work towards NPU where possible.

Attention must be made to steelwork, flanges, pipework, valves, bolt heads, enclosure walls and ledges.

Decontamination of operatives uses the 'Buddy system'.

Vacuums and attachments must be bagged when transporting from site into two clear bags with all hoses sealed and exhaust caps reinstated.

BS 8520 sets out standard for manufacture and performance of:

a) Controlled wetting equipment
b) Negative pressure units
c) Type-H vacuums

All new equipment should be manufactured to this standard. All the established manufacturers are doing this so beware of unfamiliar makes.

Correct Use of NPUs and Vacuums

NPU's and vacuum cleaners must be inspected prior to each use including the vacuum cleaner waste bag which must be inspected under controlled conditions before use.
The vacuum cleaners must be examined and tested thoroughly every 6 months and a record of inspection, examination, maintenance and defects remedied must be kept for a minimum of 5 years.

Typical Questions from Unit 4

Q1. ***List 2 practical uses of a 'Type-H' vacuum cleaner in relation to asbestos removal.***
Shadow vacuum (LEV) when removing ceiling tiles. Used for fine cleaning inside an enclosure.

Q2. ***When fully decontaminating where would your respirator be removed after leaving an enclosure?***
In the shower section of the decontamination unit after initially wetting it under the shower.

Q3. ***What would be the minimum amount of time spent under the shower when fully decontaminating?***
5 minutes

Q4. ***When the Decontamination Unit is directly connected to the enclosure where would you remove your overalls after leaving the enclosure?***
The Dirty End of the decontamination Unit.