



RSPH Level 3 Award in Asbestos Management for Dutyholders

Pre-Read

Qualification Information

Qualification Overview

To enhance the knowledge and competency for understanding the principles of managing asbestos in buildings to assist in complying with the “Duty to Manage”, controlling maintenance and building work and overseeing asbestos removal projects.

Instruction: 4 days including exam/assessment

Prior learning/pre-reading: 3 hours

Assessment:

1. Written exam
2. Practical assessment

Day 1

Unit 1 Risks and responsibilities relating to asbestos in buildings.

Unit 2 Asbestos surveys and management plans.

Day 2

Unit 2 Continued

Unit 3 Requirement for remedial works (contractor)

Day 3

Unit 3 Continued

Unit 4 Requirement for remedial works (analyst)

Day 4

Written exam and practical assessments.

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 60% in exam for EACH unit

What does being a Dutyholder mean?

Does it mean you have to:

1. Carry out asbestos surveys?
2. Use licensed contractors
3. Have an Asbestos Policy
4. Remove high risk asbestos
5. Train people

It might do, but it depends on what your Asbestos Management Plan says you will do.

A Quick Quiz...

Is it a legal requirement to;

- a) Use a UKAS accredited company for air testing
- b) Use an HSE licensed contractor
- c) Have an asbestos register for the building
- d) Re-inspect known ACM every year
- e) Carry out an intrusive Refurbishment / Demolition survey before any building work.

Answers: a) Yes b) No c) No d) Yes e) Yes

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The Asbestos Testing and Consultancy Association (ATaC) has made every effort to ensure that the information contained within this publication is accurate. Its content should be used as guidance material and not as a replacement of current regulations or existing standards.

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UNIT 1

Risks and Responsibilities relating to Asbestos in Buildings

HSE Statement

'Asbestos is the greatest single cause of work related deaths in the UK'.
Currently around 4,500 deaths per annum.

The Current Problem

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

There is a large potential for exposure in the population with 2m working in building trades and 20m 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.

The Hidden Killer - HSE Campaign

With the Hidden Killer Campaign the HSE hoped to educate the construction industry in matters regarding asbestos, as 25% of all asbestos related illness comes from the construction industry.



HSE Report RR696 - Prof. Peto

Mesothelioma risk is determined largely by asbestos exposure before age 30. The predicted total of 90,000 mesotheliomas between 1970 and 2050 will include approximately 15,000 carpenters. The particularly high risk to carpenters is thought to be due to exposure to amosite while cutting AIB. In the 1960s the UK imported almost half of all amosite mined.

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.

Section 1: Properties and usage of asbestos

Asbestos – “Nature’s Wonder Fibre”

Asbestos is the name for a group of naturally occurring fibrous mineral / silicates with amazing properties of:

- Strength – stronger than steel
- Flexibility – easily woven
- Stability – will deteriorate only slowly
- Very good thermal insulator
- Have fantastic fire retardant properties.
- Chemical and electrical resistant
- But can be deadly...

Asbestos Facts

Fibrous silicate mineral:

■ Amphiboles:

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

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

- Crocidolite (blue)
- Amosite (brown)
- Tremolite
- Anthophyllite
- Actinolite

■ Serpentine:

Chrysotile is a chain silicate that tends to be sharp, springy, (elastic) fibres. The fibres are hydrophilic (water loving and less acid resistant than amphiboles.

- Chrysotile (white)





Asbestos Types

Chrysotile (white asbestos) is the most commonly occurring type of asbestos and was used extensively in cement and textile products.

Crocidolite (blue asbestos) has the strongest and best thermal properties and was used as insulation and as a spray coating.

Amosite (brown asbestos) was a good all-rounder and used in boarding products and ceiling tiles, but also as insulation and in sprayed coatings.

Brown and blue asbestos were finally banned in the UK in 1985.

White asbestos finally banned in the UK in 1999.

Cut Off Dates for Use of ACM

- Voluntary ban on blue asbestos - 1969
- Spray coating - up to 1974/5
- Pipe/boiler lagging - early 1980s
- AIB panels/ceiling tiles - up to 1985
- Statutory ban on brown and blue asbestos - 1985
- Textured coating ("Artex") - up to late 1980s
- Floor tiles/coverings – early 1990s
- Cement flues to boilers - up to early 1990s
- Corrugated roof sheets - up to 1999
- Statutory ban on white asbestos – 1999

Beware of imports after domestic ban

Sprayed Asbestos

Sprayed asbestos ("Limpet") is a gun-applied mixture of hydrated asbestos-cement with up to 85% asbestos fibre.

It was used as fire protection in ducts, firebreaks and around structural steel work also as acoustic insulation in swimming pools/theatres.

This material is regarded as high risk due to high content and high friability.

Very rare in domestic housing



Thermal Insulation Engineer applying fire protection to structural steel.



Sprayed coating applied to structural steel. Note the damage around the electrical junction box.

Thermal Insulation

This material is generally regarded as high/medium risk with a medium to high content – highly variable from 15 to 80%. There is usually a protective coating which guards against damage.

The asbestos used could be blue, brown or white asbestos. Hard set insulation was mixed on site but there are variable types and compositions.

Pre-formed sectional ("Caposite") lagging was more uniform in nature.



Asbestos Insulating Board (AIB)

Production started in 1930s, peaked in 1970s. There are a number of trade names such as "Turnasbestos", "Asbestolux", "Marinite".

UK was the world's largest importer of amosite (brown) with approximately 24,000 tons in 1960 – 40% of the global total.

20% of the ceiling area of all new public buildings between 1967 and 1973 are constructed out of AIB ceiling tiles with former Woolworths stores estimated to have 1 million sqm of ceiling tiles.

AIB was generally regarded as medium risk as there is a lower content – usually 15 to 25%. The material is less friable as compressed and paint acts as protective coating and the asbestos fibre used was usually only brown.

AIB was mostly used internally for:

- i) wall panels
- ii) ceiling tiles
- iii) fire breaks
- iv) packing and shuttering
- v) door panels

AIB was used extensively up to 1985.



AIB as a firebreak in a ceiling void.

Asbestos Cement

Production started late 1880s, peaked in 1960/70s. Asbestos cement usually is made up of 10 - 15 % asbestos bound in Portland cement or Calcium Silicate.

There are a number of different products such as compressed flat or corrugated sheets or pre-formed moulded products these are used externally as resistant to weathering.

Asbestos cement is generally regarded as low risk due to its lower content – usually 10 to 15%, its low friability as very dense and fibres firmly bound in cement matrix and it was usually only white asbestos used.

Asbestos cement is very resistant to weathering and has a service life - 40 years +?. With the material predominantly being used externally, any fibre release is immediately diluted in atmosphere.

Miscellaneous Products

There are a number of miscellaneous products such as:

Asbestos textiles. Used in the production of fire protection clothing, gloves, overalls and fire-blankets and curtains.

Asbestos-bitumen products such as roofing felts and damp-proof courses.

Asbestos textured coating used on walls as well as ceilings.

Plastics such as bakelite toilet cisterns.

Flooring such as "Marley" floor tiles and sheets with paper backing.



Textured Coating



Toilet Cistern

Section 2: Health Risks

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.** Scarring or fibrosis of the lung.
- b) **Mesothelioma.** Cancer of the pleura or peritoneum.
- c) **Asbestos related lung cancer** caused from dual exposure to Asbestos Containing Material (ACM) and tobacco.

There are also a number of benign conditions such as pleural plaques, pleural thickening and effusions and asbestos warts and corns.

Hazard and Risk

Risk depends on:

- a) Ease of fibre release (loosely or firmly bound)
- b) % content of fibre in the product itself
- c) Type of fibre – blue brown and white.

The list below of asbestos products is in descending order of risk with the greatest risk at the top.

1. **Sprayed coatings**
2. **Insulation**
3. **Asbestos insulating board (AIB)**
4. **Asbestos cement (AC)**
5. **Textiles**
6. **Composites**

Defences against Exposure

Respiratory system defences are ‘muco-ciliary escalator’ and macrophages. Respirable fibres are fibres of a certain size - between 1 and 5 microns (approx.)

Cumulative and repeated exposure more significant than single ‘events’ Background levels cause inevitable exposure but 1 fibre does NOT kill!

Exposure Limits

Control Limit (CAR 2012)

0.1 f/cm³ (same as f/ml) averaged over a continuous 4 hour period

Sporadic and low intensity exposure

0.6 f/cm³ over 10 minutes

Balance between ‘what is desirable (nil)’ and ‘what is reasonably achievable in practice’

Exceeding the Control Limit

If the control limit is likely to be exceeded then the employer needs a licence from HSE for this work. The work must be notified to HSE / Local Authority. All employees undertaking this work must be under medical surveillance and their exposure should be monitored.

The area has to be identified as an ‘asbestos area’ and eating, drinking and smoking in this area is prohibited.

There must also be other facilities provided such as a decontamination unit (DCU) and the employer must minimise the number of people entering the area.

There should also be an emergency procedure for dealing

Clearance Indicator

The clearance indicator is the “Lowest level reliably detectable above background”. This level has no relation to “safety”.

Limit of Quantification are based on RICE counts on blank filters.

LOQ is still 20 fibres in 200 fields.

0.01 f/cm³ for 480 litres and 200 fields counted.

LOQ must be quoted for each result.

Section 3: Legislation and The Duty To Manage

Health and Safety Legislation

UK health and safety legislation has different layers, each with different legal status.

■ Acts of Parliament

– legally binding such as Health and Safety at Work Act 1974.

■ Regulations or Statutory Instruments

– legally binding such as Control of Asbestos Regulations 2012.

■ ACOPs

– not legally binding, but must prove you did something at least equal to it.

■ Guidance

– not legally binding, not obliged to follow it, but is regarded as best practice.



Regulations

- Regulation 1** Citation and commencement
- Regulation 2** Interpretation
- Regulation 3** Application of these Regulations
- Regulation 4** Duty to manage asbestos in non-domestic premises
- Regulation 5** Identification of the presence of asbestos
- Regulation 6** Assessment of work which exposes employees to asbestos
- Regulation 7** Plans of work
- Regulation 8** Licensing of work with asbestos
- Regulation 9** Notification of work with asbestos
- Regulation 10** Information, instruction and training
- Regulation 11** Prevention or reduction of exposure to asbestos
- Regulation 12** Use of control measures etc
- Regulation 13** Maintenance of control measures etc
- Regulation 14** Provision and cleaning of protective clothing
- Regulation 15** Arrangements to deal with accidents, incidents and emergencies
- Regulation 16** Duty to prevent or reduce the spread of asbestos
- Regulation 17** Cleanliness of premises and plant
- Regulation 18** Designated areas
- Regulation 19** Air monitoring
- Regulation 20** Standards for air testing and site clearance certification
- Regulation 21** Standards for analysis
- Regulation 22** Health records and medical surveillance
- Regulation 23** Washing and changing facilities
- Regulation 24** Storage, distribution and labelling of raw asbestos and asbestos waste
- Regulation 25** Interpretation of prohibitions
- Regulation 26** Prohibitions of exposure to asbestos
- Regulation 27** Labelling of products containing asbestos
- Regulation 28** Additional provisions in the case of exceptions and exemptions
- Regulation 29** Exemption certificates
- Regulation 30** Exemptions relating to the Ministry of Defence
- Regulation 31** Extension outside Great Britain
- Regulation 32** Existing licences and exemption certificates
- Regulation 33** Revocations, amendments and savings
- Regulation 34** Defence
- Regulation 35** Review

Addition Guidance



Regulation 4 – The Duty To Manage

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 - **The Asbestos Management Plan**

Impact of Recent EU Ruling

The EU has ruled the HSE did not fully implement the EU Directive with respect to “sporadic and low intensity” work.

Short non-continuous maintenance should only apply to work on **non-friable materials**.

Removal of ACM with fibres firmly linked should only be on non-degraded materials and without deterioration.

New CAR 2012 will create a 3 tier system:

- **Licensed work (no change)**
- **Non-licensed work(no change)**
- **New category: notifiable non-licensed work (NNLW)**

Guidance: Examples of Notifiable Non-licensed Work.

Minor maintenance work involving asbestos insulation where work is ‘short duration work’ e.g. repairing minor damage to a small section of pipe insulation.

Removal of large scale textured decorative coatings with deterioration of the material e.g. where the material is treated by steam, hydrating gel etc and scraped off the underlying surface.

Who Will Have To Notify?

- a) Organisations carrying out AC roof removal/demolition
- b) Organisations which deal with “non-licensed” rubble e.g. AC
- c) Companies who carry out “larger-scale” removal of textured coatings e.g. insurance related work
- d) Companies who do short-duration work on asbestos insulation
- e) Companies who do “short-duration” “removal” of AIB e.g. demolition

Non licensed work requires	NNLW requires	Licensed work requires
Compliance with risk assessment	Notification before work starts	Licensing
Control of exposure	Medical exam every 3 years	Notification 14 before work
Training requirements	Health records	Emergency arrangement
	Compliance with risk assessments	2 year medicals
	Control of exposure	Health records
	Training requirements	Compliance with risk assessments
		Designation of asbestos areas
		Control of exposure
		Training requirements

What Has Not Changed?

No change to Duty to Manage.
 No changes to most other Regulations e.g. prevent exposure, spread, training etc.
 No changes to SALI exposure criteria.
 No changes to Control Limits.
 L143 ACOP and guidance still in place.
 Everything unaffected is still in place.

Guidance: Examples of Non-Licensed Work

Short, non-continuous maintenance work involving AIB eg

- a) drilling holes for fittings
- b) repairing very minor damage
- c) lifting tiles for access/inspection
- d) Removing single sheet as part of maintenance task
- e) Removal of AC: Most AC can be removed whole
- f) Inadvertent breakage of the occasional piece will not attract NNLW requirements.
- g) Weathered AC not regarded as degraded.

Typical Questions from Unit 1

Q1. Define Regulation 4 ‘Duty to Manager Asbestos in Non Domestic Premises’
 Regulation 4 States that The Duty Holder of a premise has the responsibility for firstly locate the asbestos, secondly assess its condition and thirdly make an assessment on whether there is a potential risk of exposure to anyone in the premises. With the information collected above a Management Plan can be drawn up which is an ongoing assessment of risk. Each asbestos location must be inspected on a regular basis and any amendments made to the Management Plan.

Q2. What is the current clearance indicator used in asbestos works in the UK?
 The clearance indicator is <0.01fibres per cubic centimetre.

Q3. Name 5 regulated asbestos fibre types.
 Amosite, Chrysotile, Crocidolite, Anthophyllite, Actinolite, Tremolite.

Q4. Name two non-fatal asbestos related diseases.
 Pleural plaques and asbestos warts.

UNIT 2

Asbestos Surveys and Management Plans

Section 1: Dutyholder's responsibility for asbestos surveys.

■ Background to HSG 264

- a) MDHS 100 published 2001
- b) Pre-dated the 2004 Duty To Manage
- c) Too focussed on methodology
- d) Limited client guidance on surveys
- e) Need for better link with other Duty to manage guidance.

■ Main Features

- 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.

■ User friendly

Green summary boxes: This publication has specific guidance for clients/dutyholders in green boxes:

- Box 1:** The purpose of an asbestos survey.
- Box 3:** What the client/dutyholder should do to check the competency of the surveyor.
- Box 4:** Areas to be inspected as part of a management survey.
- Box 6:** Information the client/dutyholder should expect from the surveyor.
- Box 9:** Information required for a management survey.
- Box 10:** Information required for a refurbishment or demolition survey.
- Box 11:** What the client/dutyholder should do to check the accuracy of the survey report.

Blue summary boxes: This publication has specific guidance for surveyors in blue boxes:

- Box 2:** Survey key points.
- Box 5:** Information the surveyor needs from the client.
- Box 7:** Information to be collected by the surveyor.
- Box 8:** Example of a systematic survey inspection.

■ Aims and Objectives of New Guidance

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: (old Type 1 and 2 survey)

- a) continued use of the building
- b) normal occupancy/activities
- c) involve minor intrusive work
- d) can be non-sampling like old Type 1 survey
- e) no need to re-survey

Refurbishment/Demolition Survey: (old Type 3 survey)

- a) includes "minor", "medium" and "major" refurbishment.
- b) purpose to identify ACMs for removal

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.

■ Survey Planning

Information from the client and information from the surveyor will confirm why survey needed and agree the type.

Agree areas and/or buildings to be excluded and agree report format. (Really important with the onset of company data bases).

At the planning stage it allows both parties to discuss caveats and other issues.

4 step process for successful planning.

■ Planning - 4 Step Process

- a) Collect all relevant information
- b) Carry out desk top study
- c) Prepare survey plan and include, survey scope and procedure, sampling strategy and report format.
- d) Complete risk assessments

■ Step 1 - Information

- a) Collect all relevant information. Page 17 of the survey guide lists 25 separate pieces of information to collect.
- b) Preliminary meeting and walk through inspection where consideration of the methodology and sampling strategy together with Identifying the site hazards and access restrictions. Also, assess need for 3rd parties, plant and equipment etc.
- c) 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) A written plan for the survey, ie a method statement to include:
 - i) *Scope of survey and any excluded areas*
 - ii) *Survey procedure - how the survey will be carried out*
 - iii) *Personnel and safety*
 - iv) *Report format*
- b) Usually contained within quotation or proposal document.

■ Step 4 - Risk Assessment

- a) Non asbestos hazards such as heights/plant & machinery confined spaces/electrical/noise/chemical & bio/lone working.
- b) Specific site hazards, e.g. construction, nuclear, petrochemical.
- c) Asbestos hazards on a Refurbishment/Demolition survey and control measures necessary during opening up possible contaminated areas.
- d) RPE and decontamination.

■ Survey Process

- a) Work down from top to bottom - discuss
- b) Work up from basement to roof - discuss
- c) Inspect each area individually
- d) Work around each area clockwise from the door of entry
- e) Inspect each component inside each compartment in a logical order such as ceiling, walls, floors, fixtures and fittings, equipment and services.
- f) Look at each item individually

The survey is an inspection of the building and all its elements and materials so take samples and photographs as you go along. Always recheck areas which are complex or have many items and always do a final walk-through, checking notes against plans.

■ Levels of Presumption

Strongly Presumed.

- a) Where laboratory analysis has confirmed the presence of asbestos in a similar material.
- b) Materials in which asbestos is known to have been commonly used (eg corrugated AC sheets, AC gutters, cold water tanks, insulating boards
- c) 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 or where a dutyholder 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.**

Survey all accessible areas as far as reasonably practicable including the primary inspection of: Walls, ceilings, pipes, boilers, cladding, floor tiles etc

The Secondary inspection: Above false ceilings, inside risers, behind panels, in service ducts, tunnels etc.

MEWPS may be required.

Areas not inspected must be presumed to contain asbestos.

The inspection could involve heights up to 10m, inside plant, lifting external concrete duct covers - if that is what you request as the client.

■ 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 needed to prevent the spread of asbestos. The inspection should be conducted in unoccupied areas to minimise risks to employees and the public.

When the survey is complete the surveyed area must be fit for re-occupation either thorough visual inspection or dependent on destruction and findings reassurance air sampling with disturbance.

■ Textured Coating

The surveyor must identify the nature of the substrate – plasterboard or concrete – as this determines the removal and disposal method.

■ AIB ceilings

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

■ Partition Walls (Plasterboard AIB Sandwich)

Walls may not be uniform and may have undergone partial replacement. 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.

■ Use of AIB as packing and shuttering

Depending on the age of the building, surveyors need to be vigilant in buildings that were constructed in 1960s-70s. Commonly used as a simple convenience board, i.e. like any piece of plasterboard or ply, rather than for fire protection.

■ Cavity Walls

Wall cavities should be checked with an endoscope with entry points being agreed with a builder and client and possible a structural engineer before the inspection takes place. Walls should also be checked where pipes pass through block work.

■ Apertures (doors, windows etc)

Closers are usually found surrounding doors and windows. Airbricks, can contain asbestos mostly AC. Window frames commonly had AIB packers to make them level. Asbestos rope as fire seals are also common and door frames around fire doors. On refurbishment/ demolition surveys the architraves will need to be removed to complete the inspection.

■ Floors

Carpets and tiles must be lifted and the adhesive checked. Ducts will need to be inspected (full length). Floor boards must be lifted to examine the void below. The ends of joists must be checked for AIB packing and slab floors are known to contain rope to form expansion joints, which may need a core sampling.

AC sleeves were also used where cables run through a slab floors.

■ Ducts

Service risers, including fire stops between, floors, if not previously inspected and all internal lift shaft levels including pit at the bottom of the shaft.

■ Cladding

Columns or stanchions may have AIB or sprayed coating as fire protection they could also be overboarded with Supalux, wood or plasterboard etc; check all columns.

■ Debris in boiler rooms

In boiler rooms, where pipes pass through walls, sumps or gulleys, behind and underneath tanks or other plant, residue on walls which is painted over all need inspecting.

Plant may need to be removed to complete the inspection and sectional boilers may need to be disassembled to fully locate asbestos.

■ Residue under non asbestos insulation

Desk top study may reveal that asbestos insulation has previously been stripped and replaced by MMMF insulation.

This 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

The desk top study should be used to identify if any previous structures remain or have released asbestos debris into the soil.

■ No Access Areas

All no access areas on previous surveys must be inspected.

■ Refurbishment / Demolition Surveys

Some areas may be difficult to gain access to and may need specialist equipment or assistance such as Mobile Elevated Working Platforms (MEWPs) for high level access.

Lift shafts will need a Lift Engineer to gain access and a licensed contractor to get access behind AIB ceilings etc.

There should be no restrictions on site unless the site is unsafe or caveats have been agreed in advance.

■ Material Assessment Algorithm

Determines the likelihood of fibre release when ACM disturbed and uses four parameters,

- a) product type
- b) extent of damage or deterioration
- c) surface treatment
- d) asbestos type (from laboratory analysis)

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.

Sample variable	Score	Examples of Scores
Extent of damage deterioration	0	Good Condition - no visible damage.
	1	Low Damage: a few scratches or surface marks: broken edges on boards and tiles.
	2	Medium Damage: Significant breakage of materials or several areas where material has been damaged revealing loose asbestos fibres.
	3	High Damage: de-lamination 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 2: Selecting a survey company

What Determines Competency

- a) UKAS accreditation?
- b) ISO 9001?
- c) Insurance cover?
- d) ARCA member?
- e) CHAS/Construction line/Achilles/Exor?
- f) Financial stability?
- g) CRB check?
- h) Method statement?
- i) References?
- j) Track record?
- k) Personal experience?

General Competence

Accreditation is NOT mandatory, but competency MUST be shown by;

- a) Sufficient training, qualifications and experience
- b) Knowledge of specific tasks and risks
- c) Independence, impartiality and integrity
- d) Adequate quality management system

- e) Adherence to HSG 264

If in doubt, use an accredited company.

Surveyor Knowledge

Surveyors should have sufficient knowledge such as:

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

They should also have asbestos knowledge such as:

- a) What are AIB off cuts, when were they used as a general purpose building board or used for packers, spacers and closers.
- b) What is overspray from sprayed coatings and wall residue from insulation?
- c) Where to find discarded AIB in ceilings.
- d) If there are any repairs and upgrades and changes in appearance.

Surveyor Competence

Assessing an individual surveyor’s competence is very important and clients should look towards competency certification such as:

The RSPH Level 3 certificate, BOHS P402 proficiency module with 6 months full time surveying. The surveyor should have been audited on at least 5 surveys of each category listed below.

- a) Domestic
- b) Commercial
- c) Industrial

The surveyor should have annual refresher training and auditing.

Checking Competence

How a Client can check competency?

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

What to do in absence of accreditation/ certification?

Check quality control and quality assurance procedures. Are there written procedures?

Quality Control Procedures

Annual refresher training for surveyors is mandatory for both Management and Ref/Dem surveys. A proportion of properties to be re-inspected – 5% (BS6002)

There should be an audit (annual) of management systems and procedures by checking completed surveys.

Non-accredited bodies should follow ISO 9001 as a minimum and RG8 document.

When checking and monitoring the contract you should:

- a) Check completeness of survey. Have all rooms and areas have been accessed.
- b) Check accuracy of survey, register and drawings. The drawings should be clear and accurate.
- c) Check samples. Have sufficient been taken. Are they not disproportionate numbers for certain materials and do they take account of variation in same materials eg ceiling tiles.
- d) Check for obvious discrepancies

■ QA Checks – Site Data

Are all agreed areas surveyed and is there an accurate transcription from site data to report. Are any presumptions valid?

Do all sample, photograph, item numbers all correspond and are all no access areas recorded.

Is the extent of the asbestos recorded on site drawings?

Are there any no observed ACM omitted and have all agreed appendices been included?

Is there an executive summary and do all sample, photograph, item numbers correspond?

■ PQQ Criteria

Below is a list of information that can be collected as a part of the PQQ process.

- General company information
- Health, safety and environment
- Quality
- Technical
- Resource and capability

Section 3: Asbestos survey reports

■ Survey Report – HSG 264

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

Below is a list of reporting sections that should be in the survey report:

- Executive summary
- Introduction covering the scope of work
- General site and survey information
- Survey results including material assessment
- Conclusions and actions
- Bulk analysis results

The client is usually most interested in the summary, register, actions and drawings (not maps or charts!).

The clarity of report is vital so bulk analysis results in should be in an appendix. Asbestos results and register should follow room by room. The material assessment: highest scores = priority for action and a summary of immediate actions. A list of areas not accessed and a separate list and mark on the site plans.

There should also be a clear note on actions to be taken.

Clearly identify ACMs in poor condition (i.e. high score rating) which need remedial action. Any areas not accessed must be presumed to contain ACMs and all ACMs identified will need regular monitoring.

■ Caveats

Caveats should always be agreed in advance and reported in a specific section in the survey report.

Caveats can outline the impact and potential problems created for managing.

Caveats can be avoided by proper planning and discussion so where they are necessary there must be fully justify the reasons that are agreed between client and surveyor (in writing beforehand) and documented in the final report.

■ Analytical Results

Laboratories who undertake bulk analysis must be UKAS accredited to ISO 17025. The analysts must have RSPH Level 3 in Asbestos Bulk Analysis or BOHS P401 and the company must participate in external quality scheme AIMS.

The certificate of analysis should be included within the report and materials sampled and found not to contain asbestos will be reported as asbestos not detected, no asbestos detected or no asbestos detected in sample. The result will be the type of asbestos only as estimate of content/volume or percentages no longer allowed by UKAS. But HSG 248 says 1 or 2 fibres observed can be reported as 'Trace asbestos identified'

Results are based on sample as submitted so if samples are poorly taken or not representative of the item, the result is meaningless. Contamination may lead to false positives and poorly taken samples may lead to false negatives.

Section 4: Creating an Asbestos Management Plan



Are you Complying?

Regulation 4. Control of Asbestos Regulations 2012

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 of asbestos and the condition of that 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 - *The Asbestos Management Plan*.

There is information regarding regulation 4 in *The Approved Code of Practice L143*. Additional guidance is also available in 'A *Comprehensive Guide to Managing Asbestos in Premises*' – HSG 227 and 'A *Short Guide to Managing Asbestos in Premises*' – INDG 223.

■ The Asbestos Management Plan

The asbestos management plan should contain the following:

- Details of ACM – the register
- Risk assessment for each ACM
- Recommended action for each including remove/repair encapsulate/enclose/ manage
- Table of priority with timescales
- Personnel and responsibilities
- Training arrangements
- Controlling building work and contractors
- Arrangements for monitoring ACM
- Updating the Register and Plan

Risk Assessment – part 1

A material assessment is carried out at the time of the sampling and will cover product type, extent of damage, surface treatment and asbestos type (analysis).

Risk Assessment – part 2

Priority Assessment carried out as part of Management Plan and will include occupant activity (what goes on in the building), likelihood of disturbance (including extent of ACM), exposure potential (number of users and frequency) and maintenance activity (type and frequency).

Priority assessment will need client input but it is a good way of putting actions into order of priority. The higher the score the greater the priority.

Priority Assessment Algorithm

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

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

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

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

Personnel and training

HSG 264 Asbestos the survey guide has identified the following as personnel necessary to manage asbestos in buildings.

Appointed Person, Asbestos Manager, Asbestos Management Team and External Consultant.

For very large and complex portfolios a team of people may be necessary with the skills, training and authority to implement the Management Plan.

To control building work, are current arrangements adequate. You must remember Reg 5, must identify asbestos before work starts. Checking the asbestos register must become part of the works order system and procedures put in place to make sure system cannot be bypassed.

Introduce Permits to Work system and make maintenance work an “authorised” activity.

Always think asbestos!

Decide on the scope of work and what activities are being undertaken, what areas are being worked in and what elements are being worked on

Always check the register and drawings and ask yourself the question, Is asbestos present - yes/no/maybe?

Is a Refurbishment/Demolition survey required?

If suspected asbestos is identified there must be a system or procedure in place.

- a) Stop work and restrict access
- b) Notify supervisor/manager
- c) Check register
- d) Investigate further, sample if necessary
- e) Initiate remedial work
- f) Inform parties of results
- g) Update register on completion

Updates and reviews

Documented re-inspections of ACM must be carried out at least annually.

Who will do this and are they competent?

Update the register after removal / remedial work

Review the Plan annually or if significant changes and investigate breaches of the Plan, especially exposure incidents.

Regarding annual inspections, they should be carried out at least annually. This is not a re-survey, but a re-inspection of previously identified ACM to check:

- a) Change in condition

- b) Change in use of area, i.e. frequency which affects the Priority Assessment
- c) Removal / remedial work

To conduct the inspections a P402 certificate is not required and the inspections fall outside the scope of UKAS accreditation.

■ Refurbishment/Demolition Surveys

The purpose is to identify to ACM in order to plan for removal prior to Refurbishment / Demolition.

The survey is used to locate ALL ACMs in ALL areas as far as reasonably practicable including structural locations, break through walls, ceilings, cladding, partitions etc and inside cavity walls, ducts and tunnels, under floor tiles.

This type of survey is a destructive/aggressive inspection.

■ Refurbishment Projects

Legislation:

- a) Control of Asbestos Regulations 2012 (CAR) Regulation 5 "Identification of Asbestos"
- b) Construction, Design & Management (CDM) Regulations 2007

■ CAR 20126 – Regulation 5

Employers have duty to identify asbestos before work starts.

- a) No demolition, maintenance or other work to be carried out which is liable to expose employees to asbestos unless there is an assessment to identify asbestos.
- b) If info from client not available or not in a reliable form, employer should establish if asbestos is present and form (or assume).

Where any sort of installation, fit-out or refurbishment work is to be carried out such as telecoms and cable installation, home improvement programmes e.g. Decent Homes and office remodelling a survey will be required.

The scope will vary according to planned works and the survey will be targeted and localised.

Q. Refurbishment/Demolition Survey: where does it apply?

A. Required for all work which disturbs fabric of building in areas where Management Survey has not been intrusive.

Below is a list of specific areas that should be inspected:

- a) Asbestos ceilings to be entered
- b) Use endoscope for wall cavities
- c) Remove door architraves
- d) Flooring to be lifted
- e) Inspect plant/electrical equipment
- f) Look beneath loft insulation
- g) Underneath MMMF pipe lagging
- h) Substrate of textured coatings

■ Summary

- a) Paragraph 57 of the guidance states "no restrictions on access", i.e. you WILL find everything.
- b) Ideally building unoccupied (and furnishings removed!)
- c) If not unoccupied, then "effective isolation" of survey area
- d) Visual inspection on completion to confirm fit for occupation
- e) Reassurance air sampling if "significant destruction" has taken place.

■ Case Study (of when it all goes wrong...)

Marks and Spencer refurbishment of stores during nationwide refit programme were found guilty of putting members of the public, its staff and contractors at risk of exposure.

M&S fined £1m with £600k costs. Styles and Wood fined £100k with £40k costs and Willmott Dixon fined £50k with £75k costs.

Marks and Spencer:

- a) Did not allocate sufficient time and space for the works
- b) Contractors had to work overnight in small areas so store could re-open in the morning
- c) Failed to ensure surveys were as extensive as they needed to be to prevent disturbance of asbestos
- d) Failed to ensure work complied with minimum standards in legislation and approved codes of practice
- e) Failed to plan, manage and monitor the work properly.

■ HSE Statement on M&S

"Large retailers and other organisations that carry out major refurbishment works must give contractors enough time and space within the store to carry out the works safely."

"Where this is not done, and construction workers and the public are put at risk, HSE will not hesitate in taking robust action."

"This outcome should act as a wakeup call that any refurbishment programmes involving asbestos must be properly resourced, both in terms of time and money."

■ 10 Steps to Asbestos Management

- 1) Strategy and policy statement
- 2) Details of ACM (the register) and risk assessment
- 3) Recommended actions and priorities with timescales
- 4) Personnel and responsibilities
- 5) Training arrangements for employees and contractors
- 6) Control access and any building work
- 7) Dissemination of information to relevant parties
- 8) Procedure for conducting Refurb/Demolition surveys
- 9) Emergency procedures (including the investigation of incidents)
- 10) Monitoring ACM and updating the Register and Plan

■ Policy and Strategy

Do you have an Asbestos Policy Statement and could it be contained within your H&S policy?

This confirms your acknowledgment of the risks posed by exposure to asbestos and states your commitment to reducing the risk and ensuring directors, management and staff comply with the regulations.

■ The Register

This needs to be easy to read. It could be a plan or diagram of the building, a written list or a computer based record and should record where asbestos is and its condition and also give recommendations for action. Importantly, it shows which areas have not been inspected where asbestos must be presumed to be present.

The register must be easily accessible particularly if it is being used to tell workers the location of asbestos.

■ Recommendations for ACM

Draw up a priority action list and give high priority to damaged material and materials likely to be disturbed; these will need to be repaired, enclosed or removed.

If materials are in good condition and are unlikely to be disturbed – leave in place but review their condition annually.

■ General Arrangements

Tell people where the asbestos is and consider the benefits of labelling ACM.

Consider who works on or near asbestos and tell them where the asbestos is before they start work.

Agree the precautions that need to be taken to prevent exposure and anyone who may work on asbestos must be trained and use safe working methods.

■ Training

Different groups of people need different types of training. Regulation 10 of CAR 2012 says anyone who disturbs the fabric of the building needs awareness training. An Asbestos Manager/Appointed Person needs specific Dutyholder training for large sites/portfolios and basic awareness if fewer asbestos issues.

Maintenance operatives need awareness training

All staff should have access to an email alert describing general arrangements.

■ Disseminating Information

Work out how each group will be informed and set out in clear language the information available, what its purpose is what limitations it has.

Make sure people are aware of whom the Appointed Person is and how to contact them and decide how you are going to get the asbestos information to contractors, builders, maintenance operatives e.g. Access to database, works orders or permit to work.

■ Audit and Review

Guidance suggests 6 month review to look at:

- a) Making sure recommended remedial work has been carried out
- b) Effectiveness in preventing exposure and controlling building work
- c) Changes in staff and structure, company procedures and building use / occupancy
- d) Any failures in the system, where and why procedures were not followed, any disturbance to ACM and resulting exposure.

Typical Questions from Unit 2

- Q1. *Name the two different types of asbestos survey.*
Management survey and Refurbishment/
Demolition survey.
- Q2. *In places where it is dangerous or too difficult to sample a material what must the surveyor do?*
The surveyor must presume the material does contain asbestos until such time a sample can be taken and analysed.
- Q3. *Whose responsibility is it to carry out Material Risk Assessment and Priority Risk Assessment?*
Material Risk Assessment is carried out during the survey by the surveyor and the Priority Risk Assessment is the responsibility of the duty holder and carried out after the survey is complete.
- Q4. *How can you assess the competence of a surveyor?*
Qualifications, Company accreditation, past experience and references from other surveys he/she has conducted.

UNIT 3

Remedial Work - The Role of the Contractor

Section 1: Selecting a Contractor

What determines Competency?

- HSE licence?
- ISO 9001?
- Insurance cover?
- ARCA member?
- CHAS/Constructionline/Achilles/Exor?
- Financial stability?
- CRB check?
- Method statement?
- References?
- Track record?
- Personal experience?

■ The Checking Process

- HSE licences and enforcement action
<http://webcommunities.hse.gov.uk/connect.ti/asbestos.licensing>
- HSE enforcement and prosecutions
<http://www.hse.gov.uk/notices/> <http://www.hse.gov.uk/prosecutions/>
- Financial stability
<http://www.companieshouse.gov.uk/>
- ARCA member
<http://www.arca.org.uk/>
- Third party pre-qualification
<http://www.constructionline.co.uk/static/>
<http://www.chas.gov.uk/>

■ Licences

- One year new licence
- Three year renewal
- One year – or other duration – reduced term.
- Licences have three standard conditions
- Extra conditions if HSE require additional checks during the licence term.

■ Contract Procurement

Whoever is the client has a duty to assess contractor competency and Sub-contracted to your company but Beware! - Insurance, liability, payment terms, form of contract.

On behalf of the client – no contractual ties

A measured term contract or panel of contractors for call off work.

■ Tender Document

The tender document should contain the scope of work, survey results, and any drawings – existing and planned. Site hazards and risks and associated rules or permits together with access arrangements, compound, welfare, services, emergency procedures any communication, reporting and liaison. The duration and working times, including any restrictions and any contract milestones that may impact on other works.

■ Tender Evaluation

Can be a combined PQQ and tender, but more usual to be separate exercise. The tender will be split between Technical (the ability to deliver) and Financial (the cost)

Weightings:

- Public sector – usually 60% Technical/40% Financial
- Private sector – could be 70%/30%

Different Contracts

Within the UK construction industry multiple forms of contract exist such as:

- Contracts under Deed
- Contracts under Hand
- Letter of Instruction
- Verbal Instruction

All have differing implications and liabilities.

■ Deed Contracts

Entered into by a legal entity (Company or authorised person within a Company) there is a limitation period which extends to 12 years and is generally used for high value or high risk works.

■ Hand Contracts

Entered into by a legal entity (Company or authorised person within a Company) there is a limitation period extends to 6 years and is generally used for low value or low risk works. The principles are a duty of care and the test of reasonableness.

Verbal and Written Instruction

Limitation period generally 6 years and generally used for low value or low risk works. The principles are a duty of care and the test of reasonableness however as the service may not be specified they can be dangerous.

Insurance

Three Types of business insurance:

1. Employers Liability
2. Public Liability
3. Professional Indemnity



Employer Liability

This is Legal requirement and has minimum levels of cover and is designed to protect employees. Asbestos Liability is covered with EL policies.

Public Liability

Covers the employer from omissions that may harm the public with general cover for small builders asbestos is often excluded. Most Local Authorities have no PL cover for asbestos.



Professional Indemnity

Covers against professional errors and used in a wide range of professions. It has varying limits of cover and has a number of anomalies to check.

- Each and Every Claim vs Aggregate Cover.*
- Retro-active Dates.*
- Asbestos exclusions and buy backs.*
- Policy excesses and exclusions with run off cover.*

Project Risk Categories

- a) Commercial risk
- b) Reputational risk
- c) Contractual risk
- d) Health and safety risk

Commercial Risk Management

The objective is to preserve the delivery of budgeted project margin (i.e. income received less the cost of delivery).

Reputational Risk Management

The objective is to enhance your company's reputation as a result of the successful delivery of the project.

Contractual Risk Management

The objective is to minimise exposure to claims and to restrict any such potential claim to within the limits of the available insurances.

Health & Safety Risk Management

The objective is to ensure the company meets its legal duty of care to its staff and third parties.

**Section 2:
Industry best practice**

The Plan of Work

The Plan of Work is a "Key safety document that combines the risk assessment with the job spec to produce a practical working method to be followed on site."

It does not need to be submitted with the 14 day notification (ASB5) but does need to be prepared before notifying.

ALG memo 04/12 gives guidance on how to structure a POW and what information should be in it.

What should be contained within a Plan of Works is as follows:

Details of contract

- a) Name and address of the person to whom you are contracted
- b) Name, job title, telephone number of all relevant contacts, including the site supervisor and person preparing the plan of work
- c) The number of employees on site at any time
- d) When the work is going to take place, including nights or weekends
- e) The names of the principal contractor, CDM-C and CDM client
- f) The names of any other license holders involved
- g) Who will carry out the 4 stage clearance and to whom the analyst is contracted.

Management of the job

- a) How often the Supervisor, Manager, Director will be on site
- b) How viewing panels and/or CCTV will be used
- c) Names and contact numbers for Supervisor, Manager, Director. Who is allowed to amend the POW?

Scope of work and risk assessment

- a) Provide brief details of any survey for asbestos, who by and when.
- b) Provide a written description of the work, its location and the removal method.
- c) State the type and form of asbestos, the quantity, extent and condition
- d) Provide brief details of access and fire risks etc
- e) Provide details of any other risks and precautions.

Scope of work and risk assessment

- a) State the expected exposure using controls specified
- b) Describe the steps taken to reduce the exposure "alarp"
- c) Provide sketch plan
- d) State the volume of the enclosure, size and numbers of NPUs and the number of air changes per hour
- e) State the type of respirators to be used
- f) Describe the air monitoring arrangements
- g) Describe the smoke testing arrangements
- h) Describe how control measures are maintained and what checks.

■ Method of work for removal

- State any additional precautions to reduce exposure
- Provide detailed site information and a specific description of the working method with reasons
- Describe which fibre suppressant technique is to be used
- For wet strip system - describe injection technique, time allowed for penetration, what indicator will be used to check material is fully saturated
- State what tools and other equipment will be used
- For AIB work, provide a proper indication of practical measures to minimize dust release.

■ Other information

- DCUs (including clearance testing)
- Entry and exit procedures
- Welfare facilities
- Waste disposal
- Emergency procedures
- State the version of your company's Standard Procedures currently in use
- Work must not commence until there is a copy of the POW on site.

■ Drawing

- Dimensions of enclosure
- Location of viewing panels and/or CCTV
- Position of NPUs
- Position and number of Type-H vacuums
- DCU and source of water/electrical supplies
- Transit route
- Baglock (if applicable)
- Waste route and skip.

■ ASB5 Notification Form

Licensed work requires the contractor to notify the HSE/LA 14 days in advance of the intended start date. The condition of having a license is part of explicit requirement of CAR 2012.

ALG memo 06/12 gives guidance on the process and in what circumstances waivers are granted.

<http://webcommunities.hse.gov.uk/gf2.tif/578/211653.1/PDF/-/ASB5AIB.pdf>

■ The Enforcing Authority

HSE - Factories, construction sites, residential, hospitals, education premises, docks, railways etc

Local Authority - Shops, offices, restaurants, hotels etc.

■ Enclosures

Enclosures normally required to:

- Prevent the spread of asbestos (Control of Asbestos Regulations (CAR 2012, Regulation 16)
- To prevent the exposure of other people (employees and others) (CAR 2012, Regulation 11) who may be affected by the work.

When is an enclosure required?

- Work on the most hazardous forms of asbestos
- Whenever there is a likelihood of spread of asbestos or surface contamination
- An enclosure will be required in most situations with the exception of minor activities described in 'Asbestos Essentials'.

When is an enclosure not required?

Enclosures may not be required if:

- The level of risk is low
- If the location is extremely remote
- The work is at height and an enclosure is not practical due to the height or complexity of the structure
- Where there are practical difficulties in obtaining an effective seal on the structures
- Cleaning up of minor contamination.

Enclosures:

- Must be strong enough to withstand NPU pull
- Must include viewing panel (VP) or CCTV
- Airlocks should have weighted flaps on the inside of each section
- Unless space prevents, airlocks must be at least 1m² x 2m high (not 1m x 1m) and have a VP in the inner stage
- Separate baglock if space allows, must also have VP in inner stage
- Three part warning notice on front of airlock/baglock.

■ Removal Techniques – Basics

Aim is to minimise exposure and prevent spread and dust control is the key.

Dry stripping may be justified if fibre-release otherwise controlled at source.

RPE is the last line of defence.

Enclosures are about dealing with contingencies and preventing spread and asbestos removal is arduous work in a harsh environment.

■ Methods of Work

Suppression of asbestos fibres is essential. AIB should be removed whole if possible. Wet injection is the most effective but operatives have to be trained.

Wrap and Cut needs to be planned first and Asbe-bags are only a dust control system, not a reason for no enclosure.

■ Wet injection techniques

This is where a wetting agent is introduced into asbestos insulation or sprayed coating using injection needles and very low water pressure.

It relies on:

- Adequate soak time required
- Using appropriate needles
- Multi-point needle systems, at low pressure
- Proper dilution of wetting agent.
- Using trained operatives.

■ Wet removal (Spray)

Used where injection is inappropriate. Will generally wet the outer surface with minimal penetration and used on thin sprayed coatings, AIB removal and debris.

■ Other Fibre-Control Options

Other fibre control methods include:

- Wrap and Cut
- Glove-bags
- Local exhaust ventilation (shadow vacuuming)
- Hydration gels etc
- Enhanced air management
- Encapsulation coating / injection.

■ **Blasting Projects - Beware!**

The asbestos industry has seen the introduction of very aggressive cleaning techniques for difficult areas. The system is blasting with high pressure water and an abrasive substance such as granite. You achieve a fantastic final finish but at what cost. The area becomes very moist, noisy and difficult to see. Must only be used with highly trained operatives.

Section 3:
Work procedures

Site Set Up

Site set up will include preparation of the site, pre-clean and sheeting over areas that cannot be cleaned, enclosure construction, siting of DCU and NPU. This may have an impact on building and putting waste and transit routes in place which also may impact on building.

The DCU should be set up and operational prior to the work starting and the site supervisor must carry out pre-work inspection of the planned enclosure area, surrounding places such as transit and waste routes and the area immediately next to the enclosure.

An assessment of the extent of pre-clean of the area to be enclosed and immediate surrounding areas should be made.

The work area should be free from items of plant, equipment and furniture as far as possible.

All mobile or portable items should be removed and any remaining items must be pre-cleaned and protected to prevent contamination.

Any boilers or flues should be sealed and any live operating machinery within the enclosure must be isolated.

The floor area should be covered with an impervious layer, eg double-sheeted polythene or "Corex".

■ **Smoke testing**

Before work commences a smoke test of the enclosure must be carried out with the NPU switched off. The Enclosure must be examined regularly, as a minimum at the start and finish of each shift.

■ **Standard of Materials**

Polythene must be 1000 gauge = 250 micron and in some locations flame retardant.

Tape should be Cloth tape (avoid packing tape) and 50mm width (avoid 25mm).

Any timber used should be 50 x 50mm with the vertical supports no greater than 1.5m apart, ideally 1.2m.

■ **DCU Signage**

Clean end

"CLEAN" and "Black Hand"

Dirty end

"DIRTY", "Black Hand" and 2 part PPE

Shower (from clean end)

2 part PPE

Optional

No smoking/eating/drinking,

No towels in shower,

RPE on door from shower to dirty.

■ **Waste Water**

DCU water filtration system should be fitted with a filter to 5 microns and the filter disposed of asbestos waste when finished with. Waste water from buckets in airlocks should be disposed of through the filtered drainage system in the shower in the DCU and waste water should be directed into foul drain not sewer.

■ **Air Extraction Equipment**

To minimise fibre release from the enclosure a negative pressure unit (NPU) is used. Its function is to purge the air lock system and to change the air in the enclosure.

NPU come in various sizes and are rated in cubic feet per minute (CFM) or metres cubed per hour m³/hr.

Conversion from cfm to m³/hr – multiply by 1.6;

cfm	m ³ /hr
500	800
1500	2300
3000	5200
4000	6400

■ **NPU Performance**

Smoke testing – pressure differential reduced by 6% (8.9Pa to 8.4Pa) following smoke test, restored by replacing pre-filter

Temperature – as air temperature increases, air density decreases and –ve pressure increases.

Moisture and metal fume – detrimental effect on HEPA filter (no protection by pre-filter).

Wind – NPU exhaust should be screened from effects of wind (and beware windows, doors, lifts)

Electric supply – on site supplies can be variable and long 110v leads can result in voltage drops.

Discharge ducting (rigid grey flex type) – 100 to 150cfm loss for every 6m

Polythene – up to 200cfm loss

Bends in ducting – 3-4% loss per bend

Roving heads – 8% reduction

Flex – 6m – 1 bend – 5% drop

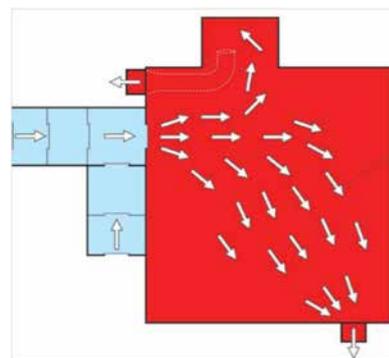
Poly – 6m – 1 bend – 8% drop

Flex – 12m – 2 bends – 10% drop

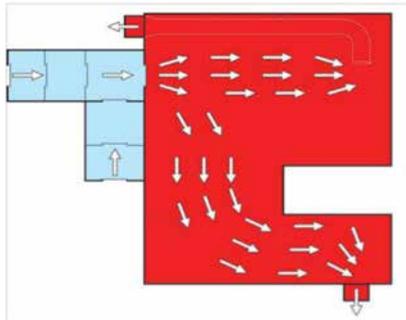
Poly – 12m – 3 bends – 26% drop

10% drop in performance is equivalent to losing 1 air change per hour.

GOOD AIR MANAGEMENT



GOOD AIR MANAGEMENT



■ **BS 8520 For Equipment**

Used to be PAS-60, which has now been superseded. The standard sets out standard for manufacture and performance of controlled wetting equipment, Negative pressure units and Type-H vacuums. All new equipment should be manufactured to this standard and all the established manufacturers are doing this, beware of unfamiliar makes.

■ **Type-H Vacuums**

Used for cleaning fine dust and debris to minimise risk of blocking hose or damaging dust bag. When in use, clean from top down to bottom; always work towards NPU. Pay attention to steelwork, flanges, pipework, valves, bolt heads, enclosure walls and ledges.

The type-H vac is also used in the decontamination of operatives using the ‘Buddy system’.

Maintenance work on vacuums is covered by CAR 2012; Licence required; competent, trained personnel; controlled conditions. Vacuums and attachments must be bagged when transporting from site to site – clear clear bags.

■ **Hazardous Waste Regulations 2005**

These regulations define hazardous waste in England and Wales (Special Waste Regulations in Scotland). They require Producers or Consignors of hazardous waste to register their premises restrict mixing and require separation of waste where appropriate and make sure that companies document the movement of hazardous waste. They require Consignees to keep thorough records and provide the EA with information on the disposal and recovery of hazardous waste every three months.

■ **Waste Disposal**

All asbestos waste regardless of whether it is licensable or non-licensable must be disposed of at a licensed disposal site or waste transfer station. It must also be suitably packaged in accordance the regulations.

■ **Transferring Asbestos Waste**

When transferring asbestos waste you must ensure skip or vehicle is as close to the enclosure as possible.

The skip must be clean on arrival and lockable. Any tools or other equipment stored in vans should be segregated to prevent bags being punctured during transit. Waste packages should not be thrown in to the skip or vehicle and under no circumstances should asbestos waste be stored in an enclosure, air lock or DCU.

■ **Storage of Asbestos Waste**

Asbestos waste can only be stored under the following circumstances:

- a) On site in a locked skip or locked vehicle
- b) At a waste transfer station, licensed by EA or SEPA
- c) Under no circumstances should asbestos waste be stored in an enclosure, air lock or the hygiene facilities
- d) If a package or bag bursts during transit in a vehicle or sealed skip, the vehicle will need to be decontaminated, visibly inspected and a disturbance air test carried out before the vehicle or sealed skip can be reused.

■ **Controlled Stripping Techniques**

The Control of Asbestos Regulations 2012 states in:

- a) Regulation 11 - prevent or reduce exposure to asbestos
- b) Regulation 16 - prevent or reduce spread of asbestos
- c) Uncontrolled dry stripping requires high degree of reliance on RPE
- d) RPE must not be the first line of protection in the workplace.

■ **Typical Exposure Levels**

There is no typical level, but in general terms:

- a) **Uncontrolled removal** – up to 1000f/ml
- b) **Controlled removal** – less than 1f/ml and even down to less than 0.1f/ml.

■ **Use of Wetting Agents**

Chrysotile is hydrophilic which means it is water loving and fibres are easily coated with water. Crocidolite and amosite asbestos are hydrophobic which means they are water hating and do not absorb water as easily.

Wetting agents help break down the surface tension and allow the fibres to be suspended in water.

Special wetting agents are required for temperatures above 75°C.

Low pressure injection (less than 50 psi) should be used as it wets by capillary action.

■ **Controlled Wet Stripping**

Suitability

Controlled wet stripping is ideal for use on sprayed coating and lagging.

Advantages

The process allows thorough wetting that will suppress fibre release and also a big reduction in cleaning time.

Limitations

The process is not suitable for boards or tiles; it needs operator training and experience and if not managed you run the risk of creating unmanageable slurry. Any hard cement-like finish may require pre-drilling and there may be potential health hazard of wetting agent. Always check the COSHH assessment.



This picture shows a system commonly known as 'the red box'. The pipe work to the right is being injected with the wetting agent prior to removal. The injection needles can be clearly seen protruding from the pipe.

■ Limitations of Wet Stripping

Live electrical equipment that cannot be isolated or protected from ingress of water.

There is a potential fire risk or generation of toxic fumes due to risk of contact between water/wetting agent and other chemicals.

The system can produce steam and risk of heat stress in hot environments and the wetting agent can freeze inside lagging/coating in cold weather.

■ Poor wetting

Incomplete saturation of ACM can result in dry patches, with exposure levels up to 100 f/ml. Over saturated ACM can fall off under the weight and create slurry which can release fibres when dry and is very difficult to control.

■ Spraying – AIB Removal

Screw fixings to be shadow-vacuumed (locate using magnet). Nail fixings to be removed by careful prising using nail bar and the unsealed side of AIB to be sprayed.

AIB that can be removed whole must be placed into bag immediately.

AIB that needs breaking must be soaked to the consistency of wet cardboard.

Approximately 1 litre per tile, around 1 hour soaking time will wet the board accordingly.



■ Local Exhaust Ventilation

Extraction of air as close to the working position as possible to capture the released fibres at source; "shadow Vacuuming".

Suitability

Removal of AIB intact especially where controlled wetting cannot be used.

Limitations

Does not prevent fibre release at point of removal, there is a limited area of control, asbestos debris may fall on the floor and the technique requires two operatives.

■ Dust Suppression Summary

- a) Uncontrolled dry stripping of asbestos must not be undertaken
- b) Controlled wet stripping techniques minimises the release of asbestos fibres and contain the spread of contamination

- c) Improved rates of wetting are achieved by the use of wetting agents
- d) Combination of controlled stripping techniques is often needed for effective control.
- e) Controlled stripping techniques require disciplined work practices and appropriate training.

■ Record Keeping

Site Supervisor will normally be responsible for collection and recording of information on site. There is no prescribed layout for these records but content and frequency of collection is set out in ACOP and guidance.

Record keeping is an important aspect when working with asbestos containing materials and records have to be kept to show that the law has been complied with and their keeping is a requirement of the Approved Codes of Practice (ACOP). These records are likely to be scrutinized during site visits by enforcement officers and during licensing renewal visits.

Below is a list of records to be kept:

- a) Plans of Work and assessment
- b) Daily enclosure checks
- c) Plant tests
- d) RPE maintenance
- e) Air monitoring
- f) Training
- g) Health surveillance.

■ Enforcement

Advice. Can be verbal or letter.

Notices. Improvement Notices (S. 21) or Prohibition Notices (S. 22).

Prosecution. 2011-12 HSE Delivery plan states 1500 planned visits to asbestos sites. With fee for intervention the HSE plans to recover the cost; such as £750 for each letter and £1500 for each notice issued.

Improvement Notice. Issued where an inspector is of the opinion that a person:

- a) Is contravening one or more of the statutory provisions
- b) Has contravened and that contravention is likely to be continued or repeated

Contravention(s) to be remedied within a time period (no less than 21 days), usually 1 or 3 months.

If appealed notice suspended (and does not appear on the HSE database).

Prohibition Notice issued where an inspector is of the opinion that:

- a) Work activity involves or will involve a risk of serious personal injury (even if no legal provision is being breached)
- b) There is an immediate threat to life and in anticipation of danger

If appealed notice stays in force (and stays on the HSE database). The HSE may want to prepare a case for prosecution. They can use different types of statements and interview.

The interview to give a statement, the inspector will draft the wording based on your interview and you sign it. In this case (have you Line Manager/Director present).

Interview under caution – in line with PACE

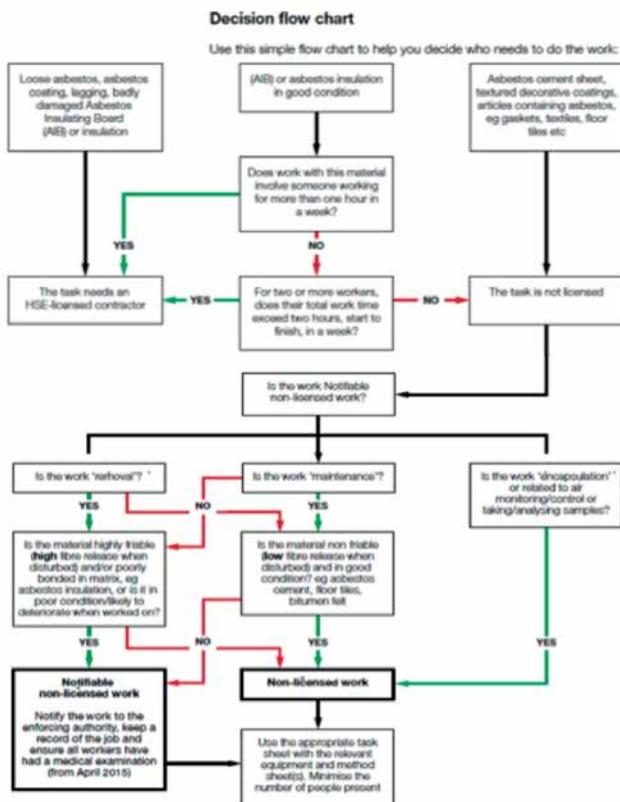
You have a right to have a solicitor present and you have a duty to tell your insurer.

Individual analysts have been prosecuted in the past.

■ Powers of HSE Inspectors

- Enter premises at any time without a warrant (except MOD)
- May enter with Police or any other person, equipment or material
- Examine and investigate as necessary
- Can direct premises or part of to be left undisturbed
- Take measurements, photographs, recordings
- Take samples of articles, substances and atmosphere
- Dismantle any article or substance, subject to test
- Take possession of and detain
- Seize and render harmless any imminent danger of serious personal injury article
- Question any person relevant to the investigation
- Require production of, inspect, take copies of documents
- Demand facilities and assistance for above
- Assume any other powers necessary to enable him to carry into effect the relevant statutory provisions.

■ Notifiable Non Licensed Work>NNLW



■ Asbestos Cement Flue

You need to remove a section of asbestos cement flue to install a new boiler - you will need to break the flue to remove it

How would this work be classified and what actions should you take?

■ AC Flue Removal

Defined as “sporadic and low intensity and below the Control Limit. Asbestos cement is a non-friable material. The work is a short non-continuous maintenance activity and removal is incidental to the main purpose – changing the boiler therefore the work is non-licensed and does not require prior notification.

Use Asbestos Essentials control sheet etc.

■ AIB Removal

The removal of single AIB ceiling tile to replace light fitting.

How would this work be classified and what actions should you take?

Defined as “sporadic and low intensity and below the Control Limit. AIB is a non-friable material (discuss!). The work will take less than 2 hours therefore classed as short non-continuous maintenance activity. Removal is incidental to the main purpose – changing the light fitting and therefore the work is non-licensed and does not require prior notification.

Use Asbestos Essentials control sheet etc.

■ Demolition of AC

You are to remove an asbestos warehouse roof and side panels before demolition, for safety reasons you decide to carry out remote demolition since the warehouse is old and is in poor repair.

How would this work be classified and what actions should you take?

Defined as “sporadic and low intensity and below the Control Limit. Removal of fibres that are firmly linked in matrix. Old asbestos sheets – weathered – but not degraded.

Removal using ‘pecker’ that results in sheets being broken into small pieces – deterioration, therefore the work is non-licensed but notifiable (NNLW).

Use Asbestos Essentials control sheets and EM sheets when available.

Typical Questions from Unit 3

Q1. What is a Plan of Work?

A Plan of Work is another name for a method statement and is a key safety document that combines the risk assessment with the job specification to produce a practical working method to be followed on site.

Q2. List 5 items that should appear in a plan of work.

- Number of employees on site
- Who will be conducting the 4 stage clearance test.
- Type, form and condition of asbestos present.
- Details of any non asbestos risks associated with the work.
- A detailed sketch plan of the work.

Q3. List 3 methods of fibre control when removing asbestos.

- Local Exhaust Ventilation (Shadow Vac)
- Wet injection
- Enhanced air management.

Q4. When asbestos waste has been removed from an enclosure where can it be stored?

On site in a lockable skip or inside a locked vehicle.

UNIT 4

Remedial Work - The Role of the Analyst

Section 1: The Role of the Analyst

The Role of the Analyst

Does it mean they can?

1. Tell the contractor to stop work?
2. Tell the contractor to change his method?
3. Issue a variation order?
4. Instruct a specialist sub-contractor?
5. Extend the timescale?

It might do, but it all depends on what you want them to do.

■ Supervision of Licensed Work (HSE ALG Memo 05/12) “Direct supervisory control”

This is taken to mean a direct and immediate influence over current site activities: the supervisor is directly in control over the way the work is done, including the actual removal process. You need a Supervisory Licence if you are an analytical company and you want to do this.

A supervisory licence is **not required** if you are:

- a) the client who has engaged the contractor doing the work
- b) the principal contractor and the work with asbestos is being done by a sub-contractor
- c) an analyst checking that the area is clear of asbestos at the end of the job
- d) carrying out quality control work e.g. monitoring outside enclosures or checking that the work has been carried out to the agreed standard
- e) a consultant or other reviewing tender submissions on behalf of the client.

■ Project Management

HSE are currently reviewing the role of analysts on site. HSG 248 will be updated to include a chapter on project management/quality control work together with monitoring progress of the work, assessing outcomes of what has been removed, reviewing costs and timescales and Looking at the “bigger picture”. It should not be concerned with the actual techniques and methods of removal.

■ Air Testing

Membrane filter used which is made of mixed cellulose ester (eg Millipore). Air is then drawn over filter via sampling head and the

filter cleared using acetone vaporizer. It is then mounted onto slide using triacetin.

■ Phase Contrast Microscopy

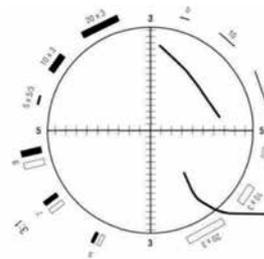
PCM method has been used since mid 1960s. The technique is used to make small, colourless, transparent objects visible. Phase contrast converts small phase shifts, introduced by the difference in RI between sample and liquid, into visible differences in the brightness of an image.

PCM method is cheap, quick and easy, but.....

- a) Many fibres are too fine to be visible
- b) No fibre identification possible
- c) Subjective interpretation of rules
- d) Poor accuracy and precision at low levels.

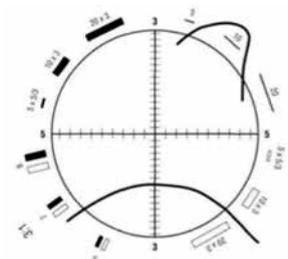
■ World Health Organisation (WHO) Counting Rules

- a) A countable is defined as any object which is longer than 5µm,
- b) with a width less than 3µm
- c) and a length: width (aspect) ratio greater than (>) 3:1,



Walton Beckett graticule.

How many fibres are countable?



Walton Beckett graticule.

How many fibres are countable?

■ Fibre Concentration (f/cm³)

The Analysts' Guide states; $\frac{1000 \times N \times D^2 = f/ml}{V \times n \times d^2}$

Where: N = No. fibres D = Diameter of exposed filter(mm)
 V = Volume (l) n = Number of graticules
 d = Diameter of graticule(µm)

■ Limitations of Method

This method of fibre counting can lead to large inter observer differences in results.

Tests have repeatedly shown large differences between;

- laboratories apparently using the same method
- between counters within the same laboratory
- between results from counters at different times
- Counting precision depends on the number of fibres counted and the uniformity of the fibre distribution on the filter.

■ Quality Control

There is an external scheme (RICE) which is administered by the Health and Safety Laboratory. The scheme compares different counters at different laboratories.

■ Internal scheme

As a requirement of the UKAS accreditation, companies also run internal schemes where analysts read monthly reference slides and conduct recounts of actual samples from site.

The sources of possible error can be attributed as follows:

- Equipment - microscope, graticule
- Materials - membrane filters
- Operator
- Sampling
- Environment.

■ Maintenance Of Equipment

- Microscopes to be serviced every year
- Master flowmeter to be calibrated yearly
- Rotameter/flowmeter to be calibrated monthly
- Sampling pumps to be calibrated every 6 months
- Counters to be calibrated every 6 months
- Stage micrometer to be calibrated every 6 months
- Master stage micrometer to be calibrated every 5 years

Section 2: Selecting a suitable company

■ What Determines Competency?

- UKAS accreditation?
- Insurance cover?
- ATAC member?
- CHAS/Constructionline/Achilles/Exor?
- Financial stability?
- CRB check?
- Method statement?
- References?
- Track record?
- Personal experience?

■ The checking Process

- UKAS accreditation
<http://www.ukas.com/about-accreditation/accredited-bodies/Testing-laboratories-schedules.asp>
- Financial stability
<http://www.companieshouse.gov.uk/>

- ATAC member
<http://www.atac.org.uk/>
- Third party pre-qualification
<http://www.constructionline.co.uk/static/>
- <http://www.chas.gov.uk/>

Section 3: Air monitoring on site

■ Air sampling procedure

- Drawing of a known flow rate of air through a filter for a measured time collecting airborne particles
- Filter then prepared for examination under the microscope
- A known area (about 1.5%) of the filter is examined using 500x phase contrast microscopy and counting fibres in accordance with given rules

■ Sampling pumps

- Must give a smooth airflow being capable of to be set to within $\pm 10\%$ for flow rates $< 2\text{l/min}$ and within $\pm 5\%$ for flow rates $> 2\text{l/min}$
- Must maintain this flow rate to within $\pm 10\%$ during the whole period of sampling

■ Flowmeters

- Must be measured by a working flowmeter (or rotameter), sufficiently sensitive to be capable of measuring the appropriate flow rate to within the values specified ($\pm 5\%$ or 10% of required value)
- And which has been calibrated against a primary standard (up to 16 l/min is permitted)

■ Background or Reassurance Sampling

- Distribution of measurement points should cover likely sources of fibres and areas of frequent occupation
- To achieve the quantification limit (0.01 f/ml) each measurement must be from a total of at least 480 litres in volume
- Fewer measurements may be generated for sampling for certification of reoccupation.

Typical sample locations

- by airlocks and baglock
- near NPU exhaust
- in (or near) occupied areas
- by vulnerable areas

Typical flow rates and volumes

- flow rate as high as possible (up to 16 l/min)
- sample volume up to 480 litres if possible
- short sample time needed to take rapid action if needed

Sampling is conducted at head height (approximately) and there is no dust disturbance (outside the enclosure).

■ Personal sampling

Personal sampling is used for:

- compliance with Control Limits
- health surveillance exposure records

- c) check suitability of RPE
- d) check effectiveness of controls (eg wet stripping)
- e) future risk assessments

The sample head is placed on the operatives lapel within 200mm of breathing zone on higher concentration side and takes into account whether the operative is left-handed or right-handed. The sampling head should point away from the exhaust from RPE. You must always ensure that the sampling tubing will not snag during use and the sample head must always point downwards.

Compliance samples must be at 1 l/min over 4 hours but other personals at suitable flow rate and time can be conducted.

■ Sampling for site re-occupation

Sampling for Site Reoccupation Certification only takes place only when the enclosure is dry and a visual inspection confirms free from debris and dust.

Sampling equipment to be distributed throughout the enclosure with at least half the samplers close to, or underneath where the asbestos was removed.

■ Four stage re-occupation

Sampling heads should be located at a height of between 1-2 m from the floor, filter holders pointing downwards. In tall enclosures (e.g. vertical pipework or lift shafts), samplers should be placed at representative heights.

There must be at least two measurements (unless the volume of the enclosure is less than 10m³, in which case one is adequate).

With that overriding condition, the number of samples should be at least, the integer next below (A/3 - 1) where A is determined as follows;

Enclosure is less than or equal to 3m in height, or in enclosures which are higher than 3m but where exposure is likely to be at ground level only, A is the area of the enclosure in square metres.

It is permissible to achieve a measurement by pooling two or more simultaneous or consecutive samples to give a total of at least 480 litres. Pooled samples should be taken within 1m of each other and are regarded as a single measurement with the volume and fibre counts being pooled together.

■ The legal requirements

Control of Asbestos Regulations 2012:

Regulation 17 – cleanliness of premises and plant. ‘Every employer shall ensure that the premises where work was carried out are thoroughly cleaned’

L143 ACOP – “a thorough visual inspection to ensure all visible traces of asbestos and other dust and debris have been removed” with attention to completeness of removal of ACM, presence of visible asbestos debris and the presence of fine settled dust.

L143 ACOP – 4 stage clearance and Certificate of Reoccupation.

■ Stage 1 - Site Inspection

Check Plan of Work

- a) is there one on site?
- b) Is it specific to the work and accurate?
- c) Does the plan match the site set up?

Check DCU is connected, clean and working

- Inspect general condition of enclosure
- d) sheeting, airlock flaps, notices

Check negative pressure unit on and working

Routes from airlocks/baglocks to skip and DCU

- e) check for presence of obvious asbestos debris

Inspect enclosure through viewing panel

- f) waste, debris, adequate lighting, dry, hazards.

■ Stage 2 - Visual Inspection

Inspection of stripped surfaces and enclosure, which starts at first stage of airlock.

Always use enhanced inspection methods and tools such as:

Torch, screwdriver, mirror.

This is a thorough inspection of all areas and surfaces with check for areas sheeted out inside enclosure and evidence of PVA sealant on stripped surfaces.

Any asbestos not being removed must be in good condition and sealed.

Areas to check in plant rooms are:

- a) Backs of pipes and vessels
- b) Support brackets and clamps on pipes and vessels
- c) Nuts and bolts or flanges and hatches of vessels and pipework
- d) Screw holes, or around nails and battens for AIB tiling
- e) Cable trays and conduits, especially if they have a metal mesh construction
- f) All horizontal ledges, shelves, window sills etc
- g) The undersides of boilers and tanks, either attached or loose
- h) Rough porous brickwork, eg breeze block and rough concrete
- i) Holes in walls etc, where pipes, cables or steelwork pass through
- j) Drains, sumps and culverts

The NPU will be left on during the visual inspection. All areas in the enclosure including high levels have to be inspected and access equipment such as tower platform or step ladder must be present if needed.

A torch or good lighting, scraper, mirror, wipes and any other piece of equipment that may aid the inspection should be used.

All other equipment and waste must be removed before visual inspection starts.

The area must be clean and dry (natural water may have to be accepted).

■ Problem areas

Dirt floors are always a problem and sometimes the best way forward is to remove top layer, inspect and then seal.

‘Limpet’ on concrete or with bitumen layer is very difficult to completely remove so Inspect - and if not reasonably practicable to do more, then seal and continue.

Wet areas. Water can and does hide asbestos residues so get a plumber (under supervision) to fix leaks.

Friable dusty surfaces such as concrete floors are a problem so air test without sealant first; if it fails again, seal after inspection, but only on instruction by the analyst.

ACM remaining. Not all ACM's have to be removed from the enclosure but any remaining must be sealed and a note in Certificate of Reoccupation made.

Factors affecting the visual process

- Experience of the analyst
- The removal process – ie blasting and problems associated with it
- Size of area
- Access equipment
- Time pressures
- Contractor

■ Clearance sampling

NPU normally capped and then switched off before starting air sampling.

Enhanced dust disturbance methods are used such as brushing is now required standard method with broom if > 20 m². Wafting clipboard, overalls or using hand is insufficient. The HSE found leaf blower was most effective method but hardly practical or realistic. Dust disturbance must be for at least 1½ minutes around each sampling pump.

Sample numbers based on enclosure size.

Whole number next below ($A\frac{1}{3} - 1$) where A is area in m² - or $\frac{1}{3}$ volume in m³ if height > 3m. Use 'area' if all exposure at floor level but you are allowed to deduct volume of sheeted out plant. There must be one sample only if volume < 10 m³ (use pooled samples?) And the sample volume of at least 480l per sample. Pooled samples within one metre of each other and the enclosure cannot be removed until air test passed. At least 80% samples must be < 0.01 f/ml and none > 0.015 f/ml. If <5 samples, all results must be < 0.01 f/ml.

The 80% rule applies so at least 80% samples must be <0.010 f/ml with none > 0.015 f/ml so if 4 samples or less, all results must be < 0.010 f/ml. If 5 samples, 1 result can be between 0.010 and 0.015 f/ml. If 10 samples, results can be between 0.010 and 0.015 f/ml and so on.

■ Post removal inspection

Inspect area when enclosure has been removed, including transit and waste routes. Check for debris trapped in sheeting or under floor. (Type-H vacuum must be present).

In worst cases, contractor may be required to reinstate enclosure! Air sampling may be appropriate or stipulated by client and the analyst will issue "Certificate for Re-occupation" to contractor and to client.

The inspection must be conducted by a 'Competent Person' who has received adequate training, qualification and experience and must be independent of contractor.

■ Hygiene Unit Inspection

The DCU inspection test is separate from 4SC with an air test in shower and dirty end before being removed from site. You may use 1 sample with door propped open between the sections if floor area < 10 m²

The DCU must be clean and dry - stages 2 and 3 only.

HSG 247 requires visual inspection of clean end.

Not needed if moved to another area on same site and not needed if unit moved for security reasons.

Section 4: Record keeping and auditing

■ Quality Control

The laboratory must keep counted slides for 6 months and all documents associated with air testing must be retained for 5 years (check contractual liability - could be 6 or 12 years).

Documents relating to personal or compliance sampling must be kept for 40 years along with the main medical records for that individual.

■ UKAS Accreditation

Accreditation for the sampling and testing of air is mandatory;

- Regulation 20 – Standards for air testing and site clearance
- (And also Regulation 21 Standards for analysis)

Accreditation is to ISO 17025. ISO 17000 series mirrors ISO 9001 for paper trails but with added emphasis on evidence of technical competency.

■ ISO 17025

The standard looks at:

- Organisation
- Management system
- Document control
- Review of request
- Complaints
- Non-conforming work
- Improvement
- Corrective actions
- Internal audits
- Test methods
- Uncertainty of measurement
- Measurement traceability
- Handling of test items
- Assuring the quality of results
- Test reports

■ Internal auditing

Each area listed previously is audited once a year and vertical audits undertaken on the whole system.

Site audits on each analyst – once a year.

■ External auditing

Annual assessment visits by UKAS when two assessors spend 3 to 4 days in the office and on site. The technical assessor visits site to witness a 4-stage clearance.

Accreditation can be suspended or withdrawn if serious breaches are uncovered.

Typical Questions from Unit 4

Q1. Define a countable/respirable fibre.

Any fibre that is >5microns in length, <3microns wide and has an aspect ratio of > 3:1. (Three times longer than wide)

Q2. List the 4 separate stages of a 4 stage clearance.

STAGE 1. Check the completeness of the work from outside the enclosure. Check the plan of works against the job. Transit routes and waste routes together with the waste arrangements must also be checked.

STAGE 2. A thorough visual inspection of cleanliness inside the enclosure.

STAGE 3. Air testing inside the enclosure under disturbed conditions.

STAGE 4. Another inspection of the site after the enclosure has been removed.

Q3. What is the name of the organisation that offers accreditation for the sampling and testing of air?

The United Kingdom Accreditation Service. (UKAS)Enhanced air management.

Q4. What test certificates come with a fully operational decontamination unit.

Air test from the last time it was used, electrical test, gas test and a test certificate for the negative pressure unit located in the dirty end. (D.O.P.)