

19 July 2010

DRAFT

Code of Practice

for the

Management of Exposure to Asbestos in Workplaces

**Draft Safety, Health and Welfare at Work (Exposure to
Asbestos) Regulations 2010 (S.I. ... of 2010)**

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Foreword

The Health and Safety Authority, with the consent of, Minister of State at the Department of Enterprise, Trade and Innovation, and following public consultation, publishes this Code of Practice, titled *Code of Practice for the Management of Exposure to Asbestos in Workplaces*, in accordance with section 60 of the Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005).

The Code of Practice provides practical guidance on observing the provisions of the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2010 (S.I. No. ... of 2010). Inter alia, the Code of Practice, in Part 4 “Lower Risk Asbestos Works”, transposes Article 3(4) of Directive 2009/148/EC of the European Parliament and of the Council of 30 November 2009 on the protection of workers from the risks related to exposure to asbestos at work (codified version) -

“4. Member States shall, following consultation with representatives from both sides of industry, in accordance with national law and practice, lay down practical guidelines for the determination of sporadic and low-intensity exposure, as provided for in paragraph 3.”.

The Code of Practice is relevant to employers, designers, architects, contractors (construction and demolition), supervisors, asbestos removal employers and operatives, asbestos consultants, surveyors and analysts, allied trades, maintenance operatives etc. and others who could potentially be at risk from exposure to asbestos fibres while at work, or require others to do such work.

The aim of the Code of Practice is to provide practical advice on the necessary precautions to prevent exposure to asbestos fibres or, where this is not reasonably practicable, to reduce exposure to asbestos fibres.

This Code of Practice comes into operation on 2010. Notice of the publication of this Code of Practice, was published in the Iris Oifigiúil of 2010.

On the use of codes of practice in criminal proceedings, section 61 of the 2005 Act provides as follows:

“61.—(1) Where in proceedings for an offence under this Act relating to an alleged contravention of any requirement or prohibition imposed by or under a relevant statutory provision being a provision for which a code of practice had been published or approved by the Authority under section 60 at the time of the alleged contravention, subsection (2) shall have effect with respect to that code of practice in relation to those proceedings.

(2) (a) Where a code of practice referred to in subsection (1) appears to the court to give practical guidance as to the observance of the requirement or prohibition alleged to have been contravened, the code of practice shall be admissible in evidence.

(b) Where it is proved that any act or omission of the defendant alleged to constitute the contravention—

(i) is a failure to observe a code of practice referred to in subsection (1), or

(ii) is a compliance with that code of practice, then such failure or compliance is admissible in evidence.

(3) A document bearing the seal of the Authority and purporting to be a code of practice or part of a code of practice published or approved of by the Authority under this section shall be admissible as evidence in any proceedings under this Act.”

Robert Roe
Assistant Chief Executive Officer and Secretary to the Board
Health and Safety Authority

1.0: Introduction

Scope of the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2010 (S.I. No. ... of 2010)¹

The Regulations specifically refer to the six types of asbestos, although the most common types found in Ireland are Crocidolite (Blue), Amosite (Brown) and Chrysotile (White) asbestos.

The Regulations relate to all employees who may be at risk from exposure while at work should exposure occur to any material or product containing asbestos fibres, that could be released and then inhaled by those employees.

The Regulations apply to all places of work and all sectors of work where asbestos containing materials (ACMs) may be present, including premises, buildings, installations, power stations, farms, vehicles, ships, aircraft, factories, plant and equipments, including temporary or remote sites.

The requirements of the Regulations must be considered by employers, designers, architects, contractors (construction and demolition), supervisors, asbestos removal employers, and operatives, allied trades, asbestos consultants, surveyors and analysts, maintenance operatives etc. and others who could potentially be at risk from exposure to asbestos fibres while at work, or require others to do such work.

General duties of employers

Where an employer requires work activities to be performed by employees which could involve exposure to asbestos fibres that employer must firstly perform, or arrange to have performed, a risk assessment to ensure that the safety and health of his or her employees is not put at risk.

This assessment should be undertaken having regard to the nature of the work to be performed, the time required to do the work and the degree of exposure which could result during the work activity. On this basis, if there is the possibility of exposure to asbestos fibres occurring, the employer must take the appropriate measures to ensure the safety and health of

¹ These regulations transpose Directive 2009/148/EC on the protection of workers from the risks related to exposure to asbestos at work

those employees involved including the use of engineering controls etc as appropriate based on the risk assessment.

The appropriate measures include use of appropriate signs and demarcation of areas where the work is to be performed, ensuring that only those essential to the work are allowed to enter the area and indicating that no smoking should happen in that area. It is important also that employees are given separate clean areas to eat and drink their food, i.e. away from the area where asbestos dust may be present.

Based on the risk assessment and when all other measures have been implemented, employers must provide appropriate personal protective clothing and protective equipment necessary to do the work safely and without risk to health. This will include items such as suitable disposable coveralls, shoes, masks etc. Separate and clean storage facilities should be provided so that employees may store their non-work clothing to avoid the risk of it being contaminated with asbestos dust.

It is essential that any personal equipment provided is checked and examined before each use. It should also be cleaned properly before being stored at the end of use. Employees using such equipment must report any defect or problems immediately to their employer and must not use faulty equipment.

Employers must limit the number of persons likely to be exposed, ensure that work processes and work systems are designed so as to prevent or reduce the generation of asbestos dust and prevent the spread of any such dust produced, including the full scope of the work activity, i.e. handling, storage, and collection of waste.

The level of training, information and instruction that must be given is relative to the level and severity of the risk, based on the risk assessment and on the work to be performed. Every employer should ensure that adequate information, instruction and training is given to all employees who are, or are liable to be, exposed to asbestos, and those who supervise such employees. The self-employed should also have a similar level of knowledge and competence.

The Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2010 set a single control level (exposure limit value) for all types or mixtures of asbestos types of 0.1 fibres per cm³. Exposure must be less than **0.1 fibres per cm³ as an 8-hour time-weighted average**

(TWA), by the use of respiratory protective equipment if exposure cannot be reduced sufficiently using other means.

Other key legislative requirements

As with any work activity the requirements of the Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005), and the Safety, Health and Welfare at Work (General Application) Regulation, 2007, apply and must be considered with respect to the protection of workers at the place of work. In addition, as regards specific work activities involving working with materials containing asbestos, particular attention must be taken concerning the requirements and control measures as outlined in the following legislation:

Safety, Health and Welfare at Work (Construction) Regulations 2006 (S.I. No. 504 of 2006).

These Regulations are referred to in the Explanatory Note to the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2010 (S.I. No. ... of 2010). They place duties on clients, project supervisors for the design process and construction stages of work, as well as on designers and contractors to ensure that the health and safety aspects of the work are taken into account, and then co-ordinated and managed effectively throughout all the stages of a construction project. This includes all stages in the lifecycle of a project, from conception, design and planning through to the execution of works on-site and subsequent construction, maintenance and repair, refurbishment, removal, demolition etc.

Under these Regulations a preliminary health and safety plan must be drawn up by the project supervisor for the design process (PSDP) on most construction projects. This plan must specify, among other items, any particular risk which exists at the premises, including the presence of asbestos-containing materials.

In the majority of situations work activities involving materials containing asbestos (including asbestos cement) are covered within the definition of 'construction work' and so the Construction Regulations apply to this type of work activity. If any doubt exists regarding the overall description or nature of the work, clarification should be sought and specific reference made to the definition in the Regulations, including its inferred interpretation. In particular, Schedule 1 to the Regulations refers to work involving 'particular risk', i.e. involving materials containing asbestos.

The Regulations require that:

- When planning works, clients must appoint project supervisors to identify and provide information about the location, type and condition of asbestos containing materials.
- Designers should take account of this information in their designs and, based on risk assessment, should remove or reduce the need to work with asbestos containing materials, where possible.
- Project supervisors should ensure that information about asbestos, relevant to the work in hand, is available to designers and contractors as appropriate.
- The main contractor on-site should ensure that individual contractors are aware of the relevant information, and all workers should be briefed.
- Anyone arranging for persons to undertake construction work should be reasonably satisfied that their appointees are competent to undertake the work safely and without risk to health.
- Where work with asbestos containing materials is part of the construction work, employers should provide employees with sufficient information, training and instruction to ensure that they are aware of the risk and the control measures, safe practices and safe systems required to perform their work activities in a safe manner.
- At the end of a project, a safety file, including relevant information about asbestos, should be prepared for the client.

Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) Regulation.

The placing on the market, the supply and use of asbestos fibres of all types and of products containing asbestos fibres is now prohibited under the EU Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) Regulation.

The restriction on asbestos fibres and products containing these fibres that applies in Ireland is contained in Annex XVII of the REACH Regulation. The legislation prohibits the use, re-use, sale, supply, further adaptation etc. of materials containing asbestos fibres. The special labelling requirement for asbestos fibres and products containing asbestos fibres being placed on the market (permitted under specific derogations) still apply. The restriction conditions for asbestos fibres can be found in entry no. 6 of Annex XVII of the REACH Regulation, amended by Regulation (EC) No. 552/2009.

Employers have additional responsibilities under other legislative requirements that would be directly relevant to working with asbestos. These include the Safety, Health and Welfare at Work (Carcinogens) Regulations 2001 (S.I. No. 78 of 2001), the Safety, Health and Welfare at Work (Confined Spaces) Regulations 2001 (S.I. No. 218 of 2001) and the Safety, Health and Welfare at Work (General Application) Regulations 2007 (S.I. No. 299 of 2007) as amended by the Safety, Health and Welfare at Work (General Application)(Amendment) Regulations 2007 (S.I. No. 732 of 2007) and the Safety, Health and Welfare at Work (General Application)(Amendment) Regulations 2010 (S.I. No. 176 of 2010).

Presence of asbestos in workplaces

For the purpose of this Code of Practice, asbestos is the name given to a naturally occurring fibrous form of mineral silicates which form part of the amphibole and serpentine groups.

There are three main types of asbestos which have been commonly used in the construction industry: **crocidolite**, **amosite** and **chrysotile**, often described as blue, brown and white asbestos respectively. As a naturally occurring material, asbestos is mined and then broken down into groups of loose fibres which are used in varying quantities in the manufacture of a wide variety of products. The presence of asbestos fibres in these finished products may not be obvious, and the different types of asbestos cannot be distinguished by their appearance or colour.

Asbestos containing materials (ACMs) have been widely used throughout the world in buildings and structures as a construction material for a number of purposes including fireproofing, thermal insulation, electrical insulation, sound insulation, decorative plasters, roofing products, flooring products, heat resistant materials and gaskets. Further examples are included in Appendix 1.

In Ireland, significant amounts of ACMs were imported in the last century for use in the construction of buildings and structures. Because of the wide use of ACMs considerable amounts still remain which, so long as they are maintained in good condition and not disturbed, do not present a significant risk.

When ACMs are damaged or disturbed, asbestos fibres may be released into the air which if breathed in can cause serious, and often fatal, diseases. The types of work that release fibres include, for example, drilling holes with power tools, sawing or sanding material. Simply working near to ACMs might result in disturbance, particularly if it is in poor condition.

Health effects from asbestos

Breathing in asbestos fibres can lead to asbestos-related diseases, which kill more people than any other single work-related illness. The diseases can take many years to develop, and there are no immediate changes in someone's health after breathing in asbestos.

The main diseases, described in more detail below, associated with inhalation of asbestos fibres are asbestosis (a scarring of the lung tissue), two kinds of cancer (mesothelioma and asbestos related lung cancer) and a diffuse pleural thickening (a non-malignant disease of the lung lining). All varieties of asbestos are Class 1 carcinogens; that is they are known to cause cancer in humans.

- **Asbestosis:** fibres penetrating deep into the lung can cause scarring of the tissue, which restricts breathing, leading to decreased lung volume and increased resistance in the airways. It is a slowly progressive disease with a latency period (the time between exposure to asbestos and the occurrence of disease) dependant on the magnitude of exposure.
- **Asbestos-related lung cancer (bronchial carcinoma):** a malignant tumour of the lungs' air passages. The tumour grows through surrounding tissue, invading and often obstructing air passages. The latency period for lung cancer is on average 20-30 years. Smoking greatly increases the risk of developing asbestos related cancer.
- **Mesothelioma:** a cancer of the cells that make up the lining around the outside of the lungs and inside of the ribs (pleura) or around the abdominal organs (peritoneum). By the time it is diagnosed it is almost always fatal. Mesothelioma usually has a long latency period averaging 30-40 years, but there have been cases where the latency period has been much shorter (around 15 years). As the frequency, duration and level of exposure increases, so does the risk of developing the disease.
- **Pleural plaques:** these form on the outer layer of the pleura, and are collections of fibrous tissues. They are known to occur after either occupational or environmental exposure to asbestos, and are an indication that a person has been exposed to asbestos, but can also be due to other causes. They may precede more serious asbestos-related diseases, but are not usually disabling in their own right.

- **Pleural effusion:** this disease is the most common disorder in the earlier years of exposure, and consists of an accumulation of fluid in the pleural lining of the lung.

Asbestos containing materials can only pose a risk to health if the asbestos fibres become airborne and are then inhaled. Exposure to crocidolite and amosite asbestos is known to be more hazardous than chrysotile, **but all types of asbestos are dangerous and there is no 'safe' level of exposure.** The risk of developing asbestos-related disease will increase as the frequency, duration and level of exposure increases.

Workers at risk from exposure to asbestos fibres

As the risk from exposure to asbestos relates to the risk of inhaling fibres, those persons at work who, whether intentionally, unwittingly or consciously disturb ACMs, may cause asbestos fibres to be released into the air which can be inhaled.

Those employed to remove ACMs know in advance that they are working with ACMs, this type of activity will cause the release of asbestos fibres and the work must be done in a controlled and safe manner to reduce the risk of release and spread of asbestos and to control any remaining risk to prevent exposure to those employees or others that could be affected by that work activity.

During any refurbishment, renovation or demolition work, employees can potentially disturb ACMs and release asbestos fibres. Therefore, it is essential that, before any refurbishment, renovation or demolition works commence, all ACMs must be located and identified. An assessment will then need to be carried out in order to establish if these ACMs are at risk of being disturbed or whether they should be removed safely before any other works begin.

Workers such as painters, carpenters, plumbers, electricians, computer/air conditioning installers etc. are all at risk of disturbing ACMs, during the course of performing their own work activities and so could potentially be exposed to asbestos fibres.

Others workers at high risk, especially from unintentional or uncontrolled exposure, are maintenance workers, boiler operators, caretakers, general repair persons etc, who during the course of their normal work and routine could unwittingly disturb ACMs if they do not know of their existence or that the materials they are working on or with contain asbestos fibres. Therefore, any ACMs must be identified and located and an assessment performed before

these workers begin their activities. This allows the work to be designed, planned and performed safely.

Asbestos awareness training should be provided for all persons whose work could foreseeably expose them to asbestos whilst carrying out their normal day-to-day work. In particular it should be given to all demolition workers and those working in the refurbishment, maintenance and allied trades where it is foreseeable that their work will disturb the fabric of the building. See Section 2 for further details on scope of awareness training.

Public Consultation Draft

2.0 Management of asbestos in workplaces

Asbestos Management Plans

Exposure to asbestos fibres must be, so far as is reasonably practicable, prevented. It is important to remember that as long as ACMs are not damaged or disturbed and remain in good condition; the risk of exposure from release of fibres is minimal and should not present any threat to the health of those occupying a building. Such materials, in good condition, do not necessarily require removal but should be assessed regularly and managed to ensure that their condition does not deteriorate.

The Regulations require that no work be undertaken which may expose employees to asbestos and to carry out a risk assessment to determine the presence of asbestos in the workplace. Therefore, an essential step in the process of managing the exposure to asbestos in workplaces is to establish an **Asbestos Management Plan (AMP)** which aims to record the presence of ACMs and the manner in which exposure to asbestos fibres is managed, both during normal occupation and when work which may disturb ACMs is planned.

The AMP should be prepared with full consultation, involvement and information sharing between all parties responsible for the workplace and be communicated to all employees or self employed persons, including contractors and maintenance workers, who use the premises as a workplace.

Any decision reached that there are no ACMs present in a workplace must be capable of being justified by adequate evidence. It is considered reasonable to assume that any building built after the year 2000 is unlikely to contain ACMs.

The asbestos management plan should include

1. An asbestos register. The register should include:
 - ✓ The identification of asbestos containing materials that may be in the workplace
 - ✓ An assessment of risk from any such asbestos containing materials
2. Identification of measures required to be carried out to ensure that any risks from exposure to asbestos containing materials are controlled;
3. Arrangements for dealing with any accidents, incidents and emergencies;

4. Arrangements for monitoring and reviewing the effectiveness of the asbestos management plan.

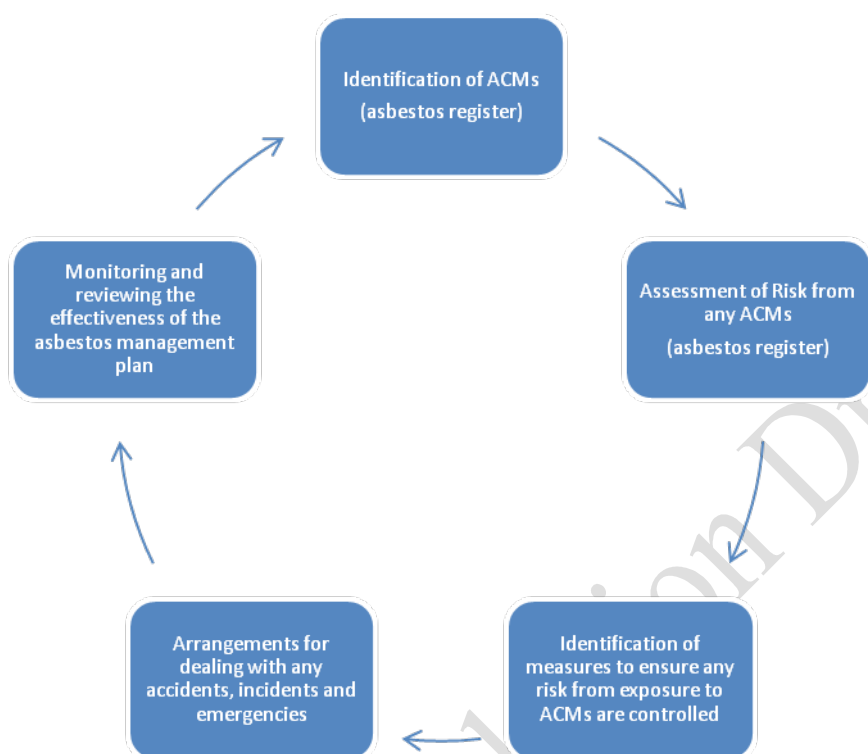


Figure 1 - The Asbestos Management Plan

Asbestos registers

The initial step in determining if ACMs are present in a building can be assisted by reviewing building plans or other documentation, such as specifications, that may exist, but in many situations not all work which has been carried out on the building or structure may have been recorded. Anyone who may be able to provide more information should be consulted, including members of staff who are familiar with the premises. Any information that has been provided must be checked for accuracy.

In practice, in most cases there is insufficient evidence available to justify a decision that no ACMs are present. In such cases an **asbestos survey** should be carried out to determine whether or not there may be any asbestos present on the premises and its condition checked. All areas of the premises such as storage areas, corridors, yards, sheds, outbuildings, service ducts, corridors, vertical risers and external pipe runs should be included - in fact any part of

the premises where asbestos might have been used. Fixed plant and machinery, like printing machines and parts of process plant, and also mobile units which only come onto the premises from time to time, must also be included.

It is essential that the person undertaking the survey is competent to undertake the task. The HSE (UK) publication '*Asbestos: The Survey Guide*' HSG 264, provides guidance to those carrying out surveys, and contains useful information for persons who commission surveys such as building owners, project supervisors for design stage of demolition projects etc.

The person or persons responsible for surveying the premises have to use a high level of subjective assessment, and need adequate training, experience and time to carry out the survey. It is important that procedures used for conducting the survey, assessing and documenting the findings are clearly recorded. The surveyor can be an individual or an organisation.

Surveyors should hold the British Occupational Hygiene Societies (BOHS) proficiency module P402 (surveying and bulk sampling) as a minimum. Those individuals conducting analysis of samples taken should hold the BOHS proficiency module P401. Both individuals and organisations engaged in analysis of bulk samples should participate in the Asbestos in Materials Scheme (AIMs), a UK national proficiency testing programme for bulk asbestos analysis.

Individuals can demonstrate they have adequate levels of competence through having personal certification for asbestos surveys from a certification body which has been accredited by the United Kingdom Accreditation Service (UKAS) or Irish National Accreditation Board (INAB) under ISO/IEC 17024. Personal certification provides assurance that an individual has obtained a defined level of competence to carry out specific activities. There is currently one accredited scheme : Asbestos Building Inspectors Certification Scheme (ABICS) which is operated by the Faculty of Occupational Health as part of the British Occupational Hygiene Society (BOHS).

Organisations who offer to undertake asbestos surveys can demonstrate adequate levels of competence through having accreditation from the Irish National Accreditation Board (INAB) to ISO 17020 *General criteria for the operation of various types of bodies performing inspection*. Accreditation provides assurance that an organisation employs competent individuals and that there is a quality system within which those individuals are required to

work. If personnel are being employed to identify ACMs through sampling and analysis protocols accredited by UKAS or INAB would indicate that they are likely to be competent.

In accordance with Section 18 of the Safety, Health and Welfare at Work Act 2005, an employer, before employing anyone to undertake a survey, is strongly advised to check that the person employed is competent to undertake the type of survey required.

Types of asbestos surveys

For the purposes of managing the exposure to asbestos, there are two different types of asbestos survey as defined in the HSE (UK) publication '*Asbestos: The Survey Guide*' HSG 264:

- "Management" survey
- "Demolition/refurbishment" survey.

A **Management survey** is undertaken to address the risks from asbestos associated with the continued use of the building (i.e., normal occupancy and activities and associated maintenance). This type of survey is designed to ensure that no-one is harmed by the continued presence of asbestos in premises (i.e., ACMs remain in good condition and that no-one inadvertently disturbs ACMs during maintenance and other work). The purpose of the survey is to locate, as far as is reasonably practicable, the presence and extent of any suspect ACMs in the building, and assess their condition.

All areas should be accessed and inspected as far as reasonably practicable. This includes under carpets, above false ceilings and inside risers, service ducts, lift shafts etc. It may involve minor intrusive work. The degree of disturbance will depend on the extent of intrusion that is, or will be, necessary for normal maintenance activities. The areas to be sampled inside buildings should normally be unoccupied during sampling.

All workplace buildings normally require a management survey as part of the on-going arrangements to manage asbestos, and to assist with the preparation of the asbestos register.

Where demolition or major refurbishment is planned, a management survey is not sufficient to ensure that all ACMs in a building have been identified. A **Demolition/refurbishment survey**, a far more intrusive survey than a management survey, designed to establish the full extent and complete presence of asbestos, must be undertaken of the relevant areas prior to work starting.

The intention of a demolition/refurbishment survey is to locate all the ACMs, including those which are hidden, so that they can be removed before the demolition or refurbishment takes place. This will involve intrusive and destructive inspection work in order to penetrate all parts of the building structure.

As aggressive inspection techniques will be needed to break through walls, ceilings, claddings and partitions, demolition and refurbishment surveys should only be conducted in unoccupied premises to minimise the risks to persons on the premises. Ideally the building should not be in service and all furniture and furnishings removed.

In the event that only certain parts of a building are to be upgraded, refurbished or demolished, only the areas affected need to be subject to the intrusive demolition/refurbishment survey. In such instances, effective segregation of the survey area must be provided (e.g., full floor-ceiling partition). Under no circumstances should people other than the surveyors involved in the work remain in the rooms or areas of buildings when intrusive sampling is performed. Precautions must be taken to control the risks from exposure to asbestos during the sampling process.

Assessment of risk from any asbestos containing materials

The person having responsibility for the maintenance or repair of the workplace building or structure must carry out an assessment of the risks posed by the presence of any ACMs. The management survey report, therefore, has to provide sufficient information to enable an asbestos register to be prepared and for an assessment of the risks posed by the presence of any ACMs to be carried out.

For any presumed or known ACMs this will include:

- ✓ The location, extent and product type (e.g., cement, board, lagging etc);
- ✓ The accessibility, condition and surface treatment of the materials,
- ✓ Their ability to release fibres into the air should they be disturbed in some way; and
- ✓ The type of asbestos (e.g., crocidolite, amosite or chrysotile).

The risk assessment must evaluate the risk to persons posed by each area of ACM. In addition to the factors listed above, consideration will need to be given to the foreseeable types of maintenance or other disturbances which may take place.

ACMs which:

- Have already deteriorated or been damaged;
- Are likely to be disturbed in the course of planned work;
- Are very accessible and likely to be disturbed or damaged in normal use;
- May be damaged by vandalism

will present a greater risk, and must be given high priority for action e.g., repair, seal,enclose or remove.

Each separate location and type of presumed or known ACM will need to be assessed individually. This will establish which of these are most likely to potentially release high airborne levels of fibres, and should be taken into account when determining what remedial action is required, and which materials should have the highest priority for action (repair, sealing, removal or leaving in place and monitoring the condition).

The most significant risk will be from asbestos in areas where maintenance or reorganisation is needed regularly, particularly if those areas are subject to heavy use during the normal working day; or where there is asbestos which is liable to damage (for example, where it might be hit by forklift trucks or heavy trolleys, or maintenance of air conditioning and heating systems will disturb it). The risk will be greater still if the ACM is in a confined space and/or an unventilated area. Remember that the potential for disturbance must be considered.

For example, a maintenance worker using power tools close to an ACM could disturb it. Asbestos in a very poor condition might be disturbed simply by somebody just walking past. There is unlikely to be any significant risk from ACMs in areas that are unoccupied, inaccessible, and not likely to be disturbed by maintenance activities.

Even when ACMs are in parts of the premises where people regularly work they will not present a high risk to health provided that: the ACM is in good condition and fibres cannot escape into the air; it is not prone to accidental damage; and there is a system in place to prevent anyone from working on it without proper protection.

Where it is considered that there may be a risk of asbestos fibres being released, appropriate action must be taken to control the risks.

Further guidance on the assessment and management of asbestos in buildings is contained within the HSE (UK) publication '*A comprehensive guide to managing asbestos in premises*' HSG227.

It should be noted that the assessment of risk of any ACMs identified during a demolition/refurbishment survey is not required, as all such ACMs will have to be removed prior to the work commencing.

Controlling exposure to identified asbestos containing materials

The next stage in the preparation of the asbestos management plan is to decide on the manner in which the risk of exposure to asbestos fibre is going to be controlled. The proposed actions, and the justification for their selection, must be recorded in the asbestos management plan.

Possible actions may include:

- Leaving the ACMs in place and monitoring their condition;
- Encapsulation of the ACM to reduce the likelihood of fibre release;
- Removal of the ACM.

Although asbestos is a hazardous material, it can only pose a risk to health if the asbestos fibres become airborne and are then inhaled. ACMs only release fibres into the air when they are disturbed, which may happen because of accidental or deliberate damage or disturbance.

If the ACMs are in good condition and are unlikely to be damaged or disturbed, then it may be better to leave them in place and to introduce a monitoring regime.

Where ACMs are in places where they will be prone to damage, a monitoring regime is unlikely to be sufficient. There are also instances where ACMs will have to be removed despite them being in good condition, for example prior to demolition, major building work or planned maintenance which is likely to disturb them.

ACMs which are only slightly damaged can be repaired, encapsulated or enclosed. These options are worth considering if no major alterations or refurbishment to that area of the premises is planned.

ACMs in poor condition, that is where the material's exposed surface has substantial areas of visibly loose fibres that may be released by very slight disturbance, or any material which has suffered significant damage or deterioration, will usually need to be removed.

A decision flow chart is provided below which illustrates the approach to take when deciding on the most appropriate option for management of asbestos containing materials.

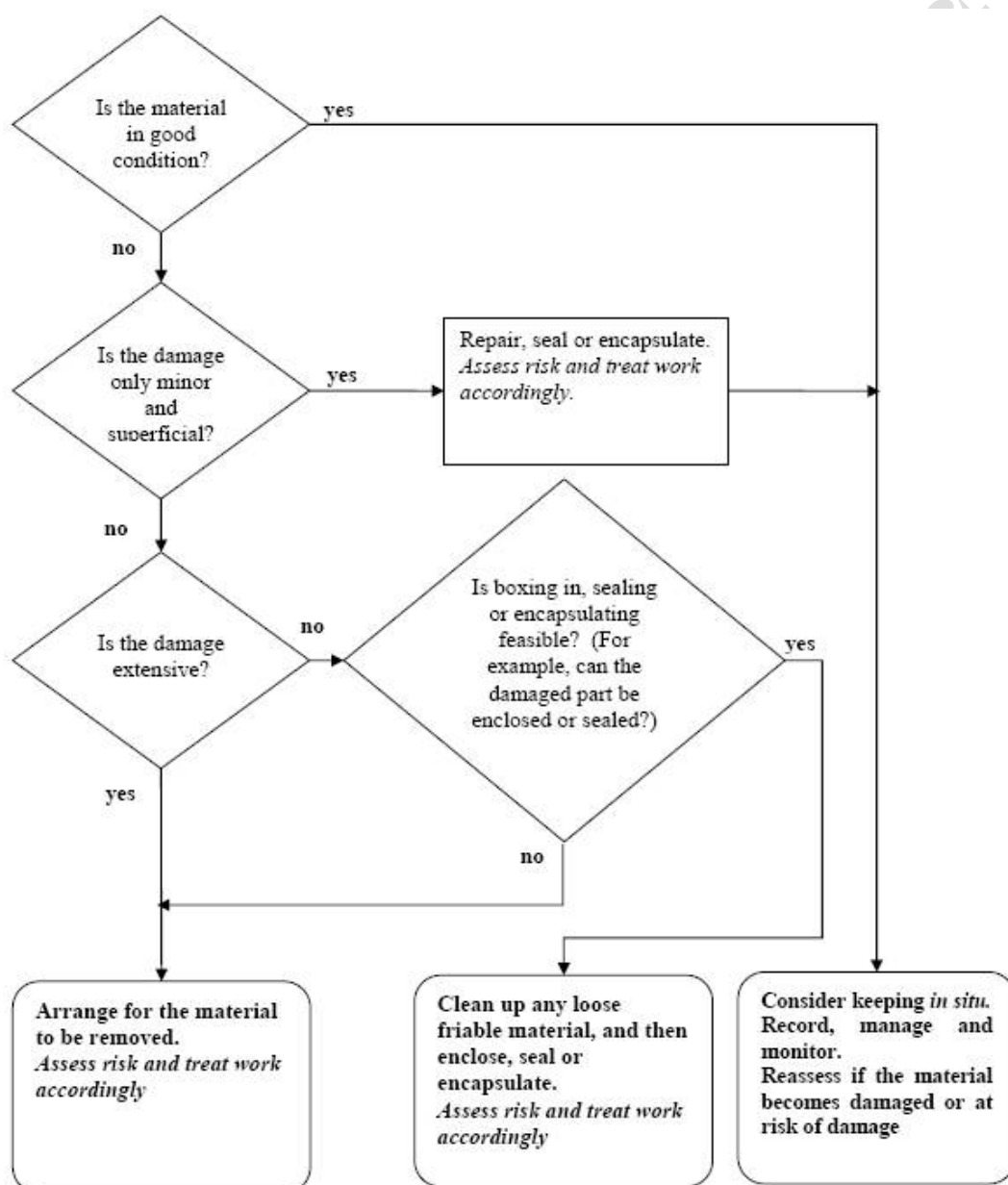


Figure 2 Decision flow chart for managing asbestos containing materials

Where it is decided to leave ACMs in place, including those which have been sealed and/or repaired, they should be clearly identified, for example with suitable asbestos warning signs, see figure 3 (except where this may cause undue alarm, such as in public places).

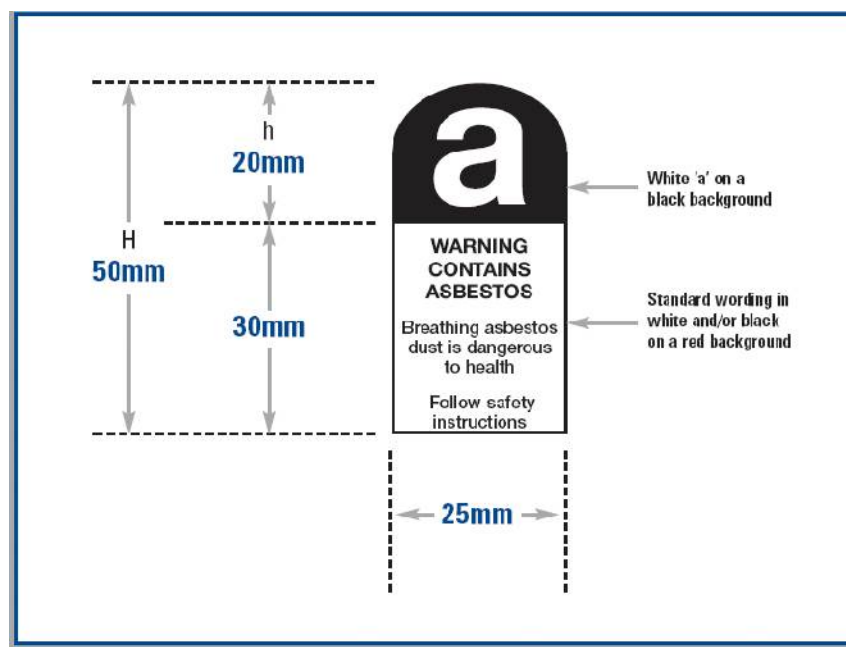


Figure 3: Asbestos Label

Arrangements must also be made to carry out inspections at regular intervals to ensure that the condition of the ACM does not deteriorate, and/or that there has not been an increase in the potential risk to persons of exposure to asbestos fibres due to, for example, a change of use of an area. A record of all such inspections should be maintained and signed off by a competent person.

The time period between monitoring will vary depending upon the type of ACM, its location and the activities in the area concerned, but would not be expected to be more than 12 months in most cases. ACMs in locations where there is a lot of activity will need more frequent monitoring. The surveyor may make recommendations in this respect.

Decisions about what to do in order to manage the risk from each area of ACMs in the premises must be recorded in the asbestos management plan, and any records/ drawings must be kept up to date. For example, if a decision is made to remove ACMs, once this is done the management plan and any relevant drawings/ records must be updated.

Asbestos awareness and management training

This type of training should be provided for all persons whose work could foreseeably expose them to asbestos whilst carrying out their normal day-to-day work. In particular it should be given to all maintenance personnel where it is foreseeable that their work will disturb the fabric of the building.

In general terms training should cover:

- The properties of asbestos and its effect on health, including the increased risk of lung cancer for those who smoke;
- The types, uses and likely occurrence of asbestos and ACMs in buildings and plant;
- How the condition of the material or product affects the ease of release of fibres
- The general procedures to be followed to deal with an emergency, for example inadvertent damage to an ACM; and
- How to avoid the risks from asbestos, including the importance of checking that an appropriate asbestos survey for the specific workplace has been carried out and any ACMs identified and properly managed.

For those who may have a responsibility for implementing and monitoring the asbestos management plan for large workplaces or a portfolio of buildings, specific training such as the proficiency module P405 'Management of Asbestos in buildings' provided by the British Occupational Hygiene Society would be recommended.

Arrangements to manage accidents, incidents and emergencies

Employers should have emergency procedures in place for any accident, incident or emergency relating to asbestos; for example, accidental disturbance of ACMs during building work, unless the amount of asbestos in the premises is so small that any risk would be minimal. These procedures should be contained in the asbestos management plan, and include the steps to be taken to minimise the risks of exposure to asbestos and measures in place to carry out emergency repairs.

In any circumstance where there is an accidental uncontrolled release of asbestos into the workplace, the cause of the uncontrolled release should be identified and adequate control regained as soon as possible.

Any persons in the affected area must leave immediately. All tools and materials should be left in the potentially contaminated area. The area should be sealed to prevent further access and to prevent the spread of asbestos fibre to other areas. Where persons have been

contaminated with visible dust or debris then arrangements should be made to decontaminate those affected. Any clothing or personal protective equipment should be decontaminated or disposed of as contaminated waste.

Appropriate arrangements must be in place to ensure that the extent of the contamination is assessed by a competent person and the area that may have been contaminated by asbestos fibres is thoroughly cleaned of visible debris or dust. This work should only be carried out by operatives or contractors who have been trained and are competent to carry out the work, and who have the appropriate equipment. In the case of a significant disturbance of asbestos insulation or asbestos insulation board, this will almost certainly require the use of a specialist asbestos contractor.

Air sampling should also be carried out, where it is necessary, to ensure that the remedial measures taken have been effective in reducing the potential for exposure to asbestos fibres.

If an employee has been potentially exposed to asbestos fibres in an incident, a note that the exposure has occurred should be added to the employee's personal record. A copy of the note must be given to the employee with instructions that it should be kept indefinitely. It is also recommended that they consult their GP to have a note of their possible exposure made on their personal medical record, which should include date(s), duration, type of fibre and likely exposure levels (if known).

Monitoring and reviewing the asbestos management plan

The management plan should be reviewed at least every 6 months to ensure that the management processes remain effective and the arrangements are being properly implemented.

Any changes in the arrangements or circumstances affecting the management of exposure to asbestos, such as new staff having responsibility for implementing the arrangements, or the deterioration or removal of ACMs, must be recorded and the asbestos register updated accordingly.

3.0 Higher risk work with asbestos

Specialist contractors

Most work with ACMs which can lead to a high release of asbestos fibres is restricted to specialist asbestos removal contractors. In accordance with Section 18 of the 2005 Act, the importance of careful selection of a suitable contractor to undertake repair or removal of ACMs cannot be overestimated.

The Regulations (Schedule 4) require such companies to provide evidence of their ability to carry out the work to clients, inspectors etc on request. This includes the following:

- Company safety statement and associated risk assessments;
- Training plan and individual training certificates;
- Individual training records for employees (operatives);
- Confirmation of health assessments (Medical certificates) of employees undertaking the asbestos work;
- Respiratory protective equipment face fit certificates for employees undertaking the asbestos work; and
- Relevant experience

A client should also confirm appropriate insurances e.g. public and employer liability are held by the specialist contractor and request references.

In order to ensure that the contractors are all quoting on the same basis for a particular job, it is recommended that a client or his representative provide or confirm the following information to the contractors.

- ✓ the scope of the work to be carried out;
- ✓ the results of the relevant parts of the survey of the premises;
- ✓ site plans;
- ✓ information about site-based hazards that the contractors may need to take into account;
- ✓ site safety rules including permit-to-work regimes;
- ✓ access to the working area including siting of decontamination facilities and waste skips;
- ✓ access to water and power supplies;
- ✓ use of site facilities;

- ✓ time constraints;
- ✓ penalty clauses;
- ✓ whether the work area is unoccupied or if there will be people working near it;
- ✓ emergency procedures;
- ✓ arrangements for liaison during the contract;
- ✓ whether the work will be supervised/managed by a third party; and
- ✓ any other issues that might affect the way the contractors will carry out their work.

The information should also include a list of the information you require to be included in the quote to be prepared. The list below indicates the range of information that a contractor should provide in addition to the price for the work:

- ✓ the estimated duration of the contract;
- ✓ the estimated number of personnel expected to be on site;
- ✓ risk assessment(s) for the job including estimated exposures for removal
- ✓ plan of work (method statement) –see below;
- ✓ emergency procedures; and
- ✓ a possible start date.

The specialist contractor will almost always need to visit the site to assess the job in order to provide a detailed quote. The contractors should be made aware of any constraints on their work which may affect costs, such as working times, and any site safety training requirements.

In most cases a minimum of three operatives (including the site supervisor) will be required on site at any one time when notifiable asbestos removal work is being undertaken. An ‘outside man’, i.e., an operative outside of the working enclosure, must be available at all times whilst work is taking place in the enclosure. Although in practice this person is often the supervisor, this need not be the case.

If consideration is being given to using less than three operatives on a project, this must be clearly justified in the Plan of Work.

Exposure levels associated with higher risk asbestos work

The following table illustrates the likely exposure levels from a variety of work activities associated with higher risk asbestos containing materials. It also includes exposure levels for

work activities on asbestos cement for comparable purposes. These exposure levels were derived from studies undertaken by the UK Health and Safety Executive.

Some of the results indicate the consequences of unacceptable bad practice. Where controlled stripping techniques are used but not applied correctly, they can lead to high airborne fibre concentrations. For example, poor wetting is often little better than uncontrolled dry stripping.

The exposures quoted are typical values as the same process in different locations may result in higher or lower concentrations. The exposures relate to the work period and are not calculated as time-weighted averages.

Table 1 - Typical exposures during work with asbestos containing materials

Technique	Comments	Typical Exposure (fibres/ml)
Well-controlled wet stripping of lagging and sprayed coatings, using manual tools	Thorough soaking of the lagging with a wetting agent followed by careful removal	Up to 1
Well-controlled wet stripping of lagging and sprayed coatings, using power tools	<i>As above but using power tools (which is NOT to be done)</i>	Up to 10
Stripping of lagging where dry patches are encountered	<i>Demonstrates need to allow thorough wetting</i>	Around 100
Stripping of sprayed coatings where dry patches are encountered	<i>Demonstrates need to allow thorough wetting</i>	Around 1000
Careful removal of whole asbestos insulating board.	Unscrewing (with shadow vacuuming) with the spray application of a wetting agent on unsealed surfaces	Up to 3
Breaking and ripping out asbestos insulating board. Carried out dry with no unscrewing	<i>Bad practice</i>	5-20
Machine drilling asbestos cement	With local exhaust ventilation, or shadow vacuuming	Up to 1
Drilling asbestos insulating board overhead, with no local exhaust ventilation	<i>Bad practice</i>	5-10
Drilling vertical columns. No local exhaust ventilation	<i>Bad practice</i>	2-5
Use of a jig saw on asbestos insulating board. No local exhaust ventilation	<i>Bad practice</i>	5-20
Hand sawing asbestos insulating board. No local exhaust ventilation	<i>Bad practice</i>	5-10

Working methods for higher risk asbestos containing materials

Encapsulation

The removal of existing ACMs can itself present the greatest risk of significant exposure to asbestos fibres. In some cases it may not be necessary to remove the ACMs, and the materials can be protected or encapsulated.

These processes themselves require proper management as control limits may be exceeded, especially when working on asbestos insulating board or thermal insulation. Therefore, encapsulation would require a specialist contractor with an understanding of the techniques to carry out the work, as fibres may be released. Before considering this option, consideration should be given to the following matters:

- ✓ The type and condition of the ACM;
- ✓ Whether the substrate is sound enough to allow the encapsulation to adhere;
- ✓ Whether any water penetration via the substrate will increase the weight on the encapsulation and cause it to fall away from the ACM;
- ✓ Whether further damage could occur due to traffic operations, bird attack or rodent attack vandalism;
- ✓ Whether access is available to allow the process to be effective;
- ✓ Whether the encapsulant will ensure the thermal and acoustic attributes of the structure are maintained; and
- ✓ Whether the approach is simply putting off the day when the asbestos has to be removed at further significant cost.

Various types of encapsulation are available, each suitable for particular applications. Each have their particular advantages, be they 'boxing-in' the ACM with board materials, or the use of bulk brush or spray applied polymeric or cementitious materials. The correct choice depends on the location and condition of the ACM, its ability to take the weight of any encapsulant and the ease in which the encapsulant can be applied to the ACM. Some materials will simply seal the surface and not offer any protection against impact damage.

Removal of asbestos insulation, asbestos insulation board and asbestos coatings

Work involving the removal of asbestos insulation, asbestos insulation board or asbestos coatings must be carried out in a manner that reduces the potential exposure to asbestos fibres to those undertaking the task, and other persons in the vicinity. The contractor carrying out

the removal of ACMs will be expected to include details in the Plan of Work (or method statement) of the control measures that are to be put in place to achieve this aim.

Detailed guidance on methods of removing asbestos insulation, asbestos insulation board and coatings is contained in HSE (UK) publication '*Asbestos: The licensed contractors' guide*' HSG 247. This includes guidance on:

- Controlled asbestos removal techniques;
- The four-stage clearance procedure; and
- Cleaning and disposal of asbestos waste.

The method of removal of the asbestos will have an obvious effect on the amount of asbestos fibre that becomes airborne and the method selected should minimise fibre release. The methods to be used should be clearly stated in the Plan of Work, but uncontrolled dry stripping of asbestos **must never take place**.

There are two broad categories of controlled stripping techniques which can be used to minimise the release of fibres during asbestos removal:

- Controlled wet stripping; and
- Dry stripping with control at source.

The type of method (or combination of methods) used will depend on a number of factors including:

- The type of ACM, e.g., lagging, sprayed coating, board;
- The thickness of the ACM;
- The presence and nature of any coating on the ACM;
- The type and nature of fixing, e.g., nailed, screwed; and
- Miscellaneous factors, e.g., whether pipework is redundant, the material is damaged, accessibility etc.

Enclosures are a fundamental component in the control of the risks associated with the release of asbestos fibres during removal work, and are required for almost all notifiable asbestos removal work. Where consideration is being given to such work without the provision of an enclosure, this should be discussed and agreed with the Health and Safety Authority at an early stage.

The enclosure should be maintained under negative pressure, and the pressure should be as uniform as possible throughout the enclosure. Negative pressure units with pressure monitoring facilities and supplementary air inlets should be located to achieve good air flow and to avoid dead spots. Air movement should be checked during the smoke test following construction of the enclosure.

Each enclosure must have a viewing panel, wherever possible. The use of closed circuit television (CCTV) may be required to enable the work and workers to be inspected without needing to enter the enclosure.

Airlocks and bag locks should be of an appropriate size for the controlled movement of personnel, waste and equipment in and out of the work area.

Detailed guidance on the requirements for enclosures for work with ACMs is contained in HSE publication '*Asbestos: The licensed contractors' guide*' HSG 247.

Maintenance of plant and equipment

This section applies to all forms of equipment used to control levels of dust, such as vacuum cleaners, air extraction equipment and filtration units. All equipment should be subject to regular visual inspection (at the start of every shift), monitoring and maintenance, which should all be recorded. Chapter 2 (Use of Work Equipment) of Part 2 of the Safety, Health and Welfare at Work Regulations 2007 (S.I. 299 of 2007) would apply to all work equipment.

Equipment used in the controlled removal of ACMs should comply with the British Standard *BS 8520-2009 Equipment used in the controlled removal of asbestos-containing materials*.

This British Standard has 3 parts:

Part 1: Controlled wetting of Asbestos-containing materials – Specification (BS 8520-1:2009);

Part 2: Negative pressure units – Specification (BS 8520-2:2009) and

Part 3: Operation, cleaning and maintenance of class H vacuum cleaners – Code of practice (BS 8520-3:2009).

Thorough examination and testing of negative pressure equipment must be carried out regularly e.g. six months in accordance with the manufacturer's instructions by a trained and competent person.

The performance of the negative pressure unit should be checked after it has been thoroughly examined to establish that airflow through the unit, and pressure drop across the HEPA filter, meets the manufacturer's specification. Where the airflow has dropped below its design capacity (e.g., a 2000 cubic feet per minute (cfm) unit is only achieving 1500 cfm), this should be clearly marked on the unit itself and included on the test certificate. The lower figure must be used in ventilation calculations.

Class 'H' vacuum cleaners should be thoroughly examined regularly e.g. six months by a competent person and in accordance with the manufacturer's instructions. The effectiveness of the HEPA filter should be established during these examinations, but a filtration test for the entire vacuum cleaner must be available, not just the HEPA filter.

Defects in any equipment should be reported and corrected as soon as possible. Where a defect may result in exposures above the relevant control limit, the work should be stopped until the defect is repaired and adequate control resumed.

Hygiene measures

Asbestos workers are potentially most at risk of developing asbestos –related diseases. Removal processes by their nature disturb and release asbestos fibres, resulting in operatives and their clothing being contaminated with fibres which can become airborne and thus become inhaled.

Any operative working with asbestos insulation, asbestos insulation board and coatings should therefore be subjected to rigorous decontamination procedures. This will also prevent the spread of asbestos contamination outside the work areas. This is not only important for the operatives themselves but also for others who may become exposed to asbestos fibres which are not removed.

The provision of an appropriate hygiene unit, usually referred to as a decontamination unit, or DCU, is essential for notifiable asbestos work. A DCU is a three stage unit with a shower between a "clean end" and a "dirty end". The DCU should be fully cleanable, with adjustable heated shower and separate areas for clean clothing and for discarding contaminated disposable work clothing. The unit should contain, in a prominent position in the clean end, a copy of the clearance certificate from the most recent asbestos removal job.

A minimum of one shower (decontamination unit) should be available for every four operatives involved in the asbestos work. There should be filtration of waste water to prevent spread of asbestos.

Extract ventilation with a high-efficiency-particulate-air (HEPA) filter produces a flow of air (through grilles) from “clean end” to “dirty end” of the decontamination unit. Self-closing doors maintain the separation of the sections. In cold seasons, the clean end should be heated to provide an adequately warm environment for changing and showering.

Where transiting arrangements are in place (i.e., the DCU is not directly linked to the enclosure) additional procedures, PPE and preliminary decontamination is required at the enclosure before travelling to the DCU for full decontamination.

Advice on appropriate decontamination procedures for asbestos work is contained in HSE (UK) publication ‘*Asbestos: The licensed contractors’ guide*’ HSG 247. It is essential that the procedures selected are strictly followed in order to ensure that the potential exposure to asbestos fibres is controlled.

Plan of Work

A Plan of Work (also referred to as a Method Statement) must be developed and complied with for **all works** which might disturb ACMs. The plan of work must be in writing and drawn up before any work commences. The employer whose employees are intended to perform these work activities is responsible for drawing up the plan.

The plan of work should be discussed and explained to the employees concerned and they must be given information and instruction in the methods and control measures planned to be used on-site, including the use of respiratory and personal protective equipment.

The method and requirements related to decontamination measures must be explained and implemented by all concerned and must be appropriate to the risk from exposure and any possible contamination which could occur while performing the work.

Where any additional risk of exposure arises, other than those identified initially and on which the plan of work was developed, work must be stopped immediately and the plan of

work must be revised and further developed to take account of those changes and the risks involved.

The plan of work must include information on the nature and duration of the planned work, the number of persons working, the address and location of the work, the planned methods and control measures to be used, arrangements relating to keeping the plant, equipment and site clean and the handling, storage and disposal plans for the ACMs. The plan of work must include a site drawing

The following is a summary of the elements which should be considered in a Plan of Work (Method Statement) for removal of ACMs subject to Notification. This list is not intended to be exhaustive, and each job must be considered individually.

1. Scope of Work

- ✓ Name of client
- ✓ Name of Supervisor
- ✓ Full address of site
- ✓ Name of Waste disposal contractor
- ✓ Name of consultant/ air monitoring organization
- ✓ Name of Project supervisor design stage
- ✓ Name of Project supervisor construction stage
- ✓ Names of any other relevant sub-contractors
- ✓ Details of survey carried out – by whom and when
- ✓ Type of asbestos identified
- ✓ Form of asbestos e.g. lagging, spray, asbestos insulating board etc.
- ✓ Location of asbestos e.g. roof space
- ✓ Quantity to be removed e.g. number of bags
- ✓ Number of operatives required including persons working outside enclosure
- ✓ Start and Finish date – to include setting up and dismantling of enclosures

2. Hygiene Facilities

- ✓ Description of facilities to be used e.g. mobile unit complying with HSE (UK) publication HSG247, Appendix 8.1 'Minimum design criteria for asbestos hygiene units'
- ✓ Location of Hygiene facility (shown on site plan)
- ✓ Designated transit route

3. Waste Disposal

- ✓ Bagging system to be used
- ✓ Temporary storage of bags
- ✓ Waste routes (shown on site plan)
- ✓ Skip locations (shown on site plan)

- ✓ Transportation and final disposal arrangements

4. Enclosure (s) of Work (shown on site plan)

- ✓ Construction of enclosure
- ✓ Volume of enclosure
- ✓ Location of airlocks (personnel and bagging locks)
- ✓ Additional screening, if required e.g. heras fencing
- ✓ Details and locations of viewing panels
- ✓ Warning notices

5. Control measures

- ✓ Details of expected exposure levels
- ✓ Specification of negative pressure units
- ✓ Number of air changes per hour
- ✓ Siting of negative air pressure units (shown on site plan)
- ✓ Method of smoke testing and witnessing
- ✓ Type and specification of respirator (positive pressure type)
- ✓ Maintenance arrangements for RPE and equipment
- ✓ Protective clothing
- ✓ Decontamination of employees
- ✓ Specification of vacuum cleaner
- ✓ Examination of controls etc and record keeping

6. Method of Work

- ✓ Wet strip technique to be used
- ✓ Additional local exhaust ventilation required
- ✓ Tools to be used
- ✓ Access equipment
- ✓ Lighting
- ✓ Clearance of waste
- ✓ Additional controls to reduce exposure

7. Decontamination Features

- ✓ Cleaning and vacuuming before leaving enclosure
- ✓ Removal of contaminated overalls
- ✓ Washing of boots and masks
- ✓ Removal of masks
- ✓ Disposal of transit and working overalls

8. Air Monitoring

- ✓ Air sampling plan for duration of works
- ✓ Systems for monitoring and controlling the effectiveness of the enclosure
- ✓ Analysis by which laboratory

9. Final Clearance

- ✓ Final cleaning arrangements
- ✓ Thorough visual examination
- ✓ Air monitoring (see 8 above)
- ✓ Removal of enclosure and disposal
- ✓ Final visual

10. Emergency procedures

- ✓ Fire precautions
- ✓ First aid arrangements
- ✓ Minor incident procedures
- ✓ Major incident procedures
- ✓ Co-ordination with external emergency services

11. Site Documentation

- ✓ Safety Statement (Risk Assessments)
- ✓ Plan of Work (Method statement)
- ✓ Training certificates
- ✓ Medical certificates
- ✓ Face fit certificates
- ✓ Equipment maintenance and inspection records (including test certificates for NPU and H type vacuum cleaners)
- ✓ Record of inspections and tests of enclosures
- ✓ Records of air tests of decontamination unit (DCU)
- ✓ Site Log

12. Other matters

- ✓ Protection of other persons on or near the work site
- ✓ Supervision of job
- ✓ Clients' requirements
- ✓ Work on live plant etc
- ✓ Heat stress
- ✓ Liaison with client/employees
- ✓ Special characteristics of site

A copy of the Plan of Work must be kept at the workplace where the asbestos removal works are taking place for the duration of the works.

Training, Instruction and information

Specialised training is required for workers involved in work with ACMs which is notifiable such as asbestos insulation, asbestos insulation board and asbestos coatings. The training of asbestos removal workers must include practical sessions so that trainees learn how to use and maintain equipment that affects safety e.g. enclosures, personal protective equipment,

respiratory protective equipment, decontamination facilities, dust suppression equipment and controlled removal equipment.

The training should be appropriate for the role for which the person is being trained (for example operative or supervisor) and the nature of the work being trained for and the type of training being provided, i.e., initial training or refresher training. It should allow employees to acquire the necessary knowledge and skills as regards prevention and safety when working with asbestos and asbestos containing materials.

The core syllabus of the training given to all employees should cover the following topics in appropriate detail and in a manner which is capable of being easily understood by the trainees (especially non-nationals):

The topics are outlined below:

- the effects of asbestos on health should cover the relationship between exposure and risk of disease to show the importance of preventing or minimising exposure; and
- the types of products that may contain asbestos, should include more detail on the nature of the products in regard to how that may affect their removal.

Safe working practices would include:

- good planning of the work including good site layout (positioning of equipment such as the airlocks, decontamination unit, shortest, safe route for carrying waste to a secure skip);
- a suitable and sufficient risk assessment covering all aspects of the work and a plan of work detailing the job;
- the preparation of a site prior to erecting an enclosure; including pre-cleaning if required;
- practice in construction of an enclosure, extra protection of the floor and any weak spots;
- ensuring all parts of the enclosure structure can be sufficiently cleaned i.e. no dust/debris traps;
- waste locks, airlocks, viewing panels (and closed circuit TV where needed), negative pressure units including ease of changing pre-filters, leads to power supplies outside the enclosures to allow fuses etc to be changed;
- maintenance of an enclosure in good order, (effectiveness of the ventilation system –

negative pressure unit, integrity of the enclosure, regular inspections, etc); including the importance of smoke testing prior to commencement of work; and

- practical methods of removing asbestos with minimal release of dust, including dust suppression techniques such as wet stripping, prompt bagging of material to prevent spread (on feet, equipment or clothing).

For supervisors:

- how to monitor the effectiveness of techniques;
- cleaning of the enclosure, air locks and hygiene facilities; fine cleaning (working from top to bottom);
- effective communication (including between, inside and outside of enclosure);
- re-cleaning in the event of an enclosure failing to pass clearance tests;
- procedures for cleaning up and dismantling the enclosure;
- use of respiratory personal protective equipment would be extended to include: positive pressure respiratory protective equipment and/or air fed respiratory protection;
- cleaning / maintaining respiratory equipment;
- the importance of face fit testing and factors that can affect or change the face-fit, how to inspect, test, and wear the respirator, and how to clean and maintain it;
- different types of respiratory protective equipment, and their advantages and limitations;
- emergency procedures in the eventuality of the supply (power or compressed air) to a respirator failing in a working situation;
- the possible restrictions (e.g. on visibility) and difficulties in using respiratory protective equipment;
- correct use and maintenance of equipment associated with asbestos removal works; and
- other potential hazards, e.g. asbestos removal at high temperatures, working at heights, erection and use of access equipment for high surfaces;

Training for emergency procedures would cover procedures for:

- aiding someone injured or taken ill in an asbestos enclosure;
- emergency (e.g. fire) evacuation;
- failures of electrical power or equipment (negative pressure, respirators etc);
- leakage detected outside enclosure; and
- loss of water supply to the hygiene unit.

Training for personal decontamination would include:

- the use of airlocks, entry to / egress from the enclosure and to the decontamination unit, where the decontamination unit may be either directly linked to the enclosure or separate;
- changing personal protective equipment, showering and disposal of overalls;
- maintenance of a decontamination unit in good order; and
- personal decontamination in the eventuality of accident or evacuation.

Waste disposal:

- Procedures for bagging and wrapping waste;
- secure containment (e.g. wrapping and /or bagging);
- labelling;
- safe transit via bag lock and designated route from enclosure to secure storage;
- transport of waste from site by an authorised asbestos-waste contractor to an approved waste disposal site; and
- evidence of traceability of waste from site to disposal (e.g. consignment notes).

For those workers, for whom the requirement on medical surveillance cannot be waived, their training should cover:

- Medical examination requirements, including the purpose and importance of medical examination and the need to have certificates showing that medical examination has been completed; and
- the information and advice that workers may be given after a medical examination.

For the supervisors and employers, the training should also cover:

- good planning;
- inspections and testing of equipment (e.g. decontamination unit, enclosure, suppression equipment etc) and how to recognise faults;
- auditing the work in progress;
- monitoring the effectiveness of fibre control techniques;
- reviewing competence and training needs;
- record keeping; and
- the need to closely supervise new operatives.

As well as the practical supervision, the supervisors' and employers training should cover

- producing a risk assessment (for exposure of operatives and others) and a plan of work;
- relevant legislation and Regulations; and
- their roles and responsibilities.

For all the personnel involved in asbestos removal work, their training should provide an understanding of the air sampling and clearance testing that will be undertaken during and after the asbestos removal work.

Providing information and training is not a once off exercise but should be provided at regular intervals e.g. need for refresher training to be assessed annually. Information and training should be reviewed and updated whenever significant changes are made to the type of work carried out or to the work methods used.

Employers must keep records of training given to individual employees and these must be available to an Inspector on request. The records will confirm that employees have received all necessary training and information at the appropriate time. Training records will also provide evidence for compliance with Section 10 of the Safety, Health and Welfare at Work Act 2005 (No.10 of 2005)

Detailed guidance on training for employees, supervisors and others working with asbestos containing materials is set out in the HSE (UK) publication HSG247 '*Asbestos: The licensed contractors' guide*'.

Personal Protective Equipment

Personal protective equipment (PPE) and respiratory protective equipment (RPE) are the last line of defense against exposure to asbestos fibres, and exposure to asbestos should be prevented or reduced to as low as is reasonably practicable by engineering controls before RPE is employed. Once it is established that exposure is liable to exceed the control limit of 0.1 f per cm³, despite the precautions taken, RPE must be provided and worn. This will normally include all notifiable asbestos work.

Various types of RPE are available and it is essential that the RPE selected matches the type of work to be done, including the working environment, the wearer, other PPE in use and the exposure concentrations (expected or measured). In practice, asbestos workers are most likely to wear a limited range of PPE. A Filtering Facepiece (FF) Particulate filter No.3 (P3) mask may be used for various tasks such as site pre-clean, site set-up, enclosure dismantling, waste

handling outside the enclosure and DCU cleaning, whilst a TM3 power-assisted respirator with full face mask and P3 filter(s) is generally required for entry into a live enclosure. Air-fed equipment may be used in some circumstances in place of power-assisted full-face masks.

Further guidance on the selection of RPE is contained within HSE (UK) publications '*Asbestos: The licensed contractors' guide*' HSG 247 and '*Respiratory protective equipment at work: A practical guide*' HSG53.

To obtain adequate performance during use, the selected RPE must be suited to the individual and worn correctly every time. An essential aspect of the performance of RPE, with a tight fitting full face mask, is the need for a good contact between the face seal of the mask and the operative's skin.

A good fit can only be achieved if the operative is clean shaven in the areas of contact and the mask is of a suitable size and shape to fit the wearer. For workers who normally wear glasses, either contact lenses, or a full-face mask which permits the fixing of special frames inside the face piece, should be worn. If neither of these options are suitable, equipment that does not rely on a good face seal for protection should be provided, e.g., a powered or air-supplied hood or blouse.

Face fit tests, which involve the individual testing of the face seal on the wearer, must be carried out as part of the initial selection of the RPE and/or where the model of RPE is changed. They must also be repeated at least once every 12 months and if the individual loses or gains weight, undergoes any substantial dental work or develops any other facial changes around the face seal area. The user should also carry out a fit check on every occasion that a mask is worn to ensure that a good fit has been obtained.

A poorly fitting respirator may create a false sense of security and result in significant exposure to asbestos fibres. Employers should maintain a written respiratory protection program with specific procedures for fit testing and training.

Employees must be given adequate instruction, information and training on the following:

- ✓ How to fit and use the RPE correctly (including pre-use face fit each time it is worn);
- ✓ The uses and limitations of all RPE worn in the work area;
- ✓ How to recognise a reduction in air flow and what to do if it happens;

- ✓ The manufacturer's instructions on the use, storage and maintenance of the equipment;
- ✓ How to clean contaminated RPE when leaving the work area; and
- ✓ How to recognise medical signs and symptoms that may limit or prevent the effective use of RPE.

RPE may be prone to misuse, careless storage, or may not be suited to an individual, so it is essential that the use of RPE be subject to a strict management system. Guidance on a suitable approach is given in IS EN 529: 2005 '*Respiratory Protective Devices*'.

Other PPE will be required, including:

- ✓ Coveralls to prevent asbestos being carried from the workplace enclosure;
- ✓ Wellington boots or other smooth, easily cleanable footwear (without laces);
- ✓ Disposable underclothing, socks and gloves; and
- ✓ Other PPE as required, if shown necessary by the risk assessment.

Protective one piece coveralls, constructed from a material that will resist penetration from fibres, with seals at fasteners, neck, wrists and ankles must be worn whenever asbestos is likely to be deposited on clothing. Disposable coveralls are strongly recommended, but where non-disposable coveralls are worn, these must only be decontaminated by a specialist laundry equipped to accept and process asbestos contaminated items.

A Type 5, category 3 disposable coverall is the appropriate standard for asbestos work, and most commonly used in practice. The coveralls should be worn in such a way as to reduce the ingress of dust inside the garment. The coverall hood should be worn over the straps of the RPE and the coverall legs should be worn over footwear.

Further PPE may be required based on the outcome of the assessment; for example, waterproof clothing for outdoor work.

Personal clothing that accidentally becomes contaminated must be treated as if it were PPE and be decontaminated or treated as asbestos waste.

Personal monitoring

Personal air monitoring will be necessary to confirm that the RPE chosen will provide the appropriate degree of protection where the level of asbestos fibres in air exceeds, or is liable to exceed, the control limit.

Although the air monitoring data should be used to establish employee exposure records, personal monitoring is not required for every job. Sampling data from previous similar jobs can be used to assist with the assessment of expected exposure concentrations. Some data on the likely fibre concentrations for a range of asbestos jobs is also provided in the HSE (UK) publication HSG247 '*Asbestos: The Licensed Contractors' guide*'. Where there is any doubt about the expected exposure concentration the exposure must be confirmed by air monitoring.

Personal monitoring should be carried out in accordance with the guidance set out in HSE (UK) publication HSG248 '*Asbestos: The analysts' guide for sampling, analysis and clearance procedures*'.

Results of any personal monitoring carried out should be retained on the employee's occupational health register.

Notification to the Authority

Based on a written risk assessment, where the planned asbestos related work activity will expose or could expose workers to a concentration of asbestos fibres in air in excess of the exposure limit value (i.e. 0.1 fibres / cm³), an employer must submit a written notification, accompanied by the site specific Plan of Work (otherwise referred to as the Method Statement) to the Health and Safety Authority, 14 days before commencing any work.

This Notification will be submitted by the employer e.g. asbestos removal contractor, who is involved in the planned asbestos related work activity.

Notification can be made using the Authority's notification form (See Appendix 2) or by other equivalent means. Notifications and the plan of work / method statement for the proposed works may be submitted:

- By email to asbestos.notif@hsa.ie
- In writing to the Health and Safety Authority, Occupational Hygiene Unit, The Metropolitan Building, James Joyce Street, Dublin 1

- By fax, for the attention of the Occupational Hygiene Unit, to 01 – 6147020

If using other means of notification than the Authority's notification form, then all of the information as detailed in Schedule 3 of the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2010, must be included in the notification. This information is a legal requirement. In the event of incomplete information being submitted, the 14 day notification period will not commence until all information has been received by the Authority.

Where there is a material change in the nature of the work to which the original notification relates which results in the original notification no longer being valid, for example, the work ceases before the planned date, the original work process is altered etc. the employer must inform the Authority in writing and submit a new notification for the work activity along with the reasons in writing for the new notification.

Employers must keep copies of all notifications and plans of work submitted to the Authority.

Occasionally, on request, a waiver of the 14 days notification period may be applied for from the Authority, which will consider the reasons for the waiver request. In general a waiver will only be considered when it is justifiably related to an emergency or an incident requiring emergency remediation, the need to make safe a site or workplace, where the demand of normal activity in the premises is essential and cannot be delayed beyond the essential need to do the asbestos work, etc. Such urgent works may only commence once the Authority has formally granted the waiver of the notification period.

It should be noted that well planned, risk assessed and properly surveyed work should not require a request for a waiver. Ideally waiver requests should occur infrequently and generally result from accidents or dangerous occurrences which require urgent remedial action to be undertaken that could not be anticipated or foreseen.

The role of the analyst and the site clearance certificate

An independent competent analyst will normally need to be appointed for all work subject to notification. The analyst is responsible for completing site clearance certification for the work area, and may also be involved in determining the air monitoring strategy during the asbestos removal, either in conjunction with the client or the contractor.

In order to maintain the independence of the analyst, they should be appointed and paid directly by the person or organisation having responsibility for commissioning the work and not by the asbestos removal contractor.

The decision to appoint an analyst for work which is not subject to notification will need to be considered as part of the assessment process carried out in the preparation of the work.

The key role of the analyst is to assess the site after the asbestos removal is complete to determine whether the area is thoroughly clean and fit for reoccupation. The assessment procedure is a 4-stage certification process as follows:

Stage 1: Preliminary check of site condition and job completeness;

Stage 2: A thorough visual inspection inside the enclosure/work area;

Stage 3: Air monitoring i.e. clearance testing; and

Stage 4: Final assessment post enclosure/work area dismantling.

The lowest airborne respirable asbestos concentration that can be reliably measured, for the purposes of Stage 3, using the standard methodology, described in the HSE (UK) publication '*Asbestos: The analysts' guide for sampling, analysis and clearance procedures*' HSG248, is 0.01 fibres/cm³.

It is considered reasonably practicable to clean the working area after disturbance of ACMs thoroughly enough for the respirable airborne fibre concentration after final cleaning to be below this limit. The figure of 0.01 fibres/cm³ is therefore taken as the clearance indicator threshold, and an area should not normally be regarded as fit for reoccupation until the asbestos in air measurements are below this level.

In addition to clearance testing air monitoring, other types of air monitoring can be utilised before and during the asbestos removal/ repair period. These include:

- **Background Sampling** may be used to establish the ambient fibre-level where there is no active asbestos disturbance, e.g. prior to work starting. It is also used in the management of asbestos-containing materials that remain in place.
- **Personal Monitoring** (as described previously) measures the concentration of fibres in the operative's breathing zone. Regular monitoring may also identify any operative whose work practice produces unusual concentrations, and hence help identify where

work practices need to be improved. Samples are also sometimes collected in the general area of the work. These samples, in conjunction with the personal monitoring, help establish the concentration of asbestos fibres in the air where the work is being done.

- **Leak Testing** may be carried out during asbestos works, where there is an enclosure. It is a secondary measure to visual inspection and smoke testing of the enclosure. This test is used where there are suspected 'weak spots' in the enclosure, or where there are sensitive areas nearby (e.g. occupied areas). The monitoring tests for an elevated fibre concentration that may be associated with a release of asbestos from the enclosure. A background test prior to work starting is useful, as it can help determine if a leak test measurement reflects a release or just background concentrations. *Leak testing* may be necessary especially where there are obstacles (cables, pipes, risers etc.) that cross the enclosure. The planning should provide a "buffer zone" between those involved in the asbestos works and other occupiers of the building. Leak testing should be done within this 'buffer zone'. *Leak tests* should be carried out at a greater frequency at the 'higher risk' times of the contract (e.g. at the start, times of greatest asbestos disturbance, and times of disturbance around the enclosure 'weak spots'). Where sufficient monitoring indicates a well sealed and managed enclosure, then such tests may be reduced or stopped as appropriate.

Detailed guidance on the role and responsibilities of the analyst, and the 4-stage clearance procedure, is contained within the HSE (UK) publications '*Asbestos: The licensed contractors' guide*' HSG 247 and '*Asbestos: The analysts guide for sampling, analysis and clearance procedures*' HSG 248.

HSG 248 includes the methods used for both sampling and evaluation of fibres in air by Phase Contrast Microscopy (PCM) which includes the World Health Organization fibre counting method as required by the Regulations.

Individuals engaged in analytical activities must hold appropriate qualifications. The recommended industry specific qualifications, provided by the British Occupational Hygiene Society (BOHS) that should be held by persons undertaking analytical work are described below.

Work Activity	Recognised Qualification (s)
Air sampling	S301: Asbestos and Other Fibres and/or P404: Air Sampling and Clearance Testing of Asbestos or Certificate of Competency in Asbestos (CoCA)
Fibre counting	S301: Asbestos and Other Fibres and/or P403: Asbestos Fibre Counting (PCM) or Certificate of Competency in Asbestos (CoCA)

Individuals and organisations engaged in analytical activities should conform to a recognized quality assurance scheme such as the international standards ISO 17025 *General requirements for the competence of testing and calibration laboratories* and/or ISO 17020 *General criteria for the operation of various types of bodies performing inspection*. In addition to qualification requirements, an organisation or individual must be able to demonstrate that they possess policies for quality control and quality assurance procedures in line with these standards.

Accreditation to ISO 17025/ 17020, provided by the Irish National Accreditation Board (INAB), provides independent evaluation that an individual or organisation has the ability to meet the standards set out in HSG 248 and also demonstrate integrity and competence. Conformity assessment will cover areas such as organisation, quality systems, control of records, personnel, accommodation and environmental conditions, test and calibration methods, method validation, equipment, handling of test and calibration items, and reporting results.

Satisfactory participation in proficiency schemes, a requirement of INAB 17025 accreditation, such as the Regular Inter-laboratory Counting Exchange (RICE) for fibre counting, administered by the UK Health and Safety Laboratory, demonstrates independent verification of analytical competence and a commitment to continually improve performance.

Waste disposal

Asbestos waste, debris, or material considered to be contaminated with asbestos fibres should be placed directly into suitable bags and sealed, or packed and sealed. This includes all enclosure building materials (such as timber and sheeting) and any items that have been present and unprotected inside contaminated areas and cannot, or will not, be cleaned (including tools and equipment).

It also includes all disposable PPE used in the enclosure, transit and waste routes, and disposable or discarded items used in cleaning and decontamination, such as clothes and towels. Waste water from the buckets in the airlocks should be discarded through the filtered drainage system in the shower of the DCU.

Solid waste should be double bagged using suitable, UN-approved packaging. This should include a red inner bag, which contains the appropriate asbestos warning label, and a clear outer bag. The following protocol should be followed for bagging (or wrapping) waste:

- ✓ Ensure the waste material has been dampened down (in the case of AIB) or is wet (a doughy consistency for lagging materials);
- ✓ Place the waste carefully into a red waste bag and seal with strong tape;
- ✓ In the inner stage of the bag lock (or airlock if no bag lock), the bag should be wiped down and transferred to the middle stage;
- ✓ In the middle stage the red bag should be placed in a clear asbestos waste bag, which should then be sealed and wiped down in a similar manner;
- ✓ The double-bagged waste should then be collected from the outer stage and transferred to the waste skip.

If wrapping a large object which cannot fit into the asbestos waste bags, the item should be wrapped in two layers of strong polythene. A red asbestos bag or printed label (with the same information as the bag) should be securely attached to indicate it is asbestos waste.

Where bagged or wrapped waste is stored temporarily, it must be kept in an appropriately locked skip or, where this is not practicable, in a suitable locked vehicle. Care should be taken to ensure that any temporary storage location is not in an area where it may be exposed to vandalism, nor close to an area considered to be sensitive, e.g., a school playground.

Where temporary storage of waste bags is required on site (only where it is not reasonably practicable to transfer waste bags directly to a suitable waste skip) this should be in a dedicated, locked room. Appropriate asbestos warning signs should be erected and every exposed surface of the room be smooth and impervious so as to allow thorough cleaning after the bags have been removed. This is usually achieved by lining with polythene sheeting.

A sealed bulkhead must be provided in vehicles used to transport asbestos waste to segregate passengers from the waste. Tools and other equipment should also be segregated to prevent bags being ruptured during transit.

The disposal of asbestos and asbestos containing materials is covered by the provisions of the Waste Management Act 1996 to 2005.

Prior to any removal work, as part of developing the Plan of Work, a suitable facility for disposal should be identified. Asbestos waste can be disposed of at an appropriate facility either in Ireland or exported abroad. The trans-frontier shipment of asbestos waste is subject to control procedures under EU and national legislation, the Waste Management (Transfrontier Shipment of Waste) Regulations 1998.

The movement of hazardous waste within the State is subject to a notification procedure, involving the provision of consignment notes to local authorities of the dispatch and destination. Any hauliers or contractors used to transport the asbestos cement waste must be authorised under the Waste Management (Collection Permit) Regulations 2001, and have a valid waste collection permit to collect this type of waste.

Asbestos waste can also be disposed of via hazardous waste transfer stations licensed by the Environmental Protection Agency. These facilities accept asbestos cement and then arrange to have the waste disposed of at an appropriate facility either in Ireland or abroad.

For further information on waste disposal, contact should be made with the relevant Local Authority and/or the Environmental Protection Agency.

As asbestos is subject to dangerous goods transport Regulations, it is therefore important that you seek advice from a competent person, e.g. a dangerous goods safety adviser. The Carriage of Dangerous Goods by Road Regulations 2007 (S.I. No. 288 of 2007) and the ADR (European Agreement Concerning the International Carriage of Dangerous Goods by Road) provide the legal framework under which all dangerous goods, including asbestos, may be transported by road.

The Health and Safety Authority have published guidelines entitled ‘Carriage of Asbestos and Asbestos Waste by Road’ and these can be obtained from the Authority’s website www.hsa.ie.

Health Assessments

Employers, e.g. specialist asbestos removal companies, must make arrangements to enable their employees who are engaged in activities where the exposure limit value may/will be

exceeded to avail of an adequate and suitable assessment of their health. Employees should co-operate with their employer in attending medical examinations.

The health assessment must be carried out by a registered medical practitioner with knowledge of the medical issues arising from work with asbestos. The health assessment must be carried out prior to the employee engaging in the work activity and every three years thereafter where the relevant work activities continues (with or without interruption).

Occupational Health Registers

Employers must establish and maintain an Occupational Health Register for all employees who undertake notifiable work. The Occupational Health Register should ideally be kept indefinitely, but in any event for a minimum of 40 years following the end of an individual's exposure.

It should be kept in a safe place and contain information as set out under Schedule 6 of the Regulations.

The occupational health register must not contain any medically confidential information but must contain the non-medical confidential results of the Health Assessment, as provided and included on the register by the responsible medical practitioner.

Where an undertaking (business e.g. asbestos removal company) ceases to trade, the employer must contact the Health and Safety Authority and ensure that the occupational health register is made available to the Authority. Where an undertaking (business e.g. asbestos removal company) ceases to trade, an employer must also contact the Health and Safety Authority (via its appointed responsible medical practitioner) and make available relevant individual medical records. For the purposes of this requirement, contact should be made with the Occupational Health Unit of the Health and Safety Authority.

Arrangements to deal with accidents, incidents and emergencies

The risk of an accident occurring in an enclosure during asbestos removal is always a possibility, for example, a worker collapsing or falling from height within the enclosure. Emergency procedures for the evacuation of ill or injured personnel, therefore, need to be written into the Plan of Work.

Decontamination should be carried out as far as possible. Where practicable employees should vacuum themselves and the victim, and sponge down RPE and boots, but evacuation of the seriously ill or injured person should not be delayed by over-elaborate attempts to decontaminate the casualty. If the victim can be moved, work colleagues can move them outside, if necessary, by slitting the walls of the enclosure. In some situations it may be necessary for the casualty to be treated inside the enclosure.

Arrangements for contacting the emergency services should be established in advance. If an accident occurs, information should be given to the relevant accident and emergency services at the time of the call to enable those services to prepare their own response and precautionary procedures for asbestos and other hazards. Spare disposable protective clothing and disposable respiratory protective equipment should be kept available for personnel who have to enter the enclosure and who do not have their own equipment; for example, paramedics.

As asbestos personnel work in many different premises and buildings, it is important that they are familiar with the procedures and arrangements in the event of a fire or other emergency requiring evacuation. Even in unoccupied buildings, there may be specific factors associated with the site which increases the potential risk of fire or other emergency situation; so the means of identifying such an event, and the means of escape must be planned.

This is particularly important if the enclosure or DCU is located in a relatively inaccessible area, or the escape route is awkward or lengthy. Although, where practicable, basic decontamination is desirable if escape becomes necessary, evacuation from the premises must be the overwhelming priority and should not be delayed by undergoing decontamination.

After reaching a safe area after any accident or emergency, PPE and RPE should be decontaminated as far as possible.

4.0 Lower Risk Asbestos Works

Exemptions from the Regulations

While the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2010 (S.I. No. ... of 2010) apply to all work activities with asbestos containing materials (ACMs) and to all work places, there are limited exceptions which may be considered and, based on risk assessment, may indicate that three specific Regulations only do not have to be implemented.

The specific Regulations which may be waived relate solely to the need for an employer to:

- Regulation 11 - Notify to the Authority of the intent to remove ACMs 14 days in advance of commencing the work;
- Regulation 20 - Make available an assessment of the health of employees; and
- Regulation 21 - Maintain the medical records relating to health assessment of employees.

It should be noted that these three regulatory requirements may be waived only for specific tasks, where it is known that certain requirements are met which demonstrate that the activity is of low risk regarding potential exposure to asbestos fibres.

These exceptions may **only** be introduced where the risk assessment demonstrates that the exposure limit value for asbestos will not be exceeded **and** that the work intended will ensure that employees' exposure is sporadic **and** is of low intensity.

When these three criteria are established, **only** certain work activities may be performed without the need to notify the Authority, to make available health assessments and to retain medical records relating to health assessments, as follows:

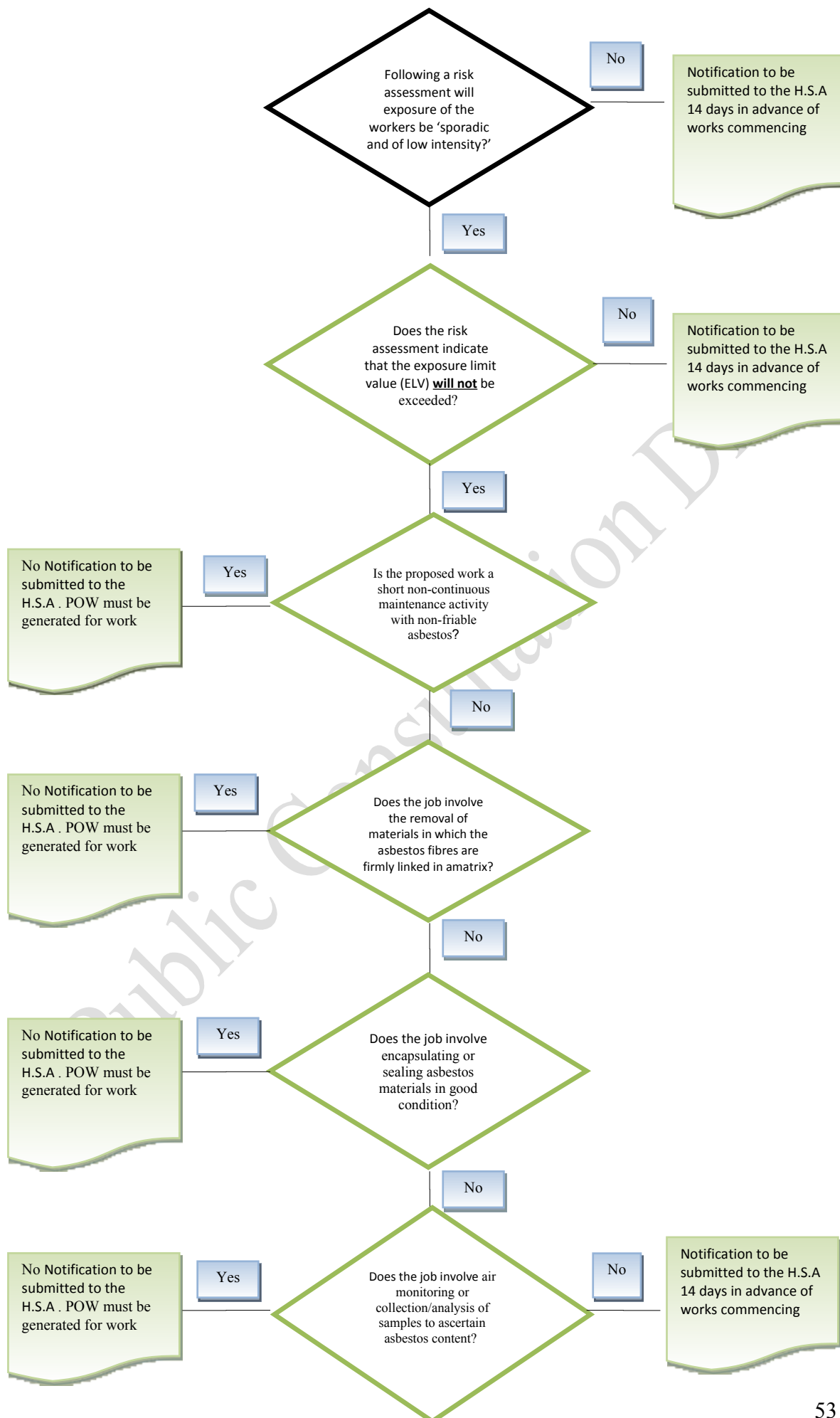
- a) Short, non-continuous maintenance activities in which only non-friable materials are handled;
- b) Removal without deterioration of non-degraded materials in which the asbestos fibres are firmly linked in a matrix;
- c) Encapsulation or sealing of asbestos-containing materials which are in good condition; or
- d) Air monitoring and control, and collection of samples to ascertain whether a specific material contains asbestos.

As these Regulations apply to all work activities and all places of work where employees might be at risk from exposure to asbestos fibres, the intention of these exceptions is to provide some distinction, based on risk assessment, between, those employees who could be regularly exposed to asbestos and employees who perform a simple and small repair now and again, or between those activities, which by virtue of the matrix in which the asbestos fibres are contained cannot normally release fibres even during removal activities.

While the key to applying these exceptions is based on risk assessment, it also must be established that the activities can only generate both low intensity and sporadic exposure of the employees to asbestos dust.

Finally, the 'waiver' only relates to the three specific Regulations which involve longer time or work involvements, i.e. notification and health assessment, and does not dilute the responsibilities of all employers to protect all employees in accordance with the other provisions of the Regulations, as appropriate, even when performing work activities to which the exception or waiver applies.

A flow chart for the process of deciding whether work meets the criteria for the exemption is shown overleaf.



Sporadic and low intensity exposure

No exposure to asbestos will be sporadic and of low intensity within the meaning of Regulation 5(b) if the concentration of asbestos in the air exceeds or is liable to exceed 0.1 f per cm³ airborne fibres averaged over an 8-hour period. Work which is likely to result in exposures at or above this level cannot be considered to produce sporadic and low intensity exposure, and therefore the exemptions provided by Regulation 5(b) will not apply.

When work with the following materials meets the definition of sporadic and low intensity worker exposure then the exemption as provided by Regulation 5(b) will apply, but only if it is clear from a suitable and sufficient risk assessment that the control limit will not be exceeded.

Materials in which the asbestos fibres are firmly linked in a matrix

Materials in which the asbestos fibres are firmly linked in a matrix include:

- a) asbestos cement;
- b) textured decorative coatings and paints which contain asbestos; and
- c) any article of bitumen, plastic, resin or rubber which contains asbestos where its thermal or acoustic properties are incidental to its main purpose (e.g. vinyl floor tiles, electric cables, roofing felt).

Where the work involves materials with tightly bound fibres, e.g. asbestos cement, the risk assessment will need to take into account the nature of the work and its duration.

There may be other materials in which the asbestos fibres can be firmly linked in a matrix such as paper linings, cardboards, felt, textiles, gaskets and rope where the products have no insulation purposes. If this is the case then the exemption provided in Regulation 5(b) may apply.

Therefore, the exemptions to some of the Regulations described can be applied to most work with these materials but only when a suitable and sufficient risk assessment demonstrates that the control limit will not be exceeded. However the requirements as provided by the remainder of the Regulations will apply to all work with asbestos containing materials (ACMs). In particular, the work must be undertaken by trained workers in accordance with a plan of work and using proper controls to prevent exposure to and spread of asbestos as described later in this chapter.

In general, Regulation 5(b) will apply to work with textured decorative coatings containing asbestos and asbestos cement. However, the risk assessment may identify factors that lead to the conclusion that the control limit could be exceeded or the exposure would not be sporadic and low intensity and in this case the exemptions would not apply.

Such factors that could result in exposure which could not be considered to be sporadic and low intensity or the control limit being exceeded might be:

- large scale removal of asbestos cement;
- a much higher proportion of asbestos in the material than normal;
- presence of amphibole asbestos in asbestos cement; and
- the material being more friable than normal

Table 2 includes concentrations that have been reported as being typical for various activities with asbestos cement.

Table 2 : Typical fibre concentrations for work with asbestos cement

Type of Activity	Typical Exposure Levels (f per cm ³)	
Machine sawing with exhaust ventilation	Up to 2	
Machine cutting without exhaust ventilation		
- abrasive disc cutting	15 - 25	
- circular saw	10 - 20	
- jig saw	2 - 10	
Hand sawing	Up to 1	
Machine drilling	Up to 1	
Removal of asbestos cement sheeting	Up to 0.5	
Stacking of asbestos cement sheets	Up to 0.5	
Remote demolition of asbestos cement structures dry*	Up to 0.1	
Remote demolition of asbestos cement structures wet*	Up to 0.01	
Cleaning asbestos cement	Roofing	Vertical cladding
Dry brushing (wire)	3	5 - 8

Wet brushing (wire)	1 - 3	1 - 2
<p>Notes</p> <p>* Subsequent sweeping up after remote demolition may give rise to concentration greater than 1 f per cm³.</p> <p>Inclusion of a technique does not indicate that it is acceptable (e.g. machine cutting without exhaust ventilation). These concentrations are given to illustrate the high exposures which can result if good work practices are not followed.</p> <p>The exposures quoted are based on measurements taken by the HSE (UK). The same process in different locations may result in higher or lower concentrations.</p> <p>The above exposure concentrations relate to the work period and are not calculated as timeweighted averages. However, it is clear that an extended duration of work may lead to timeweighted average concentrations greater than 0.1 fibres per cm³</p>		

Work with friable materials (e.g. asbestos insulation, asbestos insulation board and asbestos coatings), are not exempted from Regulations 11, 20 and 21.

Other materials need to be assessed for their condition and a risk assessment undertaken to provide the information to make a decision on the possibility of exemption from the requirements for notification and medical surveillance.

Personnel requirements

Supervision of work

An experienced operative should supervise any work that is carried out and prepare the Plan of Work (or method statement) for undertaking the work.

Training of operatives

In addition to the basic asbestos awareness training which should be provided to all operatives whose work could foreseeably expose them to asbestos whilst carrying out their normal day-to-day work persons who will intentionally disturb low risk ACMs, such as asbestos cement and textured coatings, should receive additional training, specific to the risks associated with low risk asbestos work. Workers likely to fall within this category include roofers and demolition operatives removing asbestos cement roof sheets, maintenance workers etc.

The training should cover the points mentioned in the asbestos awareness training section and:

- the operations that could result in asbestos exposure;

- the importance of effective control measures to prevent or minimise exposure to airborne asbestos and to prevent spread of asbestos contamination;
- safe working practices that minimise exposure, including control techniques,
- personal protective equipment, risk assessments and written instructions (plan of work);
- the role of respiratory protective equipment, selection of the appropriate type of respiratory protective equipment, and its proper use;
- the proper care and maintenance of personal protective equipment and respiratory protective equipment;
- procedures for personal decontamination;
- emergency procedures, to cover situations such as: accidental damage to asbestos containing materials, or personal injury or illness while engaged on the asbestos work;
- waste disposal, suitable containment (e.g. bagging or wrapping) all waste to prevent spread of contamination, labelling, and placing in a secure skip or container on site; and
- Transport by an authorised asbestos-waste disposal contractor to an approved (or licensed) site.

For operatives and supervisors, the training must include practical work to ensure that they become familiar with examples of materials and accustomed to proper use and maintenance of equipment and techniques.

For supervisors and employers, the training should also cover legal responsibilities and monitoring of the work.

Working methods

A Plan of Work (or method statement) should be prepared, which sets out:

- The scope of the work and how long it is likely to last;
- When the work will be carried out;
- The procedures to be followed to reduce exposure and prevent the spread of asbestos;
- The equipment needed, including PPE;
- Decontamination and waste disposal arrangements;

- Emergency procedures; and
- Control measures for non-asbestos hazards which may pose a risk; for example, falls from height.

Any asbestos material should be wetted before any work is started as this is the most effective method of controlling airborne fibre release as the material is disturbed. Specialist wetting agents can make work easier, but some asbestos materials do not absorb liquid easily so other methods will also need to be used to control dust exposure; for example, a Class H vacuum cleaner. Minimising breakage of any ACM will also help reduce fibre release.

Detailed guidance on appropriate working methods to be taken when working with ACMs which may not be subject to the requirements of Regulations 11, 20 and 21, are set out in the following publications –

- H.S.A publication '*Working with Asbestos Cement*'
- HSE (UK) HSG 189/2, '*Introduction to Asbestos Essentials*'
- HSE (UK) HSG 210, and '*Asbestos essentials: A task manual for building, maintenance and allied trades on non-licensed asbestos work*'

See *further information* at the end of this section for a list of relevant HSE (UK) task sheets.

Personal protective equipment (PPE)

Appropriate PPE should be determined by the assessment carried out when preparing the Plan of Work. PPE and respiratory protective equipment (RPE) are the last lines of defence against asbestos fibres, and do not preclude the need for appropriate working methods to be implemented to reduce the potential release of fibres.

Protective one piece coveralls, constructed from a material that will resist penetration from fibres, with seals at fasteners, neck, wrists and ankles must be worn whenever asbestos is likely to be deposited on clothing. Disposable coveralls are strongly recommended, but where non-disposable coveralls are worn, these must only be decontaminated by a specialist laundry equipped to accept and process asbestos contaminated items.

A Type 5, category 3 disposable coverall is the appropriate standard for asbestos work. The coverall should be worn in such a way as to reduce the ingress of dust inside the garment. The

coverall hood should be worn over the straps of the RPE and the coverall legs should be worn over footwear.

Wellington boots, or other smooth, easily cleanable boots (without laces) are preferable to disposable shoes.

If gloves are worn, these should be single-use disposable gloves. If latex gloves are worn, these should be 'low protein powder-free' gloves.

RPE should be selected on the basis of the assessment of the work to be carried out, but should always have an Assigned Protection Factor of 20 or more. Suitable types of RPE include disposable respirators (type FFP3 or type FMP3), half mask respirator with P3 filter or semi-disposable respirator with P3 filter.

The RPE selected should be fitted and worn in accordance with the manufacturer's instructions. The types of RPE listed above are not suitable for people with beards or stubble, or for long periods of continuous use.

Alternative types of RPE should be used in these instances. If the worker wears glasses, these should be put on after the respirator has been fitted properly – there must not be a gap between the mask and the face. The hood of the coverall must be fitted over the RPE straps.

At the end of the shift, the RPE should be taken off last and, if disposable, disposed of as asbestos waste. If not disposable, it should be decontaminated, cleaned and stored in accordance with the manufacturer's instructions.

Filters on half-masks should be changed regularly, and disposed of as asbestos waste.

Hygiene and waste arrangements

When the removal work is completed, the surface of the working area and any equipment used should be wiped down with appropriate cleaning rags soaked in water. A contaminated rag should never be re-soaked as this will contaminate the water. Tape may be useful for removing small dust deposits.

Any asbestos waste, debris or contaminated material (including cleaning rags) should be placed into a suitable, UN-approved red bag, which contains the appropriate asbestos warning label, and then sealed with tape. The red bag should then be wiped clean before being

carefully placed into a suitable, approved clear asbestos bag which should then also be sealed. The waste bags must be labelled to identify that they contain asbestos waste.

If the asbestos waste, debris or other material cannot fit into a waste bag, it must be double wrapped in two layers of strong polythene. A red asbestos bag or printed label (with the same information as the bag) should be securely attached to indicate it is asbestos waste.

Operatives must decontaminate themselves after working with asbestos in order to ensure that they do not expose themselves or others to asbestos fibres. The decontamination procedure should ensure that any asbestos contamination is removed prior to removal of the respirator. Further guidance is provided in HSE (UK) publication 'Asbestos Essentials', Equipment and method sheet EM8, HSG 210.

Existing site washing facilities can be used but access should be restricted to the asbestos workers during the time they carry out their work, and the facilities thoroughly cleaned afterwards. All disposable personal protective equipment should be disposed of as asbestos waste following each working shift.

Where bagged or wrapped waste is stored temporarily, it must be placed in a dedicated locked skip or, where this is not practicable, in a suitable locked vehicle. A sealed bulkhead must be provided in vehicles used to transport asbestos waste to segregate passengers from the waste during transit. Tools and other equipment should also be segregated to prevent bags being ruptured during transit.

Care should be taken to ensure that any temporary storage location is not in an area where it may be exposed to vandalism, nor close to an area considered to be sensitive, for example, a school playground.

Please refer to Waste Disposal in Section 3 for further details on legal requirements for disposal of asbestos waste.

Visual inspection, environmental or personal monitoring

A site clearance inspection, as required by Regulation 15 verifies that an asbestos work area is safe to be returned to normal use following asbestos remedial work. It is the principal component in determining the successful removal of asbestos containing materials (ACMs). It involves a thorough visual inspection but air-monitoring is not always necessary following

removal of certain types of ACMs e.g. removing external asbestos cement soffits, removal of small amounts of AC sheeting, toilet cisterns, flue pipes to boilers etc.

For lower risk asbestos work, a visual inspection as a minimum must be carried out by a 'competent person' who is independent of the person doing the removal/remedial work.

A 'competent person' must possess suitable training and sufficient knowledge, experience and skill, for the safe performance of the specific work. Additional knowledge, experience and skills would be required by a 'competent person' performing air monitoring (e.g. occupational hygienist) – the competent analyst. These qualifications were described in section 3. Therefore, there are two levels of 'competence' available to employers depending on the nature of work undertaken.

There is normally no need for environmental or personal monitoring to be carried out during low risk asbestos work as the required control measures should reduce levels of exposure to well below the control limit. If the assessment prepared as part of the Plan of Work determines that environmental or personal monitoring is required, or the Client wants clearance air sampling to be carried out for reassurance purposes, it should be carried out by a competent person who can demonstrate conformance with quality assurance procedures as described in ISO 17025 and in accordance with the HSE (UK) publication '*Asbestos: The analysts' guide for sampling, analysis and clearance procedures*' HSG 248.

Arrangements to manage accidents, incidents and emergencies

The procedures for dealing with emergencies during planned low risk asbestos work should be included in the Plan of Work. These should cover instances such as medical emergencies, fire, uncontrolled release of asbestos fibres due to unforeseen circumstances, power failures etc.

In any circumstances where there is a suspected accidental uncontrolled release of asbestos, such as inadvertent disturbance of suspected asbestos containing materials, emergency procedures should be implemented without delay.

Work should stop immediately and the area segregated to prevent anybody else entering. Steps should be taken to ensure any exposures are kept as low as possible, the spread of contamination to other areas minimised and the contamination cleaned up. It is highly likely that a specialist contractor may need to be involved in all or any of these steps.

Where persons have become contaminated with visible dust or debris, or where contamination is suspected, then arrangements should be made to decontaminate those affected. The person should put on suitable RPE, remove the affected clothing or wipe down with damp rags and leave the area. They should then shower thoroughly. Any contaminated clothing or rags should be disposed of as asbestos waste.

Arrangements should then be taken to decontaminate the affected area. This work should only be carried out by operatives who have been trained and are competent to carry out the work. As this is likely to require specialist equipment, such as a Class 'H' vacuum cleaner, a specialist contractor will almost certainly be required. Air sampling should then be carried out, where appropriate, to confirm that the remedial measures taken have been effective.

If an employee has been potentially exposed to asbestos fibres in an incident, a note that the exposure has occurred should be added to the employee's personal record. A copy of the note must be given to the employee with instructions that it should be kept indefinitely. It is also recommended that they consult their GP to have a note of their possible exposure made on their personal medical record, which should include date(s), duration, type of fibre, type of RPE worn and likely exposure levels (if known).

Further guidance on Lower Risk Asbestos Works

A list of Health and Safety Executive (UK) asbestos essentials task sheets relevant to this Section on lower risk work with asbestos is provided below. These can be downloaded from the HSE website at www.hse.gov.uk

Work with asbestos cement (AC)

- [A9. Drilling holes in asbestos cement and other highly bonded materials](#)
- [A10. Cleaning debris from guttering on an asbestos cement roof](#)
- [A11. Removing asbestos cement debris](#)
- [A12. Cleaning weathered asbestos cement roofing and cladding](#)
- [A13. Repairing damaged asbestos cement](#)
- [A14. Removing asbestos cement sheets, gutters, etc. and dismantling a small asbestos cement structure](#)
- [A15. Removing asbestos cement or reinforced plastic product e.g. tank, duct, water cistern](#)
- [A16. Painting asbestos cement sheets](#)
- [A35. Replacing an asbestos cement flue or duct](#)
- [A36. Removing an asbestos cement panel outside, beside or beneath a window](#)

Working with textured coatings (TC) containing asbestos

- [A26. Drilling and boring through textured coatings](#)
- [A27. Inserting and removing screws through textured coatings](#)
- [A28. Removing textured coating from a small area e.g. 1 square metre](#)

A29. Cleaning up debris following collapse of a ceiling or wall covered with textured coating

Removal and replacement of other asbestos containing materials

A17. Removing asbestos paper linings

A18. Removing asbestos friction linings

A19. Removing an asbestos fire blanket

A21. Removing asbestos-containing bituminous products

A22. Removing metal cladding lined with asbestos-containing bitumen

A23. Removing asbestos-containing floor tiles and mastic

A24. Removing flexible asbestos duct connectors (gaiters)

A25. Removing compressed asbestos fibre gaskets and asbestos rope seals

A30. Removing an asbestos-containing 'arc shield' from electrical switchgear

A31. Removing a single asbestos-containing gas or electric heater

A33. Replacing an asbestos-containing fuse box or single fuse assembly

A37. Removing asbestos-containing mastic, sealant, beading, filler, putty or fixing

Public Consultation Draft

5.0 References and further reading

Asbestos: The licensed contractors' guide

Health and Safety Guidance HSG 247 HSE Books 2006 ISBN 0-7176-2874-4

Asbestos: The analysts' guide for sampling, analysis and clearance procedures

Health and Safety Guidance HSG 248 HSE Books 2005 ISBN 0-7176-2875-2

Asbestos: The survey guide

HSE Books 2010 ISBN 978 0 7176 6385 9

Respiratory protective equipment at work: A practical guide

Health and Safety Guidance HSG 53 HSE Books 2005 ISBN 0-7176-2904-X

Guide to Implementing an Effective Respiratory Protective Device Program

Irish Standard EN 529 *Respiratory Protective Devices- Recommendations for selection, use, care and maintenance-guidance document* www.nsai.ie

Working with Asbestos Cement

Health and Safety Authority HSG 189/2 HSE Books 1999 ISBN 0-7176-1667-3

Introduction to Asbestos Essentials

Health and Safety Guidance HSG 213 HSE Books 2001 ISBN 0-7176-1901-X

Asbestos essentials: A task manual for building, maintenance and allied trades on non-licensed asbestos work

Health and Safety Guidance HSG 210 HSE Books 2008 ISBN 978-0-7176-6263-0

A comprehensive guide to managing asbestos in premises

Health and Safety Guidance HSG 227 HSE Books 2002 ISBN 0-7176-2381-5

British Standards Institution. (BS 8520-1:2009) Part 1 Equipment used in the controlled removal of asbestos-containing materials – Part 1: controlled wetting of asbestos-containing materials – Specification. Available from BSI customer services +44 (0)208 996 9001. www.bsiglobal.Com

British Standards Institution. (BS 8520-2:2009) Part 2 Equipment used in the controlled removal of asbestos-containing materials – Part 2: Negative Pressure Units – Specification. Available from BSI customer services +44 (0)208 996 9001. www.bsi-global.com

British Standards Institution. (BS 8520-3:2009) Part 3 Equipment used in the controlled removal of asbestos-containing materials – Part 3: Operation, cleaning and maintenance of class H vacuum cleaners – Code of practice. Available from BSI customer services +44 (0)208 996 9001. www.bsi-global.com

World Health Organisation (1997 Determination of airborne fibre concentrations. A recommended method, by phase-contrast optical microscopy (membrane filter method) WHO, Geneva 1997 (ISBN 92 4 154496 1)).

Appendix 1

Uses of asbestos

The following lists the uses and characteristics of products in order of potential for release of fibres (“friability”):

Sprayed coatings	
Use	Thermal and acoustic insulation, and fire and condensation protection systems.
Content	Up to 85% asbestos in hydrated asbestos cement. A mixture of asbestos types was used until 1974; crocidolite for thermal insulation of steam turbines until 1970; amosite for fire protection of structural steel, condensation protection and acoustic control; and chrysotile mixed with mineral wool and cement-type binder. Chrysotile was also used as a coating on top of other sprayed asbestos.
Comment	<ul style="list-style-type: none"> ▪ Applications ceased in 1974; spraying was prohibited in the UK. ▪ Extremely friable; high potential for fibre release unless sealed. Potential increases if disturbed during repair or maintenance and as materials age or disintegrate. Released dust may accumulate. ▪ Repair and removal require a specialist asbestos contractor. ▪ May be found in multi-storey flats and schools, for example on structural framework and the ceilings of swimming pools, and as fire stopping in ceiling voids.
Example photo(s)	

Laggings (thermal insulation)	
Use	Thermal insulation of pipes, boilers, pressure vessels, preformed pipe sections, slabs, tape, rope, corrugated paper, quilts, felts.
Content	<p>Variable asbestos content. Examples include:</p> <ul style="list-style-type: none"> ▪ 8 -30% in calcium silicate slabs; ▪ 15% in magnesium carbonate insulation with an asbestos surface coating; ▪ 100% in blankets, felts, etc. <p>All types of asbestos have been used.</p>
Comment	<ul style="list-style-type: none"> ▪ The use of lagging was gradually discontinued between 1974 and 1980, and is very rare in buildings constructed after 1975. ▪ Potential for fibre release if not sealed. Potential increases if disturbed during repair or maintenance, and as material ages or is damaged. Dust may then accumulate. ▪ Repair and removal require a specialist contractor. ▪ Widely used in public buildings, schools, factories, and hospitals, on pipes and boilers and for insulation between floors. Quilts were commonly used on steam boilers in industrial premises but rarely in houses or flats. Asbestos rope or cord was wound round pipework or insulation, and itself often coated in a cement containing asbestos.

Example photo(s)	“Loose fill” asbestos was installed as loft insulation.
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Insulating Board

Use	Fire protection, thermal and acoustic insulation, and also in general building work because of their resistance to moisture movement. “Asbestolux” and “Marinite” are examples of the trade names.
Content	Content 16-40% amosite or, until 1965, a mixture of amosite and crocidolite. Density of approximately 700 kilograms per cubic metre. “Shipboards” are a rigid composite of amosite, hydrated lime and silicon oxide with a lower density.
Comment	<ul style="list-style-type: none"> ▪ Widely used from the 1950s until middle 1970s. UK manufacture ceased in 1980, and it is unlikely to be found in buildings after 1982. ▪ Work on insulation board can give rise to high levels of dust, especially if broken, drilled or sawn. ▪ Requires a specialist contractor to remove the boards. ▪ Found in all types of industrial, commercial, public and private buildings. ▪ Particularly common in 1960s and 1970s system built housing. Used widely in ducts and for fire stopping, infill panels, partitions, ceiling tiles, roof under lays, wall lining, bath panels, external canopies and porch linings. Asbestos is also found in insulating board cores and linings of composite products used for acoustic attenuators, cladding infill panels, domestic boiler casings, partition and ceiling panels, oven linings and suspended floor systems.
Example photo(s)	

Ropes, Yarns

Use	Lagging, jointing and packing materials, heat/fire resistant gaskets and seals, caulking in brickwork, boiler and flue sealing, and plaited tubing for electric cable.
Content	Asbestos content usually 100%. Only chrysotile used after 1970.
Comment	Fibres may be released when unbonded material is stored in bulk. Caulking is unlikely to release fibres.
Example photo(s)	

Cloths

Use	Jointing and packing, gaskets, thermal insulation and lagging including fire-resistant blankets, mattresses and protective curtains, gloves, aprons, overalls, etc.
Content	Usually 100% but some textiles are aluminized to reflect heat. Usually chrysotile asbestos.
Comment	<ul style="list-style-type: none"> ▪ Fibres may be released if abraded or frayed. ▪ Equipment using asbestos cloth is found in foundries, kitchens and

Example photo(s)	laboratories.
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Millboard, paper and paper products

Use	General heat insulation and fire protection, electrical and heat insulation of equipment, roofing felt and damp-proof courses, steel composite wall cladding and roofing, vinyl flooring, facing to combustible boards, flame resistant laminate and corrugated pipe insulation.
Content	Very close to 100%. All types of asbestos have been used, but only chrysotile since 1965.
Comment	<ul style="list-style-type: none"> Fibres are not highly bonded in uncoated materials, and liable to be released when subject to wear or abrasion. Can be a hazard when handled. Removal should be undertaken by a specialist contractor.
Example photo(s)	

Cement products

Use	<p><i>Profiled sheets.</i> Roofing, wall cladding and weather-boarding.</p> <p><i>Semi-compressed flat sheet and partition board.</i> Partitioning in farm buildings and housing, shuttering in industrial buildings, decorative panels, bath panels, soffits, linings to walls and ceilings, portable buildings, propagation beds in horticulture, fire surrounds, and composite panels for fire protection.</p> <p><i>Fully compressed flat sheet and partition board.</i> Used as semi-compressed products but where stronger materials are required.</p> <p><i>Tiles and slates (made from fully compressed flat sheet).</i> Cladding, decking and promenade tiles, and roofing.</p> <p><i>Pre-formed moulded products.</i> Cistern and tanks, drains, sewer pipes, rainwater goods, flue pipes, fencing, roofing components, cable troughs and conduits, ventilators and ducts, and window boxes.</p>
Content	10-15% asbestos bound in a matrix of Portland cement or autoclaved calcium silicate. All three common types of asbestos have been used - crocidolite between 1950 and 1969, amosite between 1945 until at least 1976, but mainly chrysotile.
Comment	<ul style="list-style-type: none"> Widely used in many building types. Fibres are firmly bonded and only released if the material is mechanically damaged or when the material is aged. Externally the material will weather slowly but fibre release will be at a low rate. Moss, algae and lichen may grow on the material surface. Cleaning has the potential to release fibres. Low pressure cleaning with biocide additions can cause splashing and a contaminated slurry, but it is preferable to any means that involves abrasion. The material is fragile and precautions are required to prevent falls

Example photo(s)	<p>through the sheets.</p> <ul style="list-style-type: none"> Can be painted with an alkali resistant primer to seal, prevent warping and protect the surface.
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Asbestos bitumen products

Use	Roofing felts, damp-proof courses, semi-rigid roofing, gutter linings.
Content	Bitumen adhesive to floor tiles Chrysotile fibre or paper in bitumen.
Comment	<ul style="list-style-type: none"> Fibre release unlikely during normal use, but may age and become brittle. Some fibre release will occur if brittle material is broken up. Material should not be burnt after removal, as asbestos will be released by the fire. No sanding of floors/walls where bitumen adhesive has been applied.
Example photo(s)	

Flooring products

Use	Floor tiles and backing for PVC flooring.
Content	<p><i>Thermoplastic floor tiles.</i> Up to 25% asbestos.</p> <p><i>PVC floor tiles and unbacked PVC flooring.</i> Usually less than 10% chrysotile asbestos.</p> <p><i>Asbestos-paper backed PVC flooring.</i> The backing may be 100% chrysotile.</p>
Comment	<ul style="list-style-type: none"> Fibre release unlikely to be a hazard under normal conditions of use but is possible when the material is cut, or when flooring, particularly when the backing is removed. When removal is necessary, flooring should be lifted carefully, and any dust dampened and collected. Any residue sticking to the floor is best covered or skimmed. Sanders should not be used. Waste material must not be burned but disposed of safely.
Example photo(s)	

Textured coatings and paints

Use	Coatings on walls and ceilings.
Content	Content 3-5% chrysotile asbestos.
Comment	<ul style="list-style-type: none"> Potential for fibre release when dry mixes are prepared or when old coatings are rubbed down. Materials must not be power sanded or scraped off dry. If they must be removed, wettable materials can be scraped off wet, after soaking with water containing detergent. Other materials may require treating with paint stripper prior to wetting and scraping off. The advice of the manufacturer, if known, should

Example photo(s)	<p>be sought.</p> <ul style="list-style-type: none"> Wet materials must be bagged in double plastic sacks after removal and sealed prior to disposal. Supply and application prohibited since 1988, but still widely in place, for example as “Artex” on walls and ceilings
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Mastics, sealants, putties and adhesives

Use	Asbestos has been used in these products to give anti-slumping characteristics, improve covering power and prevent cracking and crazing.
Content	<1%
Comment Example photo(s)	Hardened product should not be sanded.

Reinforced plastics

Use	PVC panels and cladding, and reinforcement for domestic goods. Content
Content	Variable, mostly chrysotile.
Comment Example photo(s)	Fibre release unlikely during use unless cut using powered equipment.

Wall Plugging compound

Use	Wall fixings.
Content	More than 90% asbestos with cotton fibre and plaster dust.

Domestic appliances and motor vehicles

Use	<p>Asbestos has been used in various domestic appliances and motor vehicles for heat insulation or friction properties.</p> <p><i>Hairdryers, fan and radiant electric heaters, toasters, washing machines, tumble dryers, spin dryers, dish washers, refrigerators and freezers - paper, element formers, brake pads, compressed fibre gaskets and seals, rubberized or other polymer gaskets and seals.</i></p> <p><i>Cookers - insulating board, fire cement, compressed fibre seals, rubberized or other polymer seals.</i></p> <p><i>Simmering mats - millboard.</i></p> <p><i>Iron stands - paper millboard and asbestos cement.</i></p> <p><i>Oven gloves, fire blankets - textiles.</i></p>
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Content	<p><i>Catalytic gas heaters</i> - compressed asbestos fibre panels.</p> <p><i>Gas warm air heaters</i> - aluminium backed paper, cloth and insulating board.</p> <p><i>Boilers and pipe work</i> - asbestos/plaster with or without a surface fibre layer.</p> <p><i>Electric warm-air and storage heaters</i> - caposil insulating blocks, insulating board, paper, string, compressed fibre washers, rubberized or other polymer-bonded washers.</p> <p>Varies according to the type of material used.</p>
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Appendix 2

NOTIFICATION FORM TO BE USED FOR ANY WORK INVOLVING ASBESTOS

(To be inserted)

19 July 2010