



ASBESTOS: THE FACTS

- Facts and figures
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WORKING TOGETHER TO BEAT OCCUPATIONAL CANCER

INTRODUCTION

This factsheet is an introductory guide for health and safety practitioners, but its content may assist others with more general management responsibilities too. It describes what asbestos is, what materials it may be found in, how it may harm people, and who may be exposed to it. It introduces how asbestos may be managed effectively. While the occasional reference is given to UK legal requirements, this guide is written with the intention to assist organisations globally.

WHAT IS IT?

Asbestos is the name used for a group of naturally occurring minerals that are used in many products. It is used to strengthen materials and provide fire and chemical resistance. In the production process, asbestos has usually been mixed with other substances to create different asbestos-containing materials (ACMs), but it has also been used on its own.

Respirable asbestos fibres are invisible to the naked eye. When breathed in they can become stuck in the lungs. Over time, this can cause serious illnesses, including fatal cancers.¹



Approximately 125 million people in the world are exposed to asbestos in the workplace and it claims at least 107,000 lives a year.² The risk from asbestos is so serious that many countries have now banned its use, including the UK and all countries in the European Union.

Even when a country bans its use, thousands of tonnes of asbestos can still be found in domestic and commercial buildings, industrial plant and equipment.

MORE ABOUT THE MINERAL

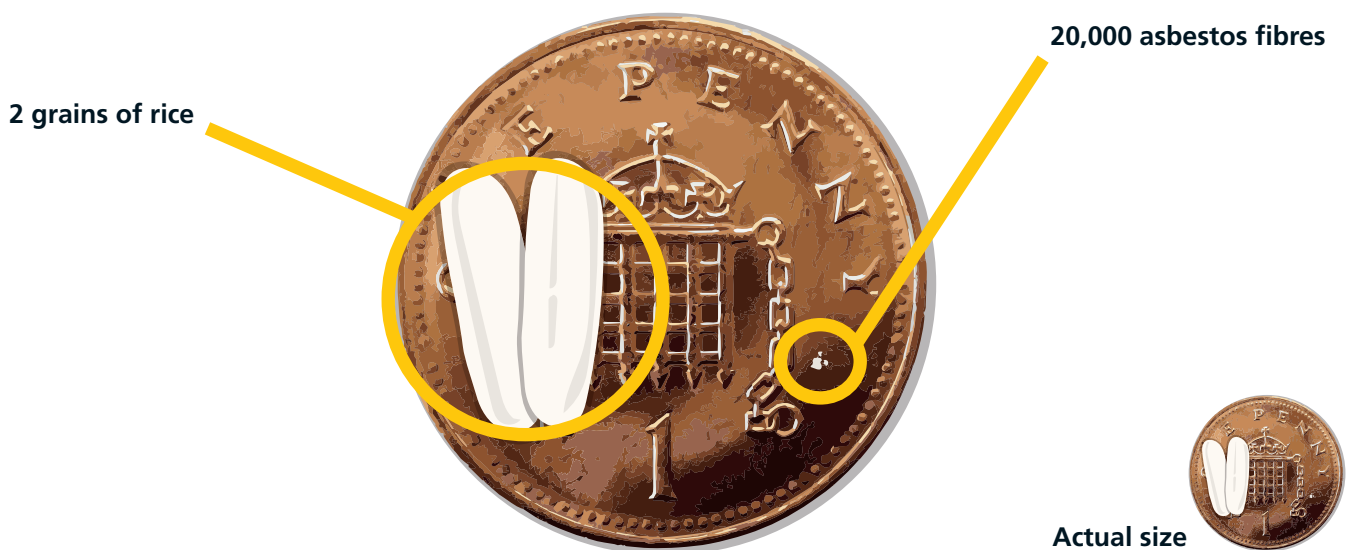
There are several types of asbestos. The most commonly used types have been chrysotile (white asbestos), amosite (brown asbestos) and crocidolite (blue asbestos). Less commonly used have been anthophyllite, actinolite and tremolite.

Asbestos fibres are microscopic: a thousandth of the diameter of human hair. In fact, it is impossible to see an individual asbestos fibre without a microscope, but you can see dust that contains fibres when ACMs are damaged.

The UK banned the importation and use of amosite and crocidolite in 1985 (although voluntary industry bans had existed – for example, for crocidolite from 1970), actinolite, anthophyllite and tremolite in 1992 and chrysotile in 1999.

The European Union banned all remaining uses of chrysotile in 2005.

HOW SMALL IS ASBESTOS?



Source: www.asbestosdiseaseawareness.org/wp-content/uploads/Penny-Slide.jpg

¹ Currently there is no effective cure for mesothelioma and therefore it is almost always fatal.

² www.who.int/ipcs/assessment/public_health/asbestos/en/

WHO IS AT RISK?

Exposure to asbestos is widespread in society, but current data in the UK indicates that the risk of a fatal asbestos-related cancer is greatest among people who work in construction and engineering. These trades encounter

asbestos in their work during maintenance, refurbishment or demolition activity. In countries where asbestos is still used, other workers will be exposed, especially those involved in the manufacture, use or installation of products using ACMs.

Examples of occupations at risk of asbestos-related disease

MAIN RISK EMPLOYMENT AREAS	PEOPLE WHO COULD BE AT RISK
construction and building trades	carpenters and joiners, plumbers, heating and ventilating engineers, painters and decorators, floorers and wall-tilers
electrical trades	electricians, electrical and electronics engineers and telecommunications engineers
metal forming, welding and related trades	pipe fitters, metal plate workers, riveters, welders and sheet metal workers
vehicle trades	vehicle body builders and repairers, motor mechanics and auto engineers
metal machining, fitting and instrument-making trades	metal working production and maintenance fitters, precision instrument makers and repairers
shipping and rail trades	shipyard workers, shipwrights, ship and railway carriage builders and engineers
others – while much lower in risk, there is evidence of asbestos-related diseases in other occupations	caretakers, fire fighters, school teachers, farmers, car, rail and aviation hobbyists



BEFORE YOU START THAT DIY PROJECT...

In the UK, if your home was built before the year 2000, it may contain asbestos. Learn about where it might be found. Stop and think before you start a 'Do it yourself' (DIY) project.

THE HEALTH RISKS

We have known that asbestos is harmful to health since 1895. In Britain, 120 years ago, factory inspector Lucy Deane noted “the evil effects of asbestos dust”. She got the dust examined by microscope, which showed the “sharp glass-like jagged nature of the particles”. Her warnings, reported in the 1898 Chief Factory Inspector’s annual report, were ignored.

Such instances can seldom be fully traced except with infinite labour and pe to the ultimate source of the trouble.

“The evil effects of asbestos dust have also attracted my attention, a mi of the particles, and where they are allowed to rise and to remain suspended quantity, the effects have been found to be injurious, as might have been expected

“As in china-scouring, so in a still greater degree in other dusty trades, th very long time apparently unaffected, before the symptoms of the evil become ma

“It is often impossible to bring positive proof of definite injury solely attribut osphere, for except in extreme cases the symptoms are similar to those attribut

the evil reaches such grave proportions as to be capable of easy and tragic ing or flax preparing, there is always a certain proportion of “old workers” e to be found in every unhealthy industry, and who are less obvio

Harmful effects have been reported in medical papers since 1924, but it was in 1955 that it was shown that breathing in asbestos fibres causes lung cancer and in the 1960s that it can cause mesothelioma. Blue and brown asbestos are the most harmful, but white asbestos also causes asbestos-related disease.

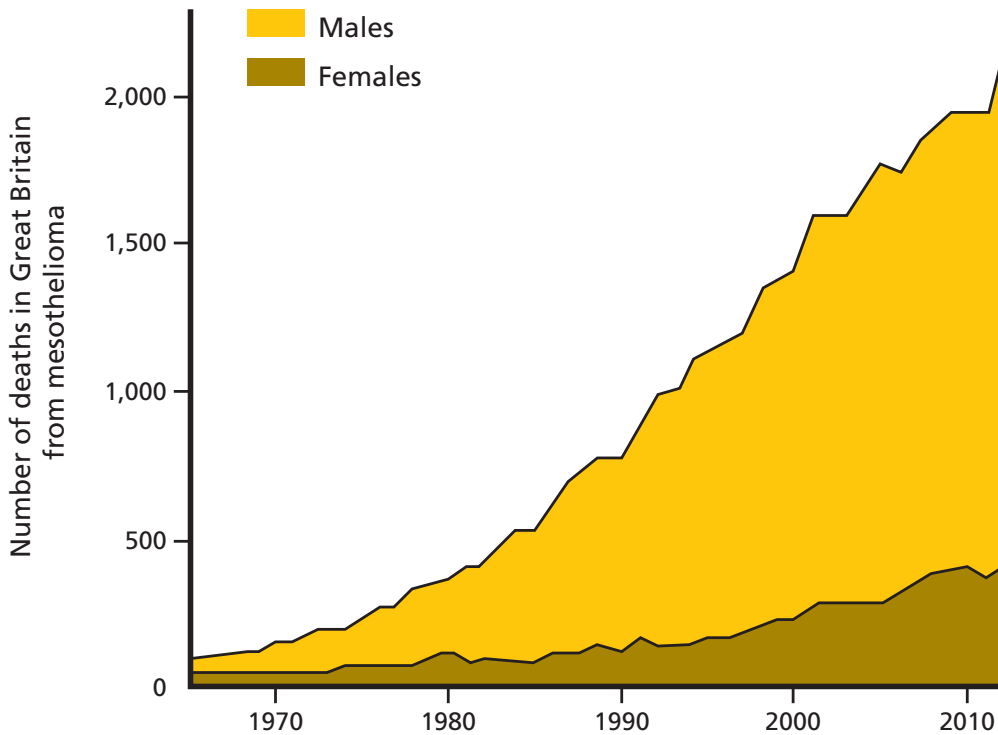
Asbestosis

Asbestos fibres breathed into the deepest parts of the lung cannot be removed by the body’s defences. It damages cells which are repaired by the body, creating scar tissue. This process is called *fibrosis*: hence the name asbestosis. It shows up as a mottled effect on x-rays. Scarring destroys lung tissue and reduces the lung’s ability to take up oxygen. It can cause pain and breathlessness. Asbestosis is caused by breathing in fibres over many years. The greater the concentrations of asbestos dust and the number of years a person is exposed, the greater the chance of developing asbestosis.

Lung cancer

Lung cancer is a malignant lung tumour characterised by uncontrolled cell growth in tissues of the lung. Most primary lung cancers are carcinomas, which produce common symptoms of coughing (including coughing up blood), weight loss, shortness of breath and chest pains.

In research carried out between 1971 and 2005 in the UK, it was found that asbestos causes lung disease and that if the worker is also a smoker, this significantly increases the risk.³



³ Frost G, Darnton A, Harding AH. The effect of smoking on the risk of lung cancer mortality for asbestos workers in Great Britain (1971–2005). *Annals of Work Exposures and Health* 2011; 55(3):239-247

Mesothelioma

Asbestos fibres can also affect the lining of the lungs (the pleura) or peritoneum, causing the development of a malignant and incurable cancer called mesothelioma. In the pleura this tumour causes fluid build-up and pain in the chest. Deaths from mesothelioma typically occur 20–40 years following exposure. The period after World War II saw the most intensive use of asbestos in Britain and Europe, which explains why through the latter part of the 20th century these countries observed a rise in the number of deaths from the disease.⁴

Each year it is estimated that there are more than 38,400 deaths from mesothelioma around the world.⁵ In Great Britain, more than 2,500 men and women now die from mesothelioma every year due to a past exposure to asbestos.⁶ There are at least as many asbestos-related lung cancer deaths as deaths from mesothelioma.

Other health conditions

Asbestos can also cause scarring to the pleura (pleural plaques), or a build-up of fluid in this space. While pleural plaques are benign, they can sometimes create pain and difficulty in breathing and may need to be removed surgically.

Keep an eye on health

Workers should seek medical advice if they have any of these symptoms:

- a cough most of the time
- a cough you have had for a while that gets worse
- persistent breathlessness
- coughing up phlegm with traces of blood
- an ache or pain in the chest or shoulder
- loss of appetite or an unexpected loss of weight
- persistent tiredness.

Don't allow someone with these symptoms to delay: it is better to seek medical advice earlier than later.

If people have been accidentally exposed to asbestos dust they may be worried and anxious. These worries and anxieties must be addressed in any medical response or rehabilitation process. Routine chest X-rays or CT scans are not recommended for people who have incidentally inhaled asbestos dust for days or weeks. Screening for lung cancer or mesothelioma is not successful, and these cancers cannot generally be diagnosed in advance of symptoms arising.

The International Agency for Research on Cancer (IARC) has reaffirmed that all types of asbestos can cause cancer.⁷ In addition to lung cancer and mesothelioma, it identified two other types of cancer that are caused by asbestos: cancer of the larynx and ovarian cancer. Medical evidence shows that other cancers caused by asbestos can include peritoneal, colorectal, stomach and pharyngeal cancer.

**DON'T DELAY:
IT'S BETTER TO
SEEK MEDICAL
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RATHER THAN LATER**



⁴ Data from www.hse.gov.uk/statistics/tables/index.htm#lung

⁵ Park E-K, Takahashi K, Hoshuyama T, Cheng T-J, Delgermaa V, Le G V and Sorahan T. Global magnitude of reported and unreported mesothelioma. *Environmental Health Perspectives* 2011; 119 (4): 514–518. <http://doi.org/10.1289/ehp.1002845>.

⁶ Data from www.hse.gov.uk/statistics/causdis/asbestosis/asbestos-related-disease.pdf

⁷ <http://monographs.iarc.fr/ENG/Monographs/vol100C/100C-06-Index-tables.php>

PRODUCTION AND USE

Asbestos has been mined in more than 30 countries. Today the main producers are Russia, China, Kazakhstan and India. These four countries and Indonesia are currently the main consumers of asbestos, too.

Why was asbestos so widely used?

Asbestos use became prevalent during the industrial revolution. It was popular due to its heat resistance and strength. It was cheap and made useful products when combined with other substances. Throughout the 20th century, asbestos was imported into the UK and most other countries in Europe and North America. Asbestos is extremely durable. Almost all that was mined and imported still exists either in buildings, on industrial plant, or buried underground in licensed waste sites.

WHERE CAN ASBESTOS BE FOUND?


Asbestos can still be found even in the countries that have banned asbestos: in buildings and articles such as the following.

Spray coatings (limpet asbestos) were mainly used for fire protection on structural steel beams, trusses and girders, but also to prevent condensation inside buildings and for acoustic control. The coating comprised a thin layer of cement and fibre mixture applied by high-pressure spray. These coatings mainly contained amosite, although varieties with other types of asbestos fibres may sometimes be found.

Laggings were mainly used to prevent heat loss or heat transfer to surrounding areas. They are found on boilers, pipes and other items of plant. These laggings may have been produced from pre-formed sections, for example on pipes, using boards or quilts or trowelled-on in a thick cement mixture. Lagging can also be made up in layers where non-asbestos material is also used, so when trying to identify the presence of asbestos it's important that samples are taken from the whole depth of lagging.

Insulating boards were manufactured from cement or calcium silicate mixed with asbestos. They were produced to provide a low-density, low-cost, fire-resistant insulation, and were used in a wide variety of buildings. You can find these used in ceiling tiles, partition walls, fire-breaks, soffit boards and heater cupboards. This material was also sandwiched between other materials to impart fire resistance (for example, layers of wood to make fire doors, sheets of galvanised steel).

Asbestos yarns were used in the manufacture of asbestos cloth for fire-protective clothing, gloves and in fire blankets. They were used in ropes and gaskets or packing materials. Asbestos cloth was used in ceramic fuse holders behind the fuse wire.



**THERE IS NO
SAFE LEVEL
OF ASBESTOS
EXPOSURE**

Asbestos millboard and papers were generally used in fairly specialist applications, such as the insulation of electrical equipment. They contain a high proportion of asbestos.

Fibre cement products made with asbestos have had widespread use as roofing, wall cladding, soffit boards, boiler flues, gutters, pipes, tanks and bath panels. They contain about 10 per cent asbestos, mostly chrysotile, but some crocidolite or amosite was used prior to 1976. Fire bricks, lintels and surrounds were also made from asbestos cement.

Floor tiles, gaskets, bitumen felts and other bonded ACMs have a much lower potential to release fibres than the other materials. Where floor tiles were bonded to the floor using bitumen there is often a residue of fibres left in the bitumen when the tiles are removed.

Mastics, sealants, putties and adhesives may also contain asbestos and were used in such things as boiler systems to attach insulation or fill gaps.

Textured coatings and paints were often used to decorate walls and ceilings.

Reinforced plastics including reinforced handles, automobile parts, housing for electronic equipment, and toilet cisterns.

EXPOSURE LIMITS

The risk of contracting an asbestos-related disease depends on the asbestos type, the concentration of fibre in the dust, the duration of exposure, the susceptibility of the individual and the time since the first exposure. Most authorities require that people are not exposed to any airborne asbestos fibres unless it is unavoidable (for instance, asbestos removal workers).

There is no safe level of asbestos exposure. Countries have different views on what limit to set for workplace asbestos exposure, where it is unavoidable. For example:

- in the Netherlands – 0.01 fibres per cm³
- in UK – 0.1 fibres per cm³
- in Canada (Quebec) – 1 fibre per cm³
- in Japan – 0.15 fibres per cm³
- in Israel – 0.2 fibres per cm³

You can find the limit value on asbestos in your country at www.dguv.de/ifa/gestis/gestis-internationale-grenzwerte-fuer-chemische-substanzen-limit-values-for-chemical-agents/index-2.jsp.

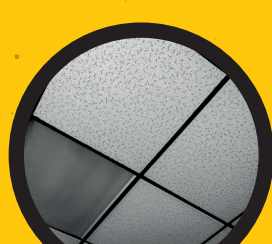
WHERE IS ASBESTOS FOUND



SPRAY COATINGS



LAGGING



INSULATION BOARDS



ASBESTOS YARNS



FIBRE CEMENT



ASBESTOS MILLBOARD AND PAPERS



FLOOR TILES, GASKETS, BITUMEN FELTS



MASTICS, SEALANTS, PUTTIES AND ADHESIVES



TEXTURED COATINGS AND PAINTS



REINFORCED PLASTICS

HOW DO WE PROTECT PEOPLE?

Elements of an asbestos management system

Eight simple steps can be taken to avoid the accidental release of asbestos fibres that people might breathe in:

- 1 **Know where it is**
- 2 **Record where it is**
- 3 **Complete a risk assessment**
- 4 **Create a management plan**
- 5 **Planning to work on ACMs**
- 6 **Inform those who are potentially exposed**
- 7 **Train workers**
- 8 **Investigate asbestos incidents**

1 **Know where it is.** Carry out a systematic survey (in the UK this is called a management survey) to identify visually and sample for the presence and condition of ACMs throughout all accessible areas of the building and associated with plant or equipment. This work should be completed by a competent asbestos surveyor. Samples must be sent to approved laboratories for analysis.⁸

In some countries the law requires that management surveys are carried out annually. Where it is not a legal requirement, if it is foreseeable that ACMs could have been damaged or may have deteriorated since the last survey and not reported, then a re-inspection is good practice.

- 2 **Record where it is.** Create a record (in the UK this is called an asbestos register) that identifies what asbestos was found and where. It must include all locations in the building and any plant or equipment. Records can be in the form of a table or a marked diagram or plan. Including photographs in the records will aid identification.
- 3 **Complete a risk assessment.** Consider who might be exposed to asbestos dust. What tasks will they be doing that may damage the ACM and release fibres into the air?
- 4 **Create a management plan** covering all locations where ACMs have been found. Consider the following:
 - Who is responsible for managing asbestos in your organisation?
 - Should the ACM be removed, protected, sealed or encapsulated? (ACMs in good condition do not need to be removed if there is no risk of fibre release.)
 - What safety precautions can be implemented to prevent ACM disturbance and subsequent inhalation of asbestos dust?
 - How will the views of workers be sought when identifying ACMs, completing a risk assessment, deciding on what controls to implement and how the ACMs will be managed?
 - How will you record the presence of asbestos (asbestos register), how is it to be managed (asbestos management plan), where the information is to be kept, how it will be accessed and by whom?
 - How will you make this information readily available to workers and contractors at the time that it is needed?
 - How will you keep asbestos records protected from unofficial amendment and updated with new information, and be certain that everyone is using the latest version?
 - What are the minimum controls you implement when working on or around ACMs?
 - What is the schedule for monitoring the condition of known ACMs, including the frequency of review?
 - How does your organisation communicate decisions concerning the management of asbestos?
 - What asbestos information needs to be recorded in fire management plans to aid the fire service when they are called to an emergency?

**WORKERS SHOULD
BE INFORMED OF THE
LEVEL OF RISK TO
HEALTH AND WHAT
PRECAUTIONS THEY
MUST IMPLEMENT**

⁸ In the UK the requirement is that the laboratory must have UKAS accreditation.

5 Planning to work on ACMs. When you are planning invasive construction work, a refurbishment and demolition survey is needed. This is an invasive check, taking samples from all the inaccessible places that will be disturbed during the planned work. This work should be completed by a competent asbestos surveyor. This information should be provided to those designing the works so that ACMs do not need to be damaged unnecessarily. It must also be given to those undertaking the works to help to prevent accidental disturbance. The best way to mitigate the risk of asbestos fibre release is to have your asbestos removed. You should give the refurbishment and demolition survey to the removal contractor.

6 Inform those who are potentially exposed. As a general principle, whether it is law or not in your country, when work may disturb asbestos, workers should be informed of the level of risk to health and what precautions they must implement to keep themselves and others safe. Contractors are much more likely to disturb ACMs if they are unfamiliar with the location, so consider how you will make the latest version of the asbestos register and management plan available to them. All workers and contractors who are not carrying out planned asbestos work must be empowered to stop work immediately if they think they have or are about to damage an ACM. If your workers are going to work in or on someone else's premises, ensure that you find out and tell them about any ACMs they may come across in their work.

7 Train workers. It is good practice to provide asbestos awareness training to workers whose working activity may disturb or damage ACMs. This education must include where ACMs can be found in the building, plant or equipment, how to work safely around them and how to protect themselves and others from dust. It is also prudent to demand that any employees of contractors have also received asbestos awareness training, if their activities while working on your premises may disturb ACMs. Workers and contractors must be empowered to stop work if they believe that a material they encounter may be an ACM.

8 Investigate asbestos incidents. An accidental ACM damage incident must be investigated to identify its causes. The investigation must check if local procedures were implemented correctly and if the asbestos register and management plan were accurate (these documents must also be updated with the results of the investigation). The investigation must consider if the person exposed had been informed of the presence of ACM and the reasons if they had not. A note should be made in the personal records of those exposed and kept for 40 years.⁹ Records should include when the incident happened, how long it lasted, the type of asbestos and the possible exposure levels.

IT IS GOOD PRACTICE TO PROVIDE ASBESTOS AWARENESS TRAINING TO WORKERS WHOSE WORK MAY DISTURB OR DAMAGE ACMs

⁹ Asbestos-related diseases can take 30 years or more to manifest. The victim may wish to seek compensation from the organisation they worked for when they were exposed. With no records, the organisation would probably be unable to defend itself.



Controls to prevent exposure

Undisturbed or sealed ACMs that are in good condition and unlikely to be damaged can be left in place. Damaged ACMs in poor condition should be sealed or removed. Any ACM in good condition or that has been encapsulated should be clearly and adequately labelled.

ACMs must not be disturbed, damaged or removed without strict controls in place that prevent exposure to dust. Do not work on ACMs unless you are competent, have a safe system of work in place and are licensed to the level required by the country that you are working in. If planning controlled work on ACMs, avoid specifying the use of power tools such as sanding machines, electric drills or electric saws, as these will generate more dust than the non-electric versions of the tools. Where the use of power tools is unavoidable, consider ACM removal and replacement by a specialist contractor.

Some minor works may intentionally disturb an ACM. If ACM removal is unreasonable in these circumstances, ensure that measures are taken to prevent dust getting into the air. For example:

- hand tools must be used and power tools avoided
- thoroughly wet the ACM with water mixed with a specialist wetting agent purposely designed for the work. Apply with low pressure to prevent dust being knocked off the surface.

- use dust extraction fittings on tools. A class H vacuum is used for cleaning up asbestos dust.¹⁰ Consider the necessary controls to prevent dust being released when the vacuum is emptied and cleaned.
- wipe down the area with wet cloths.

Accidental damage to ACM and release of asbestos dust

The plan for dealing with accidental damage to ACMs must include instructions to:

- 1 stop work immediately.
- 2 cordon off or seal off the area and stop people moving through it, keeping exposures as low as you can. This should include signage at key points.
- 3 consider if draughts may blow the dust about and where it would land and if it can be prevented.
- 4 instruct the worker to stay in one place near the point of damage to reduce the spread of fibres, not to walk around the workplace, sit in their vehicle, or walk around in public.
- 5 remove contaminated clothing and consider what other action may be necessary to prevent the spread of contamination to other areas.
- 6 clean up the contamination. Small disturbances can be cleaned up by local workers with the right training, equipment and safe systems of work. But specialist contractors should normally be preferred. They certainly have the right equipment and knowledge to clean up large disturbances and can then either remove the ACM or encapsulate it to make it safe. In the UK this work must be carried out by licensed contractors.

**DANGER
ASBESTOS HAZARD**

¹⁰ A vacuum cleaner with special filter should be used – referred to in the UK as a 'Class H' vacuum cleaner, which should conform to BS 8520-3:2009 and contain a filter conforming to BS EN 1822. www.hse.gov.uk/pubns/guidance/em4.pdf

Clothing contamination

Contamination on clothing or the body can be carried into other environments, including the worker's home, exposing other people to asbestos dust. Controls must include what to do to prevent this. If clothing has been contaminated with dust:

- stay at the location, do not walk through clean areas and stay still so you do not create a dust cloud.
- call for help and put on a disposable FFP3 face mask¹¹ (an ordinary dust mask will not protect the wearer from asbestos dust)
- use a class H vacuum or wipe down clothing and exposed parts of the body and boots with damp cloths before moving into a clean area
- move outside if possible and undress facing the wind. As clothing is gently taken off, turn it inside out, roll it up and place in a strong plastic bag. Shower and place towels in the waste bag too
- dispose of contaminated clothing and used cloths as asbestos waste in labelled double-bagged strong plastic bags¹²
- do not eat or drink in a contaminated area or when wearing contaminated clothing.

Asbestos removal

Where it is necessary to make extensive repairs to ACMs or remove them from a building, it is strongly advised to have the work carried out by a specialist contractor. In some countries this is a legal requirement. They are experts in this type of work and will know exactly how best to undertake the work to minimise the risks to their own workers and

any bystanders. In general, it would be expected that the area where such work will be undertaken is enclosed and completely sealed, using polythene sheeting. It must have an extraction fan and high-efficiency filter unit, keeping the whole space at negative pressure with respect to the surroundings. The work should be done using methods that minimise the release of asbestos fibres into the air, for example using wet injection on lagging. Workers must wear suitable personal protective equipment, including high-efficiency positive-pressure respirators. Entry to and exit from the enclosure must be through an airlock system. Workers need to have an area where they can decontaminate themselves and take a shower. This area needs to be attached to the removal area to prevent the spread of fibres as the worker moves to the decontamination area.

Asbestos waste should be labelled, packaged and disposed of according to the relevant national legislation. For example, in the UK all the debris removed from the building or plant and equipment needs to be securely double bagged. It must be transported in a sealed skip or other container to a licensed tip. Once the work is complete, the site needs to be carefully inspected by a competent asbestos analyst, followed by air monitoring, to ensure it can be safely reoccupied.

Air monitoring

Air monitoring must be completed regularly around enclosures during asbestos removal. It can also be implemented after an incident to sample the air to predict possible worker exposure levels.

¹¹ Further information on respiratory protective equipment can be found at www.hse.gov.uk/pUubns/priced/hsg53.pdf

¹² In many countries, asbestos waste must be disposed of as hazardous waste to waste management sites permitted to accept this type of waste. In countries outside of the EU, asbestos waste may be subject to additional environmental laws relating to waste. Further information is available via www.hse.gov.uk/pubns/guidance/em9.pdf and www.gov.uk/dispose-hazardous-waste

MORE INFO

Guidance and advice

- The UK's Health and Safety Executive (HSE) has a range of guidance and resources on asbestos and its health risks:
 - Find in-depth guidance and materials at www.hse.gov.uk/asbestos, including why asbestos is dangerous at www.hse.gov.uk/asbestos/dangerous.htm, and the latest figures for diseases associated with occupational exposure to asbestos at www.hse.gov.uk/statistics/causdis/asbestos.htm
 - Download the Approved Code of Practice and guidance from www.hse.gov.uk/pubns/books/l143.htm – this publication contains the Control of Asbestos Regulations 2012, the Approved Code of Practice, and guidance for employers about work that disturbs, or is likely to disturb, asbestos, as well as conducting asbestos sampling and laboratory analysis
 - Get answers to frequently asked questions at www.hse.gov.uk/asbestos/faq.htm
 - Details on the duty to manage asbestos can be found at www.hse.gov.uk/asbestos/duty.htm
 - Asbestos information for tradespeople is at www.hse.gov.uk/asbestos/tradesperson.htm, which includes where asbestos may be found and further resources. Also, *Asbestos – your quick guide*, at www.hse.gov.uk/asbestos/assets/docs/beware-asbestos-reference-cards.pdf, is a great resource for increasing awareness, and includes facts and figures, simple ways to protect yourself, how to reduce the dust, the difference between licensed and non-licensed work, and pictures and images of where asbestos is typically found
 - The HSE also has an information page relating to mesothelioma at www.hse.gov.uk/statistics/causdis/asbestos.htm, which provides information and statistics on this asbestos-related disease. More in-depth information can be found at www.hse.gov.uk/statistics/causdis/mesothelioma/mesothelioma.pdf
 - *Asbestos essentials*, a task manual for building, maintenance and allied trades on how to safely carry out non-licensed work involving asbestos, is at www.hse.gov.uk/asbestos/essentials/index.htm
- The European Agency for Safety and Health at Work (EU-OSHA) has produced a guidance factsheet for asbestos in the construction industry: <https://osha.europa.eu/en/tools-and-publications/publications/factsheets/51>
- The Asbestos Information Centre (AIC) is a knowledge portal that provides practical advice on effective management of asbestos-containing materials in buildings: www.aic.org.uk
- The UK's Department for Education has documents on managing asbestos in schools: www.gov.uk/government/uploads/system/uploads/attachment_data/file/417033/asbestos_management_guidance.pdf
- Unite has produced an asbestos guidance document for health and safety representatives that warns of the dangers of asbestos. www.unitetheunion.org/uploaded/documents/Asbestos%20-%20time%20to%20get%20rid%20of%20it11-26916.pdf
- The National Institute for Occupational Safety and Health (NIOSH) provides a range of resources to help manage asbestos www.cdc.gov/niosh/topics/asbestos

Information

- There is more information about asbestos and mesothelioma on the UK's Health and Safety Executive website: www.hse.gov.uk/asbestos/
 - Web app (can also be used on mobile device): www.beware-asbestos.info
 - Managing my asbestos: www.hse.gov.uk/asbestos/managing/index.htm
 - Statistics on asbestos-related diseases: www.hse.gov.uk/statistics/causdis/asbestos.htm
 - HSE press releases describing prosecutions involving asbestos:
 - <http://press.hse.gov.uk/2016/company-expose-family-to-risk-of-asbestos/>
 - <http://press.hse.gov.uk/2015/cinema-director-fined-for-asbestos-management-failings/>
 - <http://press.hse.gov.uk/2016/essex-school-fined-after-refurbishment-disturbs-asbestos/>

Information from other governments

- NIOSH in the USA www.cdc.gov/niosh/topics/asbestos/
- US Environmental Protection Agency www.epa.gov/asbestos
- The US Geological Survey offers reports and statistics about global asbestos production <http://minerals.usgs.gov/minerals/pubs/commodity/asbestos/>
- For locations of naturally occurring asbestos in the USA www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5126451.pdf

Independent authoritative sources

- Mesothelioma UK is a national resource centre dedicated to providing specialist Mesothelioma information, support and improved care and treatment. www.mesothelioma.uk.com
- The British Lung Foundation's website explains the causes and symptoms of mesothelioma, as well as treatments www.blf.org.uk/Page/mesothelioma
- The Cancer Research UK website provides information about risk factors, possible causes of and statistics on mesothelioma – see www.cancerresearchuk.org/about-cancer/type/mesothelioma/about/mesothelioma-risks-and-causes/ and www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/mesothelioma/
- The National Health Service (NHS) in England gives information on the symptoms of mesothelioma www.nhs.uk/conditions/mesothelioma/Pages/Definition.aspx
- A BBC report, *Dangers in the dust: inside the global asbestos trade*, looks at countries that still use asbestos, including China, India, Russia and Brazil: www.bbc.co.uk/news/world-10623725

- See the BBC asbestos in schools report www.youtube.com/watch?v=WGbMeGlpffc
- Asbestos.com, which is owned by the Mesothelioma Centre, has information on six countries where asbestos is used: www.asbestos.com/blog/2011/12/06/6-countries-to-watch-for-asbestos-use-and-abuse/
- The European Asbestos Forum strives to improve professional networks and the exchange of knowledge on all matters relating to asbestos: www.europeanasbestosforum.org
- As part of its international programme on chemical safety, the World Health Organization has a range of information on asbestos at www.who.int/ipcs/assessment/public_health/asbestos/en, including a factsheet at www.who.int/mediacentre/factsheets/fs343/en
- The International Labour Organization's position on safety in the use of asbestos is at www.ilo.org/safework/areasofwork/occupational-health/WCMS_360580/lang-en/index.htm
- www.asbestosinschools.co.uk examines the extent, type and condition of asbestos in schools and the risks to occupants
- The Trades Union Congress (TUC) has produced health and safety representative guidance on asbestos: www.tuc.org.uk/research-analysis/reports/asbestos-%E2%80%93-time-get-rid-it
- The International Ban Asbestos Secretariat's website highlights where asbestos is banned around the world: http://ibasecretariat.org/alpha_ban_list.php
- The asbestos in schools campaign website: www.asbestosexposureschools.co.uk
- The UK Asbestos Training Association's (UKATA) campaign, 'Train safe, Work safe, Keep safe', has a list of training providers who carry out free training to small businesses, sole traders and DIY enthusiasts: www.ukata.org.uk/train-safe-work-safe-keep-safe

Tools, resources and case studies

- The Unite trade union has produced materials on asbestos at www.unite-theunion.org/unite-at-work/informationresources/healthsafetyresources/asbestos, including posters and information on its asbestos campaign.
- UNISON's campaign against asbestos in schools has downloadable documents, including *Asbestos in schools – checklist*, *Asbestos in CLASP or system-built schools* and *Joint union advice on warm-air heating systems* www.unison.org.uk/news/article/2013/07/unison-steps-up-campaign-against-asbestos-in-schools
- The US Environmental Protection Agency (EPA) has produced materials to help businesses and the general public understand the health risks associated with asbestos exposure: www.epa.gov/asbestos
- The HSE has developed the “Every job beware asbestos” app: www.beware-asbestos.info
- The HSE has case studies on people who have been affected by asbestos: www.hse.gov.uk/asbestos/casestudies/tradespeoples.htm
- The HSE's *Hidden killer* campaign film shows a mesothelioma victim and his son tell their story about how it has affected their lives: www.youtube.com/watch?v=vfdgx7QK8ig
- The British Occupational Hygiene Society's (BOHS) Breathe Freely campaign has a case study on an electrician who was diagnosed with mesothelioma: www.breathefreely.org.uk/worker-case-studies.html
- A WorkSafeBC video shows how asbestos fibres can damage lung tissue and lead to lung disease: www.youtube.com/watch?v=jifoNSXvTuQ

Research and reports

Find details on HSE research and reports at www.hse.gov.uk/asbestos/research.htm, including occupational, domestic and environmental mesothelioma risks in Britain, and the Doll and Peto report, *Effects on health of exposure to asbestos*.

- Bianchi C. and Bianchi T. Malignant mesothelioma: global incidence and relationship with asbestos. *Industrial Health* 2007; 45 (3): 379–387. www.jstage.jst.go.jp/article/indhealth/45/3/45_3_379/_pdf
- Lee D H and Selikoff I J. Historical background to the asbestos problem. *Environmental Research* 1979; 18 (2): 300–314.
- Park E-K, Takahashi K, Hoshuyama T, Cheng T-J, Delgermaa V, Le G V and Sorahan T. Global magnitude of reported and unreported mesothelioma. *Environmental Health Perspectives* 2011; 119 (4): 514–518.



Download IOSH's free pack on asbestos at www.notimetolose.org.uk. In the pack, you'll find:



a leaflet for employees, covering the risks and protection measures



a pocket card for operatives to remind them of risks and controls



a range of workplace posters



real life stories



a link to our mythbuster quiz



a presentation for managers



a presentation for employees



good practice case studies



a range of 'fast facts' infographics

Contact campaigns@iosh.com to find out about free copies.

Sources: World Health Organization, Health and Safety Executive, Asbestos Disease Awareness Organization, International Agency for Research on Cancer, GESTIS – International limit values for chemical agents.

Reviewed by Craig Bell, Health and Safety Executive; Colette Willoughby, British Occupational Hygiene Society; Professor John Cherrie, Heriot-Watt University and Institute of Occupational Medicine; Philip Baker, Health and Safety Consultant; and Tim Briggs, Leeds Beckett University and Chair of IOSH's Professional Standards Committee

FIND OUT MORE, GET FREE RESOURCES

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**Institution of Occupational
Safety and Health**

The Grange
Highfield Drive
Wigston
Leicestershire
LE18 1NN
UK

t +44 (0)116 257 3100

f +44 (0)116 257 3101

www.iosh.com

-  twitter.com/IOSH_tweets
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