



# Unit 1 Introduction to Asbestos

## Learning Outcomes

**By the end of this unit the learner will be able to:**

- Discuss the main risks and dangers associated with asbestos
- Differentiate between the most common diseases and illnesses caused by asbestos exposure
- Understand the importance of proactive care and caution in all asbestos-affected environments

## Unit 1

### Introduction to Asbestos

Asbestos is a group of six naturally occurring minerals composed of soft, flexible fibers that are heat-resistant.

Large amounts of asbestos were used in new and refurbished buildings before 2000. Blue (crocidolite) and brown (amosite) asbestos were banned by law in 1985. Manufacture and supply of all asbestos was banned by the end of 1999. Existing asbestos articles can continue in use until they reach the end of their service life.

A large number of premises and older plant and equipment still contain some asbestos. Much of the asbestos will be hidden in the fabric of the building so is not immediately obvious. It is also unlikely to be recorded in the building plans but should be in the duty-to-manage plan.

Workers most likely to come into contact with ACMs are those in the construction, maintenance, refurbishment and related trades. When ACMs are damaged or disturbed they can release dangerous fibres which, if breathed in, can cause serious diseases.

Around 5000 people in Great Britain die every year from asbestos-related diseases as a result of past exposure, making asbestos the single greatest cause of work-related deaths. All forms of asbestos, including chrysotile, are classified as known human carcinogens by the International Agency for Research on Cancer (IARC). According to global estimates, an estimated 100,000 people die of asbestos-related diseases each year.

### Why is Asbestos Dangerous?

- Asbestos still kills around 5000 workers each year, this is more than the number of people killed on the road.
- Around 20 tradesman die each week as a result of past exposure
- However, asbestos is not just a problem of the past. It can be present today in any building built or refurbished before the year 2000.

When materials that contain asbestos are disturbed or damaged, fibres are released into the air. When these fibres are inhaled they can cause serious diseases. These diseases will not affect you immediately; they often take a long time to develop, but once diagnosed, it is often too late to do anything. This is why it is important that you protect yourself now.

### Asbestos Related Diseases

Asbestos can cause the following **fatal and serious diseases**:

#### **Mesothelioma**

Mesothelioma is a cancer which affects the lining of the lungs (pleura) and the lining surrounding the lower digestive tract (peritoneum). It is almost exclusively related to asbestos exposure and by the time it is diagnosed, it is almost always fatal.

### **Asbestos-Related Lung Cancer**

Asbestos-related lung cancer is the same as (looks the same as) lung cancer caused by smoking and other causes. It is estimated that there is around one lung cancer for every mesothelioma death.

### **Asbestosis**

Asbestosis is a serious scarring condition of the lung that normally occurs after heavy exposure to asbestos over many years. This condition can cause progressive shortness of breath, and in severe cases can be fatal.

### **Pleural Thickening**

Pleural thickening is generally a problem that happens after heavy asbestos exposure. The lining of the lung (pleura) thickens and swells. If this gets worse, the lung itself can be squeezed, and can cause shortness of breath and discomfort in the chest.

### **Where can you Find Asbestos?**

Asbestos can be found in any industrial or residential building built or refurbished before the year 2000. It is in many of the common materials used in the building trade that you may come across during your work.

## **Common Materials that may Contain Asbestos**

Asbestos can be found in many of the common materials used in the building trade. Some of these materials should only be worked on by a licensed contractor.

- Loose asbestos in ceiling or floor cavity
- Lagging
- **Sprayed** coatings on ceilings, walls and beams/columns
- Asbestos insulating board
- Floor tiles, textiles and composites
- Textured coatings
- Asbestos cement products
- Roofing felt
- Rope seals and gaskets

## **Loose Fill Asbestos**

Where do you find this?

This was used to insulate industrial and domestic premises so can be found in between cavity walls, under floorboards and in loft spaces.



Loose fill asbestos fibres

**What does this Look Like?**

This is a loose, fluffy insulation material (similar to candy floss), which may be blue-grey or whitish in colour.



Release of loose fill asbestos fibres

**How dangerous is this?**

Probably the most dangerous asbestos-containing material. Loose fill is made up of pure asbestos and if disturbed can release large amounts of fibres into the air, where they can be breathed in.

**Lagging and insulation**

**Where do you find this?**

Mostly found in or on heating systems such as around boilers or calorifiers and around pipework.

**What does this look like?**

This type of asbestos has many different appearances but is mostly a fibrous material which flakes and powders easily. When applied to pipes it is often covered in a protective coating (or painted) which can be any colour, and may make it more difficult to identify.



Damaged asbestos pipe Lagging



Asbestos lagging on hot water pipes



Amosite pipe lagging in very poor Condition



Lagged pipe in wall cavity

### **How dangerous is this?**

This is one of the most dangerous materials containing asbestos. You are more at risk from breathing in asbestos fibres because disturbance of the lagging or insulation releases fibres very easily into the air that you breathe.

### **Sprayed Coatings**

#### **Where do you find this?**

Insulation on the underside of roofs and sometimes sides of buildings and warehouses. Also used as fire protection on steel and reinforced concrete beams/columns and on underside of floors.

It was very easy to overspray or get a 'splash back' from the equipment used to apply this so there is likely to be debris around the sprayed area.

**What does this look like?**

Usually white or grey in colour with a rough surface, although they may have been painted.



Spray Coated Panelling



Spray coated roofing sheets



Under Roof Spray Coating



Spray coating as filler

### How dangerous is this?

This contains up to 85% asbestos and breaks up very easily. It is one of the most dangerous materials containing asbestos. Even minor disturbance of sprayed coatings can release large quantities of asbestos fibres into the air where they can be breathed in.

## Asbestos Insulating Board (AIB)

### Where do you find this?

Asbestos Insulating Board was commonly used as fireproofing material but it had many other uses such as:

- partition walls
- fireproofing panels in fire doors
- lift shaft linings
- ceiling tiles
- soffits
- panels below windows

### What does it look like?

Normal building items such as wall panels boards, ceiling tiles and plasterboard. It is difficult to tell the difference between asbestos insulating board items and non-asbestos materials.



AIB ceiling tile



AIB soffit under roof



AIB cabinet



Damaged perforated ceiling tile

### **How dangerous is this?**

Work on any type of asbestos can be dangerous. However, some short duration work (less than 1 hour for 1 person in a 7 day period, not to exceed 2 hours spent by all workers) for small or minor tasks on AIB can be carried out by non-licensed workers who are appropriately trained.

Short duration work to remove AIB as part of demolition or major refurbishment would be notifiable.

Any work lasting more than 1 hour for 1 person in a 7 day period, or more than 2 hours by all workers would require a licensed contractor.

Asbestos Essentials includes a number of task sheets which will show you how to safely carry out non-licensed work on AIB.

## **Floor Tiles, Textiles and Composites**

### **Where do you find these?**

Asbestos floor tiles were once a popular choice for flooring, and you will often find old asbestos floor tiles hidden under carpets.

Textiles can be found in fuse boxes behind the actual fuse. Old fire blankets and heat resistant gloves can also be made out of asbestos textiles.

Asbestos composites can be toilet cisterns and seats, window sills, and bath panels. Asbestos paper was used for lining under tiles and inside metal cladding.

**What do these Look Like?**

These asbestos-containing materials are not very distinctive from what is used now. To make sure we recommend you ask the owners about how long they've had certain things or look for a trade name. You should be able to look up this trade name on the internet to find out more about it.



Asbestos fire blanket



Asbestos flash guards in fuse box



Toilet cistern containing asbestos reinforced materials



Asbestos containing vinyl floor tiles

**How dangerous are these?**

Work on any type of asbestos can be dangerous. However, tasks on these particular materials can be carried out by non-licensed workers who are appropriately trained. Work on these materials would not normally be notifiable provided that the material is in good condition.

**Textured Coatings**

**Where do you find these?**

Textured coatings were used to produce decorative finishes on ceilings and walls. In the past, they have had various trade names such as 'Artex'.

**What do these look like?**

This is dependent on the particular decorative finish required ie peaks or patterns. They are hard and were originally white in colour but have often been painted over.



Asbestos textured coating on wall



Asbestos textured coating (artex) on ceiling



Damaged asbestos textured coating around pipework

### **How dangerous are these?**

Work on any type of asbestos can be dangerous. However, work on textured coatings can be carried out by non-licensed workers who are appropriately trained. This work would generally not need to be notified.

If the work is likely to cause significant break up and deterioration of the material such as large scale removal using steaming or gelling methods, then notification would be required.

## **Asbestos Cement**

### **Where do you Find Asbestos Cement?**

Asbestos cement is mainly a mixture of chrysotile (white asbestos) and cement, moulded and compressed to produce a range of asbestos cement products. You can find asbestos cement in many places inside and outside buildings such as:

#### **Asbestos Cement Roofs**

These are mainly made up of large sheets of corrugated asbestos cement; they are often found on industrial or farmyard buildings, but can also be found as roofs on garages and sheds. They are often covered in moss and other growths as they've been there for many years.

#### **Asbestos Wall Cladding**

This has a shape and structure similar to roof sheeting, and is often found on walls/as walls of buildings with asbestos cement roofs.

#### **Asbestos Downpipes and Gutters**

These are often attached at the end of cement roofs in warehouse type buildings.

#### **Asbestos Cement Flues**

These may be found in boiler systems (including domestic) air conditioning and ventilation systems.

#### **Asbestos Cement and Pitch Fibre Water and Sewer Pipes**

Drainage pipes, such as water and sewage pipes, were often made of pitch fibre. This is a lightweight and easy to handle material, made of wood cellulose impregnated with inert coal tar pitch. Asbestos cement was added to strengthen the material.

### **What does it Look Like?**

Asbestos cement is just ordinary cement mixed with asbestos, in some cases asbestos can make up over a third of the cement. It is a hard, grey material which was moulded and compressed to produce some of the materials listed above.



Asbestos cement downpipe, hopper and profile sheet



Asbestos cement flue from ventilation unit



Asbestos cement roof panelling



Asbestos cement wall cladding on warehouse

**How dangerous is this?**

Work on any type of asbestos can be dangerous. Work with asbestos cement can be carried out by non-licensed workers who are appropriately trained. This work would generally not need to be notified.

If the work is likely to cause significant break up and deterioration of the material e.g 'dropping an asbestos cement roof' then notification would be required.

There may be very exceptional circumstances where the asbestos cement has been so badly damaged that there is significant risk of exposure to asbestos fibres. In these rare cases a risk assessment will help to determine if a licensed contractor is required.

## Roofing Felt

### Where do you find this?

Asbestos roofing felt was often used for garage roofs, outbuildings etc.

What does this Look Like?



Asbestos roofing felt



Asbestos roofing felt being cut

### How dangerous is this?

Work on any type of asbestos can be dangerous. However, tasks on these particular materials can be carried out by non-licensed workers who are appropriately trained. Work on roofing felt would not normally be notifiable provided that the material is in good condition. If the work is likely to cause significant break up and deterioration of the material then notification may be required.

## Rope Seals and Gaskets

### Where do you find this?

Asbestos rope seals and gaskets can be found in gas or electric heating appliances.

### What do these Look Like?



Asbestos rope seal on boiler



Asbestos rope seal on boiler



Asbestos Gasket



Asbestos string gasket between metal sheets

**How dangerous is this?**

Work on any type of asbestos can be dangerous. However, tasks on these particular materials can be carried out by non-licensed workers who are appropriately trained. Maintenance and low risk work such as removal of gaskets or rope which can be removed virtually intact without substantial breakage would not normally be notifiable provided that the material is in good condition.

**Further Reading:**

Illustrated Practical Asbestos: For Consultants, Contractors, Property Managers & Regulators Paperback – June 9, 2021 by F. Stephen Masek

Asbestos 2nd Edition

by Ronald F. Dodson (Editor), Samuel P. Hammar (Editor), 2018