



# ASBESTOS

What you need to know

## A Guide for Employees and Subcontractors

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## **History of Asbestos**

The word Asbestos is derived from the Greek adjective meaning inextinguishable. The Greeks termed Asbestos the miracle mineral because of its soft and pliable properties, as well as its ability to withstand heat.

Asbestos became increasingly popular among manufactures and builders in the late 19<sup>th</sup> century due to its resistance to heat, electricity and chemical damage, its sound absorption and tensile strength. The first commercial Asbestos mine opened in Appalachian foothills of Quebec in 1879 and is still mined to the present day.

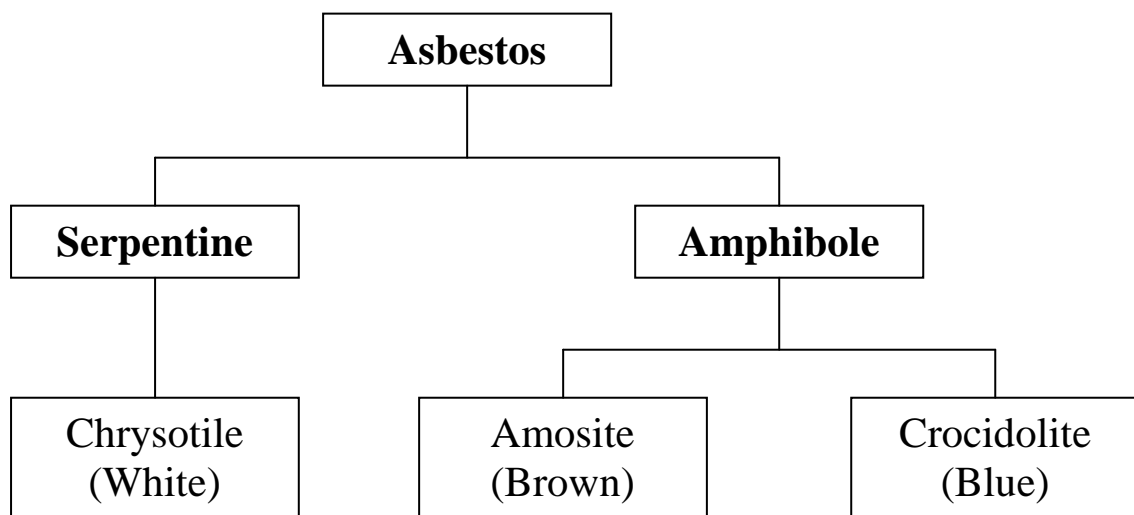
Statistics for 2005 show that 2.2 million tons of Asbestos was mined worldwide. Russia was the largest producer with approximately 40% world share followed by China and Kazakhstan.

All types of Asbestos are now banned from the United Kingdom, Crocidolite (blue asbestos) was banned in 1969 Amosite (brown Asbestos) was banned in 1984 followed by Chrysotile (white Asbestos) which a general ban was introduced 1999 (there were slight exceptions where white Asbestos could be used for a very small number of specialist uses, however a total ban was introduced in January 2005)

## Types of Asbestos

There are six types of Asbestos five of them belong to the Amphibole group these are Amosite, Crocidolite, Anthophyllite, Tremolite and Actinolite and one belongs to the Serpentine group which is Chrysotile.

Only three types of Asbestos were generally used in industry these are shown in the chart below in their groups, the others need not be discussed any further.



Chrysotile or white Asbestos as it is more commonly known is obtained from serpentine rock which is common throughout the world and has fibres that are curly, White Asbestos accounts for approximately 95% of all Asbestos used Worldwide.

Amosite (brown) and Crocidolite (blue) are mined in southern Africa and Australia they have fibres that are needle like and so pose the greatest risk to health.

Asbestos is commonly referred to by its colour however because it is normally mixed with many other substances to create a single product and its colour changes when exposed to heat, it is not possible to identify which type of asbestos a product may contain by simply looking at the colour, it may be possible to have a good idea what type of Asbestos a product contains by its location and usage, pipe lagging will normally be blue/brown asbestos and Asbestos-cement roof products will normally be white Asbestos but to be 100% sure a detailed laboratory investigation will be required.

## **Applications for Asbestos and its possible locations**

Before the health effects of Asbestos were known it was used for many purposes and even in cigarette filters. Kent the first filtered cigarette on the market used Crocidolite (blue Asbestos) in its "Micronite" filters from 1952 to 1956. Other more common uses for Asbestos and their possible locations are listed below.

### **Chrysotile (white)**

Chrysotile or white Asbestos accounts for approximately 95% of all Asbestos used world wide its availability as mineral through out the world and its insulating and heat resisting properties made it the ideal material for many jobs these would include joint compounds, it is more flexible than Blue or Brown Asbestos it can also be spun of woven in to fabric, insulating boards, brake pads for cars, floor tiles. Oven gloves, ironing boards, decorative paints and plaster products.

But by far the greatest use for white Asbestos was in Asbestos-cement products these ranged from fire surrounds to corrugated roofing sheets.

White Asbestos products are readily found in houses and factories built before the mid 1980's where Asbestos cement products were used for roofing, guttering, drain pipes, as well as other Asbestos containing products being used for floor tiles, roofing tars, felts, decorative finishes (paints and plaster) electrical insulation, fire barriers in walls and fire protection for steel framed buildings some of which would be hidden out of sight.

### **Amosite (brown) and Crocidolite (blue)**

Brown and Blue Asbestos were most commonly used for heat insulating purposes because of there ability to withstand very high temperatures and still remain in tact and their excellent insulating properties they will be readily found in insulating lagging for pipes and boilers, gaskets, limpet spray (fire protection for steel buildings), fire rated doors and low density insulation boards and ceiling tiles.

Asbestos is likely to be in building if

- It was built or refurbished between 1950 and the mid 1980's and particularly,
- If it has a steel frame construction.
- It has boilers with thermal insulation.

## Persons at risk from Asbestos

The most likely persons who may come in to contact with Asbestos are people involved in the construction industry as this is where Asbestos has had the greatest usage. The list below identifies some of the trades that may be exposed to Asbestos in their normal working environment, this list however is not exhaustive but simply show the vast number of people who may be potentially exposed to Asbestos.

- General maintenance staff
- Electricians
- Plumbers
- Gas fitters
- Painters and decorators
- Joiners
- Plasterers
- Demolition workers
- Construction workers
- Roofers
- Heating and ventilation engineers
- Telecommunication engineers
- Fire and burglar alarm installers
- Computer installers
- Shop fitters
- Scaffolders
- Architects, building surveyors and other such professionals
- Waste carriers
- Employees of waste recycling plants and land fill sites.

## Health effects of Asbestos

Blue and brown Asbestos are considered the most dangerous Asbestos because of the shape of the fibres (needle like) which readily become embedded in the lining of the lung, white Asbestos fibres are curved at both ends and so are more difficult to get lodged in the lungs, However there is no such thing as safe Asbestos all types of Asbestos will cause serious illnesses if sufficient quantities are inhaled. Asbestos fibres becomes so readily embedded in the lining of the lungs because of the size of the fibres they will typically be between 3.0 and 20.0 microns in length and can be as thin as 0.01 microns, human hair ranges from 17 to 181 microns thick. Because of their size they are not visible to the human eye and by-pass all our body's natural defence against dust and fibres and become embedded in the lining of the lungs never to be exhaled.

It is also worth noting that people who do not have direct contact with Asbestos such as family members and friends may be exposed to Asbestos fibres present on the clothing worn by workers, and sadly family members have died of Asbestos related

illnesses caused by exposure to Asbestos fibres on clothing of husbands etc.. having never worked with Asbestos themselves.

Asbestos exposure becomes a health concern when people are exposed to Asbestos fibres on a daily basis, Asbestos related diseases are unlikely in people who are exposed to single high level exposures or from a short period of low level of exposure

Asbestos may cause any of the following conditions.

**Asbestos warts.**

These are caused when sharp fibres are lodged under the skin and are overgrown causing benign callus like growths.

**Pleural plaques**

These are Discrete fibrous or partially calcified thickened area which can be seen on X-ray of individuals exposed to asbestos. They do not become malignant or cause other lung impairment.

**Diffuse pleural thickening**

Similar to the above and can sometimes be associated with Asbestos. Usually no symptoms shown but if extensive can cause lung impairment.

**Asbestosis**

This is caused when a large amount of Asbestos fibres have been inhaled in to the lungs causing irritation to the tissue of the lung lining they then become imbedded in the lung lining causing thickening and scarring. This generally makes it more difficult for oxygen to enter the blood stream and carbon dioxide to exit the blood stream. Many years of exposure are required to develop Asbestosis. However people who smoke heavily can develop lung cancer in periods as short as six months to two years, after being exposed to Asbestos, but in most cases it will take 20 years or more to develop. It is not possible to reverse or cure Asbestos although if caught early enough the condition can be slowed or even stopped.

**Mesothelioma**

Mesothelioma is a rare and virulent form of cancer that affects the lining of the lungs, and causes pleural thickening (the lining of the lung is thickened and hardened) in many cases it may take between 20 – 50 years after exposure to a sufficient amount of Asbestos fibres to develop, Mesothelioma is nearly always fatal. It is estimated that 250,000 workers in Western Europe alone will have died from Mesothelioma alone by 2029.

At least 3,500 people die in Great Britain each year from Mesothelioma and Asbestosis related lung cancer as a result to past exposure to Asbestos fibres and the number is set to rise for many years to come.

## **Guidance for Employees**

As an employee you will be most at risk when

- Working on an unfamiliar site
- The building you are working on was built or refurbished before 2000.
- Asbestos containing material was not identified before the job was started.
- Asbestos containing material was identified but this information was not passed on by the people in charge to the people doing the work.
- You don't know how to recognise and work safely with Asbestos.
- You know how to work safely with Asbestos but you choose to put yourself at risk by not following proper precautions, possibly to save time or because no other person is taking precautions.

The following is a list of Do's and Don'ts that you should take note of and act on to protect yourself and others from exposure to Asbestos fibres.

### **Do**

- Ask if you think a building was built or refurbished before 2000 to see if an Asbestos survey has been carried out and ask to see it before you start any work that may disturb any Asbestos present.
- Ask if Asbestos is present does the work need to be carried out by a licensed contractor.
- Make sure you make full use of any personal protective equipment made available to you, never work with Asbestos without the correct PPE.
- Clean up as you go to prevent a build up of waste materials and loose Asbestos fibres.
- Dispose of all Asbestos and Asbestos contaminated waste in the correct way.
- Wash before breaks and going home.
- If in doubt about anything ask for clarification before you start work.
- Ask for training or refresher training if you think you need it.
- Co-operate with your employer at all times.

### **Don't**

- Use methods that create a lot of dust such as using power tools, use hand tools if possible.
- Sweep up dust using brushes, use a Type H vacuum cleaner and /or wet rags to prevent fibres being made airborne.
- Take home any clothing such as overalls which may have been contaminated with Asbestos fibres during your working day.
- Reuse any disposable clothing or dust masks
- Smoke
- Eat or drink in the working area.
- Take shortcuts when working with Asbestos.

- Ignore any safe working methods, procedures, signs or information designed to safeguard your Health and Safety and that of your work colleagues.

### **Uncontrolled release of Asbestos**

In the event of an uncontrolled release of Asbestos or the discovery of an Asbestos containing material the following steps should be followed.

#### **Procedure 1**

If undamaged Asbestos is discovered during the working process.

- Discovery of Asbestos containing material, stop work immediately
- Keep everyone else out of the working area.
- Report the discovery to supervision immediately
- Display Asbestos warning signs.

However if you discover damaged Asbestos containing material or actually damage the Asbestos containing material during your work activity the following procedure will need to be followed

#### **Procedure 2**

- Discovery of Asbestos containing material, stop work immediately
- Keep everyone else out of the working area.
- Is there dust or debris on clothing (if no follow procedure 1)
- Remove the clothing a place in plastic bags and label Asbestos contaminated clothing
- Wash thoroughly, if possible shower.
- Report the incident as soon as possible
- Display Asbestos warning signs

#### **Remember**

- Asbestos fibres can not be seen by the naked eye in the air.
- You can not smell Asbestos fibres in the air.
- The effects of Asbestos take many years to show up – avoid breathing it in now.
- Smoking greatly increases the risk of developing Asbestos related diseases by many times.
- Asbestos is only a danger when it is air borne.

## **Disposal of Asbestos**

All Asbestos and Asbestos contaminated waste should be disposed of in the correct way. Any Asbestos product or material that is ready for disposal is defined as Asbestos waste. Asbestos waste also includes contaminated building materials, tools that cannot be decontaminated, disposable personal protective equipment and damp rags used for cleaning. If in doubt always treat waste as Hazardous or Special waste.

- Asbestos waste is Hazardous Waste when it contains more than 0.1% Asbestos
- Do not mix Asbestos waste with other general waste to get it below 0.1%
- Waste must be packed in UN approved packaging with a CDG (Carriage of Dangerous Goods Act 2004) hazard sign and Asbestos code information visible.
- Double wrapped and labelled Asbestos waste. Standard practice is to use a red inner bag with Asbestos warnings, and a clear outer bag with the CDG sign.
- For firmly-bound Asbestos- Asbestos cement and articles with Asbestos reinforcement- that does not release hazardous or respirable fibres easily CDG (Carriage of Dangerous Good Act 2004) does not apply. They should be wrapped in ployethene and suitably labelled as Asbestos waste and disposed of at a licensed site.
- Do not over fill bags and beware of sharp objects that may puncture plastic bags.
- Transportation of waste to be done by a registered waste carrier.
- Complete a waste consignment note and keep for a minimum of three years.

## **Further Information**

If you require any further information on Asbestos it is available from the following web sites.

[www.hse.gov.uk/asbestos](http://www.hse.gov.uk/asbestos)

[www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)